



Partnership for
Education and research about
Responsible
Living



Division of Economic
Education and
Sustainable Consumption

Beyond Consumption Pathways to Responsible Living

2nd PERL International Conference

Technische Universität Berlin

19–20 March 2012

Conference Proceedings

Vera Fricke, Ulf Schrader, Victoria W. Thoresen (eds.)



NORWEGIAN MINISTRY OF CHILDREN,
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Editorial Comments

These are the proceedings of the second international PERL Conference, held in March 2012 in Berlin, Germany, under the title “Beyond Consumption – Pathways to Responsible Living”. The proceedings include some of the key note speeches and all working papers that were submitted prior to the conference. Please note that the presentations included here have not been thoroughly reviewed and revised by the editors in terms of structural clarity and language proficiency.

The editors would like to express their appreciation to everyone involved in the preparation and implementation process of the second international PERL conference. A special thank you goes to all reviewers for their great effort in reading and commenting on the submitted abstracts. Each submitted abstract was reviewed by two experts. Please find below the reviewers listed in alphabetical order.

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Berlin/Hamar, May 2012

Vera Fricke, Ulf Schrader, Victoria W. Thoresen

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Beyond Consumption

Pathways to Responsible Living

2nd International PERL Conference
Berlin, Germany, March 19-20, 2012
Conference Proceedings

Editors

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I. INTRODUCTION

Beyond Consumption

Ulf Schrader, Vera Fricke


Technische Universität Berlin — Germany

On the last evening of the First International PERL Conference about “Enabling Responsible Living” in Istanbul 2011, we had a creative session about the best title for the upcoming PERL conference in Berlin 2012. Inspired by two successful conference days and the open minded atmosphere of the farewell session, we came up with the title “Beyond Consumption. Pathways to Responsible Living”. Some thought it might be too provocative for a network, originally founded as the Consumer Citizenship Network (CCN). If consumption is in the core of our thinking how can we propose to go beyond without losing identity? Nevertheless, after an intensive discussion we decided that we had found the adequate title. There are at least three good reasons.

Firstly, for a longer time already we had the plan to invite Tim Jackson as a keynote speaker. His inspiring and bestselling book “Prosperity without Growth” (Jackson 2009) is not only about GDP growth and its problematic relationship with ecological degradation and personal wellbeing but also much about consumption as both the driver and the result of economic growth. “Prosperity without consumption” would have been even closer to Jackson’s book title – however it describes a rather unrealistic vision for the modern world. Basically every human activity nowadays is combined with the use of marketed goods or service, i.e. with consumption: we sleep in beds we bought, we wear clothes we have shopped etc. – and even if we follow the new do-it-yourself trend, we usually buy at least some parts for doing handicraft. Going “Beyond Consumption” doesn’t mean to live without consumption. It stands for responsible living with a decreasing importance of commercialized consumption. And it was ambitious enough to successfully attract Tim Jackson as a keynote speaker for the 2012 conference (see Figure 1).


Secondly, the title reflects the development of the network and the switch from CCN to PERL. In contrast to “Consumer Citizenship Network”, the name “Partnership for Education and Research about Responsible Living” does not refer to consumption any more. Originally, this switch in names was primarily due to the EU decision, not to support the same thematic network more than two times. However, meanwhile the change in names from CCN to PERL also reflects a paradigmatic shift within the network and the decision to go beyond consumption towards a broader view on responsible living. The scope of the network is not limited to the buying, using and disposing of – more or less sustainable – marketable products and the education about it.

Tim Jackson




Tim Jackson is Professor of Sustainable Development at the University of Surrey and Director of the ESRC Research Group on Lifestyles, Values and Environment (RESOLVE). Funded by the UK Economic and Social Research Council, the aim of RESOLVE is to develop a robust understanding of the links between lifestyle, societal values and the environment, and to provide evidence-based advice to policy-makers seeking to influence people's lifestyles and practices. Prof Jackson also directs the newly-awarded Defra/ESRC Sustainable Lifestyles Research Group. From 2004 to 2011 he was Economics Commissioner on the UK Sustainable Development Commission, where his work culminated in the publication of the controversial book *Prosperity without Growth – economics for a finite planet* (Earthscan 2009). In addition to his academic work, Tim is an award-winning dramatist with numerous radio writing credits for the BBC.

Helen McCallum




Helen Mc Callum was appointed Director General of Consumers International in May 2011, following four years as Director of Policy, Advocacy and Communications at UK consumer group, "Which?". She previously held a variety of leadership roles: as Director of Corporate Affairs for the UK Environment Agency 2001-2007; Director of Communications in the UK Department of Health 1999-2001, and Head of Communications for the National Health Service. 1994-1999. She has also served on the CI Executive, and the Executive of BEUC, the European consumers association.

Jochen Flasbarth



Jochen Flasbarth is president of the Federal Environment Agency in Germany. He studied economics, political science and philosophy in Münster and Bonn. He worked as chief editor at the publishing house *Economica* and he acted as President of the Nature and Biodiversity Conservation Union. He was Director General: "Nature Conservation and Sustainable Use of Natural Resources" at the Federal Ministry for the Environment, in Germany and has been active in nature conservation on an honorary basis, as a member of the former German Federation for the Protection of Birds, Executive Board and the Executive Committee of the German League for Nature and Environment (DNR) and as a founder board member of the Traffic Club Germany.

Martin Unfried



Martin Unfried is an environmental expert who sometimes got bored at conferences. He asked himself how green political parties can survive if consumers even freak out about lightbulbs, speed limits and green taxes? He decided to go out and win back the consumer's enthusiasm for a new sustainable culture and some "emotional climate intelligence". He studied politics and theater sciences and worked as a journalist for public and private radio and TV. To fight for a sustainable culture, he publishes his successful "Ecosex" column in several online media. He is working at the European Institute of Public Administration in Maastricht.

Figure 1: Keynote Speakers 2012 (excerpt from the conference program)

Responsible Living is much more and includes for instance activism for a legal and socio-cultural framework which supports sustainable consumption or activities like gardening, cooking, walking, talking, and playing which do not focus on the consumption of marketed good. As we have written already: PERL is not looking for responsible living without consumption since we are for example hardly walking naked or with 100% self-made clothes. We are looking for responsible living with a less commercialized style of consumption which is not threatening the ecological and social environment – and the personal well-being. We are not talking about subsistence for everyone – but we know that buying organic beef from the other side of the globe or buying jeans with organic cotton for 20 EUR in a discount retailer is not enough to guarantee sustainability. There is no excessive consumption with a credible sustainability label. Thus, responsible living needs to reflect needs and wants as well as taking the topic of sufficiency into account – while most publications on sustainable consumption and sustainable marketing still focus on “no regret” eco-efficiency solutions. The understanding of the consumer citizen by Victoria Thoresen and others already included these progressive ideas (e.g. Thoresen 2005) but the switch from CCN to PERL makes them even clearer.

Thirdly, we as local hosts of this conference have a special compassion for the title “beyond consumption” and the shift from consumption to responsible living – since it reflects the development of our own work. We started to deal with sustainability issues in relation to marketing and consumption. Our research was focused on solutions for companies and we were teaching future managers. Now, we are primarily involved in research for consumer policy actors and in teacher training. We believe in what Erik Assadourian, one of PERL’s keynote speakers in 2011, wrote about schools that “they represent a huge missed opportunity to combat consumerism and to educate students about its effects on people and the environment” (Assadourian 2010a: 15) and that education is “a powerful tool in bringing about sustainable human societies” (Assadourian 2010b: 55). We perceived the 2012 PERL conference in Berlin – with more than 50 speakers and about 200 participants from 40 countries around the world – as one of the many small but important mosaic stones to achieve such a sustainable human society.

These proceedings document the papers which were written for this conference. With the exception of the welcome addresses and keynote speeches the selection of the papers followed an extensive review of more than 100 abstracts which were submitted on the basis of a call for proposals. The papers here, which have not gone through an additional editorial revision, are ordered according to the tracks and questions we have proposed in the call for proposals:

Track 1: Foundations & Concepts of Responsible Living

- What makes consumerism attractive and harmful for societies and consumers themselves? What makes consuming less and/or differently attractive and challenging?

- What are specific challenges and opportunities to facilitate this shift in consumption cultures (e.g. in housing, food, mobility, clothing)?
- What can history and cultural heritage teach us about life quality and sustainability?

Track 2: Examples & Practical Approaches for Responsible Living

- What changes in social structures and processes (e.g. in businesses, government and NGOs) are visible or needed to enable different consumption?
- What roles do or can information technology and social media play in this transformation?
- What can be the contribution of Rio+20 to enable this shift?

Track 3: Learning & Education for Responsible Living

- How can education deal with the controversial aspects of moving beyond consumption?
- What skills do teachers need to empower tomorrow's consumers to look beyond consumption?
- How to evaluate the success of education for responsible living?

We wish all interested educators, researchers, students, consumer activists, politicians, managers etc. an inspiring reading – especially those who were not able to attend the conference. PERL is an ongoing experience and we hope to see you all at the next international PERL conference.

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Welcome speech of the vicepresident of Technische Universität Berlin

Gabriele Wendorf

Technische Universität Berlin — Germany

Dear Madam Minister Aigner, dear ladies and gentlemen,

As the vice president for teachers training, advanced academic professional training, young academics and corporate identity I welcome you cordially at the Technische Universität Berlin for the second PERL-Conference.

Madam Minister Aigner, we are honored to have you with us today.

I am very delighted that I have the opportunity to inaugurate a conference with such a highly current subject twice in my term of office. In 2009 the 6th CCN-conference was held here as well.

It is unfortunate and virtually incomprehensible that at Rio's 20th anniversary sustainable development is still not a mainstream trend. Though, on the other hand this will encourage us to continue bringing forward this important topic. Conferences like this play an important role in increasing its esteem and spread it into the public.

This conference focuses on the proactive role of the consumer citizens within the transition toward a globally more sustainable development. The significance of this role has long been underestimated. Thus there is still a demand for empowering consumer citizens in making responsible choices. With its focus on education for sustainable development the PERL-network bridges this central gap. The program of today and tomorrow addresses central aspects as for example the relation between consumption and sustainability. It seems alternatives to consumer societies are needed. Future sustainable societies require specific skills in the political, economic and educational system. Consumer competencies have to be developed and enhanced with regard to making sustainable choices. This will help to develop and support sustainable lifestyles. We also have to rethink and redesign our governance structures for social change. For universities this means to address societal needs in research and education and to open up to the public. Participation also needs to be implemented more strongly into the educational system. Teaching methods and tools for learning active citizenship and critical consumerism have to be developed.

And on a personal level, each of us needs to develop a healthy work-life-balance to support a sustainable way of living.

Transdisciplinary approaches are needed to address all of these challenges. Teachers have a significant role in this process toward a sustainable society. They will help to enable the coming generations to continue this transformation.

The Institute of vocational education and work studies at the Technische Universität conducts a teachers training that suits these aims well. It focuses on the intermediation of daily living skills and has a strong practical orientation. It also seeks to support the non-academic domains of society since teachers trained at the Technische Universität will teach at comprehensive schools and at the German Hauptschule which represents the basic educational level in the German educational system.

At this point I would like to thank Prof. Ulf Schrader, the executive director of the institute and his colleagues for hosting and organizing this conference. He also holds the chair of Economic Education and Sustainable Consumption. The renaming of this chair is a definite indication that the Technische Universität is on its way toward sustainability. A second step supports this: Eleven months ago the academic senate of the Technische Universität has agreed on a mission statement that specifies sustainable development as one of the central aims.

Ladies and gentlemen, I would like to thank Prof. Victoria Thoresen for founding and inspiring the CCN- and the PERL-network. Also I would like to thank the representatives of the European Union and the national governments for the financial support of the network and Prof. Tim Jackson who will speak later.

Dear ladies and gentlemen, I hope you will enjoy the conference, and your stay in Berlin. And I hope you will return to your workplaces and homes with creative fruitful impulses that will add on to your successful work.

Thank you very much.

Approaches to foster responsible living

Jochen Flasbarth

President of the Federal Environment Agency – Germany

1. Introduction

More than 30 years ago the philosopher Hans Jonas published his famous „Prinzip Verantwortung“ (The Imperative of Responsibility) in which he discussed social and ethical problems created by technology. He formulated a new – some call it “Ecological” - Principle of morality, saying: "Act so that the effects of your action are compatible with the permanence of genuine human life".

For Jonas it was obvious, that with the evermore far reaching impacts of modern technologies and civilization a new ethical foundation of responsibility is required. A responsibility that e.g. takes care of future generations and that is aware of the impossibility of a precise prognosis and assessment of the complex impacts of modern technologies.

I think many of the reflections of Jonas are still very valid and the urgency to be aware of one’s own responsibility and to act accordingly is bigger than ever. I’m, therefore, very grateful for having the opportunity to discuss with you “approaches to foster responsible living”.

Beside Jonas’ ethical imperative of responsibility our own empirical studies on public awareness and environmental behavior (Studien zum Umweltbewusstsein in Deutschland) show clearly that the question of responsible living in modern, pluralized societies is – in practical terms – not easy to answer.

There is empirical evidence that the question of responsible living is associated with many social dilemmata. To become effective, environmental policy and environmental communication should consider these dilemmata and should help to create enabling frameworks to overcome existing gaps of responsibility. Here, responsibility is not only a “individualistic concept”, it is also a concept associated with the question in what way society at large can mobilize and institutionalize “responsibility”.

Regard to responsible living environmental policy should be seen as multi-dimensional challenge:

- Knowledge transfer for sustainable lifestyles
- Mobilizing civil engagement
- Creating cultures of sustainability

Talking on responsible living is not only talking about the responsibilities of others – the consumers, the producers, the business stakeholders, the scientists and so on, but also about the responsibility of the Federal Environment Agency itself. So I'll also want to illustrate by some examples how the Federal Environment Agency tries to take care of its responsibilities as an institution and employer.

2. Prerequisites for responsible living

Before we discuss approaches to foster responsible living in more detail we should have a look at some prerequisites for responsible living. To be able to live responsible requires amongst other

- Awareness: In my point of view, awareness is one of the most important prerequisites for responsible living. In order to be ready to take responsibility we must be aware that it matters what we do, that we influence and create the world and that our lives and actions do have an impact.
- Awareness goes hand in hand with another prerequisite: Knowledge and understanding. In order to live a responsible life, we must be able e.g to make informed choices (with sustainable products and services being available), to know the impacts of our actions, to have an understanding about interrelationships and cross-impacts of the state, drivers, pressures, impacts and responses of the environment and our societies.

By the way, with respect to information of the public about environmental facts, we have on our website a very popular and pretty well frequented research portal, called „Daten zur Umwelt“ (Environmental Data). The interested public will find answers to all the critical environmental questions such as ‘How clean is the air we breathe?’, ‘How polluted are Germany’s rivers and lakes?’, ‘Does transport still have the same environmental impact that it did 10 years ago?’ Background information about relevant laws and environmental policy goals are just a click away. An abundance of diagrams and tables illustrate the decrease of greenhouse gas emissions in Germany or the negative effects of traffic noise on people. The general public can access sound information about environmental protection in Germany and find links to additional sources of information.

The ‘Environmental Data’ website also draws attention to legal developments in the field of environmental law, especially as concerns climate protection. It also features the federal government’s environmental policy goals. Many keywords reference relevant literature and links.

To build up this knowledge of cross-impacts and interrelationships, we need systemic thinking. By a systemic view, we see the world as a complex, non-linear system, in which small changes may cause dramatic reactions and impacts and which is characterized by amplifying and mitigating feedback loops and rebound effects. To take e. g. rebounds effects into consideration is important when we want to un-

derstand, why despite the fact that products and production processes get more and more efficient the overall consumption of energy and natural resources is still increasing.

Another important aspect is subsidiarity. If we delegate too much decision power to far distant authorities, we risk to lose the feeling of our own responsibility. Therefore matters should be handled by the smallest, lowest or least centralized competent authority with central authority having a subsidiary function, performing only those tasks which cannot be performed effectively at a more immediate or local level.

To be able to handle matters oneself requires the competency and capacity to participate and to take care of issues too. Therefore we need amongst other an education system that motivates, enables and empowers people to engage for a sustainable society. And we need strong civil society organizations which anchor sustainability issues in the society and which strengthen the awareness and the engagement of the citizens. The Federal Environment Ministry and Environment Agency are therefore supporting with funds corresponding projects of civil society organizations, working in the field of sustainability.

And we need a society which is characterized by a culture of encouragement and acknowledgment, by a culture of empathy and cooperation, by a readiness to take risks and to accept failures when exploring sustainable ways of living.

3. Approaches to foster responsible living

The concept of responsible living respects the planetary boundaries of the ecologic system and the needs of present and future generations. It encompasses all sectors and levels of the ecological, economical and social sphere.

It includes amongst others a resource efficient and climate protecting economy, a sustainable agriculture and fishery, a “greening” of the financial sector, the preservation of soils, forests and biodiversity, a life-long education and further education for Sustainable Development and Good Governance.

The Federal Environment Agency is working on the whole range of these and many other issues, but due to limited time I can give you only a few examples how we try to foster responsible (sustainable) living, addressing as well the individual as institutions, enterprises and the political, economic and cultural framework. I’ll focus in the next minutes therefore on approaches to foster green markets and the transition to a green economy which is also one of the both main issues of the coming Rio +20 earth summit.

Supporting green markets and the transition to a green economy

To facilitate the way to a green economy politics has to move ahead providing leadership with clear and ambitious environmental goals and a coherent policy framework design.

A precondition for that is a dialogue on perspectives for sustainability and possible pathways for development. Business and citizen have to be won over for that. At the same time new “institutional arrangements” (for example networks) and strategic alliances have to be formed, promoting climate protection and protection of natural resources, linked to new perspectives on welfare.

The organizational requirements and challenges confronted on the way to transforming economy and society can only be realized in cooperation by politics (state), business and civil society. This also applies to design of environmental education, with the aim to better mobilize existing willingness for changing to more sustainable lifestyles.

Politics has to provide a framework, to bundle the diverse initiatives aimed at sustainability. Politics are responsible to act as a broker for sustainability, but also the task, to create structural preconditions allowing business and consumers to pull together and to do their bit to move towards a green economy.

Challenges

Based on an intensive dialogue environmental policy has to identify clear targets and pathways for the necessary transformation, and to provide a reliable policy framework for long term investment decisions as well as personal daily decisions. The German Federal Environment Agency is currently working on such development perspectives (Study „Energieziel 2050: 100% Strom aus erneuerbaren Quellen; climate neutral Germany 2050)

Green business and Green consumption has to move mainstream. To reach this fundamental changes are necessary, in adjusting the economic and legal framework as in the redesign of infrastructure (E.g.: Attractiveness of public transport)

Present day consumption styles still run counter to sustainable consumption. We increasingly realize that a fundamental cultural change is a central precondition for establishing sustainable production and consumption patterns.

This cultural change towards sustainability needs new forms of communication that help to create better orientation and opportunities for the people to participate in the transformation process. Empowerment of the people and supporting “pioneers for change” will be a challenging task for policy-making that goes beyond the traditional policy approaches to promote sustainable consumption.

In this respect, the challenge for policy makers is to create and organize intensive dialogue to find collaborative forms of implementation in the so-called “triangle of change” to overcome various barriers and social dilemma associated with the over-

all transformation process and to activate existing social capital for change and the needed political acceptance.

Strategies (selection only)

- Environmental goals should define the corridor in which the transformation of economy and society can take place. A policy mix of instruments targeted at both supply and demand is urgently required, to reach these goals! The following strategies are of central relevance in this context:
- Provide economic incentives for sustainable supply and demand, to allow sustainable consumption styles to move mainstream. Current misalignment of incentives needs to be corrected by adjusting market framework conditions including:
 - Prices which tell the ecological truth
 - Promoting green investments
 - Abolishing environmentally harmful subsidies (2008: in Germany 48 Billion €)
- The state needs to provide infrastructure investments that are critical to the transition to the green economy, notably public transportation systems, efficient water and sewage systems and electricity grids, thereby “crowding-in” private investments and “locking” them in the direction of green investments.
- Increase innovation dynamic of suppliers by smart regulation and financial support of pioneer technologies
 - Example: Ecodesign directive
 - German environmental innovation program financed by the Federal Environment Ministry
- Establish green lead markets (Example: Feed-in tariffs for renewable energies)
- Provide market transparency for consumers

Example 1: The Blue Angel label

Provides orientation and guarantees protection of climate and resources (But: Because of the diversity of existent labels uncertainty exists on part of the consumers as well as business; With www.label-online.de BMU/UBA have supported the Verbraucher Initiative e. V. (a national consumer organization), to build a system of evaluation of more than 400 management and product related labels in the realm of sustainability to be used as information source for consumers).

Example 2: Reusable packaging

Reduces waste and pressure on resources and avoids CO₂ emissions by refilling, they are mainly used for regional products and represent a regional closed loop economy. Therefore the UBA promotes explicit labeling of single-use and reusable packaging as an instrument in addition to campaigns for reusable packaging. Only with a high degree of transparency and education the consumer can make an informed decision.

Example 3: Ecological rent index

So far the amount of energy a building uses did not matter for local rent indices. An ecological rent index includes the energetic characteristics of buildings as a factor for decreasing or increasing rent. It thereby increases market transparency and profitability of investments in energy efficiency.

Strengthen knowledge and options for action for sustainable consumption. Transfer of knowledge on sustainable lifestyle is a central sphere of activity of environmental policy

Our experience shows that inspite of a great number of „well meant“ books and information offers current consumer education does not satisfy diverse information needs and does not provide appropriate opportunities for action. New forms of environmental education, as well as differentiated approaches are necessary. E.g. in a recently published brochure, UBA tried to offer different possibilities for a “carbon neutral” lifestyle for five exemplary kinds of social environment.

At present, UBA together with the Federal Ministry for the Environment is currently developing a knowledge platform on “sustainable living” (Nachhaltig Leben) that will help consumers and multiplier organizations (such as consumer organizations) to find better orientation in this complex field of action.

Communication and transfer of knowledge on sustainable lifestyles is a collaborative endeavour, and not only by Government alone. Here, we setup various initiative e.g. with the Retail Sector to increase capacities for better communication and marketing on green products and associated issues, like Fair Trade, healthy living, but also to increase the recognition of the role of CSR strategies to promote the overall performance of the companies including the promotion of sustainable consumption practices (beyond environmental management).

Promoting market and non-market (social) innovations towards Green Markets as complementary approaches

The transformation towards Green Markets relies on technological and social innovations. To become more effective, we are exploring new ways on how to better bring together market and non-market related innovations to increase the potential for new business models and collective action within civil society towards sustainable lifestyles in the realm of a “sharing and resilient economy” which is characterized by new services (e.g. carsharing models combined with E-Mobility) and/or

new neighborhood networks (e.g. non-profit platforms for textiles, toys, time sharing). These activities leads also to opportunities to better integrate groups of people that do not cope with the dynamics of modern life by providing adequate strategies to improve overall life quality for everyone.

4. UBA as a “Responsible institution”

We all should live what we preach. So the Federal Environment Agency is not only talking about environmental and sustainability issues but continuously trying to improve its own respective performance as a “responsible institution”. Let me illustrate this by the two examples EMAS and Family Auditing.

4.1 EMAS

The Federal Environment Agency (UBA) has had an environmental management system in place since the mid-1990s. UBA was the first federal authority back in 2001 to introduce EMAS (Eco-Management and Audit Scheme) at its then headquarters on Bismarckplatz in Berlin-Grünwald. In the meantime twelve of our branch offices meet EMAS requirements, which are inspected by an independent environmental consultant every year.

Our environmental guidelines define the principles of UBA’s in-house environmental protection, which are put into practice in the form of various measures that aim to increase the use of renewable energies, reduce energy consumption, and promote eco-friendly mobility and green procurement.

Saving energy, protection of resources and environmentally friendly use of space has high priority in the operation of our offices. We educate our staff regularly about how to protect the environment at the workplace.

Guidelines on eco-friendly business travel in German KB were resolved to decrease pollution caused by our many business trips. Moreover, we strive to reduce the environmental impact of our use of information and communications technology (ICT) and act as a model of environmental behaviour for our contract partners, customers, and visitors.

4.2 Certification as family-friendly employer “audit berufundfamilie®”

To foster responsible living means for an Institution that it cares about the well being of its employees. The Federal Environment Agency (UBA) has been awarded the certificate of the “audit berufundfamilie®” (workandfamily audit) in recognition of its status as a family-friendly employer. The certificate represents recognition of the family-friendly working conditions at the Agency.

Thanks to flexible working hours, Agency staff can better manage both job and family. UBA also offers the possibility to telecommute, that is working from the home. The parent-child workrooms at both offices in Dessau-Roßlau and Berlin also make life easier. A family affairs office has been in place since last year to help staff arrange care for relatives. UBA staff can also contact this office for advice and arrangement of child care.

Our goals for the coming years are: We want to boost management's consciousness of family-friendly human resources management. This incorporates taking into account the needs of both full-time and part-time employees when scheduling meetings, ensuring reliable working hours through sound work scheduling, and striving to strike a balance between the needs of employees with and without family obligations. Finding a balance between work life in a management position and family life is therefore expressly included on the Agency's agenda. A service to keep contact with staff on parental leave, also offered by UBA, will improve and maintain relations between the Agency and staff and make it easier to return to work. Holidays are sometimes longer than parents' holiday leave time, and a programme for children during these times aims to assist parents in finding appropriate childcare.

Both sides stand to gain when there is a balance between the interests of the Agency and those of its staff. According to a study commissioned by the *berufund-familie*[®] GmbH, job satisfaction and motivation increase in 85 percent of all cases; work quality in 70 percent of cases. Actively practiced family-oriented personnel policy is not simply a charitable social policy. When businesses have a stake in their employees' private lives, they enjoy tangible economic benefits, for the costs of flexitime schemes, telecommuting or arranging care for relatives are considerably lower than those incurred by replacement of staff, absenteeism, overlap time, and labour turnover.

The audit helps us to put a long-term system of family-friendly personnel policy into place. It is granted each time for a period of three years and is under the patronage of the Federal Ministry of Family, Senior Citizens, Women and Youth and the Federal Ministry of Economics and Technology.

5. Conclusion

The question of responsible living is a multi-dimensional challenge for environmental policy-making which is not easy to solve.

Environmental policy should create the needed orientation and real opportunities for joint action.

Environmental policy should create new capabilities and capacities on all levels of society through enabling frameworks, stimulating innovation and capacity building, and to create opportunities to mobilize civil engagement in this respect.

Finally, environmental policy should be transformed into a "policy for responsible living", helping people and institutions to become stronger change agent for a

sustainable future. With this people-centred approach environmental policy will become a transformative force within society to form the favourable background for a common “culture of responsible living”.

Thank you very much!

Concern, compassion and commitment Keys to responsible living

Victoria W. Thoresen

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At this conference we are here to exchange knowledge and insights, to discuss and learn. We are here not necessarily to agree on one specific way forward, but to identify pathways. We are, however, at the same time, dealing with one of the most essential matters confronting humankind at the moment—that of “searching for a principle of unity capable of binding together the peoples of the world in some form of valid and creative relationship” (Holley 1945).

Many “principles of unity” have been forwarded: some based on religious understandings, some on sociological analysis, others on material, economic perspectives and still others from more ecological approaches. They have sprung from an acknowledgement of humankind’s common origin, nature and environment—our being, in a sense, “the fruits of one tree, the leaves of one branch”—interdependent and interrelated.

Teilhard de Chardin reminded us that “In the passage of time, a state of collective human consciousness has progressively evolved which is inherited by each succeeding generation of conscious individuals, and to which each generation adds something.” (de Chardin 1959: 33) Or as a Somali proverb states, describing our historical and future heritage: “Every man has hanging to his neck a precious book.” It is that “book which reminds him of his responsibilities to his fellow human beings. Has our generation ignored or become unable to understand what is in this metaphorical “book”? Has our preoccupation with personal prosperity and individual freedoms clouded our vision? Here are a few interesting (if depressing) anecdotes:

- On Friday the 28th November 2008 Jdimytai Damour, a 34 year old Walmart security guard was trampled to death at 5am by a crowd of frenzied shoppers stampeding the doors of the shop for a sale on a 798USD flatscreen tv (Botsman and Rogers: 33).
- In November 2011 Rome, New York, a riot for smart-phones left two women severely injured (Time magazine 2011).
- In December 2011 a gunman shot a man in San Leandro California who refused to hand over his purchases in a parking lot (ibid).
- In India the second floor of a shopping mall collapsed, killing many. During the building process the entrepreneur had siphoned off bags of cement to sell.

- A British High Court judged in favour of a consumer and against a credit company who was charged for haranguing the customer until they felt forced to take out unmanageable loans (BBC News 2011).

Or we can look at statistics:

Some 6.4 million Germans, or nearly ten percent of all adults, are insolvent. They cannot pay their bills and have no opportunity to raise the necessary money in the foreseeable future (Creditreform 2011). According to the official EU Statistics' Evaluation of changes in sustainable consumption and production in Europe (2011 monitoring since 2000) (European Commission 2011).

- Consumption of materials continues to rise;
- Waste management improving, although more hazardous waste;
- Decrease in atmospheric emissions;
- More but smaller households with increasing expenditures;
- More and more cars on the roads.

Perhaps there are three keys which might help us: Concern, Compassion and Commitment. Before I share with you research supporting this, let me take you back to Africa for a moment and tell you a tale about a well-known figure, Anansi, the spider.

Anansi liked to spend his mornings contentedly climbing the sun-bleached rocks on the wide savannahs or swinging from the branches of the giant baobab trees. One day he heard a deep rumbling and the earth and rocks and trees began to quiver and shake. A herd of elephants walked solemnly by, sighing as they passed: "The stream is empty. There is no water left. What shall we do?!" Anansi found it hard to believe that the stream had suddenly dried up, why it had flowed as long as Anansi could remember and as long as his father could remember and even his grandfather. Anyway, what did he care about big, clumsy elephants and their problems?! Then Anansi heard a loud flapping of wings and saw birds fly overhead crying: "The stream is empty. There is no water left. What shall we do?!" One group of animals after the other passed by Anansi who became more and more alarmed by the state of the thirsty, desperate animals. But he was a pretty self-centred fellow and even though he felt sorry for the others he commented to himself, "I don't believe it. I bet they are just imagining it. And even if it is true it's not my fault and there's really nothing I can do." All night long he heard the cries and sighs of the other animals. He got angry at being kept awake. Finally, he began to imagine what it would be like without even a single dewdrop of water. By morning he had decided to see for himself if the stream was empty. It was true. There was no more water in the stream. He followed the empty stream up the valley, around the plains, past the acacia and flame trees until he suddenly came upon a huge pile of old rotten trees and shrubs and stones lying across the very middle of the stream. On the other side of the barrier the waters pushed and shoved and splashed happily about. "So that's why!" Anansi said to himself, "But there is really nothing I can do." That night and

for many afterwards he heard the cries and sighs of the other animals longing for water. He couldn't sleep. He could almost sense how thirsty the animals were. One morning he decided something had to be done. He saw a long line of termite ants and asked them: "Please, go and pull down the barrier in the stream." The termites replied: "And get drowned doing it?—no way!" and they marched away. Anansi asked a leopard: "Please, go and pull down the barrier in the stream." The leopard looked shocked and replied: "And get my beautiful fur wet?—no way!" Anansi asked a buffalo who answered: "And spend my precious time?—no way!" Finally Anansi came across a crocodile lying lazily in the mud. Anansi begged and pleaded, coaxed and encouraged the crocodile to remove the barrier from the stream. And that is what the crocodile did. And the waters rushed merrily down the stream all the way to the end. The thirsty animals returned and Anansi could finally sleep at night hearing the satisfied sounds of his fellow animals as they drank and danced at the edge of the stream.

Today the international community is being forced to recognize "planetary boundaries" (limits in relation to use of natural resources, in relation to absorbable pollution, and to unconstrained material growth). The Human Development Report for 2011, entitled: "Sustainability and Equity, A Better Future for All" highlights the fact that "environmental degradation intensifies inequality through adverse impacts on already disadvantaged people and inequalities in human development amplify environmental degradation" (UNDP 2011). Acknowledgement of the inequalities of resource use and distribution is slowly increasing. There is a broadening understanding of the choice overload caused by affluence and the lifestyle-related illnesses springing from aspects of material prosperity. And the call for identifying the nexus and interrelatedness of the main issues gets steadily stronger. The UN Intergovernmental Panel report of January 2012 claims "Peak everything is here". By 2030 we will need 50% more food, 45% more energy, 30% more water (UNEP 2012).

(Like Anansi, we hear the cries describing the difficult conditions—"There is no water in the stream.")

The "Global Environmental Outlook 5: Keeping track report" published recently by UNEP provides even more updated facts confirming that while progress is being made in certain areas, there is a general lethargy and lack of initiative to effect significant and necessary change (UNEP 2012). The complex and systemic nature of existing crisis makes any single-issue, symptomatic approach naïve. The facts are before us but behaviour change is slow and, in some cases, absent altogether. There is a need for a new narrative which examines more basic root causes and investigates the processes motivating behaviour change.

(Like Anansi, we see the problem but seem to say to ourselves "There is really nothing I can do".)

Why? Research exists that supports the contention that stimulating behaviour change is a process involving: intellectual, emotional, and social development as well as systemic, material development. To determine if concern, compassion and

commitment are keys to a new direction in development, one needs first to reflect briefly upon the existing theories of personal and social change.

Theories about attitudes and behaviour

Sociological and psychological theories of individual and collective change are based upon specific views of human nature: For example: the animalistic view of human nature which has spawned theories of social evolution and of social aggression. Thomas Hobbes (Hobbes 1998) and later Konrad Z. Lorenz (Lorenz 1966) being among the most outspoken on theories in which biological survival is the main purpose of existence. Less biologically determined approaches also exist based on more subjective, self-centered views of human nature such as John Locke and Adam Smith's individual self-interest views of human nature. These have led to classical conditioning, incentive theories (Staats and Staats 1963) in which external goals motivate behaviour. Additionally, operant conditioning theories have been put forward in which behaviour is dependent on positive reinforcement from others.

The inconsistency of attitude-behaviour relations has continued to be the focus of much investigation by social psychologists. Fritz Heider's balance theory (Heider 1958) claims that people strive to maintain consistency in their attitudes in order to avoid tension. Whereas, Leon Festinger's dissonance theory contends that inconsistency among attitudes propels people in the direction of attitude change (Festinger and Carlsmith 1959). Both, however, are in agreement that internal, external and defensive attributions play important roles in people's attitudes and actions. Internal attribution is inferring that the cause of behaviour lies within a person (Heider 1958). (Anansi thought: "they are just imagining it.") The external attributive cycle is about involving others to free ourselves from being responsible. (Anansi thought: "It's not my fault!") Defensive attribution otherwise known as the self-serving bias is when we blame others for one's misfortune (Lerner and Miller 1978). (Anansi once again: "angry at being kept awake".)

Yet, Anansi did finally do something about the problem of the dried-up riverbed. His actions could be explained by pro-social, relationship theories as an expression of empathy.

David Hume once stated "There is some benevolence, however small, infused into our bosom, some spark of friendship for human kind, some particle of the dove kneaded into our frame, along with the elements of the wolf and serpent." Jean-Jacques Rousseau added to this line of thought: "Compassion is a natural feeling, which, by moderating the violence of love of self in each individual, contributes to the preservation of the whole species."

Pro-social behaviour (sacrifice, altruism, empathic actions) is, according to researchers such as Dan Batson and Robert Cialdini (Batson 1991), strengthened by socialization processes, social norms and taboos. Stanley I. Greenspan maintains that a child's development of a self-conscious identity is totally dependent on the

empathic relationship between parents and child (Greenspan and Benderly 1997). Such relationships consist of concern, compassion and commitment. Martin L. Hoffmann goes even further explaining how “the child’s innate predisposition for empathic engagement is manifested at each stage of the maturation process, providing the individual with the emotional and cognitive foundation to become a fully formed social being” (Hoffmann 2011: 110). “Empathic predisposition is embedded in our biology and is basically a celebration of life-our own and others” claims Rifkin (2009: 9).

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II. FOUNDATIONS & CONCEPTS OF RESPONSIBLE LIVING

(Re)Designing governance for social change

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How can we rethink governance to facilitate local sustainable transformations? This paper is based on two parallel researches on the future of Agenda 21:

- a foresight group called Rio+20 and after: the future of Agendas 21 promoted by the Bureau des Territoires of the French Ministry of Ecology, Sustainable Development, Transport and Lodging;
- a projective assessment aiming at outlining the development of Agendas Iris 21 of the Brussels-Capital region promoted by Belgium regional Ministry of Environment, Energy and Urban Renovation.

The first part presents the methodological processes designed for participative scenarios building and based on collaborative workshops with Agenda 21 stakeholders, immersion sessions in the local institutions, collaborative scenario building, investigation of Agenda 21 identity, active partnership with ordering institutions and open communication process. The second part presents the scenario produced by both projection process leveraging on the Rio+20 conference to foster strategic conversation at local, regional, national and European governance levels. The third part discuss the different emerging designs of policy instruments from the scenarios such as hybrid forms of partnership, platforms to support multilevel transversally, participative visioning, transformation of public action by an acupuncture of micro-experimentations or co-evolution between experience of participants and experimentation of new solutions.

Keywords: agenda 21, scenarios, governance, co-design, policy design

1. Introduction

The World Summit in 1992 in Rio was expecting a large deployment of Agenda 21. This process started at various pace according countries. In France and in the Brussels-Capital Region in Belgium, both cases focused by this paper, Agenda 21 respectively took off in the 00's with the definition of a French Agenda 21 local sustainable development project reference framework in year 2000 and during the 2007-2011 period with the launch of a *Agenda Iris 21* annual call for tender supported by the regional Ministry of Environment and its *Bruxelles Environnement* administration.

The coming Rio+20 Summit is both pretext and occasion for evaluation of the work done so far and for conducting local foresight activities to envision and outline possible evolution of the Agenda 21 process.

In France, the Ministry of Ecology, Sustainable Development, Transport and Lodging (MEDDTL) together with ETD and 4D associations and within the steering action from the National Agenda 21 Committee set up a task force called *Rio+20 and after: Agenda 21 of tomorrow*. This task force constituted by civil servants in charge of Agenda 21 for local authorities at local, departmental or regional level together with organization and institutions supporting them aims at setting up a foresight exercise in order to envision possible futures of local Agenda 21 process in France. Strategic Design Scenarios sustainable innovation lab was involved to support the organization of the participative scenarios building and visualizing process.

In the Brussels-Capital Region, the Belgium Regional Ministry of Environment, Energy and Urban Renovation and *Bruxelles Environnement* proposed a call for tender to assess the first 10 *Communes* (neighborhood local authorities) and CPAS (Public Social Action Centre) who completed the *Agenda Iris 21* process. EcoRes sustainable development consultancy and Strategic Design Scenarios joint offer to conduct a participative assessment involving all stakeholders engaged in *Agenda Iris 21* process has been selected. In particular local coordinators of Agenda 21 in *Commune* and CPAS, AVCB and FGF associations facilitating the process, *Bruxelles Environnement* and the Regional Ministry of Environment, Energy and Urban Renovation collaborate to co-produce a projection of *Agenda Iris 21* and scenarios of development of the process at regional level.

2. Methodology

The scenarios building processes took place in France since Spring 2011 and in Belgium in Autumn 2011 both until Spring 2012. Beyond the similarities in goals leveraging on Rio+20 event to question achievements of Agenda 21 local processes

and involve stakeholders to co-develop scenarios exploring their possible futures, the respective national context in France covering between 700 and 800 Agenda 21 processes and the regional context in Brussels-Capital covering between 20 and 40 Agenda 21 processes is obviously very different. Therefore, more than a comparison of both parallel participative scenario building methodology that would hardly make sense, this section will review the different tools and methods adapted to both different contexts and study specific settings to outline the characteristic of the general co-design approach promoted by Strategic Design Scenarios.

2.1 Collaborative workshops with Agenda 21 stakeholders

In both cases different collective workshops have been organized with the different stakeholders involved in respective Agenda 21 processes. Beyond the difference of scale between national and regional level underlined before, the number of participants involved ranged from 15 to 25 for main stakeholders (local responsible of Agenda 21, external supports, network and cluster organizations and national/regional coordination). In Brussels as second range of 40-60 secondary stakeholders (elected people, civil servants, local NGOs, citizens...) were also involved for the purpose of the assessment process.

If we focus our description on the interaction with core stakeholders, the design of the workshops is aiming at kicking the participants out of the classical administrative reporting modes to stimulate creative interaction both within and between each of the Agenda 21 processes.

The workshop with civil servants responsible of the Agenda Iris 21 in Brussels for instance was organized as a one day open atelier (Figure 1) where each local Agenda Iris 21 responsible was asked to gather and invite the necessary representative team s/he consider could better represent the Agenda Iris 21 process s/he is responsible of. Different sub-ateliers were available for participants to visit in a random process. For each of them specific activities were designed:

- Stakeholder mapping on a circular map organized in concentric circles and under a webcam to videotape the construction process of the map and replaying the recording in accelerate, better understand the mental representation of social proximities;
- Set of *questions-cards* where participants have to decide which cards they choose to answer to make most sense of their local *Agenda Iris 21* process;
- Long prints of the *Action plans* where to highlight actions so that it makes sense from different points of view: progress in terms of transversality, systemic change of governance, visibility for citizens, etc...

The purpose of the whole setting is to promote self-creative assessment where participants are enabled to change and try different postures to observe their own process, build what will make most sense of it and prove it themselves; detect gaps,

barriers and enablers to enrich progressively future visions. The collective dimension of the open atelier allows mutual comparisons and cross-fertilizations between the different self-assessment processes to generate a collective vision. One of the interesting findings that emerged for instance is the collective acknowledgment of a gap between the environment competences involved on the field and the fact that most of the barriers detected regards governance issues. The collective vision for future of Agenda Iris 21 is therefore requiring a better design of the policy dimension of the Agenda 21 process based on more transversality to break the administrative silos; a more structural and central position in the political process; more synergic governance across administrative levels and between institutions.

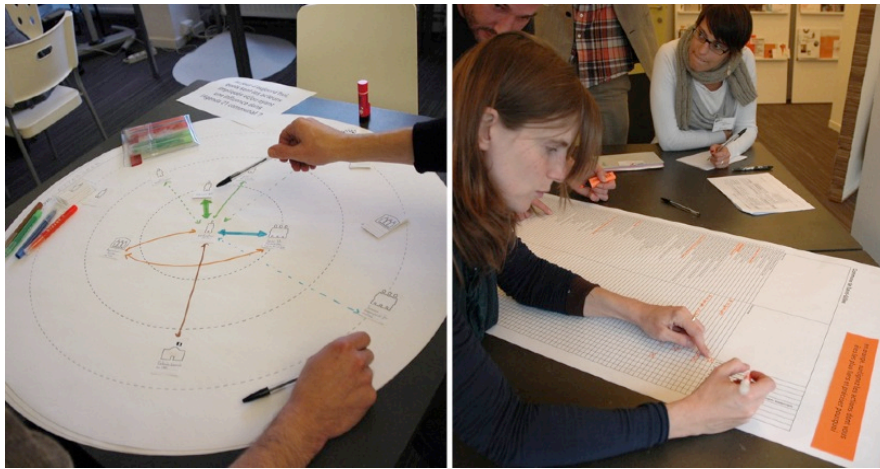


Figure 1: mapping, questions-cards and self-assessment tools to stimulate a creative interaction within and between each *Agenda Iris 21* teams during the *Open atelier* day at Strategic Design Scenarios

2.2 *Immersion sessions in the local institutions involved*

In the Brussels-Capital region, in-depth investigations to further investigate findings from desk researches and workshops with Agenda 21 coordinators were conducted in three different Communes and CPAS involved (Figure 2). The purpose was first to literally 'visit the Agenda 21 Action plan' in order to assess at real size and in action where was the real values of what was achieved and second to grasp through what people had to say – or not – about the local Agenda 21 process what was the on-going local dynamic. More than a series of appointments with the key stakeholders, the intention was to settle for 2 days in the focus public institution and improvise with formal and informal meeting when there, betting more on informal moments and spontaneous interactions rather than planned and organized meetings. 2 days are short for such a strategy requiring a minimum of time to build trust with

the different populations working in the institution and for unpredicted interactions to happen, especially that the aim was also to investigate outside the institution civil society organizations and other players that may have stakes in the Agenda 21 process.

Opposite to classical methods, immersions – event short ones – brought a great value leveraging on a series of effects that operates even after the first morning on the place:

- The guest effect: in a public institution people are rather working or passing for a short time and in both case they have specific tasks to do. Being a guest for 2 days is rather unusual especially if being a guest with no specific tasks to do. It triggers the curiosity and a certain sympathy of the civil servants;
- The informal posture is particularly interesting for taking opportunities of seeing people between 2 appointments, exchanging some words in the corridor or even bringing you sandwich and sharing their lunch table. Long appointments are not always necessary to pick-up the mood of a situation and informal encounters are often richer than formal meetings;
- The bouncing ball effect is the phenomenon when the interaction with one person pulls another: people introduce you to colleagues in the corridor, pick-up their phone to try a last minutes encounter and bouncing from one person to another you see many more people than with the tightest planning;
- The residence posture derives from settling in the place, behaving like employees and therefore meeting people more than one time during the immersion as a sort of new temporary colleague.

We insist here on the in-depth field involvement that is necessary to ground understanding of a process like Agenda 21 into the experience on the spot – even a short experience – to complete a conceptual study by a sensitive human approach. Such a quick immersion is not always as smooth as it may appear – some institution were first a bit scared of this informal, commando-like intrusion – but they generate insights from the real users or stakeholders. For instance from the cases visited, the coordinators of Agenda Iris 21 appeared clearly in a paradoxical posture: the more they are integrated in the institution and therefore metabolized by the traditional administrative structure, the less they seems to be able to leverage on their position to reform the governance of the institution. On the contrary, the apparently more instable and uncomfortable postures, floating between departments, both inside and outside – in a way a similar posture to the one we experience during the immersion session – seems to be more appropriated to assume the transversal activities of an Agenda 21.



Figure 2: Three sessions of two days immersion took place to share the daily context of Agenda 21 in the communes of Etterbeek, Uccle and the CPAS of Brussels.

2.3 Collaborative scenario building workshops

The scenario building process conducted with the French foresight group Rio+20 and after: the future of the Agenda 21 is articulated in two steps: a visioning activity outlining the desirable situation that future Agenda 21 should help to achieve and a backcasting activity establishing the necessary steps and their articulation to pass from the current situation to the desired vision expressed in the first step. The complete scenarios building process is grounded also on an Assessment of the current situation and achievements based on an overview of the more than 800 Agenda 21 in France and on the exploration of the strategic environment to deliver a short list of Hypothesis of evolution of French Agenda 21.

The foresight group is constituted of between 20 and 30 coordinators the most active Agenda 21 at various urban, departmental, regional levels with representatives of coordination bodies and research NGOs at the national level. It meets for five one and half-day intensive workshops around a series of creative and interactive exercises to invent new visions of evolved Agenda 21 processes and build collaboratively qualitative scenarios. We present here four of the key exercises proposed (Figure 3):

- 8 local challenges for 2032 aligned with Grand Challenges at European level have been proposed to tease current Agenda 21 and prompt participants to imagine how settings of Agenda 21 should have changed at the horizon of 2032 in order to play a significant role in solving these local challenges;
- The visions of evolved Agenda 21 emerging from the confrontation with the local challenges was pictured through a large and varied pallet of media (i.e. an ar-

ticle in a national newspaper; an assessment of effective role played by the local Agenda 21; the programme of a conference organised by the Ministry of Environment, etc) in order to grasp the multiple facets of the vision;

- Subgroups of participants develop stakeholders roles in implementing or supporting the implementation of evolved Agenda 21. They act as local citizens, Mayors or representative of the State government to visualise the new stakeholder panorama in short video sketches;
- 2 meters long timelines where proposed to define for each of the selected visions appropriated policy measures, local projects, resulting actions and consequences along the timeline articulated with transition arrows in order to establish the necessary evolution process from the present Agenda 21 and assess the credibility and robustness of each step to occur and produce the desired vision for Agenda 21 in 2032 to happen.

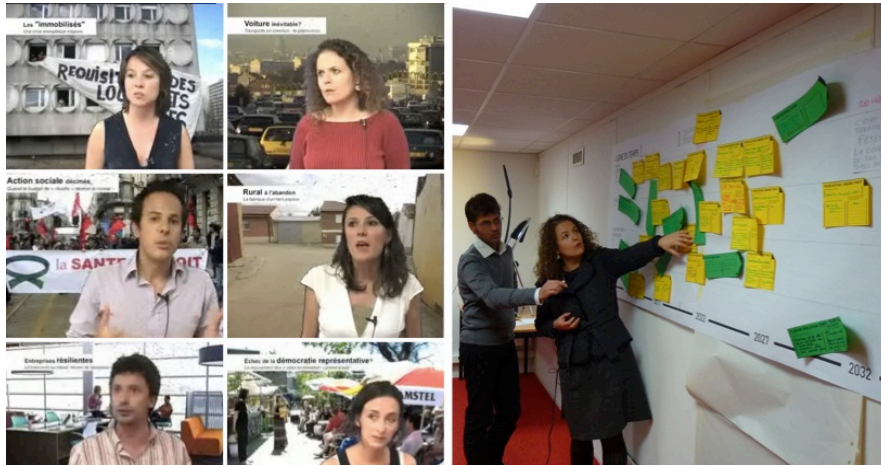


Figure 3: scenario building processes is based on qualitative and creative exercises using local future challenges to prompt visioning, stakeholder roles video sketches, wall timelines for backcasting, etc.

2.4 Investigation of Agenda 21 identity

Agenda 21 are nearly 20 year old: how are they perceived by the stakeholders of the sustainable development? What are their attributes as sustainable development tools? What is their reputation? Do they inspire trust? Which identity did they develop? The original concept issued from the World Summit in 1992 was widely open in order to include the multiple different initiatives of local sustainability worldwide. Therefore the identity formed is probably as heterogeneous as the different typologies of Agenda 21 but locally, within a relatively coherent national

framework, it possible to outline it, to better grasp the identity capital that may be activated in the future and also the bias induced by the perception heritage.

If Agenda 21 was an object? An animal? A famous person? Would it be a friend? An enemy? Which tags would best qualify it? And unqualify it? Etc: a light questionnaire has been build using free association and projection techniques commonly used in the analysis of private brand perception fully conscious of the limits that this approach presents both in conceptual term (for the heterogeneity of levels and sizes of involved institutions) and symbolic terms (for the obvious antagonism with the consumerist culture that develop these very techniques).

A bit more than 30 civil servants, responsables of NGOs and decision makers at various local, regional or national levels but all close to Agenda 21 processes took part to the experimentation and their answers brought to a series of tentative learning that could be summarized as such: Agenda 21 emerge as a very coherent brand: there is a convergence of its attributes whatever the question asked. It's a brand based on humanistic values, respect, resilience and strong local roots whatever tomorrow will be, it will be there and accountable (Figure 4).

Beyond this robust background, Agenda 21 is perceived more as an environmental issue showing a certain misbalanced reported to the 3 pillars of sustainability. It lacks of visibility: entirely focussed on its mission it doesn't take time to communicate its achievements and suffers from a lacks of recognition for that. The connotations associated are mainly positive but some are ambivalent: Agenda 21 assumes a difficult and noble task supporting local sustainable development and tends to develop an intransigent and dogmatic attitude and generate some rancour and resentment in its direct surroundings.



Figure 4: Tags cloud showing the values more or less associated to Agenda 21 as one of the outputs of its investigation in terms of brand identity in the French context.

Beyond its limits, the exercise indicate that there is a capital of identity to investigate and that this capital show clear limits that cannot be stretched in any direction

and should be handled appropriately in the possible evolution of Agenda 21 to be considered in the scenarios building process.

2.5 Emblematic participative processes

Aside to these main blocs of activities both of the projection processes conduct in France and Brussels-Capital region intend to be coherent with the very principles of participation, transversality, creative involvement and traceability promoted in the Agenda 21. In particular three key aspects of implementation of the work all along the process should be mentioned.

2.5.1 Active partnership with ordering institutions

Both projection processes are based on a classical public contracting respectively and France and Belgium including a call for tender and subcontracting of consulting companies. In both cases the commitment of the institutions giving the order has been very high with active participation of the ordering institution staff to the projection processes, shared management and involvement in the co-production of the deliverables.

The Bureau des Territoires of the French MEDDTL organised together with two national research NGOs ETD and 4D form an informal steering committee contributing to organisation and synthesis, sharing with Strategic Design Scenarios the orientation and decision making about the research steps.

The initial settings of the collaborative and projective assessment ordered by the Brussels-Capital region includes from the beginning the region role in the assessment. The regular support committee was organised as real research workshop with active participation in analysis and shared steering of the process with representative from both Brussels Environment administration and cabinet of the regional MEEUR Ministry.

The French State and the Brussels-Capital region offered here a shared and open partnership with their subcontractors aligning the research context with its object.

2.5.2 Active field experiences

Major risks with involving consulting third parties in assessment or projection activities is that whatever their involvement and the quality of their approach is, it remains 'above-ground' lacking of real scale experience and finally advising on something the intrinsically don't know. The Agenda 21 process being by essence in both French and Brussels cases an internal process within public institution, it is unlikely to have experienced third parties.

Thanks to the setting of the Agenda Iris 21 in Brussels, both Strategic Design Scenarios and EcoRes had the chance to be involved in previous support and assistance to local Agenda 21: Strategic Design Scenarios supported the Agenda 21 of the commune of Molenbeek to organize citizens walks to foster the contribution of the population to the Action plan. It collaborate also with the Agenda 21 of the commune of Saint-Gilles to co-develop with citizens a toolkit enabling them to take part in the greening of their streets. EcoRes also organized an open forum for the preparation of the Agenda 21 of the commune of Ixelles and several participative work groups for Agenda 21 of both Brussels and Etterbeek CPAS.

Although not directly linked to a scenario building process and only localised in the Brussels-Capital region, these concrete field experiences provide tangible knowledge and improve the in-depth understanding before more conceptual projective approaches.

2.5.3 Open communication

Deliverables of both projective processes are oriented to dissemination. The various forms of communication and the different media used intend to reach multiple targets and give appeal to the results (Figure 5).

During both processes, participants were involved to share their examples of promising practices, failed practices and next practices using pecha-kucha style presentations reduced here to a format of 4 images / 4 minutes to force them to communicate in a concise and visual manner.



Figure 5: examples of the open communication process including case-studies presentations in a *pecha-kucha* style, magazine-like reports, web doc giving access to in-progress materials and video bullets presenting the core of the scenarios.

Beyond the final results each step of the processes is design to generate in-progress material with already a semi-finished quality and allow browsing back in the process beyond the final output. Video-sketching was used all along the work of the foresight group in France and is organized online in the form of a web doc accessible for participants to transfer the projective process in their local context.

Reports are designed as magazines with rich iconography, pictures illustrating the co-design process with the stakeholders involved, cartoons introducing irony and distance from the conclusions and a refined page setting that place internal document in the realm of publications, triggers curiosity and facilitate dissemination.

Finally the scenarios are presented through short video bullets based on animation graphics and voiceover comments. This condensed form although certainly simplistic aims at 'travelling alone' possibly across the cognitive saturation produced by an event like of Rio+20 but also after to reach the different local interlocutors of Agenda 21 and trigger their curiosity to go deeper in the documentation of the scenarios.

3. Results

The two parallel projection processes on the future of Agenda 21 results in a series of deliverables ranging from paper report; intermediate visualizations and video synthesis to texts introducing the scenarios backgrounds, concepts and perspectives; etc. All these forms will be available publicly as complements information but surely the scenario video bullets (Figure 6) will be the first accessible and most largely

disseminated form during the Rio+20 events and after to support the strategic conversation with local Agenda 21 stakeholders. Therefore this last form will be presented in extenso through the translation of the voiceover comments.

3.1 Scenarios Rio+20 and after: the future of Agenda 21

The projection process elaborated by the French foresight group generated initially 4 scenarios. 3 of them were selected for the final presentation and 1 rejected for conceptual redundancy. We will reproduce them all here for the purpose of the final discussion focussing the different emerging forms of policy designs in the scenarios.

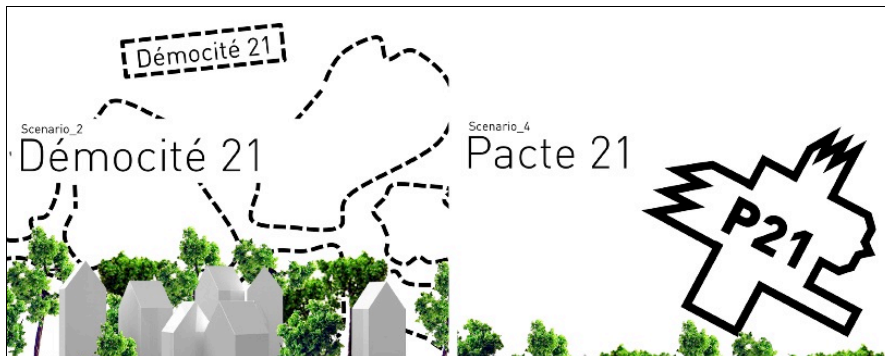


Figure 6: Each scenario will be presented through short 3 minutes video bullet based on graphic animations and voiceover comment to travel on the Internet and possibly trigger curiosity on the scenario process.

3.1.1 Scenario 1_Democity 21

Regional experimentation

To unlock local public action from top-down, hierarchical management divided in silos, a number of European regions claim for the right to experimentation and try new forms of governance: light and temporary administrative structures oriented towards innovation, resilience and long term interactions.

Democity 21

These regions pick-up symbolically former Agendas 21 which goal aimed at changing the administrative machine. They claim revival of the local governance they call “Democity 21”. Democity 21 is becoming a reference framework for local public actors, sedimenting promising practices and their various local adaptations.

Network of Free Zones

At the beginning, these region in experimentation exists mostly at a micro-local scale: a village, a city-district, a cooperation of municipalities... They are showcases. But beyond their own size, they are building a strongly responsive network across Europe which allows them to exchange and get the most from their experiences.

Inter-territoriality

In front of main social and environmental challenges and the lack of coherence between the various levels of local authorities, inter-territoriality is becoming a priority to develop synergies between related or closed regions and the dialog between institutions addressing similar objects.

Active subsidiarity

In European, all the different levels agree on common objectives of sustainable transition in which all stakeholders, even the smallest, meet their own objectives. Budgets, transition subsidies and objectives in terms of sustainability are mediated between the regions and shared according subsidiarity principles.

Renovation of public action

Stuck in many-layered bureaucracy, Europe is trying to renovate its political and administrative system. All tentative are facing permanent competition between levels, elected people frozen by the pressure of stakeholder interplay at international scale, incapable to share the power in participative processes.

Inter-ter programs

European authorities and state members under social, economical, environmental pressures recognize the interest of the Democity 21 and support research through the Public Policy Challenges of FP11 and through the renewal of the Inter-reg into Inter-ter programs, co-financing local experimentations in terms of democratic sustainable development.

Renewal of the State

A number of public actors of national levels insists on the implementation of an experimentation at national level, based on the model of Democity 21 to explore how the evolution of local action is modifying the role of the State on one hand and on the other hand, how lighter action modes of the State can support this momentum of renovation of local authorities.

Mobile-ministry

At central, regional and local level, experimental mobile ministry project teams settle locally, evolve within a network of regional Public Hubs, foster transversality between the different government missions and assist regional areas in achieving their sustainable development goals adopted collectively at an European level.

In charge of deliberation

Step-by-step, permanent features enters the Democity 21 framework: elected representatives are passing from decision delegates to a non-cumulative role of responsible for the quality of deliberation and participation as major ways of working and taking decisions in Democities 21...

3.1.2 Scénario 2_Engagement 21

Multi-level governance

As evolution of Agenda 21, the new Engagement 21 emerges as key-tools of the multi-level governance. They articulate and synergize participation from citizen action, collaboration of local socio-economical players until the alignment of regional, national and European levels.

Co-responsibility

In front of the social, environmental and economic crisis and its consequences in terms of permanent instability and shortage of public funding, the Engagements 21 propose the principle of co-responsibility shared between inhabitants, public authorities and enterprises.

Citizenship availability

Engagement 21 explore how to enable citizens: solutions emerge from the people themselves shifting their relationship with public bodies into an active citizenship within companies, administrations, free lancers as well as retired and unemployed persons supported by public subsidies.

Societal Activity

The notion of co-responsibility concretizes in mainstreaming of the Societal Activity. It works as the General Social Tax but in kind: each employer contribute giving availability to a small amount of work for the realization of social and environmental sound projects.

Negotiation tools

Each employee is then allowed to dedicate some time to collective project work according to his professional or/and personal skills. The Engagement 21 interferes as mediation tools to align competences available locally, requirement within the local eco-system and social and environmental grand challenges.

eGovernance 21 platform

This mediation based on rather complex constructions of synergies and adjustments relies on eGovernance platforms. It offers different a range of tools to build local online forums, interest groups, deliberative processes and allow the implication of citizens in the co-construction of a coherent local program of Societal Activities.

Co-production and co-management

Active citizens are participating in two ways: on the field they provide during a short time of Societal Activities the service they may benefit from. This experience allows them to better interact in the management of this service in the framework of the eGovernance 21 platform.

Societal Activity Assignment

Technically like PER (Personal Education Right) the SAA (Societal Activity Assignment) is negotiated into a contract for each employee. It is partially negotiable as 'SAA holidays' for a few months, dedicate to professional emergencies and recuperate the equivalent of time afterward.

Flexibility societal and economical activities

The flexibility based on a common agreement between employer and employee allow to mediate between temporary imperatives of the economic activity of a company and the need to concentrate forces on social projects for instance at kick-off or launch period.

Societal Activity Payroll

Each employee receives both his salary payroll and Societal Activity payroll that accounts time dedicated according to his competence profile agreed between local Engagement 21, his employer and himself.

3.1.3 Scénario 3_Pacte 21**Limit of the consumption model**

The economic development model based on "extract-consume-through away" appears to be more and more detached from the players at local scale. The shortage in public funding, the increase of the price of rough materials and the decline of the quality of life induced push to rethink the way local regions works.

Mobilization for a regional sustainable economy

Initiatives from private companies explores new development models based on local resources: industrial ecology initiatives, active participation to the mutation of local competences, fluidification of home/work mobility, working time arrangement, short food circuits, etc.

Action plans and private initiatives

These involved private actors invents new hybrid forms of services based on "private-public-citizens" groups. They build on former Agenda 21, define real action plans for a local regional sustainable economy and reinstall trust within local population.

Towards a local anchorage

These new Agenda 21 based on private initiatives are called Pactes 21 for the region in order to insist on their search for local roots and for the development of a true social regional dialogue. They are supported by a collective of partners where each one is involved in the collective project they support.

Forum 21

Local authorities propose the organization of local Forum 21 to question these local promising initiatives, ensure they are open to all, balanced and compatible with the sustainable requirement of the Pact within an horizon of 5 years. On top annual workshops aim at assessing consequences of Pact 21, point new emerging initiatives and adjust the vision.

Task-forces 21

Pacts 21 give away the Action plan-based organization of former Agenda 21 to generate multiple players Task-forces with a precise mission, social and environmental success criteria, a proper business plan, a governance autonomy and a man-

agement of involvements on Pacts based on a new law organizing new legal forms of hybrid entrepreneurial groups.

Services turning public

Social entrepreneurship organized at large scale based on Task-forces generates an innovation adapted to the region, reinvented each time from the different local context and the specificity of players. But generally a mediation role from local authorities is needed to ensure social equity and sustainability of each new initiative developed.

Local Interest Certificates

In order to reinforce this co-creation of new public services respecting social equity, the State enforces Local Interest Certificates substituting the Local Business Tax by the necessity to demonstrate that new activities involved aim at establishing a new local economy within the PSR (Pact 21 Social Responsibility).

Regional Ecology

A true regional eco-system is taking shape. The Task-forces 21 production process evolves through a series of regional loops, adding value for the companies, reinforcing local roots and reduction of local impact of economic activities in the region.

The local 10%

A part of salaries with a maximum of 10% is paid with local currencies ensuring a counter part to the efforts supported by businesses in the Pacts 21 and allow to redirect these efforts in local economy and in the quality of local eco-systems.

3.1.4 Elements of scenario 4_Agora 21

For the benefits of the following discussion of the scenarios we reproduce here part of the fourth scenario elaborated with the French Agenda 21 foresight group. This scenario called Agora 21 has been dropped for certain redundancies with the other ones but contained an interesting element of policy design to be considered here.

Focusing on middle down level of governance, Agora 21 scenario proposed to build mid-level regional platform to mediate between top-down national and international governance and bottom-up local dynamics. This mediation platform is based on participative visioning within a Regional Foresight Biennale:

Transition foresight

Agora 21 focus two major orientations: transversality of space and anticipation in time. It carries a permanent future research action to facilitate stakeholders convergence on common short, medium and long term visions.

Regional Foresight Biennale

The main instrument to leverage on for regional sustainable transition is the Regional Foresight Biennale: two weeks every two years a large foresight show is organized where all stakeholders visions for sustainability are displayed, confronted and aggregated into a regional transition vision.

Regional Foresight Mock-up

In the boots, from large public institutions to the smallest local NGOs but also companies or informal citizens groups exhibits their sustainable projects, disclose transition strategies, put-up promising visions... so that the all show is literally a foresight mock-up of regional sustainability.

Stakeholder deliberation

In the show, visitors immerse in intentions and challenges. The goal is to build a collective sustainable vision for the region but also its negotiation: citizens and stakeholders groups are required to have an exhaustive view of each player projections displayed in the Biennale to take part to the deliberative process that will mediate between goals, priorities towards the collective regional program [...]

3.2 Scenario Agenda Iris 21

The collaborative and projective assessment of the 10 communes and CPAS that completed the Agenda Iris 21 process set by the Brussels-Capital region was not aiming at producing scenarios as such but a series of policy recommendations towards the development and eventual reorientation of current setting. In order to facilitate the final discussion of emerging forms of policy designs we reproduce here the recommendations in the same scenarios form. Although presented alone, this scenario bring together the main conclusions emerging from the projective assessment process but doesn't engage the authors about what the future of Agenda Iris 21 will be.

3.2.1 Scénario Iris_Plateforme 21

Participative construction

Starting from results obtained after 4 years of Agenda Iris 21 call for tender, the Region, the Communes and Social institutions involved starts a participative process of co-construction of the future of Agenda 21 in the Brussels-Capital region.

Public dissemination

Top-down process aiming at transformation of public action, the Agenda Iris 21 lacks of visibility and organize monthly public event to massively disseminate actions achieved so far or in progress.

Public policy labs 21

The analysis of Iris 21 experience especially shows barriers in terms of governance within institutions involved: collaborative labs promoted by Agenda 21 coordinators are set-up to facilitate the local sustainable transition process.

Campus Iris 21

In order to improve articulation of Agenda Iris 21 with local power and better align it with sustainable development, Campus 21 are the occasion for elected representatives and civil servants to visit successful experiences of local sustainability in neighbors countries and to debate with peers of Agenda 21 evolutions to better tackle with local sustainable governance.

Platform Iris 21

More than setting its own Agenda 21 process the Region propose to set-up a Platform Iris 21 to activate a transversal and inter-level governance of local Agenda 21 processes.

Experiences of transversal subsidies

The Labs 21 set-up within the regional Platform Iris 21 generate in particular concrete concrete experimentations for instance of new forms of transversal subsidies to enforce inter-territoriality and collaboration between institutions involved in local Agenda 21 processes.

Mediator between institutions

Among other original forms experimented, some Agenda 21 coordinators are shared between two or more institutions demonstrating the interest of 'outside-in' posture allowing to be at the same time rooted in an institution and preserve a certain distance to facilitate the construction of outside synergies.

Sustainable Inspection 21

The refocus of Agenda Iris 21 on governance for sustainable development generates in particular a Sustainable Inspection 21 that, in the same way as the Budget inspection systematically assess the sustainability of all projects within the region.

Systemic Indicators

More than assessing the progress of each single Action plan, the Platform Iris 21 set-up regional indicators to assess Agenda Iris 21 progresses globally in terms of penetration of sustainable development in local governance, subsidiarity, responsibility, pluralism, transparency, participation, solidarity, systemic approach...

Interactive network

The former institutional and Action-plan based Agenda 21 process shift to become more organic, integrate, oriented towards new synergies and transversalities. It meets the effort engaged to give a larger and more systematic visibility to all the actions carried out by the Platform Iris 21 and emerges as a significant example of sustainable multi-level governance.

4. Discussions

This last part of the paper will discuss the scenarios as a whole and focus on the main instantiations of the new governance they put forward. By 'instantiations of new governance' we mean the specific instruments, processes, measures, services, places... on which the scenario originality and credibility is based.

But beforehand, we need to clarify what kinds of scenarios have been build and what are their characteristics. The many classification of scenarios generally distinguish between 3 scenarios approaches (e.g. Borjeson et al., 2005): *predictive* scenarios aiming at quantitative forecasting; *exploratory* scenarios investigating plausible futures and *normative* scenarios describing how a definite future can be reached. The scenarios developed here have a normative aspect: they intend to reach a more resilient society based on fluid governance. They also have an exploratory dimension because they try to creatively invent innovative solutions that are trying to make the desired vision more likely to happen. More than exploring possible or plausible futures they invent and articulate new forms of governance. This is their first emerging characteristics: they hardly tackle with local sustainability processes they start from as Agenda 21 but essentially with governance issues that are both major barriers and enablers for local sustainable transition. On top of this shift of object from sustainability to governance, a second emerging characteristic is their project dimension: they use the narrative form of scenarios to display new governance instruments, processes, policy measures, hybrid services and places, etc. They tentatively articulate them between the current situation and the desired future and prompt the social conversation around their likelihood to succeed. The scenarios produced work then as instantiations of new forms of governance and we will review the specific tentative policy design they reveal for the future of Agenda 21.

4.1 Multilevel transversality

A first cluster of tentative design of policy instruments regards the desperate need to break the silos in all directions horizontally between the different administrative levels, horizontally in terms of *inter-territoriality* (Vanier, 2008) between local circumscriptions and transversally across institutions with different natures and goals.

First emerging design of policy instrument addressing this issue is based on classical financial incentives: subsidies for research or innovation or any kind of developments could be systematically conditioned by a minimum level of collaboration between different partners, a quality of heterogeneity or a preservation of the socio-diversity: *Inter-ter* programs of *Democity 21*, transversal subsidies of *Platform 21* or 10% of salaries paid in local currencies in *Pact 21* scenario.

The second emerging design of policy instrument in the scenarios is the recognition of hybrid forms: private-public-cso *Task-forces* in the *Pact 21* forming hybrid structures delivering new forms of *collaborative services* (Jégou Manzini, 2008) mixing private initiative, public regulations and users contributions; but also hybrid relationships in *Platform 21* scenario with the 'outside-in' posture of civil servants that keep a feet outside the institutions and reciprocally, consultants that works in immersion both to keep freedom of being part of the institution; hybrid format with

the *Societal Activity* contract of *Engagement 21* matching employers and employees interests to invest in the commons.

Beyond this second strategy to break silos by combining them giving birth to hybrid artefacts, a third pattern of design of policy instrument emerges as 'platforms' with the aim of providing a common base for heterogeneous actors to collaborate. Whereas coordination structures, mix steering committees tends to push collaboration from above, platforms like in the *Platform 21* scenario tries to enable it from below providing necessary infrastructures for match-making and connectivity, translation or brokering between heterogeneous players. These type of enabling platforms bet on both the quality of the tools provided and the willingness of convergence of stakeholders to fluidify collaboration. More relieving platforms like the *eGovernance* platform in the *Engagement 21* scenario propose a more active synergizing process considering that complex heterogeneity of single *Societal Activities* require an active coordination process and will never converge autonomously.

4.2 Integrated participation

The second cluster of designs of policy instruments emerging from the scenarios regards the way to generate a balanced participative society where all stakeholders are active and none can be considered as only a passive receiver and where users involvement is not the only adjustment variable of shortage of public budgets.

The first design of policy instruments for reasonable shared participation tackle with the too often somewhat romantic idea attached to participation in the public sector: true and pure participation should be a spontaneous civic value which in theory is perfectly acceptable but in the current practice is different: participation is currently a general strategy of both private and public actors that enable users to do on their own in exchange of cheaper prices or reduced costs. From assembling their furniture, booking their travel tickets to printing their payrolls or paying their taxes online the general enabling service society generates a participation saturation and finally a participation fatigue. In a relieving society spontaneous participation may occur as a value whereas in an enabling society participation requires to be integrated as a *Societal Activity* in the *Engagement 21* scenario.

The role of decision makers tends to clash with participation for the traditional conflict between representative democracy and participative democracy (Fung, 2011). In parallel politicians more open to participation accepting or promoting it tends to hardly take part to the participation they require. *Democity 21* scenario turns policy role upside down proposing policy designs where politicians are first responsible for the quality of participation before making decisions. Ministries change from a top-down central posture to a mobile one enabling local participation and regional authorities are responsible to prompt participation and contributions of the institutions below them in *Platform 21* scenario.

The last emerging policy designs addressing participation questions the limits to participate to the decision process whereas often the decision is already biased by the lack of alternatives between which to choose. *Agora 21* scenario introduces participative visioning shifting participation role from informing decision making to exploring – or better inventing – possible or likely alternatives. Future research shift then from an expert-based foresight supporting decision making to a collective projection, exploration and invention of solutions embedded in the field activities. The *Regional Foresight Biennale* more than a show of the future is a collective fabric of new vision, a collaborative workshop and a co-creation process of the future.

4.3 Continuous experimentations

The third cluster of design of policy instruments regards the transformation of the public innovation processes: starting from a general paradigm inherited from the industrial process, conception comes prior to production, a prototype service is replicated and solutions as standards as possible are disseminated failing often to consider local contexts and to adapt social specificities. Beyond this inappropriate standardization of solutions, the conception phase in the public sector is often lacking from space for R&D, trials and errors, testing and in general experimentation.

The first policy designs emerging from the scenarios and facing this state of the art is the generalisation of the state of experimentation: *Democity 21* develops an innovation process in reaction to usual top-down public approach where the local authorities start spot experimentations, share and exchange on promising and failed practices, inspire and copy each other and progressively proceed to an organic transformation. Experimentation become the default state and public innovation is based on an acupuncture process (Jégou, 2010) choosing a reduced Action plan with as few points of experimentation as possible but strategically articulated in order to produce as in the principle of traditional Chinese medicine, a change of the whole system beyond each of the single experimentations.

The emerging change in the innovation process closely linked to the first one is to reverse the principle of 'thinking before doing' to acknowledge the fact of doing first and think after, starting more from the outputs of the first concrete move on the field to elaborate the first conceptualisations. The iterative loops between trial and analysis remain the same but the start is an action. The *Pact 21* scenario shows the recognition of the reverse posture of 'doing before thinking' leaving heterogeneous initiatives of improvised *Task-forces* happen and then operating a regulation to align the most promising ones with sustainability and equity standards and dropping the others.

The last dimension of change addressed in the scenarios regards the transformation of practices more than the production of new solutions: values of experimentation bounce back on the subjects tacking part to the experimentation process. The participation of citizens in *Engagement 21* scenario shows a co-evolution pro-

cess between experience of the participants and experimentation of the solution: in order to take part to a governance process and decide how to innovate in a particular public service, users and providers have to exchange roles and experience the solution from the other side of the desk for complete understanding and better informed capability to suggest improvement and innovate.

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Alternatives to the consumer society

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Consumerism is superficially attractive because it offers a purpose in life and social acceptance within a narrowly materialistic world view. This is cultivated through psychological manipulation and marketing, playing on physical desires and hedonism, to create passive consumers. It fills a vacuum in the absence of any deeper meaning in life. The alternative is to build a stronger sense of human purpose through education and community action, facilitating a process of maturation from egotism to altruism. Elements of that purpose should include: a vision of future society that is worth effort and struggle to build; a recognition of the importance of family, community and social relationships; an appreciation of the importance of work done in a spirit of service; an introduction to the rational tools of science and the value of knowledge and crafts; a connection with nature, beauty and the arts; and an understanding of the ethical, moral and spiritual dimensions of life that lead to the refinement of character. With these elements, cultivating a culture of change becomes possible while encouraging a diversity of local expressions of social advancement.

1. Introduction

The rise of the scientific and technological civilization of the 20th century was accompanied by a dominant materialistic world view as traditional religions, cultures and values seemed increasingly irrelevant and unable to respond to the challenges of the modern world. Following World War II, the consumer society took off in industrialized nations, but within a couple of decades it was apparent that the economy and the environment were in conflict, as epitomized in 1972 by the UN Conference on the Human Environment in Stockholm, and the publication of the Club of Rome's report "*Limits to Growth*" (Meadows et al. 1972). Forty years later, as planetary environmental boundaries have become clearer (Rockstrom et al. 2009) and crises have shaken economic certainties, the dynamics of overshoot and collapse modeled in the "*Limits to Growth*" seem ever more probable as no realistic assumptions avoid it (MacKenzie, 2012). The institutions of society have proven increasingly unable to respond to the need for a fundamental transformation in the economy. In the absence of action from top, the best hope for a response is through a bottom-up shift by individuals and communities towards more responsible living.

This paper provides an example of one possible foundation for responsible living inspired by the values-based approach to rethinking prosperity and forging alternatives to a culture of consumerism developed in the Bahá'í community over several decades (Dahl 1990; BIC 2010). While still embryonic, its approach to learning through action, reflection and consultation has the potential to motivate change of the kind required to move society towards sustainability.

2. The Consumer Society

Most modern economies are driven by consumption, maintained if necessary by increasing levels of borrowing. As long as the growth rate is higher than the interest rate, it is possible to pay back debts with interest. If growth slows or stops, defaulting is inevitable. The consumer society was a necessary creation to keep people buying regardless of their real needs. This absolute imperative for economic growth in the present paradigm is running headlong into environmental and social limits. The rising price of energy, the costs of mitigating and adapting to climate change, shortages of essential materials, higher food prices, the health costs of pollution and aging societies, the costs of insecurity from social instability, are all brakes on the kind of growth the economy experienced in recent decades. Without adequate growth, the financial system will collapse. The head of European Central Bank stated in February 2009 that "we live in non-linear times: the classic economic models and theories cannot be applied, and future development cannot be foreseen." (Seager 2009). Many countries, particularly in Europe, are on the brink of insolvency (Spiegel Online 2009) because they can no longer afford debt-led consumption and growth.

For the individual, consumerism is superficially attractive because it offers a purpose in life and social acceptance within the narrowly materialistic world view. Buying status symbols confirms your place in the social hierarchy or your identification with a particular group. This is cultivated through psychological manipulation and marketing, playing on physical desires and hedonism, to create passive consumers. "Consumer culture, today's inheritor by default of materialism's gospel of human betterment, is unembarrassed by the ephemeral nature of the goals that inspire it. For the small minority of people who can afford them, the benefits it offers are immediate, and the rationale unapologetic. Emboldened by the breakdown of traditional morality, the advance of the new creed is essentially no more than the triumph of animal impulse, as instinctive and blind as appetite.... Selfishness becomes a prized commercial resource; falsehood reinvents itself as public information.... Under appropriate euphemisms, greed, lust, indolence, pride - even violence - acquire not merely broad acceptance but social and economic value." (UHJ 2005) While it reduces human beings to competitive, insatiable consumers of goods and objects of manipulation by the market (BIC 2010), it fills a vacuum in the absence of any deeper meaning in life.

People immersed in such a system take it for granted, and see no reason to question its fundamental assumptions and mechanisms. When confronted with environmental imperatives for change, they generally deny their reality, or make cosmetic changes in lifestyle to assuage their conscience. Even those who accept the reality of environmental problems and the unsustainability of their behaviour may simply be depressed or feel trapped in a system that they are unable to change. Alternatives may not be readily available or affordable. The inertia built into the consumer society is very powerful and creates strong resistance to change.

3. Rethinking Human Purpose

Faced with such powerful forces, efforts to build foundations for responsible living must reach down to the roots of human purpose and motivation. An alternative to the consumer lifestyle must be proposed that is sufficiently attractive to be worth sacrificing the superficial for something that is deeper and more fundamentally rewarding. It must motivate sufficiently to overcome habit and resistance to change.

For adults, the effort required might be comparable to religious conversion. Sensitization to the need for responsible living is more effective when coupled with involvement in community action in a mutually reinforcing process that combines individual transformation with social action. In education, the ideal time for impact is pre-adolescence (11-14 years) when inherited assumptions are questioned, values adopted, and life-style choices made while opening up to the world. Again, an action-oriented curriculum can reinforce theoretical understanding and build emotional as well as rational commitment.

At the root must be a rethinking of what our purpose is as human beings. Is our highest purpose in life to consume well and keep the economy going, or something more? All religions and many philosophical traditions offer answers that accept a higher spiritual or ethical purpose in life involving a process of maturation from egotism to altruism. We are faced with an apparent conflict between peoples' apparent want to consume more and humanity's need for more equitable access to resources. "How, then, can we resolve the paralyzing contradiction that, on the one hand, we desire a world of peace and prosperity, while, on the other, much of economic and psychological theory depicts human beings as slaves to self-interest? The faculties needed to construct a more just and sustainable social order—moderation, justice, love, reason, sacrifice and service to the common good—have too often been dismissed as naïve ideals. Yet, it is these, and related qualities that must be harnessed to overcome the traits of ego, greed, apathy and violence, which are often rewarded by the market and political forces driving current patterns of unsustainable consumption and production." (BIC 2010)

The first level of transformation should thus involve a shift from a self-centred materialism to a vision of unity and solidarity with all the human family. That vision should see every human being as a productive member of society. This pro-

vides an excellent foundation for a sense of individual responsibility for the well-being of everyone on the planet and of future generations at the heart of the concept of sustainability.

The following are some other elements of that redefinition of human purpose for more sustainable lifestyles.

A vision of future society

Anyone who follows the news, and in particular the environmental, social and economic challenges facing the planet, is easily depressed and discouraged by the flood of bad news and negative trends. There is a feeling of foreboding (not totally unjustified) that we are heading with increasing speed towards catastrophe (Mackenzie 2012). Unfortunately, educational approaches based on the scientific reality of our present situation are so negative that they are counter-productive. We prefer to deny or ignore the unbearable. While being honest about the difficulties we face, it is essential to balance the negative reality of the present with a vision of the potential for a future world civilization that is worth effort and struggle to build. Today's problems are thus seen in this context as the inevitably-painful transition from a world of antagonistic nations, cultures and religions to a unified but diverse world society that the scientific, technological and information revolution now makes possible.

Accompanying this vision is an acknowledgement derived from the wider view of human purpose that humans are not essentially selfish and aggressive (Karlberg 2004), and that cooperation rather than competition is the best foundation for social and economic progress (Nowak 2011).

Social relationships

A second element of human purpose is the recognition of the importance of family, community and social relationships. Humans are social organisms, and human purpose is best fulfilled in extended family relationships, strong and united local communities, and functional institutions of governance, economic production, education and culture. The extreme individualism often associated with the consumer culture and economic liberalism is a distortion of human nature, not its fulfillment. Positive well-being is generally associated with dignity, friendships, having a respected role in a group, and community acceptance.

In the consumer society, these are acquired (quite literally) through possessions and other status symbols as defined by the media and advertising, but these are inherently ephemeral and transitory, as something newer and better is always on the horizon. Investing effort in building social relationships is more rewarding and sustainable, as the growth of social networking demonstrates in a superficial way.

Work

Following on from the importance of social relationships is a renewed concept of work not just as a necessary obligation to earn a living but as an opportunity to be of service to society and to acquire human virtues. To be idle or unemployed is thus a denial of human purpose. Even the simplest or most menial of occupations makes a contribution to society and can be valued as such. It follows that society has an obligation to train everyone in some skill and to give them the opportunity to use that skill for the benefit of all. This leads to an appreciation of the importance of work done in a spirit of service as an essential part of individual development. It also provides the foundation for a more human and sustainable definition of wealth creation in which everyone participates.

Science

The intellectual capacity of the human brain for rational and abstract thought is a distinguishing feature of the human species, embodied in our scientific achievements. Science should therefore not be restricted to an educated elite, but its tools of experimentation, rational proof and thinking in terms of cause and effect should be available to everyone. Lifelong learning should be a tool for social progress, and knowledge, crafts and skills should be highly valued.

Of the drivers of economic growth in the past century, exploitation of natural resources and the fossil fuel subsidy are reaching limits of unsustainability, and population growth has already ended in the most advanced economies and is expected to stabilize globally within decades. Only scientific and technological innovation remains as a driver of progress, with the capacity to evolve more sustainable ways to meet human needs. However the consumer society has used the tools of science and technology to impose cultivated wants while destroying local initiative and diversity. Alternative approaches are needed to empower local communities to apply science to develop their own culturally and environmentally appropriate solutions to their problems and priorities. This diversity will then enrich all social advancement and economic exchange.

Nature and beauty

The utilitarian approach to urban development, another symptom of materialism, has cut off an increasing part of the world population from contact with nature and from our innate desire for beauty. Any vision for future society should emphasize the arts and individual creative expression, cultivate beauty in our surroundings, and reconnect everyone with the spiritual and emotional benefits of direct contact with nature. This will have the collateral benefit of an appreciation of the natural

world that will increase the sense of responsibility for environmental protection and nature conservation through lifestyle change.

Refinement of character

For the individual, then, the fulfillment of human purpose means to discover one's talents and capacities, to cultivate human virtues and refine one's character, and to use these qualities for the benefit of the community and to advance civilization. An understanding of the ethical, moral and spiritual dimensions of life opens up a whole new world for individual growth and development unhindered by concerns about sustainability or the guilt of consumption. Unlike the ephemeral rewards of the consumer society, the benefits from investing effort to acquire human virtues are cumulative. The path is never an easy one, as the temptations of ego, desire and pride are ever-present, and need to be counterbalanced by moderation, contentment and humility. For virtues to be retained and strengthened they must be tested and exercised. Those who succeed epitomize what it means to be truly human.

A culture of change

The transformation from a culture of unfettered consumerism to a culture of sustainability can be built on foundations of responsible living such as those above. We need to question the cultural frameworks driving institutions of government, business, education and the media in the light of what is natural and just, through a public dialogue among all sectors of society on the ethical foundations of the necessary systemic change (BIC 2010). The fragmented sectoral approaches of government, business and academia need to be complemented by a more integrated systems view (Dahl 1996). Our social order characterized by competition, violence, conflict and insecurity needs to give way to one founded on unity in diversity (Karlberg 2004).

The best hope for making progress is at the community level. By increasing local communities' and individuals' awareness of the needs and possibilities, and of their capacity to respond, they can determine their own innovative approaches based on their goals and priorities and their capacity and resources (BIC 2009). Such a cultural transformation requires deliberate changes in individual choices and institutional structures and norms as mutually reinforcing components of responsible living.

For the individual, the process of learning through action builds greater capacity to carry out collective action as an agent of change in the community, as a humble learner and active participant in the generation and application of knowledge (BIC 2010). With these elements, cultivating a culture of change becomes possible while encouraging a diversity of local expressions of social advancement.

4. Conclusions

Building a solid foundation for responsible living requires a redefinition of cultural norms reflecting the requirements of justice and sustainability, leading to a broader vision of human purpose and prosperity. Each community must find its own pathway to sustainability based on empowerment, collaboration and continual processes of questioning, learning and action, where every individual can make a contribution as a productive member of society (BIC 2010). The goal should be an organic change in the structure of human society reflecting our interdependence and our interconnectedness with the natural world at the core of sustainability.

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Big points of sustainable consumption and lifestyle orientation: How do they fit together?

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There is a high scientific consensus that big efforts are needed in order to reach sustainable consumption. E.g., in industrial countries we talk about 5-9 tons CO_{2eq} reduction per capita and year. But there is also a consensus in communication sciences that for the motivation of people for sustainable consumption low cost measures and step-by-step actions are needed. The paper argues that those two findings don't fit together. There is empirical evidence that there is no automatism from step-by-step action to the realization of big points. Therefore we formulate assumptions on how to bring together big points and lifestyle orientation.

Keywords: sustainability communication, sustainable consumption, consumer citizenship, LOHAS

1. Two consensual findings

In the field of sustainable consumption and the promotion of sustainable consumption there are – among others – two theses which are common in the scientific community:

- 1) In order to reach sustainable consumption not only great, but fundamental efforts are needed. We call it the “great transformation Consensus” (e.g. WBGU 2011).
- 2) In order to reach people with sustainability communication we have to meet the people in their daily life: Step by step. We call it the “Lifestyle-Consensus”.

Ad 1.) There is a high scientific consensus that great efforts are needed in order to reach sustainable consumption. We can no longer be content with relatively small reductions of all kinds of harmful environmental impacts, even more so if they are to occur at an unspecified future point. We face globally rising energy and resource consumption, as well as the proliferation of Western consumption styles in emerging economies such as Brazil, China and India. As a consequence, we face the ne-

cessity of a significant change in less than ten years to combat these developments. Accordingly, a greater reduction of energy and resource consumption is necessary to reach sustainable consumption patterns, and in this context, they are globally generalizable.

For example looking at greenhouse gas emissions: In order to abide by the two-degrees-centigrade limit (if it is not too late at all), humankind must stop its annual increase in greenhouse gas emissions between 2015 and 2020 at the latest, and then reduce them without further delay by a minimum of five percent per annum (FEA 2009a). By the middle of the 21st century, annual global emissions must not exceed half the emission levels of 1990 (Figure 1).

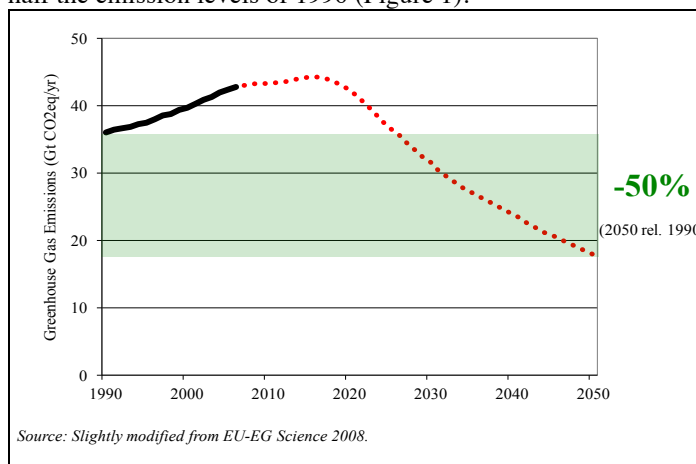


Figure 1: Global Greenhouse Gas Emissions: Actual and nominal

The efforts countries have to make to meet this target vary, as greenhouse gas emissions are unevenly distributed at present, as shown in the diagram of emissions per capita per country in Figure 2. The two-degrees-centigrade limit thus implies for Germany that its greenhouse gas emissions must be reduced by 40% by 2020 compared to 1990 levels and by 80-95% by 2050 (FEA 2009a). In Germany, this means a reduction from around 11 tons $\text{CO}_{2\text{eq}}$ per year per person currently, to below 2 tons $\text{CO}_{2\text{eq}}$ in 2050.

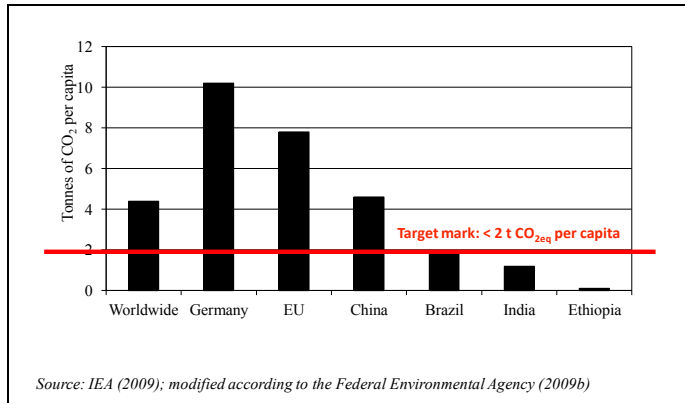


Figure 2: Per capita CO₂ emissions in various countries (2007)

Ad 2.) The need of a “great transformation” may be right from a scientifically viewpoint, but reality looks different. Fundamental changes in lifestyle or routine differs from the needs and boundless possibilities people have. Since the publication of „Limits of Growth“ sustainability communication is dominated by “catastrophe scenarios” and “time is running out” rhetoric while social sciences gathered new findings.

One central message of these findings is: There are different lifestyles which differ in values, behaviour patterns and readiness to act. Different consumption patterns for example have a huge effect on the carbon dioxides emissions caused by an individual. A Swiss report found that the annual greenhouse gas (GHG) emissions caused directly and indirectly by equal-income Swiss households range from 5 to 17 tonnes of carbon dioxide per person (Girod and de Haan 2009).

In order to make a change in society we have to take these different lifestyles and real life situations into account. Therefore different people need different choices, which have a certain connectivity to their lives. To reach this aim sustainability communication recommends low-cost measures and “step by step” messages. There is one key message repeatedly disseminated by consumer guidebooks and web-portals on sustainable consumption: let us *simply* save the world (e.g., We Are What We Do 2004). They offer consumers a large range of products that will serve the “common good” once they have been purchased. Their message is that our purchasing expenditure sets an example for society and strengthens our consumer power. This message and its underlying assumptions have also been accepted in the political debate on sustainable consumption (e.g., UN DESA and UNEP 2007).

2. Lack of fit

The question we want to discuss: How can we bring together great transformation and lifestyle-orientation? We know that: the idea of transformation and sustainable consumption has reached mainstream society. As the German advisory council on Global Change (WGBU) states in its report “World in Transition” 2011, the global transformation of values has already begun. Looking at the results of the World Value Survey, for example, 65.8 % of respondents (n = 68,123) stated that they would be prepared to give a part of their income if they were certain that the money would be used to prevent environmental pollution. (WBGU 2011).

Moreover, sustainable consumption has become a trend. It is no longer a niche phenomenon, and the days of ecological pioneers suffering a bad conscience when purchasing just about any good or service are long gone. Today one can feel good when consuming ecological products. The Lifestyles of Health and Sustainability (LOHAS) provide an apt label for this new consumption phenomenon. It is also used as a synonym to refer to practitioners of this kind of lifestyle. According to Kirig et al. (2007), LOHAS cherish the environment and want to demonstrate this through their consumption choices. They purchase such products as organic food, natural skin care, and energy-efficient household appliances.

But reality shows that this so called sustainable lifestyle of LOHAS does not lead to the CO₂ reduction needed. An analysis of the 2007 energy consumption of 24 LOHAS proponents in Germany indicated that LOHAS’ consumption levels do not differ significantly from those of the German household average (Bilharz/Schmitt 2011). However, LOHAS estimated their own environmental footprint to be around 30 percent smaller than the German average. This mismatch between consumer awareness and consumer behaviour – which is well-known and portrayed (e.g., Abrahamse 2005) – thus appears to apply also to LOHAS. Representative studies by other researchers have reached similar conclusions and Stratum (2008) provides a pithy summary on it: Big changes in consumption-styles are not LOHAS’ cup of tea.

Given the scale of the challenge it is evident that the current efforts of LOHAS are insufficient. Moreover, if the LOHAS lifestyle is widely perceived in society to be compatible with global sustainability, then arguments about the extent to which changes in consumption are necessary are likely to be marginalised. As we formulated in the first thesis, in industrial countries, we talk about 5-9 tons CO_{2eq} reduction per capita and year.

We think it is not only a question of time as to why they have yet to reach this goal. We think it has to do with a fundamental problem in sustainability communication. While consumption patterns in Germany, for instance, include a reduction of more than 9 tons of CO₂-equivalent per capita per year, the calculations of sustainability communication lie within a kilogram-scale. This kind of communication strategy may successfully motivate people; but it motivates them to pick just about any action. As a result, the ability of society to develop an understanding of what is

really important, both in terms of individual footprints and the transformation of societal frameworks, is systematically eroded.

Despite its inefficacy one could continue with a communication strategy that promotes small behavioural changes in the hope of spillover effects (Thøgersen and Ölander 2003). However, the above mentioned study of 24 LOHAS indicates that spillover is unlikely to trigger behavioural change that significantly reduces people's environmental footprint (Bilharz 2008). Spillover does not result in a "virtuous escalator" (WWF 2009, p. 7) that scales up from 'small' to 'large' action. Nevertheless, promoting small matters might be helpful in raising political awareness and achieving big political solutions; at least, they might not hamper them. But then why, one might ask, should we need big political solutions – such as unpopular ecological taxes – if we were able to achieve these impacts through small matters? It will be difficult for people to develop a sense for the necessity of (big) political measures if this approach is systematically undermined by promoting insignificant individual consumption patterns.

It seems that LOHAS have just such a difficulty. They ask little of politics. They understand sustainable consumption as a private matter that follows the mantra of "to live and let live". Thus, the current communication strategy of promoting small matters fuels the individualisation of responsibility and, as such, impedes the implementation of necessary (radical) political measures (Tukker 2008).

Therefore we think there is a lot of work to do to bring great transformation and lifestyle approaches together in a better way than sustainability communication has so far. Below, we will present three proposals to solve this communicational problem.

3. Aims and Visions

In most cases, there are many ways to reach a goal. It is the same for sustainable consumption. This is what the lifestyle approach tells us. But the aim of sustainable consumption is not to buy more efficient refrigerators or cars. The aim is to have nothing other than a great transformation, and in this way, the aim can be very concrete. For example: If the aim is to live climate-neutral, meaning the amount of CO₂ and other climate-damaging gases released into the environment does not cause further damage, the term "climate-neutral" does not describe an abstract concept, but a very concrete idea of shaping the future of everyday life. As mentioned above, there is a high scientific consensus what that means: Less than 2 t CO_{2eq} per capita and year. So the question is: How do we reach less than 2 t CO_{2eq}?

The sustainability communication should not only emphasize different methods, but rather a concrete aim to which these methods should lead. To put it more concrete: it is more important to talk about climate-neutral living than, for example, driving less. That means for communicational matters: we should formulate formu-

late concrete visions rather than talk about small actions. As the World Value Survey shows, people are ready for big measures.

We will not be able to orient consumers if we literally discuss everything. While the program on sustainable consumption patterns might be complex (i.e. comprising a multitude of consumption patterns and calculations of their environmental impact), our communication needs to concentrate on concise priorities – the big points of sustainable consumption - with targeted messages.

Public communication on the issue needs to reduce in complexity. It needs to concentrate on concise priorities with targeted messages. We should manage to link it with specific visions. Visions such as “100% renewable energies”, “passive house“, and “100% organic“ have already been implemented by individual pioneers of sustainable consumption. They have unleashed valuable societal discourses rather than being taken for granted or ignored.

4. „Big Points“ and „Key Points“

A broad consensus has emerged regarding priority areas and hot spots of (un-)sustainable consumption has emerged in the past years. In Germany for example, we have an average per-capita output of approximately 11 tonnes of CO_{2eq}. This is a considerable amount, and we must do our homework if Germany is to achieve the aspired reduction by 80 to 95 %. On average, 25 % of greenhouse gas emissions come from heating and electricity, 23 % from transport and 14 % from food. That leaves 28 % for other consumption and 10 % for public infrastructure (Figure 3).

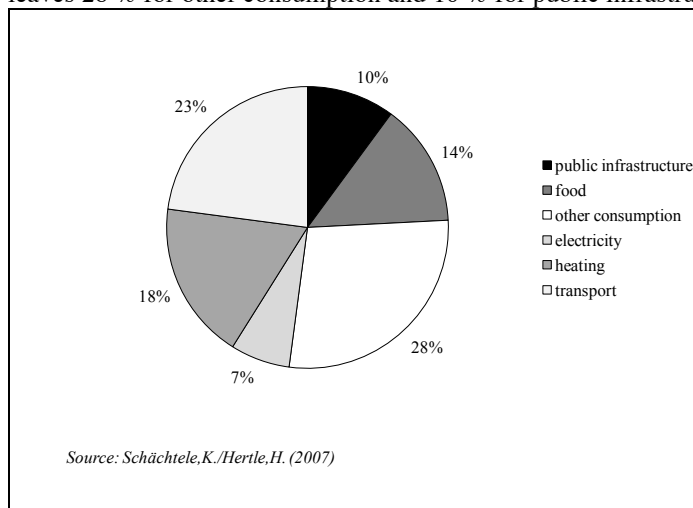


Figure 3: Average CO_{2eq} emissions in Germany by fields of action

The items that most affect individual CO_{2eq} emissions are (“Big Points”):

- Transport – long-distance travel, distances travelled by car and the car's fuel consumption.
- Housing – size of living area and insulation standard affect energy consumption.

Food consumption also has an impact on CO_{2eq} emissions, in particular the quantity of meat consumed and the purchase of organic produce. Available income seems to have a major influence on individual greenhouse gas balances. CO_{2eq} emissions usually increase with income as people tend to live in bigger houses, travel more frequently, drive bigger cars, and consume more.

Instead of trying to turn all the features of sustainable consumption into a trend, this strategy concentrates on those measures which are most important from an environmental point of view. But when devising communication strategies, it will not suffice to simply promote such big points. Calls for people to move to smaller flats or to abandon air travel will be mostly ignored. Big points need to be implemented durably. Moreover, people will need to motivate others to follow their example because sustainable consumption will only thrive if a critical mass participates.

In addition to their environmental relevance, significant actions therefore need also to convince by their durability and high resonance within society. This is why we think sustainability communication needs to prioritize big points that can become fast-selling items and trendsetters. We call these consumption choices “key points” (Figure 4). Generally, the identification of key points will depend upon country-specific contextual factors. Nevertheless, the following generic key points need to be present in industrialized nations (Bilharz 2008): investments in renewable energies and other ecological bank deposits, compensation payments for CO₂ emission, thermal insulation (most notably with regard to low energy buildings or passive houses), driving highly efficient cars with very low fuel consumption of less than three litres per 100 kilometres, participation in car-sharing programmes and eating organic food. These measures allow individual people to achieve large reductions in greenhouse gas emissions ranging from half a ton to several tons of

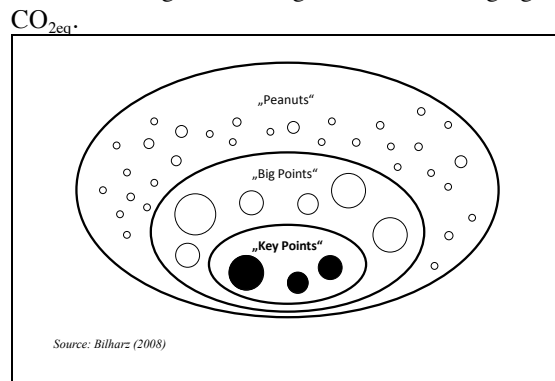


Figure 4: Peanuts, Big Points and Key Points of sustainable consumption

5. Consumer citizen and political signs of consumption

Climate protection is not just a matter for individuals. Only when public infrastructure becomes more sustainable will it be possible to reduce greenhouse gas emissions by 80 to 95 %. What does this mean for linking the lifestyle approach to great transformation? We think there are four relevant aspects:

- 1) If we are talking about sustainable consumption, we have to leave out the logic of personal CO₂-calculators. Normally, CO₂ calculators only take into account the individual's own CO_{2eq} emissions, but not the encouragement of good deeds by other people. These effects, however, are important. Not only can we influence not only our own CO_{2eq} emissions, but we can influence those of other people or companies, as well. Investment in renewable energies and other investments that help the environment are direct and indirect contributions to CO_{2eq} reductions. At the workplace, a committed workforce may even reach greater CO_{2eq} reductions than the ones that are individually achievable. Social commitment (such as membership in environmental groups) could further the introduction of more environmentally friendly legislation. These fields of action illustrate in how many ways we can act in order to take the effectiveness of climate protection to a higher level. We have to talk about our roles as citizen, consumer, and employee.
- 2) Therefore the vision of a climate neutral life must be understood on a societal level rather than on the individual level. A lifestyle with 2 tones CO₂ per person and year is hard to achieve, while savings of 9 tones are more realistic, when taking savings of others into account. For example a capital investment of 10.000 Euro in wind power saves about 11 tones of CO₂ emissions per year in Germany. There are other examples of how to save CO₂ emissions through others, like changing to an ecological bank, making donations, or compensating your flights. This wider view of CO₂ savings benefits communication, as there are no limits to the top. The main question is: What can people change? For themselves and for others.
- 3) Voluntarily sustainable consumption of pioneers cannot – and does not seek to – replace policy-making for sustainable consumption. An example from Germany illustrates this: The Renewable Energy Sources Act (Erneuerbare Energien-Gesetz [EEG]) from 2000 stipulates minimum prices for electricity from renewable sources. It has been very successful and cannot be replaced by voluntary consumer action. However, such consumer engagement can help to generate precisely this kind of policy if it sends appropriate signals to policy makers. To stay with the example, consider the following: when the Energy Act was passed, only a very tiny number – less than one percent of the German population – were involved with renewable energy from solar power and wind turbines. This tiny group of people nevertheless constituted a critical mass in the end (for a discussion of critical mass theory see Oliver et al. 1985). It sufficed to create the impetus for politicians to pass a highly suc-

cessful law on renewable energies. This is what sustainability communication has to take into consideration: What and how strong are the political signs of consumer decisions? E.g., buying whole-food products can be also seen as a vote for ecologically sustainable farming, using green electricity as a vote for an energy turnaround to renewable energy sources, the use of car-sharing as a vote for a transport policy not focused on cars.

- 4) Considering of the political effect of consumer decisions does not neglect or downsize the importance of political action itself. This is because effective consumption in terms of structural policy can contribute to support of structural change, but surely cannot substitute an active input of formal structural changes. Considering air transport, the internalization of the external costs of air transport requires an instrument such as kerosene taxation. Instead of boycotting flights, initiative-based acting using economic instruments appears to be an appropriate strategy in this context. Focusing on sustainable *consumption* in terms of purchasing habits only tends to restrict the associative space of possible individual actions and runs the risk of fading out the responsibility of people in their role as “active citizens” (voters, association members, opinion-makers or financial supporters of sustainability organisations) (Wilhelmsen 1998; Uusitalo 2005).

6. Conclusion

As the findings from the LOHAS studies and behavioural economics showed, there is no automatism from the small to the significant measures needed to face the great transition. In this article we made some suggestions to bringing the great transformation and the lifestyle approach together differently than sustainability communication has so far. Sustainability Communication should provide people better orientation:

- By communicating aims and vision rather than small measures
- By focussing on Big and Key Points of sustainable consumption
- By emphasizing the political role of sustainable lifestyles.

Though we are aware that people may not have the opportunity or financial resources to implement big or key points of sustainable consumption, limited financial resources must not be an obstacle. Instead, financial limitations urge us to search for creative solutions to all key points, such as finding ways to enable small investors to hold shares in renewable energies (e.g., offering participation certificates through ecologically-oriented banks). Another Example: The German organisation co2online provides advice to tenants on how to convince their landlord to invest in such measures as thermal insulation. The same logic applies to opportunities for key points that are limited due to geographical availability, as is the case with car-sharing. Previously, it was available only to consumers in metropolitan areas,

but over time the service has expanded. In addition, key points represent a situational approach and can be adapted to the specific needs of different target groups. These needs may be financial in nature, geographical, or motivational in nature.

Sustainability communication cannot and should not replace necessary changes in our political frameworks. Saving the world through conscious consumption patterns will remain a visionary dream. However: it has never been as easy as it is today to personally contribute to sustainable development and to influence political decisions through personal consumption patterns. Sustainable consumption has become a trend. In that respect, the emergence and the spread of the LOHAS movement is a unique window of opportunity to empower consumers for sustainable consumption and to unite the need of a great transformation with that of lifestyle orientation. Actors in sustainability communication – such as NGOs, web communities, political institution or companies – need to use this window and focus their attention on measures most relevant for sustainable consumption and societal transformation.

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Key competencies for sustainable consumption

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In the pursuit of sustainable consumption, education is widely ascribed a pivotal role as an instrument for disseminating more sustainable consumer behaviours. However, below this seemingly consensual surface the question of what sustainability objectives are appropriate in consumer education is the subject of controversial debate. This controversy is addressed in the present conceptual paper which suggests the development of key competencies as a valid and legitimate objective that addresses both individual and societal needs. This paper introduces and discusses seven key competencies for sustainable consumption (KCSC) as a reference framework for the development of practical educational interventions and research designs. It concludes with a discussion of possible further applications of the framework to contribute to a *great transition* from contemporary consumer culture to a culture of sustainable consumption.

Keywords: sustainable consumption, competency, consumer competency, consumer education, education for sustainable development

1. The consumption challenge and pathways towards sustainability

The consumption patterns of a growing, globalized consumer class have been identified as a major impact factor for social, cultural, economic and ecological changes that humankind is confronted with, patterns which influence to a high degree existing global consumption and production systems (Intergovernmental Panel on Climate Change 2007; Stern 2008; Assadourian 2010). In light of these developments, both science and society face the challenge to ensure a decent life today and for future generations through an economic development that is both environmentally friendly and socially just (Grosskurth and Rotmanns 2005). Perhaps the most compelling political expression of this can be found in the Agenda 21, the action pro-

gramme for the 21st century adopted at the World Summit on Environment and Development in Rio de Janeiro in 1992, in which the elimination of unsustainable production and consumption is acknowledged as one of the three overriding objectives of sustainable development (Barber 2003). The importance of changing consumption patterns was reaffirmed by the Rio+10 summit in Johannesburg that put in place the Marrakech process and, most recently, by the preliminary zero-draft of the Rio+20 outcome document that suggests the launching of an inclusive process to devise “a set of global Sustainable Development Goals” (United Nations 2012: 105) by 2015 that should address sustainable consumption patterns as a priority area (ibid: 106). However, below this seemingly consensual political surface, sustainable consumption remains a scientifically controversial concept, which accommodates a wide range of competing concepts and positions that either “imply consuming more *efficiently*, consuming more *responsibly* or quite simply consuming *less*” (Jackson 2006: 4; author’s emphasis).

In a widely used definition proposed by the Oslo Round Table of Sustainable Consumption and Production in 1994, *sustainable consumption* is established as the “use of goods and services that respond to basic needs and bring a better quality of life, while minimizing the use of natural resources, toxic materials and emissions of waste and pollutants over the life cycle, so as not to jeopardize the needs of future generations” (Ministry of the Environment Norway 1994). This definition has been criticized in the scholarly literature for a number of shortcomings (see Fischer et al. 2011). It is claimed that the terminology applied with no clear distinction between production on the one hand and consumption on the other. It is also argued that the Oslo definition confounds different levels when it relates essential ideas of sustainable development (meeting basic needs, increasing quality of life) with specific and arbitrary measures from the ecological sphere (reducing toxic materials) while omitting such specifications for the social or economic sphere. Fischer et al. (2011) suggest an alternative approach to evaluate the sustainability of consumer actions that focuses on two overarching normative criteria that are already mentioned in the Brundtland definition: the concept of needs and the idea of limitations (World Commission on Environment and Development 1991: 54). In this perspective, the sustainability of individual consumer actions depends on the degree to which they contribute to creating or sustaining external conditions that allow all human beings today and in the future to meet their objective needs. Clearly, this understanding is still abstract and needs further specification. It does not define a specific goal that is to be achieved; rather, it conceives sustainable development as a ‘moving target’ (Hjorth and Bagheri 2006) that requires deliberation and an on-going process of change. Hence, it is regarded as crucial to find “ways of promoting the social learning that will be necessary to navigate the transition to sustainability” (Kates *et al.* 2001: 642).

In the search for transition pathways to sustainable consumption a considerable number of approaches and measures have been proposed as possible solutions. There is ample experience with, and research on ‘hard’ *instrumental* measures, such as marketization and regulation approaches (Jerneck *et al.* 2011). These include leg-

islative, regulatory and juridical as well as financial and market instruments (Dalal-Clayton and Bass 2007; Kaufmann-Hayoz et al., 2011). Most scholars recommend complementing these approaches 'soft' *persuasive* measures that aim to change social norms and people's willingness to adopt new attitudes and behavioural patterns (Jackson and Michaelis 2003). Education, finally, while commonly categorized as a 'soft' and persuasive policy instrument, is also often credited with the potential to facilitate the formation of a sustainable society that is both democratic and deliberative. A number of important policy papers emphasize the need for an educational response, describing education as "one of the most powerful tools for providing individuals with the appropriate skills and competencies to become sustainable consumers" (Organisation for Economic Co-Operation and Development 2008: 25).

2. The role of education

Education is among the most frequently used words in the Agenda 21 and acclaimed as "indispensable to changing people's attitudes" in the transition to a sustainable society (United Nations Conference on Environment and Development 1993: 36.3; Fien 2000). This stance has received strong political support in the past two decades. The preliminary Rio+20 declaration reaffirms the political commitment "to strengthening the contribution of our education systems to the pursuit of sustainable development" (United Nations 2012: 98) at the dawn of the World Decade on "Education for Sustainable Development" (ESD) that had been called out by the United Nations for the years 2005 to 2014. The Decade sought to integrate the principles and practices of sustainable development into all aspects of education and learning (Pigozzi 2010) and explicitly addresses sustainable consumption as one of its key themes and aims to develop "knowledgeable consumers who purchase goods with low lifecycle impacts and who use their purchasing power to support corporate social and environmental responsibility and sustainable business practices" (United Nations Educational, Scientific and Cultural Organization 2005: 29).

Such an understanding of education as a means to achieve sustainable development has been the subject of critical discussion since its inception at the United Nations World Conference on Environment and Development in Rio de Janeiro in 1992 (Jickling 1992).

In the centre of the debate was the question how education should relate to the concept of sustainable development. In particular, the question has been what primary outcomes ESD should aspire to: the achievement of education, or the achievement of sustainable development. Broadly speaking, the discourse is framed by two opposing positions that are deeply critical of each other (Wals et al. 2008; Sterling 2010). Instrumental approaches, on the one hand, start from the normative socio-political concept of sustainable development in ESD and consider sustainability as a legitimate objective that education should seek to contribute to. In this perspective, education and learning are interpreted as a means to achieving the ends of,

for example, more sustainable consumption levels. Emancipatory approaches, on the other hand, focus on educational purposes. Proponents of this view see the function of sustainability as a learning context and hence as a means to support broader educational ends.

While the instrumental function of education (e.g. equipping the future workforce with skills required in a sustainable economy) is generally undisputed and regarded as indispensable (Bänninger et al. 2007), the utilization of education for achieving sustainable development objectives has been severely criticized. Prominent features of this criticism are the attempt to instrumentalize education for political purposes and a general tendency to 'educationalization' (Bridges 2008). According to Schnack (1996), approaches that seek to make educational institutions responsible for solving social or economic problems are both common and inappropriate. The argument is also made that short-term behavioural changes do not adequately prepare young people for mastering an unknown future of dynamic sustainability challenges (Scott 2009). On the other side, emancipatory approaches have been criticized as necessary but not sufficient responses to the challenges humankind is facing, because they carry the risk of denying or avoiding "a purposive or directive dimension" (Sterling 2010: 514f.). As Fien (1997) contends, education is always embedded in social settings and as such is inevitably a normative endeavour. He argues that in stark contrast to prominent liberal views which claim values relativity, such seemingly 'neutral' perspectives actually lead to a number of critical (albeit unintentional) outcomes: they reaffirm dominant ideologies and undermine the educational aspiration to empower students to critically question the status quo as well as to contribute to a transformation to a more sustainable society. From such a socially critical perspective, the question to ask is not "whether a particular approach to teaching is indoctrination, but to ask related to the ways, and in accordance with what values and ends, should schools and teachers 'indoctrinate'" (Fien 1997: 438).

2.1 Reconciling means and ends: the notion of competency

To overcome the either/or debate, steps have recently been made that are helpful in informing the further exploration of an educational response to the consumption challenge. Vare and Scott (2007) argue that it takes both types of learning, which they call ESD-1 and ESD-2: on the one hand, learning of a more instrumental nature is needed as a tool to promote skills and information to change behaviours based on what is well known and agreed on at present (ESD-1). On the other hand, more empowering learning is the essential form of "building capacity to think critically about [and beyond] what experts say and to test sustainable development ideas" (ibid.: 194) in the face of what is not adequately known and agreed on (ESD-2). Similarly, Sterling suggests conceiving instrumental and emancipatory approaches

to ESD as “potentially and necessarily complementary, indeed co-dependent” (Sterling 2010: 523).

As a result of the search for more comprehensive and theoretically sound objectives that consider such a complementary view, the concept of key competencies has gained ground in the debate on ESD. Competencies can be understood as “a roughly specialised system of abilities, proficiencies or skills that are necessary or sufficient to reach a specific goal” (Weinert 2001: 45). They deal with complex demands that necessitate the interplay of internal structures such as cognitive, emotional and motivational dispositions and represent a system of preconditions that enable individuals’ self-organized learning processes (Klieme *et al.* 2007). The term ‘key competencies’ represents a qualitative extension that highlights the significance of certain competencies: Key competencies are relevant across different spheres of life and for all individuals (Rychen and Salganik 2003) and do not replace but rather comprise domain-specific competencies, which are necessary for successful action in certain situations and contexts.

The concept of key competencies focuses on a critical, self-determined and self-reflexive individual. At the same time, it takes shared societal values into account. Key competencies offer therefore a possible solution to the tension between knowledgeable and autonomous individuals on the one hand and overall societal necessities on the other. With these features, the notion of competency serves as a valuable reference frame that can inform and orientate the search for appropriate educational objectives in response to the consumption challenge. In the next section we elaborate a framework of key competencies for sustainable consumption which provides a solid theoretical basis that has the potential to overcome the dilemma of ‘ego-centred consumership’ versus ‘eco-centred citizenship’ (Benn 2004).

3. Key competencies for sustainable consumption

We argue that a consumer education that seeks to contribute to sustainable consumption needs to reflect critically on the validity of its objectives in light of the inherent tension between instrumental and emancipatory approaches. We propose that linking the concept of key competencies to the domain of sustainable consumption offers the possibility of combining a general emancipatory approach with more instrumental, domain-related necessities. By doing this, this paper seeks to contribute to the advancement of research, practice and policy making in consumer education within the paradigm of ESD (McGregor 2009).

A conceptual approach is adopted that contains three steps. As a foundation, we first introduce and elaborate a theoretical framework of key competencies that informs the selection and definition of those generic key competencies which people need in order to contribute to a (more) sustainable future. In a second step, these generic key competencies are put into context through a critical examination and modification in light of the requirements that have been identified as specific to the

domain of sustainable consumption. In a final step, we develop a general theoretical framework of key competencies for sustainable consumption.

3.1 Foundation: a three-fold categorization of key competencies

The general learning objectives of ESD are strongly influenced by the expectations set out on a policy level. As sustainable development necessitates societal transformation and may only be realized by citizens capable of actively *participating* in societal decision-making, the importance of acquiring life skills is particularly emphasized (United Nations Educational, Scientific and Cultural Organization 2005).

The consideration and operationalization of relevant key competencies for a (more) sustainable future requires a theoretically sound framework that enables a well-founded selection of and restriction to certain key competencies. Such a comprehensive approach is offered by the framework *Definition and Selection of Competencies* (DeSeCo). The DeSeCo project was commissioned by the Organisation for Economic Cooperation and Development (OECD) and was carried out between 1997 and 2003. The project sought to produce a strong and widely shared consensus on which key competencies are necessary for the modern world. Based on a comprehensive literature review and the synthesis of a wide range of expert and stakeholder opinions, the framework was developed and discussed at two international symposia. The DeSeCo framework plays an authoritative role for contemporary educational research and was linked, for example, to the two international large-scale assessments of competencies PISA and ALL (see Rychen, 2003). It identifies three categories of key competencies that are valid across different domains: (1) Interacting in socially heterogeneous groups, (2) acting autonomously, and (3) using tools interactively (Rychen and Salganik 2003). In what follows, we will elaborate these three categories and apply them to the issue of key competencies that contribute to a (more) sustainable future.

The focus of the first category, *interacting in socially heterogeneous groups*, is on communicating and cooperating with other members of society. With growing heterogeneity in pluralistic multi-cultural societies, the competency to participate in decision-making processes as well as to collaborate with people who have other disciplinary or cultural backgrounds and mindsets is crucial for the individual's ability to interact responsibly with different others (de Haan 2006; Barth 2009). Furthermore, it is the ability to communicate transculturally the idea of sustainability that enables the individual to become an agent of change.

The second category, to *act autonomously*, comprises key competencies that empower individuals to manage their life in meaningful and responsible ways, and to develop a personal identity and value system. Individual autonomy with respect to sustainable development involves reflection as well as planning ability - the competency to reflect on individual and cultural models and to plan as well as to realize and evaluate personal projects and life plans (de Haan 2006; Salganik 2006). The

reflection component emphasizes the emancipatory approach to enable the individual to act upon their own interests and desires while at the same time considering their own cultural context. Planning capabilities focus on the ability to assess necessary resources for sustainable action as well as the consideration of possible side effects of one's own action.

The third category, *interactive use of tools*, not only refers to necessary technical skills (the ability to read texts or to use a computer), but also to the degree of familiarity with the tool itself and the ability to reflect critically on its possibilities and limitations. 'Tools' in this context refers to physical as well as socio-cultural instruments which can be used to respond to the social challenges of the global economy and modern 'information society' (Castells 1996). Active contributions to a more sustainable future require the competency for using, handling and sharing different forms of sustainability-related knowledge and the ability both to think critically about the role of information and base one's decisions on these evaluations (McKeown 2002). Furthermore, as this kind of information often depends heavily on its being up to date, proficiency in using information and communication technology interactively is becoming increasingly more important for both the investigation and dissemination of sustainability issues, e.g. in social networks (Barth 2009).

3.2 Contextualization: the domain of sustainable consumption

The specification of key competencies for sustainable consumption (KCSC) needs to take domain-specific requirements into account. These derive both from broader thematic debates (e.g. on dimensions, main themes and challenges in sustainable consumption) as well as from conceptions of consumer roles and behaviours with a greater focus on the individual.

First, the wider aspects. In their discussion of the current state of research on sustainable consumption Peattie and Collins (2009) identify as a major shortcoming a predominantly ecological interpretation of sustainable development. While it is widely agreed that sustainable development should seek to balance different dimensions, comprehensive educational approaches to sustainable consumption encompassing ecological, social, economic and cultural aspects have only recently begun to be developed (Fischer 2010). This is not surprising given the fact that the integrative consideration of multiple dimensions with their respective objectives gives rise to the emergence of various dilemmas and conflicts of interests. It is therefore seen as a major challenge for promoters of sustainable consumption to enable individuals to consider carefully the pros and cons of consumption choices within and between different dimensions and "deal with the complexities, conflicts and compromises" (Peattie and Collins 2009: 112) involved in such comprehensive engagement with sustainable consumption. Hence, educational approaches seeking to promote sustainable consumption need to consider different dimensions and norms inherent in

the idea of sustainability (i.e. in particular intra- and intergenerational justice, ecological limitations, satisfaction of basic needs) as well as their complex interaction that often result in conflicts and dilemmas of decision (Lundegård and Wickman 2007).

As for individual requirements, conceptions of the dual role of consumers acknowledge that individuals are not merely market players dealing with “the acquisition, consumption, and disposal of marketplace products, services, and experiences” (MacInnis and Folkes 2010: 905). Instead, the individual is given a wider recognition as a citizen and participant in everyday life who is of course influenced by the production and consumption of goods and services (Reisch 2004). In this context, the notion of ‘consumer citizenship’ extends the narrow concept of consumption as marketplace interactions into broader political contexts and employs more altruistic concerns (Sagoff 1996, Thoresen 2005b). In particular, it conceives as a consumer duty the consideration of ethical aspects, responsible behaviour towards others near and far, while acknowledging at the same time that consumers need to be effectively enabled to execute these duties (Schrader 2007).

The framework of KCSC seeks to promote sustainable consumer citizenship by encompassing the individual’s *diverse* consumer roles, including consumer behaviours both in- and outside the narrow limitations of marketplace interactions. Such a more comprehensive approach to the conceptualization of consumer behaviour and the sustainable consumer is offered by Stern (2000) in his typology of four different patterns of environmentally significant behaviour (see Table 1).

Table 1: Types of sustainable consumer behaviour (according to Stern 2000).

Directness	Type	Examples
Indirect, mediating influence on the sustainability of consumption	Consumer activism	Active involvement in organizations and demonstrations committed to sustainable consumption
	Nonactivist consumer behaviours in the public sphere	Active kinds of citizenship, support or acceptance of public policies, social and viral marketing for sustainable consumption
Direct influence on the sustainability of consumption	Private-sphere consumption	Purchase of major household goods and services, use and maintenance of goods, waste disposal, purchasing patterns
	Other consumption-related behaviours	Individual influences on consumption-relevant actions of organizations

Stern distinguishes between direct and indirect behaviours. While indirect consumer behaviours refer to individual actions of a more political nature (compare the term consumer *citizen*), direct consumer behaviours relate to traditional individual marketplace actions in private households and organizations (*consumer citizen*). Within

these direct consumer behaviours, *different phases* can be distinguished, comprising problem recognition, information search, evaluation of alternatives, purchase decision and finally post-purchase behaviour which includes the usage, maintenance and disposal of goods (Kotler *et al.* 2009). Research findings also indicate that these behaviours can be further divided according to the extent to which their underlying decision-making processes are guided by either cognitive control, emotional involvement or even reactive, spontaneous behavioural responses (Fischer and Hanley 2007). It follows from this account that the framework of KCSC needs to consider not only cognitive dispositions but must pay special attention to non-cognitive decision-processes and their underlying control mechanisms.

3.3 Synthesis: the framework of key competencies for sustainable consumption

Based on the threefold categorization of key competencies that contribute to a more sustainable future and the specific requirements of the domain of sustainable consumption, a framework of KCSC can now be outlined (see Table 2). This framework acknowledges the valuable insights into the requirements of the domain of consumption that existing approaches to consumer competency (Thoresen 2005a; Thoresen 2005b; Grønhøj 2007; Lachance and Legault 2007; Bonnemaizon and Batat 2010) and consumer literacy (Young 2000; Wallendorf 2001) provide, and complements and re-orientates them in light of the specific demands of sustainable consumption. It is composed of seven key competencies, each of which consists of underlying cognitive and non-cognitive dispositions.

Table 2: Framework of key competencies for sustainable consumption (KCSC)

Use tools interactively
Competency to use, edit and share different forms of knowledge Competency to use ICT interactively Competency to think visionary and to consider interrelatedness
Act autonomously
Competency to reflect individual needs and cultural orientations Competency to plan, implement, and evaluate consumption-related activities
Interact in heterogeneous groups
Competency to critically take on one's role as an active stakeholder in the market Competency to communicate sustainable consumption

A more detailed exploration of each competency illustrates how these dispositions relate to each other and shape between them the nature of each key competency.

In order to be able to make sustainable consumption choices and to act as a consumer citizen, students need to be able to *use, edit and share different forms of knowledge* (e.g. own practical experiences, word of mouth experiences, written facts, mental concepts) for different purposes (number 1 in Table 2). This requires the willingness to invest resources into the search for adequate information, the ability to evaluate the validity of the information, and to use it to inform one's own consumption-related decisions. As different knowledges may recommend different actions, the competency involves the readiness to endure tensions that arise from such seemingly contradictions. In a social perspective, it further reflects the motivation of and ability to share knowledges with others.

Information and communication technology (ICT) plays an important role as a source of knowledge and of interaction about sustainable consumption issues. The competency to use this resource effectively does not only include the motivation and ability to search information and reflect on its validity, but also involves an *interactive* component that enables students to use ICTs to process information and pass it on to others. This interactive component also features the ability to use the potential of ICTs for social interaction and to critically assess the opportunities that ICTs are offering and the risks that are involved with their dissemination (number 2 in Table 2).

The competency to *think visionary and to consider interrelatedness* focuses on future-oriented thinking and comprises the students' awareness of their attitudes and values to intragenerational and intergenerational justice as well as their opportunities to contribute to a sustainable development of consumption and production patterns (number 3 in Table 2). This presupposes knowledge of the interlinkages

between consumption and production systems, the ability to appraise the implications of one's own consumption choices for others today and in the future, as well as a general perception of the future as undetermined and shapeable.

Today's consumer societies are characterized by an increasing commoditization of needs and their satisfaction through market goods. The competency to *reflect individual needs and cultural orientations* refers to the ability of students to critically engage with these developments and to reflect their compatibility to their idea of a sustainable future (number 4 in Table 2). This includes the willingness and ability to explore and scrutinize one's own aspirations, wants and needs as well as established habits and practices of their satisfaction. In particular, it presupposes knowledge of how these preferences are culturally contextualized and shaped. In a social context, such reflective stance requires the capacity to criticize unsustainable trends and systems of provision and to accept criticism by others.

Planning, implementing and evaluating consumption-related activities in a sustainable way are processes crucial to sustainable consumption. There is a whole range of relevant behaviours, encompassing not only the individual's role in the market (e.g. the acquisition of goods or services, contact with companies' customer service, or consultation of peers in acquisition processes) but also aspects of citizenship, like participation in acquisition decisions in the public sector (number 5 in Table 2). In both types, knowledge about relevant methods and instruments has to be combined with the consumer's motivation and willingness to use this knowledge and to put it into practice. The ability to *plan* activities refers to the knowledge of how to *assess* in advance available resources, collaboration activities and consequences as well as possible side effects of different actions. It further covers the *skill in developing* and *applying* certain criteria to the selection and assessment of different options (e.g. in terms of quality or costs but also of the ecological and social impacts). Finally, it demands *critical reflection on one's own needs* and even the consideration of non-consumption as an option. The ability to *implement* encompasses the knowledge and practical skills to execute a specific activity, while the ability to *evaluate* enables one to assess whether the activity contributes towards the intended objective. Underpinning these cognitive abilities are important non-cognitive dispositions, such as a general motivation to become active both as a consumer and a citizen, a generally positive attitude towards sustainable consumption and the willingness to act responsibly in specific consumption-related activities.

The competency to *critically take on one's role as an active stakeholder in the market* enables students to contextualize their roles in the broader system of provision and consumption (number 6 in Table 2). It requires knowledge of system environments and of the roles, rights and duties of different actors within, and more particularly of opportunities to work towards changing these conditions into more sustainable ones. This includes skills to adopt a life-cycle perspective on the production, consumption and disposal of goods (and services), the ability to put oneself in the position of other actors as well as the willingness and capacity to forge strategic alliances with other actors to achieve common goals.

With this systems perspective, the role of a consumer citizen transcends the narrowly confined boundaries of individual actors who engage in market-based transaction of commodities. Moreover, it implies the development of change agency that requires the competency to *communicate the idea of sustainable consumption to others* (number 7 in Table 2). This presupposes knowledge of the idea, values and concepts underpinning the notion of sustainable consumption and involves the cognitive, motivational and emphatic skills to process this knowledge for different communicative formats, situations and conversational partners and audiences.

4. Discussion and Outlook

Consumer education in the paradigm of ESD needs to accomplish a balancing act between being both an instrumental approach that enables students to respond to today's consumption challenges in a sustainable way, and an emancipatory mode that equips students with the overarching capability to live a successful, self-determined life. Taking that into account, a careful consideration of appropriate educational objectives seems indispensable to the exploration of the potential contribution of education to the promotion of sustainable consumption without reducing its role to a mere tool for behavioural change. The focus on the acquisition of key competencies as a genuinely educational response offers an orientation that consumer educators can relate to. We have proposed and developed in some detail a framework of KCSC that contributes both to sustainable development and the development of the individual.

In addition, we see three main purposes linked to that framework in positivistic and post-positivistic perspectives on consumer scholarship (see McGregor and Murnane, 2010): first, a theoretically grounded selection of relevant key competencies should support the design of suitable learning arrangements both in- and outside the classroom, offer an orientation of relevant as well as accomplishable learning objectives and thereby contribute to a “consumer education predicated on the principles of authentic pedagogy” (McGregor, 2009, p. 263). This includes and requires a critical examination of the extent to which existing institutional frameworks (e.g. syllabi, policies) enable or confine the development and implementation of consumer education practices oriented towards enabling students to acquire key competencies for sustainable consumption (*critical methodology*).

Second, the framework should facilitate the development of suitable forms of assessment. An assessment could focus on specific dispositions as formulated for the individual key competencies or on the defined set of key competencies as such and employ both quantitative and qualitative methods (*scientific methodology*).

Finally, we see a need for research not only with respect to the assessment of respective competencies, but even more so with regard to the dynamics involved in the lifelong process of competency acquisition (including the loss of competencies acquired earlier). The generic framework of KCSC can serve as a theoretically well-

grounded starting point for future work in this field aimed at enhancing consumer educators' understanding of the development of student competency profiles over time (*interpretative methodology*).

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The effect of culture on sustainable behaviour in a design context

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Over the last few decades the consumption patterns of the world's wealthiest countries has led to the degradation of the environment and exploitation of the world's finite resources. The developed world currently consumes at a level that requires up to five planets' resources. The world average consumption, however, is a much lower 1.5 planets', which is brought down by the lower consumption rates and more sustainable behaviours of developing countries. Culture is of particular importance, as the change in consumer culture in rapidly developing nations will have major consequences on global household resource use. Culture is a key factor in the formation of habits or routines that shape behaviours and lifestyles; however it has not yet been holistically explored in a design context. This paper introduces a cross-cultural comparison of everyday household behaviours from an extensive study between the UK, India and Brazil. The findings show that culture plays a significant part on the resource impact of households due to the formation of habits and routines, with particular regard to bathing habits, washing clothes, meat consumption and energy services and the design implications of this are discussed.

Keywords: culture, design, sustainable behaviour, cross-cultural research

1. Introduction

Over the last two centuries the seemingly infinite demands of human activity have grated against the finite resources of the planet (Jackson, 2009). This intensity has accelerated rapidly since the end of the Second World War when the goal for continually increasing GDP through consumption led to the degradation of the environment and exploitation of the world's natural resources. Estimates are contentious, however many authors talk of 'peak everything' (particularly energy sources) whereby each year less resources are available to us for the same amount of effort to extract them (Heinberg, 2005). Coupled with this, rapid increases in development and growth in population, particularly in 'developing' countries, is putting even more strain on these already depleted resources.

Consumers play a key role in the depletion of resources. In Europe households account for 25% of total direct resource consumption (Kuijer & de Jong, 2009). In the UK, per capita carbon emissions are 9.66 metric tonnes whilst in Brazil this is estimated to be 2.01 and in India just 1.16 (EIA, 2006). Economists tell us that this is due to simple economics; higher income means higher consumption. Whilst to some extent this is true, the few studies conducted on the subject of cultural influences on household resource use, namely by Whilite (1999), Matsuhashi et al (2010) and Elizondo (2012) have suggested that culture plays a significant role in the resource impact of household behaviours.

If we all lived like the average person from the UK we would require 3.4 planets to support our resource use. This figure jumps to five planets if we take on the lifestyle of the average North American. The reason that the world average is just 1.5 planets is due to the lighter impact countries with a lower GDP have. The average Indian resource use is just 0.4 planets, whilst even China currently consumes on a level equal to what the earth can provide (Global Footprint Network, 2010).

Design plays an important role in shaping the impact of human activity on the environment as it influences people and their surroundings and also acts as an interface between consumers and the activities of consumption (Bhamra et al., 2011). It can help to change conventional systems by influencing the environmental and social impacts of the life-cycle of a product or service. Historically, sustainable design has tended to focus on reducing environmental impacts during the manufacturing or disposal stages of a product, however more recently, research has focused on developing strategies to reduce the negative environmental and social impacts of product use by moderating users' interaction with them (Lilley, 2009).

This paper presents the findings from a global extensive study that is part of an on-going PhD project aiming to generate insights into the impact of culture on sustainable household behaviours and the role design can play in creating new products which result in less resource intensive use behaviours.

2. Literature Review

Research into culture in a design context is scarce, yet the research that has been conducted shows that culture can have a dramatic influence on behaviour. Part of the explanation for the limited research might be the ambiguity of the term culture itself which can be defined in many different ways. Trying to understand anything about everyday life in a human context can be described as a *cultural* research project (Whilite, 1999). Whilite (1999) describes a *cross-cultural* project as one that "explicitly aims to highlight cultural similarities and differences in one or another aspect of everyday life, and use them to open avenues of theoretical inquiry" (p.2). Other anthropologists have narrowed down traditional definitions of culture; the common themes that appear throughout are; the importance of symbolic values, shared knowledge and learned behaviour (Kroeber & Kluckhohn, 1952; Banks &

McGee, 1989; Geertz, 1973). Culture is collective with people living within a defined social environment with shared patterns and perceptions which impact heavily on their attitudes and behaviours (Chau et al, 2002). For this research, culture has therefore been defined as: The shared patterns of behaviours, interactions and understanding learned by a collective group of people.

Behaviour is a topic of similar complexity. Literature regarding what shapes people's behaviour is extensive and originates from a wide range of different disciplines. Theoretical models have been developed that seek to understand the processes that influence people's behaviour. Models such as those by Ajzen & Fishbein (1980) and Schwartz (1977) suggest that either the beliefs or morals of the person or the views of others will shape the intention or trigger a behaviour. These models, however, rely on behaviour being a deliberate cognitive process. In reality, behaviours around the home are formed as part of habits or routines with little or no cognitive thought past the first completion of the task (Goldsmith & Goldsmith, 2011, Jackson, 2005; Steg and Vlek, 2009). Tirandi's (1980) model includes internal (attitudes, values etc) and external (physical constraints, social practices etc) characteristics which are strongly related to a cultural context. Habits are built up over a long period of time with social, environmental, and contextual influences, and are affected by the *understanding*, *motivation*, and *ability* of individuals to change their actions (Abrahamse, 2005; Steg, 2008).

A major influence on behaviour is personal *motivations*. Social theorists argue that individuals' perceptions of themselves and others will determine behaviour (Steg and Vlek, 2009). Changing behaviour and consumption patterns to fit into a social order is common amongst consumers (Wilk, 2002). However, individual choice theorists argue that consumer's motivations come from weighing up the greatest benefit from the lowest cost (Steg and Vlek, 2009).

Motivational factors are not, however, the sole attribute to influence individuals' behaviour. The context or physical arrangement of an individuals' surroundings such as culture, social class, education, climate, geography, public policy, taxes, regulations, income, cost of goods etc. will also influence their behaviour (Stern, 1999). Habitual behaviour refers to a behaviour that is performed regularly, without reflection, to a re-occurring event that has already been solved to a users satisfaction; whilst cognitive behaviour is the result of a choice influenced by contextual factors, solved through reasoning (Jackson, 2005; Steg and Vlek, 2009).

As previously mentioned, research into the affect culture has on behaviour in a design context is fairly limited. Below, the main studies by Wilhite (1999), Matsushashi et al (2010) and Elizondo (2012) are discussed.

Bathing practices is one area that has been looked at in previous research largely because of its resource intensive nature. Studies in the Netherlands show that bathing is the single largest water consumption behaviour in the home, whilst in the UK bathing constitutes one third of all water consumption in the home (Dardel, 2008; Karakat, 2009). Matsushashi's cross-cultural study compared bathing habits in Japan, the Netherlands and India and noted that the Japanese bathing style was the most water intensive – using nearly 200 litres of water, the Netherlands averaged

50-100 litres by showering, and the Indian participants used the least water with 20 litres using a 'reservoir' bathing technique (2010). The research led to new innovative designs being created in collaboration with a leading bathroom manufacturer, with potential water savings of 90%, which are currently in testing in the Netherlands (Karakat, 2009; Kuijer & de Jong, 2011). Whilhite (1996), similarly, looked at bathing habits in Japan from an ethnographic viewpoint and noted that the bathing procedure is deeply rooted in Japanese culture, being used to cleanse as well as comfort. The resource intensity of the behaviour is due to numerous transitions between the shower and the bathtub, although interestingly he suggests the whole family will bathe in the same water, with an element to reheat the water between users.

Whilhite has also looked ethnographically at space heating, cooling, and lighting between Norway and Japan. He suggests that these behaviours are deeply rooted in culture, as symbolic values are fixed in the social and cultural presentation of the home. He argues that energy intensive behaviours such as heating in Norway and bathing in Japan have become 'cultural energy services' and advises promoting technologies which provide the same cultural service with less energy (Whilhite 1999).

Work by Elizondo (2012) focused on exploring cultural differences in dishwashing habits between the UK and Mexico. Her findings showed great differences in the process of dishwashing between the two regions. Mexican participants used an 'open/close tap' approach to washing dishes, soaping the dishes and then rinsing them, whilst British participants filled a large bowl with hot, soapy water, and didn't wash off the soap after cleaning. She concluded that energy related routines are based on habits influenced by people's personal and environmental contexts. From these findings 'Personas' were created which designers used to empathise with the user, creating concept designs aiming to reduce the impact of the dishwashing process.

3. Research Methods

To gain a broad overview of people's perceptions and their everyday behaviours regarding domestic resource use, an online, self-completion questionnaire was devised. The questionnaire was designed to gauge people's general perceptions and behaviours on different themes relating to everyday behaviours within the home and their varying resource impacts. Participants were gathered from the UK, India and Brazil.

3.1 Sampling Strategy

The sample regions were chosen for a variety of different reasons. First and foremost the regions were chosen as they show widely different cultures, the logic being the more varied the cultures the greater the insights generated would be. The regions were also chosen as they show a contrast in levels of economic development and environmental rankings whilst also having large populations and either established or growing markets. Table 1 compares the three countries chosen using data from the CIA World Factbook (CIA, 2011).

Table 1: Country comparison

	UK	India	Brazil
Economic	High economic level of development by World Bank standards, 14th most wealthy country in the world by GNI	Low GNI ranking 114th in world Commonly cited as a 'rapidly emerging economy' due to large population and recent increase in economic growth.	Middle income country – ranking 67th in the world by GNI Commonly cited as a 'rapidly emerging economy' due to large population and recent increase in economic growth.
Happy Planet Index (combining ecological footprint, life satisfaction, and life expectancy)	Low Happy Planet Index – ranks 74th in the world	Relatively high Happy Planet Index of 35th in the world	High Happy Planet Index – ranking 9th in the world
Geography	9 geographic regions (East, West Midlands, East Midlands, London, and the North West)	6 geographic regions (The Himalayan Mountains, Northern Plains, The Great Indian Desert, The Peninsular Plateau, Coastal Plains, Islands)	5 geographic regions (north, northeast, central-west, southeast, south)

	UK	India	Brazil
Environment	Met Kyoto Protocol target of a 12.5% reduction from 1990 levels and intends to cut 20% in emissions by 2020); by 2005 the government reduced the amount of industrial and commercial waste disposed of in landfill sites to 85% of 1998 levels and recycled or composted at least 25% of household waste.	Deforestation; soil erosion; overgrazing; desertification; air pollution from industrial effluents and vehicle emissions; water pollution from raw sewage and runoff of agricultural pesticides; tap water is not potable throughout the country; huge and growing population is overstraining natural resources	Deforestation in Amazon Basin destroys the habitat and endangers a multitude of plant and animal species indigenous to the area; there is a lucrative illegal wildlife trade; air and water pollution in Rio de Janeiro, Sao Paulo, and several other large cities; land degradation and water pollution caused by improper mining activities; wetland degradation; severe oil spills
Religion	Christian 71.6%, Muslim 2.7%, Hindu 1%, other 1.6%, unspecified or none 23.1%	Hindu 80.5%, Muslim 13.4%, Christian 2.3%, Sikh 1.9%, other 1.8%, unspecified 0.1%	Roman Catholic 73.6%, Protestant 15.4%, Spiritualist 1.3%, Bantu/voodoo 0.3%, other 1.8%, unspecified 0.2%, none 7.4%
Population	62,698,362	1,189,172,906	203,429,773
Urban population	80%	30%	87%
Climate	Temperate; moderated by prevailing southwest winds over the North Atlantic Current; more than one-half of the days are overcast	Varies from tropical monsoon in south to temperate in north	Mostly tropical, but temperate in south

The questionnaire was presented in two languages; English and Portuguese so as to be as natural to the participants from the selected countries as possible. The original

questionnaire was written in English (by a native speaker) and then back-translated to Portuguese (by a native speaker) so as to ensure the translated content was as close to the original meaning as possible (Liamputtong, 2010). The translated version was then cross-checked by another Brazilian who was familiar with the research project, following guidelines by Liamputtong (2010).

The questionnaire was distributed via the internet as this was the simplest way to reach a global audience and could be completed by the participant at their convenience. The flexible and global nature of the study meant that probability sampling such as random or systematic would be unhelpful and dilatory. Instead, the questionnaire took on a purposive sampling strategy, using a small sample of relevant cases. The contacts from these cases acted as representatives to help draw out further individuals for research through a cascade or snowball effect. This small sample size of preselected representative individuals also allowed for a greater rapport to be created between the participant and researcher and aid in increasing response rates, a factor that lowered the impact of any perceived bias (Robson, 2011). The construction of the questionnaire to measure identical content in each language also aided in avoiding bias (Leung & Vijver, 1997).

Although the distribution of the questionnaire through the internet allowed a larger number of participants to be reached, obvious issues arose that affected the data; namely individuals having unequal access to the internet putting a skew on the demographics of the participants. Studies have shown that in certain populations various groups such as women, people on low incomes, people with low levels of education, and the elderly, are often underrepresented (Zhang, 2000). Although this may have been the case, the questionnaire was not designed to be representative of the country as a whole; the idea was to get many insights into the lives of people from different regions to open avenues for further investigation and thus full representation for a region was not required.

In total there were one hundred and fifty seven participants; 63 from the UK, 63 from Brazil and 31 from India. In Brazil the questionnaire was answered by at least one participant in each of the five regions, with 86.8% of participants from the south or southeast regions. In the UK, participants lived in five of the nine geographic regions, with the majority of the participants (56%) from the East Midlands. In India participants were generally split between the North and South.

The majority of Brazilian and Indian participants (57.6% and 79.3% respectively) were in the 18 – 30 age brackets, with 31 – 50 year olds being the next most common. In the UK this was reversed with almost 50% of participants in the 31 – 50 age range. The UK was also the only country with a participant over the age of 65. In the UK and Brazil there were more female participants than male with roughly a 60 – 40 split, whilst in India it was the opposite.



Figure 1: - Average Incomes

In terms of income, the majority of Brazilians (62.8%) earned in the lowest three income bands (US\$0 – US\$20,000), whilst the majority of participants from the UK (70.1%) had an income in the top three income bands (US\$20,000 +). Indian participants had a similar income to Brazilian participants (Figure 1). The Indian sample had the highest rate of students at nearly 26%, whilst the UK and Brazil had a similar rate of 13.8% and 15% respectively.

In all of the countries surveyed more than 80% of the participants were educated to degree or postgraduate level. This might be due to the contacts used to gather the data, with participants tending to be recruited via friends or family of an individual at a university. Most participants lived in households with five people or fewer.

Nearly all of the participants considered themselves to be 'pro-environmental'. The majority believed environmental issues are critical and therefore try to consume less environmentally damaging products where possible. India had the highest number of participants (20%) who wanted to do more to protect the environment but didn't think they could in their current situation, whilst the UK was the only country that had participants (3.5%) who believed environmental issues had been exaggerated.

4. Findings

The following section presents the findings from the questionnaire relating to the main themes of food, water, energy and materials, and governmental schemes. Findings of particular interest are discussed in the subsequent chapter.

4.1 Food

In Brazil, 55% of participants eat meat at least once a day, compared with 28% of British participants and 17.2% of Indian participants. India had the most number of vegetarians at 27.6% (Figure 2). Interestingly the UK had the largest range when looking at the budget for meat each week. 35.1% of the meat eating UK sample spent less than US\$10 per week on meat, similar to that of India at 37.9%, with the Brazil sample at 21.7%. The majority of Brazilian participants (53.3%) spent over US\$10 per week on meat, a similar figure to the UK at 52.7%, with Indian participants less likely to spend highly on meat (24%). It should be noted, however that a large proportion (18.3%) of Brazilian participants preferred not to answer this question.

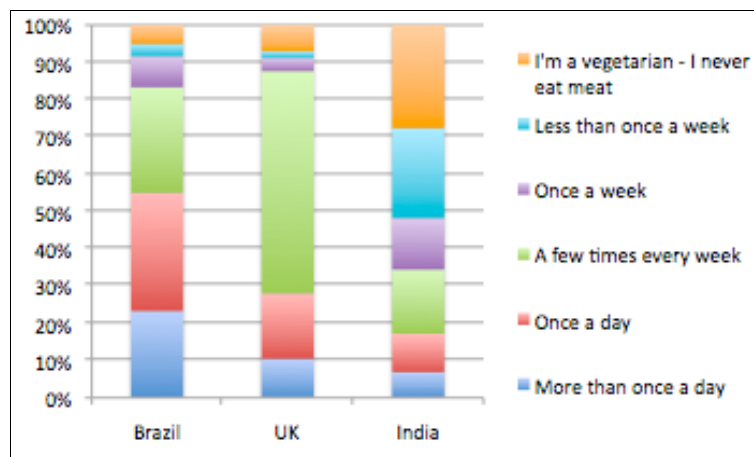


Figure 2: - Frequency of meat consumption

The UK had the highest number of participants that ate imported foods either everyday or a few times per week at 68.4% compared with 16.7% of Brazilians and 34.4% of Indian participants, whilst 20% of Brazilian participants and 13.8% of Indian participants responded that they never ate imported foods compared with 0 participants from the UK. It should be stated however that in many cases the participants did not know how much imported foods they ate each week (Brazil: 28%, UK: 15.8%, India: 20.7%). In terms of eating locally grown food, in all regions eating local food everyday or a few times a week was by far the most common answer, although once again it was common for participants to not know the origin of their food (Brazil: 31.7%, UK: 17.5%, India: 24.1%).

In all regions the most common place to buy meat was the supermarket, with a similar range in packaging materials across the regions. The UK participants were more likely to grow food with 45.6% of participants growing food themselves compared to 23.3% of Brazilians and 37.9% of Indian participants.

4.2 Water

In all regions the most common bathing type was showering. In Brazil none of the participants used a bath to wash compared to 8.8% in the UK and 24.1% in India. Brazil and India both had participants (1.7% and 17.2%) who used the reservoir bathing technique, whilst the UK didn't have any. Having a fully plumbed in shower was noted by all of the Brazilian participants and 93% of the British participants, whilst 20.7% of Indians didn't have a fully plumbed in shower.

In the UK a gas boiler was the most common way of heating water, whilst in Brazil it was the electric shower. Interestingly, in India use of a 'geyser' was mentioned (28.5%). A geyser is a small electric hot water heater designed to save electricity when showering by only heating the water needed, it is often solar powered, although the participants did not mention this.

Indian participants were most likely to have non-potable water supplied to household appliances (shower, toilet, tap etc), with 38.5% of participants having non potable water direct to appliances compared to 23.7% in Brazil and 10.9% in the UK.

Brazil, the UK and India all had high levels of washing machine use (95%, 94.5%, and 85.7% respectively). For those who didn't regularly use a washing machine there was a fairly even split between using a launderette, doing it manually, or using a friend's washing machine.

Indian participants washed their clothes the most regularly, 24.1% stated they washed clothes everyday compared with 5% in Brazil and 7.1% in the UK. Washing clothes once or twice per week was the most common practice in all regions studied.

Average washing temperatures had interesting results. 88.1% of Brazilian participants stated that they always washed clothes in cold water. This figure was also relatively high in India (55.2%), whilst the UK had a lower response of 10.9%. UK participants were more likely to never wash clothes in cold water with 47.3% of participants suggesting this compared to 20.7% in India and none of the participants in Brazil (Figure 3).

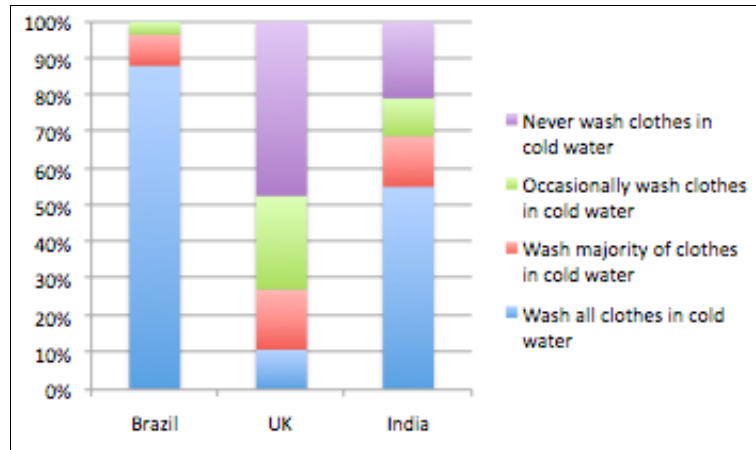


Figure 3: - Washing temperatures

4.3 Energy and Materials

The UK participants had the highest number of electrical appliances. Out of the list provided the majority of participants had most of the appliances with the exception of a lower ownership of tumble dryers, blenders, and dishwashers. The majority of Brazilian participants also had most of the appliances listed, although low ownership was noted of kettles, toasters, tumble dryers, dishwashers, and vacuum cleaners. Unlike the UK most Brazilian participants owned a blender. The Indian participants showed a low ownership of the appliances noted by both the UK and Brazilian participants.

In Brazil and the UK the most common amount spent on electricity was between US\$50 – US\$80 per month (35% and 37.5% respectively), whilst in India the distribution was more evenly spread with 19.2% of participants spending US\$10 – US\$20 per month (Figure 4). Brazil had the most participants who bought ‘green energy’ or bio-fuel with 20% compared to 3.5% in the UK and none in India.

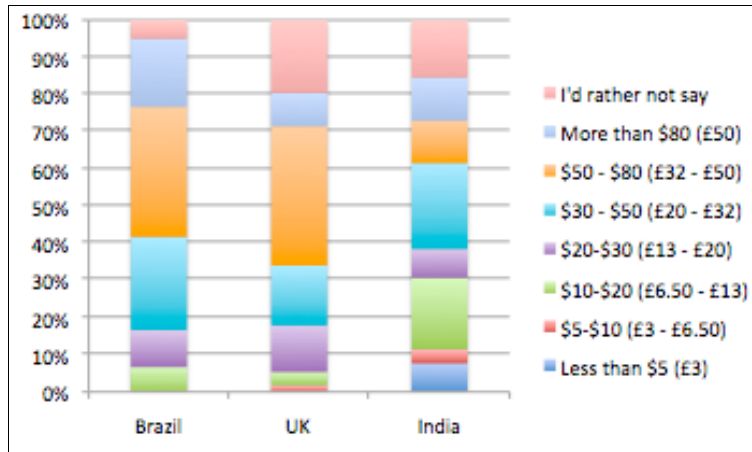


Figure 4: - Income on Energy

In the UK 75.4% of participants got their household energy by gas. India had a more even split between gas (32.1%) and electric (50%), whilst in Brazil the split was between electric (46.7%) and no heating at all (38%).

The UK participants were most likely to own something made by themselves (33.3%). In terms of buying used or pre-owned products, 82.5% of UK participants suggested they try to buy used products where possible, compared to 43.3% of Brazilians and 40.7% of Indians.

4.4 Government Schemes

All regions showed a lack of awareness by participants of any government schemes that could help them reduce their environmental footprint. In Brazil 75% were unaware of any schemes, whilst in the UK it was 63.2%, and India with 64.3%.

Recycling was an interesting issue. The UK had high rates of recycling, with all but one participant in the UK declaring they recycle. In Brazil and India there was a much more mixed response, with 40% of Brazilian participants confessing they don't recycle and 57.1% of Indian participants (Figure 5).

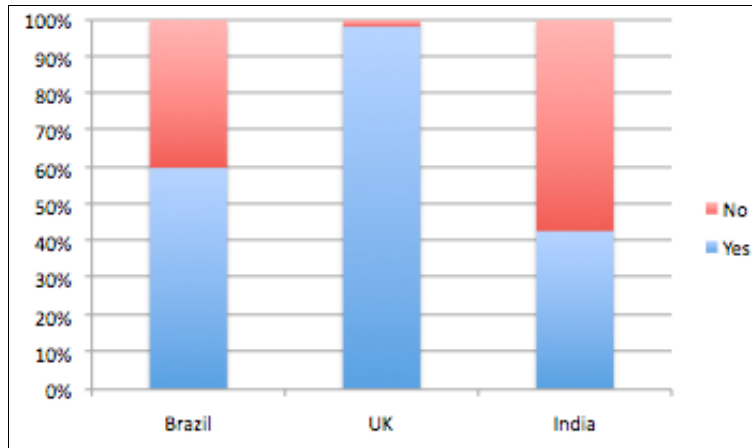


Figure 5: - Recycling rates

5. Discussion

The questionnaire was not designed to draw out statements that could be considered indicative of the behaviours of an entire nation. As well as being an oversimplification of the subject, the sample size was too small and the sampling was not representative for this to be achieved. However the results did illuminate some interesting insights, which support findings from previous research and literature, as well as open new avenues for exploration.

Overall there was a good response rate over a widespread area. The majority of Brazilian participants coming from the South and Southeast regions was generally expected as these regions are by far the most populated in Brazil, accounting for well over half of the total population and containing the major cities of Rio de Janeiro, Sao Paulo, Belo Horizonte, and Porto Alegre. They are generally regarded as the economic powerhouses of Brazil (CIA, 2011). The majority of UK participants coming from the East Midlands is likely due to the proximity of the researcher to this area, but there was also a good spread of participants from other regions of the UK. In India the main split between the North and central-south is influenced by the major cities of Mumbai and Delhi.

Census population data suggests the median age in Brazil is 29.3 years and 26.2 years in India, compared with the older age of 40 years in the UK (CIA, 2010). This helps to explain the younger age of the participants from Brazil and India compared with the older participants in the UK. Similarly in terms of income, the results from the survey generally fit into global economic data. GDP per capita in Brazil is US\$10,800, compared to US\$34,800 in the UK – correlating with survey responses. The income levels with this relatively small sample size will also be affected by other personal factors, for example the generally higher incomes in the UK may be

due to the older nature of the participants, as they will potentially be further along their career paths. Other individual factors may also contribute such as the type of job, although generally there was an even distribution and good range of jobs in the sample. The proportion of students in each sample was also very similar which helped make the results more comparative.

Meat eating figures in Brazil and India were generally as expected. According to 2002 data Brazilians eat on average 82.4kg of meat per person per year compared to just 5.2kg in India (Earthtrends, 2002), whilst India has a very high proportion of vegetarians, which was reflected in the study. High consumption rates in Brazil can generally be attributed to traditional patterns of meat consumption within the cuisine and also because the agricultural sector is a major contributor to the Brazilian economy, with cattle farming accounting for a large proportion of this (CIA, 2011; Marcelo & Fernando, 2005). In India low consumption of meat and a high rate of vegetarians is due to religious beliefs deeply embedded within the traditions of the country, although meat consumption can generally be linked to GDP and is expected to rise as GDP rises (Speedy, 2003). The surprising figure was from UK participants. Data suggests that the UK population also eat a large amount of meat, close to that of Brazil, with the average person consuming 79.6kg of meat per year (Earthtrends, 2002), yet data from the survey suggested the sample were more conservative with their meat consumption only eating meat a few times per week. The reasons for this are varied; general perception within the UK that too much meat, particularly processed and red meat, is unhealthy and thus a change in behaviour since the last per capita measurements were taken in 2002 (Hughes, 2011). It could also be due to participants trying to answer the question in a way that reflects well on them (Robson, 2011), or the fact that the question did not specify which meals to measure or a potential confusion over whether fish counts as meat. Further closer investigation will help to clarify results.

India had the highest levels of adoption of the reservoir bathing technique, and subsequently the lowest levels of a fully plumbed in shower. Matsuhashi (2009) and Karakat (2010) suggest that this is by far the most resource efficient bathing technique, using just 20 litres of water compared to 100 litres in the shower and nearly 200 litres in the bath. Interestingly Brazilian participants also used this technique, but in much fewer numbers. Perhaps as part of 'development' one of the first changes is a fully functioning shower. It will be important however to understand in further research why the reservoir technique is adopted; is it due to the climate of the region – not needing a shower for comfort; or is it based on water wastage views; or deeply embedded within the culture.

Gas was the most common water heating fuel in the UK compared with electric in Brazil, which was as expected given the dominance of both energy sources in their respective countries. The high use of geysers in India poses an interesting insight as geysers are designed to only heat a certain amount of water. As with all energy orientated devices it is impossible to calculate the exact efficiency of this, as measurements will depend on the specific model being tested, the environment it is situated in, and the patterns of use of the consumer. However, the behaviour of us-

ing a geyser is very different to that of a boiler or electric heater which have instant, on demand hot water. With a geyser there is a time delay between switching the geyser on and receiving hot water, whilst there is also the knowledge that the hot water is limited. This is also true of standard hot water tanks seen in other regions, although these tend to be a lot larger than a geyser, which are often used for just one appliance e.g. the shower. It may therefore be possible to observe various interesting water saving behaviours in houses that have geysers.

Brazilian participants conformed to countrywide data from Greendex (2010), suggesting Brazilians are unlikely to wash clothes in warm water whilst the UK participants were unlikely to wash clothes in cold water. This follows previous research that suggests Brazilian people have very different perceptions of the design of a washing machine (Shimp, 2010), and the link between cleanliness and hot water is clearly a major difference.

As expected there was a lower ownership of tumble dryers and dishwashers across the samples, predominantly because these were the most expensive items on the list. Other factors could also influence this low ownership, such as climate in some regions reducing the need for a tumble dryer. Interestingly, some appliances, which would not have a significant cost to the household, have a very different uptake. Products such as toasters and kettles, owned by nearly all the British participants, had a much lower uptake by Brazilian and Indian participants, suggesting that they either have a different way of boiling water or making toast, or they have different customs and routines that do not require the services of those appliances. Paradoxically, the blender was an item most Brazilian participants owned which was less common in British responses.

In terms of cost, Brazilians pay the highest cost for their electricity as a proportion of their income – spending much the same as UK participants despite their relatively lower incomes. This is interesting considering a significant proportion of participants have no heating costs at all. One area where the extra cost on energy may be going, that was not asked in the survey was on air conditioning. The participants who don't spend any money on heating may spend on cooling instead, and in hindsight this should have been more thoroughly investigated in the study.

The lack of knowledge of governmental schemes to aid in reducing the household environmental footprint from all the participants was a surprising outcome. This shows that there is either a lack of schemes to help people cut their footprint or a lack of advertising and knowledge of any schemes by the individual households. This is particularly strange in the UK given the high rates of recycling, and may show how recycling has become a habitual behaviour that is not cognitively thought of in households anymore. Recycling by the other samples was low, which again, was a surprise given that nearly all participants viewed themselves as 'pro-environmental' and consumers normally associate recycling and sustainability. Perhaps the lack of recycling schemes in those areas reduced this response rate, which would suggest why many Indian participants didn't feel like they could do much in their current situation.

6. Conclusions

The questionnaire gives a good general overview of resource related behaviours in the home which have helped to validate existing research and open new avenues of enquiry for future research. The questionnaire has proven particularly useful in identifying differences in resource intensive behaviours, however due to the nature of the study the reasons behind people's behaviours were not identified. Understanding the motivations behind people's behaviours is key to developing products to reduce resource intensive behaviours. This research provides a solid base for further qualitative investigative inquiry.

The findings tell us that UK consumers are more aware of their meat consumption than quantitative per capita data tells us, whilst Brazilian consumers generally follow the quantitative data (Earthrends, 2002) by responding that they eat meat the most regularly. The UK participants have either tried to cut down on their meat consumption, or portray the appearance of reduced meat consumption. As discussed this could be due to campaigns in the media, whilst the Brazilian attitude may be caused by a relatively recent increase in GDP which may have resulted in a higher demand for meat. In both cases meat consumption is deeply embedded within the culture. From a design perspective qualitative data will help us to understand the effectiveness of any media campaigns in reducing meat consumption and generate insights for possible designs for new tools or systems in the kitchen environment to help reduce resource impacts.

We can also conclude that Indian participants have a less resource intensive bathing behaviour. Research by Matsushashi (2009), Karakat (2010), and Kuijer (2009) has already looked at the bathing routine and tried to implement a more energy efficient bathing behaviour based on cultural insights. The results from this testing will be extremely valuable to the subject area, as will investigating in more depth the motivations behind the reservoir bathing technique to see if it is possible to design and implement a product based around this low resource impact behaviour in countries where a higher impact behaviour (such as taking a bath) is common.

Results also clarify the difference in behaviours, and subsequently attitudes, to washing clothes. As expected the Brazilian participants didn't wash clothes in warm water, conforming to the hypothesis drawn out by previous research that Brazilian consumers don't make a link between hot water and hygiene or cleanliness (Greendex, 2010). Investigating further why they do not have this link will help to create products for regions, such as the UK, where it is common to wash clothes in hot water. In a similar respect the use of geysers in India require more of a cognitive thought than simply turning the tap on, and it may be possible to observe lower hot water use in households that use a geyser, and thus implement some of the findings into new designs for water heating in high impact cultures.

Finally, the observed lack of knowledge and awareness of all participants regarding government schemes to help reduce a household's environmental impact despite recycling being high in the UK, is of interest. Wilhite (1999) has suggested 'cultural

energy services' such as bathing, lighting and space heating, are embedded into the culture and informs us that the most effective way to increase resource efficiency is to implement efficient technologies that keep the same cultural identity. However the recent research and investigation into behaviours suggests that resource intensive habits can be changed by successful implementation of different designs.

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The role of ICT and social media in the process of transition to responsible and sustainable living

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Currently new digital IT and social media have a tremendous impact on our own life and the world around us. It is a powerful tool of persuasion, provoking action and influencing public opinion. The main challenges are to explore how IT and social media affect the responsibilities of consumers and citizens as individuals and community members and how we can become responsible consumer citizens and benefit the society. The study addresses globalized social media as a platform and a tool for the engagement of people. It focuses on modern digital social media applications such as Facebook, Twitter, and MySpace that can empower the public to choose responsible and sustainable lifestyles. The paper examines two kinds of civic participation: 1. participation inspired by individuals; 2. participation instigated by institutions (e.g., governments, corporations, NGO, etc.). It raises the critical issue whether the participation in the “virtual world” via blogging, online petitions and texting micropayment charity can lead to greater consumers and citizens participation in the actual world and make people more socially responsible. Participation of citizens and its impact on politics is illustrated in the context of Latvia in the light of the referendum on the proposal to give a status to Russian as the second official language. Although the draft law “Amendments to the Constitution of the Republic of Latvia” has not been adopted, it is shown that the outcomes of the referendum may influence the government policy and ultimately may affect a positive change.

Keywords: social media, citizens participation, impact, sustainable living

1. Introduction

Media play a prominent and decisive role in current affairs as the most powerful tools of communication. The media outlets of the 21st century are diversified. They include television, radio, films and videos, print media, photography, electronic and digital media. This spread of media in a globalized world has rendered nearly everyone, everywhere, accessible to one another and to the media. People are spending

more time accessing, consuming and producing media content. Companies and parties are using it more effectively. Media have expanded into a vast network of online newspapers, articles and blogs. These factors have increased the power of the media in forging people's opinions and defining courses of actions.

The rapid growths of social media and new digital technologies have revolutionized the way citizens connect, interact and share ideas. Social media have become one of the most effective ways to reach out for people and a natural way of communication. For example, modern digital media applications such as Facebook, MySpace and Twitter are beginning to demonstrate their potential as powerful communication and collaboration tool in social political and educational arenas. These platforms have become increasingly popular means to affect a change in various spheres of life.

The main objectives of the present study are to:

- explore social media in the context of sustainable living
- analyze merits and drawbacks of digital communities and networks
- examine civic participation from a political perspective and illustrate its impact on sustainable/responsible living

2. The differences between digital and traditional media

The differences between traditional broadcast (or “old media”) such as TV, radio, print and digital (or “new media”) have been discussed by many scholars and on a number of web pages of media industry. Within a traditional approach, digital or new media can be seen as interactive, hypertextual, dispersed and virtual (Lister et al. 2009). In the framework of a *novel approach*, new media are viewed as numerical, modular, automated, variable and transcended (Manovich 2001). Digital media can be treated as *innovative* as compared to the media of the past. Its main features include technical processes, cultural form and immersive experience (Miller 2011: 14). It is vital to note that digital media are in the process of transformation since it is constantly being updated, modified, compressed, linked and data based. For example, web pages are acquiring new links, social networking profiles are being updated, “wikis” are getting new entries or revising old ones, etc. Thus, one of the key features of digital media is *constant change*. We share the view that it can be characterized as a *process* compared to traditional media objects (e.g. a film or a book) that have an “object-like” feature (Miller 2011: 14).

It is worth noting that the move to media as a *process* is connected with a new conception of the user. Communication processes are no longer one-directional. This implies the change of the role of the user from a static role of viewer to the role of an active, mobile user or participant. The user has the potential to have some impact on the presentation of the media, or feedback upon it. In other words, the user and the digital media are in an *interactive* mode. In this context, the notion of *in-*

teractivity can be defined as “a measure of media’s potential ability to let the user exert an impact on the context and/or form of the mediated communication” (Jensen 1998: 461 cited in Kiouisis 2002: 368).

In digital age, the Internet has become an integral part of daily life for many people and a new site of all types of social groupings or communities. Now we will make an attempt to consider the idea of digital / virtual communities and analyze the concept of network as a more accurate depiction of relationship with modern society.

3. Virtual communities: benefits and drawbacks

There are a great number of ways in which group relationships are realized online (e.g., chat rooms, forums, bulletin board systems, networking facilities, blogging, etc.). As suggested by Armstrong and Hegel (2000), virtual or online communities fall into four main types:

- Community of transactions facilitating the exchange or buying and selling of goods and information
- Communities of interest bringing together people wishing to interact on specific topic of interest
- Communities of fantasy allowing participants to create new environments, identities or imagined worlds
- Communities of relationship based on personal experience creating networks of support.

There are various views on virtual communities. For example, some scholars argue that online communities are individually and socially beneficial. Other think that they may be destructive for the real world. First, let us analyze virtual communities in terms of benefits.

Virtual communities help to compensate for the lack of community in the real world.

Online communities increase the choice in one’s social relationship. Anyone can get in touch with anyone in spite of the real world situation.

There is a *freedom of engagement* within online communities. For example, their members can choose when and how to engage with other community members. One can perform the role of a frequent poster, a moderator and contribute a lot of time and resources to community or one could be a casual member or rare poster.

Online communities overcome the problem of space and distance as well as the problem of mobility. Membership in a community is not interrupted by the physical movement of people. They can move but still be in touch with each other. This view has been supported in the work of Day (2006).

Online communities do not have material limits. There is limitless number of online communities with a great number of users (Day 2006). However, virtual communities may have some weaknesses as well.

The interests of community members may be destructive or even pathological from the standpoint of society. For instance, there are a lot of suicide forums in the Internet. Such forums share thoughts and exchange advice on effective and pain-free means of committing suicide. They may have a harmful impact on behaviour of people, in particular teenagers. In this context, offline communities try to help the individuals and modify their behaviour to the community norms.

Another disadvantage of online communities is that with respect to ICT access and use there are differences within European societies as well as developing countries. The notion of *digital divide* can be applied for different parts of Europe and across the world. Elderly people who are less educated or especially who live in rural area may be cut off from the so-called information society. Furthermore, European societies differ with respect to *diffusion paths*. These are the ways in which new technologies enter real life (i.e., whether they may be implemented via institutions, or whether they can occur as a result of private initiatives). But in spite of this, we assume that on the whole merits of online communities outweigh their drawbacks.

4. Social media

4.1 Social media: key features

We are currently witnessing the move from groups or communities to a new media trend, in particular social media. The term can be defined as a “a broad category or genre of communications media which occasion or enable social interaction among groups of people, whether they are known to each other or strangers localized in the same place or geographically dispersed” (Chandlers and Munday 2012). There is a shift to specifically technology - enhanced social networks as a form of social organization and microblogging. One can maintain links via social networking profiles where people may get in touch face-to-face. (e.g., posting messages on Facebook or using Twitter to pass on news, etc.). Microblogging as a blend between social networking, text and instant messaging allows peoples to keep in touch through short messages. For example, a popular microblogging service, Twitter, has 140 character limitations.

It is important to note that social media focus on enabling and publishing a conversation *with multiple* parties where the community has a stake in dialogue.

Social media can be characterized by a *user-generated content (UGC)* or *consumer generated media*. It is obvious that the term *USG* is self-explanatory. Thus it

can be defined as content created by users themselves as opposed to corporate media.

The category of *UGC* comprises various forms of online genres, such as discussion groups, social network sites, blogs and wikis. Since the launch of the video sharing site YouTube in 2005 and the high popularity of the social networking site Facebook from 2006 onwards we have witnessed a shift from “passive” to active and interactive media consumption. The users are no longer viewed as receivers of information but also producers of information. In other words, they produce their own news while consuming other people’s opinions. So, the hybrid concept of a “*prosumer*” and a “*prouser*” has been introduced so as to describe a new tendency of media production. The social web technologies allow users to create and edit web pages easily using any Web browser.

UGC includes a range from highly professional institutional actors such as global news providers (e.g., BBC, CNN, Al-Jazeera), the websites of newspapers and national broadcasters to non-professional institutional actors such as government agencies, non-government organizations (NGOs), political parties and non-professional individual actors (e.g., private bloggers). It should be noted that their analysis is not included in the objectives of our study.

There is a variety of views on *UGC*. Enthusiasts of *UGC* note that contributions of ordinary people represent a *democratization* of the public sphere.

UGC represents a low-expense editorial source that can provide an opportunity to generate free content.

There is an instant access to breaking news (e.g., Twitter postings made by individuals situated near an event). However, critics condemn *UGC* revealed in Facebook, Twitter, and Wikipedia as a trendy hype. There is a lot of critique of *UGC*.

First, *UGC* is often criticized for being falsified and non-authentic. Second, *UGC* tends to be subjective compared to the journalistic standards of balance and objectivity. Third, *UGC* might challenge editorial standards from the perspective of trustworthiness. For example, some news stories may be based on false information from users. However, according to Bruns (2005), the collaborative news production is based on collective intelligence. This means that active users correct all the mistakes.

It is important to note that social media provide access to infinite amounts of information and possibility for building relations with consumers and citizens in *new ways*. This enables to listen to people’s views, to build networks and relations with citizens and consumers, to answer when contacted, etc. Social media may be seen not as a short-term campaign but as a *continuous dialogue* with people. It may involve active listening, reaction and responding, content management as well as a constructive communication.

Modern digital media applications and platforms (e.g., Facebook, MySpace, Twitter, Draugiem.lv (friends), and Wikipedia) serve as *tools* that can empower consumers and citizens and make them more *socially responsible* and *engaged*.

Now let us make an attempt to analyze main users of social media in Latvia as compared to the situation all over the world from the perspective of statistics (Latvijas Interneta Asociācija 2011) (see *Table 1*).

Table 1: Social media users

<i>Facebook</i> – more than 680 m users across the world / approximately 327,940 users in Latvia (15.9% from the total number of population in Latvia)
<i>Draugiem.lv</i> – 1,208,200 registered users / 770,000 users per month (58.4% from the total number of population in Latvia)
<i>Twitter</i> – more than 200 m users all over the world / 65,000 users in Latvia (3.1% from total number of population)
<i>Wikipedia</i> – 3,6 m postings in English / 34,000 in Latvian

As can be seen in *Table 1*, in the context of Latvia, the user number of *Draugiem.lv* (i.e., a Latvian version of social media site) prevails as compared with the use of *Facebook* and *Twitter*. But on the whole, in Latvia social media are in *infancy*.

4.2 Social media in relation to democracy

It is generally acknowledged that social media provide for more democracy.

First, social media are popular platforms for collaboration and quick information sharing. Modern digital applications enable citizens to express their opinions. According to Trappel and Maniglio (2009), social media give voice to citizens and act as a creator of public opinions which should guide decision-makers and power holders to their actions. Second, they provide consumers and citizens with *additional sources of information*.

It can be seen as a prerequisite of critical public debate that can lead to opinion building and common will formation. This function is closely connected to the *freedom* rights, specifically the right to expression and the right to get informed. Thus, social media act as trustee for these fundamental civic rights.

Third, it is generally acknowledged that social media applications and platforms are significant for *mobilizing* people for any kind of cause. In our view, we can speak about *political mobilization*. Presumably protest movements, pickets may be the result of using the most basic application: Twitter.

With regard to the role of citizens in democracy, Nieminen and Trappel state: “Citizens are the prime actors in democracy, both as citizens in their relations to the state, and as consumers in their relations to the economy. In their everyday life citizens are organized in different formations of civil society, in the form of networks, associations, cultural and social groups, etc.” (Nieminen and Trappel 2011: 145).

It is important to mention that ICT and social media enable to support accountability, social movement building and democracy that are developing today. Facebook, Twitter, Draugiem, Wikipedia denote a new site for citizenship. This means

that citizens should have access to the resources and possess competences to allow them to participate in such spaces. As Facer (2011) suggests, such applications offer new resources to enable citizens to effect a change. As mentioned above, they offer resources for opinion shaping, sharing ideas as well as accountability and representations that might help people and their communities to advocate for themselves. The ways in which ICT are used to empower, to control or engage has the potential to structure the quality of public space and to shape citizens' expectations about how democratic practice and civic engagement should play in the socio-technical spaces of the 21st century.

5. Civic participation in digital age: political dimension

As mentioned above, the rapid growth of digital and mobile media technologies have enabled new forms of civic participation, activism and voice. The question posed is whether ICT and social media can increase participation of consumers and citizens or not. We will make an attempt to assess whether participation in the virtual world (via blogging, online petitions, viral messaging, and texting micropayment charity) leads to greater citizens' participation in the actual world and makes consumers and citizens more responsible and engaged. There are a lot of empirical studies. Wellman et al. (2001) found that online interaction supplement face-to-face contact in real life. In general, socially active people online tend to be socially active in real life. They are more involved in voluntarism and politics. Similarly, according to Katz and Rice (2002), online participation has no impact on community participation. There is a relationship between high Internet use and high participation in offline social life. Community oriented or sociable people are sociable online as well as offline. The Internet is a tool with which to be sociable (Wellman et al. 2001; Katz and Rice 2002). In our view, the borderline between online and offline participation is blurred. They are closely interlinked and may be seen as different aspects of civic participation.

Moreover, some aspects of online interactions might fit in with aspects of offline life. For example, as it was mentioned above, some demonstrations and pickets occurring in real life across the world are the results of organizer's efforts online. This can be seen as a political dimension of social media. Let us analyze it.

Twitter as a new public space is beginning to play a role in selection of a president, the support of an opposition regime, development of local civic society, etc. It is a new form of democratic engagement that is currently developing. Some scholars express a skeptical view regarding effects of social networks on changes in real life. For example, Facer (2011: 89) states that "whether such a space can come to involve more than a small percentage of the population, and whether the screams of anger and shouts of optimism that are expressed here will effect change in the physical world in which harm, injustice and violence is done to people and ecosystems,

however, remains uncertain". In our view, participation in social networks has a significant impact on real life.

From the public sphere perspective, the constant growth of group and interpersonal communication may reinforce the capabilities of lobbies and other activist groups to inform themselves and intervene in the discussion of public affairs. These social networking tools have increased the opportunities for the international exchange of information. So, more media intervene in the construction of public sphere.

It is important to note that civil society organizations should participate in governance agreements. In this respect, the author states that "in order to participate in such intensive decision-making process, an organization needs remarkable resources to make its interests not only heard and represented, but also-and more importantly - implemented" (Meier 2011:162). We suppose that implementation of interests may be treated as a *challenge* for civil society. In reality citizens are offered freedom of speech within consultation forums by the governance regime. Meier (ibid.) stresses that consultation structures can be seen mainly as a protest channel without the opportunity to expose and criticize the media power for unsatisfactory provision of public goods (ibid.).

The involvement of civil society in policy decision is a central issue in participatory media governance. It should be emphasized that the aim is not only to consult civil society groups but also to involve them in the *decision-making process*. This can be achieved through some sort of decision rights provided to the participants.

Participatory media governance should contain elements of democracy that will enable civil society groups to co-determine particular policy results. This will allow a more transparent political process. On the role of participatory media governance the author writes that

"Participatory media governance can enhance the legitimacy of the political process, the accountability of media companies and finally provide a better interaction between citizens, civil society, economic interest and the state with benefits for the whole democratic process" (Meier 2011:163).

Now let us make an attempt to illustrate participation and impact of citizens on politics in the context of Latvia in the light of referendum on the Draft Law "Amendments to the Constitution of the Republic of Latvia" concerning the proposal to give official status to Russian as a second state language (18 February 2012).

Since 1991 (establishment of independence in Latvia), 400,000 of Russian speaking inhabitants (i.e., ethnic Russians and other ethnic minorities) have been deprived of citizenship. This means that they cannot vote in elections, hold public office, work in government institutions, etc. Also, there are limitations in the use of the native language in educational settings (e.g. kindergartens, schools, universities, etc.). The *trigger mechanism* of the referendum was the will of the government to introduce total learning/teaching in Latvian in education (e.g., kindergartens and schools of ethnic minorities).

According to the Central Electoral commission results (Centrālā vēlēšanas komisija 2012), out of 1,098,92 (94 %) citizens who had the right to vote and were registered in voters' list of polling stations, 821,722 (74.80 %) of voters cast their votes *against* Russian as the 2nd official language whereas 273,347 (24.88%) of voters were *for* the proposal to give official status to Russian. 3,524 (0.32%) ballots were recognized as invalid. However, in the eastern region of Latgale the majority of voters approved changes in Latvian constitution to make Russian the 2nd official language. It can be explained by the fact that Latgale is one of the poorest regions in Latvia and it has a high percentage of ethnic Russians and other ethnic minorities.

It is important to note that although the Russians admitted that they had no chance of winning the plebiscite of making Russian the 2nd official language they hope that the approximate 25 per cent of support will make Latvian center-right government start a dialogue with national ethnic minorities. We assume that it can be seen as a small step *to affect a positive change*. A *step-by-step strategy* may be particularly efficient.

6. Conclusions

As a result of this study we have drawn the following conclusions:

- In a digital age, ICT and social media have become increasingly important in everyday life activity and have enabled new forms of civic participation, activism and voice.
- Participation of individuals in web - based social networks enables people to become informed citizens.
- ICT and social media help people around the world to think critically and behave responsibly. In our view, consumers and citizens should be *proactive* – not only react to changes but also cause changes. Participation of people has an impact on policy and ultimately may affect a positive change in the country.
- The world has entered a period of transition and there will be many opportunities to encourage and channel a positive change.

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III. EXAMPLES & PRACTICAL APPROACHES FOR RESPONSIBLE LIVING

The European Union LIFE Program: 20 years contribution to sustainable consumption

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Since 1992, the LIFE programme has been the EU's main financial instrument for the environment, supporting pilot actions that contribute to a more sustainable development approach, from an environment and governance perspective (innovative technologies and methodologies), as well as from the perspective of nature conservation and the protection of biodiversity. Awareness raising, education and training are often included in LIFE projects, either as part of a wider action, or as the core activity of the project. Since 2007, targeted awareness raising campaigns, aimed at accelerating the transition to more environmentally-friendly behaviours and more sustainable consumption patterns, are supported by the programme's "Information and Communication" component. Sustainable consumption has been addressed by LIFE projects through all sectors of economic and human activities. Education and capacity-building projects develop around a range of entry points: targeting children and schools, building capacity through action on a specific theme, developing incentives for "greener" procurement, and organising large awareness-raising campaigns. The LIFE programme, through its communication tools, seeks to share the results of these projects and facilitate the transfer of experience on a wider scale.

Keywords: european environment policy, LIFE programme, best practices, empowerment, knowledge sharing

1. Background: The European Union (EU) and Sustainable Development

1.1 Public concern about environmental issues

By the late 1980s, public awareness about environmental threats and the need for higher levels of environmental protection had grown rapidly. Issues such as global

warming and large scale disasters (i.e. the Chernobyl accident) highlighted the potentially dangerous impacts of human activities on the environment and helped to promote a greater understanding of the interdependence of the economy, society and the environment.

In 1986, environmental protection was introduced as an EU objective in the European Treaties. Since then, in addition to adopting framework legislation, the EU has established a number of non-regulatory instruments (voluntary agreements, environmental monitoring, economic instruments, etc) and a financial instrument for the environment, LIFE, which was launched in 1992 and has since been strengthened considerably during three consecutive programming periods due to its success and its relevance.

1.2 Sustainable consumption at EU level

The EU's Sustainable Development Strategy (SDS) set out the approach to sustainable development, including the requirement for all European Commission Directorate General to integrate sustainable development approach within their policy, programmes and actions.

The revised SDS underlines that “changes in sustainable consumption and production show a rather mixed picture, with some progress being achieved in terms of decoupling environmental degradation and the use of natural resources from economic growth. Consumption patterns, mainly regarding energy consumption, however, show clear unfavourable developments, whereas production patterns show positive signs.” (COM/2009/0400 final)

The Directorate General for the Environment aims to contribute to the protection, preservation and improvement of the environment for present and future generations. It covers a wide range of topics and domains, most of which are related to consumption, either upstream, in terms of raw materials and resources (water, air, ecosystems and biodiversity, soil and land use) or downstream in terms of the possibly harmful impacts of human activities (climate change, waste, noise and pollution). It also covers sustainable development, focusing on resource efficiency, sustainable consumption and production, and the sustainable use of natural resources.

The Sustainable Consumption and Production Action Plan (COM/2008/0397 final) complements the range of existing policies that foster resource efficient and eco-friendly products, raise consumer awareness and provide measures where gaps exist.

2. The LIFE programme - main characteristics

The LIFE programme is a financial instrument, dedicated exclusively to the implementation of EU environmental policy and to supporting demonstrative and innovative pilot projects. The aim is to guide the way towards a more sustainable production of goods and services, including the protection of nature and biodiversity, the cautious and efficient use of limited resources, the development of alternative materials and substances, and the promotion of more environmentally friendly behaviour.

LIFE supports projects which are selected on the basis of an annual call for proposals. Similar to most EU programmes, the financial mechanism consist of co-funding, with (in most cas) a maximum EU contribution of 50 %.

2.1 Complementarity

During the period 2007-2013, the LIFE+ programme has a budget of €1.7 billion to support projects.

As the EU's Commissioner for the Environment Janez Potočnik underlined during the May 2011 conference, "How significant is LIFE's contribution to protecting the environment", "the largest and therefore the most influential EU funds are outside of LIFE's remit" (LIFEnews N°6) . As a consequence, LIFE offers opportunities for actions and solutions that are complementary to others already undertaken by the European Commission. For example, LIFE Environment projects that deal with products and production processes generally focus on piloting and demonstration. They are complementary to projects developed under the 7th Research and Development Framework Programme (FP7), which focus on pure and applied research, and with the Competitiveness and Innovation Programme's (CIP) Eco-innovation strand, which helps new products and services to access markets.

2.2 Diversity

Diversity is one of the main characteristics of the LIFE programme, as it covers all EU Members States, addresses all environmental issues, and is open to any kind of public or private body registered in the EU.

LIFE projects target a wide range of stakeholders: public authorities (mainly local and regional), private organisations (companies & NGOs), professionals in their sector of activity (production or services) and citizens.

Since 1992, around 3500 projects have been co-funded and more than 1000 different beneficiaries have benefited as lead partners, with several thousands more organisations also involved as project partners.

2.3 Awareness raising and dissemination

Since its very beginning, awareness raising and knowledge transfer have been key aspects of the LIFE programme.

At the project level, awareness and dissemination are present at each step: from the selection phase, where transferability in other contexts and situations is (in most cases) the EU added value criteria; during the implementation, where the development of a proper website and awareness raising and communication activities are mandatory; to reporting at the end of the project, where a non-technical report (so-called “laymans report”) and an “After LIFE” communication plan are required.

At EU level, the Commission has progressively improved its dissemination tools to capitalise better on LIFE projects results. A complete set of information products are available on the EU LIFE Website (<http://ec.europa.eu/life>). This includes a project database, which contains information on all LIFE projects, with the contact details of the lead partner, a project summary and complementary documents in the so-called “read more” section. A series of thematic publications, analysing LIFE projects achievements, are available by topic or by sector.

3. LIFE for responsible living - Structure and method

Responsible living, as well as Sustainable development, are intangible concepts not easy to handle due to their complex nature. LIFE helps to translate them into everyday actions by focusing on specific issues as examples will show.

3.1 A three-dimension structure

Due to the large scope of topics covered, the LIFE+ regulation (Regulation (EC) No 614/2007) organizes the programme implementation through three components: Nature and Biodiversity, Environment Policy and Governance and Information and Communication. A minimum 50% of the budget will be devoted to the Nature projects, Environment will receive around 40% and Information 10%.

1. LIFE Nature and Biodiversity was designed as a tool to protect endangered wild species and their habitats, and to support the development of a network

of protected areas, Natura 2000, to ensure interconnections and to allow free movement of species through corridors where human pressure on the land-use is high. Due to the rich experience gathered over the past 20 years, LIFE+ Nature funding focuses on best practice or demonstration projects. In addition, it co-finances innovative or demonstration projects that contribute to halting the loss of biodiversity in areas outside the Natura 2000 network, including cities.

All LIFE Nature projects have carried out awareness raising activities, and many have developed training sessions and educational material. Addressing nature is usually a good way to introduce complexity in education schemes and to develop systemic thinking.

2. LIFE Environment Policy and Governance supports innovative or pilot projects that contribute to the implementation of European environmental policy and to the development of innovative policy ideas, technologies, methods and instruments. It also helps monitor pressures on the environment. Demonstration and transferability are mandatory criteria of EU added value for Environment Policy and Governance projects.
3. LIFE Information and Communication. Since 2007, this new component co-finances projects relating to communication and awareness raising campaigns on environmental, nature protection or biodiversity conservation issues. It also facilitates the compilation of experience and knowledge from previous projects. To date, 51 such projects have been financed, most of which are still ongoing.

3.2 Implementation: three types of approaches

While responsible living is addressed by the LIFE programme at large, consumption issues are mainly addressed by Environment and by Information projects.

LIFE Environment projects do not necessarily address specific environmental issues in the same way: three types of approaches have been developed. Although many projects combine several approaches, they usually focus on one of the following levers: technologies, methods and tools, or awareness raising and participation.

3.2.1 Technology oriented projects

Upstream companies and industries improve their production processes in order to minimize the environmental impact of their activities and to strengthen their competitiveness on the "green" markets. They also develop a global approach to product design and better raw material flows management, from the cradle to the grave. Downstream they develop technologies and techniques for pollution control, remediation and decontamination.

Examples of projects dealing with clean technologies include those that focus on eliminating polluting components or substances, treating waste and effluents, reducing waste production and saving water and energy; “greening” production, including the creation of new products or technological processes, often based on Integrated Product Policy (IPP) and Life Cycle Management (LCA), such as green building, eco-design and the use alternative substances.

3.2.2 Methods oriented projects

Other projects focus on the design or application of new methods and tools, such as decision making supports for analysis, modeling, planning, forecasting; monitoring devices, sets of indicators, assessment procedures; information systems, networks and online services; support and information material such as guidelines, manuals and good practices.

They implement concrete actions or bring advice to companies and public authorities in order to assess environmental situations (through surveys, enquiries, inventories); to plan sustainable development strategies and integrate environmental measures and policies; to develop environmental management schemes, quality charters and certifications; to monitor restoration measures.

They also transfer and share know-how, and increase capabilities by designing tailored environmental training, building excellence centres and creating new disciplines.

3.2.3 Awareness raising and participative projects

With the aims of increasing understanding of environmental issues and changing citizen's attitudes and behaviour, some projects focus on social processes, targeting either the general public or the professional sectors.

These projects initiate public awareness campaigns towards local populations, inform and raise awareness in specific sectors about environmental risks and opportunities, they stimulate democratic procedures based on Agenda 21, participation, informal negotiation, consensus building and conflict management, and they promote cooperation between different stakeholders to share experience, build alliances and develop common strategies.

4. LIFE for Sustainable consumption

4.1 From the cradle to the grave

LIFE projects have been developing a wide range of initiatives of different kinds, tackling environmental problems linked to consumption in all economic sectors.

Each step of the production and consumption chain has been tackled, aiming to close the loop where possible. These projects design eco-products and test cleaner technologies, they encourage cautious and efficient resources use and the reduction of greenhouse gases (GHG) emissions, propose incentives to increase demand for greener products, implement environmental management within institutions, and find ways to limit waste at source or develop recycling.

4.2 Resources for change: the role of “consumers”

Taking into account that many human activities consume resources and energy, it is clear that all of us are both citizens and consumers, and therefore we all have a responsibility for our impact, and a role to play in its limitation. In that perspective, LIFE beneficiaries consider the consumer as a decision-maker and address consumption issues in terms of responsible living and environmentally friendly behaviour. They implement actions that contribute to limiting the prejudicial impacts of human activities on the environment.

However, 20 years is quite a short time for behavioural changes to be mainstreamed and a lot is still to be done. Changing mindsets is not an easy task and promoting environmentally friendly behaviour needs specific capabilities, especially when it comes to complex issues: awareness and understanding, commitment and willingness to contribute, capacity to act in an appropriate way, collaborative and communication skills to work in a multidisciplinary way, and confidence in the impact of (individual or collective) action. It also consumes high-value resources: human energy, time and money.

5. LIFE and education: capacity building for responsible living

LIFE addresses education, not only focusing on children, but in a dynamic lifelong learning approach. Therefore it covers teaching, learning, capacity building, and contributes to empowerment by developing the capacity to think and to act.

Whatever - and because of - the complexity of environment and sustainability issues, educational and training material need to be serious and scientific, while also being easy to understand and attractive, as much as possible.

During the last 20 years, around 300 LIFE projects developed public awareness campaigns, 100 dealt with environmental education, and another 120 included environmental training within their activities. Top list of themes addressed by these projects are the following: biodiversity protection, mobility, waste, resources efficiency and climate change.

LIFE education and capacity-building projects develop around a range of entry points, which will be illustrated below through diverse projects examples: targeting children and schools; building capacity and changing behaviour through action on a specific theme; working on the demand side, developing incentives for “greener” procurement; and adopting the “sower” strategy within large awareness-raising campaigns.

5.1 Targeting children and schools

Raising awareness on complex issues is difficult but an absolute necessity to avoid a situation whereby today’s children become tomorrow’s polluters. It is, therefore, important to try and help them early to understand how their behaviour could have potentially devastating effects on the environment.

Several LIFE projects target schools and children, either as key target groups or within a wider campaign. They have developed teaching packages that can easily be integrated into teaching plans, pedagogical material, and training for trainers.

5.1.1 Ecolearn – outdoor rural-based environmental education linking environment, food and sustainable development (LIFE02 ENV/FIN/000322)

With evidence that fewer children have adequate knowledge about food production, the Ecolearn project aimed to develop pupils’ skills to identify the origins of food and their ability to make conscious food choices. Therefore, it developed an agri-environmental educational model, focusing on the links between the environment, the food chain and sustainable development.

Assuming that personal experience, emotions and social interactions have a key role to play in learning and that environmental education is most successful when it combines knowledge, attitudes, action and experience, Agropolis Oy (a development company operating in the agricultural and food sectors) organised camp schools in farm environments, where children could learn about the food chain through personal experience.

In Finland, schools are obliged to integrate environmental education into their teaching programmes. The pedagogical models have been developed along the “learning by doing” method, in close collaboration with agriculture and education experts. These models consist of pre- and post- exercises to be done at school, and an operative part, taking place on the farm. Training courses were arranged for farmers and rural advisors volunteering to host camp schools. By the end of the project, 50 farms had been certified and were involved in the network.

Additionally, a “Handbook of Rural-Based Environmental Education” has been designed for teachers, parents and entrepreneurs who are willing to organise a camp school. It has been largely distributed in Finnish schools and is available online from the web portal.

5.1.2 Eco-Animation: a cartoon to raise children’s awareness on sustainable use of natural resources (LIFE07 INF/UK/000950)

The Eco-Animation project targeted European kids between 5-8 years old and aimed to help them understand three key topics: water, energy and climate change, and healthy living.

The goal was to use imagination, comedy, adventure and magic to translate the environmental messages. The cartoon series was chosen as a medium that children could find captivating. As a result, “My Friend Boo” shows them in several episodes how small actions (e.g. using less water, asking where your food comes from, recycling, turning off switches, etc) can improve quality of life and our environment.

Complementary, it aimed to find out what messages worked best with different age groups and to indirectly reach their teachers and families, in order to increase their awareness. The three topics were addressed in a specific series, each of which has been produced with support from different EU funds.

The project developed a successful methodology, combining the skills of the partners (communication agency, environmental NGO, children's museum) to produce the cartoon series and accompanying teaching packs (all available online). The series is based on the research and support of independent international experts and feedback from focus groups of over 1500 children in six European countries.

The cartoon series can easily be transferred to other countries and even other cultures as the messages are relatively simple and are global. By the end of the project, broadcasting deals had been secured in 19 countries and 17 languages, reaching a potential audience of 25 million households.

5.2 Building capacity and changing behaviour through action

Numerous LIFE projects have addressed consumption issues through raising awareness and organising training for consumers, schools or sector professionals on a specific theme. They often work along the “learning by doing” approach, assuming that people remember better as a result of experience.

5.2.1 A waste prevention kit for enterprises, education and households (WastePrevKit - LIFE05 ENV/FIN/000539)

The LIFE WastePrevKit project saw Helsinki Region Environmental Services Authority (HSY) disseminate best practice models on waste prevention to schools, households, public administrations and enterprises with the overall aim of reducing waste in Helsinki urban area.

As the project manager Riitta-Liisa Hahtala underlines: “Waste prevention is a problematic subject. It is one thing to inform citizens how to separate and recycle their waste, it is another thing to tell people that they should change their consumer habits (i.e. avoid packaging, waste less food). You enter their private sphere and have to influence their personal choices.” (Camarsa, 2010)

HSY developed a wide range of waste prevention tools, ranging from teaching materials, to guidelines and best practices for households, businesses and public administrations, to the online “Petra” waste benchmarking service.

In addition to standard communications activities, the beneficiary ran two special information campaigns, one on reducing waste over the Christmas period (“give an immaterial gift”), the other on preventing food waste (“less food wasted means more money in your wallet”).

“Smart Teaching Materials” for all school-age groups were created and disseminated to schools and day-care centres via the National Education Board, reaching more than 3000 teachers. Vocational colleges were also targeted. The teaching materials varied from games and stories for nursery and primary schools to maths and physics problems on waste prevention for secondary schools. Feedback and ideas from the teachers and pupils using the materials were taken onboard by HSY and the materials were adapted and updated as a result.

Presently, HSY is developing virtual teaching platforms to share the teaching material and best practices. The schools will be able to adapt them, altering the WastePrevKit tools to match their teaching needs.

An indicator of success is that several schools have adopted the waste issues in everyday teaching and did not apply the methods only passively by giving ad hoc lessons, thus integrating waste prevention as part of their daily way of thinking and teaching.

5.2.2 Saving water and energy at home (RENEW - LIFE07 INF/UK/000932)

In Europe, households consume some 25% of energy and 24% of all water abstracted. In the UK, approximately 30% of an average home's energy bills can be attributed to heating and hot water. This water use contributes to around a quarter of household carbon emissions.

Having discovered that people usually don't fully appreciate the multiple benefits that can be gained through simple water efficiency improvements, the Energy Saving Trust decided to show consumers the link between hot water use and energy, and the impact this has on their energy bills, and to encourage them to adopt water and energy-efficient behaviour. As market research indicated that the financial saving messages would have the biggest impact, the key message became: "Heating water costs you money".

Specific objectives were to test various communication methods in different UK cities in order to assess which approach would be more efficient. Marketing plans were designed in partnership with existing energy efficiency advisory centres and different tools were developed: a 'top tips' list, in order to directly tackle the basic lack of understanding of the links between water and energy; an information brochure that was distributed to customers during events and via direct mail; simple water saving devices such as water efficient shower heads and shower timers that were supplied to people; a water energy check survey that was to be completed by volunteering consumers, who in return would be sent a tailored advice report; in-home tailored visits were organized, involving face-to-face discussions with consumers and focusing on tailored advice.

By the end of the project, more than 25000 people had received water efficiency advice in the pilot areas.

Evaluation showed that the highest behavioural changes were achieved when focusing on measures that are simple, cheap and easy to do (e.g. turning taps off, shorter showers, washing in a bowl). However, it was clear that the way these messages were delivered greatly influenced the awareness and the success of the process. For example, face-to-face in-home initiatives provided a better quality of advice, resulted in increases in water saving acknowledgement and behavioural change.

To increase long-term change, the project recommends to go beyond communicating top-tips when developing messages and advice; to focus on in-depth advice, rather than on quantity of contacts made; to deliver personalised advice, designed to suit your audience; to focus on delivering in-home advice, rather than through phone calls, mail and events; to use a partnership approach and integrate with other on-ground programmes.

5.3 Working on the demand side: developing incentives for “greener” procurement

This approach combines training for producers and suppliers, ensuring the availability of eco-friendly products and developing incentives for consumers to reorient their consumption towards more sustainable products and services.

5.3.1 Increase demand for eco-products and eco-services (PlusPunten - LIFE00 ENV/NL/000809)

This pilot project initiated by the Rotterdam Municipal Authority aimed to demonstrate the effectiveness of an incentive card, designed to reduce the environmental impact of consumption and to change people’s attitudes towards sustainable products. The project specifically targeted customers who usually buy few or no such products. This “passive” customer base is estimated to make up around 55% of the population (van Sambeek, 2004) .

The concept behind the “NU-Spaarpas Card” (initially called “PlusPunten”) was to create an incentive that would increase the demand for, and improve the image of, green goods and services, resulting in an increased supply of sustainable products by SMEs.

People participating were issued with a NU card, on which they could accumulate points for buying sustainable products and for separating their waste. Sustainable products included labelled organic, energy-efficient and fair trade goods, bicycles, green financial products, renewable energy, rental, repairs and second-hand goods. Participants in the scheme could redeem their points on sustainable products, on public transport, or on leisure activities around the city. By far the more successful action was the recycling of waste, with participants earning 200 points for chemical waste and 300 points for other reusable items such as furniture or white goods.

The system worked using smart-card technology: each point of issue was equipped with a terminal with a barcode scanner and each NU card with a barcode and a chip.

In order to increase the number of cardholders, participating shops and businesses, the project team carried out an intensive and continuous marketing effort. However, as only 5% of the market carried an official “sustainable” label, few shops were initially interested in joining the scheme. So the scheme was broadened, and as a result, the number of participating households and businesses increased to meet initial expectations.

The pilot scheme was considered a success, even though it was not self-supporting by the end of the LIFE co-financing. The project overcame many hurdles to show that an innovative reward system can work in practice: it was the first advanced loyalty scheme in the world that focuses on sustainability and as such it has a high demonstration value.

Many lessons were learnt from carrying out the project:

1. The financial feasibility of the system. The technical infrastructure, IT solutions, the communication plans and all technical and commercial adjustments during the trial made it all very costly and in the end it was too costly to bring income and costs into balance.
2. The card should be distributed to all households free of charge. In that way enough people would start using the card and the communication budget could be used to encourage people to use the card.
3. An important condition for commercial successful (or at least a cost neutral initiative) is enough mass appeal. When there is a mass of consumers it is more attractive for businesses to participate, thus creating more opportunities for sustainable production and purchasing.
4. Rewarding only sustainable or labelled products was not enough. The number of eligible products in shops was too small to make the programme work.

5.3.2 Provide food information to safeguard habitats and fish species (FISH SCALE - LIFE09 INF/IT/000076)

The commercial fish market is heavily concentrated on certain fish species. According to the Italian Ministry of Agriculture, Food and Forestry, out of 719 edible fish species only 10% are currently commercialised. This is mainly due to modern food habits. As a consequence, some edible species have a low commercial value due to poor demand. Non-commercial species are hence classified as “by-catch” and usually discarded by industrial fisheries. Up to one fourth of the fish harvested - about 27 million tonnes - is discarded, dead, into the sea every year. This results in a huge waste of marine resources and alters marine biodiversity by reducing numbers of adult reproductive fish.

The ongoing FISH SCALE project will seek to change consumer’s attitudes by increasing their awareness of the importance of by-catch species and by stimulating greater demand for these fish species.

Integrated communication and demonstration actions will involve the whole supply chain of the fishing sector, together with the final consumers. Expected results are the establishment of a network of commercial operators distributing neglected fish species, demonstrating their value to 10000 consumers, and highlighting the business opportunities they present to 100 other economic operators . Educational support will include an interactive portal (“Map Fish”), pocket guides, cooking tips, seasonal information (“Sea calendar”), and codes of conducts to steer operators and consumers toward sustainable consumption.

5.3.3 Alert the horticultural sector to the dangers of introducing invasive plants (AlterIAS - LIFE08 INF/B/0000522)

The spread of invasive alien species (IAS) is widely recognized as one of the main drivers of biodiversity loss in Europe. Damage caused by the expansion of IAS can be significant and therefore requires the implementation of control actions aimed at reducing their population.

The horticultural industry in Europe and elsewhere in the world has made a vast array of diverse plant species available to the public. In Europe, some 12000 species are grown in gardens and new species are constantly sought. Some of these plants have proved to be invasive and to affect native biodiversity. In fact, ornamental horticulture is the main pathway of plant invasion worldwide. In Belgium, almost all black list plants have been introduced as ornamental plants.

Along the motto “Better prevent than mitigate !”, the Gembloux Agronomic Faculty and partners are implementing the AlterIAS project with the aim to reduce the introduction of invasive alien plants (IAPs). The awareness raising actions about the environmental risks target the whole ornamental horticulture supply chain in Belgium, from growers to gardeners: some 2500 ornamental horticulture professionals, including nurserymen, garden centre managers, wholesalers, garden contractors, landscape architects and open spaces managers, as well as 100 horticulture teachers and 400000 garden amateurs.

A wide range of channels and tools are used (press, TV, radio, information sessions, stands at horticultural fairs, brochures, posters, DVD) to prompt professionals to stop growing, retailing and recommending the use of IAPs to customers, to widely publicise harmless alternatives, and to encourage gardeners to stop planting IAPs. The project disseminates best practices and promotes adherence to a voluntary code of conduct they developed.

5.4. Adopting the “sower” strategy through large-scale awareness raising campaigns

Public awareness raising campaigns are powerful tools to address environmental issues where citizen can act directly and have an important impact through adapting their living choices. Transport and mobility, waste prevention, climate change, water use, and nature protection are topics that have been addressed by more than 300 LIFE projects.

5.4.1 Pioneering sustainable mobility: from local actions to a European campaign

Sustainable mobility is a high priority for Europe's local and regional authorities. A range of different LIFE projects have carried out mobility actions that help contribute to mitigating climate change and to improving the quality of life in urban areas.

In the 1990s, a small number of municipalities began staging car-free days as a means of demonstrating that other forms of mobility are possible, closing their inner cities to private motorised traffic and opening them to a wide range of mobility-related events. For example, the 'Make Brussels bicycle-friendly' project (LIFE98 ENV/B/000269) aimed to change attitudes to cycle use in the city. A plan was implemented to encourage the general public, schools, public authorities, and private companies to cycle more. In France, the Ministry for Environment decided to hold a countrywide car-free day to unite scattered, isolated and one-off events; together with the Environment and Energy Management Agency (ADEME), it brought together 35 cities to hold the first French 'In town, without my car!' day in 1998.

In order to extend the approach and prepare the first Europe-wide 'In town, without my car!' day (LIFE99 ENV/F/000459), ADEME applied for LIFE funding, together with the EUROCITIES, Climate Alliance and Energy Cities networks. A pilot event was carried out on 22 September 1999 in a few cities, in preparation for the full scale campaign to take place the year after. 264 French, Italian and Swiss municipalities participated in the pilot event.

The campaign had three main objectives: to raise awareness of the harmful effects caused to both the environment and public health by motorised private vehicles in towns; to encourage people to use public transport, cycle, or walk more often; and to enable city dwellers to rediscover their town under less polluted, noisy and congested conditions.

The success of the campaign has been largely due to its multi-tiered approach. Firstly, the project targeted local authorities directly, inviting municipalities to establish their own action day. Secondly, national authorities assigned coordinators to promote the campaign at the national level and provide municipalities with technical assistance. Thirdly, at the European level, the project's partner organisations encouraged their respective members to join in the campaign. Finally, and decisively, in 2000, the then European Commissioner for the Environment, Margot Wallström, established 'In town, without my car!' as an official, regular and lasting European initiative. The campaign was extended to include a full week of activities, so as to give towns the time to address sustainable mobility more adequately, and prove that they truly had a long-term commitment to the issue.

In 2004, the LIFE project 'Sustainable Mobility Initiative for Local Environment' (SMILE) (LIFE00 ENV/F/000640) presented a study of the results of the many permanent measures implemented as part of European Mobility Week. An online database with good-practice examples for sustainable mobility was pub-

lished, as well as a number of in-depth recommendations and guidelines for municipal decision-makers and planners.

The LIFE programme has assisted in transforming a single-city, single-day event to an all-week, European-wide campaign. Today, literally hundreds of cities across Europe celebrate 'In town, without my car!' day as part of European Mobility Week. The awareness-raising initiative has already reached millions of citizens and is now spreading to further cities in Europe and beyond, with numerous cities in Argentina, Brazil, Canada, Colombia, Indonesia, Japan, Taiwan, USA and Venezuela organising events following the guidelines of the European Charter.

5.4.2 Organise the European Week of Waste Reduction (EWWR - LIFE07 INF/FR/000185)

The main objective of this project is to reduce the amount of municipal waste generated in Europe by involving all kinds of stakeholders and the wider public in a coordinated awareness campaign across the EU. The annual one week long campaign aims to encourage behavioural change in everyday life and to highlight best practices in waste prevention at European level.

During the Week, five groups of participants from inside and outside the EU are invited to carry out awareness-raising actions on the ground: administration and public authority (mainly local and regional), associations and NGOs, business and the industry, educational institutions, and other organizations such as healthcare and cultural services. Their actions must be registered in pre-defined categories, such as 'raising public awareness', 'better production' or 'better consumption'.

Outstanding actions are recognised through the Annual European Waste Reduction Awards.

To date, the campaign has proven to be a success, with around 1800 local actions implemented in 2009 and more than 7000 in 2011. The website presents ideas for activities, a specific section for educational establishments and « best practices » examples than can be replicated in diverse contexts.

The project will include a qualitative and quantitative assessment of changes in behaviour with regards to waste reduction as a means of assessing the impact of the EWWR.

5.4.3 Promoting the protection of nature and biodiversity at local level: the Capital of Nature and Biodiversity Award (LIFE07 ENV/D/000224)

Many European cities, towns and villages host an unexpectedly rich biodiversity. They contain a high variety of ecosystems, which provide manifold habitats: gardens and parks, rivers and forests, old buildings and walls, grassland, and many

more. This diversity is not only important to protect threatened species, but as an amenity for a large part of the population who live far away from natural habitats. In the meantime, in all EU Member States, the ever growing process of land urbanisation and the building of infrastructure results in an increasing loss of biodiversity.

Local governments can do a lot to protect biodiversity, since their day-to-day planning decisions have a direct impact on the environment and natural resources. It is therefore imperative that biodiversity considerations are integrated into urban planning, development and management. But to date, existing initiatives have unfortunately not generated significant improvements. One reason is that only a few local authorities have the know-how to deal with the complexity of nature and biodiversity protection issues.

The aim of this project was to build municipalities' capacity to protect nature and biodiversity and to encourage new related initiatives, by promoting competitions that would focus attention on local action for biodiversity. Training workshops were organised for municipal staff members and political decision makers, to demonstrate and promote what municipalities can do to protect biodiversity. A monitoring system was provided as a tool to keep track of the state of their local biodiversity and to evaluate the effectiveness of their measures.

National concepts for the annual award was devised for five countries (Germany, Spain, Hungary, Slovakia and Poland), covering some 450 cities and municipalities. A "train the trainer" programme was established to help organisers to run national competitions.

Municipalities of all sizes participated, from small villages of 25 inhabitants (Gyűrűfű, Hungary) to large cities such as Barcelona, Bratislava, Budapest, Munich and Paris. Small and medium sized municipalities were particularly interested in the competitions: some 30 % of the participants were municipalities with less than 5000 inhabitants, and over 60 % had no more than 30000 inhabitants.

The top three municipalities in each size category were honoured each year in national award ceremonies. The one overall winner of each competition was awarded the title of "National Capital of Biodiversity" for the respective year.

6. Conclusion

When the LIFE programme was launched in 1992, the general public was becoming increasingly aware of the pressures that the modern lifestyle was placing on our environment. It also became clear that environmental problems were extremely diverse, and therefore required tailored solutions and the contribution of many different categories of stakeholders. As professionals, as citizens or as consumers, people and organisations have been called on to play their part in facilitating the shift to a more sustainable development model. Creativity, vision, the capacity to revisit existing practices, methods and technologies, the ability to organise, and openness to multidisciplinary and partnership working are some of the necessary ingredients.

However, this transition will not take place of its own accord, new learning processes are required.

Over the last 20 years, the LIFE programme has played its role in confronting these challenges, by supporting innovation, experimentation, pilot technologies, methods and tools, education and sharing of experience, and by communicating projects results. During the above cited May 2011 conference, it was highlighted that replication of project results has always been fundamental to LIFE's philosophy, and that few other EU funding programmes give the same significance to multiplier effects. The ability of LIFE projects to produce technologies or methodologies that can be used in other regions or countries is considered essential for demonstrating the programme's European dimension. LIFE projects have inspired more than 40000 articles in the press and in conferences, created hundreds of websites, games and other effective ways of getting their message across. Hundreds of LIFE projects have also provided training courses, fostering "green skills" that have in turn helped create jobs.

LIFE projects have been contributing to sustainable consumption education and training through implementing large thematic awareness campaigns, providing support to identify and buy greener products, offering opportunities to learn by doing and experimenting with new behaviours, and through developing and testing pedagogical methods and tools (training kits, information products, on the ground visits).

Although no study has been carried out to date on LIFE experience on this specific topic, empirical lessons can be drawn and some key approaches can be observed from successful projects. Some of these include:

- develop the right tools and structures: building capacity at local and regional level and developing appropriate tools and structures are essential to moving from strategy to action;
- work along the production-consumption chain (multi-sectorial), use multidisciplinary approaches, and involve different kinds of stakeholders in order to benefit from their expertise and enrich the project with different viewpoints;
- maintain effective contacts: develop networking abilities and capacity to develop alliances and partnerships;
- have a strong knowledge of end users and understanding of consumers interests, and focus on the benefits and key motivators for the target public;
- provide tailored products and advice, organise face-to-face exchanges and social interactions;
- develop low cost measures by involving people and making use of their commitment and creativity;
- propose simple actions and measures that can easily be adopted by consumers in their everyday life in order to enhance confidence in their impact, and create a basis for further steps;
- seek multiplier effects, especially when money is in short supply;

- measure the impact of actions and compare results in order to choose the most appropriate way to achieve objectives;
- and last but not least, publicise and acknowledge good practices.

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Building inter-community development projects from school based initiatives

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The Global Education Experience (GEE) is an international development project of the Presentation Schools in Ireland in cooperation with other units of the congregation based in the South; in this case in Kaoma in Western Province Zambia. The aims of GEE include to enable students:

- To interact with others of a different race, culture, and religious belief
- To develop an understanding that poverty, disease, and environmental degradation are often related to political, social, and economic policies and decisions

The Presentation College Askea Carlow has been involved in this project since 2004 and is now expanding the project to include further community development. Kaoma Partnership is a recent initiative started by the members of the Askea-Bennekerry parish in Carlow, Ireland as a follow on to the GEE. This was done to form a link between Askea-Bennekerry and the parish of Kaoma, Zambia. From the outset this was designed to be an equal partner relationship, free of the problems caused by a mere donor-beneficiary situation. This research examined the literature concerning strategy development and formulation and through a qualitative research methodology sought to understand the possibility of using strategic development models developed for the corporate sector in the non-profit sector. The model presented by Bailey, Johnson and Daniels (2000) will be used to inform the primary research. The dimensions of their model; command, planning, incrementalism, politics, culture, and enforced choice; were used to develop the interview plans and to guide some the focus group work conducted. The major finding is that the strategic purpose of the Partnership is rather nebulous at present. Without a binding purpose, the Partnership runs the risk of alienating members who wish to pledge support but are unable to grasp the underlying motivations of the Partnership as there is no definitive mission statement to convey the message of the Partnership in clear, concise grounds of what the Partnership is, what it is trying to achieve, and how it plans on achieving those goals.

1. Introduction

The Kaoma Partnership is a initiative started within a local community in Carlow Ireland as a follow on to the school based Global Education Experience (GEE). This was done in the hopes of forming a link the Carlow community and the parish of Kaoma, Zambia. From the outset this was designed to be an equal partner relationship, free of the problems caused by a mere donor-beneficiary situation. As the Partnership is still in its formative stages, it does not yet have a definitive level of strategic management, or indeed the processes by which to formulate one. The Kaoma Partnership is an example of a civil society initiative, civil society being, according to the London School of Economics, “the arena of uncoerced collective action around shared interests, purposes and values(…)”

The Global Education Experience is an inter-provincial development project of the Presentation Sisters in Ireland in cooperation with other provinces and units of the congregation. The aims of GEE include to enable students to:

- Interact openly and honestly with others of a different race, culture, and religious belief and to be enriched by the experience
- Deepen their awareness of the vision of the Order in the practical setting of the work of Presentation Sisters in other countries and cultures
- Develop an understanding that poverty, disease, and environmental degradation are often related to political, social, and economic policies and decisions
- Grow in the spirit of volunteerism
- Experience Church in a different culture

The Presentation College Askea Carlow has been involved in this project since 2004 and is now expanding the project to include further community development initiatives in the town of Kaoma in Western Province Zambia.

Ireland's voluntary sector

Historically the Catholic and other Churches have been influential in the development of charities in Ireland (see e.g. Powell and Guerin, 1997). Evidence of this is the lead role taken by Religious organisations in the provision of hospitals and schools from the early 19th century. In the early decades of this century following independence State welfare services were introduced but the major role in social service provision was still carried by the voluntary sector. The Catholic Churches' social teaching saw the State as the final provider of welfare needs.

The Green Paper (Department of Social Welfare, 1997) commented on the changing role of religious organisations in relation to the community and voluntary sector noting that “religious personnel have increased their role in, for example, community based services and are redressing their mission.” The religious orders historically in Ireland were quite strong, with many families having a relatives or friends of the family working with an order overseas on the missions; Africa, Aus-

tralia, South America, the scope of Irish involvement overseas has always been quite extensive. To this end, the presence of charity work being done in the furthest reaches of the globe are present in the Irish mindset, this is of great importance to a local charity such as the Kaoma Partnership, that can tap into that collective memory and foster greater support for a 'missions-esque' project that people will be more familiar with and will have positive resonance with past fundraising activities.

Strategy Formulation

Strategy formulation is a dynamic process. Pettigrew (1982) posits that specific dilemmas that organisations face lead those involved to see strategy formulation "as an intentional process built around certain discrete decisions". This includes the culture of the organization; its environment and the rate of change or stability thereof; the organisation's task, structure, and technology; and the leadership and internal political system of the organization. At any point in time, the focus for strategic choices will be environmental and intra-organizational dilemmas; and the process of resolving those dilemmas will be influenced by organisational, cultural, task, leadership, and internal political factors. These issues have a particular relevance in the non profit sector.

The strategic development process

Theoretical views on the nature of the formation of strategy fall into two distinct groups: the "rational design" approaches and "emergent" approaches (Grant, 2003; Harrington et al., 2004). The rational approach is based on the view that organizations adjust to changes in their environment by making rational decisions and choices. In the rational strategic model "strategy consists of integrated decisions, actions or plans that will set and achieve viable organizational goals" (Chaffee, 1985). The assumption underlying a rational strategic process is that the environment is relatively predictable or the organization is "well insulated" from the effects of change. It further assumes that an organization is "tightly coupled, so that all decisions made at the top can be implemented throughout the organization" (Chaffee, 1985).

Chaffee (1985) further elaborated the emergent approach to include a view of an organization as "a collection of social agreements entered into by individuals of free will." The strategic aim is to "attract enough individuals to cooperate in mutually beneficial exchange," and to deal with "attitudinal and cognitive complexity."

The fundamental difference between deliberate and emergent strategy is that whereas the former focuses on direction and control—getting desired things done—the latter opens up this notion of 'strategic learning'. Defining strategy as intended and conceiving it as deliberate, as has traditionally been done, effectively precludes the notion of strategic learning. Once the intentions have been set, attention is riveted on realizing them, not on adapting them.

This proposition captures succinctly an earlier thesis from Bailey, Johnson and Daniels (2000) who posited six discrete dimensions of strategy development; command, planning, incremental, political, cultural and enforced choice.

On command Johnson, Scholes and Whittingham (2008) state that

“Strategy development may be strongly associated with a strategic leader, an individual (or perhaps a small group of individuals) upon whom strategy is seen to be dependent”.

The influence of managers’ personal goals on strategy and performance is particularly strong in small and medium sized firms (Chaganti et al., 1995) There is typically one owner-manager (Gersick et al., 1997) whose personal goals dominate business goals (Chrisman et al., 2003) and who would prefer to keep the firm small in order to maintain ownership and control in the long term. This would have resonance with the non-profit sector where small charities are often linked with the founder or guiding individual.

The literature reviewed revealed the rational planning model is in widespread use and that there are significant problems with it in practice. This may be due to the underlying assumptions behind this model not applying in the modern environment. Weitzel and Jonsson (1989) argued that “it is clear that a stable environment, if it ever exists, is at most a temporary phenomenon”. They called for “effective re-organisation” based around “less directive leadership” and greater inclusiveness for those lower in the organisation who may have valuable information to add to decision making.

Logical incrementalism according to Quinn and Voyer (1998) is about achieving an organization's goals by making smaller decisions and taking smaller steps, as opposed to the complex approach and bigger leaps of long-term strategic planning. The small steps attempt to resolve conflicting views of participants and reduce risk by capitalizing on knowledge that is gained during the process.

“The political view of strategy development is that strategies develop as the outcome of processes of bargaining and negotiation among powerful internal or external interest groups (or stakeholders)” (Johnson and Scholes, 2008). Parker, Dipboye, and Jackson (1995) point to Ferris’ work which describes politics as an “intentional social influence process in which behaviour is strategically designed to maximize short-term or long-term self interests”. This definition allows for both functional and dysfunctional outcomes for individuals, groups, or organizations. However, dysfunctional political behaviour may also be encompassed in this definition in the form of self-serving policies which have a long-term negative affect on the organization. This can be a feature of non profit and voluntary organisations when the profit motive is removed from strategic intentions and goals and objectives can be debated or negotiated between coalitions of interest (Chrisman et al, 2002).

Schein (1992) states that “*Organizational culture refers to the coherent pattern of beliefs and values that represent acceptable solutions to major organizational problems*” Mintzberg (1987) describes an ideological strategy, in which a consensus forms around a system of beliefs, or norms, the culture, (thus reflecting inten-

tions widely accepted in the organization). Ideology is rooted in the past, in traditions and precedents (often the institutionalization of the vision of a founder, charismatic leader: one person's vision has become everyone's ideology). This demonstrates a link between the concepts of command and culture. An important feature of not for profit organisations is that there is less concern over opportunistic behaviour by agents (Chrisman et al., 2002.). A consequence of this is an increased salience of organizational culture for influencing the behaviour of organizational members.

The elements of strategy discussed so far have derived in part at least from the will (if not the intentions) of actors within the organization. But strategies can be imposed from outside as well; that is, the environment can directly force the organization into a pattern in its stream of actions, regardless of the presence of central controls thereby in effect enforcing choices. Mintzberg describes externally imposed strategies as “*Sometimes the 'environment' rather than people per se impose strategies on organizations, simply by severely restricting the options open to them*”. (Mintzberg and Waters, 1982)

2. Methodology

While the study of strategic development in the non-profit sector is not a traditional area of study, it has proven to be a positive area of research and interest in the field is growing. The choice of case study is based on this premise; that qualitative testing is beneficial to a further understanding of the pre-established theories and possible new insight into future strategic planning.

Interviews were conducted with the staff involved in developing the project in the Presentation order and in the partner schools and the wider partnership. Further online discussions were held with the partners in Zambia. The interviewees and the stakeholder group represented are presented in the following diagram.



Figure 1: interviewees and the stakeholder groups

Each interview focused on a specific development project, which the individual respondent had been involved in, and the role of each collaboration activity during or related to that particular project. Current or recent projects of particular importance to the projects were chosen to reduce the risk of biased responses (such as post-project rationalisation). The interviews were all carried out on a confidential basis. This was necessary given the sensitivity of the subject as the project deals with community based issues including health and religious issues. Such interviews may not have been feasible without such guarantees. Elite interviews were one source of data collection because the purpose of this investigation was to probe the processes used by ‘managers’ of the Kaoma project in Ireland and the practitioners in Zambia.

Data was collected primarily through in depth individual semi-structured interviews i.e. with a list of specific questions around which a discussion took place. Interview questions were designed to probe issues such as: processes, influence, formalisation, structure, participation, role of partners, power, influence strategies, conflict, and risk. The interviewees were three representatives from the Zambian partners, two representatives from the Irish partners, two volunteers who had visited Zambia as part of the school based project. In addition an expert interview was conducted with a representative of World Wise, part of Irish Aid, who had expert knowledge in the area of project development involving international collaborations and representatives of the Presentation Sisters who started the concept.

Findings

All of the interviewees were very focused on the over-riding principle that for partnerships to develop between communities from the North and South that there must be ideological movement from the traditional charity model to a social / political

justice model. Questions need to be asked as to ‘why’ the community from the north, want to link with a community in the south, i.e. Kaoma.

“The motivations must be less about aid and more about gaining mutual understanding of the issues of interest to both communities. This results in a movement towards joint analyses, joint actions, and joint solutions, what ‘partnership’ means; how can the power in the new organisation be equally distributed between the partners, and what is the capacity of the new organisation to deliver any benefits.”

If the Partnership is to grow and survive in the field of NGO charity, an industry fraught with many rivals and little differentiation, then the strategic capabilities of the Partnership must be such that becoming part of the organisation and to support it in its future endeavours. Simply being part of a community enterprise for change is not enough. The importance of clear objectives cannot be overstated. Key challenges to be discussed and planned for include;

- Many participants lack clear objectives for creating partnerships
- Relatively short timescale of linking projects to date
- Reluctance of some stakeholders to engage in process
- Power dynamics between Irish and Southern African schools

However if the project is set up and structured properly some very immediate outcomes will be seen in the following areas;

- Increased tolerance of difference in global and local contexts
- Increased cross-cultural communication skills
- Some evidence of increased understanding of the power relationships underlying the partnership

The first item to be discussed was Sr. Angela’s thoughts on the link and what was most drastically needed. Sr. Angela was most supportive of the notion of an Irish parish reaching out to an overseas parish that has needs to be addressed. When asked, what was the most pressing matter currently facing the parish priests in Kaoma; Sr. Angela replied that it was diesel and the price thereof. This interview was invaluable as it highlighted many practical themes that the group had overlooked; in wanting to help the Kaoma community, grander plans than were necessary were considered at first, neglecting several simple and easy to work with needs that could be addressed by the group as a means of not overreaching itself too soon, an important concept in the strategic planning of the Partnership.

Sr. Jo stressed the importance of solidarity funding, that is funding in close collaboration between both partners. This again highlights the conscious decision to break away from the traditional model of donor-beneficiary aid,

“it is counter-productive to believe that an Irish organisation can identify issues and send money for specific projects without working hand-in-hand with people on the ground”.

It is important also for lay people on both sides of the link to connect with their peers in an effort to exchange experience, by doing so they can both benefit from a fresh perspective and also reflect on the strengths of their own parish. The idea of

peer education is vital as it allows for personal relationships and connections to form that will foster more long lasting affinity for the group.

“If the group were to have a taste of success and reward from a smaller project early in the lifecycle of the Partnership, this would foster confidence, allowing for greater strides to be taken in the future.”

The reciprocal visits by Zambian teachers, who have spoken at mass on several occasions, have further raised awareness in the parish that the connection with Kaoma is already established and it is now a case of strengthening and securing that bond. Fr. Liam also affirmed the importance of peer education and the possibility that

“the strong effect that peer education has had in the fight against HIV/AIDS in Zambia could potentially be of great use in Ireland in the area of drink and drugs awareness”.

This is one field where the mutually beneficial aspect of the link could be seen and felt and prove the worth of the project for those at home who would not perhaps know the details of the connection and the good it could do on both sides. The utilisation of the already well-known Millennium Development Goals as a focal point for rallying support behind the project was tipped as being something that, while perhaps not immediately recognizable, was of a high enough level of legitimacy that those who researched the commitment of the group to the goals could see that the group is not alone in these objectives and that, by working with the Partnership, would be helping not only the people of Kaoma, but of the wider world also in the raising of awareness from person to person.

The Global Education Experience leaders believe that the Kaoma Partnership could have an advantage over other such projects who,

“when still in the early stages of strategic development, are often blind to certain capabilities and realities that would only seem apparent with the experience that comes with several years of working actively overseas.”

The teachers involved emphasised the concept of cross-curricular activities specifically the involvement of Presentation College and Kaoma Community School in the John Paul II awards. This was in relation to questions based on what models of behaviour the Partnership could adopt from the GEE, revolving back to the issue of peer linking and education as a positive goal or method that can have visible effects on both sides of the link and grant tangible results that can be used to raise the profile of and confidence within the Partnership. The importance of the Presentation Sisters to the project was emphasised in the support given to the GEE through funding and legitimacy. The Sisters have recognised the need for groups of concerned individuals such as the Kaoma Partnership to organise in the spirit of revitalising the notion of the mission that was so prevalent in Irish culture in times past.

Audrey Likando, a teacher in Kaoma Community School, and Beatrice Nosikower spoken to during their visit in January about the importance of the Partnership to their community in Zambia and of the human nature facet of the reciprocal visits praised the high impact of the visits to Kaoma and

“the ensuing connection that is developed with the other side of the project, rather than simply accepting aid that is without any true motive. This was agreed as the key to sustainability of the project in the spirit of an educational, beneficial link rather than a simply a channel for funding”.

In particular, the new appreciation of solidarity funding was discussed, the women spoke of the additional benefit of projects that are researched and discussed as a collaborative effort between the interested parties, those with the strategic capabilities of fundraising and those with the practical knowledge of what is required and what efforts are blind alleys in terms of expending donations.

The parameters discussed were that the project was not a donor – beneficiary relationship but a relationship of equals each learning from the other. Any project was to be discussed with the Kaoma community and no assumptions were to be made about what we as a northern society think a community in the south should do. The ideas discussed can be broadly grouped as mentioned above.

Table 1:

Structures	Values
Structures are important but the people behind the structures are more important	A core value must be to affirm Zambian values and create a partnership of equals
The long term vision / purpose of the Partnership needs to be developed and communicated to everyone	Forging interpersonal links → family → community would allow deeper links to be created
Communication channels between the Irish and Zambian communities need to be developed	Put people first and develop programmes that assist the Zambian partners to develop programmes that the Irish partners can support
Identify needs and see what each community can offer to the other	Develop sustainable long term programmes

The external experts stressed the importance of gauging the strategic capabilities of the Partnership. If the Partnership is to grow and survive in the field of NGO charity, an industry fraught with many rivals and little differentiation, then the strategic capabilities of the Partnership must be such that becoming part of the organisation and to support it in its future endeavours.

Data Analysis and Findings

According to Neuman (1994) no single qualitative data analysis approach is widely accepted. Qualitative analysis does not draw on a large body of numbers and statistics and instead the data are in the form of words which are relatively imprecise and context based and can have more than one meaning. The general themes and concepts extracted from the interview and focus group reports are presented in terms of

the Bailey, Johnson and Daniels (2000) model. Content analysis and cross-case analysis was used to identify and interpret concealed patterns for each of the interview protocol questions. These analyses were done primarily through pattern matching (Yin 1994). Only the findings, which clearly showed support for a theoretical proposition, are reported. Essentially pattern exploration is the main source of qualitative research analysis as the sole focus of the research is to create insight and developing new theories and hypothesis suitable for future quantitative research studies.

Discussion

The discussion is structured around the dimensions of the Bailey, Johnson, Daniels model; command, planning, incrementalism, political, culture, and enforced choice.

Command

As the Kaoma Partnership is led by a steering committee, there is no one individual leader or true focal point by which strategy is commanded. Rather, by being community based, the command structure is spread across a collection of individuals coming from a variety of backgrounds with a variety of different skill sets and knowledge backgrounds. This is the result of years spent working with other parish groups, sports clubs and other organisations. This means that there is a group of people who have a great knowledge of fundraising and organisational structures that will allow the Partnership to flourish from the outset without having to stumble through these learning processes. This is a structure similar to that used by the GEE, from which much of the behavioural attitudes are adapted. This allows for a flow of continuity in the actions of the group and eases the connection with those who are familiar with the GEE. The command by committee concept will slow down the formative stages of the Partnership admittedly as a collection of individuals comes together and must learn how to create a stable platform upon which can be built a working relationship.

Planning

The Kaoma Partnership as it stands does not have specific strategic objectives as yet. This is due to the fact of the Partnership being still in its infancy and has not yet reached a level of cohesion in its steering committee that will allow for a definitive sense of rationale. As the group is still attempting to find its footing in terms of purpose that will allow the Partnership to identify and realise plans that will have tangible benefits for both halves of the link, be they in the areas of peer education or of assisting the continuing function of the Kaoma parish. At present it is a case of waiting to see how the personalities within the group and the strategic capabilities of the Partnership will affect the direction of the strategic plan once the time for planning presents itself. This will lead to procedures and structures emerging from

continued interaction within the group, this ability to create dialogue between the varying members of the group will be important as it is the basis for a stable working relationship. After this point, the strategic direction of the Partnership will be able to emerge.

Incrementalism

Incrementalism is the logical approach to the formation of the strategic plan of the Kaoma Partnership. As previously discussed, since the strategic direction of the Partnership is not yet clear, to make a definitive commitment to any one form of strategy could be construed as pre-mature. When the time comes to adopt an appropriate strategy, the Partnership as a group must keep in mind that the industry is victim to an extremely volatile environment. In this respect, continuing small scale changes to the strategy must constantly be examined and affected. As the Partnership learns to adapt to these changes, in time an emergent strategy shall emerge from the intended one as the mixture of experience gained and continuing change combine into a working framework, whereby the most viable methods of operation will present themselves to the Partnership in order to further benefit the profile and survivability of the group as a opportunity for growth in the community at home and overseas. The capabilities of the project have not yet reached a stage where grand projects can be considered as viable avenues for discussion as it is beyond the abilities of the group at such an early stage to deliver on any commitments that might have to be made.

Political

The nature of the command structure of the Partnership, as discussed above, is a collection of a group of like-minded yet different individuals. Politics in such a group should be of great importance as the Partnership is a collection of loosely connected individuals who are bound together only out of an interest in the common good. This means that the politics of the group will be of great significance as the strategic direction of the group is adapted in order to keep the varying members of the group as happy as possible, whether this will entail of compromise or of more drastic measures has yet to be seen. Some members of the Partnership will have specific projects or ideas that will have personal significance but which may not be a viable option to devote funding and energies to. In situations such as this, it is important how the political structures are affected and how they in turn affect the proper influence upon the group in order to maintain the integrity of the project. This will carry significance throughout the entire project and not simply in the formative stages of the Partnership.

Cultural

From the point of view of the Kaoma Partnership, the cultural aspect of the strategic development project is taken to literally mean the potential culture clash between the Irish and Zambian halves of the Partnership in terms of attitudes and motivations behind the projects that will be jointly run. From the Irish perspective the origins of the Partnership in the GEE, which in turn has its origins in the Presentation Sisters will partially direct the course of the search for solutions to many questions that will be asked in the strategic development process. Similarly, the very nature of being a religious organisation, specifically a parish based organisation, means that the decisions made by Partnership will be grounded in the religious-social background of its members. To this extent, strategy will very much be based on the culture that the organisation is situated in, rather than as an emergent culture based on traditions and customs within the group itself.

Enforced Choice

Enforced choice will have great impact on the Kaoma Partnership. The strategic choices of the group will be severely inhibited by the strategic capabilities that the Partnership possesses. This restriction will have to be understood and incorporated into the strategic development and thinking process. As a new and small player only attempting to find its place within the industry; an industry, as previously discussed, where to make an individual mark requires great size and market presence. In this light, the Partnership will also have to incorporate the nature of the industry into the development process, that given the relative size of the industry and the size of the Partnership, the group cannot hope to influence the strategic environment and must instead buffer itself from its volatile nature. Barriers exist in this environment, barriers that prevent organisations from reaching every potential avenue of funding and barriers which prevent projects from going ahead. This is another restriction which the Partnership will have to accept, as every project cannot get off the ground and organisations such as the Partnership must not rest all of its faith in one project, lest the issue of enforced choice railroad a project into failure.

The following table illustrates the overall findings.

Table 2:

Command	Planning	Incrementalism	Political	Cultural	Enforced Choice
The strategy we follow is directed by a vision associated with the GEE	We do not have definite and precise strategic objectives	To keep in line with our environment, we will have to make continual small-scale changes to strategy	The information on which our strategy is developed often reflects the interest of certain groups	Our individual organisations history and culture directs our search for solutions to strategic issues	Our freedom of strategic choice is severely restricted by the capabilities of the group
Our strategy is not closely associated with a particular individual but is community and partner based	We do not have precise procedures for achieving strategic objectives	We keep early commitment to a strategy tentative and subject to review	Our strategy is a compromise which accommodates the conflicting interests of different groups and individuals	There are beliefs and assumptions about the way to do things which are specific to the Kaoma Partnership because of the cultural and historical backgrounds	We are not able to influence our strategic environment; we can only buffer ourselves from it
The steering committee determines our strategic direction	Our strategy is made explicit in the form of precise plans	Our strategy emerge gradually as we respond to the need of change	The decision to adopt a strategy is influenced by the power of the group sponsoring it	The strategy we follow is dictated by the parish cultures evident in Ireland and Zambia and are grounded in both social and religious backgrounds	Barriers exist in our environment which significantly restrict the strategies we can follow

3. Conclusion

The strategy development process entered into by the Askea Bennekerry group was analysed in terms of the dimensions presented by Bailey, Johnson, & Daniels (2000). Each of the dimensions have relevance for the Kaoma Partnership and provide a good framework for use by the steering committee in developing the vision, mission and strategy of this fledgling organization. To date the Steering Committee has engaged in positive communication and awareness building activities and have developed concepts surrounding structure, vision and programmes. Therefore it can be said that the group have engaged in strategy development processes and that the dimensions proposed by Bailey, Johnson and Daniels does provide a suitable framework for strategy development in the broader non-profit sector.

The work that goes into the formation of a charitable group is one that perhaps too often slips beneath the academic radar, as the research is put into the examination of the larger groups and the UN branches and the cause and effect of their actions in the developing world. This is not to say that what the larger groups do is not good work, but the importance of the small organisation cannot be underestimated. When a group of concerned citizens come together, that group can have an enormous impact on the lives of a community many thousands of miles away and far from the television cameras, small stones can make big ripples.

To sum up the Third Sector in Ireland, to try and precisely pin down specific behavioural patterns in the sector is extremely difficult as the hectic, volatile nature of the sector is such that the different organisations are constantly adapting to the changing environment from day to day. For the larger organisations this can mean having to raise funding and awareness for emergency relief in New Zealand one week and then for the crisis currently facing Japan to strike. This whiplash in public awareness places great stress on the larger organisations to have the capabilities to shift their focus while still providing disaster relief. For smaller organisations, some of the greatest difficulties come in the shifting sands of the current economic climate. Managing the functionality of a smaller charity while still being able to access a dwindling pool of potential donations is becoming increasingly difficult in the face of government austerity measures and yet it is a challenge that must be met head on.

And it is in meeting this challenge that new issues arise. In organisations such as the Kaoma Partnership, there is no marketing department or finance department or CEO; in organisations such as the Kaoma Partnership are collections of individuals who have commitments such as their full time jobs, their children, their clubs and their lives. These other dedications are naturally just as important, if not more so, than the Partnership and this is something that can have enormous impact on an organisation in trying to formulate strategy. What if one member, in potentially a vital position, must withdraw from the project due to other commitments? There are no exit costs for any one member of the group and so, the Partnership must be vigilant in not being too dependent on any one member. In saying this, it is not to say that

the Partnership is not a group effort in the first, it is simply a warning to remind the group that as a civilian group within a parish, there are a great many more dangers than simply a lack of funding.

A critical concern for the Partnership will be the integration of the Zambian partners into the project. The methods for doing this and the implementation of these methods are crucial. To date the research has shown a definite commitment to developing a partnership of equals between the north and south. This commitment is based around the personal knowledge and commitment of the promoters of the project and this commitment must be transferred to the broader community. The visit of the teachers from Kaoma was a hugely positive event around which to develop community wide awareness of Zambia and Kaoma. Further visits will be important in continuing this awareness building. Therefore the question relating to the inclusion of the partners can be answered in the positive.

Recommendations

The strategic purpose of the Partnership is rather nebulous at present. Without a binding purpose, the Partnership runs the risk of alienating members who wish to pledge support but are unable to grasp the underlying motivations of the Partnership as there is no definitive mission statement to convey the message of the Partnership in clear, concise grounds of what the Partnership is, what it is trying to achieve, and how it plans on achieving those goals. The lack of clear objectives will make it difficult to attract support and funding. To this end, it is important to revitalise the Partnership and arrange for the committee to establish the prime directives of the link and how best to act.

Once these objectives have been established, it is important that the Partnership take on a project as soon as possible in order to gauge the capabilities of the group and how far those capabilities can take the group. The Partnership is restricted mainly by its strategic capabilities and until there is a fair understanding of these capabilities, plans of action will be difficult to establish.

The group must understand the framework of the volatile environment in which their organisation will be operating. In the mix of small-scale enterprises and the larger international entities, eg Oxfam, UNICEF, not every fundraiser is going to be a complete success and not every project will get the support they feel it rightly deserves. Rather than being game-changers in this environment, the Partnership will rather have to hope that they can buffer themselves from the worst of the sudden nature of the environment and carve out for themselves a niche from which they can operate.

Small NGOs are particularly vulnerable when coping with the speed of economic, sectoral, and competitive change. While the members of an original founding group can draw on their powerful feelings of loyalty to sustain the project in its early years, these same ties can inhibit change when later generations of volunteers inherit the running of the project. Its virtue can become its weakness.

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Study circles as tools for learning democracy, active citizenship and critical thinking

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How can study circles be pedagogical tools in adult learning and education (ALE) which is linked to empowerment, democracy, critical thinking and active citizenship? This Paper aims to implement the “*Nordic Study Circle Method*” especially in non-formal and informal adult learning and education: The study circle as a learning method for promoting studies and learning sites concerning local development, citizenship, fostering and maintaining democracy, fostering further learning opportunities, self directed learning and learning for participating in society, and, as such, the study circle as a tool for democracy. For more than 100 years the three – school, workplace and community based learning – have been responsible for each their special curriculum in the large project which is to produce active and skilled citizens. The main issue in this shared responsibility of educational work has not been the sharing of content, nor the difference between them in the way they perform – their pedagogy – but the broadness they together are representing, the manifold appealing to the joy of learning, which also has to do with the variation in the social and physical learning environments. So far, the study circle often has been linked to and associated with community based and liberal adult learning. It might not only be necessarily so. This Paper will connect the study circle to research and examples where the method also has been in use for projects on responsible living, social entrepreneurship and other forms of sustainability. But first and foremost the Paper is about the phenomena *study circles*, its origin, development, participation and also pedagogical management.

Keywords: Study circles, learning, democracy, active participation

1. Study circles as tools for learning democracy, active citizenship and critical thinking

Study Circles – when they are functioning at the best – may offer learning without humiliation, learning without guiltily and bad consciousness, non-violent learning, a

humble way of learning and learning for self confidence and self esteem. But before this...

As a Nordic traditional method for liberal adult education, the *Study Circle* has been active for more than 100 years. From the beginning, the Study Circle is seen as a democratic and emancipatory method and arena for learning, particularly among adults. Study Circles were born in New York in the 1870s. By their peak in 1915, 700.000 people were participating in 15.000 study circles in the USA. People close to the union, co-op, the temperance movement and the Social Democratic Party to educate their followers carried the idea to Sweden. Even though study circles more or less passed away in USA, they have ever since flourished in Sweden and Scandinavia. Still, nearly three million Swedes participate in more than 300.000 study circles annually, partly funded and subsidized, but not controlled, by the public sector and the government. Scandinavian communities have even convened study circles to work through major issues facing their local areas and towns, with study circle participants turning into activists who then have a significant impact on events. The last ten years, there is a renewed and blooming interest in study circles (also) in the USA, according to *the Study Circle Research Centre* in New York.

The Study Circle followed the “top-to-bottom approach” for enlightenment developed in the 18th century, expressed i.e. through the University Extension movements in France, England and Scandinavia (Arvidson, 1998) to become a “bottom-up” method. The so called founder of the Study Circle, the Swede Oscar Olsson, expressed that “The emancipation of the working class should be a task for the workers themselves”, “For the people, by the people” (Johansson, 1994) became the political slogan that influenced the Study Circle and the adult education system in Scandinavia for years.

The close links between *the method* Study Circle and *the tool for democracy* Study Circle, may also be exemplified with the expression by the former Swedish Prime Minister Olov Palme: “Sweden is to a great extend a Study Circle democracy” (Nordic Folk Academy, 1968).

The Study Circle is a human, easy and fearless way to learning for adults with low self-esteem and self-confidence. But the Study Circle method is also demanding. It claims activity and dialogue between its participants (*members*), and just occasionally you can rely on a teacher or an expert joining in. Normally the Study Circle is a group of equals, the leader the “primus inter pares”. The pedagogical idea may be summarized as “learning by sharing”, relying on each members experience.

”The Study Circle, which voluntary organizations claim to be their special method, from both ideological and educational reasons, has very much been taken for granted”, says the Norwegian researcher Hallgjerd Brattset in her study (Brattset, 1982) on how to describe and analyze the experiences from methods of planning and organizing Study Circles.

Because the Norwegian Act on Adult Education (Ministry of Education, 1976) required students’ involvement on contents and method in the courses, she thought it was of special interest to find out to what extent this is practiced in Study Circles.

The Study Circle developed from late 19th century Sweden. We are usually dating it to 1902; the year Oscar Olsson, “the father of the Study Circle” started his first circle in the Lund branch of the International Order of Good Templars, and named it a “Study Circle”.

The most distinctive features of circle studies, as Oscar Olsson (quoted in Brattset, 1982) described them, were:

- People studied in small groups, often at home.
- Study material was rare.
- Teachers were not considered a necessary prerequisite of study. The leader of the group was an organizer and he possessed no theoretical qualifications.
- People supplemented their group studies by attending lectures or meetings.
- Circle members had no previous theoretical qualifications, but a good deal of practical experience.
- They learnt to discuss, argue, show consideration for others, accept defeat and share responsibility.
- They experienced a sense of community and identity.
- The knowledge they acquired could be directly related to their everyday lives.
- Studies began at the initial cognitive level of the members and were guided by their needs.

According to Oscar Olsson, the most important features of the Study Circle was that they operated independently of teachers, were based on the reading of fiction, and used conversation and discussion as method. His definition of a Study Circle was: A circle of friends who come together to discuss problems or subjects of common interest. (Quoted in Brattset, 1982).

From this definition it follows that the leader should be more a *guide* to the students (*members*) than a traditional teacher. A practical consequence of this is the terms applied: *circle members* or *participants*, not *pupils* or *students*; *circle leaders*, not *teachers*, *circles* or *groups* and *meetings*, not *classes* or *lessons*. This use of terminology has been considered quite important, because the participants should not associate the studies with bad experiences from their previous schooldays.

Historically, Study Circles and popular movements are inseparable concepts. Oscar Olsson’s Study Circle exemplifies the close links that have always existed between popular movements and the Study Circle, and also that adult education has always been strongly associated with the voluntary sector in Scandinavia. The aim of their educational activities was to promote changes in society, according to their values. Therefore adult education can be described as instrumental to reach their goals, and the Study Circle their tool to do so.

The Study Circle is a flexible method. Several terms are therefore in use, such as circles with or without a teacher, circles combined with lectures, circles based on preproduced plans, correspondence circles, combined circles; members taking correspondence courses individually, supported by circle studies with teacher, multi-media courses, studies integrated in a pre-produced scheme, including usage of me-

dia and – finally and most recently; “e-circles”, the members communicate web-based.

The Study Circle as an academic field of research has been rare. Most of the research being done the recent years is known from Sweden and the University of Linköping. The most comprehensive study was conducted by Jan Bystrom (Bystrom 1976). The aim of Bystrom’s study was to investigate and discuss the reasons why Study Circles develop differently, and to pay special attention to the situation and function of the circle leader. The starting point of the study was the observation that in practice many circles do not correspond to the ideal.

According to Bystrom (Bystrom 1976) there are three main deviations. First, they might develop into a “school class”, with recipient pupils and an instructing teacher. Secondly, they might develop into a “coffee party”, with discussions that have nothing to do with the objectives. And thirdly, they might develop into a “therapeutically group”, in which activities concentrate upon individual mental or social problems.

The (idealistic) principle of circle members shaping their own studies is practiced to a limited extent. This may be due to uncertainty among members as to how and when they should put forward their viewpoints. The leader has a central position in their concept of studies; the circle members show little tendency to link their studies with everyday learning and communal learning. They have little confidence in their own resources.

Jan Bystrom’s conclusion is that circle studies can be much improved, if 1) Guidance is given to potential circle members during the recruitment period, 2) Training is given to circle leaders, and 3) Attention is paid to designing appropriate study material, with a view to making all members active in the learning process.

In her study, Brattset (Brattset, 1982) used a survey consisting of fifty-one Study Circles, drawn from ten voluntary organizations in Norway. The findings of the survey confirm the pre-supposition that study work is characterized by diversity. Among her findings was that most circles were initiated by the organization, mainly in the local community. Circle members and leaders had little direct influence on this.

To the question of why they took part, the main reasons for enrolling were, in order of priority: interest in the subject, need for social contact, and importance to their work. What motivated the leaders? The majority of circle leaders undertake the job because they have been approached directly by the organizers, according to criteria set by them. The most important reason for undertaking the leadership of the circle is, similar to the members, interest in the subject, followed by a desire to help the organization, need for social contact, and to work with adults and gain teaching experience.

The appointment of circle leaders and teachers were left to the local organizers. The qualifications the organizers in Brattset’s sample emphasize most in *selection of leaders* are: experience from applying the subject in practice, and ability to mix with people. Next to these qualities come knowledge, skills and teaching experience.

Brattset's study (Brattset 1982) also shows that members to a certain extent were invited to take part in the planning of circles. This was the case more often in internally organized circle studies than in external activities, and consultations with circle leaders were more frequent in external than in internal circle studies. Member and subject orientated planning was what the majority of all groups preferred. Generally, organizers participate most, also in the educational planning. Circle leaders participate more than members. Independent of subject and recruitment, members and *leaders* has more influence than organizers on the methods of the circle. Regardless of subject and method or recruitment, *organizers* have consistently much more influence on the aim and contents of the circle than members and leaders.

Still according to Brattset (Brattset, 1982) similar to the attitudes to planning, there are in all groups a tendency to prefer member-centered methods. Descriptions of practice show, that there is a tendency to apply member-centered methods more than leader-centered, but to a less extent than expressed as desirable at the beginning of the circle. The trend towards using member-centered methods in practice is more marked in more theoretical subjects in internal circles than in externally recruited circles dealing with practical subjects.

The most remarkable finding is that a large part of both members and leaders state that this kind of discussion did not take place at all in their circles. That is; a large number of circles have not made use of the variations in the members' background and experiences. Bystrom's (Bystrom, 1976) findings showed the similar comments. Consequently, members in these cases have little opportunity to influence the development of the work in the circle. This must be regarded as a departure from one of the most essential principles of the traditional Study Circle. The ideal Study Circle is perhaps a myth....

Even though the Study Circle leader is just a "primus inter pares", the role of the leader is most crucial if a Study Circle becomes a Study Circle – as previous described – or not. According to Henry Blid (Blid, 2000) two main functions can be identified for the leader: To secure that studies progress as agreed, and to promote a positive social climate at the meetings.

The *first* function implies that the leader is willing to set aside quite a lot of time to circle duties. This does not mean that the Study Circle leader should do everything. The Study Circle works collectively, and each member has responsibility for the progress. The organizational role of the leader falls in between the roles of a chairperson/president and a secretary. According to Blid (Blid, 2000), the most important *organizational functions* for leaders are:

- Prepare a draft plan for the studies to be considered by the Study Circle, presented together with a suggestion for study materials and their use.
- Prepare estimates for possible expenditure for the Study Circle and how such costs might be met
- Keep a list of the members together with notes on how they can be called to the meetings
- Arrange time and place for the meetings and prepare a meeting calendar

- Turn up in time to check upon the arrangements for the meetings
- Call the members to the meetings and ensure that he can be reached in case members should be unable to attend
- Arrange for the purchase/provision of study material and their distribution
- Suggest how all circle members can contribute actively to the meetings, for example by making summaries of or comments on sections studies
- Keep the members well informed of matters concerning the Study Circle and its work
- Make the necessary arrangements if experts are required.

The *social and emotional function* is crucial to a positive development of the circle work. A failure by the Study Circle leader in this function, will likely result in the lost of members, unless very strong ties keep them together. But by trying to apply the following advice, leadership may be improved.

- Be a good listener; listen to what the members want to say or try to say
- Learn who the members are, what they want, what they like or dislike
- Express the feelings and opinions of the circle – use “we” instead of “I”
- Promote co-operation and joint efforts
- Encourage all circle members to take initiatives
- Do not decide on behalf of the Study Circle without an explicit authorization to do so
- Meet the confidence of the members by attempting to keep promises and agreements
- Should it be necessary to contradict/criticize someone, try to allow that person to change his/her position or to accept the criticism gracefully.

Inspired by Oscar Olsson, L. P. Oliver (quoted in Blid, 2000) has set up a series of main pedagogical principles for the work and function of the Study Circle, with emphasize on the role of the participants in the group:

- *Equality and democracy among circle members*, with all members acting at one time as both teachers and students, and with reliance on dialogue and conversation rather than on lectures, outside experts, or formal presentations.
- *Liberation of members' inherent capabilities and innate resources*, empowering them to act, and to influence and be influenced by social reality.
- *Cooperation and companionship*, with members working together toward agreed-upon ends, finding “common ground” in their relationships and ideas.
- *Study and liberty, and member self-determination* of formats and direction, based upon their needs and wishes, and on the objectives of the sponsoring association.
- *Continuity and planning*, meaning enough time for conversations that overcome “one-sidedness” withdrawal of individuals, and undue pushing of one’s point of view, along with emphasis on creating interest in further study after the circle ends. This also means planning by the members themselves, who have the ability to change plans as the need arises.

- Study Circles differ from open-ended discussion groups and radio/TV “listening groups,” which often do not have systematic study as their main objective.
- *Active member participation* to encourage cooperation, joint responsibility, and conversation, without which there is no Study Circle.
- *Use of printed study materials*, from pamphlets, journal extracts, and newspaper articles to scientific texts. Printed matter should always be used to supplement circle conversations.

As Blid (Blid, 2000) points out, “the members’ active contribution are the cornerstone on which are built not only Study Circles but also the far more important democracy.... People learn best when they are active.” With groups that are too small, it is difficult to maintain conversation, with larger groups, few participate; the ideal size of a Study Circles are said to be between 5 and 15 members.

Today we will find study and discussion groups in organizations, at the work places, in neighborhoods and among people chairing common values organized much like Study Circles. These are recognized methods, and are used in both organized and informal adult learning in many countries. *Is the Study Circle then unique?* What might be the unique Scandinavian touch is the way the Study Circle is linked with the philosophy of the providers of adult education, the long tradition, the general acceptance of the method and the outspoken importance of the Study Circle method as a tool for learning and act democracy.

For those reasons, the method has hardly been questioned. It is only recently that the Study Circle has been subject to research, and the studies mentioned (Brattset 1982, Bystrom 1976) legitimate our right to question the method. Study Circles has lost terrain the last years, due to many factors, some of them mentioned in this Paper. The increased cost-benefit view on learning – that all learning should be useful for economical purposes – is focusing on so-called effective learning methods. The Study Circle is considered to be too slow in many aspects. But there is also tendency to a renewal for the Study Circle today. At the present there is an increasing interest in the Study Circle as an educational method, and a will to examine the method critically.

The learning method/s in study circles can be summarized in three words: learning by sharing. The method offers opportunities and possibilities for all participants to contribute with their previous knowledge and experiences, and through open and democratic dialogue the knowledge will be shared and further developed among them.

The Danish professor in adult education, Knud Illeris (Illeris, 2002) has set up three thumb rules for understanding adults’ learning:

- Adults learn what they want to learn and what is meaningful for them to learn
- Adults draw on the resources they already have in their learning
- Adults take as much responsibility for their learning as they want to take (and they are allowed to).

This rules fits what we are saying about how study circles function, and why they are a suitable learning method for adults. In the study circles the adults themselves are the *knowledge managers*. To a large extent they themselves decide what to learn and how to learn it.

Paolo Freire puts it like this in his famous book “The pedagogy of the oppressed” (Freire, 1996):

“... As we attempt to analyse dialogue as a human phenomenon, we discover something, which is the essence of dialogue itself: the word. But the word is more than just an instrument that makes dialogue possible; accordingly, we must seek its constructive elements. Within the word we find two dimensions, reflection and action, in such radical interaction that if one is scarified – even in part – the other immediately suffers. There is no true word that is not at the same time praxis. Thus, to speak a true word is to transform the world.”

The Adult Community Learning Fund (ACLF) example:

The Adult Community Learning Fund is a fund established by the Learning and Skills Council (LSC) and partly administrated by the National Institute of Adult Continuing Education (NIACE), partly by the LSC. The ACLF is funding local and community based projects, which aims to develop access and possibilities for adult learning for all. Some of the projects financed by the fund are more or less like Study Circles. Examples from ACLF Projects might include:

- British Film Institute - older people come together to watch films, discuss the film and film-going and, eventually, they want to engage
- With young people to share experiences about film genres and experiences. They also had plans to link up with an Asian group.
- MIND - Southampton and New Forest bring people together for exercise but their 'core group' is walking. They talk and walk and begin to make decisions about other forms of exercise and sport - and have also begun some healthy eating stuff...cooking and eating together....
- CG Partnership - Market Rasen, rural town, brought together young people to talk about the kinds of learning they might want to get involved in, they called themselves FLARE and have had a go at digital photography and the associated software packages, some assessment of their existing skills, including ICT, lit and num. to determine what they want to develop...had displays and exhibitions which they mounted...and encouraged others to get on board.

Some areas might be more suitable for using the study circle method than others. These areas are built on Scandinavian and English experiences:

When there is no single book or no single teacher that can help you all the way to the goals of *conflict solving and peace*, the study circle is a tool and a method where you may have the opportunity to test your ideas in this field with others, and

where you can propose actions on local level. Peace work has to start in yourself, in your family, in your neighborhood, among your friends, colleagues and in your community. “Think global, act local” is a slogan for discussions and problem solving in study circles.

The Working Group on Education at the Thematic Social Forum, Porto Alegre in January 2012 in planning Rio + 20 points out:

The role of education is to promote critical thinking to deepen *democracy*, in search of sustainable societies. Education has to promote autonomy. The right to education is interdependent with other rights. Democratization of education is necessary to respect diversity. We need new pedagogies to face environmental issues.

And Conscious critical Consumerism (Bjerkaker, 2006):

Where does your food you eat come from, and what does it content? Where is it produced, and who takes the profit? How is it transported, and are the farmers paid properly? What about genmodified food – do you like it? Do you wish to promote ecologic and local production of food? And what about other goods than food; are you a conscious consumer, or do you wish to be?

Consumer Groups – acting like study circles – could be a good tool to discuss and in the long run solve questions like this.

Family learning:

Do you have many examples of cross generation learning? I haven't. The children are at school. The students are at the universities. Adults go to evening classes or to the Pub. In spite of this, we know that many family matters concerns all generations and should therefore be discussed and solved with all ages coming together. Family Study Circles is hereby recommended, organised may be by local community social workers, voluntary organisations or others. It is easy to set a study circle on the water!

Neighbourhood renewal:

This might be a hard one. Many neighbourhoods need renewal just because the people living there have limited recourses, both economical, mentally and educational. To create a study circle takes initiative, from someone. And it takes a bit of confidence to join. The initiative to use study circles in discussions and problem solving for neighbourhood renewal could be taken by the local community or voluntary workers, and people might be recruited through community centres and meeting places like that. Say that people are coming there to search for work, get help with applications for work or social help, get acquainted with courses offered

etc. Such meetings with a social worker and/or a counsellor could be the start of the coming-together in study circles and learning groups similar as SC.

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Consuming behaviour towards the "green" products during the economic crisis

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The global financial crisis, with its tremendous results, seems to have affected decisively the consuming behavior of Europeans but mostly the attitude of Greek consumers who have been hit hard by the crisis. An important question is whether it is easy for a consumer in Greece under financial crisis to be "green". The objective of the present study was to examine the behavior of Greek consumers towards green products during the current financial crisis. A total of 150 consumers in the metropolitan area of Athens were interviewed using a structured questionnaire. The results of the study indicated that women as well as consumers who were more conscious about the environmental impact of individual consumption and consumers who were willing to change their daily habits in order to contribute to the environmental protection were likely to consume green products ($R^2=0.384$). However, after the outbreak of financial crisis, the consumption of "green" products has been dramatically reduced (56.7%). Finally, it seems that even the most dedicated "green" consumers seem to lose their environmental concerns since they have to struggle for their economic survival.

Keywords: green consumption; consuming behaviour; economic crisis; environmental principles

1. Introduction

The significance and the role of consumption have changed substantially in our days. During the last decades, people have consumed thoughtlessly, encumbering the planet. Today, consumers have the opportunity to choose from a wide variety of goods and services. Purchase habits indicate consumer's principles and show their view about life. Consequently, consumption operates with a cultural and social expression. The current individual consumption of natural resources in one day is equal to the individual consumption during a whole year 200 years ago. The outcomes of this new life style include the degradation of natural and urban landscapes, the worsening of the quality of life, as well as adverse effects on human

health. It has become evident that some of the most significant environmental problems are linked to overconsumption. If the population of the planet keeps consuming at the current rate, the quality of human life will continue to decline steadily, endangering not only future of the present generation but also the future of the next generations (Bhate and Lawler 1997; Robert 1996).

Lately, the increasing awareness of the environmental problems has led people to more environmental conscious consumption, e.g. buying products that do not harm the environment (Bhate and Lawler 1997; Robert 1996). In addition, consumers seem to be more willing to change their lifestyle, in order to be more compatible with the main principles of sustainable development. This wave of environmental consciousness has created a new type of consumer, the "green" consumer (Bhate and Lawler 1997; Robert 1996; Henion 1976).

The existence of the green consumer became better known during the late 1990's. The term "green" is used in order to indicate the concern with the physical environment. Scheffer (1991) described the "green consumerism" as "a specific type of socially responsible consumer behavior that may be viewed as involving an environmentalist perspective». Another description of "green consumerism" is "environmentally concerned consumption" (Henion 1976).

On the other hand, consumers who are concerned about the environment do not necessarily consume environmentally friendly products (Pickett-Baker and Ozaki 2008). According to Ajzen's Theory of Planned Behavior (1991) consumers' values and beliefs lead to attitudes towards behavior. Due to environmental concerns, consumers' values do not always lead to green consumer behavior, there is a gap between consumer's value and action (Kollmuss and Agyeman 2002), also called the attitude-behavior gap (Ajzen 2001). For instance, consumers are affected by other consumers, and hence environmental concerns do not always lead to environmentally friendly behavior (Ohtomo and Hirose 2007). In other words, environmental awareness is not the only criterion that leads to purchase decisions towards green products.

Even though, there is a variety of definitions with fine restrictions in classifying different types of greenness (Iver et al. 1994) a broader definition was selected for the purposes of this paper. Hence, it was considered as green consumer anyone whose purchase behavior is influenced by environmental concerns. Consumers who translate these concerns into action and consume environmentally friendly products are identified as "green consumers" (Henion 1976; Mainieri et al. 1997).

According to consumer based studies the green consumers' characteristics are different from those of conventional consumers. These studies focus on traditional demographic (age, income, education) and psychographic segmentation variables. Walter J. Thomson in 1990, found that persons classified as most green tended to be "better educated older females with high incomes and liberal orientation, whereas those least green to be "younger, apolitical, less well educated males (Levin 1990). A Roper Organization poll conducted for S.C. Johnson and Son, found the same pattern having a greater proportion of women and a higher level of education (Schwartz and Miller 1991). Gender was one of the most significant demographical

factors that were used in the past in order to outline the green consumers' profile, although finally many researchers concluded that the demographic characteristics can't help enough in approaching the profile of the green consumer (Tilikidou and Delistavrou 2006, Diamantopoulos et al. 2003, Mintel 1991, Berman 2005). Based on recent findings about the demographic characteristics of the green consumer there is little or no relationship between demographic characteristics and environmental attitudes and behaviors (Diamantopoulos et al. 2003).

The current global financial crisis is the worst since the Great Depression in the 1930's (1929-1941), and is characterized by liquidity shortage in the banking system, collapse of large financial service providers, "bail out" of banks by national governments and downturns in stock markets around the world (Shiller 2008). This tremendous change of the economic environment affects consumption negatively. On one side consumers are "crushed" economically by unemployment and lower incomes and on the other side they are psychologically affected by uncertainty and frustration. During crisis consumers reduce purchases, purchase selected products and postpone the purchase of luxury products (Ang et al. 2000). In addition, they spend more time to find affordable products and they prefer those with the lowest price and price becomes more important in decision-making. The relationship between economic crisis, «green» consumption and overall attitude towards environment has not been studied thoroughly, while previous studies focused more on the characteristics and the behavior of "green" consumers (The Boston Consulting Group, 2009; Ang et al. 2000).

The objective of the present study was to investigate how the financial crisis affects consumer behavior, as well as green consumerism given that in general, environmentally friendly products tend to be more expensive.

2. Methodology

Data collection

Primary data were collected through a questionnaire door to door survey of residents in the metropolitan area of Athens (October 2011 to December 2011). Residents at least 18 years old, who agreed to participate in the study, were interviewed. To avoid misunderstanding in the completion of the questionnaires the interviews were administered by the investigators face-to-face with the residents. The questionnaire consisted of 23 questions on the demographic characteristics of the respondents, their general environmental attitudes, their green consuming behavior, and the changes in the purchase behavior that occurred after the start of the economic crisis.

Data analysis

Data elaboration and statistical analysis were performed using SPSS 18.0 for Windows (Statistical Package for Social Sciences), cross-tabulations were made between related responses and the chi-square (χ^2) test of independence was used for statistical comparisons among them. All significant dependencies where $p < 0.05$ were reported. In addition, a logistic regression model was used to explain the factors that influence green consumption. The independent variables were transformed from a five scale to a two point scale where "Low" was at the low end and "High" at the high end.

3. Results

The profile of the respondents was woman (59.3%) 18 to 30 years old (41.3%), single (57.7%), with no children (68%) and with an educational level of a Bachelor degree (25%) working as a private employee (36.7%) with an annual income of 10.000-20.000€ (46%).

The vast majority of the responders (81%) were willing to change its lifestyle in order to contribute to the environmental protection, while 89.3% of the respondents believe that in general, the consumers' attitude could have an important environmental impact. In addition, 85.3% of the responders were positive towards investment in green technologies during crisis.

Half of the respondents (44%) recycled, while 40,7% would like to recycle but there are no recycling collection points in their neighborhood. During the last years, Greek consumers seemed to have adopted many environmental friendly habits such as using rechargeable batteries, saving water and electricity, donating old clothes, and buying organic products (Table 1).

Table 1:

Habits	Always/Often	Sometimes	Never/Random	I don't answer
I use rechargeable batteries	43.3%	19%	34.6%	3.1%
I recycle daily	44%	23.3%	24.6%	8.1%
I recycle weekly	22%	18%	44.7%	15.3%
I try to recycle but there aren't recycling collection points in my neighborhood	40.7%	37.3%	16%	6%

Habits	Always/Often	Sometimes	Never/Random	I don't answer
I throw my old home appliance in the recycle bins	56%	16.7%	24%	3.3%
I leave the tap water running when I wash my teeth/shaving	22.7%	20%	54%	3.3%
I switch off the lights when I leave a room of my house	83.4%	9.4%	6.7%	0.5%
I donate my old clothes	11.3%	21.3%	65.4%	2%
I use the washing machine only when is full.	69.4%	20.7%	7.3%	2.6%
I reuse the office paper	40%	21.3%	34%	4.7%
I use reusable bags at supermarket	27.4%	16.7%	52%	3.9%
I use my car daily	39.4%	9.3%	48.6%	2.7%
I purchase organic products	27.3%	30.7%	38.6%	3.4%
I prefer the imported products because they are more qualitative compared to greek ones.	40.6%	43.3%	12%	4.1%
The green products are too expensive and not so healthy as some people believe.	28,7%	43,3%	22%	6%
I prefer spending money for a coffee or cinema rather than buying a green product.	32%	36.7%	26.7%	4.6%
It's too difficult retaining the concern for green products during crisis	42%	32.7%	18.6%	6.7%
Green Greek legislation and green labeling are totally chaotic and I can't understand which product is green and which is not.	13.3%	36.7%	45.4%	4.6%

Table 2 presents the proportions of the different energy saving systems at home. More than half of the responders (59.4%) live in houses with double glazing windows, 55.3% have solar boiler and 61.3% have autonomous heating.

Table 2:

Energy saving systems	Percentage
Autonomous heating	61.3 %
Double glazing	59.3 %
Tents	56.7 %
Solar boiler	55.3 %
Wall thermal insulation	26 %
Fans	14.7 %
Automatic lights	10 %
Ceiling fans	8 %
Photovoltaic	2 %
None	3.3 %

In addition, 47.4% of the responders were positive towards the purchase of a hybrid car and 47.4% could recognize at least one brand from a given list of brands of hybrid cars. The rest 50.6% replied that they didn't care for the purchase of a hybrid car because they did not trust the new technologies, mainly because they considered them rather expensive and also because they didn't believe that these were solid cars.

According to the results, 92% of the responders had knowledge of the green products but only 72% actually purchased them. Most of those who replied that they didn't purchase green products (65%), they were able to recognize either the European Ecological Label or the Energy European Label on one or more of their appliances or other domestic products.

According to 94% of the responders the public information in Greece about labeling of green products is rather insufficient. Furthermore, 45.4% of the respondents replied that the Greek green legislation was a chaotic one and consequently, consumers had difficulties in recognizing the correct green label. It was impressive that 25% of the consumers, who considered themselves as green ones, couldn't recognize the official Greek "green" label. Additionally, as it is indicated at Table 1, 43.3% replied that sometimes green products were overrated and certainly not as healthy and innocent as some people are willing to believe. This result could be de-

scribed as a strong indication of suspicion on behalf of the consumers regarding the green controls and certifications in Greece.

Table 3 shows that for 44% of the responders, the most significant factor in purchasing products was quality followed by human health (26%) and price (16%). The less important factors seemed to be the country of origin (Greece) (5.3%), package (2.7%) and environmental protection (2.7%). It is obvious that the intention of purchasing a Greek product wasn't highly rated between the consuming priorities. In addition, responders selected a green product because they associated it mainly with the protection of human health and less with the protection of the environment.

Table 3:

Most significant factor in purchase intention	Percent
High quality	44 %
Human health protection	26 %
Low Price	16 %
Country of origin (Greece)	5.3 %
Publicity/Advertising	3.3 %
Environment. protection	2.7 %
Package	2.7 %

The majority of the responders (83.3%) considered green products in Greece as rather expensive compared to conventional ones. Seventy point seven percent answered that those products were more qualitative and for this reason, 59.3% of them would purchase one even if it was more expensive than the same conventional. On other hand, following the economic crisis, 56.7% was obligated to reduce green products' purchases, with detergents (26.5%) being at the top of reductions followed by clothing (25.3%) and food (24.1%) (Table 4). As it is shown at Table 1 the 55% of the responders stated that it's too difficult to retain their concern regarding green products in the middle of such a serious economic crisis. On the other hand, it was quite remarkable the fact that they spent for gasoline on average 124€ monthly and 48% of them insisted on using their car daily despite the crisis.

Table 4:

Green product firstly reduced after crisis	Percentage
Detergents	14.7%
Clothing	14%
Nutrition	13.3%
Household appliances	5.3%
Pc	4%
Lamps	4%
They haven't reduced green purchases	44.7%

There is a significant relationship between gender and green consumption (p-value=0.01), with females purchasing more green products than males. Gender seems to interact with the consumption of organic products (p-value=0.01) with the majority of the women being stronger organic consumers than men.

Regarding the purchase intention of a green product, during the crisis, even if this was more expensive to a similar conventional one, gender interacts with the intention (p-value=0.02). Based on results, women seem to have stronger purchase desire for green products, even in the middle of crisis, in contrast to the men. On the other side, a possible skepticism of whether concerning about the green products during the economic crisis is appropriate or not, was correlated to the marital status of the sample (p-value=0.023), with single persons being more cautious about the green issues during crisis.

Due to the fact that in Greece there is confusion about what is organic and what is not, there was a label-based question. Gender (p-value=0.013) and age (p-value=0.043) were interacted with the knowledge of the correct green labeling. It was obvious that the older people are, the more informed they seem regarding about the green labeling (p-value=0.043). Additionally the women also seem to be better informed about the green labels (p-value=0.013).

The participation in recycling programs is one of the key characteristics of green consumers. To a relevant question, there were witnessed different opinions based on gender with the women being more "loyal" to the daily recycle and with the continuous recycling on a daily basis being correlated with the gender (p-value=0.012).

Education was related to the intention of acquiring a hybrid car (p-value=0.016), as well as the existence of children (p-value=0.044). The more educated the consumers are, the more willing they seem to purchase a hybrid car, probably because they are better informed about its capabilities (p-value=0.016). The existence of children also seems to affect positively their purchase intentions (p-value=0.044).

Based on the above findings, a binary logistic regression was conducted to investigate the interactions of green consumption which was measured based on the sample's responses to a two-point scale: yes/no. Table 5 presents the independent variables used to define green consumption. All the independent variables used were statistically significant ($p\text{-value} < 0.05$). The hypothesis was that consumers' support to green consumption is increasing as the environmentally oriented consumption consciousness and willingness to change lifestyle is increasing.

Table 5:

Independent variables	B	S.E	Sig.	Exp(B)
Gender	1,021	,448	,023	2,775
Environ. consumption consciousness	2,602	,828	,002	13,487
Willingness change lifestyle	1,857	,515	,000	6,402
Constant	-12,604	3,069	,000	,000

The equation for green consumption was as follows:

Support green consumption = $-12.604 + 1.021 * \text{Gender} + 2.602 * \text{environmentally oriented consumption consciousness} + 1.857 * \text{willingness to change lifestyle}$

The value of the R^2 index indicates that the 38.4 % of the variation of the dependent variable is interpreted from the three independent variables. The Hosmer and Lemeshow test agrees with the good fit of the model since $0.584 > 0.05$

According to the results of the logistic regression model, it is obvious that gender, environmentally oriented consumption consciousness and willingness to change lifestyle are interacting with green consumption. Women seem to be friendlier to green products' purchase. Furthermore, those who are more conscious about the environmental impact of individual consumption are more likely to consume green products. The same happens with the consumers who are more willing to change their daily habits in order to contribute to the environmental protection. Those who are determined to change their lifestyle are more possible to turn to green consumers.

4. Conclusion

This paper describes the changes that occurred in green consumption before and after the outbreak of the financial crisis in Greece.

The vast majority of Greeks was willing to adopt an environmentally oriented lifestyle and concerned about the environmental impact of individual consumption. They favor investments in green technologies during the crisis and they have adopted environmental habits.

So, despite the lack of recycling collection points in some neighborhoods, Greeks recycle on daily basis or at least monthly, throw their old home appliances in recycling bins, try not to waste so much water and electricity and they use the washing machine only when it is full. They donate their old clothes and at a lower percentage reuse office paper and purchases rechargeable batteries. On the other hand, they don't use a reusable bag in supermarket and they cannot avoid using the car daily, spending a remarkable amount of money for gasoline –especially during crisis- and encumbering the environment.

A significant percentage has energy saving systems at home, energy saving home appliances and lamps. In several cases they preferred an energy saving appliance/lamp to a conventional one, strictly for financial reasons. After the outbreak of the financial crisis, the majority of new taxes were incorporated in electricity and water bills, which many times were equally to half of an average monthly salary. So, consumers preferred paying a bit more for an energy saving home appliance in order to avoid overconsumption and high electric bills.

The two main factors which determine purchases are human health protection and low prices, contrary to package and environmental protection. Greeks have identified green products more with human health and less with environmental protection. It was also quite surprising that a significant part of the responders seemed to care less whether the products are made in Greece or not. This could be explained by the rather high prices of most Greek products compared to the same imported. It is noticeable that in many cases Greek products are sold in Greek trade at higher price than abroad. In addition, only during the last -after crisis- year have appeared some campaigns explaining at the consuming public which are the financial effects and the qualitative benefits of an increased Greek products' consumption.

Most of the responders tried to consume green and organic products and the overriding majority complained about the lack of decent information on green products. So, although they all had knowledge of what green products are, they considered "green" Greek legislation as chaotic and they faced serious problems in labeling. In Greece, there are commercially available many products which are presented to be green without being so in reality. They have either the label "organic/environmental friendly", either a green package, without any other labels of the proper official stamps of certification bodies. So, even though some consumers claimed to be green, in reality they were not, since they didn't know which were the official labels.

In Greece of crisis, green products are considered certainly more qualitative but also more expensive. So, most of Greeks have reduced their green consumption and replied that they couldn't retain their concern about green products during economic crisis. There was also a smaller but equally important proportion of consumers, who answered that they view green products as overrated and not such innocent as they are presented. These consumers were more cautious about the controls and the greenness of the products existing in Greek trade.

Another finding of the present study was that gender interacts not only with green consumption but with a wide variety of other variables. Gender influences daily recycle, organic product's consumption and purchase intention of a more expensive green product compared to the same conventional. Women seemed to have more environmental sensitivities than men. They have adopted the habit of daily recycling and are considered to be stronger green consumers than men, even if it costs more.

Gender and age had a key role at the knowledge of the correct green labeling. Older people and women were better informed about green labels, and they could recognize better a product's greenness. On the other hand, marital status affected the cautiousness about how proper is concerning about green products during crisis. Singles were more skepticism and cautious in this issue.

Education and having children also interacted with purchase of a hybrid car. Families with children seemed to be concerned more about the environment's future and tried to acquire a greener lifestyle, including a hybrid car. Better educated people were also better informed about the capabilities and the environmental benefits of a hybrid car. It is worth adding that in Greece there is a partial five-year tax relief for those who own a hybrid car.

Females were more conscious about the consumption's environmental impact, willing to change their lifestyles and more likely to turn to green consumers. Some consumers have not associated the individual consumption with the environment protection. So, they may recycle or use a bicycle instead of a car, but they don't try to consume rationally and ecologically. According to the results of the present study, those who are more conscious about the effects of the individual consumption to the global environment, have more possibilities consuming green products. The same applies for those who are more willing to change their daily life in order to contribute to the environmental protection. Women have a key role in environmental issues since they were more likely to purchase green products. They deal more with the house and food issues, they are concerned about the future of their children and they are more sensitive to green topics.

In conclusion, the present economical conditions turn to something unprecedented for the Greek citizens. Although Greeks have reduced the consumption of green product, they are still sensitive about issues towards environment. They are willing to make sacrifices, they support green technologies and they have realized the environmental significance of green consuming and living. However, green interest and concern in Greece, is a rather recent phenomenon. Through the previous years, not much was known about organic products, green living or sustainable consumption, while the rest of Europe deals with these issues for a few decades. The lack of adequate information and relevant policies for the green consumption's encouragement during the past years were between the main weaknesses. Furthermore, there was an inexcusable trend over the imported products which were presented as more qualitative than Greek ones. Greeks even today are a bit confused about what is green and what is not and try to reach on their own to the correct information. Furthermore,

they make a huge effort to handle with the increased prices of both green and Greek products in order to improve the life quality.

Perhaps, in the most critical turning point for and under the worst financial circumstances ever, is quite optimistic and encouraging the fact, that Athenians don't give up. They aren't indifferent about the environment, they try to live in a healthier and greener way, they make sacrifices and they are willing to change their life in order to ensure a better future for their children and next generations.

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Empowering teenager consumers through active research to adopt a more responsible way of consumption

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On the basis of the research project *Able Youth* with teenagers at the age of 15-22 at two Viennese schools we describe the young researchers' investigations beyond consumption, researching the way their families consume energy at home and their motives, attitudes and knowledge related to energy saving and energy efficiency. Our paper reflects the manifold obstacles to putting energy efficient behaviour into practice from the perspective of the participating teenagers and their parents. Furthermore, we shed light on the impact of our own work by presenting the learning outcomes of the teenagers in terms of self-initiated changes and their real impact on daily energy practices. Discussing our own insights, successes and failures, we would like to contribute to a better understanding of how educators and scientists can empower young consumers to live more sustainable and responsible lives.

Keywords: Sustainable consumption, Energy consumption, Daily practices, Attitudes and Values, Youth studies

1. Introduction: The project Able Youth

In the project *Able Youth*, pupils of two Viennese secondary schools (78 pupils aged between 15 and 22, of which 42 participated actively) localized energy saving potentials in households, advised their own families on energy saving and assessed the final outcome at the end of the project.

Recently honored as a UN decade project for Education for Sustainable Development, the research project is financed by the program "Sparkling Science" of the Austrian Federal Ministry of Science and Research (project duration: Sep 2010 – Jun 2012). Providing a social scientific background, the scientists introduced and actively involved the pupils in developing questionnaires, conducting interviews in their own households and guided the input and analysis of data.

In October/November 2010, the first survey was conducted by the pupils with their parents; the second round took place in October 2011 with the aim of evaluating whether the project had any impact on energy consumption, the behaviour related to it and the attitudes towards energy saving in the pupils' households. In total, 82 people were interviewed in the 2010 survey round; in 2011, 55 interviewees participated, which yields a total number of 137 interviews. 65% of the people interviewed have a migratory background, and a relatively large share (68,4%) of the interviewees graduated from school with a school leaving examination (Austrian *Matura*).

Between the two surveys, the first group of the pupils was involved in energy-related activities during the school year 2010/2011; the second group did not participate in such awareness-raising activities.

The first, active group attended an energy consulting workshop on energy saving potentials in households (focusing mainly on changes in consumption practices) with the final aim of passing on the insights they gained in the workshop to their families. Furthermore, the classes participated in various workshops and activities (a number of these activities were initiated by themselves) during the school year 2010/2011 (e.g. excursions, a graphic design workshop on producing "freecards" and talks with Austrian entrepreneurs about their sustainable business practices).

The pupils actively took part in the dissemination of the project, e.g. by writing a blog and presenting the project results in their school and at university.

2. Energy consumption patterns and motives for energy saving

The results of the quantitative data analysis clearly show that the *energy consumption patterns* of the majority of the parents interviewed during the project could already be described as energy efficient before the start of the project. A large part of the participants showed previous awareness and knowledge in the area concerned in the interviews.

There are a number of variables describing behaviour, however, which give evidence of *energy inefficient behavioural patterns* in a larger part of the interviewees (but almost never reaching the majority): For example, 60,8% of the parents interviewed state that they wash white laundry at 60 degrees (only 15,7% wash at 40 degrees); 49,1% of the interviewees don't close the tap while shampooing their hair. Moreover, 47,2% frequently or sometimes do not put the lid on the pot when cooking (52,8% state to do it rarely/never) and 46,2% never switch their computer into energy saver mode. 30,8% of the interviewees state to turn on the heating as a first impulse when temperatures drop a little (61,5% put on warmer clothes). 24,5% don't use an electric kettle.

80,8% consider it sensible to be mindful of their electricity consumption, 74,5% find it reasonable, but only 18,9% state that it is effortless (21,6% tiring). Paying attention to energy used for heating is considered sensible by 84,6%, reasonable by

64%, and effortless by 24% (10% tiring). 86,5% state to be vigilant about energy consumption behaviour in their households in general, and 79,2% keep low energy consumption in mind when buying new household appliances.

Great variation could be observed in the *motives for energy saving*. According to the quantitative survey, the interviewees who stated that they mind their energy consumption behaviour in the household (87% of all people interviewed) mention the following motives:

- Cost reduction (54,9%)
- Contribution to reducing global warming (52,9%)
- Environmental protection (45,1%)
- Rising energy prices (21,6%)

It clearly shows that the dominant motive of cost reduction becomes particularly relevant in the question of whether heating practices should only be changed when this is accompanied by a reduction in heating costs. Almost half of the interviewees (48,1%) agree here.

In the group discussions, the teenagers also described a wide range of their families' attitudes to the topic of energy saving. Some specify that *energy saving behaviour* in their family is an *unreflected routine* and represents the normality:

“We don't really talk about it, but it just goes without saying somehow. It has always been like this. (...) And, I don't know, we never had to talk about it like 'dear family, from today on we'll save on electricity'. But concerning lighting, I actually want to turn it off usually, but sometimes I just forget about it and then my mum or dad says: 'Turn off the light in there', or something. But apart from that we don't actually talk about it.“

Others give more prominence to *cost reduction* as a reason for energy saving: „My dad for example already talked to me about it, because we once had to make an extra payment on the electricity bill. And that I should use less energy.“

The *presence of climate change in the media* also figures among the reasons for the pupils to talk about the topic of energy with their parents. A further motivation for energy saving mentioned by the students includes *health*, that is, the opinion that some practices could represent a health hazard might have the “side effect“ of resulting in energy saving behaviour (e.g. electric smog).

3. Obstacles to putting energy efficient behaviour into practice

According to the teenagers, *obstacles to putting energy efficient behaviour into practice* are manifold. Those mentioned in the group discussions could be categorized into the following three types:

1. *Comfort and aesthetics*: the desire to be reachable at all times, convenience, fear of reduced comfort, aesthetic reasons (cold light of energy saving bulbs,

looks are given preference to reducing energy consumption in the case of drying the hair).

2. *Limited scope of action*: small range of possibilities in the case of rented apartments and costs for investments or technical improvement.
3. *General insecurity or lack of knowledge* about the effect of energy saving measures.

In addition to this, a few parents mentioned *obstacles to energy efficient behaviour* in the questionnaire. Most frequently, *lack of time and information* were named here.

The question of subjectively perceived comfort as already described above also seems to be relevant for the parents: After all, one third of the interviewees turns on the heating as a first impulse in reaction to a little drop in the temperatures. The majority of the interviewees does not want to give up their comfort temperature, which also becomes evident from the answers to the question of whether they would accept increased heating consumption in turn for a cozier atmosphere in their homes. 60,4% of the people interviewed answered this question with yes.

Dominant ideas of parents about *hygiene* might also represent an obstacle to increased energy saving. They play a role, for example, in the choice of the temperature for washing white laundry, as described above. The relatively weak response to the question about the use of the computer's power saver mode could be explained with a lack of knowledge about this function or, alternatively, with recurrence to the desire of having the computer *constantly and immediately at reach*, as evident from the interviews with the teenagers.

4. Attitudes and knowledge regarding energy saving or measures related to energy efficiency

Apart from a relatively large amount of prior knowledge about energy efficiency in the majority of cases, many parents interviewed already displayed a sensitization for the topic of energy consumption and climate change.

A comparably *high consciousness for the problem and feeling of responsibility* or "moral" attitude towards the topic could be observed. 84,6% of the interviewees agree that everybody should be prepared to limit the standard of living for the sake of environmental protection. Furthermore, 88,7% also assent to the statement that going easy on energy resources can contribute considerably to climate protection. On the other hand, 84,2% reject the statement that climate change is a natural process to which human beings do not contribute or which they affect only little.

The people interviewed see the *responsibility for solving energy issues* mainly on part of the industry (75,5%), followed by governments (50,9%), private households (30,2%) and energy providers (24,5%).

In comparison, individual concern about the *supply of fossil energy resources* is less pronounced. After all, 36,5% of the people interviewed are not particularly disconcerted about diminishing fossil energy resources, and 31,4% do not worry at all about the future supply of fossil energy.

The people interviewed seemed to be *relatively well-informed* about the topic of energy in the household and demonstrated a certain appreciation of its relevance, as could be seen from the fact that only 18,9% of them agreed to the statement that the topic at hand does not play a significant role in everyday life; roughly the same number of interviewees (19,6%) stated not to have engaged at all with the topic so far. However, about a third of the interviewees (32,7%) felt they were *insufficiently informed* about the possibilities of saving energy in the household. Another third (30,2%) agreed to the statement that it is hard to judge where exactly energy saving in the household should start. More than half of the people in the survey (53,8%) rates their knowledge about energy consumption in the household as good or quite good, but only 20% have already used energy consulting.

What is certainly less pronounced than the general relevance of the topic is the *emotional involvement* and involvement in terms of energy consumption: “only” just over half of the interviewees (56,6%) stated to actively try to convince people in their environment to save electricity. Even though two thirds of the people interviewed declare to sometimes feel a certain anger about people who waste energy, one third still disagrees with this statement.

Interestingly enough, only few connections between the attitudes towards the topic of energy consumption and the actual energy behaviour could be found (for example, between a general awareness for the issue or awareness for self-responsibility and energy efficient behaviour). Educational levels do not seem to have any influence on the awareness for the issue in this sample.

On the contrary, clear differences could be found according to the migration background of the people interviewed: People with a migration background display a lower disposition towards saving energy as well as a lower level of awareness for the issue and are generally less informed about energy saving potentials. Only 56% of the interviewees with a migration background, for example, state to be vigilant about energy consumption patterns in the household, as opposed to 91,3% of those without a migration background.

5. Impact of awareness-raising activities upon parents and initiated learning processes among the teenagers

Only few but nonetheless some *differences in the behaviour and attitudes of the parents interviewed* surfaced from the comparative analysis of the data for the control group before and one year after the energy consulting session by the students.

On the behavioural level, for instance, a significantly higher number (T-Test for paired samples) of people in 2011 stated to leave on the light in the room fewer

times or never (in 2010, 44,8% indicated this; in 2011, it was 85,7%) or to turn off the water while shampooing their hair (57,1% in 2011 as compared to 48,3% in 2010).

Differences could also be observed on the level of attitudes: in 2011, significantly more people than in 2010 believe that those who do not practice any energy saving measures bear co-responsibility for the destruction of the environment (92,9% agreed in 2011, opposed to 86,2% in 2010) and that fossil resources should not be exploited at the cost of the following generations (while in 2010, 86,2% agreed fully or largely to this statement, in 2011, the whole sample consented). Significantly less people feel a lack of information about energy saving possibilities in the household (17,9% of the interviewees in the control group in 2011, as opposed to 39,3% in 2010).

No differences between 2010 and 2011 could be noted, however, on the *level of energy consumption*. It therefore appears – as far as this could be deduced from the facts, considering the low return rate of energy bills - that the project did not have an impact on the de facto energy consumption in the households of the control group. On the contrary: in 2011, significantly more gas was consumed (which might be attributed to other factors, however). A comparison between the energy data of the test group and the control group was not possible due to an insufficient number of complete data on energy consumption.

Considering the learning processes and the effects of the project on the students' perception and awareness for their own energy consumption, the following statement could be made: In the group discussions in which both actively involved classes took part, the pupils highlighted several *positive effects of the project*, observing – among other things – that they were *sensitized* in a certain way:

„I believe that it produced a bad conscience in me to a great part. Because, well, if I was home alone I always left everything on.“

It is interesting to consider the remark that the learning outcomes will especially become relevant to the practices in their *own future households*:

„At some points, we're also going to be parents, well, most likely. But we're certainly going to be adults who live in their own households. And it can't do any harm to already know something in advance, because, maybe we can't put it into practice now because of our parents or I don't know, because we don't have that much money ourselves to buy a washing machine or no idea what, but we can do that once we have our own flat or a house.“

6. Conclusions

The *aim* of the project was quite ambitious: to bring about changes towards a more economic and efficient energy consumption in family households by involving the teenage students living there. The *basic assumption* here was that energy consumption in the household is always embedded in a „family system“. In order to really induce a change, the whole system has to be included because it is not sufficient to address only one member of the „system“ and equip them with the relevant knowledge (mere knowledge only being *one* of several prerequisites for behavioural changes).

Difficulties in realizing the ambitious aim of „intergenerational energy consulting“ were met 1) in the knowledge transfer from school to the households, 2) in diverging motives and interests on part of the students and readiness on part of the parents, 3) in varying competences and attributions regarding responsibilities in the family household, and 4) in the role of the pupils as researchers as laid down in the project design.

Knowledge transfer: The idea was to let students carry the responsibility of passing the knowledge they acquired at school through workshops, lectures and excursions on to their families. Therefore, parents were exposed to intervention to a considerably lesser degree than the students themselves, and the “transfer“ of the intervention on part of the students was in turn to a high degree dependent on their personal *motivation* and *interest* in the topic. What was measured in the end was not the impact of the project on the students' behaviour in the household but the changes in knowledge, attitudes and de facto behaviour of the parents.

Another obstacle to knowledge transfer could be identified in the fact that *many parents* already had a *relatively well-developed prior knowledge* on the topic. The group discussions also revealed that the students who felt much more motivated and empowered as consultants were those whose parents displayed less knowledge about energy consumption to start with.

A number of *advantages* of intergenerational knowledge transfer by the pupils have to be mentioned, though: some students mentioned that because they were familiar with the habits in their own household they could react to its individual characteristics, which would not be the case with external counselors. On the other hand, they saw an advantage in the fact that their presence in the household enabled them to accompany the realization of the measures proposed. Another positive point they mentioned was the “*inversion of roles*“ in knowledge transfer: „I also like it because it's something very special that they can learn something from us once, and that it's not only us always learning from them. I mean it depends on how they grew up, which education they have, and it's just very different from 50, 60 years ago, it's just different what we learn today.“ The inversion of roles, however, was not equally well-received in all households: some parents refused to be advised by

their children. Others also used the consulting sessions to pass their own knowledge on to their children.

Competences and attribution of responsibilities: Habits regarding energy consumption are often bound to certain roles that each family member occupies in the household. *Responsibilities* concerning “economic” energy behaviour might also be perceived and attributed differently within one household. Parents in general have other tasks than children or teenagers and therefore also consume energy in a different way. The results of the group discussions, for instance, showed that teenagers focused mainly on mobile phones, PCs and television sets in their discussion, whereas the parents displayed greater concern for the areas of cooking, doing the laundry and, partly, heating. It could be followed from this that students might not feel “responsible” for some of the areas in which they were given hints for energy saving (with the exception of those regarding the appliances they frequently use, as mentioned above) and thus may have been less motivated. The implementation of the hints for energy saving was furthermore largely dependent on the *parents’ disposition*, as they did not choose the consulting consciously and out of their own interest like the pupils, but in the first place participated because their children took part in the school project.

Teenagers as researchers: The students participating turned into young scientists in the course of the project. Leading interviews with their parents was supposed to raise awareness for predominant household habits; energy saving tips should follow on the basis of this self-reflection.

What hampered the *motivation* of the students in researching their own energy consumption, however, was that – even though they were involved in the design of the questionnaire in a workshop – the greater part of the conceptional work was done by the scientists, due to the complexity of the topic (multifaceted nature of the topic of energy consumption in the household and wide range of related attitudes) and the project design (pre-post survey, control and test groups, additional necessary elicitation of electricity and heating data). Therefore, the pupils only partly perceived the survey to be “their own”. In the case of the control group, which did not actually take part in the project, motivating the students was even more difficult.

Considering the results and experiences described above, a number of factors should be taken into account when realizing active and empirical research in the area of education for sustainable development:

An investigation into behaviour and attitudes which includes the whole family system implies a number of prerequisites from various points of view and is therefore challenging to put into practice. Direct interventions or awareness-raising measures and activities only took place within the system of “the school” in this project. The system of “the family” could therefore only be influenced indirectly – through the students – by the scientists. It follows that the implementation of energy-efficient and energy-saving behaviour in the family households is dependent on the parents’ disposition towards and interest in changing their consumption patterns. It remains difficult to evaluate indirect interventions and their results in the

form of the actually resulting behaviour. Therefore, it would be recommendable for future projects to rather evaluate the direct impact on the students themselves instead.

What improves the students' motivation, according to our previous experiences with research project in schools during the past years, are dedicated teachers who become involved in the project at an early stage, who motivate their pupils to participate and actively put the knowledge acquired into practice, and who evaluate the atmosphere and attitudes towards the project among the students in addition to the feedback carried out by the scientists themselves and communicate their observations back to the project leaders. In the current project, this condition was only given in the case of one of the two classes involved.

What is absolutely decisive for successfully realizing a long-term project which goes beyond the scope of an average school workshop and the related initial phase of strong motivation is the integration of the project contents into regular lessons. This was only the case in one of the classes involved here, too. The better integrated the project contents into the regular lessons – e.g. by including the topics of energy and climate change in a number of subjects, giving them relevance for exams or final papers – the higher the personal motivation of the students.

Another factor furthering the students' motivation and their interest in actually changing their own behaviour was the presence and appreciation of external experts, giving lectures or consulting sessions or setting an example for a transformation towards sustainable consumption patterns with their own behaviour. Also here, only one class particularly profited from the experience, as experts we recommended to them were included into their final papers. In the case of the class for which the project contents did not form part of the topics relevant for their exams or final papers (due to the varying main areas of the school), motivation was lower.

Furthermore, it should be considered that the field of consumption chosen also lies within the pupils' own area of responsibility and competence. The project results demonstrate clearly that even highly motivated students were only capable of putting the knowledge acquired during the project into practice in their own areas of responsibility, for example, regarding mobile phones, chargers, etc. In the areas of responsibility attributed mostly to the parents in everyday routine they can only make an impact by giving tips. Even if doing so, it is still dependent on the parents' readiness to agree to an inversion of roles in knowledge transfer whether they accept these hints. In order to successfully support the development of a sustainable consumer behaviour in teenagers it is recommendable to choose an area which falls into their scope of responsibility and influence and for which they consequently also feel responsible in their everyday lives.

Moreover, the results of the project suggest that the choice of target group might also co-determine whether a change in consumer behaviour can be brought about successfully or not. It would be advisable, therefore, to select target groups which are completely unfamiliar with the topic, so their individual situation can be taken into account as much as possible. The finding that families with a migration background display less knowledge about and awareness for the issue, as well as the fact

that especially the teenagers whose families started out with less previous knowledge about the topic were highly motivated might prove valuable here but still have to be examined in more detail.

The project also offers insights into the communication of scientific results and sustainability, two areas in which empowerment represents a fundamental aspiration. Regarding the communication of science, the young participants are empowered to assume the role of an active researcher themselves. This way, they gain knowledge about scientific methods, for example – in this case, empirical methods used in social sciences, starting from the design of questionnaires to data analysis. The experiences from this and previous research projects in cooperation with schools clearly reveals that it is of tantamount importance to structure the research process as simply as possible, even if this might be at the expense of scientific complexity. Therefore, not all research topics are equally suited to this scheme, as it requires a reduction of complexity in order to allow students to participate as investigators in the whole research project, from the project design to data analysis. With this in mind, it has to be admitted that the consumption field of energy has certain limitations to its suitability: a great number of factors influence energy consumption behaviour and its scientific investigation requires a consideration of complex relations.

Sustainability education, in turn, empowers students in their own actions. Sometimes, but not necessarily in all cases, this might run contrary to research activities. A beautiful example for the successful marriage of research and action was given by two pupils who composed a final paper within the framework of the project. Their paper forges a bridge between their own results about energy consumption in their families and energy consumption in the school and submitted an application to the Viennese city council for mounting solar cells on the school roof (the application is currently under review).

Considering the predominant power relations in the systems of science, school and family, the empowerment of students to become active themselves seems to require a large number of prerequisites. In order to convince teenagers of the fact that they can not only become experts in a certain field but also actually influence society and the economy through their own consumer behaviour, and that they occupy an active role in dealing with limited resources, the efforts of scientists working in the field of sustainability alone are not sufficient. Pure knowledge transfer is just as little sufficient, regardless of whether it is initiated by scientists, teachers or parents. Empowerment of teenagers can only be brought about in a sensible way and on the long run if the fields of action and research in which they are encouraged to act and transform also suit their interests and areas of responsibility. Last but not least, scientists, experts, teachers and parents are called to give them credit for taking on an active role.

Challenges in sustainable clothing consumption

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As the total volume of textile consumption at the global level is estimated to be more than 30 million tons annually, the environmental impacts of this industry are remarkable. Textile and clothing consumption is ever increasing and the more recent shortening of the life spans of especially fast fashion increases the environmental burden of the industry. Mass manufacturing in cheap Asian countries has ended up in situation where cheap product prices lead consumers to impulse purchases and unsustainable consumption behaviour: overconsumption, very short use time of products and premature disposal of the product. This paper investigates the challenges in sustainable clothing consumption. It uses empirical data to study the use time of the clothing and while doing so it identifies levels in person-product attachment and attributes for product satisfaction. It also shows that current design and manufacturing systems do not contribute to the sustainable consumption. The paper also proposes alternative ways to fulfill consumers' vanity needs in appearance in more sustainable and less materialistic ways.

Keywords: sustainable clothing, sustainable consumption, product satisfaction, product attachment, PSS

1. Introduction

Mass manufacturing of clothing in cheap Asian countries has ended up in situation where cheap product prices lead consumers to impulse purchases and unsustainable consumption behaviour: overconsumption, very short use time of products and premature disposal of the product. Accordingly the environmental impact of this industry is ever increasing and simultaneously the textile waste is more than ever filling the landfills.

Consumer products that relate to our self construction and identity are constantly evaluated on both aesthetic and social grounds. Products' symbolic meanings are connected to psychological satisfaction through an emotional response. When the product no longer offers a positive emotional response, the consumer feels a sense of psychological obsolescence and can easily replace the product with a new one. Through the new purchase event the consumer can again experience excitement, joy

and pleasure, at least for a moment. Consumption emotion and product experiences are in the centre in the contemporary consumer society.

This paper investigates the challenges in sustainable clothing consumption. It uses empirical data to study the use time of the clothing, person-product attachment and product satisfaction in the long-term use of clothing. While doing so it identifies some design strategies which offer a longer person-product relationship. Accordingly these design strategies proposes sustainable consumption behaviour.

2. Research Methods

This study uses empirical data gathered in two consumer questionnaires. Both surveys were online questionnaires conducted in Finland.

Questionnaire A was conducted in April 2009. The link to the questionnaire was disseminated among design students at Helsinki Metropolia University of Applied Sciences and the University of Lapland. Furthermore the link was available to staff at the University of Art and Design Helsinki and on the following websites: Fashion Finland, Eettinen Kuluttaja (Ethical Consumer), Vihreät Vaatteet (Green Clothes), and Kierrätystehdas (Recycling Factory). A total of 246 respondents participated in this questionnaire. The vast majority, 91.8 %, of the respondents was women and 8.2% were men.

The second data collection was conducted in March 2010. This questionnaire B was based on a 'snowball sampling' method with 204 respondents. The link to the questionnaire was randomly sent to about 30 people who were then asked to further disseminate the link to their acquaintances. The aim was to reach different consumers from the first questionnaire. As there was a preconception that the first data mainly concerned young, ethically interested female respondents, the second survey also targeted male respondents and respondents without ethical interest. In this second data set most of the respondents belonged to the age group under 35 years old (29.4% were 18–25 years old and 48.5% were 26–35 years old), and 70.4 % of the respondents were women.

Structural and open questions were used to gather knowledge from the consumer perspective in person-product attachments, product satisfaction and the use time of clothing.

Firstly the person-product relationships and use of clothing are investigated. Person-product attachments was selected to understand more deeply what kinds of clothing are meaningful to consumers and what items are kept for a long time.

However this information was not sufficient because meaningful clothing is often kept for memory reasons only and these garments may not be in active use. Subsequently the research focus turned towards the long-term use of clothing and attributes that enable product satisfaction.

Respondents' open answers were analyzed using content analysis, where the aim was to understand the inherent categories and construct themes in product satisfaction and product attachments.

3. Clothing Consumption

Currently clothing is far cheaper compared to household incomes than a few decades ago. Textile and clothing prices have fallen, and currently the consumer possesses more and more cheap garments and low quality textiles. According to Jackson and Shaw (2009: 146), in 1950s in the United Kingdom 30% of a household's income went to clothing purchases; currently that figure is 12%, with a higher amount of consumed items.

Clothing prices have fallen, and currently the consumer possesses more and more cheap garments and low quality textiles which are used extremely short time. One study done in the Netherlands found that the average piece of clothing stays in the wardrobe for 3 years and 5 months. The consumer has worn it actively for only 44 days during that time (Uitdenbogerd et al. 1998 cited by Fletcher 2008).

Products are disposed of, not only because of the low quality (causing a short use time), but also because new trends and fashion make products look out of fashion. Consumers are actively seeking novelty and at the same time evaluating their appearance and the product world in a social context. The increase in waste streams can thus be understood as failed person-product relationships in the context of sustainable development (Chapman 2009: 20).

Following section is based on collected data and research findings in the questionnaire B. When asked what aspects in clothing worry consumer, 78% of women and 68% of men were worried about the short life span of garments. When asked to estimate the life span of their oldest and most used garments 74% of men and 66% of women answered over five years (See Table 1).

Table 1: Respondents' estimation of the longest use time of their garments

	Men [%]	Women [%]
7 months-1 year	1.7	1.4
1-2 years	1.7	0
2-3 years	6.9	5.6
3-4 years	8.6	15.4
4-5 years	6.9	11.9
over 5 years	74.1	65.7

When asked to estimate the shortest time they have used some garments 10% of men and 22% of women answered less than one month (see Table 2). Moreover the consumers' interest in environmental issues affects the life span of garments: 84%

of those consumers whose environmental interest is high reported using garments for more than five years while only 14% reported using some garment less than one month. Of the respondents with lower environmental interest, 59% reported using some garment for over five years and 22% said that they have used some garment for less than one month. In summary, the respondents' environmental interest and values are connected with the use time of their garments.

Table 2: Respondents' estimation of the shortest use time of their garments

	Men [%]	Women [%]
Less than 1 month	10.3	21.8
1-2 months	12.1	9.2
3-6 months	25.9	30.3
7 months-1 year	25.9	28.2
1-2 years	22.4	13.4
2-3 years	3.4	4.9
3-4 years	0	1.4

When asked respondents to think about their latest garment purchasing situation and the reasons for garment purchasing decision, the consideration of long-term use of that garment was not in high priority. From women 33% and from men 22% have considered the long use time of the garment while purchasing. In addition the consumers' value base can be seen in these responses; 43% of respondents with high environmental interest and 21% of respondents with low environmental interest have considered the long use time of garment while purchasing.

Furthermore while evaluating their latest garment purchasing, rather many of respondents admitted to have done the decision in impulse; 24% of all respondents. 19% of respondents with higher environmental interest said that their latest garment purchase had been impulse shopping, compared to 31% of respondents with a lower environmental interest. Some respondents commented that they had bought a cheap garment with low quality on impulse, which they had not even expected to last for a long time. Less consideration is used for cheap garments during purchasing.

According to respondents' answers impulse shopping had resulted in the wrong purchase decision rather often. Consumers noticed that the garment did not fit in a satisfying way, the colour was strange or wrong, the material felt uncomfortable in use, or that the garment did not fit into the existing wardrobe. These kinds of garments purchased in error may not be used at. Accordingly cheap prices tempt consumers into impulse purchasing, which often results in dissatisfaction and garment disposal.

4. Attachments to Clothing

This section is based on Questionnaire A and it investigates meaningful attachments to clothing items. How to create a deeper meaning into product is one of the most important issues a designer must consider in the context of sustainable design. Accordingly the meanings behind person-product attachments provide the most important insight for a designer. Through studying the long-term person-product relationship and attachments behind of it, the designer has the opportunity to promote emotionally durable design.

Table 3 is constructed on the basis of questionnaire A and it presents all dimensions in attachments to clothing. In summary these include the following themes: design/style, quality, materials, functionality, personal values, emotional values and present and future experiences.

Table 3: Sustainable attachments to clothing (Niinimäki 2010; 2011: 170)

Attributes that create sustainable attachments to clothes	
Design/style	classical, timeless design, not overly loud visual messages strong design, represents some unique period of design style the experience of beauty in multi-sensorial ways
Quality	high quality in design, materials and manufacturing durability
Material	ageing well, aesthetically and gracefully (e.g. wool, leather)
Functionality	multifunctionality fit reparability
Personal values	uniqueness tailor-made self-made self-designed made for me expression of one's own ideology
Emotional values	memories (history/past, places, people, moments, childhood) family ties positive associations (e.g. safe and soft tactile feeling) expression of self
Present/future experiences	promise of experiences (e.g. modification possibility, party clothes, opportunities for narratives to emerge) family ties and continuity aspect suitability for gift-giving satisfying experiences

Aesthetic aspects are important when consumers describe their attachments to clothing. Beauty in clothing can be approached through social, cultural and temporal contexts and in a multi-sensorial way. Other important aspects in attachment

process include positive experiences, memories, family ties, expressions of self, promises of future experiences, and emotions. In the study findings, design attributes that are connected to attachment are: high quality, color or print, classical design, functional style and multi-functionality. Furthermore some materials' ageing process is considered to be aesthetical, and this aspect enables a long lifetime for garments. (Niinimäki 2010.)

5. Product Satisfaction

Meaningful attachments to products are personal and they mainly emerge during a longer period of time. Accordingly meaningful attachments are not easy to address in the design process. Therefore, for designers aiming to extend the product life span, it is even more important to identify those elements that enable long-term use of product.

Satisfying experience through enjoyable use, psychical attributes, style and utility are important levels in positive product experience (Forlizzi, Disalo and Hanington 2003). Moreover product's operative dimensions are relevant during the use phase (Margolin 2002), and intrinsic quality attributes affect the enjoyable use experience of the product (Schifferstein and Zwartkruis-Pelgrim 2008). The consumer's psychological response to the product also has to be studied to understand consumer satisfaction more deeply. Jordan (1999) adds to this that even the user's ideals and values have to be studied to understand more deeply all aspects in the process of satisfaction, which leads to long-term use of product.

Product satisfaction is important in the sustainable development context for designers trying to extend the product life span and simultaneously slow the cycles of consumption. Products durability and long-term use are prerequisites for sustainable consumption (Cooper 2005). Cooper (ibid.) argues that consumers associate durability with high quality and not with environmental impacts, yet to change the balance in SCP (Sustainable Consumption Production) it is most essential to extend the product use time.

Research done in the area of satisfaction has focused on the (dis)confirmation paradigm (e.g. Churchill and Surprenant 1982; Oliver 1980). This means that consumer satisfaction is based on the size and direction of the consumers' disconfirmation experience. Consumers have certain expectations in the pre-use phase, creating a certain evaluation frame against which they judge the product. When the product performs worse than expected, the consumer is dissatisfied (ibid.). Consumers also evaluate products through a limited set of attributes. Some attributes are determinants leading to satisfaction while others are related to dissatisfaction. A good performance in those attributes that are important to the consumer is the best guarantee of stimulating product satisfaction. (Swan and Combs 1976.)

According to questionnaire B the attributes that enable longevity in clothing are: quality, functionality and aesthetic attribute (See Table 4). Fulfilling instrumental

performance expectations in clothing (i.e. the quality experienced in the use phase) alone does not result in satisfaction. Expectations in expressive performance (aesthetic dimensions) also must be met in order to develop a sense of deep satisfaction. Expressive dimensions in clothing connect to a person's psychological response to the product (the emotional experience).

Yet these dimensions in satisfaction are not enough. Consumer's personal factors, values and e.g. environmental interest influence the evaluation frame of reference. These personal values affect in what satisfaction attributes and values in the product or in the company behind of the product are important to the consumer. For those consumers whose interest in the environmental issues is high, the following values are important in clothing choices: local or ethical production, eco-materials and long life span of garments. Consumers with high environmental interested include sustainability attributes in their individual frame of reference for product evaluation. These consumers make product judgments also against these environmental values. Consumers' expectations regarding a garment's environmental values also have to be met if deep product satisfaction is the goal.

Table 4: Satisfaction attributes for longevity in clothing (Niinimäki 2012)

Satisfaction attributes	
Quality aspects	Functional aspects
Good fit (size and cut)	Suitability in use
Durable materials	Use experience
Durability A) in use	Easy maintenance
B) while laundering (stability in fit, material, colour)	
High quality in manufacturing (sewing work)	
Aesthetic aspects	Values
Beauty	Local production
Style	Ethicality
Colour	Ecological
Fit	Long life span
Tactile feeling (material and fit)	

The main determinants in clothing dissatisfaction were low durability and especially poor quality. Respondents pointed out that some garments may stay in use only until the first wash, after which the garment has lost its fit, size, or colour or the material simply looks old after laundering. First laundering seems to be the critical stage while respondents are experiencing the quality of the product. Accordingly the experienced quality in use is determinant for garments long life span. But there were also examples in the study that sometimes contemporary garments do not last even to first laundering time; some garments had come apart even before the first

laundering time. Garments low durability and especially weak maintenance quality seem to be key determinants in consumer dissatisfaction, and they lead to product disposal.

6. Design for Sustainable Consumption

Walker and Chaplin (1997) argue that it is extremely difficult to sustain the value of a product in a temporary context. They identify the following values in artifacts: monetary or exchange value, use value (practical functions), artistic value (aesthetic quality), and personal or sentimental value (emotional). In some cases the aesthetic value may last if the product is not too fashionable and it ages in an aesthetically pleasing way. Furthermore personal memories can increase the emotional value of the product.

How then the designer can create the sustainable value into product or into person-product relationship? Positive emotions towards a product offer possibilities to create commitment and bonding to this product, which will be cherished and taken good care of. This is valuable aspect in sustainable development and possibility to extend the product life span.

The challenge in extending product lifetimes is in achieving continuing satisfaction with the product also in the emotional level. Therefore it is essential to study long- and short-term use of products to identify those attributes and elements which enables the long-term use of products. On the other hand it is most valuable to define those determinants which lead to short-term use of garments to avoid these in design process.

Emotional durable design aims for deeper understanding of consumer experiences and moreover it aims for satisfying use experiences. It is important to offer good product performance in those attributes that are important to the consumer and which enables the long-term use of product. A deep emotional satisfaction is one way to postpone product disposal and thus extend the product's life span.

Consumer-based quality attributes, which are experienced in use situation, are most significant while defining the satisfaction attributes in the long-term use. Increasing the intrinsic quality of the product is not merely enough. Designers have to fulfill consumers' emotional needs also. In this level identifying the emotional and symbolic meanings of products are most important. The key to facilitating deeper product relationships thus lies in a better understanding of the consumers and it needs empathic approach to succeed.

Products' value should be defined in the use context, not only at the point of purchase (Park and Tahara 2008). Products' price should be connected to quality and durability of the product. Furthermore the product value should be connected more deeply to consumer satisfaction and sustainability aspects, e.g. to experienced quality and long life span of the product. Based on this study most of the consumers (83 %) were ready to pay more for higher quality and a longer product lifetime in gar-

ments, if it would be possible to estimate these aspects at the time of purchasing. This consumer' value base is an opportunity to create durable design.

7. Fulfilling Consumers' Changing Needs

One of the biggest challenges in clothing area is the consumers' need for newness and the constants evaluation of our appearance in social context. Clothing choices are strongly linked to our identity building and our needs in appearance are changing all the time. As consumers' aesthetic preferences change over time, the question is how to avoid the psychological obsolescence of garments. How then we can offer change to consumers in a more sustainable way? In this level only better product quality and durability are not enough. We know that unique design and "made-to-measure" services can offer better product satisfaction by meeting a consumer's individual needs and preferences better than mass-manufactured garments. Furthermore offering upgrading, modifying and lending services can offer the needed emotional change experience for the consumer.

Creating these kinds of services creates possibilities to dematerialize the satisfaction of consumer's wants and in fact they are opportunities to dematerialize the consumption. Consumer can experience emotional satisfaction and change through e.g. lending the product instead of owning the product herself. High-quality products can be targeted for intensive utilization, e.g. renting and leasing. Lately the new kinds of clothing clubs are emerging where consumers can lend each month a certain amount of garments and change these garments next month. In this approach owning of the product is not in the focus, instead the function or the experience the product can offer to the consumer.

Products aimed for long-term use must be made of high quality and durable materials and techniques, and this approach decreases the environmental impact of manufacturing and consumption in total while decreasing the material throughput in the system.

8. Challenges for Economical Systems

Service approach offers new business opportunities. In the systems based on service thinking products are investments and accordingly they are aimed for long-term use and they must be durable. This is also a possibility to change the traditional economical models in the fashion industry. Services that aim for product life extension offer new business opportunities both at local (e.g. renting, upgrading) and the global level (e.g. mass-manufacturing, online exchange stocks, and do-it-yourself concepts).

In addition enterprises operating through online allow manufacturers to be in direct contact with the consumers and better address their wishes (Stahel 2001). This offers a more active role to consumer and also offers her a possibility to affect on design or manufacturing processes, if the company wants this. Including consumer and her interests and values in the design process creates new kind of value into the product and for the company. This kind of brand value can even create new kind of business systems based on consumer's activity and her real wishes and inner values.

Widening the producers' responsibility in the clothing sector offers possibilities to change radically the current industrial manufacturing system and the economical thinking behind of it. Traditional way of doing easy profit by effective manufacturing systems in lower cost countries, increasing manufacturing volumes and sales to get more profit, have ended up in situation where the material throughput is huge. If manufactures' have the responsibility to take back product "old product becomes a source of potential value in the manufacture of new product" and industry is guided towards close loop and cradle to cradle thinking (Peattie 2010: 249). If the product can't be recycled, it is economically wise to extend the use time of the product while disposal means extra costs for the company. Accordingly consumer role can be changed from value user to value creator while extending the use time of the product and returning the product to recycling processes began to be important phases in the product value creation. (Peattie 2010.)

9. Conclusions

This paper has investigated the contemporary clothing use. It explained many levels through which consumers create attachment and satisfaction to clothing. Furthermore it identified the attributes which enables the long-term use of clothing and moreover the determinants which leads to short term use of garments.

It is possible to slow consumption and increase the longevity of products by design strategies related to intrinsic product durability and deep product satisfaction. Furthermore through services there is an opportunity to extend the enjoyable use of the product. The PSS (Product Service System) thinking can postpone the psychological obsolescence of garments by offering new experiences to the consumer in a more sustainable way.

Challenges in sustainable clothing design aiming for sustainable consumption are many. Yet by approaching the sustainable design through better understanding of the consumer, his/her needs, emotions and values and consumption behaviour offer new opportunities to better understand the current situation and the connection of design and manufacturing systems to consumption patterns. New empathic approach is needed in the design side and new business thinking is needed in manufacturers' side to change the balance towards more sustainable one. With the consumers the discussion about their inner values and how this value aspect should be included in their consumption behaviour might initiate possibilities for change. Ra-

ther many consumers are worried about the current industrial system and its environmental impacts yet they do not understand how they could themselves affect into sustainable development through their own consumption behaviour. On the other side creating new green business thinking in producers' side offers opportunities to slow down the cycles of manufacturing and consuming. These new business strategies have to aim for less materialistic production and consumption and new kind of service thinking.

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Corporate social responsibility in the Czech Republic

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The work is aimed at researching the issue of Corporate Social Responsibility (hereinafter “CSR”) in the Czech Republic (hereinafter “CR”). Social responsibility is now an integral part of integrated business management. It has a long tradition in the Czech Republic, because one of the most prominent businessmen of the 20th century – a Czech entrepreneur, Tomas Bata - began to apply CSR in his plants around the world in the first half of the last century. Currently, the issue of CSR becomes increasingly important. There is an integration of positive attitudes, practices or programs into company’s business strategy at the top management level. We follow a shift in management focus from the level of “profit only” to a wider view in the context of the three P’s - people - planet - profit. This involves the functioning of the organization with regard to the so called triple - bottom - line, when the company focuses not only on economic growth, but also on environmental and social aspects of its activities. The main objective of the work is to analyze the current state of CSR in the Czech Republic on the basis of quantitative research (approx. 100 organizations were approached) and compare it with an analysis from 2004. The conclusion summarizes the approaches of managers to the issue of CSR in the CR, including some trends.

Keywords: corporate social responsibility, Bat’a, Zlín, share holders, research, quality, management

1. Social responsibility and its evolution

In past, especially during the first transformation phase there was in Czech Republic many corporations aimed to maximize their profits, best immediately or preferably in shortest possible time. It is pleasing those today many of them do understand or begins to that for theirs stable grounds it is necessary to shift from profit-only making toward to social corporate manners, 3P, means People, Planet, Profit. In reality it is not to measure corporation success based on their economy only, even

they are important for operations, but based on corporation social responsible conduct. How is fulfilling CSR concept (Corporate Social Responsibility.)

CSR concept is not today invention. Between the World Wars, in last century, during 20-30's in former Czechoslovakia and other countries, where sister companies existed put into reality Tomas Bata and later his brother Jan. Those two did understand that correct behaviour toward customers and affordable price, including after-sale service is worth it, same as right treatment of its workers, correct award of their work, including professional training and education, forming good living conditions such as housing, catering, health care and others. Building relationship with suppliers, clear specification of demands, on-time payments, bribes refusal of personal advantages for purchasing staff from supplier side etc., can bring many advantages. Not least treated was to develop relationship with local community supporting education, health care, cultural and sport activities in region, leading to improve corporate image [1]. Those entrepreneurs identified themselves with real application of social responsibility, it is not the corporation senseless costs from excess capital, but it means investment, bringing profit in future. And big growth of Bata corporation confirmed this. It is a historical fact that Tomas and Jan Bata with this concept of Corporate Social Responsibility were ahead of time.

Sometimes it is noted that Bate did not opened nothing new, but his system was copied on his trips to North America, form Henry Ford or G.F. Johnson. It is true, that he learned from both of them and mostly in production and sales management, work procedures, care for workers etc., but Bata did not copied their system, but used to develop his business and unroll it.[2]. Exactly by the words: „To see far, I have to stay on giants shoulders“. It is necessary to say that use of known facts and their further unfolding is the base of most materialized innovations and Bata corporation was using such system on a broad scale.

Another pioneer of social responsibility was during last century 70's and 80's Mr Cuba, Agrokombinat Slusovice CEO. During his leadership not only enterprise growth was achieved, but region as a whole. It is needed to mention that this happen during co-called Real Socialism, known by its central planing[3]. And this is confirming that even under such conditions region did improved, as Bata was saying : „Circumstances are not to blame. It is people to blame“.[4]. It means to adjust toward given conditions and begin to use them as a tool for further business development.

Enterprises mentioned (Bata corporation and Agrokombinat Slusovice) are many times criticized for not fulfilling country demands, since ecology is not involved in their activities. But even that is not true, ecology was not that important then. One of Bata production policy was to minimize waste quality. For example shoe components cutters were financially rewarded for maximum leather use.[5]. And enormous effort was used for processing of rest of waste. For example such waste was used for stiffening plates, used again in shoe-making. Waste treatment was one of the tasks of research departments. [6]. Ecology was important with city development. Workers housing was designed with 2-4 apartment homes, every apartment having its own little garden. Zlin is known as green city.

As of Agrokombinat Slusovice an example of ecological approach is use of specific insecticides, with minimum average use, production and use of pheromones against bugs etc. It was real ecology in agriculture. [3].

In Europe and other parts of the world, except Japan, where certain social responsibility is part of their culture, economists this social responsibility and its importance recognized only in second half of 20th century. Its pioneer was H. Bowen describing it, in his words: „ entrepreneur obligation is to use those methods, make those decisions or to follow action necessary for society goals and values.“[7].

But a long way was leading toward this concept implementation. Just during 70's partial CSR concept was introduced. Great credit belong A. B. Carroll [8], introducing several studies about social responsibility and its importance for business, its future development. Among others he presented Pyramid of Responsibility (Figure 1

) where he joined some (according to theories that valid, nu-joinable or even non-compatible) elements, needed for successful society development.

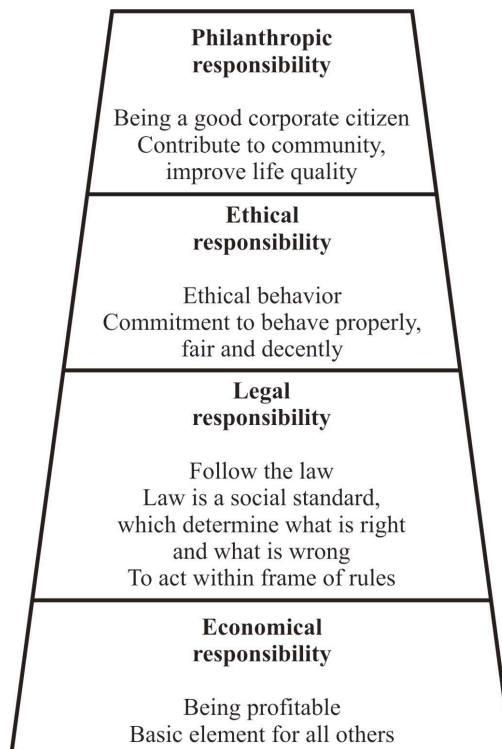


Figure 1: Carol Pyramid of Responsibility

During the turn of century more and more economists and managers became aware of the fact that even when business goal is to form a profit, such goal is impossible without the investment into social progress.

In 2000 European expert center for CSR policy was established as CSR Europe, Czech Republic is a member as well. Country is a member of Business Leaders Forum, aimed toward CSR publicity. EU issued in 2001 Green Book, where CSR is defined as follows: „ CSR is voluntary integration of social and ecological standpoints into daily corporate operations and interaction with its stakeholders.“[9].

As stakeholders are considered all persons interested inside and around the corporation. They are customers, stockholders, employees, business partners, suppliers, local and state administration representatives, and groups of interest, media, trade unions, international organizations and others. In case of given corporation as stakeholders are considered persons or groups directly influenced by its activities. It is clear, that stakeholders extent is different with small company or big international corporation.

As it was mentioned, there are 3 major fields where CSR can be applied.

- Economical
- Social-ethical
- Environmental

Closer specification can be seen in Table 1[10].

Table 1: Fields of social responsibility

Economical field	Social field	Ecological field
<ul style="list-style-type: none"> ➤ Corporate ethical codex ➤ Transparency ➤ Corruption refusal ➤ Client relationship ➤ Supplier relationship protection ➤ Investor relationship ➤ Intellectual property protection 	<ul style="list-style-type: none"> ➤ Workers health and safety ➤ Human capital development Workers education ➤ Balance of working and personal life for workers ➤ Corporate Philanthropy ➤ Equal opportunity ➤ Place of work variability ➤ Layoffs training 	<ul style="list-style-type: none"> ➤ Corporate ecological policy ➤ Material, transport, packaging ➤ Energy and water use ➤ Environmental management ➤ Protection of nature resources ➤ Conformity with national and international standards ➤ Minimize environmental impact

Table 1 is not presenting all possibilities, which can be used for practical use of CSR.

Always it is dependent on subject field of interest, its size etc. Reality can be broader or in case of little businesses even smaller. For example in field of econo-

my the content can be supplemented by good management principles, social field can be extended by hiring handicapped citizens.

Still, there is a question if CSR is not just a trendy affair, pushing corporations toward philanthropy. What is CSR offering? It is without doubt an increase of corporate image. Socially responsible business is more trustworthy not for customers only (paying and bringing profit), but for suppliers, which prefer dealing with a customer with transparent moves and on-time payments as well. More trustworthy is socially responsible corporation for its workers, since healthy and happy employee, proud of his affiliation with company, is ready to do a good work and many times is bringing innovative ideas, more trustworthy is company for region citizens where actual and possible future employees live with their families. For a whole society can practically in many cases corporation substitute a state administration.

2. Situation on implementing CSR in Czech Republic

It is gratifying that after Friedman Theory („all for profit,“ , where according to his words „philanthropy and economy are never compatible“) managers and business economists are more interested in corporate social approach. It needed to stress that classic philanthropy such as gifts to for example orphanage homes is just a small portion of socially-responsible corporation, but even that can help to strengthen its image.

Using the Ipsos Tabor s. r. o. Praha [11] research figures it was discovered that:

- 2/3 of population is in buying goods and services influenced if corporation is socially responsible or not
- For more than 80% of working people it is important if their employer is socially responsible

See 2 and 3:

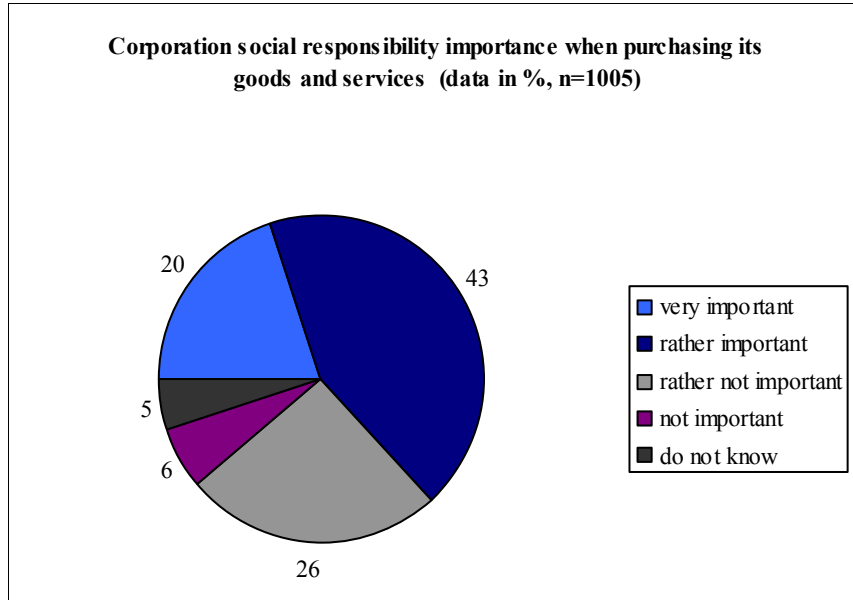


Figure 2: Corporation social responsibility importance when purchasing its goods and services

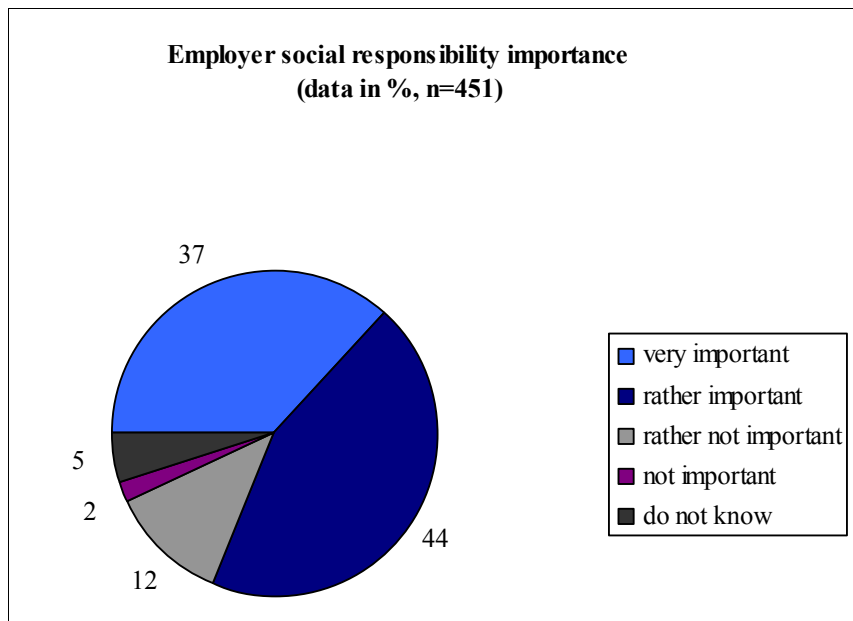


Figure 3: Employer social responsibility importance

It is a gratifying result even if partially deflated by the fact that this research was performed with big corporations only, where knowledge of CSR is expected or system used.

It can be stated that smaller businesses do not often understand social responsibility principles as of its content or use in reality. And even less they answer the question: „Do you know any CSR activities“?

This is confirmed by Business Leaders Forum (BFL) [12] during September-November 2007, when 37 businesses were questioned, 54% of them micro-businesses, (1-9 employees), 37 small ones (10-49 employees) and 9% of medium-sized businesses (50-249 employees).

By this research following facts were confirmed:

- a) Social responsibility knowledge is lower with smaller businesses
- b) Even when CSR principles are not known to them, they are in part applied (see Table 2)

Table 2: Knowledge and support of CSR activities

	YES	NO	Not stated
CSR knowledge	22	14	1
CSR activities supported	36	1	0
for CSR activities assigned persons	8	27	1

Such a fact can be easily explained. In small countryside business workers are locals. Unfair relationship with them can damage business reputation and even threaten it. Company is under great supervision. This is forcing it toward increase of cultural or social events sponsoring, reputation being in stake. And small firms cannot afford bad relationship with suppliers, since this could endanger supply of raw material, services etc.

- c) CSR knowledge is growing with corporation size (see Table 3)

Table 3: CSR knowledge based on corporation size

Knowledge/Number of employees	Micro	Small	Medium
Yes	8	9	3
No	10	4	

This fact is directly connected with information's available for small businesses or broader public about CSR principles. Our study [13] from 2010 is among other dealing with the ways of information about CSR being available to them.

Table 4: Respondents encounter with CSR principles (author works)

Position / corporation	production	trade	construction	others	total
Expert writing	-	3	-	4	7
Expert training	6	11	9	5	31
Trade fair	1	-	1	-	2
Media	17	9	11	10	47
Competitors	-	-	-	-	-
Customers	5	2	-	1	8
Suppliers	-	1	-	3	4
Others	2	2	5	-	9
Total	31	28	26	23	108

As it can be seen of Table 4, public media importance for CSR system, including its demands and advantages is great.

Interesting there is a Figure published by BLF [12], where it is explained which groups of stakeholders are the most ones influencing by their activities corporate behaviour. (see Table 5)

Table 5: CSR activities influence on stakeholders

Which one of following groups is the most influenced by your socially responsible behaviour?	
Employees	30
Competitors	4
Suppliers	11
Stockholders/Owners	5
Customers	19
Others	1
None	1
Not stated	1

Customers group is there on second place, which is satisfying. But we are sure that this ranking shall be higher, since it is customer deciding the corporation faith. According to Tomas Bata „our customer, our Master,“ or „ Bata is not paying your salary, it is the customer“.

The same comments can be applied with Table 6:

Table 6: Practical advantage of CSR activities on corporation

State the most important advantages form real life coming from responsible and ethical behaviour toward your employees, environment and community:	
Better relation with public administration	
Better customers loyalty	12
Better business partners and investors relationship	18
Improved employees satisfaction	26
Improved business economy results	9
Use of existing public support	1
Better business value	14
None	3
Not stated	1

It is obvious that awareness of smaller corporations' managers regarding customer importance and his satisfaction level exists, but majority of them is considering it as a commonplace, without need to mention it among CSR activities.

3. Comparing CSR approach in Czech Republic during 2003-2011 period

In 2003 BLF performed a research aimed to CSR themes and its activities [15]. 265 business were questioned, 42 forms returned (see Table 7) In 2011 we did questioned the same corporations, participating in BLF research, to see if during this time any change can be observed in their opinion regarding CSR. 38% forms were returned and their composition changed as well. (see Table 7)

Table 7: Comparing 2003 and 2011 results

	BOTH RESULTS COMPARED	
	2003	2011
Agree with statement „corporation other than profit-making activity shall actively participate on society development in which is commercially active“	Only one participant did not agreed with this statement	Only one participant did not agreed with this statement
Addressed with CSR definition	96 % of them feel addressed by this definition. Only 4% of them did not.	86 % of them feel addressed by this definition. Only 14% of them did not.
CSR concept	64 % know the CSR concept, 36% not.	67 % know the CSR concept, 33% not.
Special envoy for CSR	10 % of them using specialized envoy 10 % not having one, but considering 80 % not having one and not want any	33 % using special CSR envoy 7 % not using one, but considering it 60 % not having one and not want any
Important CSR topics	1 st place- care for employees 2 nd place - corporate transparency 3 rd place-ecology 4 th place-employees education	1 st place-care for employees 2 nd place -ecology 3 rd place -employees education 4 th place - corporate transparency
Actual corporate activities	1 st place - care for employees 2 nd place -employees education 3 rd place - corporate transparency 4 th place-ecology	1 st place - care for employees 2 nd place -employees education 3 rd place-ecology 4 th place-donations
Why are businesses using CSR activities?	1. coming from corporate philosophy - 93 % 2. effort to bring and keep quality workforce- 59 % 3. part of PR/marketing strategy - 55 %	coming from corporate philosophy - 63 % Competitive advantage - 46 % effort to bring and keep quality workforce - 36 %
Interested on CSR ideas	More active involvement in CSR- 23 % More information about it- 66 % Not interested at all- 11 %	More active involvement in CSR- 48 % More information about it- 40% Not interested at all- 12 %

Respondents structural change, their number and different position of those filling the questionnaires (for example if in 2003 this was 38% corporation CEO, in 2011 this was just 10%) to the certain extent influenced research results. Only by this can drop in number of those corporations being addressed by CSR ideas be explained. In 2003 this figure was 96% and according to the 2011 research only 84%. Nevertheless it can be stated that corporate effort toward responsible behaviour is growing. This can be seen on fact that number of businesses ready to implement actively CSR ideas increased during this period from 23% to 48% and number of those with special envoy on this matter is 33% compared with 10% in 2003. In reality this means that for more and more of corporations CSR is not an empty word.

Only 12%, respective 11% (see Table 7) declared they are not interested in CSR theme. Outside of questionnaires we did asked those corporations representatives for reasons. They consider assessment and planing of CSR activities as unnecessary bureaucratic and loss of time. It is needed to say that some corporations, interested in CSR fear the same. Those managers are afraid if there is an effort from their side to apply or try CSR, new documents will be required from them and proof of activities, including third party audits. Such awareness is even greater when they recognize that CSR is part of ISO 26000 standard. Remembering ISO 9000, 14000 or 18000 and bureaucracy connected with obtaining certificates is stopping them. To persuade them it is necessary to explain that CSR is primarily a voluntary activity. Audits (not classic third-party audits) are considered only in case when corporation is trying to get an award of „perspective corporation“, „successful corporation“ etc. , awarded by Quality Institute (SOK)

For management of respectable corporations, interested in CSR implementation to their system of management, Council for Quality CR, advisory board to Czech Ministry of Industry and Trade (Rada kvality CR) issued instructions [17,18,19], to help asses corporation its assumptions and results and , based on criteria requested to evaluate criteria fulfillment, weak points and chances of future growth. If there is assessed that even partially those requests are met, self-valuating report can be sent to SOK, Quality Institute. This report can serve as a document for „Perspective Business“ , „Successful Business“ or „Excellent Business“ title. Rating for those titles are based on EFQM model, and it include CSR activities.[17,18].

High award for corporate social responsibility is Czech Republic National Award for CSR, every year being issued by national Quality Institute. Appraisal is based on KORP methodology (Proper Business), systematically leading the corporation toward fulfilling appropriately all requirement of CSR- economy, environment, and social areas and became part of corporation management.[19].

As a base for above awards is serving a self-assessing report delivered to SOK office. Than on-site assessment follows, where the fact presented in report are verified, strong points and points- to -be improved marked, points given for future ranking.

Great advantage of those awards is that 2 categories for businesses exist, up to 250 employees and over 250. It opens chance for even small size businesses. Their

managers are many times concerned about their chances competing with big corporations, which are ready to invest into CSR system big money.

Corporate activities are not assessed by Quality Institute. „Business for Society“ is for 8 years now calling „Top Responsible Business“ and „Top Philanthropist“ competition. North Moravia Regional Council President is leading competition „Regional Council President Prize“etc.

Drop in corporate awareness for CSR activities motivation from 93% to 67% is not a lack of interest. According to our opinion there is a better understanding of CSR activities advantage. Many corporate managers do understand now, that CSR activities are not for theirs business just some shiny facade, but can be really helpful even just for improving corporate image (increase in opinion from 30% to 40%) or business competitiveness (increase in opinion from 45% to 46 %). In reality it means that CSR activities are becoming an important value for future. It is gratifying that only 4% and 5% businesses respectively stated as one of the motives tax benefits, (in philanthropy, employees benefits etc.)

This does not mean that corporations shall not be engaged in philanthropic activities. Research is showing philanthropy growth from 43% to 51% during observed period and foundation activities from 21% to 43%. Corporations are aware of the fact that such activities are needed but only as a part of CSR. Managers are using activities and those philanthropic ones as well as investment into the future, bringing profit at the end. Bata corporation growth during last century 20's and 30's is one proof of this fact.

Only small portion of small and medium-sized businesses managers came to realize that CSR activities include customer relationship. Probably it is caused by their opinion that responsive approach to customers is natural for business development, or that activities regarding customers are already subjects of EN ISO 9001:2008 standard for example and they are not mentioning them in CSR activities. It was a mistake of 12003 questionnaires not to stress stronger this fact.

Our 2011 research goal [16] was to compare the previous research, asking the same questions. Even that in this questionnaire ethical relationship with the customer was not stressed, 13% of businesses stated that this relationship is important for them.

In another research from 2010 [13] with 108 corporations participating actively among other questions were asked which stakeholders are the most important and which group there is most influenced by corporate socially responsible behaviour. In both cases there were customers first and followed by employees closely.

4. Conclusion

Repeated research confirmed that number of corporations using in reality or being interested in CSR activities was growing during the observed period of time. From CSR activities used in such reality in both cases dominated care for employees or

employees education, which corresponds with efforts to gain and keep quality staff. It is meritorious fact since qualified and educated employees are prerequisite for quality products and competitiveness.

Lower number of respondents declaring customer relationship as one of the actual or future activities, is not caused by low interest of it but most managers are considering this as obvious, without need to mention it in CSR activities. It was a flaw not to mention directly customer relationship in 2003 questionnaires. According to our research only 13% of participants included customer relationship in CSR activities. This figure is rather low. Our research team prepared a new questionnaire where customer relationship is mentioned specifically, and pointed-out if and how customer relationship is treated. It is for example product quality satisfaction, ways of treating the claims, customer suggestions for products improvement and others.

It is nice that more and more corporations are treating CSR not just as only pure philanthropy, even that donations and foundation activities are growing, but as an investment into the future, consequently working as a motor of future corporate development and profit-forming.

Number of those businesses having designed envoy for CSR field during the observed period was growing from 10% to 30%. We are sure that this number is even higher in reality. For example small business manager shall be informed about following relationship and connections: Business and Customer, Business and Employee, Business and its Regional Activities etc. Since work does not include directly CSR field, this was mentioned in our questionnaires. Future research will consider those questions.

Higher corporate involvement in CSR activities is reduced by fear of increased administrative work in connection with their documentation, planning etc. Bureaucracy growth will be followed by more time involved there. It is important in explaining CSR to stress that CSR activities are basically voluntary. If the corporation wish that CSR is a contribution, it is necessary to inform public circles.

Generally it is possible to say that CSR activities in Czech Republic are given adequate attention. But there is a broader publicity missing. Corporations are given right to inform about their products awards for their advertisement, but broader public can see it as one of the advertisement tricks. So it is necessary to explain to the public sense of CSR awards and this is a task for media. They are having importance for informing managers, especially of small businesses. Table 4 is presenting the fact that 47 % of participants was informed about CSR existence via media, mostly small enterprises. It shall be appropriate for media to deal more with those issues, stressing CSR advantages and presenting examples how CSR activities influenced business operations and development. Public and other media are behind by now.

Notice:

This article is presenting only part of research by our research department for CSR activities.

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User-integrated innovation: Sustainable LivingLabs

Research and development of sustainable products and services through user-driven innovation

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Domestic sustainability innovations are considered to play a key role for pathways to sustainable consumption. The paper shows how open innovation processes can lead to such sustainable innovations, by means of an experimental and interactive infrastructure. It presents how – based on results of the LivingLab project conducted at the Wuppertal Institute within a European Consortium (Lead TU Delft) – currently an extended Sustainable LivingLab approach is developed and applied in two joint research projects at national and international level. To conceptualise this approach, we refer to recent proceedings in innovation and sustainability research, i.e. practice theory to analyse sustainable product design. Focusing on technical solutions and individual behaviour while assuming people's needs as fixed entities, disregards the dynamics of everyday practices in which technologies themselves create needs. Therefore, the consumer's position should be strengthened through user-driven innovation. LivingLabs are combined lab-/household systems, which put the user, i.e. the home occupant, and value chain related actors (producer, handicraft, etc.) on centre stage in the innovation process. We introduce its research agenda and the Three Phases Model of research. We hypothesise that at the end of this user-integrated innovation process developed products have a higher chance of successful diffusion. To illustrate this, we show how the LivingLab infrastructure is employed for the German InnovationCity Ruhr and how it can promote the development of user-centred sustainable consumption strategies.

Keywords: LivingLab, open innovation, user-driven innovation, sustainable consumption, resource efficiency, value chain perspective

1. Introduction

In developing new products or services economic actors are facing the increasing dynamics and complexity of requirements in society. These requirements show i.e. in demographic and climate change, resource depletion, the growth of populations or changing and more individualised lifestyles, which should be considered for business and innovation strategies. In the last decades a large number of potentially sustainable product and service innovations have been brought to market, without large-scale integration of users during innovation processes – be it new models of supply, CarSharing, new lighting systems or “just” less energy-consuming water boilers. However, these developments often do not perform in the intended way because of unexpected user behaviour (Liedtke et al. 2012a).

New pathways to responsible living are sought to meet these urging challenges and requirements. Education for sustainable consumption and promoting consumer citizenship are preconditions (Welfens et al. 2010a), as well as new social structures and processes in business and economy are required to enable sustainable consumption.

Sustainable LivingLabs are an infrastructure to put users and other value chain related actors on centre stage in the innovation process and design of sustainable products or services, thereby reducing negative rebound effects through studying user-technology interactions in real-life settings (see Druckman et al. 2011). This way of integrating users in LivingLabs can provide an innovative way towards a more responsible living by changing structures and processes of developing sustainable products and services in economy and science. The in-depth study of everyday practices of using domestic systems and gaining feedback to prototypes in real-life enables new processes for sustainable consumption. Even though future potential for resource efficiency lies in the fields of individual decision-making, behaviour and competence development (Green and Vergragt 2002), it should not only be put on the shoulders of individual consumers (Welfens et al. 2010b). Much more, changes in structures and processes in economy are needed, i.e. to use the potentials of Open Innovation processes. To this end Sustainable LivingLabs can contribute to necessary changes in society (i.e. opening of enterprises, integrating and activating essential stakeholder groups, enabling learning processes) by taking the next step in user-centred design. The research approach thereby aims to foster interactive and cooperative value chains (Schelske 2008; Walther 2010).

How can sustainable product or service innovations be developed that do not show negative rebound effects in everyday use and at the same time increase user comfort and, thus, acceptance? This question is of high importance for transitions towards more sustainable patterns of consumption. The average lifestyle of people in industrialised countries is characterised by high levels of consumption and is, thus, responsible for an enormous increase of resource extraction and environmental problems (Jackson 2005). Due to its high demands in energy and materials, housing

is now considered one of the most important areas for a transition in consumption and production patterns (Spangenberg and Lorek 2002; Druckman et al. 2011).

In this paper we introduce Sustainable LivingLabs as a research approach that explicitly addresses sustainable homes as a field of high relevance. In most countries, private household consumption determines 60 % or more of all lifecycle impacts of final consumption. Housing, mobility, food and electrical appliances account for more than 70 % of the impact of household consumption (see i.e. ETC/SCP 2009). To reduce this impact, an absolute decoupling of economic growth from resource use is a precondition for sustainable production and consumption (Barbier 2009; Jackson 2008). Society's welfare generation has to happen within the natural system's boundaries (Liedtke et al. 2012b; Mancini et al. 2011).

The paper is subdivided into the following sections. Chapter two discusses the theoretical conceptualisation of LivingLabs, while in chapter three we introduce five research lines, comprising a research agenda for LivingLabs. Following this, in chapter four we outline current research activities at national and international level, employing the extended Sustainable LivingLab approach. This extended research infrastructure focuses on sustainability assessment along the entire value chain at different stages of the innovation process, thus, aiming to shift consumption and production patterns towards resource efficiency and sustainable lifestyles. The Three-Phases Model of Research is introduced and its application is illustrated for a current research project in the German focus region InnovationCity Ruhr. In the last chapter, we resume the potentials of Sustainable LivingLabs and draw a conclusion with regard to pathways to responsible living.

2. Theoretical Approaches to conceptualise Sustainable LivingLab

The Sustainable LivingLab approach integrates several aspects of different research strands like consumption research as well as innovation, sustainability and transition research and recent developments in these fields (like theory of practices, user integration, action research and sustainability assessment with focus on the entire value chain).

Sustainability science has accumulated considerable knowledge on tools and methods for sustainability assessments (see e.g. de Ridder, 2005; Clark et al. 2004). Also for assessing value chains, a number of methods and tools have been developed for different scopes and levels of data collection (site, company, supply chain, product, consumption) (e.g. Baedeker et al. 2005; Klöpffer and Renner 2007; Schaltegger et al. 2007; Project Group on the integration of social criteria into Life Cycle Assessment 2008; Geibler et al. 2010). However, these often show limitations as some of them do not consider the entire lifecycle (Baedeker et al., 2005). In addition, indirect effects are often not considered for analysis at the value chain level due to the limited knowledge on causal links (Geibler et al. 2010). For example,

the supply of increasing market demand for one product might have effects on other markets, e.g. through psychological rebound effects (Paech 2005). The LivingLab approach addresses this problem by aiming to integrate the user as the most relevant expert (and cause of rebound effects) in the innovation process. In our continued research, the LivingLab approach has been extended in Germany, focussing sustainability assessment at different stages of the innovation process and resource efficiency (compare Three-Phases Model of Research in section 4).

Innovation processes underlie a tendency to get more and more opened up, integrating stakeholders, other businesses and end-users in the process of developing new products or services, already at early stages of development. Concepts like “Open Innovation”, brought into discussion by Chesbrough (2003), “Wisdom of Crowds” (Surowiecki 2004) or the “Lead-user”-concept (von Hippel 1986) as well as the design of transformational products (Laschke et al. 2011), have recently promoted research in co-creation and led to a number of new business models and management tools to integrate users into innovation processes. Open Innovation here means to make use of the purposive in- and outflow of knowledge across a company’s borders to accelerate internal innovation (Chesbrough 2006). Results show that these concepts can significantly reduce the risk for innovations to fail at the market, especially for radical innovations under uncertain market or technological conditions (Clausen et al. 2011: 35). Different methods of interaction have been developed, e.g. Non-/ Lead-Users involvement in innovation workshops for sustainability innovations around the home (Diehl 2011) or web 2.0 tools to use collective intelligence (Leimeister 2010). However, Open Innovation research has so far seldom paid enough attention to the potentials for sustainability innovations.

LivingLabs focus the diffusion and user acceptance of sustainability innovations by involving users and other relevant actors along value chains into design processes (Heidecker et al. 2010). Taking up the idea of Open innovation and user-oriented design, our approach additionally draws on results of research in systemic innovation and social studies of technological development. Integrating the thesis of “co-evolution” of innovation trajectories (Rip and Kemp 1998), it can be concluded that sustainability innovations, which are meant to be successful in long-term, can only be developed in an experimental and interactive setting (Co-Design). To involve users into research processes, the approach can also draw on insights from the methodology of action research (Lewin et al. 1953). Action research assumes that scientific findings can only be achieved if professional researchers take up concrete social problems in reality and actively involve ‘laymen’ into their research, in order to try and intervene in existing social structures. The LivingLab approach can be adapted flexibly according to a defined research design. Thus, users and stakeholders can be involved at all or at specific stages of research, i.e. in the phases of *defining a problem*, *designing a research strategy*, *creating results* or *application of results* (Talwar et al. 2011).

Studies in failed innovations have shown that the benefits of eco-designed products, technologies or infrastructures are hardly realised if designed without reference to user practices, as Spaargaren (2011) points out. Therefore, the LivingLab

approach refers to Social Practice Theory to conceptualise environmental behaviour and awareness. Social Practice Theory is based on the sociological theories of practice by Bourdieu (1977, 1979) and Giddens (1984), which later were extended to practices involving technical artefacts (e.g. Reckwitz 2002). Social practices here are the basic units of social analysis. They represent a – largely routinized – type of behaviour in everyday life, which is widespread in society (i.e. cooking, showering, driving to work), enacted within a designated field of action by knowledgeable and reflexive agents drawing on virtual sets of rules and resources (“structure”), thereby (re-) producing just these rules and resources. Structure is conceptualised to be both enabling and constraining for actions. “The social is neither reduced to rational actions of individuals (*homo economicus*) nor to value-based normative rules (*homo sociologicus*) or to symbolic structures ‘inside’ or ‘outside’ of the individual mind [...]” (Brand 2010: 220). At the same time, the key role of technological innovation for a transition towards more sustainable lifestyles is in no way neglected (Spaargaren 2011). The interdependency between routines in everyday actions, technological artefacts, as well as social acceptance and norms can thus be scrutinised (Reckwitz 2002; Warde 2005; Röpke 2009; Jackson 2005). Spaargaren, Martens and Beckers (2006) argue that the adoption of sustainability innovations can neither be understood only as a conscious choice of individuals (such as early movers with a well-developed environmental awareness) nor just as a passive, involuntary or mechanistic result of changes in technological systems. One of the improvements of Social Practice Theory is to understand domestic consumption as preconfigured by socio-material infrastructures with implicit cultural and policy regimes, e.g. for heating, cooling or lighting at home (Spaargaren 2011). At the “very moment of turning the tap” (Spaargaren 2011: 816) such systems of provision (as rules and resources) shape practices of use, but at the same time are reproduced in their current form. Secondly, it is practices, rather than individual desires, that create wants (Warde 2005). In this sense new technologies can be said to trigger new demands and, thus, possibly unintended resource and energy consumption. Even though Social Practice Theory emphasises routines of practices it can be used to examine change as well. For change to take place, a break of on-going sense-making in practices must occur or can be induced by certain events or governance strategies. Innovation and learning can take place in this process of de- and re-routinizing of practices, as Brand (2010) shows for the German “Agrarwende”-policy. For example, transformational products appear promising to disturb routines of practices (Heidecker et al. 2010, Hassenzahl et al. 2011).

The LivingLab infrastructure provides means to observe practices involving technical artefacts in the process of everyday use. The potentials of new prototypes to change current practices and, thereby, potentially change rules and resources of systems of provision bottom-up, can be analysed in real-life settings. Social practices in using the new product have to be regarded during the innovation process, since all too often products designed for environmental efficiency under given circumstances are misused or overused, resulting in unintended and generally less sustainable outcomes (‘the rebound effect’) (Liedtke et al. 2012b).

Transition can in terms of Practice Theory be seen as a circumscribed process or trajectories of change, within the time-space bound reproduction of social practices (Spaargaren et al. 2006). Transition research studies complex socio-technical change processes to meet challenges of sustainable development, aiming to identify underlying patterns and dynamics (Geels and Schot 2007). A multilevel perspective on change as an interplay of developments on the three functional levels ‘landscape’, ‘regime’ and ‘niche’ is in the centre. Transition means a deep change of ‘regime’ of a specific system. ‘Regime’ here refers to the currently predominant structure of a social system in terms of culture, dominant values and patterns of action. A process of change in material infrastructures, organisational structures, values and norms to establish new patterns of perception and action (transition) can be induced by combining several different developments (Kemp and Loorbach 2006). To describe such complex processes of change the Circular Transition Model was developed, which distinguishes the phases of Problem Assessment, Vision Development, Experiments and Learning & Upscaling (Loorbach 2010). At the Wuppertal Institute transition research is established as a meta-approach for the institute’s research and development in sustainability (Schneidewind et al. 2011). The phases of Experiments and Learning & Upscaling can especially well be conducted within the Sustainable LivingLab infrastructure. The methods employed in the research infrastructure, as we will describe in the following section, can serve as an example for these parts of the circular model.

3. Five Research Lines for a LivingLab research agenda

Focussing on sustainable homes and related value chains, Product-Service-Systems or Sustainable Consumption-Production-Systems, Sustainable LivingLabs can help to identify new ways in one of the most crucial areas for reducing resource extraction and environmental impact (Rohn et al. 2011). Actually, modern sustainable homes are often rather high-tech environments. Home occupants have to monitor, manage, maintain and live with complex technology interfaces, connecting and interacting with heating, cooling, ventilation, lighting, communication, and energy management systems of the home. Thus, it is one of the key challenges to find out to what extent people can indeed successfully interact with this potentially complex range of systems. Furthermore, it is to be explored in how far this interaction leads to more sustainable households over time along five generic research lines (Welfens et al. 2010b).

Initially, the LivingLab infrastructure including the methodology and research lines was developed and implemented in a design study within the 7th Framework Programme of the European Union (2008-2010), conducted in a cooperative project by four academic (led by TU Delft in cooperation with ETH Zurich, Universidad Politecnica de Madrid, Wuppertal Institute) and three industrial partners (ACCIONA, BASF, Procter & Gamble). It aimed at understanding why sustainable

technologies that seem technologically and behaviourally adequate, and despite people's willingness to act for sustainability, often do not perform in the intended way in real life. The research infrastructure concentrated on human-technology interactions, acceptance and adoption of sustainability innovations focused around the home, such as ventilation, water and energy management. Its basic assumption was that, in order to research user acceptance and rebound effects, human-technology interaction must be understood within the context of everyday practices of utilisation (Bakker et al. 2010).

Within the Design Study five research lines were defined based on a foresight process analysing and evaluating global megatrends. An expert panel of the LivingLab consortium ranked these megatrends in order of their relevance for sustainability and the LivingLab approach. The trends were chosen in terms of how they affect innovation intensity, competitiveness and user orientation. Employing a cross-impact analysis of the most relevant megatrends and basic functions of homes, important research questions and topics were elaborated. These again were summarized to five research lines, helping to structure the potentially broad scope of the LivingLab infrastructure. These five generic research lines are (Welfens et al. 2010b; Liedtke et al. 2012b):

Design, construction and maintenance of sustainable homes:

LivingLab facilities are highly visible examples at the frontier of sustainable building systems for reducing emissions, material consumption, energy and water use. This research line is thus close to the primary idea of LivingLab, founded at the MIT, and focuses the collaborative development and testing of i.e. easy to install and user-friendly systems or materials that can easily be dismantled, separated or reused. Another focus is on implementing feedback loops between actors and decision makers in planning and construction.

Integrated approaches to home energy management:

Sustainable LivingLab offers a unique opportunity to study the integration of demand-based energy offerings and related services in combination with smart appliances and low-energy heating and lighting solutions. For the purpose of this paper, this research line serves as a case study (compare below). The focus here is on developing interaction designs and smart systems (smart meters, smart grids) that can encourage and support inhabitants in saving resources, whereas complex control technologies become an integral part of such systems. Therefore, the Sustainable LivingLab infrastructure can provide an opportunity to study user-technology interactions. Working prototypes should be placed in a real-world context, involving actual consumers. Research questions mainly consider:

- 1) The physical design of the product, including perceived physical affordances, ease of use, and pleasure in use.
- 2) Social interaction issues, including perceived social norms, i.e. how much energy does a comparable household in a similarly sized house consume?
- 3) The perceived environment as recognized by the energy savings system, including issues like the amount of daylight, outdoor temperature, or detected user activities.
- 4) Financial and environmental incentives for indicating at what time of the day there is a grid surplus of green energy.

The connected home:

Rising virtual services such as tele-working, tele-shopping or social connectedness in the web 2.0 have a potential to radically change habits, develop new markets and increase resource efficiency at the same time. This indicates the need to extend the scope of LivingLab research questions also on activities beyond the home, since implications of this on-going virtualisation of working, social interaction and consumption should be considered.

Resource-efficient lifestyles and social networks:

In connection to the last research line, the Sustainable LivingLab approach offers the possibility to study lifestyles and consumption patterns in a real-world setting. The role of user's motivations and pleasure in interdependence with socially constituted ways of using a certain product or service, forming social practices of consumption, can be studied. Even within relatively homogeneous groups of users (in terms of age, education and socio-economic situation), studies have shown that varying consumption patterns can lead to vast differences in the amount of energy and resources used by households (e.g. Kotakorpi et al. 2008). Furthermore, the impact of training sessions for end consumers and awareness tools (such as smart meters) can be analysed. Do users change their actions in result, does this achieve energy savings, and how can tools be improved, i.e. in terms of visualisation with colours, graphs or figures?

New product and service development:

“Products with significant environmental effects in the use phase should be developed in LivingLab with a clear focus on the user context to prevent unwanted side effects” (Liedtke et al. 2012b: 12). Trends, such as the increasing percentage of electronic devices at home or the growing trend to work at home offer a seemingly

endless range of possibilities to create new sustainable practices around them, especially at this early stage.

4. Developing a Research Infrastructure and Methodology for Sustainable LivingLabs

In the initial Design Study, a three-phases model of research was developed under the lead of TU Delft, which served as a conceptual framework of methods to conduct innovation processes in LivingLabs (see Figure 1).

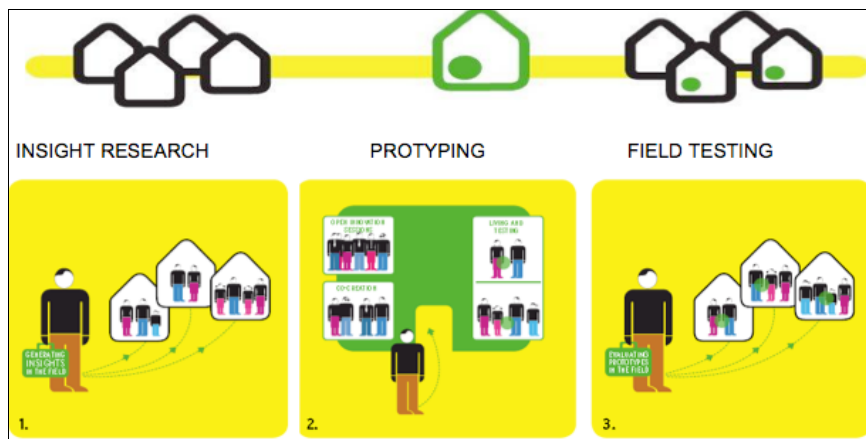


Figure 1: Three-Tier Model of Research in the LivingLab Design Study (Bakker et al. 2010: 11)

In the first tier “Insight Research”, human needs were to be analysed within their everyday context, i.e. their own homes, while in the second tier “Prototyping” new products or services were tested within the LivingLab dwellings. On this basis, prototypes were (re)designed and then tested in the field in the third tier (Bakker et al. 2010).

In relation to the management of interactive value-added processes (Schelske 2008; Reichwald and Piller 2006; Walther 2010) the Research Group 4 “Sustainable Production and Consumption” at the Wuppertal Institute extended this methodology for user-integrated design of products or services. The objective is to early identify trends in the field of Sustainable Consumption and Production and integrate all relevant actors in value chains (producers, handicraft, consumers, users, consultants etc.) directly into the development of research strategies and product design – thereby, focussing on resource efficiency and sustainable lifestyles as well as basic innovations with an increased demand for change. Besides developing resource-efficient technologies and product-service systems (Rohn et al. 2011), main emphasis is put on contributing to a culture of more resource efficiency in economy

and lifestyles (Low Resource and Carbon Society). Furthermore, requirements for change in value chains and their management are to be derived.

We define Sustainable LivingLab as an infrastructure designed to enable Open Innovation processes, in which users and other actors, relevant for the context, actively participate in development, testing and marketing, respectively of new products, services and system solutions. The interactive innovation process is situated in real life surroundings (living space, work environment, mobility, urban space). It is led by sustainability criteria and aims to contribute to global and universally applicable patterns of production and consumption.

The research objectives followed are to analyse relationships between home occupants' behaviour, domestic resource consumption and domestic systems (products, technologies or infrastructures, i.e. mobility), with the aim of minimising resource consumption and waste production, while still optimising users' experience and comfort. Participating households test the obtained solutions, before the other value chain related actors are involved in stakeholder dialogues on new prototypes.

Currently, the Wuppertal Institute is cooperating in two research projects at national and international level, which build on the initial Design Study and further develop the LivingLab idea for sustainability innovations with special focus on sustainable lifestyles and resource efficiency.

The project "SusLabNWE - Creation of a networked infrastructure for innovation on sustainability in the home environment that enables user-centred testing and development in living laboratories" is conducted in a joint-project of research facilities and stakeholder partners across Europe (2012-2015), funded by the European Regional Development Fund (ERDF), Programme INTERREG IVB NWE. It aims to set up a networked infrastructure of houses and LivingLabs in North-West Europe at five locations: Rotterdam (NL), Ruhr area (DE), London (UK), Gothenburg (SE) and Zurich (CH). Each location will be set-up according to the results of the Design Study on LivingLabs and run in public-private partnership. Companies, researchers and policymakers will be able to collaborate in these multi-disciplinary, user-centred testing facilities in order to increase household's sustainability. Additionally, the Wuppertal Institute is currently conducting a research project in cooperation with Fraunhofer IAO and ISI on Sustainability Innovations in LivingLabs, funded by the German Federal Ministry of Education and Research (2011-2012). This project focuses on Germany and a specific national infrastructure for Sustainable LivingLabs. Main research questions included are: In which fields can LivingLab be expected to gain a high potential for sustainability innovations? What should a German research infrastructure look like in contrast to the European design study, if these potentials are to be engaged? Therefore, the existing German Research and Development landscape is scanned for suitable starting points for such an interactive setting. Fields of innovations (technologies, products, services) are identified in regard to where Sustainable LivingLabs can offer a high potential for sustainability innovations. Furthermore, a continuous dialogue between relevant actors will be established.

5. Employing the Three-Phase Model in SusLabNWE

Within the SusLabNWE Project the focus location of the German consortium (Wuppertal Institute, Hochschule Ruhr West and InnovationCity Management GmbH) is located in the Ruhr area in North Rhine-Westphalia. Several districts of the city of Bottrop, all together an area with approximately 67,000 inhabitants, have been nominated as the model region ‘InnovationCity Ruhr’, and is as such participating as one of the five locations in the SusLabNWE project. Different initiatives aim to reduce CO₂-emissions by 51 % until 2020. In the field of heating alone a cut of consumption from 829 GWh now to 409 GWh in 2020 is aspired. SusLabNWE will – co-financed by the Ministry of Innovation, Science and Research of the German Federal State North Rhine-Westphalia – build up a LivingLab infrastructure here and, thus, contribute to this ambitious transition process by setting up a pilot application in the area of heating and cooling in InnovationCity Ruhr. Approximately 80% of all heating systems in Germany work inefficiently and consume too much energy. Combined with optimising user behaviour, savings of 10-30% of heating energy are possible (Messerschmidt 2012).

The following Figure 2. gives an outline of how the Three-Phases Model of research is adopted and employed in the SusLabNWE project.

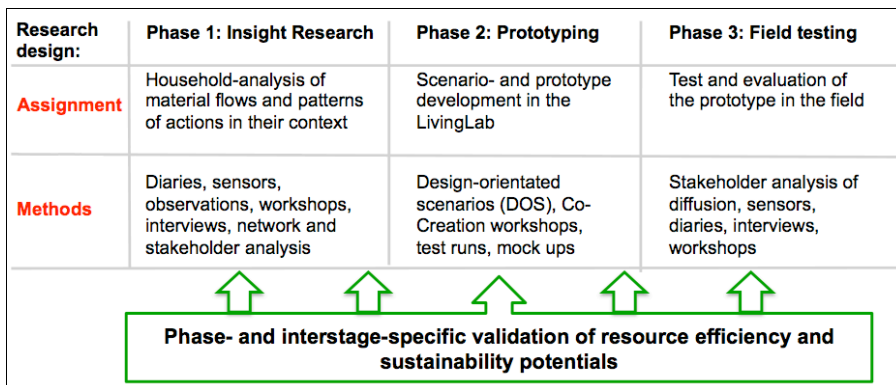


Figure 2: The Three-Phase Model of Research in Sustainable LivingLabs (Liedtke, Geibler and Greiff, based on Green and Vergragt 2002; Bakker et al. 2010; own depiction)

First Phase: Insight Research

Point of departure is an in-depth analysis of households regarding material flows and patterns of action. For InnovationCity Ruhr, user behaviour will be analysed in 20-50 households of the area using qualitative and quantitative research methods,

and focussing on heating. Methods include i.e. qualitative interviews or installing temporary data loggers for temperature and air quality in the households. A network and stakeholder analysis on who are relevant actors in the heating system for the area, as well as workshops with producers on heating 2.0 will be conducted. This research will be conducted in the real-life environment of people's homes, thus it is possible to scrutinise the household's consumption and patterns of action in their actual context.

Second Phase: Prototyping

In this second phase the actual testing in the Sustainable LivingLab infrastructure is carried out. Lead-user and non-lead-user groups will be identified and Open Innovation and co-creation workshops will be performed in Fraunhofer inHaus, an existing research facility in the area and capable for the LivingLab infrastructure. Development of design-oriented scenarios, test runs with new prototypes as well as user-integration with mock ups in Fraunhofer inHaus are focus areas to employ the Sustainable LivingLab infrastructure within the research project.

Third Phase: Field Testing

As a third step in the research process, fully functional prototypes will be tested and evaluated in the field, installing them in existing or newly built homes. Similar to the first phase, another stakeholder analysis of the diffusion for the newly developed prototype can be conducted as well as further in-depth tests in terms of sensoric observations. Again, quantitative methods, i.e. measuring potentials for energy savings, and qualitative research methods like interviewing users and stakeholders along the value chain can be combined.

During the development process a phase- and interstage-specific validation of resource efficiency and sustainability potentials of the new prototype is performed. By these means, sustainability assessment along the value chain is integrated throughout the Sustainable LivingLab approach. By doing so, necessary readjustments can be done at any stage of the open innovation process. At any stage, however, differences in data availability for a new prototype have to be regarded when conducting sustainability assessments. Especially for second order effects (technology application), data availability is more limited in the beginning of an innovation process since applications of developed products or services might only become apparent in the future (Geibler et al. 2006). Throughout the research process, time for reflection and learning processes is provided, thus, supporting future developments in the LivingLab's infrastructure in the sense of learning loops.

6. Conclusions

In this paper we introduced the Sustainable LivingLab research infrastructure as a means to put users on centre stage in the innovation process of new sustainable products, services or models of supply. Thereby, social practices in using such innovations can be accounted for and observed in real-life surroundings. LivingLab illustrates that sustainable patterns of consumption does not necessarily mean to totally abstain from consumption. Much more, LivingLab enables design and development in such a way that user behaviour and social practices can be aligned with technological aspects for a more sustainable consumption around the home. By actively involving users and other important stakeholders in the innovation process, the potentials of diverse perspectives can be used and observing the practical application of innovations becomes possible. By these means, LivingLab can contribute to a necessary change in structures and processes both bottom-up (by sustainability innovations showing high user acceptance and less rebound effects) as well as top-down, e.g. by inducing a change in existing patterns of innovation and structures of energy supply. Companies have to open up towards society and intensify the integration of users and important stakeholders into innovation processes (Rohn 2011). Especially enterprises of the energy sector in Germany could broaden their application of user-driven design or Open Innovation processes (Piller et al. 2012) and, thus, make use of the implied benefits for sustainability. By employing the Sustainable LivingLab's infrastructure, companies can benefit from more successful innovations and reduce costs of failed research and development. Social benefits clearly lie in more sustainable innovations and increased resource efficiency by analysing and potentially changing social practices towards sustainable lifestyles, while users profit from optimised comfort. Thus, an opportunity for new pathways to a more responsible living can be found in the collaboration of different stakeholder groups and users in innovation processes of new products or services. Institutionalising this form of opening the innovation process – as it is promoted in current research projects by installing a European-wide LivingLab infrastructure – can contribute to such necessary changes.

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Planning for sustainability – the case of Brøset

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A general challenge to introducing new ways of living within planetary borders is that currently, unsustainable practices in many cases are intertwined in material surroundings and shared practices that stabilise established conceptions of normality. This makes it very difficult to approach the study of consumption of resources on an individual scale with an a-priori focus on internal mechanisms. In Norway, researchers and planners are currently cooperating in the development of a new housing area at Brøset, a suburb of Trondheim, where the aim is to create surroundings that nurture low-carbon and low-consumption practices. As the planning of the area enters a more concrete phase, initial objectives will be tested against established conceptions of how to plan, develop, and attract the interest of potential inhabitants. The focus of the paper is to discuss some of the challenges, resistance, and paradoxes that have emerged in the current stage of the process, in which a master plan is to be developed and sent out for public scrutiny. Perspectives and concepts from actor-network theory will be used to highlight the role of material artefacts and “qualitative regimes” in configuring human practices.

Keywords: actor-network theory, framing, lifestyle, planning, sustainability

1. Introduction

Since the topic of sustainability emerged in the field of international policy there has been an ongoing process of framing and reframing, both of the concept itself and the political and/or strategic implications of this formidable challenge to our way of living. However, the process has not taken place in a vacuum, and existing agendas and ideological positions have played a decisive role in shaping the common understanding of what questions to ask and what answers are paid attention to (Hajer 1995; Jamison, 2001; Vormedal 2005)

Probably the most obvious paradox in the current debate is that the widely held assumption of economic growth and the associated consumerist lifestyle is more often than not taken for granted, or treated as ‘the elephant in the room’, that is not to be spoken of. As has been pointed out for a long time, this situation is not very productive and needs to change if any true progress is to be made (Meadows et al.,

1972; 1992; 2004; Daly 1973; Jackson, 2009). The question is, of course, how to go about this without being rejected and cut off from the resources necessary to gain some leverage when we enact our roles as academics, bureaucrats, politicians, or members of civil society.

One particular challenge when trying to address these issues in the current ideological climate is that questions concerning lifestyle choices now tend to be seen as a matter of individual, moral (or immoral) choice, and thus exempt from the realm of politics or societal planning (Amdam et al., 2001). Again, this is something of a paradox since it is not very difficult to demonstrate how nation states, and various supranational bodies and commercial actors invest a lot of resources in persuading consumers to keep buying enough goods to sustain positive growth in economic activity. Thus, to reclaim lifestyle issues as an object for societal discourse and planning is a challenge in its own right, and this paper presents some of the issues faced when moving down this road in a very concrete manner. The deceptively simple question to be asked here is: Can we plan for a new lifestyle?

2. Consumption revisited

*You know that we are living in a material world
And I am a material girl*

‘Material Girl’ lyrics © Sony/ATV Music Publishing LLC
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These famous lines from the megahit ‘Material Girl’, performed by Madonna, can be interpreted as the final demise of any attempts to move beyond current consumerist lifestyles. Still, it is possible to use them as a way of reframing the issue because they highlight a seemingly strange contradiction in the way we think and speak about consumers and consumption. Gadgets, technologies, and material infrastructure play a decisive role in our private lives and define our societies on many levels. A vivid demonstration of this effect can be seen in time-travel documentaries where selected families are forced to live their daily life with items and technologies from earlier decades. As modern technologies make their entry, many families report that communication patterns and general levels of interaction between them are changed in fundamental ways, and not always for the better. Regardless of what one might think of this development in a normative sense, it is, however, safe to conclude that our modern life and daily routines are sustained by a host of products and technologies, perhaps more so now than in earlier times.

Thus, the somewhat perplexing observation is that although materialism and consumerism are more or less regarded as synonyms, dominant policy frameworks and academic theories about consumption are more or less completely ignorant of the role of material objects (and those who bring them forward) in shaping daily lives. Many of these models of understanding typically share the axiomatic position

that knowledge structures or the attitudes of individual consumers are the primary driving force behind consumption (Hand et al., 2005; Næss, 2007; Næss and Ryghaug, 2007). This understanding is closely related to the neoclassical concepts of utility-maximising and sovereign consumers as the main drivers of the economic system (Persky, 1993; Amdam et al., 2001):

'The construction of economic man opened up for a psychologisation and de-historification, which have dominated "mainstream" economy until our days. Values, attitudes and wishes emerge in the individual, and social influence can in principle not take place.' (Amdam, 2001: 180; my translation, emphasis in the original)

Hence, a more integrative perspective is needed, where the mutual connections between sustainable or unsustainable production and consumption are identified and recognised (Tukker, 2008). Furthermore, it is also crucially important to consider the many ways that material objects and infrastructure enable and constrain individual choices and behaviour.

2.1. A practice-oriented approach to consumption and planning

One promising way of overcoming the inherent limitations of economic and/or psychological models of human conduct is to focus on practices or practice fields (Hand et al., 2005; Holmberg et al., 2011). Here, the phenomenon of consumption is framed as an outcome of relations between individuals, social conventions, and material/physical objects, without ascribing an a priori dominance to individual factors and mechanisms. Within actor-network theory (Latour, 1987), material objects and humans are seen as equally important elements to include in scientific enquiries of societal practices. In this sense, objects may also include ways of calculating or other routines that shape how information is treated or acted upon (Callon and Law, 2005). Also the links between production and consumption are given explicit attention in studies that see these activities as co-constructed or mediated (Lien, 1995; Shot and de la Bruheze, 2003; Oldenziel and de la Bruheze, 2008).

Taken together, these perspectives provide insights that can be used to understand possibilities, but also barriers involved in the needed transition towards a sustainable society. It is thus quite obvious that different ways of calculating have a huge impact on how we think and act with regards to the current state of the world. According to Jelsma (2003), lack of progress in the sustainability field may also partly be ascribed to a conflict between an emerging sustainability ethic and the values that are built into our material surroundings. Thus, if the dominant landscape features that make up the fabric of our daily lives are designed to stimulate car-based mobility and shopping, it becomes very difficult and perhaps unreasonable to expect that many individuals will move beyond consumption and live responsibly within their fair share of global resources.

This attempt to re-materialise the issue of consumption should, however, not be confused with the frequently employed programme of technological determinism.

The crucial distinction rests in the point that neither technologies nor individuals should be seen as the prime movers of societal practices. As has been vividly demonstrated in domestication studies (Sørensen, 2005), users of technology often employ artefacts in ways never foreseen by those who design them. To control the behaviour of citizens through physical interventions is not a foolproof method, as a plethora of counter-programmes may be launched if, for some reason, measures do not fit the idiosyncrasies of creative individuals. Hence, interfering in established consumption patterns is a painstakingly difficult task, and this perhaps explains why attitude campaigns remain a popular strategy despite being generally ineffective. In order to achieve real change, one needs to reconfigure a socio-technical landscape where artefacts and technology are blended with sometimes incommensurable social and political goals, calculative practices, and individuals that constitute their own rationalities in often unpredictable manners.

3. Some methodological reflections

As a part of the research project “Towards carbon neutral settlements” a group of researchers at NTNU and SINTEF have cooperated closely with planners in the development of a new housing area at Brøset, a suburb of Trondheim. While some members of the group have maintained a more distant role in terms of directly influencing the municipality’s policy development, most if not all of the research has been oriented towards supporting the establishment of a new settlement at Brøset. This field of interchange between researchers and planners will be subject to detailed analysis in a planned anthology that summarises the main results from the research project, which has been running in parallel with the early phase of planning activities. In the context of the present paper, I will adhere to the principles of action science (Argyris and Schön, 1996) and make my role and normative goals explicit to the extent possible in a long and sometimes complicated process.

The basic framework in the project has been to work along three dimensions: the actual development of the area, research activities, and knowledge dissemination. Of course, this has taken me and several other members of the research group into territories that imply a potential conflict between taking a normative stance and evaluating processes and outcomes we have been actively involved in. Thus, researchers have given feedback to the municipality and teams before, under and after the open parallel commissioning process while evaluating the same process in several publications, including the present one. Rather than seeing this blurring of conventional roles as a problem, it is my experience that it has been essential in creating the results achieved so far. Given the close cooperation over extended periods of time, an atmosphere of mutual trust has developed, allowing for potentially controversial issues to be discussed across formal organisational borders. Without the openness of the municipality’s administration and the willingness of researchers to

engage in real-life problems and normative issues, this project would not have happened.

4. Planning for a new lifestyle – the case of Brøset

In the light of recent focus on climate change, it is perhaps not surprising that the topic is now quite high on the agenda of many public authorities, both locally and on a national level. In Norway, the 13 largest cities have joined forces under a common umbrella, 'Framtidens byer' (Future Cities), coordinated by the Ministry of the Environment. As a part of this programme, a few local initiatives have been appointed the status of national pilot projects that are supposed to inspire other cities to practical action. The first project to receive this attention is the planned climate-neutral settlement at Brøset, in the city of Trondheim. The suburb is located 3 km to the east of the city centre. The 35 ha site currently hosts a high-security psychiatric institution that is surrounded mostly by green fields and woodland. Hence, when the institution moves to a new location, it will be possible to develop the area more or less from scratch.

The history behind the initiative is somewhat original, since it emerged from the research community at the local university (NTNU). The vision of a climate-neutral settlement was then adopted by the political majority in 2007 and stated as one of the central goals of municipal climate policy. Since then, there has been close cooperation between Trondheim Municipality and an interdisciplinary group of researchers representing a broad spectrum of competencies (architecture, city planning, social science, and quantitative environmental systems analysis). Various applied research initiatives have been launched, including extensive outreach activities such as breakfast seminars and media inputs. Representatives from the municipality and the research community have also been invited to take part in day-to-day meetings within each other's institutions, securing a high degree of coordination and mutual cross-fertilisation.

4.1. Initial programming

As a result of close cooperation between researchers and planners, an ambitious vision for Brøset has been developed, with the aim of reducing yearly emissions of greenhouse gasses from the current Norwegian average of 12 tons per person to 3 tons. This is a level thought to be commensurable with the UN target of stabilising temperatures in 2050 within an increase of 2 °C of the current global average.

The following statement from the initial planning programme describes the central role ascribed to Brøset in municipal city planning:

The municipality of Trondheim must ... plan to become a close to zero-emission municipality within a few decades. The Brøset area will be a pilot project in order to develop a future society. It will show us the way for the future and demonstrate how city development can contribute to emission levels within safe limits.

(Trondheim kommune, 2010: 14; my translation)

In this regard, an important caveat was the modification of what might otherwise been seen as an overly ambitious target:

This goal must be seen in relation to an expected gradual improvement in the background economy towards lower emissions per produced unit of goods and services. In other words, 3 tons per person per year is not realistic within the current production system.

(Trondheim kommune, 2010: 14–15; my translation)

Nevertheless, it was realised quite early in the process that it was necessary to include the whole spectrum of activities related to individual carbon footprints, including general consumption of goods and services. These goals have been backed by a quantitative approach where the major sources of emissions from Norwegian households have been ascribed to a set of categories such as transport, electricity and food, discriminating between domestic emissions and emissions generated abroad (Solli et al., 2010). In contrast to calculative tools that differentiate between emissions from production and consumption, this approach utilise a consumer perspective where final demand is taken as a vantage point (Peters and Solli, 2010). Although the use of quantitative tools has been given much attention in the planning programme, the limitations have been recognised too.

What can be calculated and programmed must be combined with great attention to what cannot be calculated and programmed in a process revolving around making problems visible, raising awareness of alternatives, knowledge sharing, and building enthusiasm. Methodically speaking, a focus on social and cultural aspects of reducing greenhouse gas emissions makes it necessary to involve users actively and in unconventional ways in the various phases in the realisation of Brøset.

(Trondheim kommune, 2010: 19; my translation)

4.2. Parallel Commissioning Process

The next step of the planning process was to arrange a parallel commissioning process in which the objectives would be translated into a master plan for the Brøset area. The overall assignment was defined in the task programme, which also reflected the thematic focus areas in the 'Future Cities' network, a national policy framework involving the largest cities in Norway:

The projects should demonstrate a holistic approach to the physical design of Brøset. It is particularly important to demonstrate how a lifestyle with low emissions of greenhouse gasses can be achieved, with special attention to land use, transport, energy use, and climate adaptation. The suggestions should also describe which processes seem adequate for the organisation and development of the solutions.

(Trondheim kommune, 2010, pp. 13; my translation)

Although not mentioned in the overall task description above, waste and consumption is one of the four main categories in the 'Future Cities' framework. Further on in the task programme, the challenges associated with these areas were described in the following way:

The amount of waste is closely connected to consumption and standards of living. Consumption and waste have a large influence on greenhouse gas emissions. What people consume in different areas cannot be governed through overall area planning, but the quality of housing, outdoor spaces, and waste management systems can nevertheless be of importance for greenhouse gas emissions over time.
(Trondheim kommune, 2010: pp. 22; my translation).

The task of developing master plans for Brøset formed the basis of a public procurement process, in which 4 (out of 30) interdisciplinary teams were selected. The subsequent process, consisting of three seminars held over a period of three months, was open to the press and general public, and mainly involved the teams, landowners (all public), and representatives from the research community. External experts were also invited to join an evaluation committee, together with representatives from the municipality and site owners.

As described above, the main task assigned to the four selected teams was to develop a master plan for the Brøset site, envisioning what a climate-neutral settlement would look like. However, in line with the prominent role of quantitative calculation earlier in the process, they were also obliged to make use of a specially designed tool where the climatic and economic effect of various measures were expressed in numbers. In short, this procedure was designed to take into consideration the often-overlooked rebound effect. A frequently cited example is the situation where economic gains from installing water-saving equipment are used to finance climate-intensive activities such as air travel, thereby cancelling the net positive effect of the intervention. Thus, the teams were to take an average Norwegian salary as their vantage point when making their calculations, and deviations from this level of income would need to be explained and validated.

Regarding the results of the parallel commissioning process, the four teams delivered plans ranging from 1200 to 2800 housing units. All information from the teams reviewed in this paper was downloaded from Trondheim Municipality's web pages (Trondheim kommune, 2011). Suggestions ranged from a rather conventional development with high focus on technological solutions to a more radical concept where (coordinated) self-building and access to one's own garden was seen as the main strategy for creating and sustaining an alternative identity for the inhabitants of Brøset (Figure 1).



Figure 1: The Brøset site developed according to team CODE, with 1200 housing units, allowing all inhabitants access to their own garden.

(Trondheim Kommune, 2011: Team Code om Brøset: no pagination in material)

Interestingly, several of the teams anticipated an increase in average number of persons per household and also introduced family and household structures that are not very frequently seen in Norwegian society today. It is uncertain whether this was done to make calculations look better or whether this was a development that the teams truly believed in. Nevertheless, the dimension of individual versus collective was quite central in many of the concrete solutions put forward to reduce the climate footprints of the residents. One team even formulated a new ideology thought to replace the currently dominating framework of individuality:

Since the 1960s', post-modern society has tried to escape what was perceived as a suffocating version of collectivism. Yet after half a century, when everything from transport to urban spaces has been individualised, the collective project has been re-launched, due to the environmental crisis. The question is now: How can we create new and resource-saving collectives, without removing the possibility of individual expression? In future settlements

the collective should be an extra option – a positive element in daily life, creating neighbourhoods and community while at the same time providing room for individuality and diversity.

(Trondheim kommune, 2011: Team SLA om Brøset: pp.34)

While this visionary statement is somewhat abstract, it has been backed with a rather concrete approach, specifying the relative contribution from material infrastructure and lifestyle changes (Figure 2). At the core of the concept is a combination of unique landscape design and sustainable buildings with new and positive ways of organising daily activities:

We do not think that real changes in lifestyle will happen if the motivation is only an abstract target of reducing CO2 emissions. The only motivation for change must be quality. We therefore suggest that Brøset, in addition to its unique architectural and landscape qualities, will be renowned for its unique local, organic cuisine and diverse opportunities for leisure and sports activities.

(Trondheim kommune, 2011: Team SLA om Brøset, pp. 5)

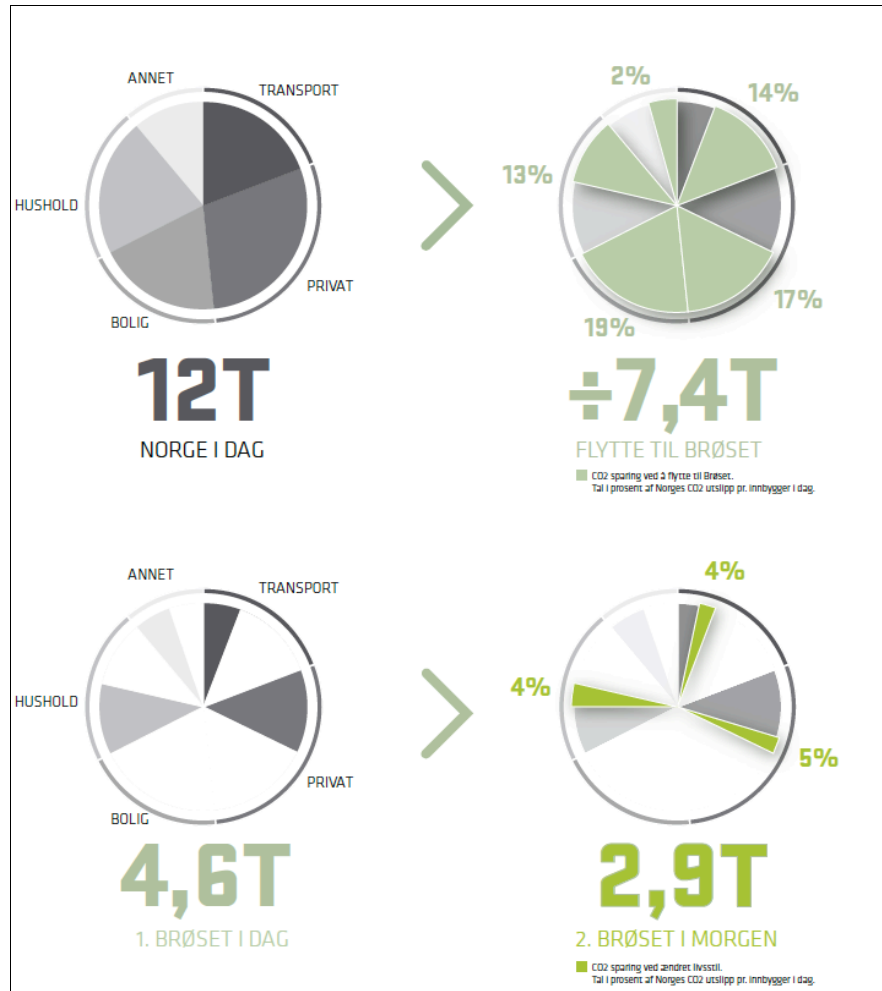


Figure 2: A schematic description of how Team SLA anticipates that the 3-ton target for greenhouse gas emissions should be reached. First, a reduction from 12 tons to 4.6 tons per person by moving to Brøset, with optimal technical and material solutions. Then, a further reduction to 2.9 tons can be achieved through lifestyle changes developed over time. (Trondheim kommune, 2011: Team SLA om Brøset, pp. 9)

Not only Team SLA, but also the other teams were acutely aware of the limitations of focusing only on physical infrastructure and buildings. However, they varied considerably in how they approached what is often referred to as lifestyle issues. At one end of this spectrum there was a project that to a large extent deemed a substantial change in lifestyle to be unrealistic, referring to a schism between (given) individual qualities and reduced consumption:

We have taken into consideration the quality of human beings that make most of us motivated to win competitions, stretch further, earn more money, and have better goods. This quality makes the realisation of a sustainable, climate-neutral, and environmentally friendly lifestyle a difficult task, because climate-neutral living often means having to give up something that many desire. We want to prepare for a Brøset where there is room for most people.

(Trondheim kommune, 2011: Team COWI on Brøset: 8).

Whereas Team COWI in this context may be considered an outlier that received a fair amount of criticism from the evaluation committee, it is nevertheless interesting to compare the team's reasoning with other teams' approaches to the issue of lifestyle and lifestyle changes, such as Team Code:

Brøset is an innovative urban development project, precisely because it addresses the total of greenhouse gas emissions, created by consumption and lifestyle, not only emissions from heating and driving cars. We therefore aim to facilitate a new and improved lifestyle, with less work, less consumption, and a different consumption pattern. This new lifestyle will be created by new architecture at Brøset, providing for new ways of living and making possible new ways of organising work and leisure. Different ways of living will give different ways of thinking, and hence attitudes will change.

(Trondheim Kommune, 2011: Team Code om Brøset: no pagination in material)

Team Code was the only team that explicitly focused on reduced income as a way to combat greenhouse gas emissions. According to Code, through investing a lot of time in creating a vibrant local community at Brøset, potential inhabitants may consider it a sensible option to reduce their paid working hours and hence their carbon footprint stemming from general consumption. They also stressed the importance of shared space to nurture a sense of community among residents (Figure 3). Arguably, this line of reasoning is well known from the eco-village and transition town movement, where systems for partly or, in some cases, fully replacing the formal economy have been developed, e.g. in the form of local currencies or local economy trading systems (LETS).



Figure 3: Common space within a cluster structure, combining individual houses and shared spaces (Trondheim Kommune, 2011: Team Code om Brøset: not paginated)

Despite high ambitions and quite detailed strategies for how to reach the 3-ton target, none of the teams succeeded in quantifying their projects in a manner consistent with the emission-calculating tool. Furthermore, many of the assumptions behind the suggestions were questioned by a group of experts that reviewed the material, leading to a much smaller reductions in greenhouse gas emissions than projected in the presented material. Still, the municipality expressed great satisfaction with the outcome of the process (Gansmo et al., 2011).

4.3. Master plan

After the closure of the parallel commissioning process, a group of representatives from different municipal departments were given the mandate of developing a master plan for Brøset. The research community was also represented in this forum, continuing the close cooperation from earlier phases of the project. Since none of the teams were accorded the status of winner, the municipality was free to choose from the available material. It soon turned out that many of the suggestions from the teams needed to be backed by more thorough analysis. In line with comments from the evaluation committee, the group also chose a different organising principle for the overall structure of the plan, introducing an urban street structure that cut through the area, combining a road reserved for public and non-motorised transport with spaces for public functions and mixed-use (Figure 4).

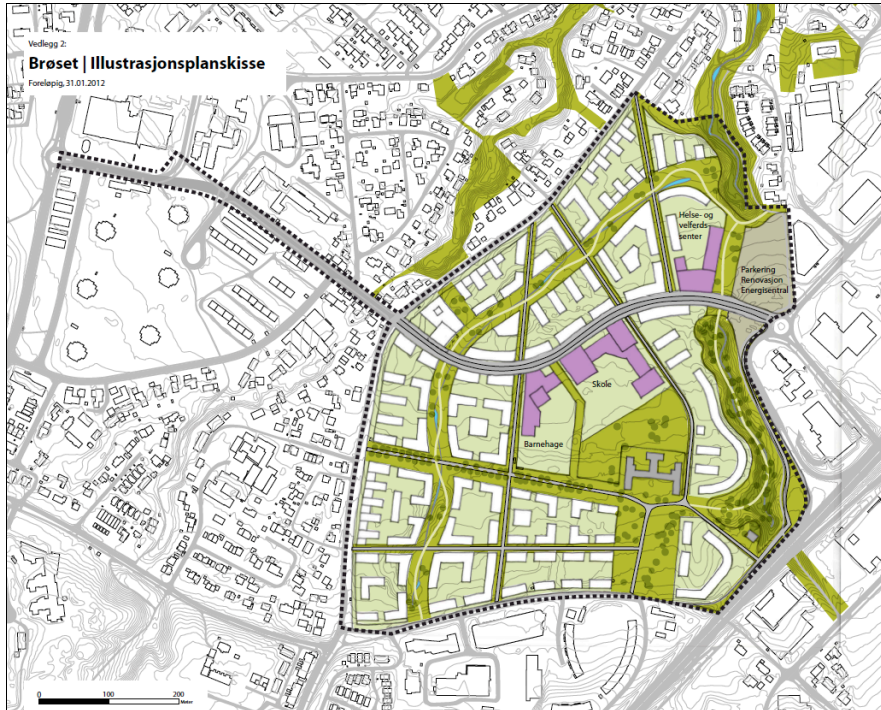


Figure 4: Preliminary illustration of the master plan for Brøset, showing the axis with public functions (purple) and housing areas (white) intersected by a green belt (Trondheim kommune, 2012).

Although the master plan is currently under revision and will soon be subject to a public hearing, some basic principles can be identified:

- All buildings will adhere to the best available technology and meet strict energy demands well beyond current regulations.
- The area is supposed to have a net positive energy balance on a yearly basis and utilise renewable energy only.
- Except for the axis, all internal roads are meant to give priority to non-motorised transport, while allowing use by delivery vehicles, disabled drivers, and emergency vehicles.
- Private car ownership and driving are not encouraged, as strict parking regulations apply (0.5 cars per household compared to current norms of 1.5).
- Access to local service functions and the closest shopping centre are designed to be cumbersome by car and very easy by public transport and bicycling or walking.
- Vital public functions such as schools, kindergartens, and nursing home are located within the area. All private housing along the axis will be regulated for mixed-use purposes at ground level.

- A continuous green belt, 30 m wide, will cut through the housing areas, which will be divided into nine sections of varied size and shape. This triangular green structure is planned to contain a high-grade path, various activity zones, and areas for growing food.
- All housing sections will have a communal house for shared functions such as extra kitchen facilities, exercise rooms, and flats for short-term hire.
- The area features a higher density and smaller dwellings than most other residential areas in this part of the city (12 dwellings per daa, 70 m² per dwelling exclusive shared spaces)

In order to ensure that all relevant information has been considered, a relatively comprehensive summary of the teams' suggestions has been prepared by the municipality. This exercise has revealed that much of the material is too detailed (or not relevant) to be included in an area plan, and thus needs to be evaluated in the context of a more detailed regulation in a later stage of the process.

5. Discussion

After having reviewed a selection of the planning documents related to the ambitious project for Brøset, I now discuss the findings in the light of theoretical perspectives and my reflections from participating in the process in various roles thus far.

One of the central aspects of the Brøset project as presented here is the operational definition of climate neutrality (3 tons per person per year) and the focus on total climate footprints of household consumption. With actor-network terminology, this may be described as a 'qualculative' regime (Callon and Law, 2005), indicating a blending of qualitative, normative elements and numbers. The idea behind the concept is that seemingly objective figures carry a lot of normative or political assumptions that are often taken for granted when alternatives are few or non-existent. I will now return to the calculative exercise performed by the teams, as it actually highlighted some very interesting and potentially controversial connections between general consumption and greenhouse gas emissions.

In their analyses, the teams took the current average of Norwegian salaries as a vantage point and category-by-category they had to specify how their various interventions influenced resource efficiency and spending. What this would mean in practice is that economic savings from, for example, installing energy saving appliances would have to be invested in activities that would generate very little emissions per economic unit if the total emission level is to remain within safe limits, in this case three tons per person per year. If the fact that salaries in Norway and in most Western economies under normal circumstances grow with a given percentage each year is also taken into account, this politically sanctioned income growth can be seen as a near perpetual and exponentially growing rebound effect. Thus, it be-

comes quite clear that increasing available income will almost inevitably result in rising greenhouse gas emissions. This is mainly because it is quite unrealistic to anticipate that the decrease in resource consumption per economic unit can keep up with income growth, considering emissions generated in the global background economy (Peters et al., 2011).

In this sense, the way consumption is framed in the Brøset project is at odds with the officially approved way of calculating emissions from the Norwegian economy. In public statistics, foreign emissions are excluded from products and services consumed within Norway. This contrast is made particularly salient by repeated claims from Norwegian politicians that Norway's economy has broken the long-established connection between growth in GDP and emission levels, and should be seen as an inspiration to the rest of the world (Werner, 2010; Rønningen, 2011). Clearly, these two "qualculative" regimes have very different implications when it comes to designing policies. It is, however, doubtful, whether the full implications of the seemingly innocent exercises performed in the Brøset project have been realised by most actors involved in the process.

Another field where a lot of research activity and interaction with planners have been taking place is transport, and it has resulted in the aim of turning the conventional hierarchy upside down. This implies giving first priority to non-motorised transport, then public transport, and lastly treating private cars as the least prioritised means of transportation. Although this has been previously done within city centres elsewhere in Norway, Brøset represents a national pilot project in introducing such radical restrictions on private car use in semi-urban areas. Thus, it is a rather clear-cut example of trying to intervene in one of the 'sacred' dimensions of Western lifestyle. The suggested level of 0.5 cars per household has already generated some debate, as representatives from the building industry question whether people will want to live under such restrictions (*Adresseavisen*, 2012). Initial user studies have also found that this topic is experienced as quite challenging for people living in the areas around Brøset (Thomsen and Löfström, 2011).

Despite these responses, experiences from other projects in Norway, such as the city rail project in Bergen, indicate that the level of controversy before a project is realised is a poor predictor of the perceived popularity after its completion. This may seem a rather arrogant statement seen from the perspective of citizens as informed human beings that know what is best for them. Drawing upon insights from practice studies and actor-network theory as presented above, the claim can, however, be made that current material circumstances influence the life world of people to a large extent. This also includes the formation of attitudes towards new ways of organising daily practices. Within this line of thinking, such beliefs are created in the field between individuals and their surroundings and not as a result of a fully autonomous process within each individual.

Whereas Team CODE may have been somewhat uncritical in their visions for how new architecture would influence people at Brøset, it is certainly possible to find support for the claim that material surroundings do have an important role in constituting human behaviour (Jelsma, 2003. Larssæther, 2011). The role of so-

called props in influencing daily choices has also been recognised within psychology (Thaler and Sunstein, 2008). The central assumptions behind the transport concept developed for the area can thus be understood in actor-network language as an attempt to introduce a new form of normality through a reconfiguration of the socio-technical landscape. The big challenge is, of course, to understand how this new regime can be introduced to people that are deeply enrolled into a car driven society, with its immediate desire for comfort and flexibility.

Returning to the initial question of this paper, it certainly seems that the municipality of Trondheim and their partners in the research community believe that it is possible to plan for a new lifestyle. It is not difficult to trace a recognition of the mutual relationship between lifestyle and technology and material infrastructure in many of the documents reviewed here, separating the project from approaches that rely solely on either green-tech or moral appeals. However, when critically examining what has been written in various policy documents about consumption, it is rather salient that the texts are either very general in nature or focus on 'safe' issues such as waste reduction and effective technologies for waste removal. This is most likely an expression of the balance act that both researchers and planners have needed to perform between aiming for radical reductions of greenhouse gas emissions while conforming to what is deemed politically acceptable.

In addition, most of the material from the parallel commissioning process is first and foremost about shifting consumption patterns, with the exception of that produced by Team Code, which explicitly addresses the conflict between perpetually growing income levels and climate footprints of the residents at Brøset. However, even their suggested strategy of increasing part-time work will have a logical stop if continuous income growth proves to be the norm. At a certain point, people would need to leave the formal economy altogether because even minimal positions in a fossil-fuel driven economy would generate too much income and associated emissions to be within safe levels.

It is questionable whether the preliminary master plan for Brøset in its present form would take residents very far "beyond consumption", but there are elements that at least point out some possible topics to explore further. The idea of stimulating a more locally based everyday lifestyle is present in the suggestions to programme essential public functions into the area. If all private houses along the axis were regulated for mixed-use on the ground floor, this would support the concept of living local. The same would be the case with strengthening the connection to the nearest shopping centre at Valentinlyst, (300 meters to the west of the site). Placing cars in underground garages on the outskirts of the area would also liberate a lot of space that could increase the quality of outdoor areas, giving room for non-commercial activities such as private and public gardens and other leisure activities that would benefit both people and the planet. Furthermore, the communal houses represent a deliberate attempt to introduce arenas where individual consumption is replaced by collective solutions, both in a direct sense and through building community.

5.1 *The way forward*

As the initial planning phase will soon be finished, the Brøset project will enter a critical phase, risking that initial ambitions will be watered down or deviated from. An issue that has been looming in the background while working with the master plan has been that the owners of the site are not in agreement on how to proceed with negotiations concerning sales and distribution of income. While all owners are public, the current psychiatric institution needs to finance and complete a new build in a different location before leaving the premises. In the age of public enterprises, it is evidently not an easy task to transfer money between sectors without invoking a lot of political controversy.

The idea of taking an active role in selling and marketing the positive qualities of low-carbon life as described in the parallel commissioning process also seem slightly alien to the municipality at present. It is quite uncertain how and by whom the issues not covered by the master plan will be addressed, although the researchers (in close coordination with the municipality) have initiated some activities with relevance for the further process. These include a user-participation project and a climate centre that can serve as an engine in the development phase. In this regard, it is worth citing the published planning programme once again, in which it is stated that *‘what can be calculated and programmed must be combined with great attention to what cannot be calculated and programmed’* (Trondheim kommune, 2010: 19; my translation). Perhaps a separate strategy is needed in order to deal with factors that are not included in the established programming procedures and available calculation tools. Hopefully, the positive dialectic between actors will ensure that the project can still be identified after engaging with forces where other concerns than climate footprints may be highest on the agenda.

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IV. LEARNING & EDUCATION FOR RESPONSIBLE LIVING

Moving beyond *unlearning unsustainable consumption*

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The notion of sustainable consumption has mainly been taken up in the educational community as a challenge to *unlearn unsustainability* and reverse (or at least mitigate) the hazardous consequences of consumerist lifestyles. This conceptual paper criticizes this response for its inherent negative framing of consumption that is also reflected in teaching resources and practical materials, as this bears the danger of patronizing students and causing discouragement and apathy rather than opportunities to acquire competences for sustainable consumption practices. It proposes that advancements towards a more positively oriented consumer education for sustainable development (CESD) are needed and suggests to employ a salutogenetic approach that has informed a change in thinking and practice in health education away from focussing on what causes disease (pathogenesis) towards exploring what contributes to health and well-being (salutogenesis). The argument of this paper is that in a salutogenetic approach CESD should have its emphasis on substantiating the conceptually underdeveloped relation between human needs, different types of satisfiers and their contribution to achieving a good life for oneself as well as others today and in the future. The paper merges these strands and provides a starting point for further discussion on consumer educational approaches that enable students to think positively beyond consumption.

Keywords: education for sustainable development, consumer education, needs, satisfiers, salutogenesis

1. Education and the Sustainable Consumption Agenda

The zero draft of the final document of the Rio+20 UN Conference on Sustainable Development reaffirms the critical role of education as a key area for promoting sustainable development when it commits to “strengthening the contribution of our education systems to the pursuit of sustainable development” (Art. 98) (United Nations 2012). The aim of such contribution is to „educate a new generation of students in the values, key disciplines and holistic, cross-disciplinary approaches essential to promoting sustainable development“ (ibid., Art. 101) – a new generation that is able to live up to the “particular responsibility to nurture sustainable development and sustainable consumption and production patterns” (ibid., Art. 14).

Undoubtedly, the political affirmation of education for sustainable development (ESD) following the Rio conference in 1992 had set off an intensive scholarly debate on sound theoretical and conceptual approaches and international efforts to establish an empirical evidence base on the implementation mechanisms and effects of ESD. The probably most emphatic political affirmation of the educational agenda was the launch of the UN decade on ESD (2005-2014) that was recommended by the Rio+10 summit in Johannesburg and subsequently adopted by the UN general assembly. Consumption issues feature prominently in the decade. According to the implementation scheme, the decade sets out to “*to integrate the principles, values, and practices of sustainable development into all aspects of education and learning*” (UNESCO 2005: 6) and explicitly aims to develop “*knowledgeable consumers who purchase goods with low lifecycle impacts and who use their purchasing power to support corporate social and environmental responsibility and sustainable business practices*” (ibid.: 29).

For the European and North American context, the UNESCO mid-term review on structures and contexts of ESD clearly states that sustainable development “depends to a great extent on changing lifestyles and patterns of consumption and production” (Wals 2009: 21) which makes education for sustainable consumption a “core component of ESD” (Young Choi and Didham 2010: 50). Among the most prominent initiatives are the project *Development of On-Line Consumer Education Tools for Adults* (DOLCETA), the foundation of the *Consumer Citizenship Network* (CCN) and its successive *Partnership for Education and Research about Responsible Living* (PERL) as well as the *European Network for Consumer Education* (E-CONS). Moreover UN agencies have developed materials in cooperation with other organisations such as *YouthXChange* (UNESCO and UNEP 2007) or *Here and Now!* (Thoresen 2008) that have been disseminated on a global scale.

2. Consumer Education for Sustainable Development

Conceptually, consumer education for sustainable development (CESD) in the sense of consumer citizenship education differs from alternative and ‘conventional’ approaches to consumer education in a number of respects. Most importantly, it

- is “interdisciplinary and combines consumer education, civic training and environmental education” (Thoresen 2005: 9),
- seeks to “empower people so that they are able to responsibly manage their social and environmental impacts, but also to participate in and stimulate the public debate about values, quality of life, responsibility and accountability” (Pierre and Thoresen 2009: 2),
- is “an essential element of liberal education and is part of the on-going values debate [...] to define the ‘quality of life’” and “serves as a preventive measure against the growing problems of indebtedness, fraud, commercial exploitation and lifestyle related illnesses” (Thoresen 2005a: 11), and
- provides “sustainable consumer empowerment through critical consumer education” that helps “people engage in the process of social critique by learning the new languages of critique, possibilities and action” and teaches people “about a new kind of responsible choice focused on one’s intentions rather than the actual choice made in the marketplace” (McGregor 2005: 445).

In accordance with the principles of ESD, CESD seeks to conceptually overcome major deficiencies of traditional environmental and consumer education approaches, namely the narrow focus on problems and the tendency to present socio-scientific issues in a catastrophic “gloom and doom” approach that runs the risk of causing “apathy and ‘powerlessness’” (Wals and de Jong 1997: 127) among students rather than increasing their capacity to contribute to positive changes. As a result, it is observed that consumer educators often “encounter disillusionment, passivity, fatalism and a sense of powerlessness” (Thoresen 2008: 9) among their students. In order to change this, consumer education in the paradigm of ESD should seek to lead “away from the ‘threat’ and ‘suffering’ scenarios and towards ‘modernisation’ scenarios” (de Haan 2006a: 7) that focus on enhancing students’ competences to “enact changes in economic, ecological and social behaviour without such changes always being merely a reaction to pre-existing problems” (de Haan 2006b: 22).

The sustainability debate is important, because it shifts the emphasis from an almost exclusive concern with present problems to that of preferred futures. Such a temporal shift gives equal attention to solutions and future goals. How many school projects on rainforest destruction, for example, fail to consider alternative scenarios for the future? To study only the problems at best leads to indignation and, at worst, despair. Encouraging students to explore their preferred futures, however, can lead to greater feelings of hope and empowerment. (Hicks & Holden 1995: 186f.)

Despite these efforts to advance towards a modernization scenario, the case for CESD is often still made employing risk and problem centred arguments and scenarios that stem from the background of Agenda 21. The final document of the world summit stresses the need to “encourage changes in unsustainable consumption patterns” (UNCED 1993: 4.1.b) in order to reverse “the continued deterioration of the global environment” as well as “aggravating poverty and imbalances” (ibid.: 4.3) and therewith prevent a global catastrophe. More generally, it is argued that the concept of sustainable consumption has not been built on a positive definition, but rather originates from a problem and risk centred debate that sought to reverse undesired effects of consumption patterns in industrialized countries and eradicate underconsumption among a large proportion of humankind (Fischer et al. 2011). Consequently, key sustainability problem areas such as “waste, climate change and ozone, energy, water, child labour and human rights, animal welfare and biodiversity” (UNESCO & UNEP 2007: 8) feature prominently in both environmental and consumer education resources (see also Thoresen 2008: 24f.).

This paper argues that in order to advance towards a CESD that genuinely meets the foregoing propositions, the overemphasis on addressing environmental and social problems and risks linked to consumption patterns needs to be overcome. The following chapter explores how a more positive approach and a greater focus on the relationship between needs, satisfiers and human well-being could inform such further advancement of CESD.

3. Inspirations for a Positive CESD

What could be possible pathways and conceptual approaches towards a positively oriented CESD? The following discussion merges three strands of thought: the salutogenesis approach in health promotion as an overall perspective, the good life for today and future generations as a central normative idea emerging from the sustainability agenda, and the distinction between needs and satisfiers as a didactic leitmotif to elaborate and design educational interventions.

3.1 Perspective: Salutogenesis Approach

Some inspiration can be gained from an educational field related to consumer and sustainability education. In the field of health education, a remarkable conceptual evolution took place with the adoption of the Ottawa Charter in the 1980s. The Charter introduced the concept of health promotion to the policy agenda. *Health* was defined as a “positive concept emphasizing social and personal resources, as well as physical capacities“ that „goes beyond healthy life-styles to well-being“ (WHO 1986). Based on this understanding of health, *health promotion* was defined

as „the process of enabling people to increase control over, and to improve, their health“ (ibid.).

The spirit and rationale of the Ottawa Charter can be interpreted as a turn away from a pathogenetic towards a salutogenetic framework in the health promoting sector (Eriksson and Lindström 2008). The concept of salutogenesis was developed and introduced by AARON ANTONOVSKY who “was intrigued by the question why some people, regardless of major stressful situations and severe hardships, stay healthy while others do not“ (ibid.: 2). While the predominant approaches to health education at that time viewed health in a pathogenetic perspective as „generated through the elimination of risks for diseases“, a salutogenetic approach focuses on the “question of what creates health” (ibid.: 2). Emphasizing the available „resources for health and health-promoting processes“ (ibid.: 1f.), it “starts by considering health and looks prospectively at how to create, enhance, and improve physical, mental and social well-being” (Becker et al. 2010: 2).

With its resource rather deficit oriented perspective a salutogenetic approach could help to meet what ELIZABETH SCHOR refers to when she posits that “a new critique [of consumption] should be positively oriented; that is, it should argue in favor of a better way of organizing the economy and society” (Schor 1998: 136).

3.2 Objective: Sustainability, the Good Life and Human Needs

A key question in the debate on sustainable consumption is what form of consumption should be sustained for what reason. Drawing on the Brundtland definition, two overarching normative criteria for the evaluation of consumption modes can be identified in response to that question: the concept of needs and the idea of limitations (WCED 1991: 54). A sustainable consumption mode would have to ensure that external conditions are maintained or (re-)created that allow those people living today and future generation to satisfy their needs (Fischer et al. 2011). As clearly not all human aspirations and wants of human beings today and future generations can be met within the boundaries of our planet, a lively debate has emerged on the question of how to identify those objective needs whose satisfaction is ethically not disputable and should thus be politically ensured.

According to Di Giulio et al. (2011), only objective theories that identify elements of a good life independently from subjectively perceived feeling of deprivation and from individual aspirations provide a solid base for the elaboration of objective needs. Among the most prominent anthropological approaches that argue for a limited number of essential elements that are universally characteristic for human life are the capabilities approach by MARTHA NUSSBAUM and AMARTYA SEN (1993) and MANFRED MAX-NEEF (1991) approach to human development (for an attempt to merge these approaches refer to Constanza et al. 2007).

According to MAX-NEEF’s conceptualization, a need has a dualistic structure: “it is a deprivation in the sense of something being lacking [and] is a potential to the

extent that it mobilises the subject” (Stø et al. 2008: 237). He identifies nine universal (axiological) needs that correspond with different forms of being, having, doing and interacting in which the need can be satisfied (Table 1). Transcendence was suggested to be included as a tenth need (Cruz et al. 2009). MAX-NEEF’s framework proposes that “needs are finite, few and classifiable” while “satisfiers are culturally determined and numerous” (Stø et al. 2008: 237).

Table 1: Matrix of Needs and Satisfiers by MAX-NEEF (1992: 206f.)

Needs according to axiological categories	Needs according to existential categories	Being	Having	Doing	Interacting
Subsistence		1/ Physical health, mental health, equilibrium, sense of humour, adaptability	2/ Food, shelter, work	3/ Feed, procreate, rest, work	4/ Living environment, social setting
Protection		5/ Care, adaptability, autonomy, equilibrium, solidarity	6/ Insurance systems, savings, social security, health systems, rights, family, work	7/ Cooperate, prevent, plan, take care of, cure, help	8/ Living space, social environment, dwelling
Affection		9/ Self-esteem, solidarity, respect, tolerance, generosity, receptiveness, passion, determination, sensuality, sense of humour	10/ Friendships, family, partnerships, relationships with nature	11/ Make love, caress, express emotions, share, take care of, cultivate, appreciate	12/ Privacy, intimacy, home, spaces of togetherness
Understanding		13/ Critical conscience, receptiveness, curiosity, astonishment, discipline, intuition, rationality	14/ Literature, teachers, method, educational policies, communication policies	15/ Investigate, study, experiment, educate, analyse, meditate	16/ Settings of formative interaction, schools, universities, academies, groups, communities, family
Participation		17/ Adaptability, receptiveness, solidarity, willingness, determination, dedication, respect, passion, sense of humour	18/ Rights, responsibilities, duties, privileges, work	19/ Become affiliated, cooperate, propose, share, dissent, obey, interact, agree on, express opin-	20/ Settings of participative interaction, parties, associations, churches, communities, neighbourhoods, family

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Needs according to axiological categories	Needs according to existential categories	Being	Having	Doing	Interacting
Idleness		21/ Curiosity, receptiveness, imagination, recklessness, sense of humour, tranquillity, sensuality	22/ Games, spectacles, clubs, parties, peace of mind	23/ Daydream, brood, dream, recall old times, give way to fantasies, remember, relax, have fun, play	24/ Privacy, intimacy, spaces of closeness, free time, surroundings, landscapes
Creation		25/ Passion, determination, intuition, imagination, boldness, rationality, autonomy, inventiveness, curiosity	26/ Abilities, skills, method, work	27/ Work, invent, build, design, compose, interpret	28/ Productive and feedback settings, workshops, cultural groups, audiences, spaces for expression, temporal freedom
Identity		29/ Sense of belonging, consistency, differentiation, self-esteem, assertiveness	30/ Symbols, language, religion, habits, customs, reference groups, sexuality, values, norms, historical memory, work	31/ Commit oneself, integrate oneself, confront, decide on, get to know oneself, recognize oneself, actualize oneself, grow	32/ Social rhythms, everyday settings, settings which one belongs to, maturation stages
Freedom		33/ Autonomy, self-esteem, determination, passion, assertiveness, open-mindedness, boldness, rebelliousness, tolerance	34/ Equal rights	35/ Dissent, choose, be different from, run risks, develop awareness, commit oneself, disobey	36/ Temporal/spatial plasticity

The column of BEING registers *attributes*, personal or collective, that are expressed as nouns. The column of HAVING registers *institutions, norms, mechanisms, tools* (not in a material sense), *laws*, etc, that can be expressed in one or more words. The column of DOING registers *actions*, personal or collective, that can be expressed as verbs. The column of INTERACTING registers *locations* and *milieus* (as times and spaces). It stands for the Spanish ESTAR or the German BEFINDEN, in the sense of time and space. Since there is no correspond-

ing word in English, INTERACTING was chosen '*à fait de mieux*'.

3.3 Didactic Leitmotif: Needs and Satisfiers

Following the objectives agenda in the foregoing chapter, a key theme in CESD revolves around exploring ways in which we can satisfy our needs in a way that allows us and all other human beings today and in the future to live a good life. A helpful approach to pursue this agenda is the analytical distinction between needs and satisfiers proposed by MAX-NEEF (1992). He distinguished between five different types of satisfiers according to how successful they are at satisfying a particular need and what positive and negative side-effects they have on the satisfaction of other needs (Table 2).

Table 2: Types of Satisfiers (Cruz et al. 2009: 2024)

Type	Description	Examples
Synergic satisfier	Are those which, by the way in which they satisfy a given need, stimulate and contribute to the simultaneous satisfaction of other needs.	Popular education does not only satisfy the need for understanding, but also stimulates the satisfaction of such needs as participation, creation or identity
Singular satisfier	Aiming the satisfaction of targeted single needs, this kind of satisfier is neutral regarding the satisfaction of other needs.	The need for <i>protection</i> is satisfied by singular satisfiers like insurance systems or professional armies
Destructive satisfier	Elements of paradoxical effect. Applied under the pretext of satisfying a given need, they do not only annihilate the possibility of its satisfaction, but they also render the adequate satisfaction of other needs impossible. (Sometimes specially related to the need of protection).	Whilst supposedly satisfying the need for <i>protection</i> , supposed satisfiers like censorship, bureaucracy or authoritarianism impair the needs for <i>understanding, affection</i> or <i>participation</i> .
Inhibiting satisfier	Are those which by the way in which they satisfy (generally over-satisfy) a given need seriously impair the possibility of satisfying other needs	A paternalistic or over-protective family may satisfy the need for <i>protection</i> at the expense of inhibiting the satisfaction of the needs for <i>understanding, participation</i> and <i>identity</i>
Pseudo-satisfier	These are elements which stimulate a false sensation of satisfying a given need. Though they lack the aggressiveness of destructive, they may, on occasion, annul, in the	The need for <i>understanding</i> is only seemingly satisfied by pseudo-satisfiers such as stereotypes, indoctrination or aggregate economic indicators

	medium and long term, the possibility of satisfying the need they were originally aimed at.	
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While only a limited number of universal needs exists, satisfiers are numerous and determined by specific spatial, temporal and social contexts.

We may go as far as to say that one of the aspects that define a culture is its choice of satisfiers. Whether a person belongs to a consumerist or to an ascetic society, his/her fundamental human needs are the same. What changes is his/her choice of the quantity and quality of satisfiers. In short, what is culturally determined are not the fundamental human needs, but the satisfiers for those needs. Cultural change is, among other things, the consequence of dropping traditional satisfiers for the purpose of adopting new or different ones. (Max-Neef 1992: 200)

A merit of MAX-NEEF's framework is that it goes further than conventional modernization frameworks that compare the sustainability performance of different sets of commodities and consumer choices, and instead focuses on exploring how peoples' needs "can be satisfied by [both] material and non-material satisfiers" (Mont 2004:138). With this perspective, it addresses what THOMAS PRINCEN identified as major blind-spot in the scholarly debate:

Little if any research has been done on peoples' choices *not* to purchase or to seek less consumptive, less material-intensive means of satisfying a need. (Princen 1999: 354)

MAX-NEEF's work has received broad interest in the debate on sustainable consumption (e.g. Jackson and Marks 1999, Edwards-Jones et al. 2000, Boulanger 2007). In particular, further analysis of goods and behaviours and their potential to satisfy human needs and promote human well-being were identified as a major field for further research on the promotion of sustainable consumption (Jackson et al. 2004: 91).

In a sense, these questions are amongst the most crucial questions of our time. In a world in which economic consumption is threatening to erode the integrity of the global ecosystems, it is particularly vital to be able to identify which bits of consumption contribute to human needs satisfaction, and which simply operate as pseudo-satisfiers and destroyers. And yet, the truth is that we have barely even scratched the surface in asking such questions, let alone formulated coherent answers for them. (Jackson et al. 2004: 91)

In light of its wide reception in the sustainable consumption discourse, it is fairly remarkable that MAX-NEEF's framework met with little to no response in the consumer education field. This is surprising with regard to empirical insights from youth surveys that indicate a strong need for an educational engagement with the relation between needs, (commoditised) satisfiers and well-being. A questionnaire survey on consumption patterns of young adults aged 15 to 25 conducted between 2002 and 2004 in Germany (N=850), for example, found that about 27 percent of the respondents use consumption choices to express themselves and their identity (Lange 2004). The authors of the study distinguish between three forms of consumption among youths: rational consumption that describes a form of consumption in which money is spent based on a cost-benefit-analysis (75 to 80 percent of

youths) on the one hand, and demonstrative (15 percent of youths) and compensatory (15 to 18 percent of youths) forms of consumption that use consumer goods and services to satisfy needs for affection and recognition or to countervail deficits that stem from other problem fields (ibid.).

4. Discussion: Educational Implications

The inspirations from chapter three suggest to overcome a pathogenetic, risk and problem-based consumer education in favour of a CESD based on the principles of salutogenesis that has its primary focus on the promotion of well-being and a good life, and that engages with and utilizes the potential of different satisfiers to contribute to this objective. Table 3 provides a succinct comparison of a pathogenetic and a salutogenetic perspective on CESD that juxtaposes distinct features of the two approaches.

Table 3: *Pathogenetic vs. Salutogenetic Perspective on CESD* (adapted from Becker, Glascoff & Felts 2010: 8)

Pathogenetic Approach	Salutogenetic Approach
Start Point = Problems associated with consumer lifestyle	Start Point = Potential for greater well-being and quality of life
About avoiding problems and its causes	About approaching potential and its causes
Primary focus: prevention of unsustainable consumption patterns	Primary focus: promotion of synergetic needs satisfaction and the actualisation of well-being
Secondary benefit: sustainable consumption	Secondary benefit: prevention of pseudo and destructive needs satisfaction in unsustainable consumption patterns
Outcome: Absence of unsustainable consumption	Outcome: Presence of sustainable consumption

Such salutogenetic perspective opens up new vistas for consumer educators and invites contributions from other educational fields. TIM JACKSON, for example, suggests to refer to sports and physical education as a “satisfier of the needs for idleness, participation, identity” (Jackson and Marks 1999: 428) or democratic structures in schools and civic education projects as “a satisfier of the need for participation” (ibid.). Likewise, it could be argued that arts education is today functioning as a “catalyst for processes of solving social problems” (Mandel 2005: 13; transl. by author) that has great potentials to develop individual capabilities (UNESCO 2006) and satisfy the need for creation, identity and participation.

It could be provocatively argued now that good consumer education in this understanding is consumer education that covers and addresses as little consumption

as possible. Or as an antagonism: the best consumer education is no *consumer* education at all.

This antagonism is a fallacy for two reasons. First, arguing from an educational philosophical perspective, it would be an illegitimate case of “educationalization” (Bridges 2008) to ask educational organisations to contribute to solving the problem of unsustainable consumption by providing behavioural modification interventions targeting to replace certain sets of satisfiers by others. While such instrumental approach might indeed help to lower the material demand for the satisfaction of needs and thereby contribute to a reduction of harmful environmental impacts, it lacks a reflective component that is pivotal for any experiential learning (Kolb 1984) and for the formation of sustainably oriented intents on the basis of which we make our consumption choices. CESD should seek to contribute to the development of competencies that enable students to reflect the impacts of their consumption choices, to evaluate alternative options, and to plan and make their consumption choices accordingly (Barth and Fischer 2012). For that, and this is the second reason, a broader scope is needed than a perspective focusing merely on the well-being of the individual. Consumer education in the context of sustainable development inevitably needs to situate the satisfaction of individual needs in the broader context of maintaining external conditions that allow all human beings today and in the future to satisfy their needs. This requires consumer educators to work towards empowering students to act not only in their self-interest, but in a broader citizenship framework in the interest of others as well (McGregor 2011). For that it is crucial to reflect on and learn about the effects of individual consumption choices on maintaining or creating such conditions that allow others today and in the future to meet their needs.

Not surprisingly, MAX-NEEF himself suggests to apply the framework of needs and satisfiers “as a participative exercise of self-diagnosis for groups located within a local space” (Max-Neef 1992: 205) in order to help the group “become aware of both its deprivations and potentialities“ and to identify „which satisfiers would be required to fully meet the fundamental needs of the group“ (ibid.: 210). This offers a blueprint for a salutogenetic CESD that is both genuinely educational and emancipatory.

5. Summary and Conclusion

This paper argued for a positive and salutogenetic approach to CESD that centres on the promotion of well-being and a good life and puts the relationship between needs and different types of satisfiers at the top of the agenda. The perspective unfolded in this paper offers a number of benefits for the further advancement of CESD. On the one hand, it offers opportunities for greater collaboration with other educational fields as suggested in the foregoing chapter. On the other hand, it protects consumer education from being overloaded and conceptually blurred by the

number of additional issues and themes that it is expected to incorporate. Instead, it provides a clear focus on consumption and consumer decisions and relates affiliated themes to the central idea of meetings needs to live a good life. By addressing the relationship between needs, satisfiers and well-being, it further does not determine students to the roles of consumers, but pursues a truly educational agenda.

The proposition of this paper is not to be misread as a plea for refraining from engaging with consumption-related sustainability problems and risks in CESD. On the contrary: of course it is necessary to engage students with global sustainability problems, to raise awareness about how these are linked to individual and collective consumer actions, and to endure emotional conflicts. This is critical as to enable students to fully comprehend the side-effects of different choices of satisfiers and develop competencies for sustainable consumption. However, given the lack of conceptually elaborated educational responses to the debate on needs, satisfiers and the good life in the sustainable consumption discourse, supplementary approaches to the problems and risk-centred CESD are urgently needed. A salutogenetic approach provides a starting point for future work on the further substantiation of the underdeveloped link between needs, their consumption and non-consumption based satisfaction, and the overarching positive notion of quality of life in CESD.

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Efficiency indicators in education for responsible consumption: Which should we choose?

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We are currently seeing a proliferation of initiatives aimed at promoting more responsible lifestyles. This education for responsible consumption throughout our lifetimes motivates not only individuals but also the public, educational and entrepreneurial spheres. Any actions that are put in place must therefore be capable of being aligned with responsible consumption indicators in order to identify the efficiency of multi-actor methods used in education for responsible consumption by measuring ecological impacts associated with our changing lifestyles. However, it would appear that there is currently a discrepancy between the large number of local initiatives introduced to reduce the ecological impacts associated with household consumption and our limited ability to assess them. In this article we put forward a methodology that will increase the effectiveness of assessment methods that are currently available. First, the indicators that are most relevant for each aspect of household consumption are identified, then those that are best suited to local use and specific local requirements can be selected, especially in relation to educational schemes for responsible consumption already in place. The method is applied experimentally to the theme of sustainable food, in an urban area already associated with a large number of responsible consumption policies (Bordeaux Metropolitan area, SW France).

Keywords: responsible consumption indicators, ecological impacts, education, methodology, food

1. Introduction

For the last twenty years, major international institutions have stressed the need to encourage populations to become more involved in preserving the environment (chap.4 of the Rio declaration 1992; UNEP 2003) in a spirit of shared ecological responsibility. Responsible consumption policies form part of the effort to find a balance between meeting the needs of individuals and populations and preserving the

environment. They play an increasingly important role, especially in the context of sustainable development policies (UNEP 2003).

Among all the levels – local, national, international – at which responsible consumption policies have been put in place, the local level is definitely the most dynamic. A great variety of initiatives have emerged, from a wide range of sources: local public authorities (e.g. Local Agenda 21, sustainable cities), educational establishments (eco schools, etc.), producers of goods and services in partnership arrangements with consumers (local food systems), or even consumers themselves via *community-based actions* (Dubuisson-Quellier 2010; Seyfang 2007).

1.1 Responsible consumption indicators

Responsible consumption indicators are used to define, for a given moment, the ecological impacts associated with people's lifestyles. In line with the definitions set out in the product life cycle assessment (see standard ISO 14044), three major categories of impacts can be defined: 1) impacts relating to the quality of terrestrial and aquatic ecosystems (e.g. biodiversity erosion), 2) impacts relating to the quantity and availability of natural resources (e.g. exhaustion of raw materials), 3) impacts relating to human health (physiological, psychological and socio-economic aspects).

There are direct impacts arising from each of the three phases of the consumption process, which are: 1) the acquisition of goods and services phase (e.g. purchase, autoproduction, rental), 2) the use phase of these goods and services (e.g. frequency of use, maintenance, storage) and 3) the disposal phase (e.g. waste, sale, abandon). For a more holistic view of the ecological consequences of different modes of consumption, indirect impacts linked with the life cycle of consumer goods must also be taken into consideration: 1) before the consumption phase, during production and distribution, and 2) after the consumption phase, at the end of the product's life (recycling, incineration, landfill) (Moll *et al.*, 2005). This global approach, including impacts associated with production, distribution and product end-of-life, has the advantage of identifying any transfers of impact as consumption modes change (Hertwich, 2005). It does have a disadvantage, however: it associates reduction in ecological impacts only with changes in modes of consumption, without considering changes in modes of production (Princen, 1999). There is therefore a risk of confusing responsible consumption indicators with the more general indicators of sustainable development. In order to remain focused on responsible consumption, the solution adopted here is to consider only those ecological impacts that populations can reduce significantly by their own behaviour, which is in agreement with studies by Spangenberg and Lorek (2002).

1.2 Role of responsible consumption indicators

The major role of responsible consumption indicators is to be a useful decision-making tool when defining and improving local policies for responsible consumption. To achieve this, two conditions must be respected: 1) the indicators have to be linked with the characteristics of these responsible consumption policies (indicators providing information on areas of consumption that are not targeted by such policies are of less interest), 2) the indicators must identify those populations (households or groups of households) that have been most receptive to these responsible consumption policies. Responses to responsible consumption policies are extremely diverse and this is enhanced even further as the environmental, family (family structure, generations), psychosocial (resources, standards, skills, etc.) or biological (individual abilities) contexts also vary greatly (Ribeyre 2003). With this level of detail, policy effectiveness can be improved, not by changing the content but by improving targeting.

Responsible consumption indicators also present some interesting prospects for increasing ecological responsibility at local level: information from citizens on behaviour in the population to which they belong (Oullier and Sauneron 2011), higher levels of citizen participation in local life (Fraser *et al.*, 2006), local authorities setting an example and increased attractivity of local areas (Musson, 2012).

1.3 Current tools for responsible consumption assessment

Today, increasing attention is being directed towards responsible consumption assessment at local level, but it is rarely evaluated in isolation. Responsible consumption indicators usually form part of assessment grids for local and regional sustainable development, which also cover other aspects such as sustainable production or local or regional governance (CGDD, 2009). Despite this increase, two problems emerge:

1. From a conceptual point of view, assessment tools have difficulty in fully incorporating the 3 main types of impact that responsible consumption can have (on ecosystems, on resources, on health). In addition, there seems to be some hesitation between whether responsible consumption should be analysed transversally (water, energy, waste, etc.) or thematically (sustainable housing, responsible eating, etc.). It is fairly clear that the trend leans towards transversal assessment: these data are fairly easy to obtain and this results in a small number of indicators. However, although this type of assessment does have certain advantages, it may not be sufficient for decision-makers and those involved in education for responsible consumption who, more often than not, are working in specific areas of expertise (e.g. transport, catering, waste, etc.) and who therefore need information on the

specific impacts of these different consumer items. Thus it is important to define thematic responsible consumption indicators.

2. From a methodological point of view, the main limitation concerns the process by which stakeholders in the assessment select the indicators. In many cases, indicator grids are put before them (e.g. national benchmarks), and from these only those indicators that are "of the greatest relevance" are selected. Using this method, there is a risk that only part of responsible consumption will be assessed and transfers of impacts will be ignored, which will seriously detract from the credibility of the assessment overall. It is therefore necessary to find methods for selecting indicators where there is a guarantee that the major types of impact are definitely considered. In this context multivariate analysis tools are particularly relevant.

1.4 Aims of the article

The aim of this article is to propose an educational tool with which to assess the effectiveness of the multi-actor approach in terms of education for responsible consumption. This educational tool is based on a new methodology with which to identify the most relevant responsible consumption indicators per household consumer item, from a scientific and operational point of view, and thus measure the reduction in ecological impacts linked with changes in lifestyle at local or regional level.

2. Scope of the educational application

The application is used here as an example and assesses only one consumer item and in only one area.

2.1 The consumer item selected

The assessment covers a thematic consumer item associated with *consumption of fruit and vegetables*. There were several reasons for this choice: the significance of ecological and socio-economic impacts associated with food: energy, water and soil pollution, erosion of biodiversity, health, family budget, relocation of savings (Duchin, 2005; Wallen *et al.*, 2004; Faist *et al.*, 2001; OECD, 2001).

2.2 The area of application

The final assessment will be made on the Bordeaux metropolitan area, a rapidly developing urban conurbation (719,489 inhabitants in 2010, with 1 million inhabitants forecast for 2030) in the south-west of France. In this area there are many local initiatives for more responsible household consumption, most of which fall into the Agenda 21 framework. The Bordeaux conurbation is an intercommunal administrative structure with its own Agenda 21. It is made up of 27 local authorities, 23 of which also have their own local Agenda 21. In this same area, 35 Agendas 21 have been reported in schools and universities.

The assessment was carried out on data from 4 local Agendas 21 and 3 school Agendas 21 in the Bordeaux conurbation.

3. Presentation of the educational process

There are four steps in the process to determine the responsible consumption indicators: first, an inventory is made of all potential responsible consumption descriptors related to the targeted consumer item; next, from the long list of descriptors, responsible consumption indicators are selected that are considered most relevant in terms of the consumption phases and types of impact; the third step consists of testing the measurability of these indicators, and finally the chosen indicators are compared with local education for responsible consumption policies.

3.1 Step 1: inventory of responsible consumption descriptors

For a chosen consumer item, the responsible consumption descriptors correspond to the greatest possible amount of information needed to define the 3 main categories of impacts (on ecosystems, resources, human health), by type (direct and indirect impacts), and associated with the three phases of consumption (acquisition, use and disposal) of the goods and services targeted (Figure 1).

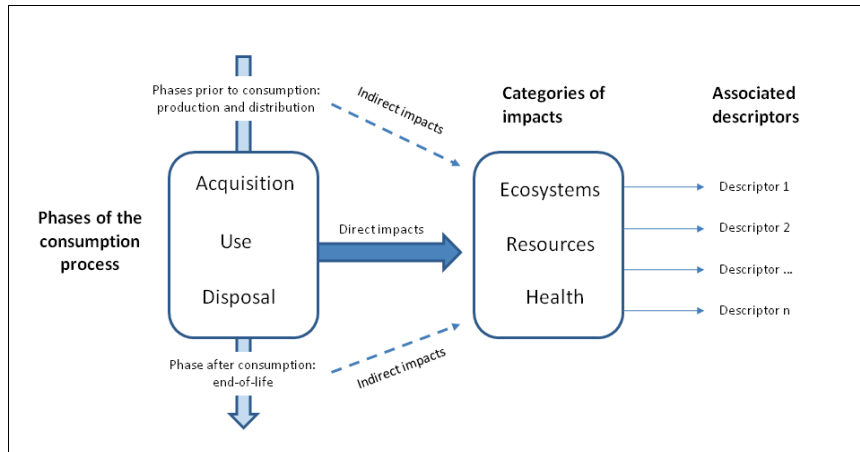


Figure 1: Diagram summarising the referencing of thematic responsible consumption descriptors

Impacts on ecosystems may refer to air pollution, water pollution, the consumption of space, waste emissions, or biodiversity. Impacts on resources may refer to water, energy or mineral consumption. Impacts on human health may refer to matters of physiological or psychological health, time use or family or local economy. With this methodology, indirect impacts (linked with upstream and downstream phases of consumption) are taken into account only if consumers can change them by their own choices and behaviour.

Descriptors can be identified in various ways: we can consult the scientific literature to determine the different ecological issues surrounding a given consumer item; we can look at assessments of local responsible consumption or sustainable development projects (CGDD, 2009) in order to include the local dimension; data can be complemented by personal observations from individuals or groups. All the descriptors identified are then pooled into a table of data ("inventory grid").

As an example, here we consider the procedure as applied to the *responsible consumption of fruit and vegetables* and identify 29 descriptors for this item (Table 1): 15 correspond to impacts linked with the acquisition phase, 9 with the use phase and 5 with the disposal phase; 11 descriptors have impacts on ecosystems, 5 on resources and 13 on health. In the context of an educational exercise, learners can select the descriptors best adapted to their own issues, and this in itself already represents a very constructive basis for discussion and confrontation.

Table 1: Inventory grid of descriptors relating to fruit and vegetables

no.	Descriptors	Consumption phase	Category of impact	Type of impact	Relevance	Influence of consumer
1	Soil pollution (inputs for auto production)	Acquisition	Ecosystems	Direct	Strong	Choice of amount of fertilizer used in kitchen garden
2	Consumption of space (auto production)	Acquisition	Ecosystems	Direct	Weak	Choice to have a kitchen garden
3	Biodiversity (auto production)	Acquisition	Ecosystems	Direct	Weak	Choice to plant different varieties
4	Soil pollution (inputs for agriculture)	Acquisition	Ecosystems	Indirect	Strong	Choice of quality of products
5	Air pollution: GHG (transport)	Acquisition	Ecosystems	Indirect	Strong	Choice of origin of products
6	Air pollution: GHG (agriculture)	Acquisition	Ecosystems	Indirect	Strong	Choice of quality of products
7	Water consumption (auto production)	Acquisition	Resources	Direct	Weak	Choice of plants grown, choice of collecting rain water
8	Energy consumption (agriculture)	Acquisition	Resources	Indirect	Strong	Choice of seasonal products
9	Energy consumption (transport)	Acquisition	Resources	Indirect	Strong	Choice of origin of products
10	Domestic accidents (auto production)	Acquisition	Health	Direct	Weak	Know-how, precautions, knowledge of vegetable gardening
11	Budget (Acquisition)	Acquisition	Health	Direct	Strong	Choice of quality and quantity bought
12	Time (acquisition)	Acquisition	Health	Direct	Weak	Choice of supply (buy / auto production)
13	Health (farmers)	Acquisition	Health	Indirect	Strong	Choice of quality of products
14	Local GDP (share from agriculture)	Acquisition	Health	Indirect	Strong	Choice of origin of products
15	Local GDP (distribution circuits)	Acquisition	Health	Indirect	Strong	Choice of supply mode
16	Biodiversity (fauna/flora linked with storage)	Use	Ecosystems	Direct	Weak	Choice of storage and preservation of fruit and vegetables
17	Air pollution: GHG (cooking)	Use	Ecosystems	Direct	Weak	Choice of fruit and vegetable preparation mode
18	Energy consumption (storage and cooking)	Use	Resources	Direct	Strong	Choice of preservation and consumption mode
19	Water consumption (food preparation)	Use	Resources	Direct	Weak	Choice of preparation mode (cleaning, cooking)
20	Health (consumers)	Use	Health	Direct	Strong	Choice of quality and quantity of food consumed
21	Domestic accidents (cooking)	Use	Health	Direct	Weak	Know-how, precautions, knowledge of cooking
22	Budget (cooking; storage and cooking)	Use	Health	Direct	Weak	Choice of preparation and cooking mode
23	Time (cooking)	Use	Health	Direct	Strong	Choice of preparation and cooking mode
24	Local GDP (share linked with use)	Use	Health	Indirect	Weak	Choice of preparation and cooking mode
25	Biodiversity (fauna/flora linked with fermentable waste)	Disposal	Ecosystems	Direct	Weak	Mode of conserving / managing fermentable waste
26	Air pollution: GHG (composting)	Disposal	Ecosystems	Direct	Weak	Amount of waste produced and recycled
27	Air pollution: GHG (waste collection and management)	Disposal	Ecosystems	Indirect	Strong	Amount of waste produced and recycled
28	Budget (waste removal tax)	Disposal	Health	Direct	Weak	Amount of waste produced and recycled
29	Local GDP (share on waste collection and treatment)	Disposal	Health	Indirect	Weak	Amount of waste produced and recycled

This inventory procedure usually results in identification of a large number of descriptors for each consumer item, which may be superfluous and complementary to varying degrees. For example, the large number of descriptors that correspond to indirect impacts (11 out of 29) derives from the fact that consumers often have a wide choice of fruit and vegetables produced and distributed in a very wide range of conditions, they often have information about means of production and distribution (origin, labels, means of supply, etc.), and they can therefore have considerable influence on indirect ecological impacts. However, these impacts are not all relevant: for example, although consumers can potentially influence energy consumption associated with transport, which is linked to the origin of the products they buy, they have very little influence on the working conditions of the people who provide this transport. This point is therefore not the subject of a descriptor.

3.2 Step 2: selection of responsible consumption indicators

In terms of the information they provide, the relevance of the responsible consumption descriptors is variable. In order to select from the 29 previous descriptors those considered to be responsible consumption indicators a selection has to be made on the basis of a certain number of objective criteria:

1. An initial selection process identifies the relevance (strong/weak) of each descriptor in terms of the issues associated with the themed consumer item chosen (e.g. food, transport, housing).
2. Next it is necessary to check that the selected descriptors do indeed cover the impact categories (ecosystems, resources, health) for the three consumption phases (acquisition, use, disposal).

Among the methods available to aid decision-making which are able to represent, synthesise and highlight significant data, multivariate analysis is an interesting tool that is often recommended. When data is presented in graph form, the proximity between observations and variables can be seen and complementary observations can be added. However, when the number of descriptors is relatively low, data analysis can be simplified and mathematical tools are not required.

To illustrate the procedure, a multiple factor correspondence analysis is carried out based on table 1 by combining 29 descriptors with the data in the next 4 columns: consumption phases (acquisition, use, disposal); impact categories (ecosystems, resources, health); type of impact (direct, indirect); relevance (strong, weak). The "relevance" column, which corresponds to information of a different type, is used as a supplementary variable. Results are shown in the 1-2 factorial design which includes 73% of total variance (Figure 2).

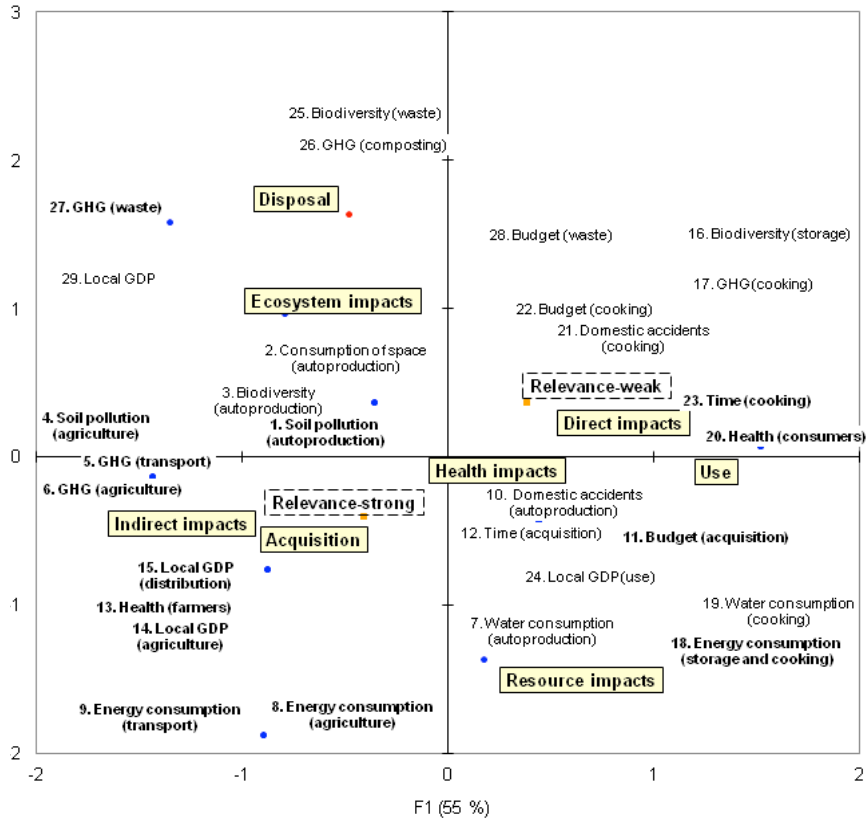


Figure 2: Multiple Factor Correspondence Analysis using XLStat software (29 descriptors for responsible consumption of fruit and vegetables crossed with 3 main variables shown in boxes (consumption phase, impact category, impact type) and a supplementary variable in dashed line boxes (relevance). Descriptors identified as most significant are in bold.

The graphs are analysed and 14 descriptors are considered to be of major interest with regard to issues relating to fruit and vegetable consumption. They are associated mainly with the acquisition phase and cover indirect impacts linked with the production-distribution phase (negative axis 1 in the factorial design, Figure 2). They also show clearly the diversity of impacts on ecosystems (air and soil pollution), on health (health of farmers and consumers, budget and time allowed for the acquisition and use phases), and on resources (energy consumption) (axis 2 of the factorial design).

As in step 1, learners are required to justify their choices and envisage different scenarios.

3.3 Step 3: measurability of responsible consumption indicators

For them to be usable, the indicators that are selected (14 in this case) have to be capable of being measured or at least assessed. Each one therefore has to be associated with a collection and/or measurement method which differs according to the accessibility and the quality of the data.

3.3.1 Origin and quality of data

Although seldom discussed, this issue is nevertheless key. Before completing the inventory grid (Table 1), it is useful to review and define the situations encountered and their specific features.

1. *Sphere of evaluation.* Information collection differs greatly, depending on whether it takes place in the public or private sphere. In the former, it is often public or semi-public bodies that collect information from a large population and a huge area; the purpose of these data is to be made widely available. In the latter case, there are fewer data available, they are more specific and often of a somewhat confidential and intrusive nature. As a result, it may be necessary to carry out data acquisition campaigns on specific samples with a limited number of participants. Two information collection methods may be suitable. The first is metrology. For example, with direct ecological impacts, quantification of the flow of matter or energy in the places where the consumption takes place (e.g. measuring soil pollutants) is by far the best method to use. The second method is the survey technique. In this case, the main drawback is the declarative nature of responses.
2. *Nature of the information.* One of the difficulties in assessing actions associated with a clearly defined family of products is to obtain data that are related specifically to this matter. A great deal of information is available that can be used to assess responsible consumption transversally (e.g. data on energy consumption collected by energy providers) but little that can be assessed thematically (e.g. energy consumption linked with the use – storage and cooking - of fruit and vegetables). For thematic purposes, better targeted data collection campaigns are required based on a specific matter.
3. *The cause of impacts.* With regard to indirect impacts of consumption, assessment is based on the diversity of production, distribution and end-of-life sectors for products consumed by households. As it is impossible for the most part to obtain information on all these sectors, product types associated with mean values can be used. This solution has the advantage of retaining the quantitative nature of the data obtained, but it can be criticised as it tends to homogenise modes of household consumption and blurs any subtle differences that there may be between households. Some more qualitative solutions could be used: for example, the proportion of products consumed that

have an environmental quality label could inform indirectly about the amount of inputs (fertiliser, pesticides) used in agriculture. For direct consumption impacts, observations generally take place close to the act of consumption and are carried out by local authorities, associations or regional research centres.

4. *The quality of observations.* The term *quality* is associated with various parameters relating to the reliability of observations, their accuracy, the frequency at which records are produced, the mode of expression, the units, the date they are obtained, how questions are formulated, etc. and once again with specific features, depending on whether these are measurements, estimates or questionnaires. This underlines the need to pay great attention to these criteria, provided that there is a choice of criteria available and that their quality can be assessed. Often, when the *right information* is not available, it becomes necessary to generate elements for assessment from more or less hypothetical transpositions or extrapolations. For example, energy consumption linked with food can be estimated in conjunction with a qualitative survey on fridges in households (capacity) and on the frequency and average time spent using cooking systems.

3.3.2. Illustration for the set of indicators selected

Table 2 shows the ways in which each of the 14 indicators of responsible consumption of fruit and vegetables was measured. Some indicators are characterised by direct measurements, others by indirect measurements.

Table 2 : Measurability of the 14 responsible consumption indicators

no.	Descriptors	Measurability	
		Direct	Indirect
1	Soil pollution (inputs for autoproduction)	Measure pollutants	survey (inputs for autoproduction)
4	Soil pollution (inputs for agriculture)	data not available	Survey (ecological labels)
5	Air pollution: GHG (transport)	data not available	Survey (origin of products)
6	Air pollution: GHG (agriculture)	data not available	Survey (seasonality)
8	Energy consumption (agriculture)	data not available	
9	Energy consumption (transport)	data not available	Survey (origin of products)
11	Budget (Acquisition)	Survey (household budget)	
13	Health (farmers)	data not available	Survey (social and ecological labels)
14	Local GDP (share from agriculture)	Regional economic statistics	
15	Local GDP (distribution circuits)	Regional economic statistics	Survey (means of supply)
18	Energy consumption (storage and cooking)	data not available	Survey (equipment and cooking)
20	Health (consumers)	medical statistics (Body Mass Index)	Survey (amount of fruit and vegetables consumed per person per day)
23	Time (cooking)	Survey (household time use)	
27	Air pollution: GHG (waste collection and management)	Weigh waste	Survey (wastage, composters)

When there is a problem in accessing direct measurements, then different indirect measurement tools can be suggested. For example, indicator 15. *Local GDP (distribution circuits)*, which shows that the share of fruit and vegetable distribution in the local economy can be measured via a survey of modes of supplying households. For educational purposes this survey tool was used in 76 households in the Bordeaux conurbation with different sociodemographic characteristics (type of housing, standard of living, family structure). The results (Figure 3) reveal a variety of fruit and vegetable distribution circuits according to households, ranging from acquisition of products from the producer (at the farm) to buying in the supermarket. Data like this can be used in part to provide information for indicator 15. *Local GDP (distribution circuits)*.

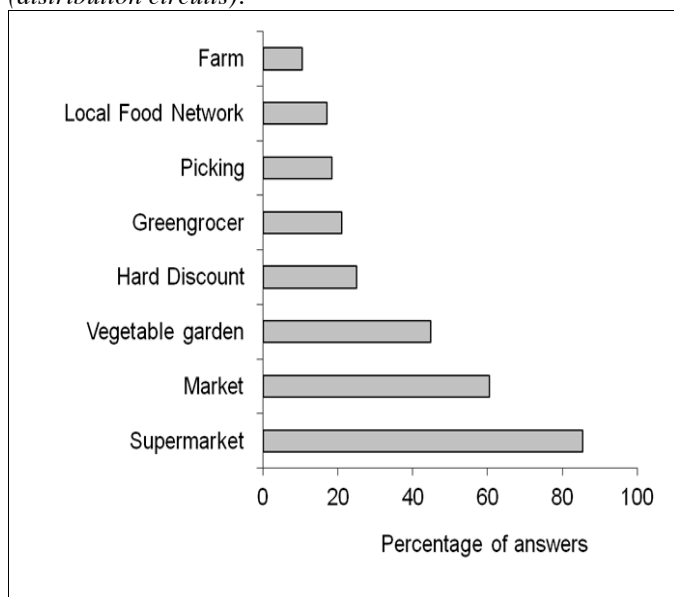


Figure 3: Modes of fruit and vegetable supply in 76 households participating in the supply modes survey.

3.4 Step 4: responsible consumption indicators as assessment tools of local change

The responsible consumption indicators identified from the educational procedure described in the present article can be used as assessment tools for responsible consumption at local or regional level. When local authorities have not set out their own responsible consumption indicators, the 14 indicators identified here in a scientific and theoretical manner can form a basis for reflection for putting a policy in place to assess responsible consumption in their area. When local authorities are al-

ready carrying out this type of action, the indicators identified here can serve as a reference to compare with the public policy assessment indicators that they are already using.

As an example within the Bordeaux metropolitan area, an inventory of responsible consumption policies and education for responsible consumption reveals 83 measures associated with sustainable consumption of fruit and vegetables. Some are redundant or very similar, so all have been grouped according to 3 objectives (Figure 4 A). In addition to these responsible consumption policies, the Bordeaux metropolitan area has assessment indicators with which to evaluate actions in place (Figure 4 B). These indicators concern: 1) transversal indicators (e.g. annual production of household waste per inhabitant); 2) thematic indicators on fruit and vegetable consumption (e.g. number of members of local food networks, number of subsidised composters).

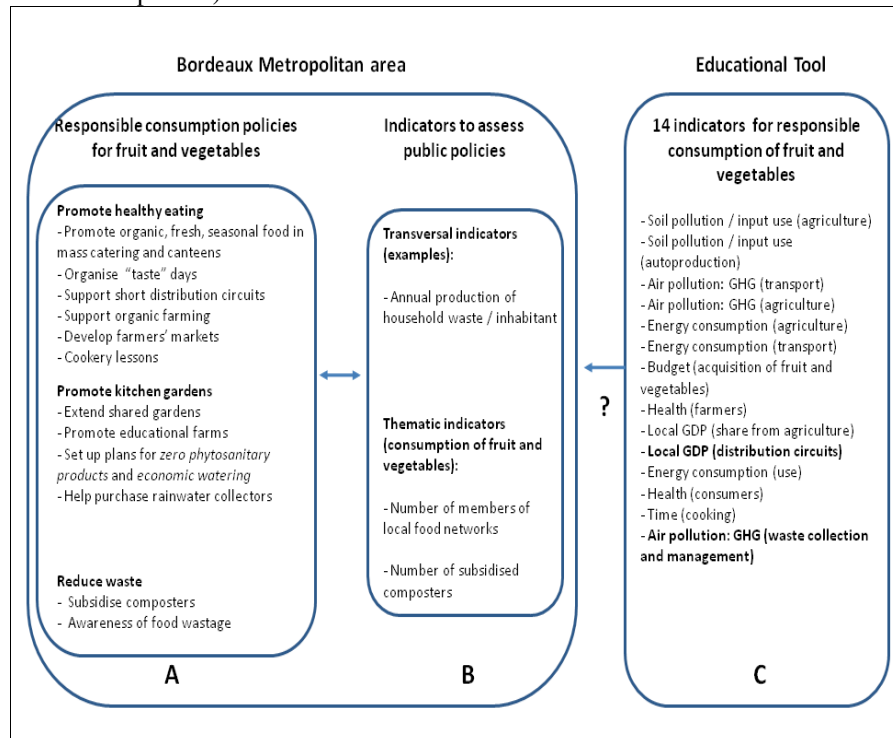


Figure 4 : Policies (A) and indicators (B) relating to sustainable food consumption in the Bordeaux metropolitan area and linked with the 14 responsible consumption indicators selected in the educational procedure (C). The two indicators shown in bold can be linked to the two thematic indicators proposed by Bordeaux

The Bordeaux metropolitan area proposes two thematic indicators associated with responsible fruit and vegetable consumption. Their indicator *Number of members of Local Food Networks* can be assimilated to indicator 15. *Local GDP (distribution*

circuits), and *Number of subsidised composters* can be assimilated to the indicator 27. *Air pollution: GHG (waste collection and management)*. In relation to these two common responsible consumption indicators, two comments can be made: 1) both indicators cover only very partially indeed the different ecological issues relating to responsible fruit and vegetable consumption; 2) they provide no scope for discussion of all the efforts made by the public sector to promote more responsible consumption at local level. Indeed, no indicator shows whether promoting a more responsible supply of food and encouraging a healthier diet has been accompanied by a reduction in inputs or energy consumption, either directly or indirectly, or better health for the population. In the light of this observation, the leaders of Bordeaux metropolitan area could consider using some supplementary indicators taken from the 14 in the educational tool which would enable them to improve the assessment of ecological impacts in the area associated with household consumption of fruit and vegetables.

4. Discussion

By adopting a method to assess actions promoting responsible consumption, students or working people can not only develop a critical perspective towards the choices they make, but also apply the procedure operationally to actual situations.

Although in this article the method has been applied to food, it can perfectly well be extended to all items of household consumption (transport, housing, etc.). Depending on the consumer items, variations can be observed concerning the chosen indicators, especially in relation to the consumption phase with the greatest impact and to the number of indicators of direct/indirect impacts (e.g. food represents a consumption item of which the ecological impacts in terms of the production element of its life cycle are for the most part "outsourced", but nevertheless, through their consumption behaviour, people still have considerable influence on all these impacts).

In terms of education, this method can also be applied to areas other than Bordeaux. This may result in other indicators being chosen, linked with the ecological, social, or political priorities of the area. One can imagine, for example, that public actors who are sensitive to the question of households in a precarious situation in relation to consumption could be interested in indicator 11. *Family budget (acquisition)*.

As well as being transferable, the method can be useful in several ways for educating for responsible consumption. First, by systematically taking into account many direct and indirect ecological issues, it becomes easier to diagnose any transfers of impacts that may happen when modes of consumption change. Next, the possibility of applying assessment methods so that they are better focused on the population. For example, some decision-makers may want to measure responsible consumption at the level of a district, others at a much larger scale. This brings up

the subject of the scale which is best suited to measuring responsible consumption. There is a risk that by increasing the number of decision-making levels this will lead to a corresponding increase in levels of assessment and this is indeed the trend that is currently observed in many local areas. Household consumption behaviours, however, are the result of many compromises between experience, representations and personal choices, requests for responsible consumption from those involved in education, consumption policies applied at local and likewise at global level. Changes in ecological impacts assessed at local level are thus due to the effectiveness of the multi-actor approach to education for responsible consumption. The most coherent plan for the future would be to pool these assessment methods and thus increase the feasibility, coherence, transparency and effectiveness of assessments of responsible household consumption and local sustainable development.

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Working and learning in the world of cradle-to-cradle (C2C)

A European network on education for responsible living

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The described European Leonardo da Vinci Transfer of Innovation project enables corporate trainers and teachers on VET level to empower tomorrow's consumers to consume so called Cradle-to-Cradle (C2C) products and services. The consumers are allowed to be beneficial instead of less bad; it's about giving people a long-term goal and a positive vision of where to go. C2C is all about a positive agenda. C2C design is about creating continuous cycles of both biological and technical 'nutrients'. This means that products are made from pure components that are easy to disassemble in order to create new products in both the biological and technical cycles. Manufacturing processes rely on renewable energy, conserve water and embrace social responsibility (CSR). Therefore C2C fits in the European policy of achieving a Carbon Low Society and for New Skills for New Jobs. In The Netherlands and the partner countries UK, Germany, Romania and Greece there is much need to have C2C on vocational level, because (future) process operators, designers and middle managers also have to obtain competences based on the C2C philosophy. The end product of the Leonardo project is a course and a train-the-trainer programme for corporate trainers and VET teachers.

Keywords: beyond sustainable development, positive attitude and responsible living, teacher training for VET level, european network and cooperation, new skills for new jobs policy

1. Cradle-to-Cradle in education goes beyond sustainable development

The first key aspect of C2C in education is to move away from teaching students (as future employees and as consumers) to feel guilty. We have faced a long period of all kinds of environmental disasters which has created a feeling that it would be

better if the human race was not here. That's why people talk about minimising footprints. For education, however, that's not a very positive message.

If feeling guilty for being alive and being on earth is the basis for education, you will not be able to inspire students as future employees and as consumers to do new things. You can't be innovative working from guilt because you are trying to minimise feeling guilty. People become more creative when they feel appreciated and can live without fear. It is far more powerful to be proud of what you do.

So the first, and far most important thing, is to tell students that we are happy that they are here.

C2C is about innovation, quality and beauty. Things are not beautiful when they are toxic. And it is not beautiful when people can not make a living either.

Sustainability is guilt management from the past. Why would we want to be less bad, when instead we can be good? Instead of talking about minimising our footprint, C2C is about making a big and positive footprint.

In our opinion, the concept of sustainability is especially unattractive for education. Sustainability always remains within the realm of existing systems, i.e. it always wheels in the same paradigm. And if we stay in the same paradigm, we will destroy the planet. Minimising your footprint does not help; we need to do things differently. People have been trying to do things that are less bad for many years now, but that just delays the process. We will just destroy the planet a little later and that does not make any sense.

C2C helps empower students (and their teachers to help them) to become engineers, designers, architects, chemists, economists, communications specialists, managers, product developers, marketers and urban planners because there is so much room to innovate that will affect the behaviour of consumers.

We need a change in education in all the different subjects. We need a range of skills to work together on solutions and for that we need a range of qualifications. To really make things work, we need C2C principles to be applied to all fields.

C2C in education is therefore about taking students as they are and supporting them to become what they want to be. This means looking at a C2C society. It is about looking at what the role of mankind is on this planet. It is about innovation, a positive footprint, a system that allows us to be beneficial instead of less bad. It is about giving people a long-term goal and a positive vision of where to go. C2C is about a positive agenda (Boer et al. 2011).

2. The philosophy of Cradle-to-Cradle (C2C)

An improbable joint venture between an American architect and a German chemist led to the publication of a book in 2002, which gave a new impulse to the way we think about sustainable development. In "*Cradle to Cradle: Remaking the Way We Make Things*" Michael Braungart and William McDonough present a concept which lifts our ideas about sustainability to a higher level.

The traditional way of thinking about sustainability was established in the seventies of the former century when people started to realize that our current production and consumption system is damaging the environment. In the nineties of the 20th century, designing methods such as eco-design and measuring techniques such as LCA were developed with the aim of minimizing the environmental damage caused by human activity.

However, according to Braungart and McDonough, we should not just be looking for ways to make things “less bad”. Carrying on with the traditional ‘Cradle to Grave’ production model will still lead to huge quantities of waste and pollution being produced. McDonough and Braungart propose “starting out by doing the right things”. This new perspective is rapidly gaining ground among the current leaders in sustainable development.

On the basis of the *Cradle to Cradle innovation framework* companies started making products with surplus value; products that have a positive effect on people, the environment and society.

This innovation framework is helping us to find sustainable product solutions using the 3 ‘guiding principles’ of C2C:

- 1) *Waste = food*: this principle envisages an infinite cycle in which products are designed and produced in such a way that they ultimately produce new products, or can be reintroduced to the biological or technological cycle;
- 2) *Use renewable and inexhaustible energy sources*, such as the sun;
- 3) *Celebrate diversity*; greater diversity leads to a more resilient ecosystem.

The realization of C2C concepts requires a considerable amount of creativity, financial resources and cooperation between the right partners. The 3 ‘guiding principles’ provide shared goals for this purpose. Maintaining the C2C philosophy and implementing it in an organizational process is an on-going, step-by-step development.

To obtain a clear structure and direction, a *roadmap* is often used to help us plot a path towards a future-oriented objective.

MBDC is the owner of the Cradle to Cradle trademark; EPEA has the right to use this trademark and assists companies in the certification process. The C2C Product Innovation Institute is licensed to certify products in accordance with the third version of the Cradle to Cradle certification chart, which is currently in progress (Hupperts et al. 2011).

3. The project: Working and Learning in the World of Cradle-to-Cradle

As said, the goal of C2C is to make better products which can be recycled as biological or industrial commodities which are the basis of new products. In this way companies save on energy costs, reduce their CO₂ emissions and there is no waste from new commodities.

Companies contribute therefore to the EU policy to become a sustainable and low carbon society.

A world without waste is a great concept, but it will take a mind shift to turn the ambition into reality. Companies not only need to reinvent the way they make things. They also have to reorganize and re-think the way they work together. C2C products and processes can only be achieved by teamwork throughout the value chain, in open innovation, long term partnerships and with an open mind for Corporate Social Responsibility (CSR).

In this way companies contribute to the EU policy of New Skills for New Jobs and are helping education in educate the workers of the (C2C) future.

All partners in the Leonardo da Vinci Transfer of Innovation project *Working and Learning in the World of Cradle-to-Cradle* i.e. in The Netherlands, Germany, Greece, the United Kingdom and Romania indicate that there is already a lot of learning material on C2C, but not on VET level. The links with CSR and ISO 26.000 are also not very well established.

There is not sufficient learning material, or no material, on creating more awareness for C2C with process operators, designers and middle management. The question on how to implement C2C in your own organization is not sufficiently answered. There are not enough opportunities given on going more in depth on C2C when needed.

In the participating countries networks on C2C exist or arise, but the connections between VET (level) and companies are not well established yet within these networks.

Partners in the project also indicate that they want to have long lasting contacts after the project, mostly by way of digital communication. The gained information and feed back is useful for them in their work in the existing national networks.

Big companies and especially small and medium-sized businesses are interested in the opportunities C2C gives as an innovative and truly sustainable concept. It offers to safeguard the existence of their businesses and create new job opportunities with products that are safe for customers and the environment and have a good reputation and high brand value, resulting thus in strengthening their market position and increasing their share.

3.1 Aims and objectives of the project

The concrete aims and objectives of the Leonardo da Vinci project *Working and Learning in the World of Cradle-to-Cradle* are therefore as follows:

- C2C needs new skills for jobs on VET level for process operators, designers and middle & quality management.
Competence based education can fulfill these needs by using new educational methods developed in Germany, in this case 'serious gaming'. Serious gaming will be the upbeat and anacrusis to training in the workplace and continuous learning.
The end product is a course on C2C.
- Trained trainers and teachers take care of competence based education on C2C for employees in enterprises and for students in VET.
The end product is a train-the-trainer programme on C2C.
- The trained trainers and teachers participate in new and existing networks on C2C. In this way, they can keep on working on C2C after the project is finished and keep updated on how employees and students can find their way with their new skills to (new) jobs.
The end product is a long term participation in new and existing networks.

In this way the EU policy on New Skills for New Jobs is implemented and the current situation is changed that there is no training on C2C on VET level. Also the long term participation in networks will change the current situation that the wishes and needs of business are not met adequately by VET training and education. The needs of the labor market will be better served and controlled because VET education and enterprises meet and work together in new and existing networks. Encouragement of cooperation between VET and the world of work is in this way highly strengthened and will meet this important European priority.

3.2 Learning material of the project

One of the famous founders of the Cradle-to-Cradle (C2C) concept, the German chemist Michael Braungart, is based in Germany. His institute EPEA Internationale Umweltforschung GmbH (International Research on Environmental Sciences) provides up-to-date and innovative content and knowledge for the C2C trainer-training and the C2C course. Another linked German institute EPEA Akademie is involved in the further development of the serious game on C2C and its link to training in the workplace. The innovations from Germany are transferred to other European countries.

These innovations will be translated and adapted to the existing culture and situation in The Netherlands, UK, Romania and Greece.

All partners have contacts with (other) businesses and or their umbrella organizations. The scope of the businesses differs. There are big companies and small ones. There are forerunners and starters with a big interest in C2C. Mostly they operate in the chain of interior design like main partner Desso Carpets, but for example in Greece there is much interest in C2C in food design and on ISO 26.000.

What all companies would like to establish is a stronger European network on company trainings on C2C on VET level and on co-operation and regular updating with VET education. Real implementation of C2C in enterprises and VET starts with mind setting, change management and quality management. Forerunners can help the motivated starters. Together partners like to adopt these settings into the trainer training and course.

All partners show interest in CSR and ISO 26.000.

So, the sector is interior design (new skills and jobs for process operators, designers and middle management), with European countries geographical situated in the North-West (Germany, The Netherlands, UK) and the South-East (Romania, Greece) and the joint perspective to adapt mind setting, change management and quality management to the different cultures and state-of-the-art in the different countries. In this process companies and VET education are supported by consultancy, universities and umbrella organizations.

Important pedagogical material exists in Germany. It contains a vision of C2C, design principles, efficiency versus effectiveness, recycling instead of down cycling, material flow management, steps to develop a C2C product and much more. A simulation game (or serious game) tests and expands the understanding of C2C in a creative way. It prepares for the implementation of projects in the working place.

3.3 methodological and didactic approach of the project

A quote from famous Einstein can explain our methodological and didactic approach in just a few words:

"We can't solve problems by using the same kind of thinking we used when we created them".

The main goal of the didactic approach is to deliver in a interactive way a stepping stone for companies and VET that wants to start with implementing C2C in their own organization or in their curriculum. This means (new) methodology for rising awareness, mind setting and to give practical assistance and tools for change management and implementation and further consultation for more in depth activities.

Important skills to develop are change management, process management, project management and quality management. Employees and students have to reflect on their open mindedness, persistence, and what higher management wants with them and the organization.

The methodological approach is as follows:

- Reflections on how you see the future just out of your reach (for serious mind setting) and on the current vision/strategy of the organization.
- Information and knowledge about C2C and business cases and also about CSR and ISO 26.000.
- Playing the simulation/serious game for more understanding about C2C in a creative way.
- Assignments or your own project on how you are going to implement C2C in your own organization.
- Feed back and evaluation and excursions provide more hands-on information.
- At last there are possibilities for advanced courses or in depth consultancy by EPEA.

In testing the materials constant input of participating companies is asked (are we on the right track, what do you miss, what do you like to add, are we filling in the policy on new skills for new jobs, what does your future employee need (more), what kind of business cases etc.)

A pilot course for all trainers to be trained will be held in June 2012 for target users in The Netherlands. Also pilot courses are organized in each participating country for target users in that specific country.

The target users for the pilots are new trainers to be trained from companies and VET, management and employees from enterprises and students on VET level.

3.4 The project consortium

In elaborating the policy on New Skills for New Jobs, the consortium has a right mix between companies and VET. They both function on an equal base. They are supported by consultancy, training institutes and universities. The consortium is organized in a Core Unit, Trained trainers, Project management and Reference givers from companies.

- Core Unit: it is our experience in international projects that it is very effective and efficient to give tasks of developing the material and disseminate and exploit the results to a small group with enough means in time. The Core Unit is a mix of companies, VET and naturally the providers of the innovations to transfer. The Core Unit will also guide and coach the trainers to be trained.
- Trained trainers: a right mix of participants from enterprises, VET and universities will be trained by the Core Unit to become trained trainers for corporate training and training in VET. They come from all the participating countries. From the beginning dissemination tasks are allocated to them and they are asked to participate in new and existing networks in which they can function after the project has ended.
- Project management: it is our experience in international projects that it is most effective and efficient to concentrate project management and project admin-

istration in one organization. Because quality management is an important aspect of the project, we also want to have good quality in the management of the project itself. For this we asked an experienced partner from Romania to monitor and advice the project management in a independent way.

- Reference from companies: the input of companies is very important in the new skills for new jobs strategy. Companies are asked for reference if the educated target groups have added value for them. There will be reference during the courses, so continuous adjustments of the outcomes is possible during the whole project period. The influence of companies is also very important when it comes to dissemination and exploitation. Decidedly, after the project period the C2C course must have a commercial based future.

The world of C2C has prominently an international orientation. To meet the demands of the concept of C2C there is need for a chain of companies and suppliers who all have the same mindset on the life cycle of C2C products (and services). So, boundaries between countries are not at stake. They are - to tell the truth- more a burden in setting up efficient chains of companies. The new jobs for these companies and suppliers are also not helped when they meet boundaries. The same can be said about Corporate Social Responsibility (ISO 26.000).

Some companies and countries are more advanced in working with the C2C concept while others are lagging. But they all share the idea that C2C is the future and contributes to the EU policy on a Carbon Low Society.

Also for reasons of competition and scale, the EU level is more important then the national or regional one (Application Form, 2011).

Dutch Desso carpet company and Dutch VET Koning Willem I College are the key partners in the Leonardo project *Working and Learning in the World of Cradle-to-Cradle*. How they implement C2C in their organizations is described in the following paragraphs.

4. Cradle-to-Cradle at Dutch Desso Carpets

Carpet, carpet tile and artificial turf manufacturer Desso is one of the leading companies in its field in Europe. Their Business Carpets division manufactures carpets for commercial locations such as offices, banks, retail units, public buildings, schools, universities, hospitals and care centers.

Desso's ambition regarding C2C is as follows: Cradle-to-Cradle is developing products and processes that will contribute towards a better environment and better indoor quality.

Desso is the first carpet manufacturer in Europe to adopt the C2C design philosophy. Their carpets and artificial grass will be produced using manufacturing processes that rely on renewable energy, seek to conserve water and embrace social responsibility. Their products are made from environmentally friendly, pure materials

that are safe for human health and are designed in such a way that they can be biologically or technologically recycled at the end of their useful lives.

Prior to formal C2C certification being granted, products, materials and components must all undergo a rigorous assessment procedure. The initial stages of the certification process comprise assessing raw materials in terms of human and environmental health criteria and evaluating the manufacturing process according to recycling potentials, energy and water use and social responsibility.

EPEA will be supplied with detailed information regarding all the materials involved in Desso's products and processes. At this point in time, 90% of Desso's polyamide carpet tile collection is C2C certified.

4.1 Needed competences at Desso

In 2007, when Desso started on their C2C journey, they needed additional expertise in the company – primarily chemical expertise at the design stage.

The marketing department also needed additional expertise on the basic C2C principles in order to be able to communicate the added value of the certified products.

Special technical project teams were set up to develop new machines.

The key values encouraged throughout the organization – and required from every employee to ensure a successful C2C work method – are 'ownership', common sense, ambition and integrity. Furthermore, Desso have seen that employees are motivated and driven by being involved in this ambitious, strategic change of direction.

A large group of employees from Desso – from a variety of departments and disciplines – were given a training course and this expertise has since been transferred into the production processes. The company has found that it is one of the leaders in implementing the concept and therefore had to discover and tackle a lot of issues themselves in the early stages.

Employee commitment to the C2C goals is of utmost importance, along with a strong belief in the philosophy. If they can see for themselves that implementing C2C works and that the market responds positively, it will create great encouragement to move ahead.

Desso created a C2C awareness team tasked with raising awareness on sustainable issues within the organization such as waste management. The company strategy places C2C as the top concern for every part of the organization and has identified their production processes as the first area to target (Desso 2010).

5. Cradle-to-Cradle at Dutch Koning Willem I College (KWIC)

As a UNESCO school, the Dutch VET institute Koning Willem I College (KWIC) does a lot in the field of sustainable development and globalization. All the students are affected by it. C2C initiatives fit well in the school's policy and strike a chord with students and teachers alike. C2C is part of the training programmes on construction, energy and climate. It aims to get students acquainted with C2C and teaches them to think innovatively and creatively.

First and foremost, the programme explains that companies are currently also involved in looking at the long term in a world of 9 billion people. All these people are getting older and increasingly want more comfortable lives, jobs and homes, which will result in scarcity of raw materials and energy. Students should therefore find a point on the horizon; something to work to in the long term. They learn how to forecast in order to be able to backcast. They learn to determine what steps have to be taken to finally get to that point on the horizon.

Questions to be asked in the beginning are: what is the ultimate goal in construction? How to build without using (fossil) fuels, without using (non-renewable) materials, without using land, without using water and changing air quality. So, zero energy, zero materials, zero land, zero water and zero air. But this is the conventional sustainable approach.

In C2C terms the approach is different from 'zero'. For example new questions to be asked are:

- Which products are made from defined post-consumer materials?
- How can the biological and technological cycles be separated? How Waste equals Food (and therefore are not contaminated) and how will the remains be reused in the technological cycle.
- How to use renewable energy?
- Less bad isn't good enough. Try to leave a positive footprint behind. For example, produce waste water that is cleaner than the water into which it will be discharged.

The assignment that follows the question session is to design a house based on the principles discovered in the question session in groups of four students. Students can take 20 minutes for this task. They then give a presentation to each other on what they came up with, followed by a discussion.

This inevitable leads to a list of C2C principles.

The design will be free of offenders such as hazardous substances. That means that the students will draw up a list of all the elements that will be used in the design which have to be non-toxic and recyclable. Products should also be easy to collect, easy to up cycle and easy to reintroduce into the cycle. An outright ban on hazardous substances and completing cycles will require a great deal of patience.

Needed competences at KWIC

To get there, students have to re-think, re-organize, re-plan and re-schedule.

The principle in the program is that students take small steps because no one ever succeeded in being perfect from the very beginning. Make a start and improve at every turn. Act now because you don't have to be perfect from the start.

If the above is a success, you won't have to cut down as things will get better and become more fun.

Finally, students are shown examples. For instance: How does Desso currently manufacture its carpets?

C2C is all about thinking creatively and innovatively. Students participating in this programme are incredibly enthusiastic and are keen to follow it up in their educational program. A first taste that promises more to come (Boer et al. 2011).

6. Conclusions

On the basis of the C2C philosophy companies started making products with surplus value; products that have a positive effect on people, the environment and society.

C2C in education is therefore about letting students experience what their role is on this planet. It is about innovation, a positive footprint, a system that allows us to be beneficial instead of less bad. It is about giving people a long-term goal and a positive vision of where to go. C2C is about a positive agenda

A world without waste is a great concept, but it will take a mind shift to turn the ambition into reality. Companies not only need to reinvent the way they make things. They also have to reorganize and re-think the way they work together. C2C products and processes can only be achieved by teamwork throughout the value chain, in open innovation, long term partnerships and with an open mind for Corporate Social Responsibility (CSR).

In this way companies contribute to the EU policy of New Skills for New Jobs and are helping education in educate the workers of the (C2C) future. The needs of the labor market will be better served and controlled when VET education and enterprises meet and work together in new and existing networks.

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C2C works and that the market responds positively, it will create great encouragement to move ahead.

Desso created a C2C awareness team tasked with raising awareness on sustainable issues within the organization.

C2C initiatives fit well in the KWIC's school's policy and strike a chord with students and teachers alike. C2C is part of the training programmes on construction, energy and climate. It aims to get students acquainted with C2C and teaches them to think innovatively and creatively.

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Evaluating learning performance in education for sustainable development (ESD)

Case studies from Regional Centres of Expertise on ESD in East Asia

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As the UN Decade for Education for Sustainable Development (DESD) nears its end in 2014, the impact of education in attaining a more sustainable future and the scale of ESD's implementation is a key issue. The challenge now is to measure the extent to which ESD has been implemented and to identify methods to further mainstream these important learning processes in a systemic manner. The United Nations University Institute of Advanced Studies (UNU-IAS) and the Institute for Global Environmental Strategies (IGES) initiated a collaborative research project in close cooperation with UNESCO's Bangkok Office in early 2011. This project focuses on monitoring and evaluation of ESD and aims to establish regionally-relevant indicators of ESD to assess the implementation that has occurred under DESD in individual countries across Asia. The current research takes a two-fold approach by quantifying aspects of countries' current status and context of ESD implementation through work with national ESD focal points and also by assessing the qualitative aspects of good practice cases in cooperation with Regional Centres of Expertise on ESD (RCE). This paper presents five exemplar practice cases collected from RCEs in Japan, the Republic of Korea and the People's Republic of China. A qualitative evaluation of these cases is made to identify success factors, strengths and weaknesses in regards to effective ESD learning performance across these countries.

Keywords: education for sustainable development (ESD), monitoring and evaluation, indicators, regional centre of expertise (RCE), learning performance

1. Introduction: Learning

Learning is the “process by which actors assimilate information and update their cognitions and behaviour accordingly” (Henry, 2009). It is the way by which individuals or a group acquire capacity for adapting to unfavorable conditions. As a process that involves collaboration and reflection, learning is an extension of this into an inter-generational dimension, and the concept of environmental limits (Scott and Gough (2010). Learning could also have “different meanings depending on whether it refers to processes involving individuals, collective agents, or wider social systems” (Tabara and Wostl, 2007). According to Mehlmann et al. (2010), changes in our way of life is significantly linked to effective learning for sustainability, and the meaning we derive from it, and that learners take action because that action contributes to improving sustainability, not just learning for the sake of it.

2. Performance-based Testing (Standard Methods of Assessment) and its limitations

Performance-based assessment, although represents a set of strategies for acquiring and applying one’s knowledge, skills, and work habits by performing tasks, it is not necessarily meaningful to students. Addressing learning performance using standardized methods of assessment thus has been difficult in the face of the present environmental, social and economic challenges. They include the following: 1) The pedagogical objectives inherent in assessment and evaluation systems have a narrow focus as they rely on a few performance indicators, primarily test results; 2) the curriculum is compartmentalized hence the subjects and/or disciplines are not integrated and are mainly dealt with in isolation often resulting in reductionist constructions kept in “silos” with power relations at play; 3) the individual is assessed on the assumption that learning occurs independent of one’s motivation and the environment; 4) teachers’ concentrate mainly on helping students pass the tests instead of offering the student whole education to face the world because entire school systems are evaluated based on performance on such tests. Teachers’ creativity and innovation in themselves are thus stifled; 5) only the measurable aspects of learning that are easily quantifiable (e.g., knowledge) get measured while the affective aspects like values, respect, care, motivation and stewardship that are difficult to quantify are avoided; 6) in the traditional context regarding education, the ways teaching is conducted shrinks student agency. Furthermore, alternative perspectives raised are limited in number; students who do not conform to the laid down rules or norms are marginalized; often, the learning environment is separated far from the real world, and 7) it is also assumed/considered that power, privilege, and hierarchy prevail in the traditional learning setting and that teaching is considered as a

political act and the teachers political agents, and that the pedagogical tools are rooted in politics and ideology (Columbia University, 2012).

Furthermore, the literature is replete with clear information that our present educational system as it is cannot meet the present “wicked” and complex problems facing humanity and thus calls for its complete overhaul in order to equip people to be able to address such problems. In addition, UNESCO, the lead implementer of Education for Sustainable Development (ESD) makes clear that “Traditionally, literacy, numeracy, and disciplinary knowledge are assessed using standardized tests and data are gathered related to enrollment and attendance; however, these do not measure many aspects of quality education. Missing are assessment and evaluation of life skills, perceptions, behaviours and values, which are part of quality education” (UNESCO 2005).

ESD indicates a complex of concepts, theoretical constructs, policy prescripts and practical methods and tools that convert education and learning to the socio-economic and ecological dimensions of sustainable development (Lenglet et al., 2010). In ESD therefore the complex nature of its pedagogical objectives is at odds with the narrow focus inherent in standard assessment and evaluation systems that pertains in conventional education where mainly test results are relied upon (Kertesi, 2007). ESD thus dissuades standardised testing while methods that speak to the holistic view of the overall quality of education are encouraged (Armstrong, 2011).

The processes of learning focused on sustainability (or ‘ESD learning’) “are not confined to educational contexts; neither to formal nor to informal ones”; also, “because mastering the challenges of sustainability depends on learning processes of individuals, as well as on learning processes of human systems at the level of groups, organizations, nations ... ” (Hansmann, 2010). ESD learning is “best understood as a multi-level concept that comprises individual learning as well as group, organizational, and societal learning”. (Hansmann, 2010). As a continuously unfolding concept as well as practice, the contribution of education and learning through ESD could result in improvement in the quality of life of the people, help create resilient individuals, group or society who are capable of thinking holistically, systemically and integratively, and able to adapt to adverse environmental conditions using their acquired knowledge, values and skills. According to Mehlmann et al. (2010), the two principal components of ESD are 1) the profound change in ways in which people and communities across scales use the biophysical or ecological resources of the planet’s and relate to each other in the context of sustaining the Earth’s carrying capacity (transformation), and 2) the intellectually practical and life skills of learners to comprehend their world in its complexity and to contribute to the necessary collective and individual action required for transformation to occur and be effective (action competence). What needs to be considered as important is the effectiveness of the learning process and the consequent outcomes when evaluated.

3. Methodology and Findings

3.1 Methodology

In search of a strategy that will facilitate translation of the ESD agenda at the local level, especially as we near the end of the Decade of ESD, the RCE, a brainchild of the United Nations University is becoming an institutional mechanism for facilitating capacity development for SD through contribution to the local implementation of the UN DESD. This contribution to DESD is partly in the form of embedding education in all spheres of life and encouraging collaborative learning processes between local actors and stakeholders across transdisciplinary knowledge and sectoral boundaries in a particular region to articulate a global vision of ESD in local terms (Mochizuki and Fadeeva, 2008; Fadeeva and Mochizuki, 2010). In addition, RCEs can facilitate the duplication and dissemination of good ESD practices emanating from the numerous initiatives and projects they address with variability in scope and in depth (Ofei-Manu and Shimano, 2010).

Having played a trailblazing role regarding the RCE initiative/ESD implementation as five of the first seven RCEs acknowledged globally in 2005 are located in the Asia-Pacific region, RCEs in Asia Pacific are helping to address and explore the question of how to evaluate the activities of RCEs – both as a global process and as a local/regional learning initiative. Hence the importance of the RCEs' involvement in this research process cannot be overemphasized. With the overarching goal of developing regional indicators to be utilized in the monitoring and evaluation of the implementation of the DESD in Asia-Pacific, and also contributing to the formulation of new efforts and initiatives on ESD towards 2014 and beyond, the research is being conducted in two complimentary formats. First, national ESD focal points are participating in a quantitative country survey regarding the national context of ESD implementation. Second, RCEs in Asia-Pacific are providing qualitative research through case studies of their flag-ship projects for qualitative evaluation in the framework of effective ESD learning performance. Exemplar practices of five RCEs obtained out of eight sets of reporting framework sent are presented in this paper: one from the People's Republic of China (RCE Beijing), one from the Republic of Korea (RCE Tongyeong) and the remaining three from Japan (RCE Chubu, RCE Okayama and RCE Kitakyushu).

Areas of investigation included the following: 1) The major objectives, focus and activities involved in the initiatives of the various RCEs; 2) the benefits of multi-stakeholder partnerships and the learning methodologies, approaches and strategies applied to the initiatives; 3) the main outcomes and achievements of the RCE initiatives; 4) the major strengths and advantages and the primary weakness and constraints, and 5) how the ESD initiative addresses the three pillars of sustainable development (SD).

3.2 Findings

3.2.1 The major objectives, focus and activities involved in the initiatives of the various RCEs

Table 1 shows the major objectives, focus and activities involved in the initiatives of the various RCEs. In RCE Beijing, using different educational methods with a focus on the practical and theoretical experience acquisition of ESD, teachers were expected to better understand the concept of ESD, know how to teach students and also know how to communicate ESD to their peers, family members and the community at large. RCE Tongyeong focused on future leadership on SD through knowledge and skill acquisition of the youth who can think critically and systematically on complex situations using sustainability-related original/self-research study trips in collaboration with youth of other RCEs of their choice abroad and reporting back home and/or sharing their acquired knowledge and experience with the locals.

With most of its activities mainly focused on conservation activities involving regional natural and cultural resources, RCE Chubu attempted to use social networking service (SNS): an online platform that focuses on building social relations among people who share interests and activities in the form of cyber dialog in order to provide a worldwide overview of the diversity of ideas about biodiversity, including opinions from the South and from different sectors of the civil society. Using various educational/learning approaches, based on collaboration, networking and other multi-stakeholder cooperative relationships RCE Kitakyushu and RCE Okayama, both of Japan sought to bring their members to the realization of just and sustainable society through capacity building and by increasing the number of active pro-sustainability citizens as well as enhance the organizational and operational capabilities of their respective RCEs.

Table 1: The major objectives, focus and activities

Element	CHINA Beijing	KOREA Tongyeong	JAPAN Kitakyushu
○,1 Objectives	<ul style="list-style-type: none"> ● Better understanding of ESD ● Know how to teach ESD to students; and, ● Better communication of ESD to the community of practice 	<ul style="list-style-type: none"> ● Self-research study trip for practical experience & topical competence ● Present vision of SD to future leaders. 	<ul style="list-style-type: none"> ● Realization of just & sustainable society ● Increase the number of active pro-sustainability citizens
○,2 Focus	<ul style="list-style-type: none"> ● Understand the concepts and theories of SD and ESD ● Experience the good practices in schools ● Acquire knowledge about international trends 	<ul style="list-style-type: none"> ● Critical/complex thinking of youth 	<ul style="list-style-type: none"> ● Strengthen networking of RCE across scales ● Strengthen capacity of members and staff
○,3 Activities	<ul style="list-style-type: none"> ● China-Germany Teacher training program ● Symposium for Interactions ● Implementation of ESD in daily teaching [6 courses] Symposium on teacher training ●RCE Beijing and MoE teacher training of 1000 teachers 	<ul style="list-style-type: none"> ● Selection of researching cities and topics/themes for SD research, ● Opening of eyes of youth to the road to sustainability ● Pdn and disbn of reports, workshops etc. ● Interaction with general public respect for other cultures 	<ul style="list-style-type: none"> ● Promote field activities to help build sustainable community that is harmonious with the environment ● Exchanges among RCE Kitakyushu members (e gs) ● Exchanges outside RCE Kitakyushu (egs) ● Promote ESD using community centres as nucleus of ... ● Training of ESD facilitators to lead.. development of ● Educational aids to promote ESD ● Giving of lectures at universities

3.2.2 The benefits of multi-stakeholder partnerships by the RCEs the learning methodologies, approaches and strategies applied to the initiatives

The teachers in RCE Beijing had the opportunity to visit schools with good ESD practices, hence had practical/hands-on experience in addition to related discussions with colleagues and principals of such schools. The youth in obtained skills and knowledge by tapping into the local collaborative and other activities under the RCE Tongyeong and by participating in several international activities in the RCEs they visited abroad. RCE Kitakyushu provided extensive outreach to the community through a multi-stakeholder partnership, a consequent diversification of the activities in RCE Kitakyushu and a broadening of the scope of member organizations and individuals through ESD integration in their activities.

The Cyber Dialogue of RCE Chubu resulted in the input of pluralistic views on biodiversity, hence a broadening of perspectives across scales as well as opportunity for input/acquisition of specialized knowledge from faculty members. In RCE Okayama, there was creation of mutual knowledge/learning using dialogue between people and through flexible networking /connections that allowed other groups or organizations to join and also led to an increase in the number of pro-sustainability people. Use of community centres provided the right atmosphere for cooperative learning. There was also the benefit of capacity building of members and staff and meaning-making (reflection) out of the activities performed by the stakeholders themselves.

Different educational/learning methods used included lectures, field trips, 'on-site' visitation, use of games, (RCE Beijing); original, self-planned research with limited guidance, study trips abroad, and involvement in action-based activities (RCE Tongyeong); field study visits through exchange, receiving and giving lectures (RCE Kitakyushu); cross-boundary learning and social networking discussions (RCE Chubu) use of promotion committee, several cooperative learning activities, mentorship, farm visits, combining environmental education with international understanding, information dissemination through UNU, etc. (RCE Okayama).

3.2.3 The main outcomes and achievements of the various RCE initiatives

For RCE Beijing, teachers acquired higher awareness of SD and environmental protection after receiving training in ESD and extended it to students, colleagues and their families. Teachers therefore acted as agents of social learning by embedding the skills into the communities of practice where they live (Reed et al., 2010). Contrary to what is thought of South Korean youth as being constantly in need of parental guidance, they emerged from the program as 'independent' youth, capable of managing themselves and responsible. They were able to introduce for example international dishes to their school canteens and the community indicating their ac-

ceptance of other cultures besides theirs. This program has emerged as a flagship leadership program for training young leaders for SD in RCE Tongyeong. In RCE Kitakyushu, the level of awareness of ESD by the public increased and so was the number of member organizations. Through the initiative, the city government recognized the importance of ESD promotion and consequently, increased the funding. Development of capacity of RCE members and ESD staff through collaborative learning from each other for example using field visits, members acting as lecturers of ESD at a university consortium and members starting new groups and initiatives were some of the outcomes.

In RCE Chubu, the realization of ESD learning across boundaries and increase in networking among participants and development of a conservation-related public document were the main outcomes. The major outcomes of the initiative in RCE Okayama are as follows: Promotion of ESD integration into the local curriculum; connecting to nature and linking up with the older generation through farm visits; promotion of ESD using various events and involving all levels of formal education and several other forms of learning and other local residents; mentorship of university students to students in first and second cycle schools; making of citizen scientists through scientific survey conduction; experiential learning of nature, and collaboration between the university and municipality for deeper understanding of environmental issues.

3.2.4 The major strengths and advantages and the primary weakness and constraints of the initiatives

Trainee teachers of RCE Beijing had opportunities to reflect on the importance of SD in their profession and lives as they gained increased awareness and motivation to apply it in their daily teaching and personal lives. In RCE Tongyeong, students gained the ability to self-manage problem solving processes that require multiple skills including self-discipline, ability to communicate and collaborate with others, understanding the issue and search for information and also, use of basic foreign language skills. Furthermore, active participation of the youth, financial and policy support from the local government and understanding of parents and teachers involved were significant strengths identified.

The strengths and advantages of RCE Chubu were the provision of a platform for cross-sectoral, cross-cultural and multi-thematic issues (gender, minorities, indigenous people /knowledge, communication strategy on biodiversity) using cyber dialogue and the unveiling of the Appeal of the Citizens of Aichi-Nagoya Document. The spirit of voluntarism and high motivation among RCE Kitakyushu members and staff to promote ESD, strengthening of relationships with other RCEs through networking and support from local government to promote ESD were some of the strengths. RCE Okayama showed the following strengths: multi-stakeholder involvement, a sense of communality, grassroots based ESD promotion, capacity building support from the university, provision of place for praxis, participation and

support from local government by establishing full-time position of ESD coordination and hence supporting ESD promotion.

3.2.5 The weaknesses and constraints of the RCEs

The weaknesses and constraints of the various RCEs are as follows:

1. RCE Beijing: 1) Financial burden on students for the in-service training; 2) inflexibility of the training period as it is only scheduled over the weekends; 3) inadequate trainers (faculty) to train the teachers; 4) inadequate funding to run the ESD training program hence a lot of free services are sought after (threatening the program's stability as a result), and 5) the fact that ESD is considered quite an abstract concept and 'lacks clarity'.
2. RCE Tongyeong: 1) The need for personal transformation to avoid acting solely on instructions from superiors to participating in self-managed activities; 2) youth participation constrained by time; 3) some parents and teachers discouraging the youth from participating due to misunderstanding of the program, and 4) the possibility of accidents and injuries due to travel or some other cause.
3. RCE Kitakyushu: 1) Difficulty in maintaining continuity of youth commitment to ESD in the community; 2) constraint regarding institutional linkage with formal education; 3) organizational commitment of faculty is not totally reliable; 4) the need to develop theory to support practice in community; 5) limited global perspectives of members; 6) lack of long term security of human and financial resources, and 7) low capacity building of both members and ESD staff to support ESD activities.
4. RCE Chubu: 1) Lack of IT literacy; 2) problems of access; 3) language barrier, and 4) mistrust of the cyberspace affecting the type of information to divulge.
5. RCE Okayama: 1) Scope of ESD was considered too narrow, i.e., the core theme was is mainly limited to environmental issues; 2) uncertainty of retaining the ESD coordinator due to lack of funding; 3) low capacity development of local key informants; also at the faculty level, and 4) the inability to establish a local evaluation process.

3.2.6 How the ESD initiative addresses the three pillars of sustainable development

Regarding how the ESD initiative addresses the three pillars of sustainable development, two examples are discussed:

- **RCE Tongyeong:** Students obtained the theoretical aspects of social, environmental, cultural and economic sustainability through lectures, research and study

visits both at home and abroad. Practical experience was obtained through conducting original research 1) on economic issues, for example on revitalizing the traditional market in RCE Cairo; 2) on social issues, youth participation at local festivals (RCE Toronto), career development (RCE Yokohama), movie industry and the local community (RCE Kodagu), education system and youth participation (RCE Denmark), and 3) on environmental issues, participants performed campaigns to raise awareness on environmental problems; youth visited islands linked to climate change (RCE South Pacific), youth visited the Island for the Youth (RCE Okayama) and Eco-city (RCE Munchen).

- **RCE Kitakyushu:** Youth migration in Edamitsu community had resulted in high percentage of elderly population with vacant houses causing a sense of isolation and security concerns. The community was located on a hill, thus the elderly people had difficulties in mobility. An advice from a university professor resulted in the people taking various actions to revitalize and rebuild a community by starting from mapping the risks and problems. They identified evacuation spots in the case of disaster, cleaned community roads and planned vegetables in abandoned lands. They planted lemon trees on the road sides starting with nurseries hoping to make a community full of fruits. The entire community, including the elderly people and children in nursing schools jointly painted lemon trees on the wall of community centres with support of a school art teacher, hence resulting in intergenerational exchange and sustainability of the project. Now a mother is working to publish a book on a story of lemon for the next generation. They also served hot-lemon to the community people at a gathering using the fruits. These activities were mainly done voluntarily, but some created job opportunities for some members of the community. In addition, as the bond within the community strengthened, their support for each other intensified, for example helping old people who live alone with their daily shopping. Consequently, in Edamitsu community, the three pillars of sustainable development were addressed together: while planting trees (environmental), residents strengthened social ties (social) and created job opportunities (economic).

For the remaining RCEs, even though the environmental and social aspects were addressed, the economic aspect did not come through directly.

4. Elements of ESD Learning Performance

A review of the various aspects of the initiatives implemented in the RCEs reveal processes and content of education/learning strewn across them. Evaluating the effectiveness of these initiatives and hence monitor their progress and their contribution to SD without any framework of reference will be difficult. According to Tilbury (2010), international collaboration and local to regional initiatives have provided exemplars of how learning and education can contribute to sustainability.

Questions being asked now are about the extent to which these practices have been mainstreamed across education systems and, how effective, quantitatively and qualitatively these education/learning efforts have been in the context of monitoring and evaluating strategies, content and processes of learning and outcomes of ESD. As a result, in trying to understand what constitute effective ESD learning performance (LP) through the development of an actionable conceptual framework we have attempted to identify what we call “Elements of ESD LP” by investigating the *characteristics* (or *aspects*) of effective ESD learning that give an overall definition to the concept and are grounded in several educational theories and learning methods. In other words, through the integration of learning domains that speak to ecological knowledge and skills as well as values (social norms and beliefs about behaviours), we sought to develop an educational learning performance approach/framework that resonates with core competencies for sustainability regarding both process and content aspects of ESD. We then tried to relate the elemental characteristics to the RCE practice cases in an action-reflection process with an equal interplay between them.

Regarding the ESD elements as seen in Table 1, there are 4 areas to the conceptual framework that try to highlight the difference between process & content orientations of these elements – each orientation within which two elements are explained. The two elements under process side of learning and education are:

Progressive Pedagogies and Cooperative Learning Relationships

- Progressive Pedagogies (PP) which is looking at the educational theories and learning methods that are used to ground the entire instruction and teaching of ESD and
- Cooperative Learning Relationships (CLR) which involves the incorporation of the multi-stakeholder social learning and networking processes that ESD engages with, especially as seen through the RCEs.

Regarding educational contents, there are two elements as well namely

- Sustainability Competencies (SC) that consists of capacities people need in order to be able to contribute to SD; a variety of different knowledge and skills and also values and certain ethical issues, and
- Framework of Understanding and World-View (WV) that looks at the overall framework of understanding and worldview.

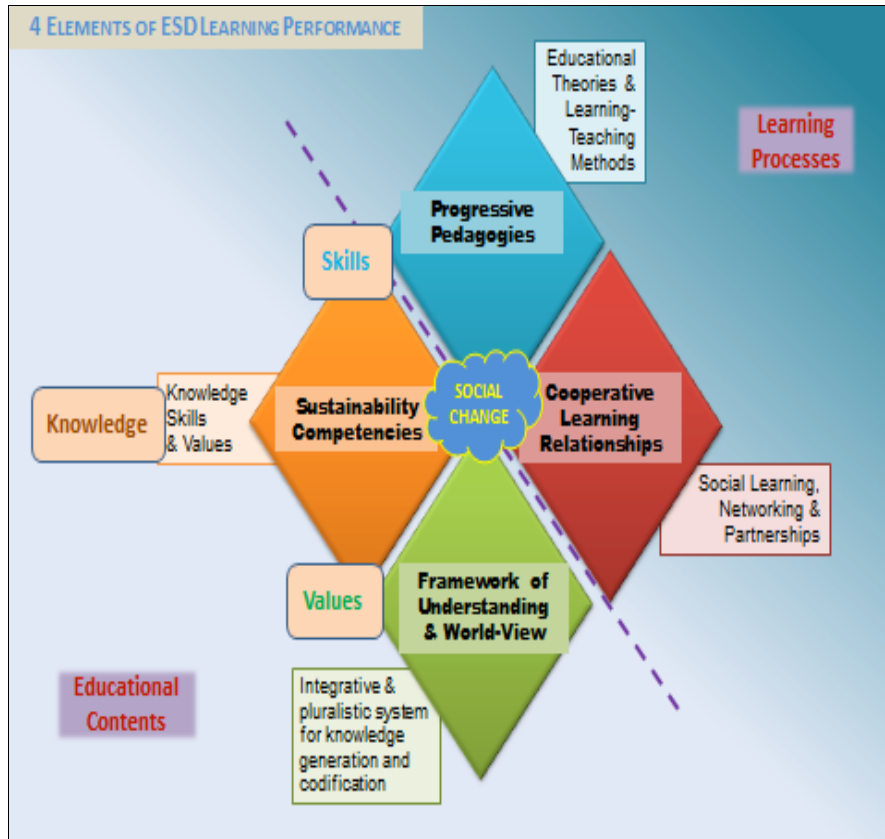


Figure 1: Elements of ESD Learning Performance
 [The figure depicts the 4 elements of ESD learning performance with their corresponding representative components in the rectangles, the sub category to which they belong (process or content), and the overlapping nature of the elemental characteristics [e.g. values and skills] and the overall goal of the framework: which is to bring about social change]

The boundaries between these elements are not clearly defined, thus there are crossovers/overlapping of the elemental characteristics. Hence taking SC as an example, while knowledge competency lies at the core of this element, regarding skills, there are skills that emphasize process and are related to the type of pedagogy and the overall learning skills gained through fact-based learning/educational experience. Similarly, with respect to values, there are values grounded in one’s world-view, that supports sustainable change and values acquired through learning.

5. Reflecting the practice cases on the characteristics of the four elements of ESD Learning Performance

5.1. *Progressive Pedagogies (PP)*

5.1.1. Background

Progressive Pedagogies (PP) in the context of this paper deals with the Educational Theories and Learning Methods. Those briefly discussed in this paper include Experiential Learning Theory and Education, Critical Theory and Pedagogy and Constructivism.

Experiential Learning Theory and Education: The distinguishing feature of experience-based learning is that the central focus of the teaching and learning process is the experience of the learner which “may comprise earlier events in life, current life events, or arising from the learner's participation in activities implemented by teachers and facilitators” (Andresen et al., 1995). A major component “of experience-based learning is that learners analyse their experience by reflecting, evaluating and reconstructing it” – individually, collectively, or both – so as to draw meaning from it in relation an earlier experience (Andresen et al., 1995). Experiential learning was found to have occurred in the initiatives of RCE Tongyeong, RCE Kitakyushu, RCE Okayama and RCE Beijing.

Critical Theory and Pedagogy: The goal to introduce critical theory concepts is to strengthen the habit of 'critique' in order to encourage student reflexivity and employ action methods as a way of extending and strengthening learning (Springett, 2010). The goal of combining action methods with critical theory approach is to enable people to see the world in a new way through active participation in practical life. The teachers in RCE Beijing had the opportunity to apply this aspect during their training in ESD. Students of RCE Tongyeong could also think critically, on complex issues using self- research investigation. Critical perspectives does not accept things at face value but rather gives consideration to asymmetric power relations and how these relate to the debate at hand, the ways in which power may become legitimized or naturalized and what that represents, etc. (Springett, 2010).

Constructivism is a view in philosophy according to which all "knowledge is a compilation of human-made constructions" “not the neutral discovery of an objective truth”. From constructivism point of view, subject matter must be made personally relevant to the learner allowing for an opportunity for meaning-making whilst at the same time the subject matter must emphasize multiple perspectives (Armstrong, 2011). Several examples of knowledge co-production were identified in particularly ESD activities in RCE Okayama RCE Kitakyushu and RCE Tongyeong.

Progressive Pedagogies (PP) or what is considered in some quarters as pedagogy for sustainability transcends the theories, methods and tools that can assist in creating awareness about the unsustainability of certain ecological, economic and social processes and the role of individual and collective behaviour (Mehlmann et al., 2010). PP emphasizes the psycho-social dimensions of teaching, and stresses the value of “experience that comes from hands-on research and community-based learning and from each student’s personal experiences” (Columbia University, 2012). PP encourages critical reflection about teaching among students and teaching is organized with the objective of solving real-world problems. PP also looks at the theoretical and practical aspects of different issues whiles creating learning space for learners to be actively involved in the process including inquiry and problem-solving (Columbia University, 2012). Pedagogy for sustainability needs to allow learners to delve into these processes in order to analyse and understand their physical, biological, ecological historical, social, economic, political characteristics, drivers and constraints. PP further helps learners to analyse and comprehend how their own actions and behaviour may be influenced by, may contribute to or may alter these processes whether positively or negatively. In practice, for example the teachers of RCE Beijing had opportunities to reflect on the importance of ESD in their profession and lives as they gained further insight on ESD pedagogy and were able to apply it in their daily teaching and personal lives. RCE Tongyeong students were able to deal with theoretical and practical pedagogy-related issue, come up with a research problem, design a plan and tried to solve it. Several activities recorded in RCE Kitakyushu and RCE Okayama also indicated some PP approaches.

5.1.2. Characteristics of the Element PP

The characteristics of PP that are grounded by the educational theories and methods include the following:

- Critical reflection & practice and problem solving:
- Student-centred, active, interactive enquiry-based learning where the student engages as a participant with transformative teaching instead of transmissive teaching;
- Action/experience-oriented, student-centred learning
- Knowledge production through iterative interaction develops the ability to learn by collaboratively deconstructing, reconstructing, and co-constructing knowledge; Life-long learning, and
- Cyclical process of collective inquiry.

5.2. Cooperative Learning Relationships (CLR)

5.2.1. Background

Cooperative Learning Relationships (CLR) – also grounded by a couple of theories – is the inclusion of social learning, networking and partnerships as an important educational component of ESD. Social Learning (SL), the most practiced of them all is a process in which people are stimulated to reflect upon implicit assumptions and common frames of reference in order to create a new room for new perspectives (Wals, 2010). SL is about creating a common platform for people of different backgrounds, knowledge, skills, values and perspectives and experiences both from the organization and outside of it with the common aim of coming together to seek answers to questions that have no ready-made answers (Wals, 2010). The overall social learning process can be described as a multiscale process. Public participation promotion strengthens SL. Consequently, framing and reframing of the problems and the issues at stake affect the social learning processes. Also, the determination of the management of boundaries, i.e., who determines what and who is and who is not part of the process, the type of negotiation methods and strategies used, the ground rules that have been set to facilitate the interactive process, the leadership needed to direct and coordinate the process, and how allocation of the resources are facilitated (Tabara and Wostl 2007). RCE Kitakyushu, RCE Okayama and RCE Tongyeong all exhibited forms of cooperative relationships in the form of participation, networking, social learning, service learning etc.

5.2.2. Characteristics of the Element CLR

- Inclusion & internal network structure for interaction (among social networks) and latitude given for democratic debate on the framing and definition of the issues at stake;
- Group processing-the processes in establishing managing systems of knowledge and making sense of information;
- Participation and power sharing, shared ownership /commonality;
- Clear definition and purpose of roles;
- Accountability of individual/groups;
- Positive interdependence and building of trust;
- Opportunities for reflexive moments and discourse;
- Situatedness / Social skills.

5.3. Sustainability Competencies (SC)

5.3.1 Background

Sustainability competence (SC) as a concept is referred to as the qualities people need to possess to be able to act when confronted with sustainability challenge (Wals, 2010). SC is a concept that helps articulate the qualities, and attributes that learners need to develop when engaging in sustainability issues. The basis of competency for SD is the possession of relevant knowledge and the ability to think, act and take responsibility. SC as an element of ESD learning performance comprises the knowledge, skills and values traditionally referred to when discussing the contents of ESD.

5.3.2 Knowledge...

is considered as an embodiment “by actors within the system, rather than to be existing independently” and “is regarded as inherently dynamic, where interactions within a knowledge system result in the constant evolution of knowledge-based resources” (van Kerkhoffa and Szlezákb, 2010). Knowledge competence in the context of SC however, deals more with the discipline-specific content. The list is inexhaustible with the following as a representation: Climate Change, Disaster Risk Reduction, Sustainable Consumption and Production/Education for Sustainable Consumption, Indigenous Knowledge, Well-being, Development & Environmental Quality, Resilience and Socio-ecological Systems.

5.3.3 Skills...

(similar to knowledge) associated with ESD are expansive. They include collaboration and cooperation, conflict resolution, creative, imaginative, and real-world problem-solving future-mindedness, knowledge transfer, meaningful communication and civic engagement, social action negotiation interdisciplinary and transdisciplinary, research skills, adaptive learning, contextualization of issues personal introspection visioning and gaining buy-in the ability to identifying change and adapting to it, systems thinking and thinking that is focused on values (Armstrong, 2011; and the several references therein). Others include critical thinking, complex thinking, real-world problem-solving, seeking alternative solutions, advocating for change, collaboration and cooperation, conflict resolution, negotiation, creativity, imagination. Learning outcomes for ESD skills emphasize process as much as facts-based learning, the *how* as much as the *what*. Some of the most common strategies for the development of these skills include collaborative activities, systems instruc-

tion, reflection, multigenerational analysis, and democratic dialogue (Armstrong, 2011).

5.3.4. Values

Values supportive of ESD that are most frequently cited in the literature include care, respect, charity, social and economic justice, commitment, cooperation, compassion, self-determination, and self-reliance, self-restraint, and empathy. Others are resilience, optimism, tenacity, commitment, passion, patience, emotional intelligence, assertiveness, persuasiveness, empathy, authenticity, ethical self-awareness, competence, and curiosity (Armstrong, 2011). The acquisition of knowledge at all levels of education and age in a formal, non-formal or informal manner was quite abundant in the RCEs' initiatives. This was observed as well in the acquisition of skills. Although the most difficult to measure, it could be inferred in many circumstances that sustainability values were also developed among members in the RCEs.

5.4. Framework of Understanding and World-View

5.4.1. Background

How we interpret, learn and take action towards environmental and sustainability issues is greatly influenced by the lens with which we use to observe them, our understanding, our reality, hence our worldview and perspective which in turn influence what & *how* of knowledge acquisition. The key issue then is the adequacy of the match between the real world and the ways through which these/things are understood. Framework of Understanding and World-view (WV) is the integrative and pluralistic system for knowledge generation and codification promoted in SD and ESD but it is attached to the idea of paradigm change often discussed with ESD topics. WV is also grounded in a couple of theories particularly Systems Theory and Integrative Theory.

Systems theory conveys important insights into how systems of all kinds may embody emergent properties and possibilities that are characteristic of systems as wholes – offering us a means of understanding why an entire system really is more than the sum of its parts. “The systems view is a world-view that is based on the discipline “system inquiry”. Central to systems inquiry is the concept of ‘system’” which in most general terms mean “a configuration of parts connected and joined together by a web of relationships” (Banathy, 2012). Using a complex systems lens, learning is just not a cognitive endeavour but an existing natural property of all complex systems.

5.4.2. Characteristics of Framework of Understanding & World –View

The characteristics of this element include the following:

- Holism & Integration: “a non-reductionist descriptive and investigative strategy for generating explanatory principles of whole systems” and it involves the generation of experiential understanding. Attention is focused on the emergent properties of the whole rather than on the reductionist behaviour of the isolated parts (ISSS, 2012);
- Systems thinking: “the process of understanding how things influence one another within a whole”, whose concepts are interconnections, feedback, and time delays. Focusing “on cyclical rather than linear cause and effect, systems thinking has been defined as an approach to problem solving, by viewing "problems" as parts of an overall system, rather than reacting to specific part, outcomes or events and potentially contributing to further development of unintended consequences” (SA, 2012).
- Interdisciplinarity and Cross-Boundary: Interdisciplinarity is fundamental organizing principles for enhancing society’s capability of self-renewal. It is an approach to knowledge and inquiry that has epistemological and methodological dimensions and may be seen as a response to the perceived shortcomings of disciplinarity (Jones et al., 2010), an integration instrument whose basic goal is to obtain a synthesis, a means to obtain a presupposed unity from a plurality of disciplines .
- Cultural relativism and social constructivism, and
- Pattern recognition, system design from patterns to details (synergy).

Students of RCE Tongyeong were able to introduce a new culture through food to their locality. As already discussed in this paper, RCE Kitakyushu and RCE Tongyeong were able to address practical sustainability problem in a systemic, integrative manner.

6. Conclusion

A key “point about effective learning is that not only can it have tangible and immediately useful outcomes in terms of knowledge, understanding, skills, social action, etc, but it can also reinforce the capability and motivation for further learning” (Scott and Gough, 2010) — whether it is by the individual or a social group.

The paper begins on the premise that the RCE is increasingly becoming the fundamental platform for the integration of the principles and practices of effective education and learning for sustainable development into all aspects of human endeavours in order to encourage change in behaviour as we transition towards sustainability. The current education system is however, ‘flawed’ in light of the ed-

educational/learning process and content required for the sustainability transition and hence requires fundamental change in implementation and, particularly in ways evaluation is conducted. As a major player whose regional initiatives contribute to local implementation of the DESD, flagship initiatives that had taken place in some RCE's across the region of East Asia were qualitatively evaluated at the backdrop of the effectiveness of the learning processes and content of the initiatives and consequently, learning outcomes in relation to monitoring and evaluation of ESD implementation. This evaluation was based on characteristics of process and content of education/learning that were found scattered in the initiatives' practices and were also grounded in several educational theories and methods in the literature.

In a quest to understanding what constitute effective ESD learning performance therefore, an actionable conceptual framework through the integration of the educational/learning domains that speak to ecological knowledge and skills as well as values and perceptions about behaviours was developed as an approach that resonates with core competencies for sustainability in an action-reflection process with an equal interplay. The overall goal of bringing together these elements into an actionable framework to effect social change, which means the educational/learning processes and content that seek to advance sustainability should exhibit these and other related characteristics.

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Augmenting responsible living curricula with a transdisciplinary orientation

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This paper addresses one of the Track 3 questions pertaining to responsible living curricula, “What skills do teachers need to empower tomorrow’s consumers to look beyond consumption?” Before describing an approach to transdisciplinary learning with the potential to bring about the necessary culture shift to ensure responsible living as a way of life, the concepts of transdisciplinary knowledge (including wicked problems), transdisciplinary habits of mind (cognitive skills), transdisciplinary learning, and the transdisciplinary learning approach (related to Delors’ four pillars of education) are explained. Teachers wishing to consider a transdisciplinary orientation as they teach consumers to look beyond consumption can gain much from the synergy evident among the four large ideas inaugurally presented in this paper.

Keywords: transdisciplinary, responsible living, curriculum and learning, sustainability, wicked problems

1. Introduction

Track 3 for the 2012 PERL conference focuses on *education and learning for responsible living*. Responsible living curricula strive to help students integrate what they learn into their daily lives. The development of students’ consciousness and self-control are fostered, as are prosocial behaviour (voluntary behaviour intended to benefit others) and independence, interlaced with a strong sensitivity to interdependence and interconnectedness. A space is created where students can develop appropriate attitudes and dispositions, and acquire skills and knowledge necessary, to make responsible, informed choices so they can lead empowered, purposeful, and fulfilled lives. They also learn to develop attitudes that allow them to take advantage of new opportunities and, at the same time, deal confidently with the stresses of uncertainty and change. The curricula integrate concepts and content from a variety of subject areas and, most especially, they deal with contemporary

issues facing children. Students learn to care for themselves, for others and for the environment (Thuente 1993).

This paper addresses one of the Track 3 questions pertaining to responsible living curricula, “What skills do teachers need to empower tomorrow’s consumers to look beyond consumption?” In fact, this question, as it was framed in the call for papers, dealt with more than *what skills are required*. It also focused on the *orientation to learning and knowing* that teachers hold, which informs the skills they will need when they teach. To that end, this paper does not discuss how teachers would change the way they teach. It focuses instead on how their appreciation for what counts as learning and knowing might change if they embraced a *transdisciplinary orientation* in their pedagogy.

As a caveat, McGregor (2006, 2009, 2010, 2011c) provides detailed overviews of the transdisciplinary (TD) approach, and how it understands what counts as reality, logic, knowledge and the role of values. Except for the following brief overview, it will not be repeated in this paper. Transdisciplinary knowledge is emergent and complex. TD Reality is comprised of multiple levels, which are able to interface with each other through the mediating effects of leaving behind resistance to unfamiliar or disliked ideas. The logic used to infer judgments, make decisions, problem pose and problem solve is inclusive, respecting many actors’ points of view. Integral value constellations play a crucial role in solving problems faced by humanity, and must be managed and led in a climate of collegiality and respect.

Irresponsible and unsustainable consumer actions harm those consuming, other humans, other species and the environment. To help *consumers look beyond consumption*, to feel the weight and the import of their decisions, educators must remain deeply aware of the complexity of interrelationships among peoples and systems. With this awareness, they can change their approach to teaching; the consumer culture cannot change unless consumer pedagogies change (McGregor 2011b). “Transdisciplinarity is a powerful educational approach for the shift in culture [required] where [responsible living] is no longer a vision but a way of living” (Marinova and McGrath 2004: 6).

Hermani (2011a, b) has an intriguing view of students that informs the discussion shared in this paper. They “come to school with what they intrinsically *are*, in their integrity, in order to *learn to know themselves*, as well as the environment and our world’s interactions” (2011a: 3, italics added). A transdisciplinary approach enables educators to respect this integral link between students (consumers) and their wider world. It gives teachers permission to focus on helping students *learn to know who they are* by showing them they are inherently tied into the complexity of the world. With this self-knowledge, students can begin to engage in more responsible consumption and life choices as they learn to care for themselves, for others and for the environment (the crux of a responsible living curriculum).

Before describing an approach to transdisciplinary learning with the potential to bring about the necessary culture shift to ensure responsible living as a way of life, I will introduce the concepts of transdisciplinary knowledge, transdisciplinary habits of mind (cognitive skills) and transdisciplinary learning (including the four pillars

of knowledge needed for the 21st century). Together, they help educators begin to gain a transdisciplinary orientation (note that *trans* means to zigzag, go across, go beyond, to cross over).

2. Transdisciplinary Knowledge

Traditional curriculum uses disciplinary knowledge and subject-focused content. Most people are familiar with mono-disciplinary knowledge, developed by and housed within distinct disciplines (e.g., economics, politics, sociology). Multidisciplinary knowledge is created when one discipline uses the insights it gains from inviting others to contribute to the solution of a disciplinary problem. Interdisciplinary knowledge is created when scholars from multiple disciplines work to integrate their ideas into a new whole, but the work is still confined to scholars in academic disciplines. When scholars within universities works with actors outside the academy, people who are living the problems, we witness the creation of transdisciplinary knowledge (McGregor 2006; Wall and Shankar 2008). Apgar, Argumedo and Allen (2009) clarify that transdisciplinary knowledge is created by “mov[ing] beyond the integration of different disciplines towards transdisciplinary approaches that link different disciplines *with* local and traditional knowledge systems” (256, emphasis added).

Transdisciplinary knowledge is a new kind of knowledge that complements traditional, one-discipline, multi and interdisciplinary knowledge. TD knowledge is formed in a transintellectual space, wherein resides a gradual cross-fertilization of ideas resulting from the convergence of different perspectives and value systems in the spirit of solving complex, emergent global problems of humanity (Lattanzi 1998). This type of knowledge is globally open and entails the integration of disciplinary knowledge with stakeholders’ lived experiences leading to new visions of a responsible and sustainable future. It is alive and perpetually in flux and information because the problems being solved with TD knowledge are alive. Its creation entails self-transformation oriented towards new knowledge of the self, the unity of all knowledge, and the creation of *a new art of living* (Nicolescu 1997); that is, responsible and sustainable living.

Transdisciplinary knowledge is co-created outside the traditional university boundaries in the actual context of where it will be applied, by those who will be applying it to solve complex problems they are experiencing (McGregor and Volckmann 2011). Lattanzi (1998) suggests that distinct (disciplinary) bodies, or autonomous branches of knowledge, be referred to as *departments of knowledge*, to distinguish them from the *holistic knowledge* that forms the base of transdisciplinary learning. From this stance, he argues that knowledge from distinct disciplines is valuable, first-step knowledge, needed to understand problems from one perspective. However, the transdisciplinary knowledge base is best for treating problems that benefit from not treating them in *disciplinary isolation*. Such problems include

human aggression, less than harmonious distribution of resources, thwarted human empowerment and loss of human potential and unsustainable production and consumption.

This is why transdisciplinarity is described as a process characterized by the integration of efforts by multiple disciplines and members of civil society to address issues or problems with global implications. By integration is meant opening things up to all involved so that something new and permanent can be created via synthesis and the harmonization of ideas and perspectives. Indeed, many issues of fundamental importance for our society, such as sustainability and peace, could not even be posed within the domain of one discipline. Of significance is that Lattanzi (1998) believes an inquiry into a simple issue should not stop just because a satisfactory explanation has been found. This latter approach is inherent in the other three approaches for creating knowledge (mono, multi and inter). Transdisciplinary thinking would have us dig deeper for the underlying complexity of daily reality that creates issues that have global implications, including climate change/global warming, pollution, overpopulation, and unsustainability.

2.1 Wicked Problems

As an important side note, TD knowledge creation is most appropriate (indeed required) for *wicked problems* that affect all of humanity and have no given solution, rather than to tame problems that affect particular contexts and that have recognizable solutions (McGregor 2011a). Wicked problems, such as climate change, overpopulation and poverty, are “large-scale, long-term, complex and interlinked [with other] issues” (Apgar et al. 2009: 258). Knowledge about the problem is uncertain, the nature of the problem is disputed and there is a great deal at stake for those living with the problem and any solutions (McGregor 2011a; Pohl and Hirsch Hadorn 2007). Rittel and Weber (1973) characterize wicked problems as ill-structured (messy) issues that have human relationships and social interactions at their center. What the problem is depends upon whom is asked; different stakeholders have radically different views and understandings of the complex issue. As well, they have different notions of what constitutes an acceptable solution. And, there are no evident solutions, because there is an immense space for possible alternatives.

Each wicked problem is unique because of (a) the nature and the properties of the presenting problem and (b) the configuration of related issues, of stakeholders and the context. And, many aspects of a particular wicked problem can be considered symptoms of other wicked problems. The solution to one may exacerbate another or cause a new wicked problem (McGregor 2011a; Rittel and Weber 1973). A very special set of cognitive skills (habits of mind) are required to problem-solve wicked problems - transdisciplinary habits of mind.

3. Transdisciplinary Habits of Mind

Transdisciplinary thinking helps people deal with the complex, wicked societal problems that require knowledge across all aspects of society: academic research disciplines, communities, civil society, industry and governments; that is, it involves the integration of knowledge from multiple knowledge systems or knowledge spheres. Thinking from a TD perspective means people have to (a) recognize and value the multiple interacting parties while (b) allowing themselves to self(re)-organize during the perspective sharing and problem solving process (Apar et al. 2009).

Mishra, Koehler and Henriksen (2011) identify seven habits of a transdisciplinary (TD) mind, cognitive skills they suggest any individual, from *any* discipline, tends to use when creatively thinking across a range of domains. These TD mind skills are universal and employed by people inclined to integrate different solutions, viewpoints and perspectives. They include: perceiving, patterning, abstracting, embodied thinking, modeling, play and synthesizing (see also Mishra and Koehler (2006) and <http://tpck.org>).

First, *perceiving* is a two-layered process. People learn to observe using their five senses, and then they learn the process of *imaging* (calling to mind what they observed without any external stimuli). Second, *recognizing patterns* involves identifying a repeating form or plan in a seemingly arbitrary arrangement. Third, *abstracting* entails two processes: (a) people extract and focus on one feature of a thing to grasp its essence. Then, (b) they use analogies (comparisons between two seemingly disparate things) to explain the abstraction. Fourth, *embodied thinking* is also two-pronged. (a) Using kinesthetic thinking, people learn to 'think with their body,' learning how to use their five senses to know the world around them (e.g., how hard to hold an egg without breaking it). (b) Thinking with the body also involves putting oneself in another person's position (out of one's body into another body's experience) in order to understand them (empathize) (Mishra et al. 2011).

Fifth, *modeling* involves both abstractions, noted earlier, and dimensional thinking (space and time). When people model, they build replicas or use theories or formulas to represent and then study something. *Deep play*, the sixth universal TD mind habit, involves people intellectually playing with ideas, concepts, boundaries or processes so they can open doors to new ways of thinking via unexpected breakthroughs. Finally, *synthesizing* involves feeling and thinking coming together into many and new ways of knowing, which could not have emerged if everything had remained separate and disconnected. Through synthesis, people develop deep, empathetic, complex connections between each other and their attendant ideas and positions (Mishra et al. 2011).

Derry and Fischer (2005) also discuss transdisciplinary competencies and mindsets, arguing that learners need these as well as disciplinary-specific, in-depth knowledge (see Lattanzi 1998) They propose three mindsets (habits of the mind) that would bring disparate disciplines and actors together: knowledge about bound-

ary objects, communities and metacognitive skills that foster reflective community. First, knowledge exchange requires hosts (researchers, journals, bureaucracies, standards, stakeholders/stakesharers (see Torkar and McGregor (2012) for discussion of stakesharers). These hosts are called *boundary objects*, features that cluster at the edges of borders, with the potential to connect ideas across people. They can impede and expedite transdisciplinary learning.

Second, transdisciplinary learners need to have a commitment to the collective creation, expansion and building of knowledge through knowledge creation communities. Third, TD learners must be able to “think about and monitor their thinking” (metacognition skills) because this habit of the mind supports a reflective knowledge creation community. They must be skilled at reflecting on the data, concepts and real world items, on the activities of the problem solving system/community, and on their modes of participation and inquiry (Derry and Fischer 2005).

4. Transdisciplinary Learning

“Transdisciplinary learning is important” (Stahl, Cimorelli, Mazzarella and Jenkins 2011: 497). It draws together concepts, theories and approaches from parent disciplines and stakeholder’s knowledge systems and lived experiences and then *transforms* these into new, TD knowledge, which is possible because boundaries have been broken down or transcended. TD learning is driven by the need for new knowledge creation to address complex problems of humanity (Park and Son 2010). Transdisciplinary learning opportunities help participants gain better understandings of how their perspectives, knowledge and values contribute to solving the problem. In particular, if opportunities are provided for altering the perspectives, knowledge and values that are being examined, iterative learning is possible, leading to appreciations of how each actor’s *position* on an issue can change as other’s are brought to bear. As well, what they *know* can remain the same, but be viewed differently as different actors’ perspectives are brought to bear (Stahl et al. 2011). Embedded disciplines and stakesharers’ knowledge systems will come into play as needed or desired throughout the process.

TD learning requires opening one’s mind to an array of competing perspectives on how to solve problems (even on what constitutes a problem). The TD approach is all about merging divergent perspectives to problem solve (McGregor 2011b). This inherent crossing back and forth, in and out, over and under each other’s perspectives and positions opens ‘newer learning’ because it opens important questions about thinking and gives learners permission to question. Transformative learning helps people see problems in even more than three-dimensional depth because it mimics the complexity of the problems people experience in the real world (Davies 2009). People “creatively move into, through, across [and beyond] disciplines in

order to *open meaning* rather than be pinned down by [disciplinary] facts” (Davies 2009: 2, emphasis added).

5. Transdisciplinary Learning Approach

Müller, Tjallingii and Canters (2005) envision a transdisciplinary learning approach to help people from different disciplines and sectors work together to establish a common orientation to the issue at hand. (a) Each participant would articulate his or her position (including any limitations) and (b) all participants would accept the superiority of a common learning approach over disciplinary stances stemming from arbitrary, artificial boundaries. The latter involves all participants engaging in both an integrating and a service role, leading to the convergence of mindsets into agreed-to, new TD knowledge.

Their TD approach to learning involves a learning cycle with three steps, with learning occurring through continuous interactions between internal interpretations and external actions. The three learning steps are as follows. First, each participant comes to the table with his or her own purpose, concepts, knowledge and interpretations of the world. Second, informed by their internal perspectives, each participant poses actions, which have a series of expected and unexpected effects. Third, these actions and consequences are observed and described by each participant, leading to a convergence of viewpoints inspiring the creation of new knowledge, ideas and concepts. Each participant’s interpretation of these shared data (including boundary judgments), their view of the problem, their chosen approach and possible solutions might shift, which could lead to new ideas and concepts (Müller et al. 2005), and the TD learning cycle continues.

Müller et al. (2005) suggest that this TD learning approach can best be represented using a spiral to illustrate that the cycle has no beginning nor defined end: one could start with interpreted knowledge, take action based on this knowledge, observe the consequences and interpret the results to get new knowledge, leading to another set of actions, which are observed and interpreted, and so on. They also describe the learning cycle this way, “the creative step [action] is a translation from the internal world of thoughts and feelings to the external world of forms; the descriptive step [observe] is a translation from the external world to the internal world; and the normative step [interpretive] is a translation from information to purpose [leading to the next act]” (Müller et al.: 200). This TD learning cycle respects Schmitt’s (2007: 1) call for transdisciplinary learning wherein people can “effectively communicate across disciplines and sectors, value other’s expertise and knowledge, establish necessary relationships, ask important questions, integrate shared learning, and grow in self-confidence while successfully working [and learning] with others.”

5.1 Four Pillars of Education

Transdisciplinary learning involves a process wherein knowledge, attitudes, skills, concepts, and values transcend and are focused on issues across, between and beyond single subject areas. The goal of such learning is to understand the present world so changes can be made to ensure the future, taking into consideration human commonalities (Renatica Learning Wiki 2011). TD learning experiences that help consumers to look *beyond* consumption must reorient learners to what it means to learn, moving beyond learning facts and information to learning how to know, to do, to be with, and to be (the four pillars of education) (Delors 1999; Nicolescu 1997). Marinova and McGrath (2004) envision these four pillars as fundamental to a transdisciplinary pedagogy for responsible living.

Nicolescu (1997) proposes that these four pillars form the foundation of TD knowledge. Although these pillars may sound very familiar, those advocating for the integration of transdisciplinary thinking into responsible living curricula must define them very differently than they are conventionally understood. Very briefly, *learning to know* refers to training in permanent questioning of assumptions and in building bridges leading to continually connected beings. *Learning to do* certainly refers to acquiring a profession, but doing so within a profession that authentically weaves together several competencies at the same time as creating a flexible, inner, personal core. The latter refers to always being an apprentice of creativity and of creating one's potential (Delors 1999; Nicolescu 1997).

Learning to be with others means that not only do people learn to respect others but they learn a new attitude that permits them to defend their own convictions. This new attitude makes a space for both open unity and complex plurality - they do not have to be in opposition to each other. Finally, *learning to be* does not mean the same thing as existing. It means people discover how they have been conditioned, determining if there is any tension between their inner self and their social life, and testing the foundations of their convictions and to question - always question. People have to continually ask themselves "Where am I?," because things change and move and so do people (Delors 1999; Nicolescu 1997).

6. Summary and Conclusion

Davies, Fidler and Gorbis (2011: 11) describe the ideal 21st century worker as "T-shaped," with *T* standing for transdisciplinarity. People with this quality are able to be conversant, be *TD-literate*, in their own field or lived experience while being able to converse in the language of an array of actors affected by the complex issues facing humanity. The same can be said for learners. They need to be T-shaped and TD-literate, taught in such a way that they gain TD habits of minds. To facilitate the development of this T-quality in learners, educators preparing and delivering re-

possible living curricula can bring a transdisciplinary orientation to their pedagogy. To aid in this pedagogical transition, this paper has discussed the topics of transdisciplinary knowledge (including wicked problems), transdisciplinary habits of mind, transdisciplinary learning, and the transdisciplinary learning approach (related to the four pillars of education).

Teachers wishing to consider a transdisciplinary orientation as they teach *consumers to look beyond consumption* (a very wicked problem) can gain much from the synergy evident among the four large ideas presented in this paper (see Figure 1). By way of a summary, transdisciplinary work involves focusing on a wicked problem both within and beyond disciplinary boundaries with the possibility, the hope, of new perspectives and solutions emerging from the integration of perspectives. This work entails seeing patterns, using one's imagination, being able to explain abstractions, creating multi-dimensional models, playing with intellectual ideas and pulling the results together to generate solutions to wicked problems.

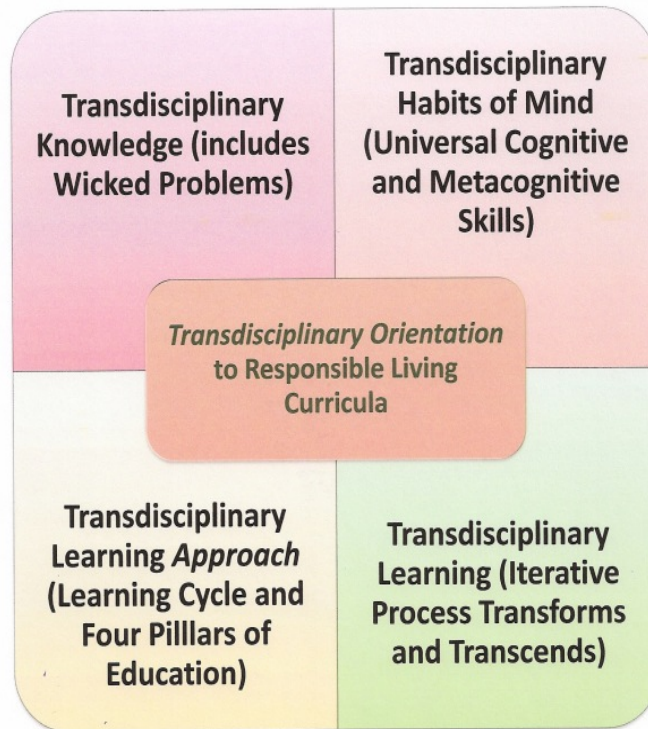


Figure 1: Aspects of a Transdisciplinary Orientation to Responsible Living Curricula

This is a powerful pedagogical idea. So is appreciating the role that boundary objects play in creating links, bridges or modes of transcending borders so people can connect in reflective knowledge generating communities, operating at the borders.

Add to this the power of iterative learning on the borders of universities and the rest of the world, leading to the convergence of a myriad of perspectives made possible from opening minds and fostering newer learning (thanks to always questioning, being creative and accepting plurality). Perceiving learners as coming to school as they *are*, so they can learn to know themselves and figure out *where they are* at any given moment in time, as well as who they can *become*, is another powerful approach to delivering a responsible living curriculum.

As well, educators can help students *move beyond consumption* if they envision learning as a cycle with people moving through three stages: use their internal interpretations of an issue to meet with and take action with others, the results of which are observed and interpreted by everyone, leading to more interpretation, action, observations and so on. Iterative learning never stops, is always done in a reflective community and the knowledge generated is owned by everyone (embodied). Educators supporting responsible living curricula will never teach the same way again if they embrace a transdisciplinary orientation.

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Can students learn energy saving from energy efficient school buildings?

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The German government supports lighthouse projects of energy efficient school buildings. These concepts aim to save energy or even produce more energy than the building needs. The planners also intend to achieve better learning conditions by offering a more convenient indoor climate and more comfort for the users. A further idea is that the teachers can use the projects in lessons in order to raise energy awareness of the students. The projects are monitored by an interdisciplinary research team of engineers, economists, and social scientists. Technical measurements and surveys of users complement one another. The sociological component focuses on how the installed technologies affect the school's daily life, their acceptance by the users, the impact on the perceived air and light quality, and the satisfaction of users' needs. First results show that the buildings offer convenient room temperatures in all seasons. However, some problems occur with automatically controlled ventilation and lighting systems. These findings demonstrate the need for a close cooperation between planners and social scientists representing the views of users.

Keywords: energy-efficient school, acceptance, learning conditions, energy awareness

1. Introduction

There are about 1.5 million non-residential buildings in Germany of which 40,000 are schools in the public sector. Many of them are built in the 1960s and 1970s and need energy-efficient modernisation. In addition, new school buildings offer a chance to play a visibly exemplary role in demonstrating low energy performance.

In the Second National Energy Efficiency Action Plan of the Federal Republic of Germany (NEEAP 2011) following the EU Directive on Energy End-use Efficiency and Energy Services, the German Government emphasises its effort to carry out energy-saving projects in schools. These are partially supported by "Fifty/fifty" incentive programmes where federal states and municipalities offer to give back 50 % of

the energy costs saved by means of conscious user behaviour, to the individual schools. The national KfW banking group is providing direct loans to municipalities for energy-efficient redevelopment of schools.

In 2007 in the research sector, the German Federal Ministry of Economics and Technology launched an initiative "Energy-Efficient School Refurbishment" (EnOB 2012). It is also part of the government's high-tech strategy. Initially, seven schools were selected as model projects for a research programme. This aims to demonstrate concepts and technologies which are currently available to be used in the modernisation of old buildings and the construction of new "Buildings of the future". These are low-energy buildings, equivalent to "3-litre houses" requiring less than 34 kilowatt-hours of primary energy per square meter, net zero-energy buildings, and energy-plus buildings. They have to include energy-optimised construction and technical equipment with moderate investment costs, significantly reduced operating costs, and offer high comfort levels to occupants. According to the government's programme this requires "sophisticated" building concepts and innovative technologies. Therefore the selected buildings include elements such as:

- innovative building shell, e.g. vacuum insulation, translucent insulation, or switchable glazing,
- heating by co-generation, heat pump, or renewable energy,
- solar hot water heating,
- innovative ventilation systems with heat recovery, or air collectors,
- effective protection from solar radiation and overheating,
- energy-efficient cooling systems, or passive cooling,
- electricity-saving lighting, daylight guiding, and motion sensors, and
- innovative controlling systems.

An important component of the Energy-Efficient School Refurbishment programme is the scientific evaluation of the energy-optimised buildings. It aims to test the new concepts, technologies and materials, and identify success factors of good building performance. The research team provides advice to the planners during the design and construction phase and is responsible for a comprehensive measurement and evaluation of data during the operating phase.

The accompanying social research is investigating the acceptance of technical measures by persons concerned such as teachers, students or caretakers, and the efficiency of educational concepts which use the project models in school lessons. Written questionnaires, personal interviews, group discussions, and participative observation are used as methodological approaches.

As of now, in March 2012, two model projects are fully completed (Figure 1), and all steps of social research are carried out. Both projects comply with the "3-litre buildings" standard.



Figure 1: Science College Overbach (left) and Foerderschule Olbersdorf (right)

- One project is a new building: the Science College Overbach (SCO) in Juelich-Barmen, which is a separate building within a private high school campus. The SCO was built for students and young adults studying the natural sciences. There are seminar rooms, lecture halls, computer rooms, and laboratories. The building fulfils the passive house standard with high insulation of the building shell, window systems with switchable glazing, central ventilation, and intensive use of daylight with roof heliostats. It is heated by a heat pump system. Generally, the SCO is considered a “high tech” building.
- The second project is a retrofitted historical building, used by a special needs school (Friedrich-Froebel-Foerderschule, FFF) with students up to a secondary school graduation. Built in the years 1927/28, it is protected as historical monument and offered great challenges for the retrofitting of the building shell and installation of technical equipment. It has double-glazed windows, fitted partially with inside sun protection and partially switchable glazing, and an automatic air supply system. There are at least some “high tech” solutions integrated into the historical walls. During the retrofitting work the school used another building.

2. Methodology

In order to find answers to the questions of how technical solutions are accepted by the users and how they influence the room climate and the learning conditions, the situation before and after the retrofitting, and a comparison of the old and the new building were analysed using empirical methods of social research (Table 1). Secondly, the question of how the energy-efficient building or the retrofitting process is used in school lessons was investigated.

In the first step, personal interviews with the headmaster, selected teachers, and caretakers or facility managers were conducted to identify expectations concerning the retrofitting or the new building. A written survey of all students and teachers was then undertaken before the beginning of the construction work.

In the second step discussions with focus groups, i.e. selected students, teachers and parents, took place in order to determine the attitudes of different actors towards the project after having experienced the new or retrofitted building. Finally, the students and teachers were again surveyed after having experienced one hot and one cold seasonal period.

Table 1: Social monitoring research

Method	Target group	N	N
		SCO	FFF
Personal interviews	headmaster, 2 teachers, caretaker	4	4
Survey old building	all students	410	129
Survey old building	all teachers (FFF only)	-	20
Focus groups	students, teachers, parents	35	16
Survey new building	teachers giving lessons in the new building	16	24
Survey new building	all students	779	126

For the SCO it was not possible to carry out a survey with all teachers “before” construction. Therefore the questionnaire for the teachers in the second step invited them to make a direct comparison between the old and the new building.

3. The relevance of the building environment for learning in school

The basic assumption is that energy-efficient school buildings improve the room climate and therefore also the learning conditions. Indeed, for almost all of the components, in both schools, the room climate was judged better in the new building than in the old one. Figure 2 shows this result for the SCO, Figure 3 for the Foerderschule. However in the case of the Foerderschule, there are some differences between the scores of teachers and students as far as temperature in summer is concerned.

In both cases the new or retrofitted buildings obviously have problems with air quality and also, to a certain degree, with solar radiation. The group discussions revealed that the functioning of ventilation, opening of windows and sun protection is a rather complex issue and that there is an interrelationship between these elements.

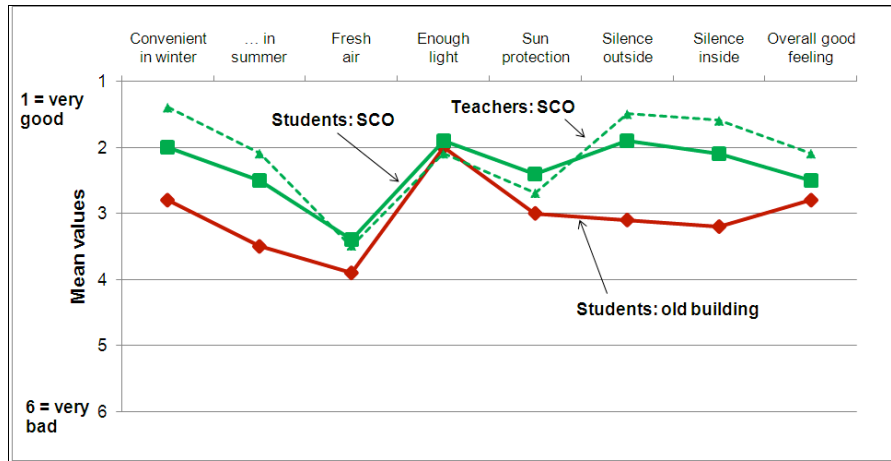


Figure 2: Students’ and teachers’ opinions of the room conditions in the old and new building (SCO)

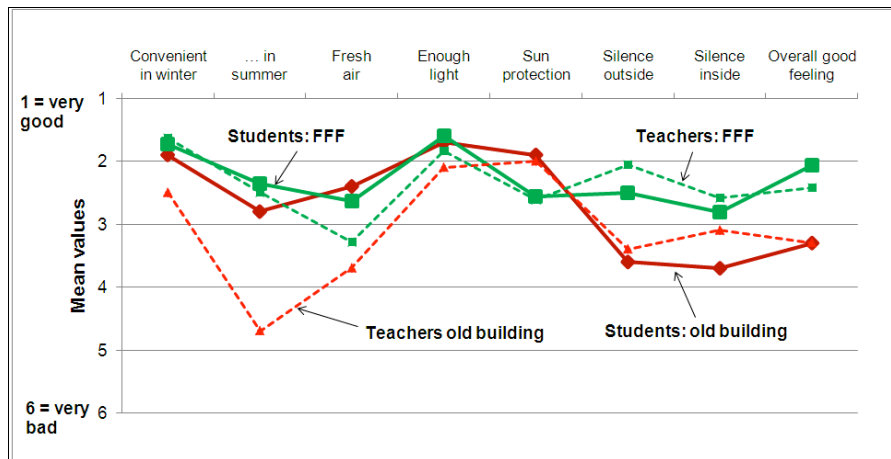


Figure 3: Students’ and teachers’ opinions of the room conditions in the old and new building (Foerschule)

The switchable glazing is an innovative element to protect the rooms from solar radiation and to avoid overheating in summer. However, a problem of this technology is that it takes too long to react when the weather changes. In addition, some initial problems occurred with the operation of some of the switches. The most frequent complaint is that the air quality provided by the central ventilation system is insufficient. However there is also a psychological issue: the fact that the user cannot influence the situation makes him feel uncomfortable. A frequent complaint in the SCO is that windows can only be partially opened i.e. tilted, because they become too hot from outside due to the surface coating. The ventilation system can only be

controlled by the facility manager. If there are complaints he can increase the air exchange rate for the whole building, but not individually for each room.

In the Foerderschule the blinds between the double windows move up and down automatically depending on the level of solar radiation. When the weather is unsettled this happens frequently and can disturb the concentration of the students. In addition, the windows cannot be opened when the blinds are closed. The teachers have the option to control the blinds by a special key, but the handling is uncomfortable. An automatic ventilation system is installed based on a slot above the window and an exhaust valve in the inner wall. From the users' point of view this is not nearly enough to guarantee comfortable air quality. It is necessary to open the windows even in the morning before the lessons start or ten minutes into the lesson.

Another obvious problem for the users is the automatic control of lighting. This feature is not well accepted which could be affected by the feeling that the users lack influence over the feature.

Despite these problems, the majority of the teachers (SCO 54 %, Foerderschule 67 %) said that the students can learn better in the new building than in the old one and that room conditions indeed influence the learning conditions. Students answers differ greatly between the schools: In the Foerderschule 75 % said that they can learn better in the new school whereas in the SCO only 43 % answered positively. One reason is that in the SCO the acceptance of the new building is influenced by other factors beyond energy efficiency. The technical equipment of the SCO – laboratories, smartboards, and communication facilities – offers excellent learning conditions for natural science subjects. So 65 % of the students with a high interest in natural disciplines said that they can learn better in the new building.

4. The energy-efficient building as a topic in school lessons

A second concern of the social monitoring research was to find out the extent to which energy-relevant aspects of the new building are used in the lessons and how effective this is.

Of the students, 71% in the SCO, and 52% in the Foerderschule said that the teachers taught them about special energy-related features in the new or retrofitted building. The difference can be explained by the fact that the SCO is a high school with special emphasis on natural sciences in which the subject is covered. In other classes the topic was only partially dealt with. Of the students, 34 % said that measurement results were a topic in lessons (31% of the teachers). The figures were 32% for switchable glazing (38 %), 20 % for automatic lighting control (25 %), and for the heat pump only 15 % (38 %).

Teachers deal with energy consumption, energy saving or climate change in their lessons more frequently on a more general level than they raise specific issues with the individual school building. The students said in the group discussions that elements of the SCO building are primarily discussed in the “junior academy” with

participants who are especially interested in natural sciences and receive special lessons about the technical equipment in buildings. A special focus group was formed with representatives of these students. They are particularly interested in the new building and its energy-related systems and they deal with energy topics more often than others. However this has nothing to do with the new building: it tends to be linked to the implementation of the junior academy and its curriculum.

Of the students in the Foerderschule, 26 % stated that there was only a little information about the energy performance of the building available, 23 % said that there was information, but that they were interested in more details, and 45 % were not very interested in the topic at all. Of the teachers 70 % said that they have talked about energy-related technical aspects of the building. In the Foerderschule the students are not involved in technical measurements or informed about this issue. The teachers are willing to provide more information within their lessons, but they have not yet had enough time to look at the technical details due to more important tasks in their everyday work. In addition, too many additional issues cannot be accommodated in the curricula.

5. Learning for life

A further research question was to identify the impact of using an energy-efficient building on attitudes towards energy and on energy-saving behaviour. Basic attitudes are developed very early in childhood and therefore school is an ideal place to raise awareness and learn about the environment, energy saving, and sustainable use of resources in general. It has been shown, for example, that children who studied climate change in school were more likely to believe they can influence it (EU 2006).

The impact on attitudes and behavioural intention was measured indirectly by asking students about the importance of energy saving in each survey. This was also addressed directly in some questions and in the group discussions.

The comparison of the attitudes towards energy saving before and after moving into the new or retrofitted building shows that energy awareness increased slightly in both schools (Figure 4). An interesting side aspect of the question “How important is it to save energy?” is the difference between the general and the personal importance. The students judge their personal responsibility significantly lower than the general importance of this issue.

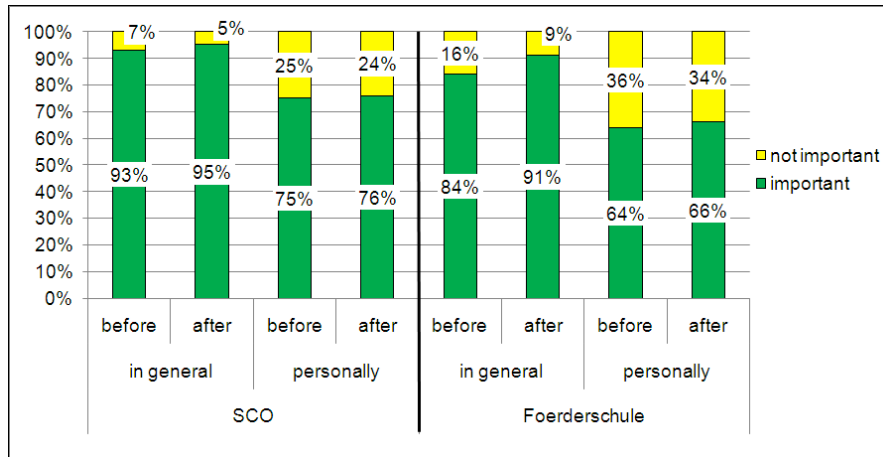


Figure 4: Students' attitudes towards energy saving before and after moving into the new or retrofitted building

A direct question was whether the students received suggestions of energy-efficiency measures installed in the school building which they could use at home. There were some differences between the answers of students and teachers, above all in the SCO. Here 93 % of teachers said "Yes", but only 38 % of the students agreed. In the Foerderschule the results were 58 % of the teachers, but only 41 % of the students. The majority of students have already discussed the new or retrofitted building at home (69 % in the SCO and 64 % in the Foerderschule). However the discussions of the SCO students focus primarily on the general technical equipment rather than energy-related issues.

It can also be noted that 48 % of the students in the Foerderschule believe that the retrofitted building offers more opportunities for them to save energy, 8 % said that they can contribute less, for 15 % it is equal, and 29 % don't know. The teachers agree with this view but actually students stay behind their possibilities. With regard to the scale of opportunities opinions differ considerably: in the SCO 88 % of the teachers believe that students can contribute "much" to energy saving in schools in general, but only 29 % believe that they can do so specifically in the SCO building (Figure 5). Of the students, 45 % believe that they can contribute "much" in both the new and the old building.

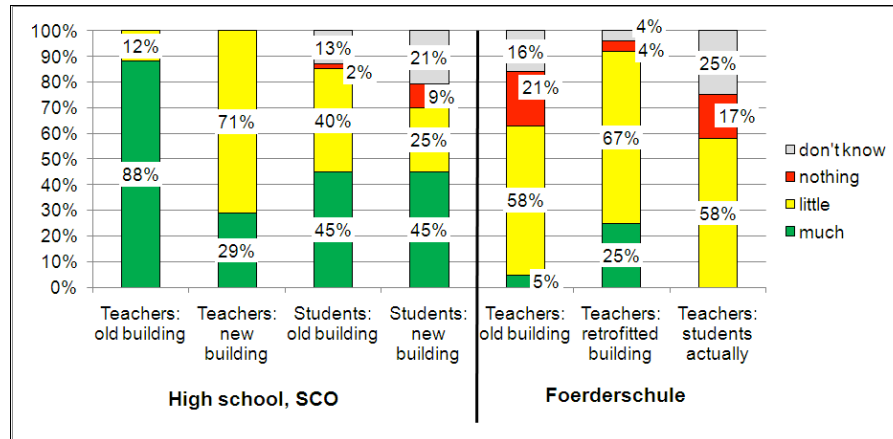


Figure 5: How much can students contribute to energy saving in schools?

A further question concerned the kind of energy-saving measures the students use in their everyday life, such as switching off the light when not in use, avoiding standby consumption, brief and intensive airing instead of tilted windows when the building is being heated etc. The answers appeared to be equivalent before and after moving to the new or retrofitted building; the analysis did not reveal a clear picture. The students claimed to use slightly fewer measures in the second interview than in the first one, but in the second interview they talk more frequently about the brief airing in the heating season. This may indicate some impact of the discussion about this issue in the school context.

6. Conclusions

Generally the students and the teachers consider the new or retrofitted building better than the old one. It successfully avoids overheating in summer and its technical systems help to improve the internal air quality. However the automatic ventilation systems are not sufficient and the users tend to feel the need to open the windows. They are more satisfied with the room conditions when they can influence them. The innovative element of switchable glazing is widely accepted as a mean to avoid being dazzled by the sun and overheated, but it is a problem when it prevents the windows from being opened. The same applies to the shading facilities within double windows when they do not allow the users to open the windows.

Sometimes it is a communication problem between planners, technicians, or facility managers, and the users. The users need adequate information about the functionality of the technical equipment installed. However the teachers do not have enough time to deal with this topic in class in great detail nor can they play the role

of an energy manager because they have other priorities and have to follow the curricula.

The impact on the student's attitudes towards energy saving of working in an energy-efficient school building is limited. The teachers argue that it is primarily a parental duty to create energy awareness rather than a task of teachers in school. They believe that their influence on energy awareness is relatively low. It is therefore important to involve the parents by providing information and encouraging the students to discuss energy saving at home. However, this is a separate issue to working in an energy-efficient "flagship building". Energy saving behaviour can also be learnt in a conventional building. "Learning by doing" would be the most effective way of generating awareness. Examples include inviting the students to engage in activities such as working groups on energy saving in school, competition of ideas, or "eco events", etc. In order to motivate them it is important to make sure that they have fun with energy saving and environmentally friendly behaviour.

With respect to the "high tech" solutions, e.g. the automation of heating, ventilation, lighting, and blinds, neither the teachers nor the students assume that automation can promote the energy awareness.

Where high tech facilities are fully functional, they can protect against fears and antipathy. Nonoperational or damaged equipment can lead to an aversion towards energy saving.

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Evaluating the outcomes of the seminars on active methods in education for sustainable development and responsible living

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Sustainable development is a transdisciplinary area requiring interactive, participative and reflective educational approaches. Learners need to be able to construct their own understanding, meaning and values, as a step in the collective search for responsible living and a sustainable future. Active teaching and learning methodologies can facilitate this process. Much has been written about the use of active methodologies in Education for Sustainable Development, but less is known about how to evaluate the outcomes. We see two major challenges in the evaluation process. First is the question of how to evaluate active (transformative) approaches and the second is what to evaluate? Over the past four years the Active Methodologies Work Group in the Consumer Citizenship Network and the Partnership for Education and Research about Responsible Living (PERL) have developed several teaching resources based on active teaching and learning approaches to help to facilitate Education for Sustainable Development and responsible living. In addition the Active Methodologies Work Group has run seminars for teachers and facilitators to help them to integrate active methodology and concepts of sustainable development into their teaching practice. In this paper we would like to present how we evaluated the activities used at these seminars in different European countries (Bulgaria, Iceland, Turkey, Latvia, Slovenia and Greece). We were interested in finding out what participants learnt, how they would use the activities in their work and suggestions for improvements to the activities. We also asked if these active methods improved their critical thinking. We hope that this contribution will stimulate further discussion on this topic.

Keywords: active methods, teaching, learning, sustainable development, evaluation

1. Introduction

Educational programs around the world have over the last few decades increasingly had to consider the inclusion of topics related to sustainable development in their curriculum. Since 2005 sustainable development has achieved greater attention due to the UN Decade of Education for Sustainable Development (2005-2014). The complexity of sustainable development is well acknowledged. The more complex a subject is to learn, the less potential there is for students to achieve mastery of it through passive learning approaches (von Blottnitz, 2006).

The choice of teaching methods has a major impact on whether students take part actively or passively in class (Felder, 2004). It is well documented that students taught using teacher centred traditional approaches are less able to integrate their knowledge, or think critically and creatively, and that this results in lower learning achievements and misconceptions (e.g. Acar & Tarhan, 2008; Felder, 1996; Herron, 1996).

Over the past four years the Active Methodologies Work Group in the Consumer Citizenship Network (CCN) and the Partnership for Education and Research about Responsible Living (PERL) have developed several teaching resources based on using active teaching and learning approaches, to facilitate learning related to Education for Sustainable Development and responsible living. The Active Methodologies Work Group has run seminars for teachers and facilitators in several European countries to help them to integrate active methodology and concepts of sustainable development into their teaching practice. In this paper we would like to present the active methods that we used at these seminars and the approaches that we used to evaluating them. We were interested in finding out what participants learnt, how they would use the activities in their work and their suggestions for improvements to the activities. We also asked if the active methods helped to improve their critical thinking.

1.1 Active Teaching and Learning

It is argued that in order to develop an effective understanding of the multidimensional meaning of the complex topic of sustainable development for themselves students must actively participate in their own learning. For this reason, the traditional passive approach to teaching appears outdated. Educational outcomes are enriched and deepened in active learning experiences because students are more engaged in, and responsible for, their own learning, and they learn by doing (Bringle & Hatcher, 1999).

Active learning techniques provide students with the chance to develop higher levels of scientific understanding than traditional learning approaches do. The reason for this is the feeling of ownership and personal interest which active learning

creates. Students consider their studies as significant because they feel that they are important and that their opinions and inventions have value in themselves. Therefore, the level of pleasure of the students is augmented and greater motivation is attained (Harrison, 1992).

Practitioners advocate active learning approaches because they help develop real-world skills and experiences, research and strategic-thinking capabilities, and problem-solving skills (Benigni & Cameron, 1999). Bakir (2011) found that Science and Technology courses supported by active learning methodology increased students' creative thinking levels significantly (Bakir, 2011).

1.2 Critical Thinking

Active learning approaches can support the learner's engagement with critical thinking. The main characteristics of critical thinking are; productive and positive activity, a focus on the process rather than the outcome, it is triggered by positive as well as negative events and it is emotive as well as rational (Thomas, 2009). Critical thinking is a skill or capacity that is of great importance to practice in the classroom for participation in a democratic society. Profetto-McGrath (2005) described that critical thinking involves reflection and also involves evaluation and critical appraisal. It engages the skills of analysis and interpretation. This process is oriented toward making judgements about everyday situations.

Teaching critical thinking is not accomplished by traditional knowledge based teaching; rather it is a process that works well with active learning methods. In the classroom students are encouraged to explore the world by discussion or dialogue and listen to each others experiences and viewpoints. This helps students explore diversity of perspectives and gives those new ideas and understanding. To run a discussion in the classroom that is beneficial for all participants' places different demands on the teacher. The teacher needs to ask the right questions and create an atmosphere that makes it easy for all students to express their thoughts and opinions. To achieve this, the activity needs to be interesting, well structured and include open questions such as; The "What?"(information), the "Why?" (reasoning), and the "How?" (action) (Personal consumption and climate change, 2011, p. 8)

1.3 Evaluating the Outcomes of Active Approaches

Kirkpatrick (1994) presents a useful four level evaluation model for evaluating training programmes. He refers to level one of the model as the 'reaction' level. Kirkpatrick suggests that the initial stage in gauging the effectiveness of training should be to collect data on the participant's perceptions, how they felt about the training, did they like it and was it relevant to their work context. Level 2 relates to

'learning' and what participants learnt in terms of knowledge, skills, understanding etc. Level 3 is about 'application' after training and to what extent what has been learnt has been put into practice and level 4 is about 'results' and any subsequent contribution to positive change.

Typically the evaluation of short professional inputs such as teacher seminars and workshops focus on level one and two of Kirkpatrick's (1994) model and rely on data collected from participants at the end of a session or activity. Participants are asked to complete a short one or two page evaluation form that provides useful feedback for stakeholders such as the facilitators, the seminar hosts, seminar funders and the participants themselves.

Often the collection of data at seminars is rushed and is left to the last few minutes of the seminar when teachers are tired and don't have enough time to reflect effectively on what they have learnt and how they might apply learning in the classroom or learning environment in the future.

This type of end of seminar evaluation evaluates the immediate success and strengths and weaknesses of seminars and usually captures the participant's on the spot responses to areas such as the overall value of the seminar, the quality / relevance of the content relating to specific parts of the session and the effectiveness of the facilitators. In many cases evaluation forms are designed to elicit quick responses and include questions that are based on participants responding to Likert 5-point scale statements (Likert, 1932). One example of this is where participants respond to statements and select one answer: strongly disagree, disagree, neither agree nor disagree, agree, strongly agree.

Another approach to evaluation at a teacher seminar is where participants have time to reflect throughout the day or after each activity. This way participants can think about the relevance and applicability of what they are learning and experiencing in a more focused and immediate way rather than summarising at the end of a day.

We see some major challenges in evaluation processes. First is the question of how to evaluate active (transformative) approaches. The second question is what should we evaluate? Much has been written about the use of active methodologies in Education for Sustainable Development, but less is known about how to evaluate the outcomes. A positive example in a very recent article written by Everly (2011) reported that active learning was acceptable to students. The majority of students reported learning more from having active learning activities in the classroom rather than lecture-only. Student's beliefs were also supported by improved test scores. Students who had active learning activities in the classroom scored significantly higher on a standardized assessment test than students who received lectures only.

Although collecting responses from teachers at seminars has value in terms of getting an initial gauge of the seminars effectiveness, the more important aspect or value of any professional development input is what Kirkpatrick, (1994) refers to as after training 'application' and 'results'. What happens after the training seminar is important in terms of any lasting impact or added value that it brings to an individual's professional practice, the professional practice of colleagues and more im-

portantly what it brings to student learning and student experiences in the classroom or learning environment and finally behaviour change. The subsequent behaviour change is one of the principle outcomes that any seminar focused on sustainable development and responsible living would hope to achieve.

For this reason evaluation that includes a follow-up activity after an event can be valuable because it facilitates measuring the longer term value of inputs and experiences at a seminar and gets an indication of how many teachers have had an opportunity to implement learning and ideas from the seminar activities, the quality and effectiveness of what has been tried out and how students have responded and changed as a consequence.

2. Methodology

2.1 Participants and Methods

The seminar participants were mainly student teachers and practising teachers in Bulgaria, Iceland, Turkey, Latvia, Slovenia and Greece who were brought together in their own countries by individual members or organisations associated with PERL or CCN. A mixed method approach to evaluation was used across the seminars in different countries and facilitators adopted their own methodology or tools to collect evaluation responses from participants.

All seminar participants with the exception of the Greek participants completed an individual seminar evaluation form. Participants in Latvia and Bulgaria also completed a critical thinking questionnaire and participants in Iceland completed a post seminar web survey.

Altogether 121 participants completed the seminar evaluation form asking them what they had learnt, how they would use the activities in their work and inviting suggestions for improvements to the activities (see Table 1 for details). Additionally 66 participants answered a critical thinking questionnaire. Seven months after the seminar a web survey was sent out to 19 participants who attended the seminar in Iceland, asking if they had used any of the active methods experienced at the PERL seminar in their classrooms with learners. Eight participants completed the survey (45% of participants). The sixty participants that attended the seminar in Greece used another approach to evaluate their seminar. In groups they discussed their experience and recorded the key points that they wished to share. These were then given to the facilitator.

Five-level Likert scale (Likert, 1932) and open-ended questions were used in the critical thinking questionnaire. The data from the questionnaires was processed at the level of descriptive statistics.

2.2 Organization of Seminars and Active Methods

Every seminar included an introduction to the theory of active teaching and learning and a context was provided for the use of transmissive approaches that support education for sustainable development and responsible living.

The main part of each seminar was structured around participants engaging in and experiencing different active methodologies rather than just hearing about or talking about them. This active approach was key to providing participants with an authentic experience of transformative as opposed to transmissive learning so that they would be in a better position to judge the value and applicability of the methodology and activities for their own teaching contexts.

The active methods and activities included in each seminar varied across seminars and countries. In the main, selection was influenced by the length of time available for the seminar, the background and interest of the participants, participant's previous experiences of using active methodology, participant's level of knowledge of education for sustainable development and responsible living, the facilities available and the skills and experience of the facilitators.

Active approaches used:

- *Green bingo*: a simple icebreaker type activity designed to get participants up and moving about the room, getting to know each other and identifying each others everyday sustainable practices e.g. cycling to work, reducing energy by lowering the wash temperature of the washing machine when washing clothes etc. Each participant had a card with statements and had to find different participants to match statements.
- *Basic images and objects activity*: an introductory activity involving a large collection of photographs linked to different aspects of sustainable development. Each participant selected a photograph that spoke to them about the theme and then paired up with another participant to share their photographs and thoughts. Each pair then found another pair and they shared again. Finally the group of four decided on just one photograph that they would share with the whole group and explain why.
- *Visual carousel*: a group activity designed to collect participant responses to an idea, issue or scenario represented in a photograph. Responses were encouraged and stimulated through a range of prepared questions to promote critical thinking such as what?, why? and how? Photographs attached to large flip chart pages were passed from group to group so that each group could record their responses. The activity provided the opportunity to review the responses of others, reflect on the learning and outcomes of the activity and examine possible lifestyle changes.
- *Take a stand*: an activity where participants explored the interests of different social groups and the complicated issues involved in decision making. The focus was on global warming and climate change. Each group represented a different social group e.g. consumers, owners of industrial factories, shop owners, gov-

ernment etc. and discussed the interests of the group they represented by answering a set of questions. A plenary meeting was held to see if solutions could be agreed by all groups.

- *Meet in the middle*: a group activity where each group of four participants received a photograph and a large sheet of paper divided into four. Each participant recorded in one of the four spaces questions they wanted to ask about what was going on in the photograph. The group reviewed the questions generated by all four and then agreed which final four questions they would investigate and how.

Table 1: Details about participants and methods used

Country	Active methods used	Number of participants	Date
Turkey	Visual carousel	12	15.3.2011
Latvia	Images and objects activity (Jigsaw and journalist), Visual carousel, Meet in the middle	31	26.4.2011
Iceland	Visual carousel, Take a stand	15	1.6.2011
Bulgaria	Green bingo, Visual carousel, Basic images and objects activity	36	23.-24.6.2011
Slovenia	Green bingo, Visual carousel, Meet in the middle	27	29.8.2011
Greece	Basic images and objects activity, Meet in the middle	60	30.9.2011

3. Results and Discussion

3.1 Active Methods and Learning Outcomes

Altogether 121 participants completed evaluation forms at the end of seminars, asking them what they had learned, how they would use the activities in their work and inviting suggestions for improvements to the activities. For both the first and last

questions a summary of the most frequent answers for each active method is presented and discussed. Also some examples are presented in Table 2. Results of the second question are presented in Figure 1.

Green Bingo

This icebreaker activity was well received amongst participants. They especially emphasised that the activity was an interesting new method, organized as a competition, a good icebreaker that involved everybody in the group. Some participants were already familiar with the method. They liked the use of it for the sustainable development topic.

Basic Images and Objects Activity

This activity was especially valued for its group dynamics. Working in groups and sharing opinions about the images were amongst the most frequent comments. Participants also mentioned that the activity was new for them, encouraged discussion and challenged imagination. It was also mentioned that the activity helped them to think more about the complexity of the issues discussed and that the solutions of complex problems are never “black and white”.

Visual Carousel

Participants emphasised that this activity was new to them, that it encouraged working in groups and discussion. It motivated everybody in the group to share ideas and solutions, to think deeper (“to think beyond regular concepts”) about the problems of sustainable living. Also, it involved a lot of new knowledge that was shared among groups and individual participants.

Take a Stand

This activity was new and interesting for participants. They emphasised that the activity made you more aware of problems and they found it very meaningful when they explored (role-played) the interests of different social groups and the complicated issues involved in decision making.

Meet in the Middle

Participants indicated that this activity was a new and interesting way of forming questions. They especially liked the process of decision making and forming common conclusions (questions). It involved a lot of discussion and critical thinking.

Table 2: Examples of responses for each active method

Active Method	Examples
Green Bingo	<ul style="list-style-type: none"> ➤ I have learned about my SD habits. ➤ A way to stimulate students, to create good atmosphere for learning. ➤ I learned new warm up activity. ➤ I learned some new ways of saving energy.
Basic Images and Objects Activity	<ul style="list-style-type: none"> ➤ It is a useful method to encourage students to speak and construct their arguments. ➤ With this method I learned how to work in groups, although we share different opinions. ➤ I have learned that the team work is very important. ➤ I have learned how certain images can provoke creative thinking.
Visual Carousel	<ul style="list-style-type: none"> ➤ I learned to think deeper and further along the production chain to identify threats/impacts to sustainable development. ➤ That more brains give more solutions. ➤ I learned how asking the same question over and over again may lead to coming up with unique solutions. ➤ Nice group exercise, sharing experience, learning from the others. ➤ Think beyond regular concepts. It also includes the ideas that don't come to mind straight away.
Take a Stand	<ul style="list-style-type: none"> ➤ Very interesting to put on the role of different interesting groups. ➤ Made me think a lot about the product of different goods and how that affects climate change. ➤ New and interesting method. ➤ Made me think how little we actually know what affects climate change.
Meet in the Middle	<ul style="list-style-type: none"> ➤ How good am I able to form questions. ➤ I learned how to agree with the others in the group for the best questions. ➤ To respect others' questions. ➤ A good way how to make common conclusions.

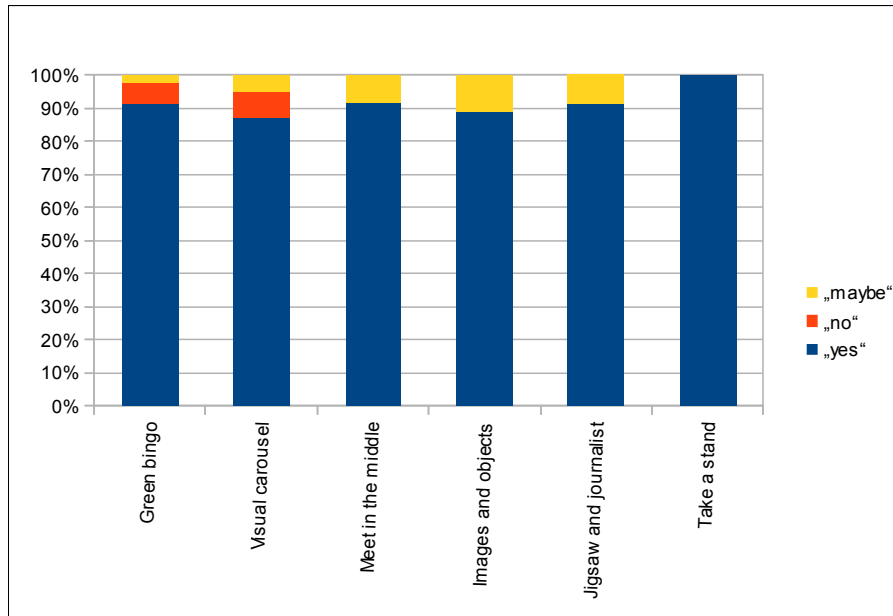


Figure 1: Response rates of participants on the use of an active method in the future practice

In most of cases, when participants responded negatively (see Figure 1) they explained that the particular active method couldn't be used with the age group they work with, they thought it was too demanding for their students or it was not relevant to their school subject. They suggested we should do more simple or demanding activities, questions, images... to fulfil the needs of differentiated groups of students.

As we mentioned before, collecting responses from teachers at seminars has value in terms of getting an initial gauge of the seminars effectiveness, but the more important aspect or value of any professional development input is what happens after the event and does it have any lasting impact or bring about change. Therefore, we made a small web survey in Iceland, asking the participants that attended the seminar in Reykjavik if they had already used the methods they had experienced at the PERL seminar seven months earlier. All of the respondents that replied (8 participants) had used the Visual Carousel activity in their life-skills classes. They were all very satisfied and expressed that students liked the method. They thought it was fun and good way to introduce the theme. None of the responders had used the Take a stand activity, but they all intended to use that activity later as a summing up for the theme.

Participants (N=60) of the seminar in Athens (Greece) were invited to evaluate (discuss) the seminar in groups. The activities and methodology were discussed and the facilitator collected a summary of major comments that are presented below.

1. A very interesting seminar. It could be nice to have the opportunity to attend more seminars like this one. The method of the seminar was very interesting because we had the opportunity to implement what we had heard from the presenter.
2. A very interesting seminar that gave us important and useful information. We would like to attend more similar educational meetings.
3. A very valuable seminar which would be beneficial if implemented for all different subjects at middle or high school. It could be nice to implement something similar for problems in the classrooms. For example “how to manage problems in the class” or “how to react to students with special needs in school environment”. Thank you.
4. The ideas of this seminar seem very interesting and they can be used for all the school subjects. We would like to implement these ideas in our classes because we think that the classes will be more interesting and students will comprehend the material of the class much easier.
5. The seminar was very practical and motivating. PERL through this seminar gave us the opportunity to develop a more global initiative for a better life and how to improve the environment.

We also conducted a survey asking participants how seminar activities influenced their critical thinking skills. The descriptive statistics for the results is presented in Table 3. In general, participants think that the PERL seminar helped them to develop critical thinking skills. They most strongly agreed with the statement saying that there are often a number of ways to solve problems and reach goals. And they strongly disagreed that problems and situations are just black and white, right or wrong. There is a high standard deviation (SD) in these statement meaning, that participants had diverse opinions about these statements.

Table 3: Descriptive statistics for participants' opinions about the seminar outcomes for their view on critical thinking

Statements	Mean	SD	Median	N
I will put more effort to try and gain the best possible understanding of a given situation based on reasons and evidence.	3,8030	,74874	4	66
I will be less tolerate of the opinions and ideas of others, especially when they are different from my own opinions and ideas.	1,7727	,85567	2	66
I will more carefully consider the possible outcomes or consequences of situations, choices, proposals or plans and take this into account when making decisions.	3,8750	,70147	4	64
I now have less confidence/trust that I can use reasoning and judgment to solve problems and reach goals.	2,1364	,97486	2	66
I now see that problems and situations are just black and white, right or wrong.	3,3333	1,02782	4	66
I now believe more strongly that there are often a number of ways to solve problems and reach a goal.	4,1515	,70694	4	66
I am now even more confident to stand firm in my judgment when there is reason to do so, and to change my mind when reasons and evidence indicate that I am mistaken.	3,8254	,70801	4	63
I have a better understanding of the idea that we sometimes need to make decision or judgment even in the absence of complete knowledge or when there is no clear right or wrong answer.	3,5846	,76836	4	65
I have become more aware of what is needed to construct a good argument.	3,4375	,85217	4	64

4. Conclusion

The PERL Active Methodologies Work Group ran seminars for teachers and facilitators to help them to integrate active methodology and concepts of sustainable development and responsible living into their teaching practice. Although a range of

approaches and tools were used to evaluate the seminars some very clear outcomes emerged.

Participant's hands-on experience of the various active methodologies at the seminars was positive and they found the activities selected to support education for sustainable development and responsible living interesting and stimulating. Many participants looked for follow-on seminars. For the most part the seminar activities had not been experienced previously by participants and in many cases participants were completely new to active teaching and learning.

In terms of the approach and methodology participants particularly appreciated the group work and the importance of the team approach, sharing and listening to opinions and ideas, problem solving together, learning from each other and the development of critical thinking.

The need for differentiated approaches for different learner groups was expressed raising the need for the adaptability of the methodology to be highlighted at future seminars.

While comments in the evaluations related more to the methodology and activities than sustainable development and responsible living itself, participants did indicate that the activities helped them to highlight their knowledge of sustainable development, their practices and areas that they did not know about.

Where post seminar evaluations were administered the findings were encouraging and teachers were using and implementing some of what they had learnt at the seminars and had gone on to try out some of the activities in their own classrooms.

This evaluation feedback and analysis is important for the seminar facilitators, funders, and hosts as it highlights the value of the seminars that have already been delivered and will help when designing seminars and evaluation methodology in the future. Clearly there is a need to carry out more post seminar evaluation to get a better sense of the level of implementation by teachers after participating in these types of seminars but more importantly the impact that this is having on their students in terms of emerging knowledge and application of sustainable development and responsible living practices in their everyday lives.

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Business school students and sustainability: Attitudes and behaviours of students signed up to a sustainability specialty as compared to their peers

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Sustainability has only recently become a topic of interest at business schools and in business management. It is not yet known whether new education variants incorporating this issue attract a different type of students. The study compares the environmental commitment of business students that chose a sustainability variant in their study with their peers. The results show that while students differ in their view on the relation between humans and nature, little differences can be found for environmental behaviour and ascription of responsibility and personal norms, except for a difference in ethical buying behaviour. Differences are found for gender, age and nationality. A further step of the research will explore how the sustainability focus of the education influences attitudes and behaviour over time, and which viewpoints students have on the relation between business and sustainability.

Keywords: attitudes, behaviour, business, education, students

1. Introduction

In recent years, environmental sustainability, as an element of corporate social responsibility, has become an important topic in business management. Business leaders increasingly acknowledge stakeholder expectations regarding corporate responsibility, to the extent that corporate sustainability is sometimes being coined as the key to success and a strategic necessity for business management. In Denmark, a majority of companies are working towards improving environmental records and societal responsibility for strategic reasons (CSR.dk/miljo 2010). The economic rationale of this orientation is supported by studies that show that an actively pursued environmental management has a positive impact on long-term profitability and corporate competitive advantage (e.g., Chen 2008).

Business schools are gradually beginning to incorporate sustainability in their curricula. In principle, incorporating sustainability in business education could be implemented from two different, but interrelated, perspectives. The first involves preparing future business leaders for their career by imparting them with the knowledge and skills to integrate environmental concerns into their future decision-making models, for the benefit of their future employers as well as public and private stakeholders, and the society at large (Pesonen 2003). The second perspective addresses business students' role as consumer-citizens and the integration of sustainability in all education in order to promote a sustainable development. This view has been advanced by the United Nations, when declaring the years 2005-2014 as the 'Decade of Education for Sustainable Development' with the goal of integrating "the principles, values and practices of sustainable development into all aspects of education and learning, in order to address the social, economic, cultural and environmental issues we face in the 21st century (UNESCO 2012). Even if this integration has not yet met with the ambition as stipulated by the UN, sustainability perspectives are now incorporated in various ways in mandatory subjects and student electives in business schools.

Business students represent the largest, single group at universities in most developed countries (Reid et al. 2009). Since they have the capacity to influence the sustainable development through their future work, their commitment to this challenge, personally and professionally, constitutes an interesting research site.

Experimental evidence indicates that being exposed to a "self-interest model", as students of economics and business administration invariably are, increases self-interested behaviour (e.g., Frank et al. 1993). The notion of self-interest is central in economic theory (Parkes and Blewitt 2011), which makes the inference to students of economics as self-interested individuals tempting. In particular, business education has been blamed for recent ethical scandals and moral decline in management (e.g., Ghoshal 2005), indicating that business education fosters students who are less moral than their peers pursuing different university majors (although this could also be a case of self-selection, i.e., those who enter business education are more amoral from the outset). However, the empirical evidence for business students having a lower moral threshold is rather weak, or at least mixed. Thus, in a meta-analysis of business studies and ethics, Borkowski and Ugras (1998) concluded that female students exhibited stronger ethical attitudes/behaviour than males, as did older versus younger students, but no relationship between university major and ethics could be established. Also, a recent large-scale study (Neubaum et al. 2009) found no evidence that business education fosters negative moral orientations of students.

While there is research on environmental education as such (e.g. Zelezny 1999), there is limited research dealing specifically with business students' commitment to a sustainable development. The studies of university students by Kilbourne and colleagues (e.g., Kilbourne et al. 2001; Kilbourne and Polonsky 2005) suggest a link between beliefs in the Dominant Social Paradigm (DSP) (essentially an opposing force to the "new environmental paradigm," Dunlap et al. 2000) and environmental

attitudes, such that trust in the established and dominant social, political and technological order decreases concern for the environment and the perception of change necessary to alleviate environmental problems. The authors suggest addressing the core of the problem, the adherence to the DSP, in addition to educating for sustainability and raising environmental concern (Kilbourne et al. 2001).

Studies particularly concerned with business students and sustainability have looked at business students' conceptions about sustainability (Reid et al. 2009), and whether students perceive the topic of environmental sustainability as a legitimate business issue (e.g., Thomas 2005; Dale et al. 2010). Also, studies have looked at how integrating environmental topics into the curriculum of business education may sensitize students and heighten their interest for environmental issues. Cordano, Ellis and Scherer (2003) subjected business students to a course featuring a wide variety of environmental topics and differing views of the environmental responsibilities of business. Following the course, the students reported to have increased awareness and concern in relation to all measures used.

The present study seeks to investigate business students' environmental commitment from both perspectives mentioned above; the students as future business leaders and the students as present, and future, consumer-citizens. The study compares business students following a regular business curriculum with students who enrolled to follow a business major focusing on sustainable production and consumption. The overall purpose of the present paper is to compare the initial characteristics of these two groups. Thus, the study investigates the self-selection question – do business students who choose a sustainability variant differ from those students who follow the ordinary business variant from the outset?

2. Methodology and Measures

In order to gather data on students' environmental attitudes and behaviours, a paper and pencil questionnaire was designed and distributed during the first month of the fall semester 2011. Two courses in the third semester at the bachelor level within the study of 'Economics and business administration' were approached during lecture breaks. The two courses differed in that one course was an introductory course of the study variant 'Sustainability' while the other course was part of the ordinary study programme (OB). The sustainability-related variant of the Bachelor programme (SB) offers five courses related to the subject during the second year of study (Sustainable production and consumption, Environmental and energy economics, Sustainable economics, Project evaluation and sustainability, Seminar on environmental issues), and students can either choose the sustainability variant, a variant called 'International Management' or the normal programme. Answers of 101 students were obtained, 51 of these from the SB course. As a subsequent aim was to conduct a follow-up survey in the following semester, all students were encouraged to fill out an 'individual number' consisting of first their mothers and then

their fathers birthday in day and month (for example 10.04. and 15.10. leads to 10041510). This would allow tracking individual changes in attitudes or behaviours.

The questionnaire contained the revised New Ecological Paradigm scale (Dunlap et al. 2000; Bruni et al. 2012) in order to assess students' views on the relation between humans and nature. The 15 statements can also be divided into five subscales of three items each, which are 'Reality of limits to growth', 'Antianthropocentrism', 'Fragility of nature's balance', 'Rejection of exemptionalism' and 'Possibility of ecocrisis'. In addition, it was asked whether students agreed to the statement 'Climate change will negatively impact me during my life time', with all items assessed on a 7-point likert scale ranging from strongly disagree to strongly agree. Next, students were faced with 13 statements about their sustainability behaviours assessed on a 7-point likert scale (worded as: never, seldom, now and then, often, and always). Statements were taken and adapted from Grønhøj and Thøgersen (2011) and focused on environmental issues, and two additional statements included social issues ('I actively support environmental causes (signing petitions, 'like' on social media, etc.)') and ethical consumerism ('Environmental or social credentials of companies influence my buying decisions'). Thirdly, questions of ascription of responsibility and personal norms used seven items taken from a larger list of items used by Steg et al. (2005), and again assessed on a 7-point agree/disagree scale. These items focused on energy policy and perceptions of responsibility and norms with regard to energy problems and solutions.

The data was analysed using SPSS. Analysis in this first round remained limited to simple uni- and bivariate statistics due to the limited sample size. Questions regarding age and nationality were only asked in very basic categorisations (aged 23 years or older / younger than 23 years, of Scandinavian nationality / of other nationality) to ensure anonymity. Apart from gender, age and nationality, we asked about car-ownership, the type bachelor variant they were studying, or whether they had chosen the course as an elective (studying a different study than the Bachelor on Economics and business administration, or being an exchange student). The students from the two courses differed somewhat in background characteristics: The SB students course were more likely to be male, non-Scandinavian and car owners. The higher share of exchange students might be the reason for these differences.

3. Results

We expected students that signed up for the SB course to show more favourable attitudes and behaviours with regard to sustainability. A possible display of favourable viewpoints and heightened interest would explain their motivation for choosing the sustainability variant or the course as an elective.

3.1 NEP

The results show that the expectation is met regarding the NEP: the SB students showed significantly higher scores on the NEP ($M=53.4$, $SD=5.9$) as compared to the OB students ($M=49.2$, $SD=6.8$; $t(93) = 3.174$, $p = .002$).

Comparing the results for the five subscales, it can be observed that the significant differences stemmed from the subscales of 'Antianthropocentrism' and 'Possibility of ecocrisis' ($t(99) = 2.736$, $p = .007$ and $t(99) = 2.170$, $p = .032$). Thus, the SB students were less prone to believe that "nature exists primarily for human use and has no inherent value of its own" (Bruni et al. 2011), and thought it was much more likely that an "ecocrisis" might occur at some point.

Next, we analysed on which single statements students in the two courses differed. These were two of the three statements related to Antianthropocentrism, items which stated 'Plants and animals have as much right as humans to exist' and 'Humans were meant to rule over the rest of nature' ($t(99) = 2.640$, $p = .010$ and $t(91) = -2.288$, $p = .024$), and two of the three statements related to the possibility of ecocrisis which were phrased 'Humans are severely abusing the environment' and 'If things continue on their present course, we will soon experience a major ecological disaster' ($t(90) = 2.240$, $p = .028$ and $t(87) = 2.044$, $p = .044$). In addition, the SB students were more likely to agree to the statements 'We are approaching the limit of the number of people the earth can support' (of the 'reality of limits to growth' subscale, $t(91) = 2.356$, $p = .021$) and 'The balance of nature is strong enough to cope with the impacts of modern nations' (of the 'fragility of nature's balance' subscale, $t(88) = -3.067$, $p = .003$).

The subscale of 'possibility of ecocrisis', as well as the two statements in which the students differed in addition, highlight a heightened perception of risk of crisis, limitation and imbalance that characterises the SB students to a greater extent than their OB peers. It is therefore interesting to see how this is reflected in the answers to the statement 'Climate change will negatively impact me during my life time'. Even though the two groups do not differ significantly, the frequency analysis shows that among the SB students, only 29% disagree or are unsure about the negative impact of climate change on themselves as individuals, while in the other course, 52% of the students disagree or unsure.

3.2 Behaviour

The heightened awareness of the threats of unsustainable human behaviour of the SB students could be expected to lead to more environmentally friendly behaviour. This, however, was not the case. The students differed significantly in that the SB students stated to be less likely to travel by plane to go on holidays ($t(98) = -2.205$, $p = .030$), but they were more likely to use a car for short distances ($t(92) = 3.086$,

$p = .003$). Both behaviours might be related to the characteristics of the students within the group (more likely car-owners and exchange students). An interesting difference could nevertheless be found with regard to the statement 'Environmental or social credentials of companies influence my buying decisions' – the SB students agreed to a greater extent to this statement (MD 3,14, SD 0,98) than their peers (MD 2,64, SD 0,78; $t(99) = 2.823$, $p = .006$).

3.3 Personal norms and ascription of responsibility

The same result applies to the views on energy policy and perceptions of responsibility, and personal norms with regard to energy problems and solutions. The only statement to which differences between the two student groups were found was in the statement 'My contribution to the energy problems is negligible'. As expected, the SB students were less likely to agree (MD 2,8; SD 0,88 versus MD 3,3; SD 0,83; $t(99) = -2.906$, $p = .005$). The SB students do not seem to be characterised by a greater sense of responsibility for the energy problem and for performing behaviours related to solving the problem.

3.4 Background characteristics

When comparing all students with regard to difference related to their age, gender and nationality, no distinction can be found for the NEP score, but a few however interesting differences can be observed for some statements:

The students above the age of 23 years were more likely to buy recycling paper ($t(77) = 2.470$, $p = .016$), to support environmental causes ($t(98) = 2.391$, $p = .019$) and to talk to others about energy saving ($t(100) = 2.185$, $p = .031$). Thus, it appears as if the slightly older students, who made up around a third of the group, had a tendency to state that they were more active in engaging in sustainable behaviours than the younger students.

The students that were not of Scandinavian nationality (43% of the sample) were more likely to agree that humans are severely abusing the environment, that the balance of nature is delicate and easily upset and that, if things continue on the present course, ecological disaster will be experienced. They were also more likely to state that they use the backside of paper for printing and that they buy paper made from recycled paper. The only statement to which they did not show favourable views or behaviours was the car use, because they were more likely to state that they use the car for short distances. It appears as if the non-Scandinavian students perceive that humans behave less sustainable, and that thus poses a threat. Regarding paper reuse and re-cycling, they act more environmentally friendly (see table 1).

Table 1: Statements in which Scandinavian and non-Scandinavian students showed significant differences

Statement	Result of t-test
Humans are severely abusing the environment	$t(100) = 2.290, p = .024$
The balance of nature is very delicate and easily upset	$t(97) = 2.086, p = .040$
If things continue on their present course, we will soon experience a major ecological disaster	$t(100) = 2.182, p = .031$
I use the backside of used prints for taking notes	$t(100) = 3.714, p = .000$
I buy paper (e.g. as printing paper or writing pad) made from recycled paper	$t(100) = 2.215, p = .029$
I use a car for going short distances (less than 5 km)	$t(100) = 2.146, p = .034$

With regard to gender, the results confirm the expectation that females tend to have more favourable viewpoints and behaviours with regard to sustainability. The female students, who made up a little over half of the students in the sample, showed higher scores on the Antianthropocentrism subscale of the NEP, and especially disagreed with humans having the right to modify nature, as a statement belonging to this subscale. Interestingly, they also disagreed that humans will learn how nature works in order to control it, as a statement belonging to the rejection of exceptionalism subscale, but overall, they had lower scores on this subscale. The female students were more likely to state that they use the backside of paper for printing, that they eat meatless main dishes, buy organic products and they were more likely to agree to that they feel guilty when wasting energy (see table 2).

Table 2: Statements in which female and male students showed significant differences

Statement	Result of t-test
Antianthropocentrism subscale of the NEP	$t(100) = 2.563, p = .012$
Humans have the right to modify the natural environment to suit their needs	$t(100) = -2.667, p = .009$
Rejection of exceptionalism subscale of the NEP	$t(99) = -3.061, p = .003$
Humans will eventually learn enough about how nature works to be able to control it	$t(100) = -2.661, p = .009$
I use the backside of used prints for taking notes	$t(100) = 4.708, p = .000$
I eat meatless warm dishes	$t(100) = 3.060, p = .003$
I buy certified organic products	$t(100) = 3.148, p = .002$
I feel guilty when I waste energy	$t(100) = 3.090, p = .003$

4. Conclusions

The results confirm that students that through their choice of courses have shown an interest in the topic of sustainability actually differ from their peers in their view on the relation between humans and nature as measured by the NEP. It is thus confirmed what has been expected based on the literature: that individuals interested in sustainability issues are characterised by a more favourable view about the relation between humans and nature.

Looking more closely at the subscales and statements of the NEP in which the student groups differed, it seems as if their motivation to choose the sustainability-related course might be especially rooted in their heightened awareness of the possible threat of the results of unsustainable human behaviour. This seems to suggest that a certain fear and 'avoidance' is the main driver of the interest. However, the question is whether other measures than the NEP might be more helpful in detecting 'approach'-related motivations of the students.

The higher NEP score and greater awareness of negative outcomes of unsustainable human behaviour, however, does not seem to translate into greater environmentally friendly behaviour nor different perceptions of responsibility and personal norms with regard to energy problems and solutions - at least as far as the self-assessed statements are concerned.

A remarkable positive exception among the environmental behaviour statements is the statement 'Environmental or social credentials of companies influence my buying decisions'. It might be interesting to further explore whether the fact that the target group were business students explains why exactly this sustainable behaviour turned out to be the one behaviour in which the sustainability-interested students differed from their peers. It could be hypothesised that business students might be more likely to choose a sustainable action that works via market mechanisms, rewarding sustainable businesses and based on consumption.

The fact that no differences could be found for ascription of responsibility and personal norms, apart from one statement about the own contribution to the energy problems being negligible, might again find an explanation in that both groups of students were business students; business students might think of energy problems and solutions in terms of technology and economic incentives rather than thinking about responsibility, guilt and moral; this assumption however would need further investigation.

The results regarding age, gender and nationality pinpoint some slight differences. The tendency of the older students to show more favourable behaviours is in line with the literature finding that older versus younger students possess more positive environmental attitudes, values, and behaviours (e.g., Borkowski and Ugras, 1998). This might indicate that with increasing age, students possibly develop habits and routines in order to act more sustainably, and maybe also increase their self-

confidence in doing so. It would be interesting to compare this with the answers of students of the same study, but in a later semester, as for example on the master level. Also the results about female and male students are in line with what was expected based on the literature. It is interesting to note that especially eating vegetarian dishes and buying organic products might be considered an action more likely to be conducted by females, due to the link between meat and maleness and the interest in organic food often coupled with health motivations. In general, female students have been shown to score higher on environmental concern and action (e.g., Borkowski and Ugras 1998; Cordano et al. 2003).

Maybe surprisingly to those expecting Scandinavians to be especially environmentally aware, this was not reflected in the students' responses to this survey. On the contrary, non-Scandinavian students reported a significantly higher agreement to some of the NEP items, and also reported being more active with paper re-use and buying recycled paper. An explanation might be found in the fact that the NEP statements in question dealt with human mistreatment of nature and possible threats resulting from this. The higher importance given to environmental issues and awareness in the Scandinavian countries might lead to the perception by the respective students that the environmental degradation and the trade-off between human action and environmental issues are 'under control'. This finding might be interesting to explore further, because it might 'backfire' in the sense that Scandinavian students have less motivation to act sustainably, not being aware of the fact that the actual environmental impact of their countries might still be far from sustainable.

An incident of anecdotal evidence of the thoughts outlined above might be the following: in the sustainability-related course, students were encouraged to test out their foot-print in one of the internet-tools available for this. One exchange student compared her own foot-print for herself in her Eastern European home country and for herself while living in Denmark, and was perplexed that the foot-print in Denmark was considerable higher. She had expected it to be the opposite, arguing that in her home country, 'nobody cares about the environment'; She was not aware that the foot-prints on average are bigger in Denmark due to the higher standards of living.

All in all, it can be concluded that students that voluntarily chose an education or course about sustainability are characterised by more favourable attitudes, but are not necessarily characterised by more environmentally friendly behaviours and perception of responsibility. It is therefore interesting to further explore whether their interest and motivation might increasingly translate into behaviours during their further education. Furthermore, it appears interesting to explore the questions raised in relation to the surprising findings on nationality and the perception of misuse and endangered nature.

In an extension of the study, we therefore plan to analyse changes in the attitudes and behaviours after a full semester of education in the specialty variant on 'sustainability'. We will be incorporating further items on the relation of business and sustainability as well as the education and sustainability, partly based on sources such as Wells et al. (2010) and Parkes and Blewitt (2011). A future extension could

be surveying other business schools, based on the fact that a growing number of business schools deal with sustainability issues on the grounds of the UN-Principles for Responsible Management Education (see Ryan and Tilbury 2011).

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Coherence for responsible living

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A high sense of coherence (SOC), which can be understood as a global positive and active orientation to life leads to a better response to stress and keeps healthy. For the study discussed here, it was postulated that a high SOC leads to a more sustainable consumer behaviour as well. The findings of a study with 174 teenagers in the German town of Leverkusen in 2010 suggest that the SOC, and in particular the SOC-subscale meaningfulness that is a strong belief that things in life are interesting and satisfying, that things are really worth it and that there is always good reason to care about what happens, has an impact on consumption. The main result of this study is that teenagers with a higher SOC display a more deliberate approach towards consumption. The SOC level seems to be a strong predictor of human behaviour. The relation between SOC and consumption leads to the conclusion that education should not only foster knowledge and competencies but also the individual SOC.

Keywords: sense of coherence; SOC; consumer behaviour; adolescents; financial literacy

1. Introduction

The world we live in is driven by money. We have to buy almost everything we need with money we have earned before. Wishes are legion, resources are scarce. Producing as well as consuming products and services regularly means using finite resources. As consumers we should keep this in mind. But we don't. Consumer behaviour is less responsible than it could be. One key to achieving sustainability in a world driven by money is to develop financial literacy so that consumers spend money more responsibly.

The idea behind this pilot study was to investigate the extent to which the individual orientation to life influences consumption-related behaviour. One hypothesis was that an active and positive attitude to life with a strong belief that things will work out all right will lead to a more deliberate consumer behaviour and this will in the end foster a more sustainable lifestyle.

To gain information about people's orientation to life, the salutogenic model by Aaron Antonovsky (1923–1994) was used. Antonovsky coined the term “salutogenic” (salus, Latin for “invincibility”, “well-being”, “happiness”; genesis, Greek for “origin”) for his model to emphasize its distinction from the term “pathogenic”.

Central questions that served as the point of departure for Antonovsky's theoretical and empirical work were: ‘Why do people stay healthy despite so many detrimental influences?’ And: ‘What is special about people who do not get ill despite the most extreme strain?’

Antonovsky, an American-Israeli medical sociologist, introduced this concept to the health sciences and to health care. He criticized the still widespread pathogenic-curative approach and juxtaposed it to a salutogenic orientation. He argued that the question why people stay healthy should have priority over the question of the causes of disease and their risk factors. This concept, which is oriented towards human resources, stands diametrically opposed to the pathogenic model, which is oriented towards human deficits.

Central elements of the salutogenic model are the following three:

- the health/disease continuum
- exposure to stressors and generalized resistance resources (GRR)
- the sense of coherence (SOC).

The picture of a continuum between health and disease visualizes that problems or diseases are omnipresent. No human being is completely healthy. People are never quite balanced; they always live in an imbalance, and the complexity of life permanently creates new imbalances.

Stressors, such as exceptional life events, chronic diseases, everyday nuisances, and physical or biochemical problems are with us throughout our lives. Generalized resistance resources (GRR) offer ways to deal with these stressors by active adaptation, risk reduction and resource development.

On the basis of the generalized resistance resources and the experiences gained by utilizing them, people develop a special set of coping resources called sense of coherence (SOC). SOC is defined as: “a global orientation that expresses the extent to which one has a pervasive, enduring though dynamic feeling of confidence that (1) the stimuli deriving from one's internal and external environments in the course of living are structured, predictable, and explicable; (2) the resources are available to one to meet the demands posed by these stimuli; and (3) these demands are challenges worthy of investment and engagement” (Antonovsky, 1987: 19).

According to Antonovsky's above-mentioned definition, this basic attitude of experiencing the world as coherent and meaningful consists of three components:

1. Comprehensibility - the cognitive component
2. Manageability - the instrumental or behavioural component
3. Meaningfulness - the motivational component

Antonovsky considered meaningfulness to be the most important of these. Without the experience of meaningfulness and without positive expectations of life, the SOC

value will not be high despite even if the other two components are quite pronounced. A person who does not experience meaningfulness will always perceive life as a burden.

To what extent a person succeeds in mastering stress, depends on a cycle of the sum of the generalized resistance resource and their purposeful use on the basis of the Sense of Coherence within a health-disease continuum.

Having described the salutogenic model with its components and the SOC as its central construct, we will now turn to the power of the sense of coherence on health. According to Antonovsky, the following effects of the SOC can be assumed:

1. The SOC can have a direct influence on different systems of the body, for example the central nervous system, the immune system or the hormone system. It also affects thinking processes, called cognitions, which determine whether a situation is perceived as dangerous, safe or welcome.
2. The SOC mobilizes existing resources. Successful implementation of these resources leads to a reduction of tension and thus indirectly affects the physiological systems involved in the processing of stress.
3. People with a distinct SOC are more likely to be in a position to make choices regarding behaviour that explicitly promotes health.

It thus follows that a high SOC value leads to a better response to stress and keeps healthy. As Antonovsky (1987) argued, the positive orientation to life is valid for all areas of life, so it can safely be postulated that a high SOC leads to a more sustainable consumer behaviour as well.

If there is a connection between SOC and consumer behaviour, working on the SOC could help foster responsible behaviour.

2. Literature

The salutogenic construct can be thought of as a broad measure of resilience. Various studies among diverse samples showed a positive and active orientation to life has been linked to positive health-related outcomes (e.g. Fiorentino 1986; Lutgen-dorf et al. 1999; Eriksson and Lindstrom 2007).

Although some evidence suggests that SOC reaches a point of stability in adults around the age of 30 (Kivamaki et al. 2000), little is known about the factors associated with developing and maintaining a high SOC across the lifespan.

This has led researchers to study youth populations to better understand the origins, context and interrelationships of a positive orientation to life (Margalit and Eysenck 1990; Sagy and Antonovsky 2000; Olsson et al. 2006, Honkinen et al. 2006).

More recent research has expanded the understanding of factors associated with the positive orientation to life in adolescent populations. Mattila et al. (2011) explored the associations of a positive orientation to life (SOC) with health behaviour

and social competence among 15-year-old adolescents and found (that) a strong SOC among adolescents (was) associated significantly with lighter use of alcohol, being a non-smoker, better care of oral health and better social competence compared with the others/the rest of the group/aggregate. They concluded that sense of coherence is a useful tool for identifying adolescents in need of extra support and motivation for their health behaviour.

In a study among adolescents who were 13–18 years of age, Moksnes et al. (2011) investigated the association between domain-specific stress, positive orientation to life (measured by SOC), and subjective health complaints (SHC), as well as the possible moderation effect of the SOC on the relationship between stress and SHC. The results also lend support to the view that promoting salutogenic factors has positive implications as far as subjective health in adolescents is concerned.

Edbom et al. (2010) could show that a high sense of coherence in adolescence is a protective factor in the longitudinal development of Attention Deficit Hyperactivity Disorder (ADHD) symptoms.

Evans et al. (2010) analyzed a group of 8th- and 10th-grade students (N=1619), reporting on their risk and protection behaviour. Analyses revealed that protective factors present in multiple domains were related to a higher SOC, while risk factors present at multiple domains were related to lower SOC regardless of gender.

The studies presented above show that most research is done in the fields of health promotion, prevention, psychotherapy and rehabilitation. Socioeconomic studies are rare. One exception is the study by Larsson and Kallenberg (1996). Their research was concerned with the relationship between the SOC and different measures of social support. In their representative population sample they found a relationship between SOC and number of friends. The higher a person's SOC value, the more friends he or she had.

Keeping all this in mind, the study presented in the following concentrates on socioeconomic issues. The main research question is: Is there a relation between the SOC value and the consumer behaviour?

3. Study on the relation between the SOC value and the consumer behaviour

This chapter deals with the empirical model and the measures, introduces into the sample and includes findings, a conclusion and methodological considerations.

3.1 Empirical model and measures

Two primary measures were used in the analysis: sense of coherence and consumer behaviour of the adolescents. Most of the items were summarized into cumulative indexes.

Scale reliability was ensured by Cronbach's Alpha. Differences according to the number of semi-quantitative answers between the groups were determined using means of the Mann-Whitney-Test (two independent sub-samples) or the Kruskal-Wallis-Test (more than two independent sub-samples). For nominal scale level, data frequencies were calculated and differences between sub-groups were calculated with a Chi2-Test. The levels of significance used are $p > 0.05$ for non-significant differences, $p < 0.05$ for significant (*), $p < 0.01$ for very significant (**), and $p < 0.001$ for highly significant (***) differences.

To analyze associations between the variables, Spearman's correlation coefficient (r), a non-parametric measure of correlation, was used. It provides information about the direction and strength of the correlation between two variables with ordinal scaling level or non-normal distributed variables, respectively. It uses the statistic r , which falls between -1 and +1. The bivariate correlations procedure computes the pairwise association for a set of variables and displays the results in a matrix. Strength of correlation: Usually $r < 0.5$ means only a weak correlation, between $r > 0.5$ and $r < 0.7$ a middle correlation is found, and $r > 0.7$ shows a strong correlation. However correlation coefficients above $r = .20$ in studies on human behaviour can be considered good.

As stated above, the analysis will focus on the link between perceived behavioural control and actual behaviour. A next step that is still in the planning stage and will be published later will integrate these variables into the model of the theory of planned behaviour. Ajzen (1991) held that the more favorable the attitude and the subjective norm, and the greater the perceived control, the stronger should the person's intention to perform the behaviour in question be. He also saw a direct link between the perceived behavioural control and actual behaviour. This path is the subject of the study here presented.

The literature shows different models to operationalize perceived behavioural control. Ajzen (2002) suggests that perceived behavioural control is the overarching, superordinate construct comprised of two lower-level components: self-efficacy (Bandura 1997) and controllability (Armitage and Conner 1999). This perspective of the control component in the theory of planned behaviour implies that measures of perceived behavioural control should contain items that assess self-efficacy as well as controllability. Sparks et al. (1997) reported the highest internal consistency for a large set of mixed items. To follow this critique and with the strong belief that the SOC model best represents self-efficacy and controllability the SOC-scale was chosen to measure perceived behavioural control (Table 1).

Table 1: The items of the SOC-L9-scale, its subscales and the attribution of the items to the components “self-efficacy” and “controllability”

Question	SOC subscale	Attribution to “self-efficacy”	Attribution to “controllability”
Do you have the feeling that you are in an unfamiliar situation and don't know what to do?	Comprehensibility	x	
Do you have very mixed up feelings and ideas?	Comprehensibility	x	
When you think about your life, you very often ...	Meaningfulness	x	
Doing the things you do every day is: ...	Meaningfulness	x	
How often do you have the feeling that there's little meaning in the things you do in your daily life?	Meaningfulness	x	
Do you anticipate that your personal life in the future will be: ...	Meaningfulness		x
When you do something that gives you a good feeling: ...	Manageability		x
Many people – even those with a strong character – sometimes feel like sad sacks (losers) in certain situations. How often have you felt this way in the past?	Manageability		x
When you think of difficulties you are likely to face in important aspects of your life, do you have the feeling that: ...	Manageability		x

3.2 Sample and data

Initially a pre-test was conducted to generate valid statement batteries and to ensure content validity. For this purpose, the questionnaire was tested among a group of 35 adolescents. No significant problems occurred during the pre-test; only a few changes had to be made to ensure better understanding. The adolescents were able to complete the questionnaire in about half an hour.

Data for this study were collected via in-school surveys with 174 9th-grade students in a school in the German town of Leverkusen in 2010. The study conducted is a quantitative cross-section analysis with written permission by the parents of the students. The students responded to a 143-item survey designed to assess individual, family, consumer behaviour and resources in their everyday lives.

As a first result, nearly 100 per cent of the students completed the survey. The sample consisted to 52.4 per cent of male and to 47.6 per cent of female students (Table 2). 21.6 per cent did not have family roots in Germany. Most of the participants were aged 15. A high number of them (90 per cent) had a cell phone. Only one third of the teenagers had their own bank account (32.8 per cent) and 12.1 per cent did not receive any pocket money. Those who worked for (additional) money got a median of 62.5 Euros a month. Two thirds of those answering the question said that their money lasted at least until the next time they got money.

Table 2: Descriptive statistics of the sample

	N		mean	standard deviation	median	minimum	maximum
	number	missing					
Sex	166	8	1.52	.039	2.00	1	2
Age	164	10	15.45	.063	15.0	14	19
In possession of a cell phone	160	14	1.03	.012	1.00	1	2
Own account	138	36	1.59	.042	2.00	1	2
No pocket money	34	140	1.38	.085	1.00	1	2
Money from jobs	24	150	133.96	32.70	62.50	15	600
Money lasts for one month	148	26	2.15	.062	2.00	1	3
Immigrant background	167	7	.22	.032	.00	0	1

The consumer behaviour of the adolescents, i.e. the dependent variable, was assessed by means of five statements. Each of these was to be rated on a 5-point continuum from 1 (strongly agree) to 5 (strongly disagree). If a respondent felt differently, they had to rate the number which best expressed their feelings between the two extremes. The statements were: "I have no debts.", "I pay back my debts always in time.", "I often buy only the things absolutely necessary for me." "I know what I need." and "The most needed goods I buy first.". All items had to be recoded before summing them up to a scale.

To assure reliability, questions with low reliability were eliminated from the set. The developed scale had the following three questions: "I often buy only the things that are absolutely necessary to me." "I know what I need." and "I first buy the things I need most." and the reliability coefficient for the consumer behaviour-scale was .76. The mean scale value for respondents was 11.94 with a standard deviation of 2.25.

The criterion and independent variable, sense of coherence, was assessed by means of nine valid items that were developed by Singer & Brähler (2007) based on Antonovsky's (1987) 29-item measure of sense of coherence (Table 3). Each item

was designed to tap into one of the three components of this concept: comprehensibility, manageability, and meaningfulness. The items were formulated as questions or statements to be rated on a 7-point Likert-scale in German from 1 to 7. If the words under 1 were right for the respondent, they had to circle 1; if the words under 7 were right for a respondent, they had to circle 7. If a respondent felt differently, they had to circle the number which best expressed their feelings.

After four items were recoded to range from "not like me" to "a lot like me," items were summed to range from low to high sense of coherence.

The reliability coefficient for the SOC-scale was .75 and the mean scale value for respondents was 42.66 with a standard deviation of 8.33. Table 3 shows the details of the SOC scale.

Table 3: Statistical information upon the SOC-scale

Scale	Number of Items	Range	M	SD	Al-pha	rtt	Intercorrelation		
							SOC Co*	SOC Ma*	SOC Me*
SOC-L9	9	19-63	42.66	8.33	.756	.703	.31	.37	.58

*Abbreviation:

Co = subscale comprehensibility

Ma = subscale manageability

Me = subscale meaningfulness

The relatively low intercorrelation between the subscales is a very strong indicator for the independence of the scales as well as the model. In this point the study's results differ most from the national German Norm study by Singer and Brähler (2007). The low mean is a sign for the youth of the sample. The mean increases with lifespan and life experience. Disappointing to a certain extent is the reliability of the construct. It is relatively high but not excellent. This could again be due to the age of the sample.

3.3 Findings and Conclusion

The results of the study suggest that the orientation to life measured by the SOC not only predicts positive health outcomes, but also has an important impact on teenage consumption. In particular the SOC-component meaningfulness: "a belief that things in life are interesting and a source of satisfaction, that things are really worth it and that there is good reason or purpose to care about what happens" (Antonovsky, 1987:18), has an impact on their consumer behaviour. The main finding of this study is that teenagers with a higher SOC-value have a more deliberate consumer behaviour, with a significant correlation coefficient of $r = .248^{**}$.

Nearly every second student (49.4%; often and strongly agree) indicated that they often buy only the things absolutely necessary for them. Three-quarters of the participants (75.8%; often and strongly agree) answered that they knew what they needed and another 79.5% (often and strongly agree) reported that they first bought the goods they needed most. So in all cases the majority of the adolescents felt they were smart consumers.

Analyzing the data, it was found that there are only significant and reasonable positive correlations between the SOC subscale meaningfulness and the items showing the consumer behaviour. The findings point out the central position of the subscale. Of importance is that they deny having debts and if they have to go into debt that they always pay it back on time (Table 4).

In addition, questions related to health behaviour were asked. The answers showed a high and significant correlation between SOC and health related behaviour (Table 4), as it was also found in the literature described above.

Table 4: Coefficient of correlation between the Sense of coherence subscale meaningfulness and selected variables showing consumer behaviour

Aspect of consumer behaviour		SOC subscale meaningfulness
I don't owe anyone money.	coefficient of correlation	.213**
	N	155
I always pay back my debts on time.	coefficient of correlation	.234**
	N	151
I know what I need.	coefficient of correlation	.261**
	N	152
I often buy only the things that are absolutely necessary to me.	coefficient of correlation	.135 ^{ns}
	N	153
I first buy the things I need most.	coefficient of correlation	.256**
	N	154
I eat healthy.	coefficient of correlation	.221**
	N	152
I don't smoke.	coefficient of correlation	.329**
	N	154
I don't drink alcohol.	coefficient of correlation	.228**
	N	152
I go to the gym at least once a week.	coefficient of correlation	.245**
	N	154

The correlation coefficient between the sense of coherence and the consumer index is higher and also very significant for boys (.382**). This leads to the result that the consumption-related behaviour of teenage boys is more considerate than that of

girls. This finding is in accordance with the literature showing women's consumption-related behaviour to be more often affected by emotions.

The SOC level seems to be a strong predictor of human behaviour – the higher the SOC, and the higher the component meaningfulness within it, the more responsible the behaviour. The presented close relation between SOC and consumer behaviour in the second life decade leads to the conclusion that education should not only foster knowledge and competencies but also the individual SOC.

As a result, the sense of coherence can be a useful tool for:

1. identifying adolescents in need of extra support and motivation for their consumer behaviour.
2. changes in life competence that can be drawn from changes in the measurable sense of coherence. Thus, there are new impulses for empirical research (Normann 2010).
3. lessons at school that should consequently focus on fostering a sense of coherence by working on the students' sense of comprehensibility, sense of manageability and sense of meaningfulness.

3.4 Methodological considerations

First, the group size was very small and only taken from one school, making it difficult to transfer the conclusions to teenagers in general. Second, the instrument was established for adults. Although Honkinen et al. (2006) had good experiences using a 13-item scale with school kids, the question remains whether, lacking life experience, the teenagers (fully) understood what was meant by the questions.

Nevertheless the findings and limitations of this pilot study have illustrated the importance of the Sense of coherence with respect to the consumer behaviour of teenagers and have raised a number of issues for future investigation. A representative study applying the presented instruments would be welcome.

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Animal welfare education contributes to responsible living

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As all societies move towards more intensive ways of farming, animal welfare has a huge potential to impact what and how we consume. This in turn has a major effect not only on the welfare of individual animals, but as livestock production is one of the dominant contributors to greenhouse gas emissions, also upon planetary ecology. Animal welfare education introduces students to concepts of animal welfare via a variety of educational tools. Central to this are the ideas of critical and systems thinking, which allow students to reevaluate their relationship to animals and consequently many of their patterns of animal-related consumption. If developed and evaluated in a robust fashion, it is postulated that animal welfare education can be a part of a combined effort to reveal the true cost of today's consumption habits, helping society move towards a more ecologically benign way of living.

Keywords: animal, welfare, education, consumption

1. Introduction

As a large conversation, we would restore to the subject of education the importance that every great philosopher... has assigned to it. Education, as they knew, had to do with the timeless question of how we are to live. (Orr, 2005, p.xi)

This paper examines the role that animal welfare education can play in creating pathways beyond consumption and towards 'responsible living', moving through the three central questions posed by the educational stream of this conference: How can education deal with the controversial aspects of moving beyond consumption? What skills will teachers need to empower tomorrow's consumers to look beyond consumption? How is it possible to evaluate the success of education for responsible living?

In order to address these questions from a robust position, a basic picture of what the field of animal welfare (AW) currently constitutes will be set out, along with how this feeds into what animal welfare education (AWE) and humane education

(HE) are in their current incarnations, and the sometimes complex relationship that exists between the two.

1.1 What is Animal Welfare?

Across history, humans' relationship to animals has been one of both concern and indifference. The field of animal welfare explores this relationship by having at its heart a concern with ensuring that animals are recognized as sentient creatures which are capable both of suffering and fulfillment, thereby placing a duty of responsibility to those animals that are under human care. The reasons behind this responsibility or obligation are not singular in their cause, arising from different perceptions of animals: as having an intrinsic value; as resources; as sentient beings; as endangered; as protected by ethical codes or laws (Jamieson, et al., 2012).

Though the field of animal welfare has no standardized tenets, there are three key criteria that are generally considered necessary for animal welfare:

1. that the animal has good health i.e. they are functioning well.
2. that they have no pain i.e. they are feeling well.
3. that they are able to perform their full suite of natural behaviours e.g. grazing, dust-bathing, nest building etc.

(Taken from Concepts in Animal Welfare, WSPA, 2007a)

The field of animal welfare sits at the intersection of all three of these points, and continually monitors the extent to which they are being fulfilled. These three areas form an interlinked structure, with each affecting and feeding into the other.

1.2 The Ecological Impact of Livestock

In addition to improving welfare because of a human duty of care towards animals, animal welfare is part of another complex series of interactions which rests in the ecological implications of their use in agriculture, which has come to the fore because of the rise of intensive farming techniques and livestock's established link to the manifestation of anthropogenic climate change.

The global demand for meat, eggs and dairy is predicted to double between 2000 and 2050, and intensive farming has generally been seen as the only way to effectively satisfy this need (WSPA, 2011). Intensive farming is characterized by measures to increase the outputs or yield per animal, be it milk, muscle mass or offspring, while minimizing the inputs (food, water, energy) that go into their production. There are various means to achieve this, but some of the established methods are: by indoor or feedlot housing, concentrate feeding (using cereals and oilseeds such as soya), the concentration or crowding of animals i.e. using less space per an-

imal, and the selective breeding of particular animals with high yield traits or a switch to existing commercial high input breeds (WSPA, 2011).

Intensive farming systems might at first glance seem efficient in that they produce high yields in relatively short times, however they externalize many of their true ecological and economic costs, a fact which has only been exacerbated by developed countries subsidization of feed crops and energy production (WSPA, 2011). Intensive farming systems also have a tendency to increase the distance from farm to fork, creating physical and conceptual barriers between consumers and the consumed (Stone and Barlow, 2005). In this context it is not hard to imagine that animals can become more easily become decontextualized from sentient creatures to simply sources of nutrition.

The intensification of farming in order to fulfill increasing demands for animal products while at the same time lowering the price of animal products at the point of purchase, will also generally put further pressure on each individual animal to produce. In this scenario its easy to see that one or several of the key criteria for welfare can begin to suffer: health – as overcrowded conditions necessitate the sub-therapeutic and consistent use of anti-biotics; pain – as animals that need to be processed quickly undergo procedures without the use of anesthesia, or are required to travel long distances before they are slaughtered; the ability to express natural behaviour – as animals are kept in barren conditions without stimulation. All of this leads to a state in which the intensification and growth of livestock production can often lead to lower standards of welfare for the animals involved, along with higher environmental costs for the planet. To put this last into some sort of ecological perspective:

- Over 70% of the land currently used by humans on the planet is for livestock production, and every year this land produces 61 billion farm animals, with the seas and oceans contributing at least a trillion more.
- 33% of currently available arable land is used to produce feed for animals.
- 7% of available global water is used for livestock production.
- 75% of new diseases over the last decade originated from animals or animal products, with industrialized systems having been shown to increase the risk of further outbreaks (The above figures are all taken from a research report by the World Society for the Protection of Animals (WSPA), 2011, *Why livestock and humane, sustainable agriculture matter at Rio +20*).
- A recent study concluded that via the processes of forest clearing for pasture or feed crops, animal waste, livestock digestion and respiration, the total effect of raising livestock in terms of greenhouse gas (GHG) production worked out at 51% of the global emissions total (World Watch, 2009).

While it is not established that high welfare extensive systems of farming always have a lower ecological impact, the evidence base is growing. For example, pasture based rather than feed lot systems for raising cattle have been shown to reduce greenhouse gas emissions through the sequestration of carbon into grasslands (WSPA, 2011), while a Swedish study (Wirsenius, Azar, and Berndes, 2010)

showed that reducing food waste along with cutting meat consumption in high income countries by 25%, would be more effective in reducing greenhouse gas emissions than intensifying livestock production. All of this means that when one is considering the intensification of livestock production from a holistic perspective, the impacts upon sustainability and welfare are considerable, and a large part of these consequences originate with the current unsustainable consumptive patterns of high-income societies.

2. How can education deal with the controversial aspects of moving beyond consumption?

Though there are an infinite number of contact points between education and consumption, there has been up to this point a relatively small amount of research examining the relationship between animal welfare and consumption habits. At the meta level however, consumption practices have had a significant amount of attention in terms of their calculated effect on the environment. This has resulted in the 'sustainable consumption' movement, which aims to minimize the environmental impact of these habits by redirecting our consumption pathways along more ecologically benign routes. At the smaller scale, cultural studies have begun to seriously examine 'shopping as practice' as a window in to how our daily lives relate to consumption. Animal welfare education has the potential to influence both of these consumption pathways, both via the rationalization of choice, and in how people attach value to the act of shopping.

2.1 Sustainable consumption and animal welfare

There is an explicit recognition that current levels of consumption in high-income countries are both unsustainable in the amount of resources that are required to fulfill them and the consequent damage they do to the Earth's ecological systems (WSPA, 2011). In this context, changing such patterns of consumption has become a core paradigm of the sustainable development movement and has led to the development of 'sustainable consumption' as a possible solution. This solution is based on the idea that if we consume 'better' (but not necessarily less), we can achieve some form of resource balance in our societies. In this way, sustainable consumption was given life by the same process of rationalization that placed sustainable development at the head of the environmental movement at the end of the 20th Century. The United Nations Department of Economic and Social Affairs (UN DESA) defined sustainable consumption as:

'The use of goods and services that respond to basic needs and bring a better quality of life, whilst minimizing the use of natural resources, toxic materials and emissions of waste and

pollutants over the life cycle, so as not to jeopardize the needs of future generations'. (IISD/United Nations Department of Economic and Social Affairs, 1999: 1]. In: Competing Discourses of Sustainable Consumption p.96)

This 'rationalization of lifestyle practices' towards more sustainable behaviour is based on a deficit model of behaviour change: as more scientific knowledge is produced regarding the effects of consumption, this will filter down into a more informed market place and set of consumers. These citizens will then fulfill their most important role as 'citizen-consumers', and will then rationally make more ecologically responsible decisions, leading to a more sustainable society. In this context, if individuals truly care about the environment, its most powerful manifestation will be expressed through acts of consumption. However, as will be noted in the next section, such behaviour patterns in the context of consumption and shopping, although robust, are never that simple.

Research has shown that the shopping patterns which are established early on in an individual are often remarkably resilient and can be carried forward through much of their lives. Young people are therefore often viewed by the marketing industry as simply 'consumers of the future' i.e. prime targets to co-opt into brand loyalties or particular consumer behaviours, making them highly valuable and highly influential. What this means in terms of animal welfare is that:

.... the consumer's purchases of animal products may substantially impact on welfare standards. Though children may not perceive that they possess immediate consumer power, they store knowledge for later use and form their ideas (including prejudices) early in life. (Jamieson et al., 2012, p.65)

If this is the case, then while consumption patterns can be altered by a range of forces, such as marketing, legislation, the supply and demand of goods, and price, the future purchasing power of the young is one way in which AWE could potentially have an enormous impact on the welfare of animals. Before examining the detail of AWE and explaining its ties to current consumption practices, it should be recognized that AWE itself sits within a broader pedagogy known as humane education (HE); exploring this context a little further will help to show the way in which education programs can hope to influence a societal shift towards a culture in which consumption is no longer a defining and consistently ecologically punitive activity.

2.2 Humane education

Human Education's ethos has always been a broad one; beginning in the late 19th Century various civil society groups in the USA and Europe began to focus on issues such as empathy, justice, kindness and respect, via the lens of the human-animal relationship. The definition of what exactly HE is has shifted over the years, though its overall mission could be viewed as:

The practice and reinforcement of kindness, of care and compassion towards animals, through formal and non-formal educational processes... having a range of positive spin-offs in terms of pro-social attitudes towards people of a different gender, ethnic group, race, culture or nation. (Selby, 1995, p.3)

The assumption being that if empathy could be promoted between humans and non-human animals then, it would simply flow out towards other humans to create a more harmonious world. The human-animal relationship has also always been seen as a natural way to engage young people in challenging subjects.

On the basis of 'starting where the shoe hurts', an exploration of animal welfare and rights issues may be the entry point to a wider environmental consciousness for many young people. (Selby, 1995, p.15)

In this way, promoting positive relationships with animals was seen as the perfect vector for increasing compassion and kindness throughout society. As HE continued to evolve it began to form a dynamic though not always harmonious relationship with what would now be called environmental education (EE) or ecological literacy, while at the same time expanding to form links with both critical thinking and reflective pedagogical practices.

In its most contemporary version, the Institute of Humane Education defines HE as having four primary elements:

1. Providing accurate information (so we have the knowledge to face challenges)
2. Fostering the 3C's: curiosity, creativity, and critical thinking (so we have the tools to meet challenges)
3. Instilling the 3R's: reverence, respect, and responsibility (so we have the motivation to confront challenges)
4. Offering positive choices and tools for problem solving (so we will be able to solve challenges)

(Taken from: Institute for Humane Education, 2012).

HE is therefore an umbrella term, representing not only many aspects of AWE and EE, but making 'living ethically, sustainably, and peaceably on this planet the very purpose of education' (Institute for Humane Education, 2012).

Though HE has come in for criticism for the fact that it does not adhere to any one particular educational theory, that characteristic allows HE an adaptability in its pedagogical systems, often co-opting established frameworks to deliver its programs. Taking account of this flexibility, there are still seen to be four key mechanisms for the delivery of HE:

1. Formal humane education – takes place in schools and colleges.
2. Formal training for different groups who work with animals e.g. slaughter personnel.
3. Informal education – talks, publications, companion animal groups.
4. Public awareness campaigns – for example, anti-fur campaigns in the media.

(Taken from: Concepts in Animal Welfare, WSPA, 2007)

Though animal welfare may have a number of links with some of the knowledge and values that HE promotes, AWE is distinct enough in its history that it has developed a very specific pedagogical identity and knowledge base of its own.

2.3 Where does Animal Welfare Education fit?

In a similar fashion to HE, the delivery of animal welfare education (AWE), adapts to the established educational practices already in place. That said, AWE programs often rely on basic theories of behaviour change which would have traditionally stemmed from the so-called deficit behaviour model in which the current undesired behaviour stems from a lack of knowledge, and the correct response is therefore assumed to originate from filling that knowledge vacuum with the appropriate information. Consequently, that education will lead to a change in knowledge and attitude, producing a more positive range of human behaviour which will then lead to better welfare for animals (Jamieson et al., 2012).

Though such deficit models still exist, more recent examples of behaviour change theory have complicated the assumed linearity of causation. For example, those models based around pro-social paradigms recognize the effect of interactions such as altruism and empathy in significantly shaping people's behaviour, while contemporary sociological models have examined the combined influence of attitudes and values, alongside the barriers and benefits associated with particular behaviour patterns.

Whatever methods are employed though, the end goal is to produce students who will have a greater knowledge about animal welfare and will then act in a more positive way towards the animals they encounter in whatever context that may be, be it as food, companions or working partners.

2.4 Consumption – the gap between values and practice

The issues facing the intersecting points of welfare and consumption are wide ranging, from the amount of meat that is being consumed, to the way that meat was raised i.e. organic, free-range, intensive etc, to the transport involved in the slaughter process, all the way to the packaging wrapped around each animal product. Thus far, while increases or decreases in animal welfare knowledge have shown correlating changes in behaviour, any causative links are yet to be fully investigated (Jamieson et al., 2012; Toma, Kupiec-Teahan, Stott, Revoredo-Giha, 2011). Consequently, the most interesting question that AWE itself faces in the consumption debate is this: a range of studies into sustainable consumption, the promotion of positive environmental behaviours, and the consumption of animal products, have found that the appropriate knowledge does often not equate to a symmetrical behav-

behaviour change (Jamieson, et al. 2012). Therefore, even if AWE programs manage to shift attitudes in people to become more in line with sustainable or higher welfare concepts, these values are often not expressed when that same individual comes to make purchases; the idea that if a deficit in knowledge is filled, the appropriate behaviour will simply follow, has again been shown to be far too linear and simplistic. When we reflect upon where we are as a society in environmental terms, this scenario actually seems rather familiar: there is no shortage of easily digestible information backed by robust science regarding climate change, such that no one could argue that there is an information deficit, yet the struggle to convince people to behave in ways which would mitigate the harmful effects of global warming continues unabated.

There has also been a good deal of information about the impact of raising livestock for food on the environment as well as the benefits of organic and low intensity farming on the 'quality' of produce, yet a recent study (see Tobler, Visschers, and Siegrist, 2011) showed that consumers in Switzerland felt that product packaging was still the most important aspect when it came to the environmental impact of food purchases and that reducing meat consumption or eating organic fruits and vegetables would have little environmental impact. In a more striking example, a study into sustainable consumption practices in the UK found that those already predisposed to act sustainably were actively put off by campaigns that advocated making positive environmental changes in their lifestyle (Hobson, K., 2002). From this, we can see that simply increasing knowledge or changing attitudes is not enough.

We are already aware that behaviour change theories have recognized the limits of simple deficit models, becoming more subtle and complex over time; as a result they are beginning to pry apart the ways in which values, knowledge and attitudes interact. However, the particular complexity with consumption lies in the fact that shopping as an act is in and of itself a complex expression of values and beliefs, which has only recently begun to be investigated in the context of a rising ecological and animal welfare consciousness. For example, in *Shopping, Space and Practice* (Gregson, Crewe, and Brooks, 2002), shopping is:

'... represented as expressive of, constitutive of, and a manifestation of key social relations, of family, class, ethnicity, and gender...' (Gregson, Crewe, and Brooks, 2002, p.598)

This added layer of behavioural complexity means that any assumptions about influencing consumption patterns away from those embedded in high-income cultures is even more of a challenging task. Looking at the study mentioned earlier (see Hobson, 2002) into sustainable consumption practices in the UK, which showed that those most open to making positive changes were actually actively put off doing so by traditional social marketing techniques, highlights the potential negative impacts that can occur. Recent work done by the social marketing group Common Cause (2011) in the UK, has coined this effect as 'collateral damage', in that by engaging in the very same methodologies which caused the problem i.e. a rationalization of the citizen-consumer as a dehumanized actor, a tension is created between

the intended values of the program and the tools with which it works, thus causing the opposite reaction from the one originally intended.

So, when there seems to be a gap between the values people express and the behaviours they display, how can AWE programs have any meaningful effect? Current research suggests that we have to at least start the process of revealing the values embedded in consumption pathways before we can plan out the appropriate action - a process that has already begun. AWE contributes directly to this by disrupting the simple notions of the human as a rational and passive consumer of animals, and asks its students to criticize, investigate and reflect upon the human-non human animal relationship. This empowers them in thought, and allows them to be more 'citizen as solution makers' rather than merely 'consumers of the future'. In this way, the pathway towards sustainable societies has:

.... little to do with rationalizing consumption practices or with exercising their alleged citizen-consumer power. Rather, it is about creating 'spaces of hope'... for a fairer future... (Hobson, K., 2002, p.115)

Such 'spaces of hope' have the potential to be created in ecologically minded educational initiatives, allowing students to determine the location of both themselves and animals in the web of consumption. But which kind of educational skills and tools allow us to create such discursive and disruptive spaces?

3. What skills do teachers need to empower tomorrow's consumers to look beyond consumption?

The skills required by teachers to look beyond the horizon of contemporary consumption practices are the very same as those required by their students: the ability to think critically, to be self-reflective and mindful, to be ecologically literate, to empathize with non-human animals, to identify problems and triangulate upon solutions by using a spectrum of disciplines, to hold compassion, respect, and cooperation in the highest regard. If we break some of these skills down a little more we can see more clearly how they relate directly to the prospect of moving beyond our current culture of consumption, to a society which values animals and the environment.

3.1 Ecological literacy

To become ecologically literate is a process of awareness. As Fritjof Capra puts it, we become aware of:

.... how we ourselves are part of the web of life, and over time the experience of ecology in nature gives us a sense of place. We become aware of how we are embedded in an

ecosystem; in a landscape with a particular flora and fauna; in a particular social system and culture. (Capra, F., 2005, p. xiv)

The central thesis behind this process is that students and teachers alike will form intellectual and emotional bonds to a local and global ecology that allows them to transform the current unsustainable systems into processes that work with nature, something that current ecologically untethered thinking cannot. However, if the dominant education models have produced generations of people who have created the consumption pathways, and hence many of the ecological problems we see today, then one cannot expect that very same system to produce any meaningful solutions. Ecological literacy therefore suggests that the very purpose and process of education has to be radically remodeled in order to produce individuals and societies who are able to produce such solutions. In order to do that ecological literacy has co-opted two key intellectual tools: systems thinking and critical thinking.

3.2 Thinking systems

Many pedagogic models in use today focus on providing both a problem and then an established solution in order to highlight best practice examples of the linear process of cause and effect. Critical thinking allows both teachers and students to challenge business-as-usual approaches to knowledge and behaviour formation, which in turn creates robust frameworks for establishing new learning spaces – those very 'spaces of hope' mentioned earlier. If we are to move towards a post-consumer centric society which respects animals as sentient beings then such spaces are vital in allowing ecologically creative solutions to flourish. The process of systems thinking dovetails with this in that it recognizes that ecological systems are non-linear in their processes and that the most appropriate intellectual framework to reflect this is a dynamic, interconnected network (Capra, F., 1997, Capra, F., 2005, Selby, 1995). It visualizes cyclical connections rather than simple cause and effect changes, and tries to understand the relationship between as many interconnected parts as possible. When critical and systems thinking are combined, our relationship to non-human animals has no choice but to be rethought and realigned in ways that hopefully reflect a more ecologically compassionate relationship to the world.

3.3 Skills and values

So how do all sets of skills then go on to influence our relationship with consumption? We can posit that a critical and systems thinking mind which is embedded in an ecologically literate framework would see consumption practices quite differently from one produced by many of the current educational systems present in high-income cultures. As it is today, consumption in these societies is less often about

need than desire, an individual expression of character via the role of the consumer-citizen. The skills described above have the potential to help decouple the embedded values present in our consumption practices, thus helping to reveal their true ecological costs. If such realizations occur, AWE's next role is to then empower students to create viable solutions that meet the goals of animal welfare.

4. How to evaluate the success of education for responsible living?

Measuring the outcomes of educational programs is both vitally important and notoriously difficult. The key aspect to any robust measurement and evaluation strategy is to be able to identify educational outcomes which are measurable.

In some cases one is able to measure the direct effect of an educational program by the welfare status of any affected animals (animal based outcomes), however that is often not possible, and therefore human indicators of attitude and intended behaviour need to be used in the mean time (Jamieson et al., 2012). Measures of attitude, empathy, pro-social behaviour towards animals, along with particular spheres of knowledge can all be measured using a variety of established research tools e.g. attitudinal questionnaires, semi-structured interviews etc.

In the case of AWE what we are actually concerned with is whether the programs have a positive effect on the student's behaviour over their lifetime – to date however, there have been no longitudinal studies that have addressed this question, and therefore studies into the effects of AWE programs are still at a very early stage, with the results being somewhat inconclusive. For example, research has found that increases in knowledge do not necessarily correlate to a shift in attitude, and nor do any perceived increases in empathy towards human or non-human animals always result in more positive behaviour towards other animals (Jamieson et al., 2012). On the other hand, there have also been repeated and measurable positive effects in relation to animal welfare after educational programs were introduced for groups of adults who work with animals (Jamieson et al. 2012).

A best practice example of an evaluation of outcomes over a shorter time scale was an AWE program called 'Respect for All Forms of Life' introduced into Costa Rican primary schools in 1990. In a two year evaluation, it was found that children who participated in the program showed significantly more humane responses to standardized questions compared with a control group who did not have access to the program, and this effect was still in evidence three months later in the post-test evaluation (WSPA, 2007).

Though the links between knowledge, attitude and behaviour are complex, especially over long time scales, one area which may shed some light on the specific relationship between empathy and behaviour are the long term results of research into the links between animal abuse and interpersonal violence. Though there is a huge amount of debate around this topic, what has been established is that there is a

strong link between the occurrence of animal abuse and inter-human violence i.e. adults involved in interpersonal violence often have a concurrent history of animal abuse. Perhaps more interestingly, a recent piece of research (see Flynn, 2011) looked at people who are involved in what was termed 'institutionalized animal abuse' i.e. those employed in slaughterhouses. The study found that the crime rate in small American communities with slaughterhouses was double that of those without slaughterhouses. The final and most contentious theory in this field, known as the graduation hypothesis, is the idea that animal abuse in childhood has a direct and causative link to violence in later life. In a recent study, violent criminals in a Florida prison were found to have been four times more likely than non-violent ones to have committed childhood animal cruelty (Flynn, 2011). However, with both the research into slaughterhouses and the graduation hypothesis, any causative links are as yet unestablished and still very much open for debate. What they do present is a compelling example of the potential of empathy towards sentient beings to influence behaviour choices throughout our lives. If in such cases levels of empathy towards animals as young people can help to predict future patterns of behaviour towards humans as well as animals later in life, it is not such a stretch to begin to see that the human-animal relationship could also have profound effects on how one views oneself in relation to society and its embedded cultural practices.

5. Discussion

It should be clear that the relationship between animal welfare education and consumption is both extremely complicated and of the utmost importance. If one of our key relationships with animals e.g. the production of livestock, has huge welfare and environmental implications due to the intensification of farming and its contribution to greenhouse gas production, then that connection alone shows us that how we evolve this relationship could be one of the most important ecological decisions humanity has to make.

Just as the deficit models of education and consumption have shown to be over simplistic and counter-productive, if we only base animal welfare education on the scientific rationalization of our decision making processes e.g. what we should and should not eat being based on how much it contributes to global warming, then once again we may have missed a more robust and long lasting path towards sustainable and positive change. Of course, part of AWE *is* to provide accurate information so people are able to make wise decisions that lessen the suffering of animals around the world. However, if AWE is to make a really profound effect to our relationship with animals, we have to allow it to create those 'spaces of hope' – those areas that allow critical and self-reflective thinking practices to view the human-animal relationship and our practices of consumption as part of an interconnected system. Only in this way can new models which move beyond traditional

notions of consumption and respect the intrinsic value of every animal, contribute to answering that question of 'how we are to live'.

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Water responsible life and education

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E-CONS NETWORK — Spain

Droughts, floods, lack of potable water, waste, disease. Water is abundant and scarce good, necessary and devastating at the same time. How to act responsibly to this resource of nature? What can teachers of different educational levels to include in their teaching such subjects, is it really possible to educate through play and creative research? I will prove that we can act in the classroom, it is possible to educate and instruct, learning play. The article presents a multimedia teaching case, which includes several useful resources to develop a practical and interactive workshop. Describes methods of work, activities and teaching formulas to investigate, reflect, discuss and draw conclusions that can motivate responsible action. In short, proposes the development of research and practical activities (easily transportable to the classroom) in which one learns to know the water, discover the creative and destructive power, understand the need to respect it and use it rationally.

Keywords: water, education, sustainable consumption, project, workshops

“It is paramount that we satisfy the essential needs of billions of children, men and women for whom we must guarantee food, health, education and, first and foremost, energy and water so that they can finally pull themselves out of poverty.”
(Loïc Fauchon, President of the World Water Council)

1. Water. Preliminary information. Events, institutions, standards.

1.1 World Water Day, March 2012

Since 1993 is celebrated every year on World Water Day. The General Assembly of the United Nations, took this agreement in its resolution A/RES/47/193

In the website of the World Water Day, March 2012, we read:

“There are 7 billion people to feed on the planet today and another 2 billion are expected to join by 2050. Statistics say that each of us drinks from 2 to 4 litres of water every day,

however most of the water we 'drink' is embedded in the food we eat: producing 1 kilo of beef for example consumes 15,000 litres of water while 1 kilo of wheat 'drinks up' 1,500 litres.

When a billion people in the world already live in chronic hunger and water resources are under pressure we cannot pretend the problem is 'elsewhere'. Coping with population growth and ensuring access to nutritious food to everyone call for a series of actions we can all help with:

follow a healthier, sustainable diet;

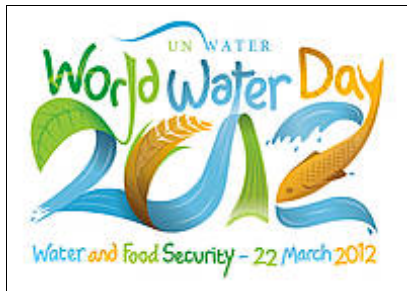
consume less water-intensive products;

reduce the scandalous food wastage: 30% of the food produced worldwide is never eaten and the water used to produce it is definitively lost!

produce more food, of better quality, with less water.

At all steps of the supply chain, from producers to consumers, actions can be taken to save water and ensure food for all.

And you? Do you know how much water you actually consume every day? How can you change your diet and reduce your water footprint? Join the World Water Day 2012 campaign "Water and Food Security" and find out more!"(1)



We all know that the important thing is to keep working every day, not only the World Water Day.

1.2. World Water Council, 2010-2012

In 2009 the World Water Council, launched its Strategic Plan 2010-2012 "A NEW WATER POLITICS" (2), based on four objectives:

- Supporting political action to improve water and sanitation services and water management;
- Deepening the involvement of major water users in solving global water challenges;
- Strengthening regional co-operation to achieve water security and economic development;
- Mobilizing citizens and consumers to address the global water crisis.

Obviously, to realize these objectives, the paper proposed an action plan, with four sections:

- Supporting political action
- Deepening the involvement of major water users
- Strengthening regional cooperation
- Mobilising citizens and consumers

For each of the actions, the document specifies the desired results obtained.

- Increase awareness and catalyze citizens' engagement in addressing the water crisis through global public events on water.
- Assist in the development the capacities of professionals and policy makers to address emerging water issues.
- Assisting members and partners to better understand the impact of IT innovations in the water sector.
- Improve the quality, quantity and balance of media coverage on water problems and solutions worldwide as a way to catalyse citizens' action and stimulate stronger "water solidarity".

Different actions that are proposed have been developed with more or less success. Necessary actions, no doubt, but clearly insufficient.

1.3. World Water Forum (March 2012) and Rio+20(June 2012)

Throughout this process frames the 6th World Water Forum (Marseille, 12-17 March 2012) that will be of great interest to prepare The United Nations Conference on Sustainable Development, "Rio +20", will be held in Rio de Janeiro, Brazil, from 20 to 22 June 2012. The conference will be preceded by the third Preparatory Committee meeting of the Conference, from 13 to 15 June 2012.



The objective of the Conference is to secure renewed political commitment for sustainable development, assess the progress to date and the remaining gaps in the implementation of the outcomes of the major summits on sustainable development, and address new and emerging challenges

I want to emphasize here some aspects included in the RIO 2012 document Issues Briefs (3) because they are, at least for me, fundamental:

“They emphasize the importance of targeting the poorest to help lift them out of poverty and realize their human right to basic drinking water and sanitation services. The Stockholm statement (agreed in the Stockholm World Water Week 2011) calls for effective water management to help adapt to the impacts of climate change and promote economic growth.

Water policy and institutional reform is urged, in order to promote water use efficiency, protect freshwater ecosystems and achieve water, energy and food security. Increasing the water resilience and sustainability of cities is identified as a priority area, as is agriculture where there is a need to increase efficiencies along the whole food supply.

The General Assembly, recognizing “the right to safe and clean drinking water and sanitation as a human right that is essential for the full enjoyment of life and all human rights”, gives additional impetus to the forward motion that the commitments since Agenda 21 have provided.

In the outcome of Rio+20, any action-oriented decisions on water will need to add value to what has been agreed in previous conferences on access to water and its sustainable use.”

To think it would be great to be able to get to Rio +20 our proposals on this subject. Especially in relation to information and education for citizenship. Although, honestly, I'm not too optimistic about their effectiveness. Hope I'm wrong on this occasion.

1.4. European Comisión, 2000-2027

Water is life! It is a precondition for human, animal and plant life as well as an indispensable resource for the economy. Water also plays a fundamental role in the climate regulation cycle.

Protection of water resources, of fresh and salt water ecosystems and of the water we drink is therefore one of the cornerstones of environmental protection in Europe. The stakes are high and the issues transcend national boundaries and concerted action at the level of the EU is necessary to ensure an effective protection.

We know that in Europe (4):

- Only 30% of surface water and 25% of groundwater is not at serious risk from pollution and other changes
- 60% of European cities over-exploit their groundwater resources
- 50% of wetlands are endangered due to over-exploitation of groundwater
- Since 1985, the area of irrigated land in southern Europe has risen by 20%

It is interesting to know, before taking any action in this area, policies, actions, projects, etc., taking place in the European Union. Ignorance of these actions is one of the causes of their inefficiency. I have included references access to documents and websites that may be of interest. Specifically the consolidated version of the Directive 2000/60/EC, in the field of water policy, whose implementation plans ranging from 2000 to 2027, with regular reports from the European Commission on the level of execution.

2. Water responsible life and education. A project proposal aimed at teachers.

"Education is the most powerful weapon you can use to change the world"
(Mandela, Nelson)

Let's change the world. If we do not change it, it will change us. Leave us without water, natural resources, without quality of life, nothing. We removed as a species. Millions of people live with hardly anything, lack of drinking water, suffering floods, tsunamis, hunger, ... But we own the world, those who have almost everything, are to blame. What will be even more if we are unable to fulfill our mission as educators aware, critical, responsible, committed. We are called to implement educational projects that are truly effective. You may not get, but at least we try.

2.1. What then are the key aims?

Make it possible for the pupils to acquire clear concepts.

Provide pupils with procedures which allow them to: investigate the reality; practise analysis, criticize, and discuss; explore the most appropriate ways for the utilization, use and enjoyment of water; facilitate the resolution of problems (in relation to water) and autonomy at the time of making choices and save water.

To boost the appearance of attitudes that are: positive towards personal education and information as consumers; critical towards water waste, the deterioration of the environment and the phenomena that prevent individuals from acting in a conscientious manner; responsible towards their actions as consumers and committed to the rest of the consumers world's poor who have no drinking water, valuing the importance of joining forces; respecting the laws standards and agreements (related to water) essential for life, that govern consumers' living together in healthy harmony.

2.2. A close look at sequencing

Naturally, the way we introduce pupils to these proposals must be gradual, in accordance with their developmental level, practical, fun, scientific, effective, free and non-contentious. To teach them how to develop the senses, to think, to take decisions and to be responsible for their actions is an excellent way of training aware, critical, socially committed and responsible consumers who are in touch with their environment, in a very important issue: responsible life water and educación.

2.2.1. First level:

At this developmental level CE needs to introduce pupils to the water through observation, identification and manipulation of the water, so that they may know their qualities and establish relations that allow them to discover and value their correct use.

2.2.2. Second level:

At this developmental level, should develop deeper contact with the water: through experiments, creative and play activities, understanding and establishing relationships between the facts and phenomena water-related, contributing to the assumption of their responsibilities with critical attitudes towards the water wastage, purchasing habits of responsible water use.

2.2.3. Third level:

At this developmental level, should consolidate prior learning and advance in terms of researching into water topics, through knowledge and practising rights and obligations, and when faced with consumer actions, using attitudes showing scientific knowledge, critically valuing the impact of consumer society of (waste water, for example) on the environment and being able to act in a responsible manner.

2.2.4. Adults level:

Consumer education in the adult sphere throws up a different problem from educating about consumption at the school level. Whatever activity is planned (on issues related to water) needs basing work on practical experience of the water topics.

2.3. A series of techniques to work with

Without wishing to give an exhaustive list, here are some of them:

- Searching for information from different sources
- Analysis of texts and documents and everyday life situations.
- Value clarification
- Investigation of processes in relation to water
- Experiments, debates, role plays.
- Case studies; solving conflicts

- Creation and development educational projects and workshops on water issues.

2.4. An example of a specific project: investigate the water.

This is a project that uses mixed techniques. It is, in fact, a plan of multiple activities, arranged, structured and considered as an open research model based on the principle of activity, planning and resolution of hypothesis, which permits individualised education, allows the pupil to be the protagonist in the various phases of the project, facilitates the interdisciplinary and/or globalised aspect, and prepares the pupils for life providing them with techniques for solving problems.

The standard plan for these kinds of projects would be:

- Motivational and proposal stage: through films, talks, events, simple experiments, questions, and field observations. The teacher proposes, incites, accepts and enriches the contributions from the pupils.
- Planting a hypothesis around the theme of water: we ask what we know about it, and seek different sources of information about the topic. The hypothesis on which we are going to work must be clear and plausible so as to be measured by the methods available or can be made available to the pupils.
- Choice of a research method: through work in groups we can put forward different proposals, at the end of the class decide on the definitive one, it can also be interesting for each group to follow its own line of investigation so as to be able to contrast results.
- Experimental process: the research method is put into practice, samples are taken, a survey; direct observation or laboratory checking.
- Analysis and expression of the data gathered: via charts, graphs...
- Preparation of conclusions: conclusions will be reached depending on the hypothesis planted, the information collected, the graphs and other forms of interpretation created. Contrast these conclusions with similar work (if this exists).
- Analysis, criticism and evaluation: think about the processes carried out, the possible mistakes, the difficulties encountered, and the new questions that have appeared.
- At the end it is important to communicate the results of the research: organize an exhibition, creating a slogan, a blog, a page on a social network, edit a video, make up a comic, a rap, etc.

What is important is the process we follow, more even than the final result. In some cases, due to the lack of means available to us, the results cannot be taken as being totally valid. In this project it is not a question of forming expert researchers, rather forming critical consumers who are investigating a reality. It is a very useful project for the last levels of compulsory education, but it is also interesting to start working with it at the first level.

2.5. Workshops

This is a one-off activity and extremely hands-on. The workshop methodology permits both individual as well as group work, as it poses a series of actors in its development:

- Motivation and first contact with the topic, based on the interests and curiosities of the pupils.
- Basic theoretical information on the topic to be tackled and the planning of a working hypothesis.
- Designing and organizing activities.
- Pooling of results and conclusions.

3. A proposal for workshops: suitcase “Water Responsible Life and Education”

Did you know that two thirds of the Planet Earth are covered by water, that 97% is salt water and only 3% sweet water, that 2,25% from this 3% are polar and glacier ices, only 0,74% are subterranean waters and a low part the rivers and lakes?

Did you know that 84% of the evaporating water comes from the sea and 77% falls back on the sea and only 7% falls on the solid ground?

Did you know that 31 per 100 inhabitants of the planet do not have drinking water; that in some places of the world one person is using 350 litres of water per day and in others, the poorest places, less than 5 litres?

3.1. Objectives:

- Presentation of the teaching case "Water, responsible life and education"
- Develop a practice of research activity (easily transportable to the classroom) in which one learns to know the water, love, uncover creative and destructive power, understand the need to respect it and use it rationally.
- Use multimedia resources to developing and teaching evident properties.
- To consider, discuss and draw conclusions.

3.2. Process of the activity:

Motivation and first contact with the topic (5 minutes).

- Multimedia, riddles, presentation of participants.
- *Basic theoretical information* on the topic to be tackled and the planning of a working hypothesis and group work (5 minutes).
- Multimedia
- *Group Work* (20 minutes):
- Each group receives a worksheet and different materials for the development of work.
- Each group chooses a facilitator who will be scoring the various proposals, conclusions and activities.
- *Sharing* (10 minutes)
- Each group will present the findings and explain the activities that could be made in class, using the materials received.
- *Play animation* (17 minutes)
- The game is played with all participants, organized into teams that compete and / or help to achieve the targets set in the game.
- *Evaluation* (3 minutes)

3.3. Resources to use:

Water Way: Board game including: questions, experiments, multimedia resources, interactive games.

3.3.1. Examples of questions:

First question:

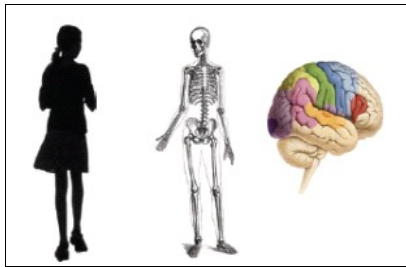


Figure 1

What % of water does it have...?

1. - 80% ;
 2. - 70% ;
 3. - 20%
- a) The human body.
 - b) The bones
 - c) The brain

Enter the percentage corresponding to each letter (A, B, C)

Second question:



Figure 2

One water lily doubles itself every day and needs 30 days to cover a pool. Look at the picture (*figure 2*) and answer:

How many days would two water lilies need? days

Third question:



Figure 3

A dry looking plant. It can spend many years like this. But when it comes into contact with water, it gets an intensive green colour.

Look at the picture (*figure 3*) and answer

What is the name?

Fourth question:



Figure 4

You are close to a river. You need exactly 6 litres of water and you have two containers: one of 4 litres and the other one of 9 litres.

See (*Figure 4*) and answer :

What can you do?

Answers of the question:

- *First question:* A = 70; B = 20 ; C = 80
- *Second question:* 29 days
- *Third question:* Rose of Jericho
- *Fourth question:* Fill the container of 9L and put 4 litres into the container of 4L, empty it into the river. Put another 4 litres into the container and empty it again. Fill the remaining litre into the container of 4L. Refill the container of 9L. Fill the missing 3 litres into the container of 4L, and then you will have 6 litres in the container of 9L.

3.3.2. Examples of experiments:

First experiment: chromatography



Figure 5

Is the color black, really black? A young child could use this pen? (*figure 5*)
Experiment used to determine if a marker pigments are truly water-soluble or contains a water-insoluble pigment.

Second experiment: test of the dirty water



Figure 6

Look at *figure 6*.

Why did the carnation change color? What if a head of lettuce?

Practical activity that serves to identify what happens to a white flower when it is immersed in colored water.

Transfer of this experimental knowledge to that what happens to our food when it is watered with contaminated rain.

Third experiment: the acid rain

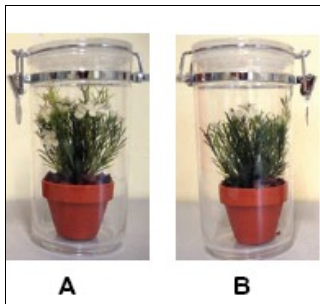


Figure 7

Look at *figure 7*.

The plants were the same, but A has been watered with normal water and B with vinegar.

What does this effect look like?

Practical activity to find out what happens when a plant is watered with an acid product, for example vinegar. Transfer of this experimental knowledge to that what happens with the acid rain.

Fourth experiment: paper recycling



Figure 8

Look at *figure 8*.

It's easy to make paper at school (recycling old newspapers, for example). It serves to reflect on the saving of raw materials, energy and water that means to use recycled paper.

How much water is needed to produce paper?

CALIDAD DEL PAPEL QUALITY OF THE PAPER QUALITÉ DU PAPIER		INGREDIENTES NECESARIOS PARA FABRICAR PAPEL NECESSARY INGREDIENTS TO PRODUCE PAPER INGRÉDIENTS NÉCESSAIRES POUR LA FABRICATION DU PAPIER		
		Madera - Wood - Du bois	Agua - Water - De l'eau	Energía - Energy - De l'énergie
Primera calidad Quality 1st grade Qualité supérieure				
Calidad normal Quality standard Qualité standard				
Papel reciclado Recycled paper Eau papier recyclée				

Figure 9

Look at figure 9.

Observe, reflect and act accordingly.

3.3.3. Interactive games of the water

First game.



Figure 10

Simulation game of the water cycle

Image of one of the game resources (figure 10)

Each participant is one cycle element.

It is easy to see what happens with the water throughout the cycle.

It serves to reflect on the importance of the use of water.

Second game. Find out the errors.

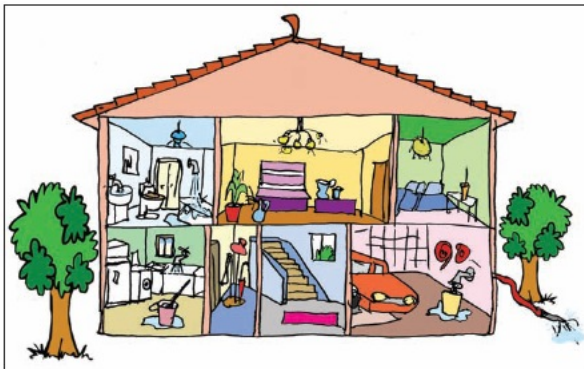


Figure 11

Look at figure 11

Interactive computer-game to find errors in a home where water is wasted. Quite simply, for the first level.

3.3.4. Examples of multimedia resources:

We have developed several videos including simple experiments that can easily be done in the classroom.

The videos are used to discover the "magic" properties of water.

3.4. Additional activity:

3.4.1. Riddles

RIDDLE 1: Guess who I am: the more I wash, the more dirty I am (figure 12)



Figure 12

RIDDLE 2: I come from my mother and my mother comes from me (figure 13)



Figure 13

Answers of the riddles:

- Riddle 1: water
- Riddle 2: the ice

3.4.2. What is this?



Figure 14



Figure 15



Figure 16



Figure 17

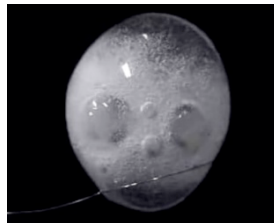


Figure 18



Figure 19

Could you do this experiment? Why?

What about this?



Figure 20

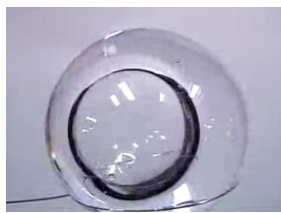


Figure 21

???

Naturally. You could perform these experiments. It is not impossible. But you must be in space.

3.4.2. Exhibition

We have an exhibition entitled "Treasures of the water" which includes photographs, activities and poems. Was filed in the pavilion of the European Union in 2008 ExpoZaragoza.



Figure 22

Raindrops



Figure 23

One by one the raindrops
start becoming water
water for verses and houses
water for men and fish,
water for fruit trees,
for dreams
water.
Europe is raining
its voice down above the wings of progress
its voice above the rings of hunger
its voice above the swampland,
above all voices,
above the soul of the sea.
When will you rain?

(Nieves Álvarez)

4. Final tips

You can help too!

When it comes to saving water, there are lots of things we can do around the home, or as consumers, to save on water consumption and conserve supplies. Here are a few ideas:

- About one-third of water for domestic use goes down the toilet, literally. Use the short flush whenever possible, or reduce the toilet cistern capacity.
- Collect rainwater for the garden and for washing the car. This can save up to 50% of household water.
- Take showers rather than baths, and do not leave the water running when brushing teeth or cleaning dishes.
- Don't fill your kettle – just boil the amount of water you need.
- Check taps and pipes for drips and leaks, and fit spray taps that reduce the flow.
- Use the economy cycle and wait for a full load of clothes in the washing machine or dishes in the dish washer.
- Use a bucket when cleaning outdoors instead of a hosepipe.
- In your garden, use watering cans or trigger nozzles on hoses to irrigate only those areas that need it.
- Use bottled water sparingly: in Europe, tap water is safe to drink.
- On holiday, reduce hotel laundry by using towels and sheets several times. (5)

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http://ec.europa.eu/environment/water/index_en.htm
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The 2nd PERL International Conference „Beyond Consumption – Pathways to Responsible Living“, March 2012, took place in Berlin/Germany and was hosted by the Division of Economic Education and Sustainable Consumption, Technische Universität Berlin. The proceedings include some of the key note speeches and all working papers that were submitted prior to the conference.

The "State of the World" report 2010 has shown again that the dominating consumer culture in the modern world is incompatible with sustainable development. Responsible living implies changes in the way people fulfil their needs. In line with the international bestseller "Prosperity without Growth" by Tim Jackson – one of the keynote speakers of the conference – we can find ways towards need satisfaction beyond excessive consumption of goods and services. "Beyond consumption" does not mean "without consumption" but addresses a way of need satisfaction with less and different consumption (particularly in richer populations) and a stronger focus on less commercialized activities.

- Conference tracks:**
- Foundations & Concepts of Responsible Living
 - Examples & Practical Approaches for Responsible Living
 - Learning & Education for Responsible Living