RESPONDER
Linking SCP and Growth Debates

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Background paper on Sustainable Food Consumption and Growth

1st Multinational knowledge brokerage event on Sustainable Food Consumption (Lisbon, 25-27 January 2012)

RESPONDER - linking **RES**earch and **PO**licy making for managing the contradictions of sustai**N**able consumption an**D** **E**conomic g**R**owth

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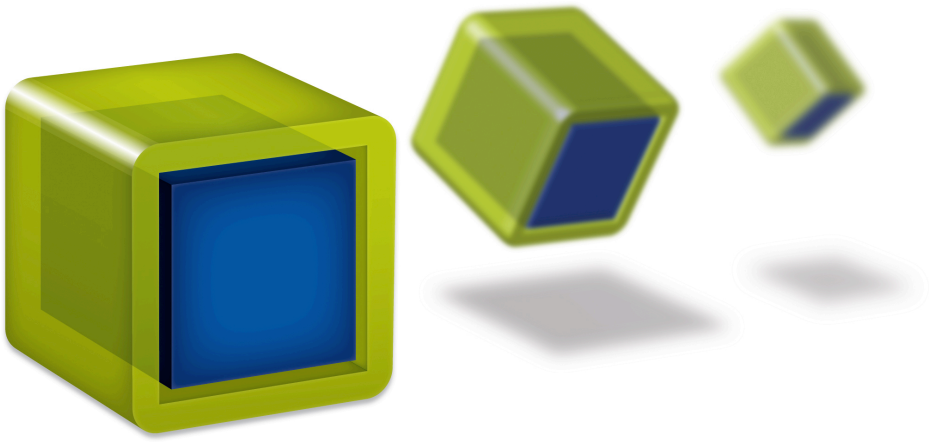

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1 Executive summary

This paper provides background material on the core issues of the RESPONDER project and the 1st Multinational Knowledge Brokerage Event on Sustainable Food Consumption in order to promote active participation and engagement in the debate.

The overall aim of RESPONDER is to promote sustainable consumption by exploring novel ways of knowledge brokerage that help to improve the management of potential political, social and economic contradictions with economic growth. The challenge is not just to bridge the gap between science and policy, but also to improve the mutual understanding between the "pro-growth community" and the "beyond-growth community". RESPONDER aims to improve the mutual understanding and knowledge transfer between these groups by using participatory systems mapping as a core methodology. Knowledge brokerage means that the project will not conduct new research, but exploit existing research by new integrative modalities of linking research results to policy-making. This approach will be explored in a series of Multinational Knowledge Brokerage Events focused on five sectoral policy areas – food, housing, household electronics, mobility and private savings/debts.

This paper first briefly outlines some of the key messages presented in a selection of recent initiatives promoted by the UN, OECD, EU and individual EU Member States reflecting the desire to promote sustainable economic development and ensure that it does not jeopardise the well-being of the planet and of future generations. These initiatives generally acknowledge that technological solutions are unlikely to solve the sustainability challenge and that behavioural change and altered lifestyles will have to play major roles.

Food production and consumption encompasses a multiplicity of aspects, such as food and water security, food safety, fair trade, nutrition, production practices and conditions in the food chain. The global food system has been evolving into an unsustainable path. Recent trends observable in many OECD and most European countries point to a change in diets towards a higher consumption of meat, cheese, fruits, vegetables and bottled drinks and a change in consumption patterns towards more ready meals, fast-food and out-of-home consumption. The social system rotating around food consumption has been simplified. In industrialised countries, because most food products are available at affordable prices all year round, food seasonality has lost its meaning. In addition, consumers have become increasingly estranged from the production of their foodstuffs. On the other hand, the interest in organic and fairly traded foods has increased among a group of concerned consumers. An overall increase in food waste, coupled with raising overweight and obesity has also been observed. At the same time, increased health awareness, healthy lifestyles and overall well-being have become a societal and economic megatrend.

Food consumption is one of the private consumption areas that have the largest impact on the environment: within the EU-25, approximately one third of households' total environmental impact – including energy use, land use, water and soil pollution and emission of greenhouse gases (GHG) – is related to food and drink consumption. About 800 million people worldwide are chronically hungry due to poverty and lack of access to food, while at least 1 billion people are overweight. Both extremes, stemmed from economic and social inequalities, bring several problems in the health sector. Health risks do not only relate to food security, but also to food safety: the latter is defined as the presence of unwanted substances in food products, including pathogenic organisms, toxic substances and contaminants. Today, a

small but increasing number of consumers is interested in supporting fair trade through their purchases. Studies on the environmental impacts of organic production show that organic farms use 50 to 70% less energy (direct and indirect) per unit of production than conventional farms. Organic production also has clear benefits for biodiversity on agricultural land, although lower yields may mean that a larger land area is required than under conventional production methods.

Different policy instruments can be used to promote sustainability in the food sector. The contribution that Corporate Social Responsibility (CSR) regimes can play is the subject of increasing debate in industry, civil society and the political arena. Another approach to accommodate more sustainable food consumption patterns is taxation of unhealthy foodstuff, such as the fat tax introduced in Denmark. Apart from that, policy instruments are discussed to gradually reduce meat consumption. First policy option is the elimination of the current system of subsidies for cheap meat production, in favour of major investments in healthier diets. “Green public procurement” and “no-meat days” are further policy proposals that aim to achieve less meat consumption.

The systems mapping exercises that will be undertaken in the 1st MKBE in Sustainable Food Consumption will explore the links and contradictions between sustainable food consumption and growth, focusing in three major questions:

1. What factors influence the global environmental effects of a shift to a Mediterranean diet (less meat) in Europe?
2. Could healthier and more sustainable diets lead to increased food waste in European households?
3. How does an increase in consumption of regional products affect the productivity of agriculture and food systems?

In this mapping exercises during the workshop we will explore the interrelationships underlying these questions, revealing the different factors shaping the links between meat consumption in Europe and the environmental impacts at global scale, shedding light on the linkages between food consumption habits and the emergence of food waste and examining the causal effects on agricultural and food systems when consumers prioritize regional and seasonal diets.

2 The RESPONDER project

The overall aim of RESPONDER is to promote sustainable consumption by exploring novel ways of knowledge brokerage that help to improve the management of potential political, social and economic contradictions with economic growth.

The challenge is not just to bridge the gap between science and policy, but also to improve the mutual understanding between the "pro-growth community" (i.e. economists and policy makers oriented towards growth as an overarching policy goal) and the "beyond-growth community" (i.e. scientists oriented towards the limits to growth debate and policy makers involved in sustainable development). RESPONDER aims to improve the mutual understanding and knowledge transfer between these groups by using participatory systems mapping as a core methodology. So-called system maps serve as the basis for systematising empirical findings, questioning different model assumptions, analysing the effects of different policy options and identifying new research questions. Knowledge brokerage means that the project will not conduct new research in this area, but exploit existing research by new integrative modalities of linking research results to policy-making. In synthesis, RESPONDER:

- Links the sustainable consumption and growth debates: its overall aim is to promote sustainable consumption by exploring novel ways of knowledge brokerage;
- Links four communities: research, policy, pro-growth, and beyond growth;
- Aims to improve mutual understanding and knowledge transfer between these groups by using participatory systems mapping, in a series of Multinational Knowledge Brokerage Events on five sectoral policy areas – food, housing, household electronics, mobility and private savings/debts.

3 Reconciling economic development and sustainability[1]

A number of initiatives, at all levels of policymaking, reflect the desire to promote sustainable economic development and ensure that it does not jeopardise the well-being of the planet and of future generations. This section briefly outlines some of the key messages presented in a selection of recent initiatives promoted by the UN, OECD, EU and individual EU Member States. Not all of these proposals address the topic of sustainable consumption at great length. Nevertheless, most of them acknowledge that technological solutions are unlikely to solve the sustainability challenge and that behavioural change and altered lifestyles will have to play major roles.

3.1 UNEP Green Economy Initiative

Launched in late 2008, the UNEP-led Green Economy Initiative aims to provide the analysis and policy support for investing in green sectors and in greening environmentally unfriendly sectors. UNEP defines a green economy as one that results in "improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities" (UNEP, 2011:16). In short, a green economy values and invests in natural capital, being low carbon, resource efficient and socially inclusive. In the report Towards a Green Economy "sustainable consumption" is linked to increased resource efficiency in consumption patterns and the purchase of green goods and services. A case is made to invest two per cent of global GDP in greening ten key sectors of the global economy in order to shift development and unleash public and private capital flows onto a low-carbon, resource-efficient path. The Green Economy report shows how a green economy presents a new engine of growth; how it generates new decent jobs; how it can reduce persistent poverty across a range of important sectors; and how this shift can be achieved. The report seeks to motivate policy makers to create the enabling conditions for increased investments in a transition to a green economy. UNEP's concept of a green economy does not replace sustainable development; moving towards green economies should unleash potentials to achieve sustainable development and poverty eradication on a scale and at a speed not seen before.

3.2 OECD Green Growth Strategy

At the OECD Ministerial Council Meeting in June 2009, Ministers acknowledged that "green" and "growth" policies can go hand-in-hand, and asked the OECD to develop a Green Growth Strategy that brings together economic, environmental, social, technological, and development dimensions into a comprehensive framework. The publications "Towards Green Growth" and "Towards Green Growth – Monitoring Progress: OECD Indicators", published in May 2011, provide an operational and flexible framework for governments in developed and developing countries on how economic growth and environmental protection can be achieved. The overarching goal is to establish incentives or institutions that foster innovation, investment and competition that can give rise to new sources of economic growth that is consistent with resilient ecosystems – with the ultimate goal to increase well-being. The strategy explicitly calls for new production and consumption modes in order to sustain and raise living standards. Equity concerns are acknowledged but it is recommended to tackle them in separate initiatives together

[1] This section draws extensively from Pirgmaier, E.; Dobernig, K.; Polzin, C.; Scholl, G.; Sedlacko, M. (2011). 1st European Dialogue on Sustainable Consumption and Economic Growth – Background Paper. 19-21 October 2011, Berlin.

with other social issues of sustainable development agenda. Overall, green growth is considered as a subset of sustainable development, rather than as a replacement.

3.3 Europe 2020

Europe 2020 has been launched in 2010 as a successor agenda of the Lisbon strategy. Proposed by the European Commission and endorsed by the European Council as a ten-year strategy of smart, sustainable and inclusive growth, it follows a consistent approach to converge the wide range of economic, social and environmental policies the EU is striving for. Five headline targets have been agreed for the whole EU for 2020 – regarding employment, R&D/innovation, climate change and energy, education and poverty/social exclusion. Similarly to the Lisbon strategy, the new strategy highlights the need to decouple economic growth from the use of natural resources, thus achieving "sustainable growth". This reconciliation is tackled under the Flagship initiative "Resource-efficient Europe". Equity issues are addressed by the Flagship initiative "European platform against poverty", but not explicitly targeted. Europe 2020 and the flagship initiatives serve as the umbrella of the European Sustainable Consumption and Production Policies.

3.4 Degrowth movement

The degrowth movement is capturing part of the growth-sceptical debate. The economist Nicholas Georgescu-Roegen is considered as the creator of the concept of degrowth already in the 70s, although to his view degrowth was not conceived as a voluntary societal idea, as put forward by the degrowth movement since 2001. Instead, it was considered an unavoidable necessity for a real durable development of humanity within the biosphere. The degrowth movement has been experiencing a popular upswing in recent years and is particularly active in France ("décroissance"), Spain ("decrecimiento") and Italy ("decrescita"). It comprises scientists as well as activists, who advocate an equitable downscaling of production and consumption in order to increase human wellbeing and enhance ecological conditions at the local and global level, in the short and long term (Schneider et al., 2010). Degrowth ideas are based on an assumption that reducing "overconsumption", as a root cause of today's environmental and many social problems, does not require individual martyring and a decrease in well-being. Well-being can rather be achieved through non-consumptive means, such as work sharing, less consumption or more time for friends, family, culture and the community. The first international Degrowth Conference took place in April 2008 in Paris, the second one in March 2010 in Barcelona, and the third one is planned for early 2012 in Venice.

3.5 German Study Commission on Growth, Wellbeing and Quality of Life

The Study Commission of the German Parliament on "Growth, Prosperity, Quality of Life – Toward Sustainable Development and Social Progress in the Social Market Economy" is expected to determine the importance of economic growth in the economy and society with the aim of developing a holistic well-being and progress indicator. It also aims to investigate the possibilities and limits of decoupling growth, resource use and technological progress. Final results are expected by the end of the legislative period in 2013. The study commission consists of 34 members, including 17 members of parliament and the same number of external experts, appointed by the political groups according to the majority.

3.6 Growth in Transition

"Growth in Transition" is an Austrian initiative, which brings forward the question on what kind of growth is desirable for the future and which goals are targeted with it. Formed in 2008 by the Austrian Ministry of Agriculture, Forestry, Environment and Water Management as a stakeholder dialogue, the initiative intends to trigger a dialogue among institutions and people about how we can shape a transformation process towards sustainability. It also aims at contributing to current EU and international processes and at informing the Austrian public. The initiative covers different institutions that organise activities focusing on the same core issue but from different angles. It currently consists of 15 partner organisations – seven Austrian ministries, three Austrian provinces, Social Partners, companies, Oesterreichische Nationalbank and organisations from the civil society. Sustainable consumption has played an explicit role in an international conference with more than 550 participants held in January 2010. Findings exist from a workshop series 2009/2010, the conference and current work on a Policy-Science-Stakeholder Dialogue.

3.7 Policy initiatives to better measure progress

3.7.1 Beyond GDP

In 2007, the European Commission initiated " Beyond GDP" – a process that led to the adoption of a communication in 2009 with a concrete roadmap for developing new environmental and social indicators to measure the prosperity and well-being beyond GDP. The roadmap suggests five key actions to improve indicators of progress in ways that provide an improved basis for public discussion and policy-making: complementing GDP with environmental and social indicators; near real-time information for decision-making; more accurate reporting on distribution and inequalities; developing a European Sustainable Development Scoreboard; and extending National Accounts to environmental and social issues.

3.7.2 Commission on the Measurement of Economic Performance and Social Progress

French President Nicolas Sarkozy set up this high-level Commission in 2008, chaired by Joseph Stiglitz, recipient of the 2001 Nobel Prize in Economics. The Commission's final report was published in September 2009 and contains chapters on classical GDP issues (e.g. addressing the importance of improving existing measures of economic performance before going beyond GDP); quality of Life (e.g. emphasising the importance to complement measures of market activity with measures of people's wellbeing); and Sustainable Development and Environment (e.g. following the logic of a "wealth" or "stock-based" approach to capture sustainability). The report provides a general overview of the state-of-the art in the respective areas and comes up with 12 key recommendations.

3.7.3 OECD's Project on Measuring Progress of Societies and the Better Life Initiative

The OECD initiated a global project on "Measuring the Progress of Societies" in 2004 to foster the development of key economic, social and environmental indicators in order to provide a comprehensive picture of how the well-being of a society is evolving. The project aims to encourage the use of indicator sets to inform and promote evidence-based decision-making, within and across the public, private and citizen sectors. The Better Life Initiative, launched in 2011, follows a similar objective of understanding what drives well-being of people and nations and what needs to be done to achieve greater progress for all.

4 Sustainable food consumption[2]

4.1 Definition of sustainable consumption in the food domain

In the broadest sense food production and consumption encompasses a multiplicity of aspects, ranging from food and water security to fair trading conditions and to species-appropriate livestock breeding. In general, we identify main areas of concern for the food issue (Coff et al., 2008):

- food security, i.e. the just and fair supply of food and drink to human beings; the issue is directly related to a globally growing population which will have to cope with the lack of land available, and the soon approaching biophysical limits in some parts of the world (e.g. North America, India and China [Tempelman, 2004]);
- food safety, i.e. food should not endanger the health of consumers due to pathogens or pollution;
- new developments in nutritional research and technology, such as functional foods and health foods or personalised nutrition, challenging existing norms and values related to food and access to it; this latter includes food-related diseases like obesity and their association with food culture;
- specific production practices and conditions in the food chain, i.e. animal welfare, the environment, fair working conditions, and use of new (bio and nano) technology, with the core issue being the 'traceability' of key ethical consumer concerns.

4.2 Sustainable consumption and its features in the food domain

In industrialised countries, the range of available food products is manifold. Because most food products are available at affordable prices all year round, food seasonality has lost its meaning.

In addition, consumers have become increasingly estranged from the production of their foodstuffs and consumer knowledge of seasonality or regional supply has been lost (e.g. Murdoch & Miele, 1999; Tischner & Kjaernes, 2007; Blay-Palmer, 2008).

The following developments and trends in food consumption, which altogether contribute to the unsustainability of the food system, are observable in many OECD and most EU countries:

- Changes in diet towards a higher consumption of meat, cheese, fruits, vegetables and bottled drinks (OECD, 2001; European Environment Agency [EEA], 2005); furthermore, a change in the pattern of consumption towards more ready meals, fast-food and out-of-home consumption (Tempelman, 2004);
- The social system rotating around food consumption has been simplified by this new pattern, while the symbolic meaning in societal settings has been enhanced. In fact, food consumption was once part of a strong social meaning and community life, while now convenience food consumption is more common. In the meantime, health, fitness, prestige, and indulgence are fea-

[2] This chapter is largely taken from the "CORPUS Discussion Paper 1 on Sustainable Food Consumption" (Reisch et al., 2010).

tures now part of nutrition symbolism (Davies, 2001; Schröder, 2003), creating more complex consumption behaviours;

- A decline in time spent on nutrition (Hamermesh, 2007) together with a relative decline of consumer spending on food (Michaelis & Lorek, 2004; EEA, 2005);
- A decline in nutritional and home economics competencies despite increasing knowledge on healthy nutrition (Eberle & Schmied, 2008). This increased knowledge has also seen an increasing diet-related uncertainty on the part of consumers and general disbelief among customers regarding food information (Derby & Levy, 2001; Hawkes, 2004; Kjaernes, et al., 2007; Bergmann, 2002);
- This trend is related to an increasing need for complexity reduction (Mick, et al., 2004), especially in labelling organic and fairly traded foods, which have raised major interests among consumers (Krier 2005; Willer, et al., 2008);
- An overall increase of food waste (Ventour 2008), coupled with raising overweight and obesity (World Health Organization [WHO], 2005; European Commission, 2006);
- Increased health awareness, healthy lifestyles and overall well-being have become a societal and economic megatrend (Reisch & Gwozdz, 2010; OECD, 2001; European Commission, 2006).

4.3 Sustainability issues in the food system

Food consumption is one of the private consumption areas that have the largest impact on the environment: within the EU-25, approximately one third of households' total environmental impact – including energy use, land use, water and soil pollution and emission of greenhouse gases (GHG) – is related to food and drink consumption (Danish Environmental Protection Agency, 2002; EEA, 2005).

4.3.1 Selected environmental impacts

GHG emissions: GHGs are caused in particular by the use of mineral fertilisers and synthetic pesticides, livestock farming (in particular methane and nitrous oxide emissions), transportation, the packaging and processing of food, cooling and cooking. Food production and consumption accounts for 18% (in UK) and 16% (in Germany) of total GHG emissions (Eberle, et al., 2006; BCO, 2008).

Water consumption: diets with more consumption of meat put higher pressure on water resources (Schaffnit-Chatterjee, 2009). The World Wildlife Fund For Nature (WWF, 2009) revealed that agriculture accounts for about three quarters of German water consumption (60% of this from abroad). Overall, the study estimates a per capita water consumption of nearly 4.000 litres per day just for food.

Land usage and soil degradation: agriculture needs land for crop cultivation and above all for livestock breeding; this usage is expected to increase as the growing demand for meat in developing countries will require an exponential growth in land use (Tempelman, 2004). This will cause further degradation of arable land (22% of all cropland, pasture, forest and woodland have globally already been degraded since the 1950s, cf. Schaffnit-Chatterjee, 2009, p. 9).

Eutrophication: caused by the use of fertilisers and NO_2 emissions from livestock breeding.

Water pollution: pesticides cause water bodies to be polluted; in the future, experts expect not only a further increase in pesticide use but also increasing absolute contamination due to the long persistence of pesticides in both soil and water (RSU, 2004).

Loss of biodiversity: biodiversity assures food security in the long term; the use of agrochemicals in intensive farming and the replacement of local varieties of domestic plants with high-yield or exotic varieties have made important gene pools collapse (Schaffnit-Chatterjee, 2009; Foster, et al., 2006).

4.3.2 Human health aspects

About 800 million people worldwide are chronically hungry due to poverty and lack of access to food, while at least 1 billion people are overweight. Both extremes, stemmed from economic and social inequalities, bring several problems in the health sector.

Obesity is a major challenge for sustainable development (e.g. for use of resources) and for public health, as it requires a considerable amount of public procurement to deal with it. Programmes are being undertaken in various countries, especially to avoid childhood obesity. It is estimated that by 2050 half of the population in the UK will be obese (DEFRA, 2008), leading to an increase in chronic health conditions, worsening quality of life and raising public procurement for health. The British Cabinet Office (2007) reports a major spending for the treatment of food-related illness, with a very likely increase.

At the same time, developing countries have less possibilities of affording an increase in their public health spending to prevent **hunger and malnutrition** and cure their consequences; also, developing countries have lower efficiency in their public spending in health, while their relative percentage of public procurement is higher than in OECD countries (Herrera et al., 2005).

Health risks do not only relate to food security, but also to **food safety**: the latter is defined as the presence of unwanted substances in food products, including pathogenic organisms, toxic substances and contaminants. In European countries, the most serious food safety issue is food-borne illnesses (DEFRA, 2008). According to the BCO (2007), 600 - 700 people died in Britain in 2006 as a direct result of something they ate, with the primary factor being food poisoning, followed by choking accidents. In addition, more than 300,000 cases of food poisoning are reported each year. According to one German risk assessment study on food-borne diseases (Eberle & Reuter, 2004), however, the highest health risks are related to active hormonal substances and bovine spongiform encephalopathy (BSE), followed by GMOs, pesticides and viruses/bacteria. The study also reported that the health risks related to nitrates and the use of pharmaceuticals in livestock breeding are much higher than the risks related to the radiation of food and to food additives. Food-borne health risks also differ according to diet, with the lowest risks related to a vegetarian diet based on organically grown produce and the highest risks to a meat diet based on conventionally produced foods (Eberle & Reuter, 2004).

4.4 Enhancing sustainability: current approaches

Today, a small but increasing number of consumers are interested in supporting **fair trade** through their purchases. As a result, the European market for fairly traded products is growing, with the most often sold products being coffee, bananas, orange juice, tea and chocolate. According to FairTrade Germany (2011), fair trade products have grown exponentially within the German market in the last five years, reaching a turnover of 400 million Euros in 2011. In other European countries the same trend is observable. Furthermore, fairness in trade is not only an issue for developing nations: in European countries, farmers are also demanding fair payment for their produce.

Studies on the environmental impacts of **organic production** (e.g. Food and Agricultural Organization [FAO], 2003; Shepherd, et al., 2003) show that, depending on the products they use, organic farms use

50 to 70% less energy (direct and indirect) per unit of production than conventional farms, mainly as a result of different fertiliser consumption. Organic production also has clear benefits for biodiversity on agricultural land, although lower yields may mean that a larger land area is required than under conventional production methods. In milk production, however, the advantages are less clear, primarily because of the higher milk production of conventional dairy farming. In any case, animal treatment is better on organic farms, and cows are less likely to be lame or stressed or to carry disease (Dabbert, et al., 2004; Owen, et al., 2007).

The contribution that **Corporate Social Responsibility (CSR)** regimes can play, including in the food sector, is the subject of increasing debate in industry, civil society and the political arena. One means of managing ethical workplace conditions throughout global supply chains is to follow international standards, such as Social Accountability Standard 8000 (SAS 8000) or the ISO standard for CSR (ISO 26000). According to a survey of 300 retail and consumer goods executives from 48 countries, ethical sourcing will also figure prominently as a food (retail) sector issue in the future (CIES, 2007).

Another approach to accommodate more sustainable food consumption patterns is **taxation of unhealthy foodstuff**. In October 2011 Denmark, for instance, has approved the adoption of a fat tax, the first one in the world of its kind, which is expected to reduce the consumption of saturated fatty food stuffs. Every kilo of saturated fat will be taxed by 2.15 euro (especially butter, vegetable oils, meat, and dairy products) (Gwozdz, 2011). Clear outcomes are not yet available, and it is not clear whether the demand of these products will actually decrease, even though the Danish government has predicted 4% less consumption of fatty food stuffs due to the tax (Danish Ministry of Finance, 2010). Recently, Hungary has introduced a fat tax as well.

Apart from that, policy instruments are discussed to gradually **reduce meat consumption** (focusing more on environmental and social benefits than health-related ones). First policy option is the elimination of the current system of subsidies for cheap meat production, in favour of major investments in healthier diets, mainly plant-based (Popkin, 2009). The EU, for instance, provides about 40 million Euros to Sweden to support the marketing of various animal food products in order to increase their sales, as reported by the Swedish Left Party (Holm et al, 2010). Energy-related subsidies and taxation of water use are, according to Popkin (2009), other connected strong leverages as livestock farming is more resource-intensive than plant production. “Green public procurement” and “no-meat days” are further policy proposals that aim to achieve less meat consumption (Holm et al, 2010).

5 Exploring links and contradictions between sustainable food consumption and growth

5.1 What factors influence the global environmental effects of a shift to a Mediterranean diet (less meat) in Europe?

A desirable policy option to steer the present European food system into a healthier and more sustainable pattern is to foster the adoption of a Mediterranean diet. This diet provides a lower intake of meat compared to other common European diets. Such a change in alimentary habits is likely to trigger several effects. Our foci for this guiding question are especially the global environmental effects, which will be caused by a lower consumption of meat within the EU.

A scenario with a widespread Mediterranean diet can be implemented without changing the overall calories intake or turning all European vegetarians. This diet can be based on larger intake of fruits, vegetables, fish and whole grains, and low or moderate intake of red meat, poultry, pork and dairies. EU average meat consumption is 85 kg per person per year (EC - DG Agriculture, 2009), while the world average is 38 kg (FAO, 2006). A Mediterranean diet has, compared to Northern Europe diets, around one third less intake of meat, animal fat and their derivate foodstuffs (in terms of calories) (Tukker et al., 2009).

Meat which is marketed in the EU-27 is both produced within the EU itself and imported from abroad. In particular, the EU-27 has strong import of raw food (included grains for fodder). According to the European Commission (2020), main exporters of food to the EU-27 are Latin American countries. Brazil has, as its main export, foodstuffs and (especially) livestock.

The livestock sector is heavily involved in many present-day environmental concerns. A non-exhaustive list of these issues includes land degradation, atmosphere and climate change, water use and degradation, and biodiversity. It is estimated that in 2050 the global production of milk and meat will be doubled compared to the 1990 level (Steinfeld et al., 2006). Thus, environmental impacts per unit of output have to be cut by half just to avoid any increase of these impacts.

In case a widespread acceptance of a Mediterranean diet occurred, reduction of environmental impacts among the European environment was modest overall. In fact, only less than 10% of the impacts driven by current food consumption would be avoided. Impacts on the European environment are directly accountable, while the changed import-export balance of the EU-27 can be categorised as a secondary effect (Tukker et al., 2009). Livestock farming in Europe could remain largely unchanged (provided that additional exports compensate for the decline in domestic sales), while the production figures in non-European countries could turn down.

As a Mediterranean diet includes more calories intake from fish and seafood, impacts of fisheries and its trade has to be evaluated, too (even if fisheries do not exert the same environmental pressures as meat production). Especially fish stocks should be regarded as main issue, together with the possibility of the EU-27 to be able to produce enough fish within its borders.

In the system mapping exercise during the workshop we attempt to reveal the different factors shaping the links between meat consumption in Europe and the environmental impacts at global scale.

5.2 Could healthier and more sustainable diets lead to increased food waste in European households?

The forthcoming "Roadmap to a Resource Efficient Europe" calls amongst others for reducing the disposal of edible food waste in European households. At the same time more sustainable and healthier diets are promoted favouring fresh and less processed foodstuff over convenience and fast food. The question is whether a fresher and healthier diet would cause more food waste, as fresher vegetable produce, dairies, fish and meat are generally more perishable than processed and long-lasting food. In addition, one could assume that, with less use of packaging, fresh foodstuff would turn more easily bad-looking or actually inedible. On the other hand, a diet based on fresh and seasonal food is arguably more sustainable than one without any seasonality incorporated. Among other benefits, a higher consumption of fresh and seasonal food could trigger a higher demand for local food supplies. Therefore a decrease of the so-called "food miles" and energy consumed for transportation could also occur (Owen et al., 2007).

The behaviour-related causes of food waste are connected to cultural and sociological factors, as well as house economics and individual skills. The types of purchased foodstuff and the related possibilities of storing them are not only responsible for a certain amount of waste, as other variables might play a more important role, such as nutrition habits and attitudes. Food consumption and food waste are also linked to the kind of diet people follow. For instance, among the food wasted in a Turkish household, on average more than 30% is fresh vegetables and salads (Pekcan, 2006 in Parfitt et al. 2010) and a similar percentage is fresh fruit. In the UK the proportion of these types of food are 23% and 13% of the total waste.

In WRAP (2009) it is pointed out that (in UK) a very large proportion of wasted fruit and vegetables are inedible parts or categorised so by households. Furthermore, an important reason to throw away food may not be connected to the freshness at the time of purchase, but to household skills and frequency of cooking. Yet, Western lifestyles may not be compatible with the abilities required to better and efficiently handle (fresh and other) food. Indeed, without developing the necessary skills of fresh food management consumers run the risk of throwing ever more foodstuff in the waste bin.

In the system mapping exercise during the workshop we attempt to shed light on the linkages between food consumption habits and the emergence of food waste.

5.3 How does an increase in consumption of regional products affect the productivity of agriculture and food systems?

The promotion of seasonal foodstuff cultivated and processed at local/regional scale is part of policies fostering more sustainable food consumption. Increasing the share of regional products in diets may promote diversity and push away from the standardization of food tastes, while potentially tackling impacts on human health. Ecological pressures, such as accelerating loss of crop biodiversity worldwide, may also prompt local and regional efforts to grow, manufacture, and brand food (IFF, 2011). However, a transition towards local/regional food production and consumption is generally at odds with productivity-driven narratives. The implementation of this strategy may impact gross production and resource use patterns, thus affecting land use and employment.

Labour productivity is a measure of how efficiently labour is used. It may be defined as output, or value added, divided by the amount of labour employed to generate the output (ILO, 2005). Indicators of labour productivity may be calculated as output per hour worked or output per person employed. On the other hand, agricultural labour intensity measures the number of economically active persons (or annual work units) per hectare of arable and permanent cropland (WRI, 2012) or unit of output. World figures for agricultural labour intensity in the period between 1963 and 2003 show that this measure has increased from 0,62 to 0,87 workers per hectare. Asia, Sub-Saharan Africa, Middle East & North Africa were the regions that contributed the most to this result. In contrast, labour intensity has decreased considerably in Europe during that period, from 0,34 to 0,09 workers per hectare, which brings it closer to the values registered for North America (0,01 workers per hectare in 2003) (WRI, 2012). How would an increase in regional and seasonal diets impact on agricultural labour intensity and productivity?

At a macro-economic level, the implementation of this strategy may affect the employment in domestic agriculture in various ways: domestic sales of seasonal products may increase, and hence have positive effects on employment in the respective sectors. Sustainable/local/organic agricultural practices may involve increased expertise and time (e.g. integrated pest and nutrient management; new on-farm green equipment and infrastructures), which could contribute to inducing shifts of resources into agriculture (OECD, 2011). On the other hand, food exports to other countries in Europe and abroad may decline, which could shift away resources from those agricultural sectors that depend to a large extent on exports.

Agriculture is an important driver of rural economies in many EU regions and is the basis of local traditions and social identity. This is particularly true in rural areas where the primary sector has a significant contribution to value added and employment (Freibauer et al., 2011). Furthermore, agriculture generates additional local economic activities, such as food processing and tourism. As advocated by Freibauer et al. (2011), in designing new systems of food production, particular attention needs to be given to the crucial importance of the local environments.

In this mapping exercise, we will explore these interrelationships, examining the causal effects on agricultural and food systems when consumers prioritize regional and seasonal diets.

6 Outline of the workshop

The first Multinational Knowledge Brokerage Event on Sustainable Food Consumption takes place on 25-27 January 2012 at Centro Cultural de Belém in Lisbon.

On **Thursday, 26 January**, following the welcome and introductory address by **Paula Antunes** (CENSE FFCT-UNL) and **André Martinuzzi** (RIMAS WU, Austria), the workshop will be kicked-off by a keynote presentation by **Roberta Sonnino** (Cardiff University, UK) to set the scene for the core questions that RESPONDER deals with. In particular, Dr. Sonnino will address initiatives and strategies for sustainable food production and consumption. Next, participants will get the chance to debate some of the presented issues in the course of a **poster walk**. Following lunch break, **Jeroen van Laer** (European Commission, Directorate General for Health and Consumers - SANCO) will present the second keynote, addressing sustainable food issues from a consumer policy perspective. The following period opens space for questions and discussion on the two plenary presentations.

The remaining of Thursday afternoon is dedicated to the method RESPONDER uses for exchanging knowledge and fostering mutual understanding – participatory systems mapping. After a brief introduction to the method by **Nuno Videira** (CENSE FFCT-UNL), participants will in three thematic working groups jointly construct and debate system maps on one of three policy questions described in section 5. System mapping exercises will be facilitated by André Martinuzzi, **Frieder Rubik** (IOEW, Germany) and Nuno Videira. Finally, **Rui Santos** (CENSE FFCT-UNL) will wrap up Day 1 and give an outlook of the next day.

On **Friday, 27 January**, after a presentation of interim outcomes by Paula Antunes, **Arnold Tukker** (TNO, The Netherlands) will be responsible for the third keynote presentation, sharing environmental and health considerations with respect to diets in regions of prosperity and austerity. Following a period for questions and discussion, a second session on participatory systems mapping will take place, in which the maps from Day 1 will be discussed with members of other groups and finalised. Subsequently, **Sofia Vaz** (CENSE FFCT-UNL), the event facilitator, will introduce a **fishbowl discussion on policy conclusions and research needs**. This activity precedes the final address by the RESPONDER project coordinator, André Martinuzzi, who will wrap-up the debate and give an outlook on upcoming events and activities planned in the project.

The workshop will also provide plenty of opportunities for informal discussions and social interaction. On **Wednesday, 25 January**, a **welcome reception** is scheduled at Jerónimos 8 Hotel. On **Thursday, 26 January**, a **sustainable cooking workshop and dinner** will be hosted at Kiss the Cook in Lx Factory.

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