



Policies  
to Promote  
Sustainable  
Consumption  
Patterns

## EUPOPP Work Package 3

### Deliverable 3.1.1: Inventory + exploratory analysis of SC instruments in need areas food and housing

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Ingrida Bremere, BEF

with contributions from

Bettina Brohmann, Regine Barth, Franziska Wolff, Norma  
Schönherr (OEKO)

Ana Alcantud (ECOI)

Denise Leung (UCL)

Daina Indriksone, Irina Aleksejeva (BEF)

Eva Heiskanen, Kristiina Aalto (NCRC)

Amalia Ochoa (ICLEI)



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## 1 Introduction

The first part of the impact assessment of sustainable consumption (SC) instruments within the EUPOPP project covers the implementation of the WP3.1. The research tasks include the development of an inventory of SC instruments (Task 3.1.1) and an exploratory analysis of selected SC instruments (Task 3.1.2). The analysis dealt with the questions of how these instruments are designed and implemented in the need areas of housing and food. This report constitutes the Deliverable 3.1.1 of the EUPOPP project, and provides results from the SC instrument inventory and the exploratory analyses.

*The report is structured as follows:*

- Chapter 2 sets the objective and scope of the inventory and exploratory analysis of SC instruments. Instruments with a potential for high sustainability impact are in focus of the EUPOPP project.
- Chapter 3 delineates the methodology aspects for carrying out the instrument inventory in need areas of food and housing, presents criteria for the selection of instruments and aspects covered by the exploratory analysis of instruments.
- Chapter 4 presents an overview of SC instruments in the food sector. The inventory covered instruments found on European level, as well as national and regional instruments in different EU member states.
- Similarly to the previous chapter, Chapter 5 contains an overview of SC instruments in the housing sector.
- In Chapter 6 follows a summary of the findings from the exploratory analysis of the selected SC instrument.
- Chapter 7 presents a brief summary and outlook related to the instrument effects from the design analysis.

## 2 The objective and scope of inventory and exploratory analysis of SC policy instruments

The broader frame conceptualizing the EUPOPP project is elaborated in the Conceptual Framework (Heiskanen and Schönherr, 2009). Here we need to first delimitate the concepts of analysis of our research tasks:

- The focus is on policy measures that target the demand side or product policy, with a special focus on policies for **housing and food**.
- We thus focus on policies that directly and on purpose influence what products and services people do buy or can buy, and how they use the good or service towards more sustainability.

- Moreover, we focus on policies that contain an explicit aim to target sustainable consumption, either directly by addressing individuals, or indirectly by changing the framework conditions for consumption. Other policies, which implicitly or unintentionally influence the sustainability of consumption are considered as ‘contextual factors’ rather than as the explicit focus of evaluation.

The units of analysis cover the **SC policy instruments**. These are understood as a set of techniques of governance by which public and private institutional actors support and effect social change towards sustainable consumption. The particular interest is on instruments that target the demand-side, i.e., private or organizational consumption and products.

However, the policy development is starting from a given situation creating the background context of the instruments. The food sector is largely dominated by the practices of production originating in the EU’s Common agriculture policy, as well as generally, food safety regulations. Food production is the main aspect while the other end, i.e. over-purchasing of food and waste generation currently is addressed only to a little extent. In the housing sector the instruments are related to the development of energy policies improving the energy efficiency of appliances and buildings.

## 2.1 Scope of the SC instrument selection

Sustainable Consumption (SC) instruments with a potential for high sustainability impact are in focus of the EUOPP project. The elaboration of consumption trend analysis and sustainability potentials<sup>1</sup> have gained some insights on areas where the high sustainability impacts can be expected (Fritsche, Hünecke & Rausch 2009). Thus, the considerations on sustainability potentials and the selection of possible drivers (as delineated in the EUOPP project WP2) were the basis for parameters on grouping of instruments in the need areas of housing and food.

For housing:

- Household electricity consumption driven by appliances (white goods, lighting, IT and home entertainment). The trend analysis shows that the level of equipment in households is rising.
- Green energy as share of green electricity, gas and heat in the overall energy mix driven by share of green electricity purchased by households and share of green thermal energy purchased by households.
- Thermal energy demand for residential heating driven by the energy standard of buildings (kWh/m<sup>2</sup> a) and the choice of heating systems. Indications are that less people live on

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<sup>1</sup> The sustainability potentials are expressed in potential reductions of CO<sub>2</sub> equivalents, taking into account full life-cycle emissions, and comparing the “achievable” sustainable consumption patterns in 2030 with the projected “trend” developments (Fritsche, Hünecke & Rausch., 2009).

even more living space (single households, larger apartments) while at the same time efficiency potentials are not fully utilised.

- Air conditioning energy demand driven by saturation of air-conditioning systems and constructive elements supporting natural cooling.
- Household water consumption driven by saturation of respective household appliances and equipment and domestic water use. This parameter has a regional relevance in the EUPOPP project (e.g., UK, ES/Southern cluster).

For food:

- Food product characteristics with type and amount of food consumed (per person and year) and share of organic agriculture driven by sustainable diet styles and share of organically grown food purchased by consumers. The trend analysis shows that most sustainability potentials are related to the diet (particularly consumption of dairy and meat products).
- Beverage packaging (waste management) driven by share of packaging type purchased by consumers.
- Organic waste separation in households (waste management) driven by the rate of separated organic waste per household per year as there are regulatory in ordinances of municipalities targeting the sorting of organic waste. These instruments may have a potentially significant impact on GHG emissions as environmental impacts differ whether the waste is used for biogas production/compost or incinerated/disposed in landfill.

In terms of geographic coverage, the scope for the SC instruments will cover primarily for the instruments found in the EUPOPP focus countries – representing four regional clusters as defined in WP 2 (Fritsche, Hünecke & Rausch, 2009): Germany, Finland, Latvia, Spain and the United Kingdom, although some promising instrument from another country with a relevance to the project will be included as well. The national implementation of EU-wide instruments (directives, regulations) in our focus countries by national and regional or local instruments will be included as well. The scope will encompass relevant instruments irrespective of the stage of implementation, i.e., including also new instruments.

## 2.2 Implementation steps

The implementation of WP3.1 includes the development of an inventory of SC instruments (Task 3.1.1) aimed at producing of instrument lists in groups of instrument having a high sustainability potential (from WP2). Carrying out of an exploratory analysis of selected SC instruments (Task 3.1.2) of how these instruments are designed and implemented in the need areas of housing and food will help to identify most promising instruments for in-depth analysis in the WP3.2.

The implementation of tasks was designed to take place in subsequent steps as depicted schematically in Figure 1.

## Policies to Promote Sustainable Consumption Patterns

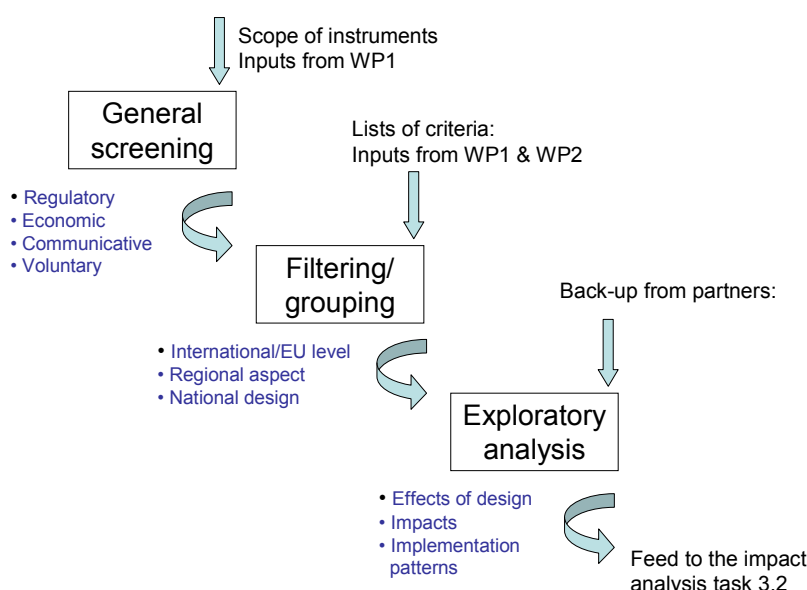


Figure 1. Schematic depiction of implementation of tasks within the EUPOPP project WP3.1 on SC instrument inventory and exploratory analysis

The inventory, i.e., general screening of SC instruments was designed to select SC instruments in certain groups pertaining to parameters in the need areas of housing/energy and food (as defined by the scope) primarily covering for instruments focussing on the consumer and products.

An important aspect for the selection of SC instruments comprised their distinction by the instrument categories (type of instrument). In the EUPOPP project the instruments are categorised based on their governance mechanisms as elaborated in a conceptual framework (Heiskanen and Schönherr, 2009):

- Regulatory instruments oblige the addressees (citizens or organisations) to comply with the government rules under threat of sanctions. Examples include bans, mandatory standards and permit requirements.
- Economic instruments involve the distribution or levying of resources, thus making certain behaviours more or less financially attractive. Examples include taxes or tax exemptions, subsidies or loans, levies or charges, tradable permits and public procurement.
- Communicative instruments aim to influence the addressees via information and persuasion. Examples include labelling, disclosure of information about product or producer performance, and communication campaigns.
- Procedural instruments and instruments of societal self-regulation include negotiated agreements, voluntary programmes and self-regulation by groups of addressees.

The intention was not to cover all instruments that are available in each of the countries, but, instead, to focus on certain criteria for the selection of SC instruments. These instrument selection criteria were derived from the conceptual framework of the EUPOPP project (WP1).

The inventory of SC instruments shall serve as a basis for selection of certain instruments for subsequent exploratory analysis. Filtering and grouping of instruments therefore was performed according to criteria lists (may include design, expected impact or coverage of different types) to systematically select which instruments to analyze.

The exploratory analysis of the selected SC instruments was designed to cover aspects on: how are the concrete instruments designed; how can they impact the individual level of consumption and on the framework conditions of consumption; how are these instruments implemented and institutionally embedded. Drawing from previous work, potential instrument effects as intended and unintended changes in consumption patterns and resulting changes in the environment, society and economy, as well as potential effects on sustainability are included. Examining the selected SC instruments in an exploratory fashion is aiming at preparing for a selection of (ten) instruments to be assessed by in-depth analysis within WP3.2.

In general, results from the implementation of the SC instrument inventory and exploratory analysis tasks (WP3.1) provides the feed for in-depth analysis of SC instruments (WP3.2) where the deepening of SC instrument analysis complements the work carried out by inventory and exploratory steps.

## 2.3 Building on previous research

The literature background suggest, that we are not the first to carry out the policy instrument inventories and assessment of their impacts, especially related to the housing. Carrying out the inventory and exploratory analysis of SC instruments within the EUPOPP project thus will build up on findings from previous research while taking a step beyond the conventional “pro-environmental” (e.g., GHG emissions reduction) efficiency evaluation. In our project the effectiveness of SC instruments is evaluated as regards the changing of individual consumption behaviour, framework conditions for SC as well as their (ex post & ex ante) sustainability impact.

Herewith we are highlighting a few of the most important sources relevant to inventories and assessment of policy instruments.

An inventory and assessment of policy instruments for reducing greenhouse gas emissions from buildings included a world-wide coverage from 52 countries (80 case studies or review reports) collected through database search and specialized target group interviews in particular cases. 20 policy instruments were evaluated according to their effectiveness<sup>2</sup>, cost-

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<sup>2</sup> Effectiveness is defined specifically as success in reducing GHG emissions (Koeppel and Úrge-Vorsatz, 2007)

effectiveness<sup>3</sup> and factors for success<sup>4</sup> (Koeppel and Ürge-Vorsatz, 2007). While evaluating the categories of regulatory, economic, voluntary and information instruments, preconditions and success factors were identified. Sustainable consumption aspects, however, were not in focus of the research. Behavioural characteristics of individuals that hinder the energy efficiency practices (e.g., tradition, behaviour and lifestyle) were included in the list of barriers to the energy efficiency in the buildings sector.

An evaluation of the policy instruments for sustainable consumption and greening the market (within the EU and its Member states) in the selected domains of mobility, food and housing/energy use was carried out within the SCORE network activities. The methodology for evaluation comprised two steps: an inventory of the policy instruments and subsequent evaluation of environmental and economic impacts for a set of promising policy instruments (Lorek et al., 2008). A set of promising policy instruments was chosen to evaluate their environmental and economic impacts. The choice was supported by the criteria related to the relevance, various types of instruments, coherence within the consumption domain to allow the possibility for cross-checking the potential of policy mixes, and representing a mix of traditional and innovative instruments (Lorek et al., 2008; Tukker, 2008). The study intended to offer incentives to structure policies and policy mixes in a more systematic way. However, the analysis and assessment of policies and instruments did not investigate the aspects of the governance mechanism and intervention logic underlying the instrument design and their effects on the instrument impacts.

The conceptual framework, which was elaborated in the project CHANGING BEHAVIOUR includes factors that can influence the successfulness of instruments and presents recommendations with relevance to policy makers and intermediaries (Mourik, et.al., 2009). A portfolio of policy instruments regulating electricity consumption is overviewed and instruments classified according to the barriers they tend to overcome and on their impacts – direct impacts on the consumers' behaviour or effecting actors on the consumer environment level (Transpose, 2009).

Research on effects of influences on consumers' energy behaviour brings forward a key issue on how to design and promote energy efficiency programs. Based on findings of an international inventory of instruments a conceptual framework offering a common baseline of understanding of behavioural aspects was developed within the project IDEAL EPBD (Brohmann, et.al., 2009). The comparison of the results in various countries and various policy measures is used to define the most effective ways on how to solve market barriers and change the consumer behaviour.

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<sup>3</sup> For the cost-effectiveness of CO<sub>2</sub> reduction (in USD/tCO<sub>2</sub>), the total societal costs (from the policy making perspective) were considered, recalculated to USD with the base year 2000 where possible (Koeppel and Ürge-Vorsatz, 2007)

<sup>4</sup> The factors for success identified key factors determining effectiveness as well as barriers which can explain the failure (Koeppel and Ürge-Vorsatz, 2007)



### 3 Methodology approach

In this chapter the approach to the instrument inventory and the exploratory analysis is described. Templates for a structured implementation of tasks were developed (Annex I: inventory sheet and Annex II: exploratory analysis).

#### 3.1 Inventory of SC instruments

The instrument inventory, i.e., general screening and collection of lists of instruments was carried out by the project partners: NCRC, ECO-I, UCL, OEKO and BEF. Our inventory comprised the selection of SC instruments in certain groups pertaining to parameters in the need areas of housing/energy and food (as defined by the scope) primarily covering for instruments focussing on the consumer and products.

The collected SC instruments were described briefly in a template (an Excel sheet) where the individual sheets corresponded to the parameters from grouping of instruments (please refer for parameters to the chapter 2.1).

The intention was not to cover *all* instruments that are available in each of the countries, but, instead, to focus on certain criteria for the SC instrument selection as outlined in further discussion. Brief overview on SC instruments is presented in further chapters.

The general criteria for the selection of instrument for the inventory included:

- Coverage of sustainability aspect reflected mainly by environmental, but also social (gender) and economic (employment) aspects in the EUPOPP project.
- Targeting different consumption phases, i.e. purchasing, usage and disposal behaviour. Addressing the purchasing behaviour would mean the decision for products that are more efficient than *conventional* products, or based on different technologies/ energy sources than *conventional* products. Addressing the usage in terms of efficiency or disposal behaviour in terms of waste management in a sustainable way.
- Instruments with a *high potential for impact* generation, e.g., national scale, European scale

*Additional* criteria were applied to achieve an overall balance among instrument types and consumption phases, and impact levels (global vs. national vs. local) covered, as well as the innovativeness aspect and the coverage of gaps identified in the research on sustainable consumption.

### 3.2 Selection of instruments for exploratory analysis

Certain selection criteria were underlying the selection of instruments for the exploratory analysis.

- Expected potential to reach many people (scope of impact) and to induce substantive behavioural change in those people tackled (depth of impact).
- Instruments with a high potential for impact generation both in terms of identifiable change in consumption patterns and as regards sustainability impacts.
- Instruments that have a certain “age” and degree of implementation allowing to get data on implementation and effects (evaluation), although new instruments were included as well if they were particularly innovative.
- Instruments that address the gaps in existing research or that have not been well researched yet.
- Innovative instruments and those with a potential of generating ‘new knowledge’ were of interest
- In general different instrument types were selected, to be able to later make conclusions on efficacy of governance mechanisms – selection should tackle different consumption phases (purchasing, usage and disposal).

6-8 instruments per partner shall be covered in the exploratory analysis, with food/housing instruments in more or less equal shares.

### 3.3 Approach to the exploratory analysis

A text based analysis of selected SC instruments in areas of housing and food was performed in an exploratory fashion by presenting answers to the questions:

- How exactly is the instrument designed to function?

The conceptual framework of the EUPOPP identifies, that the design and implementation of a policy instrument need to fit the consumption problem in question, as well as the institutional and policy context, and adequately reach the declared target group (Heiskanen and Schönherr, 2009: 86). For the analysis, the aspects include background and implementation history, goals and objectives of the instrument, innovative aspects. Functioning of the instrument is described by the core governance mechanisms and pathways by which it is to attain its goals. It includes as well different target groups (actors) involved in instrument implementation (e.g., consumers, producers, retailers, public administration) and their responsibilities.

- From the very design, how can the instrument impact on the individual-level determinants of consumption and on the framework conditions of consumption?

As identified in the conceptual framework of the EUPOPP, the individual-level consumer behaviour is effected, e.g., by influencing consumer's knowledge, routines and habits, motivation and norms, confidence and empowerment, abilities and opportunities (Heiskanen and Schönherr, 2009: 52). Framework conditions of consumption include the market and the social and physical environment (Heiskanen and Schönherr, 2009: 52). The instrument may affect the market by changing relative prices or improving product information, consumption feedback, market transparency or the availability of products and services, or by government using its market power and example. An instrument can affect the social and physical environment by fostering systems of provision, through enabling infrastructures and conditions or supporting local sustainable communities and social groups.

- How the specific design aspects of a SC instrument support its effectiveness?

Among design factors that enable or hamper the effectiveness of the instrument are, e.g., scope and outreach, depth, targets, monitoring and evaluation, instrument reviews by adjustments of the instrument.

- Does and how the instrument interacts with other policies or instruments?

A brief overview on synergetic and antagonistic interactions of the instrument is presented.

- What are potential (if empirical insights already available: de facto) effects of the instrument?

Information found in the literature sources are meant to be presented here. By instrument effects we understand both intended and unintended changes in consumption patterns (instruments outcomes) and resulting changes in the environment, society and economy (instrument impact).

## 4 Overview on SC instruments in the food sector

An inventory list of SC instruments in the food sector is found in Annex III. A brief description of the instruments is found in this chapter.

## 4.1 European level instruments relevant for sustainable food consumption

SC instruments of national and regional scale are heavily influenced and/or complemented with instruments adopted on EU level. While the focus of the EUPOPP inventory and exploratory analyses has been on the former, consequently also EU-wide instruments are addressed. EU-wide instruments relevant for sustainable food consumption were partly implicitly covered by the regional inventories, since directives and regulations have to be transposed into national law/directly implemented on a national level. Moreover, some instruments regarded as particularly interesting from a consumer perspective were compiled in a separate inventory list. The instruments of this category are mainly procedural/voluntary instruments and complement the national level inventories.

The EU sustainable food chain initiative: The European Food Sustainable Consumption and Production Roundtable brings together agricultural producers and suppliers, food and beverage producers, packaging firms and consumer organisations. It is supported by the United Nations Environment Programme and the European Environment Agency and was formally launched in April 2009. The Roundtable constitutes a major food sector-wide contribution to the EU's ambitions in the field of SCP. The organizations participating in the Roundtable seek to develop environmental assessment methodologies for products and means for effective consumer communication, and to report on improvements.

The Sustainable Food Lab is a **network** of European organizations committed to developing a sustainable European food system. The European initiative has published a Dossier of Best Practice in Sustainable Public Food Europe and the USA (published in August 2007). The Dossier extensively covers good practice in Italy, UK, Spain, France, Sweden and Denmark<sup>5</sup>. The Dossier is useful to obtain information about many initiatives taking place on local, regional and national levels in several EU Member States. The Sustainable Food Lab is a European initiative comprised of companies (e.g. Carrefour, Cooperative, Unilever), governmental and international organisations (e.g. European Commission, World Bank), as well as civil society organisations (Oxfam, The Nature Conservancy).

Organic Farming, Good for nature, Good for you Campaign<sup>6</sup>, is an initiative of the European Commission's Directorate General for Agriculture and Rural Development as part of a campaign to increase awareness about organic farming throughout the EU. The initiative's **website** is the focal point of the campaign and its general content is tailored to the needs of consumers. Meanwhile a special toolbox section provides print, photographic and audiovisual material for various stakeholders including organic farmers and farming associations, processors and retailers for generating their own promotional campaigns in the different EU Member States.

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<sup>5</sup> <http://www.sustainablefoodlab.org/article/view/17964/1/2373>

<sup>6</sup> [http://ec.europa.eu/agriculture/organic/home\\_en](http://ec.europa.eu/agriculture/organic/home_en)



Green Public Procurement, a website<sup>7</sup> of the European Commission, Directorate-General for the Environment containing information on policies (EU and national, including also national action plans on GPP), good practice, events and practical guidance from the EC on how to overcome legal issues fundamental to carrying out GPP in practice. The **website** contains information on the European policies and the legal framework governing GPP, information supporting GPP and gathered through European studies and surveys that evaluate the environmental benefits of GPP and the financial costs associated. The website also serves as the main portal for providing the Green Public Procurement Training Toolkit – a tool developed by the European Commission and an expert group composed of EU Member State representatives for use by GPP trainers or for the integration in general public procurement training courses. The Toolkit contains core and comprehensive GPP criteria for a range of different goods and services purchased by European public authorities including **criteria for food** (food and catering services). One of the main objectives behind the European Commission's most recent Communication on GPP - Public Procurement for a Better Environment (COM(2008) 400 Final) – is the definition of a process for setting common GPP criteria across the EU, where the Commission proposes the GPP Toolkit criteria for adoption by the EU Member States in their GPP national action plans and other GPP guidance. The Toolkit was developed by the Commission to address some of the principal obstacles causing a lack of action in GPP by the European public sector.

Join the Food Revolution, a campaign<sup>8</sup> on European Food Culture by the Greens/European Free Alliance in the European Parliament offers an **open forum** to NGOs and civil society organisations with the aim of provoking public debate and action on issues such as: possibilities for improving the safety of food without forgoing quality and taste; prevention of Europe's agriculture and environment from being risks associated with genetically modified organisms (GMOs), creation of more choice for consumers and farmers through sustainable consumption and production of food, as well as promotion of healthy diets.

The EU wide instrument related to sustainable labelling<sup>9</sup> of food products was introduced in 2003 by the EC Regulations No 1830/2003 and 1929/2003. The aim of this instrument is to improve traceability of products containing GMO's and food/feed produced from GMO's. The objective is to facilitate accurate labelling, monitor the effects on the environment and health, and implement risk management measures. Producers are obliged to provide information about their products so GMO's can be traced for labelling while retailers have to ensure their products are properly labelled. Application of the label gives people information which food contains GMO's thus can influence their purchasing as well as usage behaviour.

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<sup>7</sup> [http://ec.europa.eu/environment/gpp/index\\_en.htm](http://ec.europa.eu/environment/gpp/index_en.htm)

<sup>8</sup> [http://www.greens-efa.org/cms/default/rubrik/10/10598.food\\_culture@en.htm](http://www.greens-efa.org/cms/default/rubrik/10/10598.food_culture@en.htm)

<sup>9</sup> [http://www.biosafety.be/GB/Dir.Eur.GB/Del.Rel./1830\\_2003/1830\\_2003\\_TC.html](http://www.biosafety.be/GB/Dir.Eur.GB/Del.Rel./1830_2003/1830_2003_TC.html)

EC Regulation No 1830/2003 concerning the traceability and labelling of genetically modified organisms and the traceability of food and feed products produced from genetically modified organisms and amending Directive 2001/18/EC

## 4.2 National and regional instruments

The overview on SC instruments in the food sector reflects the selection of relevant instruments throughout the four regional clusters (Fritsche, Hünecke & Rausch 2009). The lists of collected instruments were not aimed at full representation of all instruments available. Rather, we have focused on instruments best fulfilling the selection criteria (refer to chapter 3.1)

### 4.2.1 Food product characteristics – diet and share of organic food

#### Regulatory instruments

Regulatory instruments addressing consumers and having sustainable food consumption at heart have been found to be scarce in all four clusters. From the high numbers of instruments addressing food product characteristics, most address food safety standards and quality requirements.

However, we found it useful to include an example from Spain in the inventory. The regulation creating a legal basis preventing the abuse of the terms concerning “biologic” and “ecologic” agriculture and products<sup>10</sup> was issued in 2005. The aim of this instrument is to set rules in a way that the abuse of terms like “bio”, “biologic” (“biológico”) or “organic” (“orgánico”) should be prevented by the legal basis in order to avoid the misinterpretations and possible confusion at consumers side. Several terms labelling a product as „ecological“ are protected and defined according to the corresponding regulations of ecological products. The abuse of those terms can now be pursued. However, the main addressees of this instrument are producers to fulfil the requirements, while the consumers are not directly involved but being protected for their consumer rights to purchase correctly labelled “ecological” products (Alcantud, 2009a).

#### Economic instruments

In the group of economic instruments we have pointed out those ones, which are promoting sustainable meals/food in public canteens related to the Green Public Procurement (GPP). Many consumers are regularly eating in public canteens and are therefore confronted with whatever “sustainability standard” these places adopt. Especially in schools and universities where young consumers are concerned the GPP may enhance the multiplier/ model function of the public purchasing. The GPP instruments are given special attention in the EUPOPP classification of instruments: by implying the market signals, these instruments are featuring

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<sup>10</sup> Royal Decree 1614/2005 modifying the Royal Decree 1852/1993, of 22 October, on the organic agrarian production and its naming on agricultural and food products, available at: [http://noticias.juridicas.com/base\\_datos/Admin/rd1614-2005.html](http://noticias.juridicas.com/base_datos/Admin/rd1614-2005.html)



characteristics of regulatory or economic instruments, and making use of eco-labels or training, communication and information (Heiskanen and Schönherr, 2009: 53).

In Italy, the instrument *Mense Bio* (Organic school canteens)<sup>11</sup> is in operation since 1986<sup>12</sup> when activities started in one municipality. Since then, the geographic coverage has increased considerably over the years. The general objective of the instrument is to incorporate special types of products (organic food) in meals by providing economic support to public services (hospitals, schools, universities etc.) that include organic food in their canteens. The implementation is combining regulatory<sup>13</sup> and communicative<sup>14</sup> characteristics. Consumers are the beneficiaries, while the management of public canteens have to introduce a certain type of food in their offers. Public administrations (state and regional level) have to set and comply with the legal provisions, while public institutions (schools, etc.) are the ones that put the instrument into practice. Moreover, the Emilia Romagna Region promotes an informative Internet site run by a non-profit organization, which is active in the promotion of organic food<sup>15</sup>.

In the Nordic countries, public catering has an important role due to the high percentage of meals consumed outside home<sup>16</sup>. There are several instruments dealing with aspects of sustainable meals found. In Sweden, the instrument on goals of organic production and consumption 2010<sup>17</sup> is aiming at the public catering sector (state and municipality) to increase the amount of organic food to 25% before 2010. The share of certified organic farming area

<sup>11</sup> Some of the legal basis that manage the introduction of organic food in public services canteens: National Law: Ex.DPR 128/99 n.132 11, art. 59 Finanziaria 2000; Emilia-Romagna Region LRn.29 del 4/11/02; Marche Region, LR n.76 del 29/12/97; Friuli Venezia Giulia Region, LR n.15 dell'8/8/00; Umbria Region, LR n.21 20/08/01; Veneto Province Delega n. 3883 del 31/12/01 and LR n.6 1/3/02; Lazio region,LR n.49 del 27/12/08 (Alcantud, 2009b).

<sup>12</sup> The first municipality that incorporated organic food in the schools canteens was Cesena in Emilia- Romagna Region in 1986 by the means of the project "Papamondo" to introduce organic Mediterranean diet in schools canteens. During the 90's other municipalities joined this initiative and in 1996 there were 69 "organic schools", in 1997 97, in 1998 there were 103 schools *Mense Bio*, in 1999 more than 110 (Alcantud, 2009b).

<sup>13</sup> Law 488/99 "Regulation for the annual and long-term state budget" (Legge 23 Dicembre 1999, n. 488 " Disposizioni per la formazione del bilancio annuale e pluriennale dello Stato (legge finanziaria 2000)" pubblicata nella Gazzetta Ufficiale n. 302 del 27 dicembre 1999 - Supplemento ordinario n. 227) includes provision "the public institutions that manage schools or hospitals canteens can include in their everyday diets organic products, traditional ones and Protected Designation of Origin (PDO) products as well, taking into account the recommendations of the Nutrition National Institute" (article 59). Taking as a basis the Law 488/99 regional and local authorities includes in their respective public tender and in the regional laws the quantity and type of organic food that must be offered. The regional laws can have specific objectives linking food consumption and environment or health aspects (Alcantud, 2009b).

<sup>14</sup> Incorporates informative, communicative and educational activities related to sustainable food consumption education in schools (Alcantud, 2009b).

<sup>15</sup> The internet site: [www.sportellomensebio.it](http://www.sportellomensebio.it) is targeted at municipalities, parents, food service and catering companies.

<sup>16</sup> E.g., in Sweden about 50% of meals are consumed outside the home (Shanahan & Ekström 2001). The amount of meals produced in catering units is around 5.7 million every day (delfi Marknadspartner AB 2005).

<sup>17</sup> Ekologisk produktion och konsumtion - Mål och inriktning till 2010; Recommendation of Swedish Government 2005 (Regeringens skrivelse 2005/06:88)

should increase to 20% of all farming areas<sup>18</sup>. The consumers thus get a chance to purchase sustainable, due to the increasing amount of organic food served in public institutions (schools, offices, hospitals).

In Finland, the instrument on requirements for public catering to serve sustainable meals<sup>19</sup> is in operation since 2009. The goal is to promote the consumption and production of organic foods and for public catering to be the leader in consuming organics. The public catering (of state institutions) should offer / serve sustainable<sup>20</sup> meal choices at least once a week by 2010 and twice a week by 2015. Consumers are not assigned of a particular role, however, by increasing the amount of sustainable (organic, vegetarian or seasonal) food served in public institutions (schools, offices, hospitals etc.), consumers can increase their consumption of sustainable food when eating in canteens. The instrument promotes the demand for sustainable food and thus creates new markets for producers while catering procurers are likely to ask for more information about sustainability aspects of food (Heiskanen and Aalto, 2009a). Consumer education and “leading by example” can be utilized through the public procurement of food services that are well visible to consumers.

### Communicative instruments

A high number of instruments have been found in the group of communicative instruments, although these are largely attributed to labels. Other types of communicative instruments mainly consist of information campaigns to promote healthy food and ecological products.

Instruments created and used on national scale by the public administration, e.g., the Federal program for organic farming in Germany<sup>21</sup> (since 2001<sup>22</sup>) and information on NAOS strategy in Spain<sup>23</sup> (since 2006) place great emphasis on consumer information on sustainable food

<sup>18</sup> The current instrument (from 2006) is the follow-up from earlier instrument (from 1994) requiring the increase of organic farming area top 10% by 2000.

<sup>19</sup> Council of State Decision of Principle on the Promotion of Sustainability in Public Procurement 8.4.2009

<sup>20</sup> Sustainable food is defined to be either organic food, vegetarian food or seasonal food.

<sup>21</sup> Bundesprogramm für ökologischen Landbau: <http://www.bundesprogramm-oekolandbau.de/> bundling several projects such as \*)web portal [www.oekolandbau.de](http://www.oekolandbau.de) \*)promotion price organic farming \*)several information campaigns and workshops \*)Trainee program \*)exhibitions. The goal is to is to frame conditions for organic agriculture and farming and create a balanced growth of supply and demand regarding all phases of the supply-chain from producer to consumer. Retailers (bakeries, butchers or dairy) are informed about standards and laws in the area of organic farming and marketing of the products. The programme also offers workshops for employees of food retailers. Information campaigns for consumers – especially children and teens as well as information material for large-scale consumers such as canteens. The final review of the evaluation can be downloaded <http://www.bundesprogramm-oekolandbau.de/das-programm/evaluierung/>.

<sup>22</sup> The programme started off at the end of 2001. In 2002 and 2003 35 Mio Euro were allocated through the programme, 2004-6 20 Mio, since 2007 the programme has a budget of 16 Mio Euro.

<sup>23</sup> Strategy for nutrition, physical activity and obesity prevention NAOS strategy. Estrategia NAOS; Estrategia para la nutrición actividad física y prevención de la obesidad <http://www.naos.aesan.msps.es>. The aim is to inform about the activities, publications, nutritional advices, etc. of NAOS strategy. Within the activities of this strategy special campaign is created for information and promotion of a healthy nutrition and lifestyle for school children (6 to 10 years). Evaluation report from the pilot phase: [http://www.perseo.aesan.msps.es/docs/docs/programa\\_perseo/Primera\\_Evaluacion\\_PERSEO.pdf](http://www.perseo.aesan.msps.es/docs/docs/programa_perseo/Primera_Evaluacion_PERSEO.pdf)



production, mainly through web portals. Furthermore, consumers are addressed by a wide scope of activities while particular attention is paid to children and teens promoting healthy nutrition and lifestyle.

Information campaigns on promotion of healthy food or balanced diets and use of biological food are found in countries throughout the four regional clusters, e.g., Germany and Latvia. These campaigns are organized as part of national plans or programs promoting healthy food. Information and assistance to consumers is provided via printed materials, e.g., brochures<sup>24</sup> specifically designed to help consumers in their everyday shopping and to inform them about standards, labels and other possibilities to consume in a sustainable way. In Greece, the dietary guidelines for adults are issued to increase the understanding for use of various products, including regional food<sup>25</sup>. Campaigns<sup>26</sup> to promote consumption of organic foods by delivering information of and recipes for meals via e-mail take a more direct approach to contacting consumers.

A report<sup>27</sup> on “Livestock consumption and climate change: A framework for dialogue” - by the organizations World Wildlife Federation (WWF) and the Food Ethics Council (FEC), published in September 2009, is calling on the UK government to encourage the reduction of meat consumption. This instrument is included in the overview due to its high degree of innovativeness, taking into consideration the large sustainability potentials related to consumption of meat products (Fritsche, Hünecke & Rausch 2009) and the fact that this is an aspect that is not yet publicly tackled by policy makers. The report is based on research conducted by the WWF and FEC, and it sets out a framework to aid producers, environmental groups, and policy-makers to address and make progress on the issue. Aimed at encouraging the government to take an active role in reducing meat consumption in the general population, WWF has suggested numerous ways this can be achieved; such as public health campaigns that encourage people to eat lower-impact livestock products, such as poultry. It also suggests extending nutritional information and introducing VAT-style taxes on high GHG foods. Currently, the public administration is called to create policy to encourage consumers to eat lower-GHG products (Leung, 2009a).

### **Mandatory and voluntary labels**

Labels are among the most commonly used communication based instruments affecting the purchase decisions of consumers. Requirements and standards to be fulfilled for the label award are giving to consumers certain guarantees and information about products. Although,

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<sup>24</sup> Sustainable Shopping Basket, 2009, in Germany: <http://www.nachhaltigkeitsrat.de/projekte/eigene-projekte/nachhaltiger-warenkorb/?blstr=0>

<sup>25</sup> The recommendations in Greece are since 1999, the general discussion is ongoing concerning the uptake of olive oil and its quality, e.g., <http://www.nature.com/ejcn/journal/v56/n9/full/1601521a.html>

<sup>26</sup> Club for organic food (Luomuklubi) <http://luomu.ruokatieto.fi/> Voluntary campaign by Finfood - Suomen Ruokatieto Oy, The Ministry of Forestry and Agriculture finances the campaign material.

<sup>27</sup> [http://assets.wwf.org.uk/downloads/fec\\_report.pdf](http://assets.wwf.org.uk/downloads/fec_report.pdf)

the background for the goals and functioning of labels are common to all of them, there are particular aspects that make the label distinctive, and therefore, they are discussed individually.

Since 1994, organically labelled products need to meet the EU criteria<sup>28</sup> on organic production and labelling of organic products. The implementation of these requirements is country specific: if the official label in Finland was introduced in 1996<sup>29</sup>, the requirements in Latvia are in force since 2008<sup>30</sup>. In some cases regulatory and voluntary labels are applied to one particular product group in parallel, e.g., egg labelling<sup>31</sup> in Germany.

The regional eco-label: Nordic Swan is also applied for restaurants (5 licences in Finland, and 29 licences in other Nordic countries). This voluntary label is awarded if the restaurants fulfil a set of criteria<sup>32</sup>, among others including the ones on purchase and use of raw materials and serving of organic food.

The German organic food label (Biosiegel)<sup>33</sup> was initiated in 2001 as a nationally standardized eco label in order to bring about clarity and transparency for consumers of organic food (Bio-Siegel 2009a). In 2007, the legislation was adapted to European standards<sup>34</sup>. Following this adaptation, the German legislation regulates the use and design of the German eco label and the European legislation articulates the eco-political targets of European eco-labelling. The regulatory framework forming the basis for the use of the eco-label is mostly concerned with circumstances of production, while the label intends to inform about the environmentally friendly production and the organic characteristics of the labelled products (Schönherr, 2009f).

National voluntary organic food labels have a long history in some EU countries. In Germany, the Bioland-label<sup>35</sup> has been awarded by the leading organic farmers association since the mid-1970s. Among the aims of this instrument are to produce food with high value for human

<sup>28</sup> The labels are voluntary, but organically labelled products need to meet the criteria of the Council Regulation (2092/91, 834/2007, 967/2008 on organic production and labelling of organic products).

<sup>29</sup> Exploratory analysis of Labelling of organic products (Aalto and Heiskanen, 2009b).

<sup>30</sup> Requirements for food quality schemes, its implementation, operation, supervision and control (Latvia); *Prasības pārtikas kvalitātes shēmām, to ieviešanas, darbības, uzraudzības un kontroles kārtība (MK Not.663 (2008))*; <http://www.likumi.lv/doc.php?id=180014>

<sup>31</sup> Mandatory standards for egg labelling were introduced in Germany in 2004 when the EU directive came in force (<http://www.bmelv.de/SharedDocs/Standardartikel/Ernaehrung/SichereLebensmittel/Kennzeichnung/Eierkennzeichnung.html>). However, the voluntary label for eggs awarded by the association "Kontrolliert Alternative Tierhaltung (KAT) e.V.", which are stricter than the EU legislation, are just as widely applied (<http://www.label-online.de/index.php/cat/3/lid/20>).

<sup>32</sup> Criteria are issued for certain time period: current criteria are valid from 13 Dec.2006 to 31 Dec.2011.

<sup>33</sup> <http://www.bio-siegel.de/english/homepage/> Legal base of instrument: Organic Labelling Act regarding the introduction and use of an Organic Label (ÖkoKennzG 2001; [http://bundesrecht.juris.de/\\_kokennz/](http://bundesrecht.juris.de/_kokennz/)) --> Organic Labelling Ordinance regarding the implementation and use of an Organic Label (ÖkoKennzV 2009; [http://bundesrecht.juris.de/\\_kokennzv/](http://bundesrecht.juris.de/_kokennzv/))

<sup>34</sup> Set out in Council Regulation 834/2007/EC

<sup>35</sup> Bioland label: <http://www.bioland.de/bioland/>, the Bioland Guidelines as a basis which are stricter than the European legislation. Products as bread, egg products, meat and meat products, beer, cheese, butter included and 100% of the ingredients of certified foods must be of organic origin

health and to contribute to the solving of energy and resource problems. Around 5000 organic farmers and 838 producers are working according to the Bioland Guidelines. Naturland label<sup>36</sup> standard in Germany is in operation since 1982. The core of all Naturland's standards is their holistic approach, sustainable management, nature conservation and climate protection in actual practice, preserving and maintaining the soil, air and water, as well as consumer protection. A wide range of products is covered. This instrument is particularly interesting, because the standards also cover areas not yet governed by the EC organic regulation, such as organic aquaculture, the manufacture of textiles and cosmetics, and, social standards. Both of the above mentioned labels have stricter criteria for certification than the mandatory Biosiegel.

The label "Quality product"<sup>37</sup> in Latvia, also known as "Green spoon" was created as a brand name in 2001 (owner is the public organisation Marketing Board). In 2008, the label was adjusted to the national food quality schemes. The label is voluntary, but the labelled products need to satisfy the criteria of the requirements for food quality schemes, its implementation operation, supervision and control. In addition, it is required, that 75% of raw material is from the same country or region, where the product is produced (shall be documented for proof). The application of label is directed to allow people to choose those food products which are grown and manufactured in Latvia, to improve the sale of such products, and to promote the popularity of Latvian products on local and foreign markets.

The certification system for the Stop Climate Change Label<sup>38</sup> is applied in Germany although the criteria are set according to international standards developed by AGRA-Teh (Agrar- und Umwelttechnik GmbH). The instrument addresses manufacturers aiming at balancing, reducing and neutralizing emissions of greenhouse gases in companies thus actively contributing to climate protection. The certification is especially targeted at companies which are not obliged to take part in EU emission-trade, with special emphasis placed on food producers. The label informs consumers about the product and the company of the product thus influencing the purchasing behaviour. As the first of its kind in Germany the label is an innovation in the environmental labelling system since climate change implications of food production were previously not communicated to consumers in this way.

In the UK, initiated by the Carbon Trust<sup>39</sup> the Carbon reduction label<sup>40</sup> was developed in 2007. The goal of this instrument is to provide a measure of a product's carbon footprint across its

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<sup>36</sup> Naturland label: <http://www.naturland.de/welcome.html> Product groups include fresh produce, beverages, frozen good and dry goods.

<sup>37</sup> <http://www.marketingapad.lv/lv/zinas> The Marketing Board is an organization which merge Latvian agricultural companies and local food producers or public organizations related to this topic to promote local production of raw materials and realization on local and foreign markets.

<sup>38</sup> [www.stop-climate-change.de](http://www.stop-climate-change.de)

<sup>39</sup> The carbon Trust is a company that provides business ideas and investments to help the UK to move a low carbon economy. It is also developing commercial low carbon Technologies. <http://www.carbontrust.co.uk>

<sup>40</sup> <http://www.carbon-label.com/>

life cycle. It allows businesses to show their commitment to reducing carbon emissions by demonstrating that their products have low footprints. It helps consumers make decisions about products by noticing products' carbon footprints on packaging. The carbon footprint label measures carbon emissions at every stage of the supply chain, so producers can assess the environmental impact of their supplies to determine the total carbon emissions of each item. Labelling also enables retailers to decide which products to stock, and to give their customers more information about the products they are purchasing. It also encourages consumers to make educated choices when purchasing products to lower the footprints.

### **Procedural instruments and instruments of societal self-regulations**

In order to promote consumption of healthy food several procedural instruments and instruments of societal self-regulation have been introduced addressing food production companies and their respective associations, companies operating vending-machines, schools as well as general public to ensure a healthy diet at workplaces.

For example, in Spain since 2005 as a part of the Strategy for nutrition, physical activity and obesity prevention NAOS strategy<sup>41</sup> a number of voluntary public agreements have been made with the relevant associations<sup>42</sup> setting voluntary goals that with a view to influencing the purchasing behaviour of consumers particularly when eating outside of the home. While these initiatives mainly focus on health issues they may be considered as SC instruments insofar as they increase consumer choice and awareness of products that are not only healthier but also frequently more environmentally friendly, both with regard to their contribution to GHG emissions and other sustainability criteria.

The public agreement with the Spanish Federation of Food and Drinks Industry aims at replacing trans fats by unsaturated fats in food for children under 12 years, commercialising food products with a low contents in salt, fats and sugar, reducing the caloric contribution of food products, to study the possibility of reducing portions in order to reduce the excessive calories intake, set up working groups to assess the technological possibilities of reducing or replacing fats as well as to elaborate a plan to reduce sodium in these food products that represents a high intake of sodium.

The public agreement with the Spanish Federation of associations of restaurant industry sets the aim not to use saturated fats or trans-fats, use iodized salt in regions where there is an iodine deficit and to do workshops with children in order to favour a healthy diet.

Under the public agreement with the Spanish Association of Vending Machines, companies commit themselves not to install vending machines where there are children between 3 and 12 years old, to remove products advertisement of 'unhealthy' food and include new

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<sup>41</sup> Strategy for nutrition, physical activity and obesity prevention (NAOS strategy).; Estrategia para la nutrición actividad física y prevención de la obesidad (Estrategia NAOS) <http://www.naos.aesan.msps.es>

<sup>42</sup> <http://www.naos.aesan.msps.es/naos/empresas/compromisos/>

advertisement to promote healthy nutrition, to offer healthy products (e.g., fruits), to publish a good practices handbooks for vending machine professionals.

The public agreement with the Spanish Association of Hotel Trade and the Restaurant Industry and the Association of retail chain of Modern Restaurant Industry aims at to support NAOS strategy by the means of communicatory activities (campaigns, handbooks) in the establishments, to promote fruits, vegetables and salads consumption in the establishments, to provide the nutritional information of the food products offered, to reduce the saturated fats gradually, not encourage the giant size portions consumption.

The public agreement with Spanish Confederation of Bread making Organizations sets the aim to reduce gradually the salt percent used in bread elaboration (from 2,2% to 1,8%) thus reducing the sodium daily intake of consumers.

In Germany the Job und fit (Job and fit)<sup>43</sup> initiative was launched in 2007 as a part of the National Aktionplan "In Form - Deutschlands Initiative für gesunde Ernährung und mehr Bewegung" ("In Form - Germany's Initiative for a healthy diet and more exercise")<sup>44</sup> under the auspices of the Federal Ministry of Food, Agriculture and Consumer Protection in collaboration with the German Nutrition Society. The aim of this project is to sustainably optimize the nutrition at work and provide sustainable meals in company canteens, thus addressing both the food choices at the staff canteen and the food choices for the self-made lunch box. The project developed voluntary quality standards for company catering in order to improve its quality. These are recommendations e.g., for the use of certain products in order to raise the awareness about a healthy diet based on sustainable products e.g., to prefer fresh foods, to use MSC-labelled fish products, as well as meat from species-appropriate husbandry and fair trade products.

Targeted to schools voluntary quality standards for school canteens<sup>45</sup> in Germany have been implemented since 2007. The project Schule+Essen=Note1 (School+Food=GradeA) is a part of the national action plan In Form - Deutschlands Initiative für gesunde Ernährung und mehr Bewegung. The main goal of the project and its quality standards is to reach and ensure a constant nutritional quality of food served in school canteens. As recommended by the quality standards, the share of organic products in the costs of goods purchased for catering a school should be at least 10%. With regard to meat consumption the quality standards envisage a maximum of eight times during a menu cycle of four weeks. Since the project gives advice on a wide range of aspects concerning school canteen management promoting a healthy diet it also touches upon the purchasing and the disposal phase of consumption, yet to different extents. The main focus is on the purchasing phase of consumption. The disposal phase is mostly addresses by a few guidelines on choosing reusable crockery in order to reduce or avoid waste generation.

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<sup>43</sup> [www.jobundfit.de](http://www.jobundfit.de)

<sup>44</sup> <http://www.in-form.de>

<sup>45</sup> <http://www.schuleplusesessen.de/schule+plus+essen/qualitaetsstandards/>

The voluntary instrument School Milk Scheme is functioning in Latvia since 2004<sup>46</sup>. The implementation of the “School milk” includes signing of voluntary agreements from schools on subsidized milk supply<sup>47</sup>. Joining the scheme educational establishments (schools, kindergartens) are signing agreements for milk and certain milk product supplies that are supported by subsidies for implementation. General rules governing the aid scheme for the supply are set on the European level. The main objective of the school milk program is to improve the health of schoolchildren by facilitating the milk product supply to schools and stimulating them to consume healthy food, to replace low-quality food and drinks with convenient, high-quality dairy products. On the other hand milk production process has a high energy demand thus cannot be considered as sustainable from the perspective of product life cycle analyses. However, the instrument mechanism, i.e. the encouragement of consumption of a certain product in combination with financial support holds potential for similar initiatives in other food areas with higher sustainability potential, i.e. fruit and vegetable consumption.

## 4.2.2 Beverage packaging

Instruments related to beverage packaging, in fact, reflect the waste management practices governed by the waste management legislation (EC Directive 94/62/EC). For the EUPOPP project, the focus is on share of packaging type purchased by consumers. Thus, the instruments listed in the inventory reflect the packaging management practices in countries. Grouped by the governance mechanisms, there are regulatory and economic instruments presented.

### Regulatory instruments

In the Directive on packaging and packaging waste (94/62/EC) the principle of producers’ responsibility is delineated. In Finland, the instrument on producer responsibility for packaging<sup>48</sup> is an example for national implementation of the EU requirements. The goal of the instrument is to reduce packaging waste at the source and to increase recycling and recovery. Concerning consumers this instrument has an impact on disposal behaviour promoting waste sorting and thus avoiding the packaging waste disposal at landfills.

### Economic instruments

<sup>46</sup> Cabinet of Ministers regulations Nr. 314 „Procedure for allocation, administration and supervision of EU support for supply of milk products for pupils in educational establishments (2009) <http://www.likumi.lv/doc.php?id=190529&from=off>

<sup>47</sup> The „School milk” gives the opportunity to the school-kids in the general educational establishments to receive 200 or 250 ml milk or certain milk products a day at a reduced price.

<sup>48</sup> Parliament and Council Directive (94/62/EC) on packaging and packaging waste, Finnish Waste Act (1072/1993), Government decision of packaging and packaging waste (962/1997); Government decrees 987/2004 and 817/2005

As an economic incentive to support beverage packaging deposit-refund systems, to reduce packaging waste and resource use the beverage packaging tax<sup>49</sup> has been introduced in Finland since 2004. The instrument promotes joining the deposit-refund scheme as those participating in deposit-refund systems are exempted from this tax. It applies to all beverages that are not part of a deposit-refund system, below a certain size, and not made from fibreboard. These are e.g., all soft drinks and beer, most water and alcoholic beverages. The instrument influences both purchasing and disposal decisions. Purchasing is influenced by making non-returnable packaging being more expensive. Disposal is influenced by providing a refund for people who return their bottles.

The instrument of a deposit system to reusable packaging was introduced in Latvia in 2003 by the Cabinet of Ministers regulations<sup>50</sup>. The regulations determine the procedure and types of packaging that apply to the deposit system i.e. glass bottles (beer and mineral water packaging) and two types of plastic boxes for bottles. With respect to consumers, the instrument aims to promote, support and encourage the participation of consumers in the management system of packaging, as well as to ensure the convenient deposit management service for consumers. The instrument is mostly addressing the disposal behaviour phase as consumers are encouraged to bring back the packaging of beverages assigned to the deposit system. The possibility for recovering the deposit cost that is charged at the purchase shall serve as an economic stimulus for the consumer. Information about the deposit system and a special label on the packaging is applied to direct the consumer to make the purchasing decision.

In Germany by the Packaging Ordinance<sup>51</sup> the Green Dot - Dual System Germany<sup>52</sup> (Der Grüne Punkt - Duales System Deutschland) was introduced in 1991. The ordinance places a legal obligation on trade and industry to take back and recycle transport, secondary and sales packaging. The Green Dot on a package is a financing symbol signalling that a licence fee has been paid for collecting and sorting the package concerned. The instrument addresses producers, retailers (usually the first dealer is responsible for the proper participation in a dual system) as well as consumers having an impact on their disposal behaviour. The Green Dot serves as an indication to consumer that this sales packaging unit can be put in the resource collection - in the 'yellow bag', or the 'yellow bin'<sup>53</sup>, at the resource centre, in the paper and glass container.

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<sup>49</sup> Act on Excise Duty on Certain Beverage Containers. (1037/2004); Government Decree on return systems for certain beverage packaging 180/2005

<sup>50</sup> Cabinet of Ministers Regulations (CMR) on application of the deposit system for reusable packaging (CMR Nr.414, 2003, amended with the CMR Nr.167, 2006)

<sup>51</sup> The Ordinance on the Avoidance and Recovery of Packaging Waste (latest version 2009)  
[http://www.bmu.de/files/pdfs/allgemein/application/pdf/verpackv\\_lesef.pdf](http://www.bmu.de/files/pdfs/allgemein/application/pdf/verpackv_lesef.pdf)

<sup>52</sup> <http://www.gruener-punkt.de/en/customer-infoservice/dual-system-for-sales-packaging.html+A1>

<sup>53</sup> Bins/bags in yellow colour are used in German municipalities for packaging waste collection

Another economic instrument in Germany is the Deposit System for one-way beverage packaging<sup>54</sup> (Dosenpfand) which was launched in 2003. Since 1st May 2006 it includes all non-returnable beverage packages supplied to the retailing sector. The instrument has extended the scope of deposits being levied on non-returnable beverage packages and the simultaneous launch of a nationwide standardised clearing system. The retailing sector is required to take back non-returnable beverage packages made from the same types of material – PET, glass or cans – as they offer in their own range of products. For consumers, sales outlets provide information, in the shape of stickers or posters, informing which packages and which types of material are subject to a returnable deposit. For all beverages in PET packages, glass bottles or cans subject to a mandatory deposit, the consumer pays a standard deposit of 0.25 Euro. Thus the instrument is providing an economic stimulus for consumers influencing their disposal behaviour.

Also in the Netherlands the beverage packaging deposit system<sup>55</sup> (Statiegeld) has been introduced based on provision of the Environmental Protection Law (since 1980 it applies to glass bottles). The instrument was designed to strengthen the existing protection of refillable containers and to reduce the presence of beverage containers in litter. The instrument addresses filling companies (they have to be a part of the disposal/clearing system), retailers (they have to guarantee that consumers can repose their bottles - usually at automatic machines in supermarkets). For consumers statiegeld-logo indicates that bottles/ beverage packaging is refundable thus addressing their disposal behaviour.

#### 4.2.3 Organic waste separation in households

Organic waste separation in households is regulated by the EU Waste management legislation. There are several waste streams identified in general, however, organic waste is considered separately only by few countries. Therefore only few instruments particularly addressing organic waste separation aspects have been found.

In Spain, in reaction to the European directives 91/156/EEC and 91/689/EEC the Catalan waste law<sup>56</sup> was created in 1993 (last modified in 2009<sup>57</sup>). The Catalan Waste Law of 1993 obliged all of the Catalan municipalities with more than 5000 inhabitants to separate organic waste. The main change is that in 2008 the Law 9/2008<sup>58</sup> makes compulsory the separate collection of organic waste for all Catalan municipalities. The last regulatory modification, the Law Decree 1/2009 establishes that the local authorities have to elaborate an organic waste

<sup>54</sup> <http://www.gruener-punkt.de/en/customer-infoservice/dsds-deposit-scheme.html>

<sup>55</sup> Environmental Protection Law (Wet milieubeheer). <http://wetboek.net/lexicon/statiegeld.html>

<sup>56</sup> Regulatory waste law 6/1993 of the 15th of July, available at: <http://www.arc.cat/ca/normativa/legislacio.html>

<sup>57</sup> Revised text of the waste Law Decree 1/2009. --- DECRET LEGISLATIU 1/2009, de 21 de juliol, pel qual s'aprova el Text refós de la Llei reguladora dels residus. Available at: <http://www.arc.cat/ca/home.asp>

<sup>58</sup> Law 9/2008, of July 10th on the modification of the Regulatory waste Law 6/1993 of July 15th. Available at: <http://www.arc.cat/ca/normativa/legislacio.html>



management territorial plan. The instrument mainly addresses public authorities, as they have to organize the separation and develop a local management of waste. However, consumers are not directly forced to use the separation systems; thus they are not touched by the instrument in a compulsive way and therefore the impact of this instrument to the disposal behaviour is questionable.

In Finland the provisions of the instrument regional waste management plans and municipal waste ordinances are set on national level since 1993<sup>59</sup>, however municipalities have autonomy in their implementation. Thus, different approaches are taken. The goal of this instrument is to prevent placing in landfills residential waste and other similar waste, from which most of the bio-waste fraction has not been separated. The instrument has an effect on the consumer's disposal behaviour as consumers are expected to follow the local waste regulations. They can be required to separate food waste in different ways depending on the waste management system in each particular municipality.

The Helsinki Metropolitan Area Council Waste Management Regulations is another regulatory instrument implemented regionally. It was introduced in 2005 based on Waste Act provisions. The regulations prescribe that properties with more than 10 households or producing more than 50 kg of organic waste ('biowaste') are required to collect that waste separately. Smaller properties are encouraged to compost their waste. Small properties composting their organic waste are allowed to have waste collected less frequently than otherwise. The instrument addresses consumer disposal behaviour as collection of 'biowaste' is a little cheaper than of mixed waste. Besides that waste batches that contain a lot of 'biowaste' might not be accepted at the landfill.

In Germany based on the EC Directive 2008/98/EC on waste, waste separation instructions have been introduced by municipal ordinances<sup>60</sup>. In order to promote organic waste separation, some municipalities prohibit the disposal of organic waste into the residual-waste bin (Restmülltonne). Some ordinances (i.e. Bad Kreuznach) also state sanctions for households if the garbage is separated in a wrong way.

Proportional cross subsidisation of organic waste<sup>61</sup> is another instrument introduced in Germany. It prescribed two ways for financing organic-waste collection. One option is that the total amount of costs is added to the charge of residual waste. In case people compost their organic waste on their own, there has to be an adequate discount. Another option is an extra charge for organic-waste collection. In order to lower the total costs of this charge (so that people are still motivated to separate their waste) costs can partly be co-financed though the residual waste charge. Both ways of financing have to be coinciding with the

<sup>59</sup> Waste Act (1072/1993) Government decree on landfills (202/2006) National Waste Plan until 2016 (approved in 2008)

<sup>60</sup> Municipal ordinances (kommunale Satzungen) i.e. Uelzen Abfallsatzung (waste-ordinance Uelzen) §5 Abs.2 <http://www.uelzen.de/dokumente/1238874/Abfallentsorgungssatzung%201.1.2009.pdf>, Bad-Kreuznach waste-ordinance §9 [http://www.kreis-badkreuznach.de/kreisverwaltung/downloads/abfall\\_satzung.pdf](http://www.kreis-badkreuznach.de/kreisverwaltung/downloads/abfall_satzung.pdf)

<sup>61</sup> Landesabfallgesetz NW (Waste-Act of the Federal State NW) <http://www.treffpunkt-recyclingpapier.de/hochschule/rechtliches/labfg.pdf>

”Kostendeckungsgebot” (Cost recovery-Imperative), which states that charges levied on waste may not be higher than necessary for recovery of disposal costs.

### 4.3 Summary

The food sector is the one where attempts to define what should go under the umbrella of sustainability has triggered various opinions. Along with environmental sustainability for food production and processing the subject of food is very much connected to individual consumer’s well-being and also economic considerations of choice. All actors in the food production-consumption chain, except for the end-user / consumer, have to comply with food safety regulations (issued on EU and national/regional levels). Food and Drink industries, however, are turning to help consumers making healthier choices, by making adjustments to the product choice and portion sizes (CIAA, 2010). However, the focus is on reduction of saturated fat, salt/sodium ingredients or sugar.

Within the EUPOPP project, instruments beyond these requirements are in focus. The approach of instruments is subdivided according to different consumption phases, i.e., purchasing, usage and disposal.

- Several instruments address consumers through informed choice options and labelling strategies. There is a high number of communication based (including labels) and procedural society self-regulation instruments found in countries. The oldest and most commonly applied instruments of organic labels on food products are well represented by the inventory. In addition, labels tackling the climate change (e.g., Stop Climate Change, Carbon reduction label) appear on food products. Thus, the choice options of consumer are strongly geared towards respect for the environment, e.g. targeting the life cycle environmental impacts.
- Instruments on Green Public Procurement are directed on promoting sustainable food<sup>62</sup> in the public catering sector. The effect on consumer choice for sustainable meals thus strongly applies to countries both having a high percentage of meals consumed outside the home and GPP procedures at place. These conditions seem to be present particularly in the Nordic countries.
- An outstanding instrument calling to encourage the reduction of meat consumption (in the UK) is the one tackling gaps in policies related to the diets of consumers. By presenting a strong signal to the governments for considering the policy measures, the instrument attempts to alter the consumer decisions related to the private sphere of individual choices.
- There are no instruments found targeting the usage phase for consumer. In fact, food is not “used” in the sense other goods are – it is directly consumed. Secondly, the

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<sup>62</sup> Sustainable food is defined to be either organic food, vegetarian food or seasonal food (Heiskanen, Aalto, 2009a)



sustainability relevant aspects of the preparation of meals (especially cooking) that might conceptually qualify as “use” are tackled under a different parameter (domestic appliances).

- Instruments tackling the disposal phase are related strongly to the waste management practices and are thus governed by these aspects. Most relevant aspects related to the food sector include the separate collection of organic (household/ kitchen) waste and composting. Apart from that, consumers are encouraged to avoid the generation of food waste at households<sup>63</sup>, e.g. by communicative campaigns calling consumers to avoid food waste as well as calling them to give away a surplus food (e.g., campaign in the UK<sup>64</sup>).

## 5 Overview on SC instruments in housing sector

The overview on SC instruments in the housing sector reflects the selection of relevant instruments mainly found in the EUPOP project partner countries. The lists of collected instruments were not aimed to fully represent all instruments available. Rather, we focused on instruments best fulfilling the selection criteria (refer chapter 3.1).

An inventory list of SC instruments in the housing sector can be found in Annex IV. A brief description of the instruments is found in this chapter.

### 5.1 European wide instruments relevant to the housing sector

The housing sector is quite intensively regulated by EU-wide instruments, e.g. on appliances, energy efficiency, heating. Moreover, these measures are reflecting the EU policy development on energy efficiency. The objective to meet the ambitious climate and energy policy targets by 2020 (EC COM(2008) 30 final) is triggering adoption of new measures. Herewith we are briefly reviewing on the **recent** EU wide instruments.

#### On energy efficient products

- The Eco-design Framework Directive (Directive 2005/32/EC) has come up with lists of products that have been identified as priority areas for implementing a measure for reducing stand-by energy losses. The proposal to reduce stand-by electric power consumption by household appliances and office equipment has set the level of ambition based on existing cost effective technical solutions (EC MEMO/08/488). The EC

<sup>63</sup> However, the respective instruments were not included for analysis by the scope of instrument selection in our report.

<sup>64</sup> Campaign in the UK Love Food hate Waste: [www.lovefoodhatewaste.com](http://www.lovefoodhatewaste.com)

Regulation (Commission Regulation (EC) No. 1275/2008) establishes requirements related to stand-by and off mode electric power consumption. Requirements for the design of equipment (product) representing significant volumes of sales and trade apply largely to producers and retailers. However, the electricity savings (environmental impact) will be achieved only by consumers using these products. Thus, the effects on consumers will appear through increased market share of products and ensuring affordability of such products to consumers (e.g., also for low income households).

Our inventory of national and regional SC instruments indicated some smaller scale activities in previous years related to the consumer information and education campaigns in Latvia<sup>65</sup> and Germany<sup>66</sup>. The recently introduced EU-wide instrument most probably will trigger the development of national and regional instruments in countries.

- The instrument on household lamps is endorsed by the EC Regulation (Commission Regulation (EC) No. 244/2009). Traditional incandescent and halogen bulbs are gradually phased out from the market starting from 2009 by the end of 2012. The measure on household lamps was prepared after in-depth technical and economic study, extensive consultation of all interested parties including consumer organizations, environmental NGOs and lamps and luminaries manufacturers. This measure will largely affect consumer choice and thus particular care was taken to ensure that consumers will find alternatives either by offering the same light quality or higher energy savings<sup>67</sup>.

Our inventory on national implementation of the EU requirements indicated outstanding approach in the UK<sup>68</sup>. The Government has a voluntary agreement with retailers to end their sale by 2011 (i.e., a year ahead of mandatory requirements). Thus, the country is leading the way in helping consumers reduce their carbon footprint and tackling the climate change

- The revision of the Energy Labelling Directive (Directive 92/75/EEC) aims at extending the scope in that way that its potential to further mitigate climate change is enhanced, and to better achieve the EU-wide goals of sustainable production and consumption. The proposed framework Directive will extend the scope from household appliances to all energy related products, and it will also include provisions related to public procurement

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<sup>65</sup> In 2007, the energy producing company “Latvenergo” JSC launched a campaign “2x2=5 Spend smarter, live lighter” having an aim to raise the issue on efficient use of electricity. More information is available at [www.efektivi.lv](http://www.efektivi.lv).

<sup>66</sup> Stand by campaign “Off. Really off?” was carried out in 2000. The focus of the campaign was on the financial savings that could be achieved and psychological motives of consumers to be ‘in control’ of their consumption. There was a detailed evaluation of the campaign. This came to the conclusion that the campaign was relatively effective, both in terms of awareness and action (Bauknecht, 2009).

<sup>67</sup> <http://ec.europa.eu/energy/efficiency/ecodesign/lumen/doc/incandescent-bulbs-en.pdf>

<sup>68</sup> The phasing out of incandescent light bulbs (Smith, 2009).



and initiatives promoting and stimulating the demand for better products and helping consumers to make better choices (COM(2008) 778final). The Community action (instead of National mandatory labelling schemes) is considered to better achieve the objectives of the proposal.

Our inventory indicated SC instruments on implementation of the EU requirements at national level in Finland, the UK, Latvia and Germany. The relevant requirements are attributed to all household appliances which are included in the Energy Labelling scheme so far: cold appliances (fridges, freezers and their combinations), washing machines, tumble dryers, combined washer-dryers, dishwashers, electric ovens, air-conditioners, and lamps. However, there are differences in the national implementation (e.g., how soon the countries really transfer the directives into their national laws and what kind of supporting campaigns they have, as well as different national controlling and monitoring schemes to ensure that the label is working effectively). So far, the Member State practices are not harmonised (Aalto, 2009).

### On buildings

- The revision of the EPBD intends to clarify and simplify certain provisions, extend the scope, strengthen some of its provisions so that the impact is more effective, and to provide for a leading role of the public sector (EC COM(2008) 780). The revised Directive will require that the Member States set national targets for all new buildings to be nearly zero energy buildings by 2020 (public sector by 2018) with an intermediate target being 2015, also requiring the Member States to set national plans for turning existing buildings into nearly zero energy buildings. Thus more dynamic targets for the housing sector are foreseen.

Our inventory indicated instruments for the national design and implementation of the minimum energy efficiency standards for buildings in Finland, Germany and Latvia. From the consumer perspective, the demand-side aspects, the energy performance standards in countries have been existing long before the introduction of the instrument by the EPBD. However, only by the EPBD (in 2002) the application of the minimum energy requirements was made obligatory in the Member States (Indriksone, et.al., 2009). The instrument bears the potential of widely affecting the construction sector and widely implementing standards of energy efficiency, and thus contributing to more energy efficient construction or renovation. So far, the reduction in energy consumption of buildings is the illustration, however, figures are largely dependent on the national context. In Latvia, the national policy implementation measures aims to reduce the average heat energy consumption in buildings<sup>69</sup>. In Germany, the potential seems to be on decline and a rather pessimistic view

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<sup>69</sup> The national policy implementation measures aims to reduce the average heat energy consumption in buildings from 220-250 kWh/m<sup>2</sup>/year (2006) to 195 kWh/m<sup>2</sup>/year (2016) and 150 kWh/m<sup>2</sup>/year (by 2020) (Guidelines for Development of Energy Sector for 2007-2016).

is expressed about the effects of national instrument<sup>70</sup>. In Finland, the demand for effective heating energy in buildings has shown a decline already before the year 2000<sup>71</sup>. The resulting effect thus would be assigned to the former national policy rather than the effects of the instrument.

- The provisions on energy performance certificates are to be reinforced in the revised EPBD. The threshold for display of certificates in public buildings (frequently visited by the public) is lowered to 500 m<sup>2</sup>. Tackling the existing building sector by setting minimum energy performance requirements for all buildings without the threshold of 1000 m<sup>2</sup> when a major renovation is to be carried out will clearly affect consumers to take action and contribute to energy savings.

Our inventory has indicated instruments with regard to the national implementation of the energy performance certificates for buildings in Finland<sup>72</sup> and the UK<sup>73</sup>. The goal of energy performance certificates is to provide information about the energy efficiency of homes and buildings. The one requirement that will affect almost all citizens, is that an Energy Performance Certificate will be required each time a building or home is sold or rented. This includes individual apartments. In addition, when a new building is contracted, a new certificate must be issued.

## 5.2 National and regional instruments

### 5.2.1 Domestic appliances

The trend analysis shows that the level of equipment of Domestic appliances (white goods, lighting, IT and home entertainment) is rising. The EU instruments addressing this group, including performance standards (Directive 2005/32/EC) and mandatory labelling (Directive 92/75/EEC), are among the oldest and most commonly used instruments for increasing the energy efficiency of appliances. These instruments are also among the ones extensively explored by analysis (Koeppel & Úrge-Vorsatz, 2007; Lorek, 2008).

<sup>70</sup> The potential seems to be on decline as the construction industry has received a decreasing number of orders for house building since the mid-1990 (Destatis, 2009, p. 4). Another rather pessimistic view about the effects of the national instrument considers the quota of energy relevant renovation in the housing sector too low and simultaneously warns about the discontinuation of important subsidy policies, for example, by the KfW after the entering into force of the EnEV 2009 (ZDB, 2008, p. 3).

<sup>71</sup> According to Heljo et al. (2005), the demand for effective heating energy in buildings declined from 80 kWh/m<sup>3</sup> in 1970 to less than 45 kWh/m<sup>3</sup> in 2000. However, the steep decline took place between 1975 and 1983, and the decline levelled off in the 2000s.

<sup>72</sup> Act on Energy Certificate for Buildings (48/2007), Decree on Energy Certificate for Buildings (785/2007)

<sup>73</sup> [www.direct.gov.uk/en/HomeAndCommunity/BuyingAndSellingYourHome/](http://www.direct.gov.uk/en/HomeAndCommunity/BuyingAndSellingYourHome/)

Homeinformationpacks/Energyperformancecertificates/index.htm

For a brief reflection on national and regional instruments within the EUPOPP inventory see the subsequent sections.

### Regulatory instruments

The instrument of municipal collection points for waste electronic and electric equipment (WEEE) in Germany (ElektroG<sup>74</sup>) is in force since 2005. This regulatory instrument is included as it targets the disposal phase of domestic appliances and facilitates their disposal for consumers<sup>75</sup>. The main goals of the instrument are identical with those in the two related EU directives on WEEE and RoHS<sup>76</sup>. The specific objective of reaching target quotas for the collection of WEEE at municipal collection points and the role of consumers in contributing to the achievement of these target quotas is most interesting aspect of this instrument to our research.

### Economic instruments

In Spain, the economic instrument Household electrical appliance renewal plan mainly addresses the purchasing phase by setting a financial support for replacing old domestic appliances by new, low-energy consuming products (class A or higher)<sup>77</sup>. The basis for the instrument is the national strategy and subsequent plans for implementation<sup>78</sup>. The action plans foresee annual Renewal Plans for Domestic Appliances<sup>79</sup> labelled as low-energy products according to the EU-wide labelling system. There are now three applied Renewal Plans (2006, 2007, 2008). Fostering the replacement of old domestic appliances by new, low-energy consuming products, the consumers are involved in a most direct way - they are

<sup>74</sup> Act Governing the Sale, Return and Environmentally Sound Disposal of Electrical and Electronic Equipment, as of: 23 March 2005, Article 3(3), Federal Law Gazette BGBl. I, p. 762.

<sup>75</sup> The general background is set by the EU legislation that requires Member States to ensure the setting-up of collection and treatment schemes and sets the minimum collection targets to increase the separate collection of WEEE. The objective of these schemes is to increase the recycling and/or reuse of such products.

<sup>76</sup> Directive 2002/95/EC of the European Parliament and of the Council on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment

<sup>77</sup> The types of appliances include: fridges, freezers, washing machines and dishwashers, electric ovens, gas hobs and induction hobs.

<sup>78</sup> The Spanish Energy Efficiency Strategy (E4) 2004-2012 has been adopted in December 2003. Two national action plans: Energy Efficiency Plan 2005-2007 and Energy Efficiency Plan 2008-2012 (Plan de Acción 2008-2012. Estrategia de Ahorro y Eficiencia energética en España 2004-2012 (E4) - Published on 29-08-2008, available at: [http://www.idae.es/index.php/mod.documentos/mem.descarga?file=/documentos\\_documentos\\_Plan\\_de\\_Accion\\_2008-2012\\_19-07-07\\_con\\_TABLAS\\_ed11c5ce%5B1%5D\\_7f9353e7.pdf](http://www.idae.es/index.php/mod.documentos/mem.descarga?file=/documentos_documentos_Plan_de_Accion_2008-2012_19-07-07_con_TABLAS_ed11c5ce%5B1%5D_7f9353e7.pdf)

<sup>79</sup> As each autonomous region in Spain is the executing entity of the Renewal Plans it has to incorporate it in its own law structure - the regional implementation of the Renewal Plan in Catalonia: ORDER ECF/466/2008, establishing the regulatory base of the Renewal Plan for Household electrical appliances, boilers and air condition systems in Catalonia.

Available inter alia at [https://www.gencat.cat/diari\\_c/5255/08291074.htm](https://www.gencat.cat/diari_c/5255/08291074.htm)

object of the benefits and of the corresponding information campaign (Alcantud, 2009c). The value of the financial support depends on each Autonomous Region, with a minimum of 50 Euros per appliance. Retailers have an active role in providing information to consumers. The public administration is coordinating the process on at least two different levels: the national level, where the plan including the instrument has been developed, and at the level of the autonomies (e.g. Catalonia), which have to implement the plan. The final objective of this instrument is that consumers would not find any other appliances than those of energy class A (or higher) on the market.

### Communication based instruments

A longer list of communication based instruments in the sector of domestic appliances is developed during the inventory including an eco-label, information centre, campaigns.

The Blue Angel (*Blauer Engel*) is known since 1978 and thus can be considered as the first and most well-known eco-label worldwide. The intention of this label is to provide concise and valuable information on how environmentally friendly the labelled product<sup>80</sup> is and why the product has been granted the right to bear the label. Towards the consumer, the label communicates information about the product and its compliance with the criteria for awarding. We find that the label is widely known and recognized: as 80 per cent of consumers know the label, 38 per cent pay attention to the label during the purchasing phase, and 66 per cent are willing to pay (more) for environmentally products (Schönherr, 2009e).

In Latvia, the energy efficiency information centre is operating since 1997. It was established by the initiative of the Latvian energy supply company<sup>81</sup>. By providing an advice to consumers on energy efficiency of household appliances, the instrument is targeting all three consumption phases, at least to some extent: purchase, usage and disposal. The objective of the energy efficiency information centre is to advise consumers on safer and more efficient usage of various electrical appliances. In principle, the advice (free of charge) is conceived for all inhabitants interested. Experts provide free advice on safe and efficient electricity consumption, the newest and most efficient electrical appliances and their selection criteria, connection options of electrical appliances, the options to make new connections and increase the load and billing. The Energy Efficiency Centre offers lectures on power safety and energy efficiency, workshops that are organized in cooperation with the manufactures (vendors) of the appliances and lectures to school- children, students of universities, and teachers.

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<sup>80</sup> The product range considered in this study represents a variety of products including, for example, calculators, computers, espresso machines.

<sup>81</sup> The public limited company Latvenergo AS is one of the largest corporate entities in Latvia. The company is an energy power supply enterprise engaged in the generation of electricity and thermal energy, electricity trade, as well as the provision of IT and telecommunication services ([www.latvenergo.lv](http://www.latvenergo.lv)).



From November 2000 till April 2002, the information campaign: Off. Really off? was carried out in Schleswig Holstein<sup>82</sup> (German state) intended to be a pilot project to be later repeated on a larger, country wide scale. This communication based informational instrument, based on a marketing approach, addressed the purchasing and usage phases through the campaign towards stand-by energy consumption of appliances (in private households). To that end, the programme pursued the objective to increase the awareness of standby losses and associated costs among consumers, thereby increasing consumer demand for appliances with low or no standby-consumption, or to switch off appliances completely instead of leaving them in stand-by mode. At the same time, the project targeted at retailers of consumer equipment in order to provide better information for consumers through this channel.

The market transformation programme<sup>83</sup> (including the implementation of minimum standards and labelling for appliances) has been implemented in the United Kingdom since 1994. The instrument aims to achieve sustainable improvements in the resource efficiency of products, systems and services where these are critical to the delivery of Government commitments in areas including climate change, water efficiency and waste reduction. The programme covers products that consume large amounts of energy and water at the point of use and are responsible for a significant waste and hazardous materials arising at end of their useful life e.g., all major domestic energy-consuming appliances, traded goods in the commercial sector, domestic and non-domestic water products.

### 5.2.2 Green energy

Green energy relates to the energy produced from renewable energy sources (e.g., solar, wind, biomass) considered as having less impact on environment as well as having less CO<sub>2</sub> emissions in comparison to energy production from fossil sources. Promoting the use of renewable energy sources for electricity and heat production is amongst the priorities of the EU energy policy. Various incentives are used for that purpose on regulatory, economic as well as on communication bases.

#### Regulatory instruments

The regulatory instrument Barcelona Solar Thermal Ordinance<sup>84</sup> is operating in Barcelona, Spain since 2000. It requests for the incorporation of systems of collection and use of solar energy for the production of sanitary hot water in the buildings (e.g., residential, health-care,

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<sup>82</sup> The programme was initiated by the Energiestiftung Schleswig Holstein, a regional energy foundation in the state of Schleswig Holstein set up to promote climate protection, energy efficiency, renewables, in cooperation with a marketing agency and the Deutsche Bundesstiftung Umwelt (DBU)

<sup>83</sup> UK Government's Sustainable Consumption and Production strategy (through DEFRA) <http://www.defra.gov.uk/environment/business/scp/>

<sup>84</sup> [http://www.barcelonaenergia.cat/document/OST\\_AnunciBOP.pdf](http://www.barcelonaenergia.cat/document/OST_AnunciBOP.pdf)

sports, commercial and industrial) existing in the Barcelona municipality. The instrument affects newly built, renovated and rehabilitated buildings and those seeking to implement a change of use<sup>85</sup>. Since 2003 continuous monitoring of the project and its impacts has been performed. It has been evaluated that thanks to the ordinance the total area of solar thermal panels has increased by approximately 1.8% and a remarkable reduction in CO<sub>2</sub> emissions has been achieved. Due to the success of this local regulation elaborated for the Barcelona city, it has been incorporated in the National Building Code.

The Renewable Energies Heat Act<sup>86</sup> (EEWärmeG) is implemented in Germany since 2008. It aims at increasing the share of renewable energies in heat provision to 14% by 2020. The Act makes the use of renewable energy for space and hot water heating mandatory for new buildings. It also stipulates budget requirements to this end for the Market Stimulation Programme. While the Act applies only to new buildings, it leaves room for individual German States to enact policies addressing the existing building stock. The instrument obliges owners of buildings that are to be newly erected to use a certain percentage of renewable energy for hot water and space heating purposes. The minimum percentage depends on the renewable energy technology used.

Both of the above described instruments have an influence on consumer energy purchase behaviour promoting the use of renewable energy sources particularly for heating and hot water supply.

### **Economic instruments**

The Ecological Tax Reform with regard to energy taxes was initiated in Germany in 1999. The decision was taken to continue the reform until at least 2003. In 2003 the Act on the further development of the eco-tax reform was launched<sup>87</sup>.

The law initiating the ecological tax reform launched an electricity tax and a petroleum tax increase which also includes heating oil and gas. In 2002, the law continuing the Ecological Tax Reform launched further increases of petroleum taxes. In 2006, the original law on petroleum taxation (Mineralölsteuergesetz) was overruled by the new law on energy taxation (Energiesteuergesetz).

The instrument aims at encouraging energy savings by influencing the price for energy by increasing the petroleum tax tariffs and thus has an indirect effect on overall energy consumption behaviour in Germany. The instrument aims also at promoting renewable

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<sup>85</sup> The instrument applies to those houses with a forecasted volume of sanitary hot water demand equal to an average annual energy consumption of over 292 MJ.

<sup>86</sup> <http://www.bgbportal.de/BGBL/bgb11f/bgb1108s1658.pdf>

<sup>87</sup> The Law Initiating the Ecological Tax Reform: (BGBl. I p. 378) <http://217.160.60.235/BGBL/bgb11f/b199014f.pdf> / The Law Continuing the Ecological Tax Reform <http://217.160.60.235/BGBL/bgb11f/b199056f.pdf> / Act on the further development of the ecological tax reform (Gesetz zur Fortentwicklung der ökologischen Steuerreform) <http://217.160.60.235/BGBL/bgb11f/bgb1102s4602.pdf> / Legal Norm for taxation of heating oil and gas: Energy Taxation Law (Energiesteuergesetz): <http://bundesrecht.juris.de/bundesrecht/energiestg/gesamt.pdf>



energies by releasing them from taxes. However, both aims are contradicted by weak clauses in the law. First, the petroleum tax divides between combustibles for heating and for fuel. For combustibles used in heating (Heizstoffe) there are much lower tariffs as for combustibles used as fuel (Kraftstoffe). So there is only a low incentive to save energy on heating and warm water production. Second, the electricity produced from renewable energies is only exempted from electricity taxation if it is provided from grids solely supplied with renewable energy which is not the case when retrieving electricity from the public energy grid.

The instrument Emissions reduction – white certificates<sup>88</sup> is applied for the period from 2008-2011 in the UK. It requires energy suppliers, by 2011, to reduce lifetime CO<sub>2</sub> emissions, and to focus 40% of activity on vulnerable/ low-income households. Suppliers must find a way to reduce their carbon emissions by promoting certain actions among its domestic energy users, such as a market transformation or demonstration action. They may also introduce new types of heating systems to help reduce their carbon emissions. Suppliers must focus on low income households and help alleviate fuel poverty. It is evaluated that this instrument is already having a large impact on household emissions. It is widespread and has the potential to make a long term difference in how households generate heat.

### Communication based instruments

There are various types of communicative instruments addressing public administration and consumers in Germany. For example, there is a Web-based information portal on green public procurement<sup>89</sup> where, among other information on tendering, recommendations are given on "lighting" and "green electricity". It includes recommendations to use discharge lamps instead of temperature-spotlights; to use insect-friendly (i.e. with UV-Filter) outdoor lighting; make use of power-supply units according to the German eco-label standards and make use of stand-alone power-control-systems. The instrument applies to public administrations requested to tender their lighting-concepts according to these recommendations. Thus the instrument has an influence on purchasing behaviour as well as on disposal behaviour (e.g., fluorescent lamps must be collected separately and disposed at local collections-points) of consumers at public administrations. Besides that for public administrations there is also a Handbook on procurement of green electricity<sup>90</sup> issued in Germany in 2006. The handbook gives information on the legal background of European-wide tendering procedures in order to reduce energy consumption and to purchase green electricity on a broader scale.

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<sup>88</sup> Carbon Emissions Reduction Target (CERT) (2008-2011). Available at:  
<http://www.defra.gov.uk/environment/climatechange/uk/household/supplier/cert.htm> and  
[http://www.opsi.gov.uk/si/si2008/ukjsi\\_20080188\\_en\\_1](http://www.opsi.gov.uk/si/si2008/ukjsi_20080188_en_1)

<sup>89</sup> [www.beschaffung-info.de](http://www.beschaffung-info.de)

<sup>90</sup> <http://www.bmu.de/energieeffizienz/beschaffung/doc/37933.php>  
<http://www.bmu.de/files/pdfs/allgemein/application/pdf/oekostrombroschuere.pdf>

In order to facilitate the decision when choosing the most appropriate electricity provider for the consumer an Ok-Power Label<sup>91</sup> was developed in Germany in 2000. The company EnergieVision e.V. labels green-electricity products, which provide for an increase of energy from renewable sources and efficient heat-power cogeneration. The focus is put on an "additional" positive environmental impact. The label considers green energy products and providers. The list of certified providers is available on the internet<sup>92</sup>. Thus the instrument influences the consumers purchasing behaviour. Moreover it enhances also transparency and accountability.

### Procedural instruments and instruments of societal self-regulations

The instrument Electricity purchase in open electricity market conditions<sup>93</sup> was introduced in Latvia in 2005 by the Electricity Market Law<sup>94</sup>. The goal of this instrument is to create for every electricity end-user the prerequisites to choose the most appropriate offer, to promote electricity trading for an economically reasonable price, and to stimulate competition on the electricity market. The instrument addresses all electricity end-users, including households, who have a connection to a transmission or distribution system. It can have an impact on the purchase behaviour of consumers, as they are given the opportunity to choose the electricity trader using e.g., more renewable sources thus having less environmental impact compared to electricity trader producing energy from fossil fuels.

## 5.3 Thermal energy demand - heating

It has been evaluated that the building sector is responsible for 40% of the EU's energy use and 36% of the Union's CO<sub>2</sub> emissions<sup>95</sup>. Although being dependent on climatic conditions, thermal energy demand of buildings is closely linked to various other aspects, e.g., area of living space, energy performance of a building, quality and thermal performance of heat supply systems. Thus there is a large potential to develop instruments influencing thermal energy demand by changing consumption patterns. The majority of EU instruments targeted to the building sector are related to energy performance of buildings (Directive 2002/91/EC), including regulatory provisions, financial incentives and awareness raising of consumers.

<sup>91</sup> <http://www.ok-power.de/>

<sup>92</sup> <http://www.ok-power.de/?show=anbieterliste>

<sup>93</sup> Electricity market in Latvia has been opened for all electricity end-users, except households, since 1 July 2004. Electricity market was fully opened since 1 July 2007.

<sup>94</sup> Electricity market law (2005). Available at [http://www.ftc.lv/export/sites/default/docs/LRTA/Likumi/Electricity\\_Market\\_Law\\_.doc](http://www.ftc.lv/export/sites/default/docs/LRTA/Likumi/Electricity_Market_Law_.doc)

<sup>95</sup> Fact sheet DG RTD, Brussels, 26 march 2009, retrieved from: [http://ec.europa.eu/research/press/2009/pdf/ppp-fact-sheet\\_en.pdf](http://ec.europa.eu/research/press/2009/pdf/ppp-fact-sheet_en.pdf)



The following instruments based on criteria for selection, within the EUPOPP project have been identified.

### Regulatory instruments

Several instruments regulating efficiency of energy production installations were found. For example, the regulatory instrument Small scale Combustion Plant Ordinance<sup>96</sup> (Kleinf Feuerungsanlagenverordnung) was introduced in Germany in 1983. It defines limits of chimney gas for old equipment and sets standards of heat loss carried by chimney gas for new oil and gas furnace equipment. The instrument regulates the heat loss and as such might reduce energy demand due to higher energy efficiency. It might also influence purchasing decisions with regard to fuels due to different emission values of different fuels.

Requirements for the performance of thermal systems came into force in Spain in 2007 by the thermal system code (RITE)<sup>97</sup>. The instrument establishes the energy efficiency requirements for heating, air conditioning and warm water systems. It aims also to promote the use of renewable energies (solar and biomass in particular), application of systems recovering residual energy, gradual disappearance of more pollutant solid fuels and less efficient generating equipments. It requests installation of accounting of consumption in case of collective facilities thus having an impact on consumption behaviour.

In Latvia the instrument Energy efficiency requirement for hot water boilers was introduced in 2004 by a Cabinet of Ministers Regulation<sup>98</sup>. The instrument aims to ensure that only those hot water boilers meeting certain energy efficiency (and other) criteria are placed on the market for customer. The instrument gives the consumer the possibility to be aware of the energy consumption of a particular device and choose more energy efficient household appliance thus influencing the purchasing behaviour.

The instrument Emissions reduction (described more detailed above) is designed to have an impact also on the thermal energy demand in the UK. It requires suppliers to reduce their carbon emissions by promoting certain actions among their domestic energy users, such as a market transformation or demonstration action.

### Economic instruments

The economic instruments identified address three main aspects either in combination or separately - construction of new energy efficient buildings; renovation of buildings increasing

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<sup>96</sup> Small Scale Combustion Ordinance [http://bundesrecht.juris.de/bimschv\\_1\\_1988](http://bundesrecht.juris.de/bimschv_1_1988)

<sup>97</sup> Thermal Systems Code (RITE Royal Decree 1027/2007) REAL DECRETO 1027/2007, de 20 de julio, por el que se aprueba el Reglamento de Instalaciones Térmicas en los Edificios [http://www.boe.es/aeboe/consultas/bases\\_datos/doc.php?coleccion=iberlex&id=2007/15820&xtlen=1000](http://www.boe.es/aeboe/consultas/bases_datos/doc.php?coleccion=iberlex&id=2007/15820&xtlen=1000)

<sup>98</sup> Cabinet of Ministers Regulations Nr. 416 "Regulations on hot water boilers". Available at <http://www.likumi.lv/doc.php?id=87952>

their energy performance, conversion of heat supply systems for the use of renewable energy sources.

An instrument supporting the construction of energy efficient buildings in Germany, the KfW programme Energy efficient construction<sup>99</sup> (Energieeffizient Bauen) is known since 2009, replacing the Ecological construction program (2005-2009). A financial support in the form of low interest rate credits and allowances is given for constructing KfW Efficiency Houses (e.g., passive or low energy houses<sup>100</sup>). This instrument has an impact on purchasing (the grant covers the first acquisition of efficient houses) and on usage behaviour (required energy standards must be met).

Similarly the KfW loan and grant programme “Energy efficient rehabilitation”<sup>101</sup> (Energieeffizient Sanieren) gives financial support for rehabilitating or refurbishing measures aimed at reducing energy consumption. A repayment grant is additionally given if the KfW Efficiency House standard is achieved. Also this instrument has an impact on purchasing (the grant covers the purchasing of energy efficient technologies) and on usage behaviour as the grants requires certain standards with regard to the use of energy efficient technologies.

A similar instrument for promoting the construction of new energy efficient houses has been introduced in the UK. The instrument Stamp duty exemption for zero-carbon homes<sup>102</sup> (2000-2012) aims to encourage the market for homes that does not consume fossil fuels for heat and power. The instrument promotes micro-generation technologies (e.g., ground source heat pumps, photovoltaic cells, solar water heaters and wind turbines) and raises public awareness of the benefits of living in a zero-carbon home. The instrument offers a fiscal incentive for builders and homeowners to build zero-carbon houses. In this case the instrument has an impact on purchasing behaviour (it affects the way people purchase appliances and design their homes), on usage behaviour (it affects how people use energy because of living in zero-carbon houses) as well as on disposal behaviour (having a zero-carbon home will reduce the amount of waste).

The use of renewable energy sources and insulation of houses is promoted also in Cyprus where the instrument Governmental financial support for energy savings was introduced in 2004. Subsidies for household sector technologies include thermal insulation, solar thermal heaters, geothermal heat pumps, PV thus having the influence on net energy consumption in the country.

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<sup>99</sup> [http://www.kfw-foerderbank.de/EN\\_Home/Programmes\\_for\\_residential\\_buildings/Energy-Efficient\\_Construction.jsp](http://www.kfw-foerderbank.de/EN_Home/Programmes_for_residential_buildings/Energy-Efficient_Construction.jsp)

<sup>100</sup> The annual primary energy consumption and the specific transmission heat loss must not be more than 55% - 70% of the values admissible for a new building in accordance with the EnEV2007 and the annual primary energy consumption must not be more than 40 – 60 kWh per m<sup>2</sup> of building floor area. For passive houses the annual primary energy consumption should not be more than 40 kWh per m<sup>2</sup> of building floor area and the annual heating requirement not more than 15 kWh per m<sup>2</sup> of living space.

<sup>101</sup> [http://www.kfw-foerderbank.de/EN\\_Home/Programmes\\_for\\_residential\\_buildings/Energy-Efficient\\_Rehabilitation.jsp](http://www.kfw-foerderbank.de/EN_Home/Programmes_for_residential_buildings/Energy-Efficient_Rehabilitation.jsp)

<sup>102</sup> <http://www.hmrc.gov.uk/ria/9-zero-carbon-homes.pdf>

Promotion of RES in Italy is performed by the instrument Tax relief and tax allowance implemented during 2007-2010. Introduced by the Law “Measures for the annual and plurianual State Budget” (2007)<sup>103</sup>, tax relief is given for insulation, solar panels installation, substitution of windows and heating systems by others that are more efficient while 55% tax allowance is given for installation of heat pumps and geothermal heating systems.

Taxation policy to increase energy efficiency at households is also used in Finland where the instrument Domestic help credit<sup>104</sup> was introduced already in 2001. Tax deduction applies for household services, including renovation services for improving heating system thus compensating the former financial support for repair, energy and health renovations of residential buildings. Anyone who pays municipal or state income tax (with no income limitations) is entitled to get household deduction. The instrument can possibly influence the purchasing and usage behaviour although there is mechanism requiring people to use the tax deduction for energy renovations.

Another instrument Energy grants based on income levels<sup>105</sup> is functioning in Finland already since 1970s. Major allocations come from the annual state budget. The grants are distributed by the municipalities. Support (max 25% of investment) is granted for detached home owners with low income levels (mainly pensioners) to make energy renovations including heating systems thus having an impact on purchasing behaviour e.g., by promoting purchase of more efficient technologies for heat supply.

Additionally, in Finland the instrument Energy grants for multifamily dwellings<sup>106</sup> is applied according to the Act on state subsidies (688/2001) and the Act on renovation and energy subsidies (1021/2002). It addresses dwellings where more than 3 families are living. The instrument started functioning in 2003 but criteria and levels decided annually. The instrument aims to support house owners in conducting energy audits, energy renovation of outer casing, energy renovating of heating and ventilation systems and conversion to renewable energy. The instrument has an impact on purchase behaviour as well as potentially on usage behaviour (depending on audit results). A similar instrument, Promoting the implementation of energy efficiency measures at residential buildings, was recently (in 2008/2009) introduced in Latvia by the Cabinet of Ministers Regulations (CMR)<sup>107</sup>. The instrument aims to increase energy performance of multi-storey dwelling houses by providing state co-financing for flat

<sup>103</sup> Law Nr. 244 of 24th December 2007, Measures for the annual and plurianual State Budget. Available at <http://efficienzaenergetica.acs.enea.it/fin2007.htm>

<sup>104</sup> The government up-dates yearly the detailed rules for deduction and the maximum yearly amount. The tax relief is deductible directly from the income tax.

<sup>105</sup> Grants are awarded by the Housing Finance and Development Centre (ARA) which is under the Ministry of Environment. (Act State Housing Fund 15.12.1989/1144).

<sup>106</sup> Grants are awarded by the Housing Finance and Development Centre (ARA). Major allocations come from the annual state budget. The grants are distributed by the municipalities.

<sup>107</sup> CMR Nr. 138 "Investments in Energy Efficient Building Renovation" (2009). Available at <http://www.likumi.lv/doc.php?id=188595&from=off> and CMR Nr. 59 "Order on how to allocate state budget co-financing for implementation of energy efficiency measures at residential buildings" (2008). Available at [http://www.rea.riga.lv/files/Ministru\\_kabineta\\_noteikumi\\_Nr\\_59.pdf](http://www.rea.riga.lv/files/Ministru_kabineta_noteikumi_Nr_59.pdf)

owners of residential buildings. Thus the instrument stimulates flat owners in multi-storey buildings to invest themselves in order to obtain co-financing for improving energy performance of their properties.

The Pro-Klima der enercity-Fonds<sup>108</sup> is functioning in Germany since already 1998. It is a joint fund established by six cities and one city utilities operator. The instrument is aiming at the encouragement of voluntary initiatives on a local level. It comprises five relevant funding lines for: newly erected buildings, refurbishing of building stock, installation of solar panels, and provision of schooling materials on climate protection and renewables, energy advice for leasing households. The instrument can influence the purchasing behaviour as well as the usage behaviour by providing training materials on climate protection, renewables and energy advice for leasing households.

There are economic instruments promoting improvements of heating and air conditioning systems. For example, the instrument financial subventions for the acquisition of boilers<sup>109</sup> (Plan de Renove 2008) in Catalonia was giving support (up to 500€) for the purchase of low-energy techniques thus having an impact on purchasing behaviour. While in Finland a grant for detached houses to convert heating systems<sup>110</sup> was applied from 2006-2008 aiming at speeding up heating system conversions from oil and electric heating to the district heating or wood/pellet based heating system, geothermal heating, solar collectors, and for oil heating renovations including the installation of a solar collector. The instrument facilitated the purchase of technologies others than conventional by giving an economic support. The grant was administered on the national level by the Housing Finance and Development Centre of Finland (ARA), funding distributed by municipalities (building inspectors).

An economic instrument in Germany is the Ecological tax reform with regard also to heating oil/gas<sup>111</sup> started in 1999 aiming at steadily increasing prices for heating oil and gas. Thus the instrument was aimed at influencing the purchasing and usage behaviour - encouraging energy saving and promoting use of renewable energies. However, especially heating oil and gas have been exempted from high tax increases.

Other instruments in Germany are the Market incentive programmes<sup>112</sup> (Marktanreizprogramme) introduced in 1999 particularly in order to support the use of renewable energy sources in existing residential and non-residential buildings. Since January 2009 legislation has become stricter setting obligations for constructors to partly cover the needed heating through renewable energies. The support through the incentive programmes (especially in the areas of new buildings) is a direct follow-up of the legal requirements.

<sup>108</sup> proKlima-Förderung. Available at <http://www.proklima-hannover.de/Foerderung.3.0.html>

<sup>109</sup> Order ECF/466/2008. Available at [https://www.gencat.cat/diari\\_c/5255/08291074.htm](https://www.gencat.cat/diari_c/5255/08291074.htm)

<sup>110</sup> Government Decree (128/2006) on renovation, energy and health hazard grants

<sup>111</sup> Legal Norm for taxation of heating oil and gas: Energy Taxation Law (Energiesteuerergesetz). Available at <http://bundesrecht.juris.de/bundesrecht/energiestg/gesamt.pdf>

<sup>112</sup> [http://www.bafa.de/bafa/de/energie/erneuerbare\\_energien/index.html](http://www.bafa.de/bafa/de/energie/erneuerbare_energien/index.html)



### Communication based instruments

Various communication based instruments were found using different communication tools and aiming at the promotion of energy efficiency of heating systems and construction.

In several countries consultancy to consumers is provided. For example, in Germany, since 1991 the instrument Energy consultancy and promotion/ support programme “On-Site-Energy Advice” (“Vor-Ort-Beratung”)<sup>113</sup> is applied. Financial support for expert consultancy (funding of up to 50% of the costs) has been given in order to improve thermal insulation of buildings, heating installations and renewable energies. The instrument addresses tenants of residential buildings built before 1984 in the Western Federal states and before 1989 in the Eastern Federal states. The instrument influences purchasing behaviour and usage behaviour as consultancy can be used when making a decision about existing and new buildings and thermal insulations as well as for improvement the rational use of heating systems.

Information of customers is provided also in the UK through various initiatives of the Energy saving trust<sup>114</sup> already since 1992. The instrument aims to reduce CO<sub>2</sub> emissions by helping people use energy more efficiently, conserve water, reduce waste, and make renewable energy sources more accessible. Free advice and information to people across the UK is provided. Through this instrument people are encouraged to take a variety of measures to save energy, including purchasing of efficient machines and advised on how to reduce their energy usage. Thus the instrument influences both purchasing and usage behaviour.

Also in Finland training is provided for tenants. The instrument Energy expert – voluntary peer-to-peer advice scheme was introduced in 1996 and coordinated by the Finnish energy agency Motiva<sup>115</sup>. It aims to generate energy efficiency at the household level by training ordinary people to act as energy experts within the dwellings they live. Both, rental and owner-occupied housing are addressed. The instrument has an effect on usage behaviour as energy experts monitor the energy consumption and give advice to other residents. Motiva is also coordinating the implementation of the instrument TopTenFinland aiming at promoting and raising awareness on energy efficient products (including circulation pumps and windows) thus having an influence on purchasing behaviour. Activities of Motiva are related to two other instruments - Motiva – advice for households in energy efficient construction aiming at promoting energy efficient construction, giving advice and presenting good examples and Motivoittaja – labelling scheme for low-energy housing introduced in 2002 also in order to stimulate the development and mainstream marketing of cheap new low-energy buildings (50% less than usual). Both instruments influence purchasing (when making a decision about house construction or purchase) as well as usage behaviour (by implementing measures attributed to exploitation of low-energy houses).

<sup>113</sup> <http://www.bmwi.de/BMWi/Navigation/Energie/energieeinsparung,did=9790.html>

<sup>114</sup> UK based organisation promoting reduction of CO<sub>2</sub> emissions. Available at <http://www.energysavingtrust.org.uk>

<sup>115</sup> <http://www.motiva.fi/en>

Label as a communication based instrument related to energy demand is known in other countries, too. For example, in Germany the Blue Angel<sup>116</sup> (described more in detail above), introduced in 1978, today is known world-wide. Product labels inform consumers on all types of heating systems labelling them as "low-emission" (emissionsarm) and/or "energy-saving" (energiesparend) systems thus having an influence on purchasing decision of customers. Also in the Nordic countries (Finland, Sweden, Denmark, Norway and Island) the Nordic Swan label for detached houses and the Nordic Swan label for various heating systems<sup>117</sup> is applied. The instruments aim at promoting environmentally sound detached houses (apartments in future) and high quality heating systems (e.g., biofuel pellets, closed fireplaces, boilers and burners, heat pumps). These two instruments influence not only the purchasing behaviour but also usage and disposal behaviour as there are requirements for customer information for appropriate use and disposal.

In order to inform the consumers on the energy efficiency of the boilers offered in the Spanish market the instrument Information system about energy efficiency of boilers<sup>118</sup> has been introduced. With the help of a database elaborated by the Diversification and Saving Energy Institute (IDAE), a particular website has been established informing and promoting customers to buy energy efficient products for heating thus having an impact on their purchase behaviour. In order to support sustainable building of residences in the Basque country. Also in Spain, the instrument Guide of sustainable edification and economic support applying it<sup>119</sup> was applied from 2006 – 2007. The economic support given facilitates purchase of low-energy techniques (impact on purchasing behaviour). Amongst others, the scope of the instrument covered heating systems and insulation.

### **Procedural instruments and instruments of societal self-regulations**

Addressing mostly large property owners (condominium associations, housing associations) the instrument Voluntary energy conservation agreement for housing properties<sup>120</sup> was introduced in Finland in 2002. The instrument aims to improve energy efficiency by reducing the specific energy consumption of residences. Specific targets are set – to reduce heat & water by 15% by 2012, to stabilise and start reducing electricity consumption by 2008, to have at least 80% of the buildings audited and energy use continually monitored by 2010. This voluntary instrument can have an impact both on purchasing and usage behaviour of large property owners agreeing to join the scheme and support reaching the targets.

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<sup>116</sup> [www.blauer-engel.de](http://www.blauer-engel.de)

<sup>117</sup> Nordic ecolabel system is voluntary, financially and politically supported by the Nordic governments. More information available at <http://www.svanen.nu/Default.aspx?tabName=StartPage>

<sup>118</sup> IDAE databases available at: <http://www.idae.es/index.php/mod.indice/mem.i>

<sup>119</sup> Order of October, 18., 2006 of the Council of Social and domestic affairs about financial aids regarding the "Guide of sustainable edification for domestic buildings" in the Basque Country

<sup>120</sup> Ministry of Employment and Economy enters into the agreement with housing owners (condominium association, housing association)



The instrument Voluntary system of inspection of boilers<sup>121</sup> has been introduced in Finland in order to provide voluntary advice and support to consumers for inspection and replacement of oil burners and boilers. The instrument shall be applied from 2008 till 2016 aiming to achieve a total replacement target of 10 000 burners/year. The instrument can potentially influence the purchasing behaviour.

The instrument Heat energy usage in Latvia derived from the Cabinet of Ministers Regulations issued in 2008.<sup>122</sup> The instrument gives the possibility to the heat energy user to pay for the heat energy consumed by installing metering devices. There is a possibility to voluntarily install individual measuring devices<sup>123</sup> in each apartment for each radiator. It is obligatory to register the amount of used heat energy, report on that to the supplier, and pay within given timelines. The instrument used for individually metered heat consumption has a good potential for inducing substantial change in usage behaviour as a regular feedback on used energy is provided.

Another type of instruments refers to the billing procedures. For example, the Ordinance on the heating costs billing procedure<sup>124</sup> (Verordnung über die Änderung der Heizkostenabrechnung) that was introduced in Germany in 1989 and amended in 2009 aims to reduce CO<sub>2</sub> emissions within the housing sector. The amendment increases the usage bound part of the billing procedure for old buildings (built before 1995 with central gas or oil-fired heating) from 50% to 70%. Moreover, the gauging of consumption does not apply if newly constructed or refurbished buildings reach the passive-house-standard. The instrument has an effect on usage behaviour as the introduced billing procedure motivates people to use their heating system more efficiently.

### 5.3.1 Air conditioning

Although the main attention in Europe is still paid to keeping buildings sufficiently warm, since recently, tenants, particularly of new buildings, are facing a new challenge – how to guarantee reasonable comfort conditions in summer with no, or at least minimum, cooling energy. However, based on criteria for selection, within the EUPOPP project we have identified only one relevant instrument.

The **economic** instrument Financial subventions for the aquisition of low-energy air condition systems (Plan de Renove 2008) (Planes Renove de sustitución de equipos de aire

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<sup>121</sup> Government Decree (128/2006) on renovation, energy and health hazard grants

<sup>122</sup> CMR Nr. 876 "Regulations of heat supply and usage" (2008). Available at <http://www.likumi.lv/doc.php?id=183035&from=off>

<sup>123</sup> The individual heat measuring device shall correspond to the requirements set by the standard LVS EN 834:2001.

<sup>124</sup> Ordinance "On-Site-Energy Advice" (Richtlinie Vor-Ort-Beratung) <http://www.bmwi.de/BMWi/Redaktion/PDF/E/energiespar-richtlinien-vor-ort,property=pdf,bereich=bmwi,sprache=de,rwb=true.pdf>

acondicionado) was introduced in Catalonia (Spain), in 2008<sup>125</sup>. The aim of the instrument is to advance the acquisition of low-energy air condition systems by giving financial aid for the purchase. The potential beneficiaries are natural or legal persons, either public or private replacing appliances included in the support lines. The aid is devoted to replacing electrical appliances by others with a class A (or higher) energy label. It's the consumers purchase behaviour that is intended to be changed directly by the subventions derived from this instrument. Economic support (100€ per air conditioning system) facilitated the purchase of low-energy techniques..

### 5.3.2 Domestic water use

The water required for domestic purposes is a significant proportion of the total water demand in Europe. The proportion of water for abstracted urban use ranges from about 6.5% in Germany to more than 50% in the United Kingdom. The EU water framework directive 2000/60/EC requires EU Member States to ensure by 2010, that water-pricing policies provide adequate incentives to use water resources efficiently and to recover the true costs of water services in an equitable manner<sup>126</sup>.

The following instruments related to domestic water have been identified within the EUPOPP project, based on the selection criteria.

#### Regulatory instruments

Because of exceptional drought warning after 2006, the instrument Regulative restrictions of water use in periods of exceptional and/or emergency warning in Catalonia<sup>127</sup> was introduced in Catalonia (Spain) in 2007/2008. The instrument aims to establish the necessary norms and measures for exceptional and emergency situations of drought to guarantee the continuous supply of drinking water to the inhabitants of Catalonia. It sets quantitative and qualitative restrictions of permitted/prohibited types of usage according to different levels of emergency thus having an impact on domestic water usage behaviour.

#### Economic instruments

Since 2010 the economic instrument selling water for prices according to the real costs weighed by usage behaviour (Programa A.G.U.A.)<sup>128</sup> has been introduced in Spain. The aim of

<sup>125</sup> Order ECF/466/2008. Available at: [https://www.gencat.cat/diari\\_c/5255/08291074.htm](https://www.gencat.cat/diari_c/5255/08291074.htm)

<sup>126</sup> UNEP/DEWA/GRID-Europe 1998-2008, [http://www.grid.unep.ch/product/publication/freshwater\\_europe/consumption.php](http://www.grid.unep.ch/product/publication/freshwater_europe/consumption.php) (reviewed on 20.01.2010)

<sup>127</sup> Decree of drought 84/2007 of the Genrealita de Catalunya -- Decret de Sequera 84/2007, [http://aca-web.gencat.cat/aca/documents/ca/sequera/decret\\_sequera\\_2007.pdf](http://aca-web.gencat.cat/aca/documents/ca/sequera/decret_sequera_2007.pdf)

<sup>128</sup> Law 62 / 2003 -- Ley 62 / 2003: [http://www.mma.es/secciones/acm/politica\\_agua/directiva\\_marco\\_aguas/pdf/ley62-2003.pdf](http://www.mma.es/secciones/acm/politica_agua/directiva_marco_aguas/pdf/ley62-2003.pdf)



this instrument is to make users use water resources efficiently via higher costs for inefficient consumption ('polluter-pays-more' principle). Thus, this economic incentive directly influences the usage behaviour as the payment is directly related to the water consumed.

A similar instrument, Payment according to actually used amount of water (water counters)<sup>129</sup> was introduced in Latvia in 2006. This instrument allows consumers to pay for domestic water according to the actual amount used, based on exact measurements of water consumption per flat. The instrument has promoted consumers to install individual meters stimulated consumers to use water more efficient thus having a direct impact on usage behaviour.

### Communication based instruments

In England the instrument Water Saving Group (WSG)<sup>130</sup> was applied from 2005 till 2008. The aim of this newly designed instrument was to bring together key stakeholders in water sector in order to promote efficient use of water in households in England. It also aimed to raise awareness about water efficiency and analyze better management practices in the long term. The overarching goal was to reduce per capita household consumption. The WSG brought together people from government, NGO's, and industry to combine skills and experience. The group's action plan was to help the government's plan to reduce per capita consumption to 130 litres per person per day by 2030. By awareness raising of people this instrument was addressing purchasing, usage and disposal behaviour of consumers.

## 5.4 Summary

The housing sector is the one where strong regulation is achieved by the application of EU wide instruments. Their national implementation is complemented by initiatives on national and regional level. Within the EUOPP project the focus will be on these national and regional instruments.

- Related to the purchasing phase of consumption, the SC instruments address consumers in various ways: mainly through providing economic incentives (grants, subsidies), campaigns and advisory, labelling strategies and voluntary agreements from producers and service providers.
- Looking at the inventory of economic instruments, it indicates a growing application of economic stimuli (subsidies) for consumers to perform larger scale activities having long term effects (e.g., renovation of house). Related to the design of buildings, the approach to combine of various instrument types will offer higher chances for better implementation. In

<sup>129</sup> Minister of Cabinet regulations "Order on how tenants and flat owners have to pay off service providers on services provided that are related to use of living space": <http://www.likumi.lv/doc.php?id=149906&from=off>

<sup>130</sup> <http://www.defra.gov.uk/environment/water/conserves/wsg>

addition, the instruments may influence the purchasing phase and design phase decisions (e.g., minimum energy efficiency standards).

- Energy efficiency and eco-labels are among the oldest instruments applied in the countries of interest for this study. Although existing labels covers a wide range of appliances, recent developments to revise the EU Energy Labelling Directive aims at further widening of the scope from household appliances to all energy related products.
- Our inventory indicated groups of instruments addressing the consumer that mainly include regulatory instruments, campaigns, voluntary agreements from producers and service providers that can be attributed to the usage phase of consumption. Campaigns within this inventory were tackling particular aspects of energy consumption (e.g., stand-by losses of electricity). However, the instruments found had a pilot action character and thus applied on a regional scale.
- Regulatory instrument on restrictions of domestic water use is applicable in regional context in countries suffering from water scarcity.
- Instruments tackling the disposal phase are related strongly to the waste management practices related to special waste streams (e.g., WEEE).



## 6 Exploratory analysis: Summary of findings

An overview on exploratory analyses of design aspects of SC instruments, functioning of the instrument and effects on individual level consumption and framework conditions (as discussed in literature) is presented in further sections. The summary reflects a set of instrument exploratory analysis papers prepared by project partners on individual selected policy instruments.

### 6.1 Regulatory instruments (pII to Philipp)

#### **Communicative aspects of the campaign of Regulative restrictions of water use in periods of exceptional and/or emergency warning in Catalonia, Spain<sup>131</sup>**

The instrument is addressing the usage phase of consumption. In normal environmental situation, the less strict regulation will apply. Design of the instrument foresees accompanying communicative campaign that is aimed to involve the consumers. The consumers are supplied with regular information on status of water provided to them by public administration and multiplied by media. However, there are cases possible, when full compliance is requested. Consumers, although not being explicitly addressed by the law, are part of the situation. When the worst case environmental scenario is occurring, consumer decision power is restricted: the consumer compliance with the regulation is requested and secured with imposing of sanctions in case of non-compliance to the law.

The core of the instrument is in regulative aspects by specifying the hydrological status scenarios and defining the management measures to be applied. The instrument is addressing the usage phase of consumption and is designed to reach all of the Catalan population. From one hand the consumers are affected by worst-case water restrictions, while the strong communication component within the instrument is promoting the thinking that it is *them* who can save water (Alcantud, 2009d). Taking into consideration that the situation of urgency is also the cause for the activation of the instrument's activities, there are no particular or measurable targets set to be achieved, rather the continuous monitoring of situation is foreseen. Since 2005, the instrument has been revised, however, the trigger was the draught of 2006/2007 rather than the incorporated schedule of the instrument reviews in its design. Sanctions are foreseen for non-use of the instrument, i.e. for the abuse of water in periods of draught. The definition of prohibited actions is depending on the status of urgency.

The regulative aspects of the instrument never had to arrive at a point where the end-consumers' supply was limited, as those perceived their responsibility due to the daily communication about the drought and its effects (Alcantud, 2009d).

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<sup>131</sup> Exploratory analysis of Communicative aspects of the campaign of Regulative restrictions of water use in periods of exceptional and/or emergency warning in Catalonia (Alcantud, 2009d).

### **Municipal collection points for waste electronic and electric equipment (WEEE) in Germany<sup>132</sup>**

The exploratory analysis of this regulatory instrument is concerned with the specific objective of reaching target quotas for the collection of WEEE at municipal collection points and the role of consumers in contributing to the achievement of these target quotas. The instrument addresses the disposal phase of consumption while it is designed to reach all households generating WEEE. The instrument aims at building on and extending existing behavioural patterns (widespread disposal of white goods and other big appliances at municipal points of collection) to all WEEE – including small appliances and lamps (Müller & Giegrich 2005). There are, however, no positive or negative incentives to support such substantive behavioural change. The instrument is designed to set a clear and easily measurable target<sup>133</sup>. The level of ambition is estimated to be high for the EU average but low for Germany where comparatively efficient collection systems have been in place prior to the enactment of ElektroG (Schönherr, 2009a).

The instrument is designed to set the legal responsibility for managing collection of WEEE to municipalities and counties. Municipal waste management authorities are obliged to set up collection points, but the main management responsibility (containers, transport, etc.) is with the producers of electronic and electric equipment, who also bear the main financial burden for the disposal and treatment of this waste. Consumers are not directly addressed by the instrument beyond the obligation to dispose of WEEE at municipal collection points.

Three years after the enactment of the ElektroG the BVSE estimates that there are 15 kg WEEE per person/year of which 8 kg per person/year is collected at municipal collection points.<sup>134</sup> Note that this amount is double the target amount of 4 kg per person/year (BMU/UBA 2008). However, this is not the striking success it seems to be at first sight – rather, Germany had a comparatively efficient waste disposal system in place already before the enactment of ElektroG. We are not aware at this point of any literature/assessments of the sustainability impacts of the ElektroG. The latest impact assessments conducted under the WEEE directive revision process might give some indication of potential impacts of ElectroG (Schönherr, 2009a).

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<sup>132</sup> Exploratory analysis of Municipal collection points for waste electronic and electric equipment (WEEE) in Germany (Schönherr, 2009a).

<sup>133</sup> The target is set by the Directive (EC) 2002/96, §5(5): “[...] Member States shall ensure that by 31 December 2006 at the latest a rate of separate collection of at least four kilograms on average per inhabitant per year of WEEE from private households is achieved.”

<sup>134</sup> BVSE, 31.03.2008.



### Regulation creating a legal base preventing the abuse of the terms concerning “biologic” and “ecologic” agriculture and products, Spain<sup>135</sup>

The instrument aims to modify the Royal Decree 1852/1993 in a way that the abuse of terms like “bio”, “biologic” (“biológico”) or “organic” (“orgánico”) should be prevented by the legal basis. The *purchase* and *use* of eco-products should be clear and without misinterpretations.

In Spain, public pressure and pressure the EU made it necessary to implement several modifications of the Royal Decree 1852/1993 with the national final implementation in form of the Royal Decree 1614/2005<sup>136</sup>. Being a law, the functioning of the instrument is as simple as clear: Several terms labelling a product as “ecological” are protected and defined according to the corresponding regulations of ecological products. The abuse of those terms then is to be pursued. *Consumers* are not directly involved as Actors. They are touched by the instrument indirectly, being protected in their user rights. Also, indirectly, via the national discussion about changes of names of famous former “bio” or similar products they get idea what is behind eco-labelling. However, there is no awareness raising step or further action requested in favour of using biologic agriculture products (Alcantud, 2009a). Producers are in charge of revising the names for their products in order not to violate the laws protecting the terms of eco-products.

The direct outcomes on the Spanish market consisted in a series of renaming processes of plenty of products that were labelled inadequately as “bio” products<sup>i</sup>. Regarding de facto effects of the instrument there is no empirical evidence available on *national level*, at least we don’t know about them, as there is still no answer available of the various departments we addressed (Alcantud, 2009a).

### Municipal waste separation instructions on organic waste in Germany<sup>137</sup>

The instrument addresses the disposal phase of consumption. Municipal ordinances on the mandatory separation of organic waste are regulatory instruments. They oblige consumers to make sure that waste is separated into various categories including the category of organic or organic waste<sup>138</sup>.

There has been a lively debate in Germany on whether or not to maintain/introduce separate organic waste collection bins in municipalities relating to the costs of setting up and maintaining adequate treatment facilities for organic waste (other than landfills and incinerators which do not require separate collection). However, rising disposal costs for

<sup>135</sup> Exploratory analysis of the Regulation creating a legal base preventing the abuse of the terms concerning “biologic” and “ecologic” agriculture and products (Alcantud, 2009a).

<sup>136</sup> Royal Decree 1614/2005 modifying the Royal Decree 1852/1993, available at: [http://noticias.juridicas.com/base\\_datos/Admin/rd1614-2005.html](http://noticias.juridicas.com/base_datos/Admin/rd1614-2005.html)

<sup>137</sup> Exploratory analysis of Municipal waste separation instructions on organic waste in Germany (Schönherr, 2009b)

<sup>138</sup> After separation, the organic waste is to be delivered to a composting system, either by using the public organic waste disposal system, or – if certain criteria are fulfilled- organic waste may also be disposed of in the domestic composting site (Schönherr, 2009b).

residual waste has led to the extension of separate collection systems for organic waste in recent years. It can be deduced that cost-reductions in the treatment and disposal of organic waste are also an (implicit) objective of introducing this instrument (Schönherr, 2009b). However, no unified system has been imposed by the law on national level which lead to controversial implementation paths on local level<sup>139</sup>. Private households are required to separate their waste according to various categories including the category of organic waste. The public administration needs to provide the adequate facilities and infrastructure for the (organic) waste disposal system to be effective. The public administration needs to monitor the compliance of the citizens/ waste producers with the waste separation regulations and, if necessary, impose respective sanctions for non-compliance with the regulations on the part of the consumer. Failing to comply with the regulations may lead to a fine (even up to 5000 Euro) or the authorities may decide not to remove the waste from the premises if it has not been separated accordingly (Schönherr, 2009b).

There are no specific targets mentioned in the legal texts. Therefore, there is no official benchmark that would serve as a basis for assessment. The Federal Ministry for the Environment, Nature Conservation, and Nuclear Safety points out an impact on sustainability caused by organic waste separation alone: the compost made from organic waste can be used as fertilizer which improves the humus characteristics of the soil and therefore represents a suitable replacement for mineral fertilizer<sup>140</sup>. In the words of the Ministry “the recycling of organic waste thus contributes to the sustainable exploitation of resources”.<sup>141</sup> The Ministry reports that as a result of sustainable waste disposal based on separation practices by the consumers, the decrease of methane emissions from municipal waste from 26.7 Mio. tons equivalent to CO<sub>2</sub> in 1990 to 4.0 Mio. tons in 2004. A sustainability calculation of waste intensity puts waste accumulation in relation to economic growth<sup>142</sup> (Schönherr, 2009b).

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<sup>139</sup> As a general principle, the waste disposal legislation of the federal states stipulates that disposal fees may not exceed the amount necessary to cover disposal costs of all wastes. Municipalities setting up facilities for separate biowaste collection may either introduce a new fee or add the additional fee to the residual waste charges. The second option violates the cost-recovery principle in that it “subsidises” the separate collection of biowaste. Where municipalities have introduced this option in their waste disposal charges this has frequently and often successfully been challenged in court (e.g. in Hessen and North Rhine Westphalia). However, the waste disposal law of North Rhine-Westphalia has recently been amended so that a cost-covering disposal fee is no longer mandatory for biowaste bins – it is now possible to charge either a common fee for both residual and organic waste or a separate biowaste collection fee that may be lower than necessary to cover the costs of disposal. This has been decided to be permissible by the competent courts. Similar stipulations have been included in the waste disposal legislation of Schleswig-Holstein and Lower Saxony (Schönherr, 2009b).

<sup>140</sup> BMU (2007). *Kurzinfo Bioabfälle*. Retrieved from: <http://www.bmu.de/abfallwirtschaft/fb/bioabfaelle/doc/3158.php>

<sup>141</sup> BMU, 2007: „Die Bioabfallverwertung leistet somit einen Beitrag zum nachhaltigen Umgang mit Rohstoffen“.

<sup>142</sup> According to the study at BMU, during the past 20 years waste accumulation stayed behind the growth of the real GDP. Instead, one could even observe an overall decrease of waste accumulation in the private sector since 2002 (Schönherr, 2009b).



### Source separation of kitchen waste in Helsinki metropolitan area, Finland<sup>143</sup>

The municipal waste ordinance requires<sup>144</sup> collecting the sorted waste by contracted service providers who are to provide appropriate collection schemes for bio waste<sup>145</sup>.

Separate collection of food and other degradable organic waste from households (henceforth: biowaste) started in 1993 and was spread to the entire Metropolitan area by 1999. The first treatment plant for organic waste was completed in 1998. The separate collection was introduced in the 2001 waste management strategy of the Helsinki Metropolitan Area. Separate collection of bio waste from inhabitants is mandated by the ordinance. Threshold with more than 10 households or producing more than 50 kg of organic waste is set to require separate collection of organic waste (bio waste). Smaller properties are encouraged to compost their organic waste on site or they can join the separate collection on a voluntary basis. In principle, the design of the instrument foresees the possibility of issuing sanctions (fines), however none of that has been reported (Aalto and Heiskanen, 2009). Waste is collected by contracted service providers - contracts require that local regulations are taken into account. Prices for customers are set.

Collection of biowaste is a little cheaper than of mixed waste. Waste batches that contain a lot of biowaste might not be accepted at the landfill, and therefore it is in the service providers' interests to make sure that there is not too much biowaste in mixed waste. In the end, it is the task of the Helsinki Metropolitan Area to monitor compliance and this is mainly done via sampling studies. The amount of separately recovered biowaste is calculated annually. It has grown by 25% since 2004 while total waste has increased by only 13% (Aalto and Heiskanen, 2009a). Separate collection of biowaste – as compared with landfilling – has a positive impact. Partly owing to the separate collection of biowaste, the greenhouse gas emissions from waste treatment have declined from 410 000 CO<sub>2</sub> eq in 1990 to 97 000 CO<sub>2</sub> eq in 2008 (YTV 2009).

### Selective garbage collection of organic waste specified within the Catalan Waste Law (*Llei reguladora dels residus*), Spain<sup>146</sup>

The instrument obliges all municipalities with more than 5000 inhabitants to apply separate collection of organic waste. Public administration, however, are tackled by the regulatory

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<sup>143</sup> Exploratory analysis of Source separation of kitchen waste in Helsinki metropolitan area (Aalto, Heiskanen, 2009a)

<sup>144</sup> The governance mechanism is the Waste Management Ordinance, which municipalities (or conglomerations of municipalities like the Helsinki Metropolitan Council) can use to allow or prescribe certain forms of waste treatment. However, because it is difficult to monitor the behaviour of all residents (especially when waste collection is privatized), the Helsinki Metropolitan Council also relies on informative instruments (advice, campaigns) and financial instruments (cheaper tariffs for separately collected biowaste).

<sup>145</sup> Bio waste includes food waste, garden waste, tissue paper and wood chips. Food waste (kitchen waste) amounts to about 30% of bio waste in the Helsinki Metropolitan Area (Aalto, Heiskanen, 2009a).

<sup>146</sup> Exploratory analysis of the selective garbage collection of organic waste specified within the Catalan Waste Law (*Llei reguladora dels residus*) (Alcantud, 200e).

framework: they have to organize the separation and develop a local infrastructure for implementation.

The governance mechanism at individual consumer level is voluntary, as there is no compulsory regulation for consumers to use the waste separation and join the system<sup>147</sup>. Moreover, it has to be noted that no use of other governance mechanism (economic or informative) is designed by the instrument.

## 6.2 Economic instruments

### Spanish Household electrical appliance Renewal Plan (*Plan de electrodomésticos*), Spain<sup>148</sup>

The instrument is aimed to foster the replacement of old domestic appliances by new, low-energy consuming products (class A or higher) giving financial aid for the purchase. Thus, the purchasing phase is mainly addressed. The aims of the instrument are rather ‘technical’ than ‘social’: achieving bigger numbers of energy labelled appliances at the market and higher rates of energy saving in households. The final objective of this instrument is that consumers would not find any other appliances than those of energy class A (or higher) on the market.

Understanding the combination of an initial *economic* support for energy efficient appliances and the *communicative* introduction to European energy labelling standards as an activation energy producing faster and more intense consumer-supplier-interactions, the Household electric appliance Renewal Plan might be seen as a quite innovative way of introducing actual European standards in countries without already existing corresponding customs/behaviour.

Regarding de facto effects of the instrument there are no empirical evidence available *at national level*. As the amount of subventions is limited (Catalonia: 4.810.581€, about 45.000 domestic appliances expected to be purchased during 2008, whereas about 7.500.000 persons are living in Catalonia), it is not the direct but the indirect effects that may reach many people.

### UK Carbon Emissions Reduction Target<sup>149</sup>

The goal of the instrument is to reduce CO<sub>2</sub> emissions in the UK. The scheme requires certain energy suppliers, by 2011, to reduce lifetime CO<sub>2</sub> emissions and focus 40% of all activity on vulnerable/low-income households. This includes people over 70 years of age, and people on

<sup>147</sup> The particular aspect of the instrument has to be noted that nearly all of waste collection in Catalonia is done via a “bring system” where the containers are located in public space, and according to that system there is no factual obligation of separating waste at individual level (Alcantud, 2009e).

<sup>148</sup> Exploratory analysis of Spanish Household electrical appliance Renewal Plan (Alcantud, 2009c);

<sup>149</sup> Exploratory analysis of UK Carbon emissions reduction target (Leung, 2009b)

low incomes. In an effort to encourage energy suppliers to develop new ideas and actions, Defra provided incentive in the Order for market transformation action.<sup>150</sup>

This instrument, which is the third and final phase in a series of similar instruments<sup>151</sup>, doubles the previous obligations imposed upon energy providers to aid people in making their homes more energy efficient and to reduce household emissions. It is estimated that approximately £1 billion a year, for duration of three years, will be invested in this project.

This money will fund the distribution of 100 million free/subsidised energy efficient light bulbs, better insulation for up to 5 million houses, and assistance to 2-3 million households to help them save energy with measures such as energy efficient appliances.<sup>152</sup> Suppliers may introduce new types of heating systems and white goods to help reduce their carbon emissions. However, the specific methods to be employed are not specifically stated in CERT. Suppliers must also find a way to reduce carbon emissions among their domestic energy users, such as a market transformation or demonstration action, i.e. micro generation.

The UK government estimates that once all of the measures listed in CERT are implemented, the reduction in annual CO<sub>2</sub> emissions will equal 4.2MtCO<sub>2</sub>/year. An annual review must be submitted to Defra to track the progress of CERT. Reports must be submitted by 31 July 2009 and 2010. If CERT is successful, the UK will have succeeded in persuading energy companies to reduce emissions within their own ranks and among customers. There are a number of other initiatives- economic, policy-oriented, legislative, and communicative- that are encouraging companies and consumers to reduce energy consumption. All of these instruments combined will have major effects on sustainability in the UK, and will lead to lower GHG emissions (Leung, 2009b).

### **Energy grant for multifamily dwellings for renovations that reduce CO<sub>2</sub> emissions, Finland<sup>153</sup>**

The aims of the instrument are to support house owners with a grant<sup>154</sup> in (a) conducting energy audits, (b) energy renovation of outer casing, (c) energy renovating of HVAC systems,

<sup>150</sup> Ofgem website. [Carbon Emissions Reduction Target 2008-2011. Market Transformation Action](http://www.ofgem.gov.uk/Sustainability/Environment/EnergyEff/InfProjMngers/Documents1/Market%20Transformation%20vfinal.pdf). February 2008. <http://www.ofgem.gov.uk/Sustainability/Environment/EnergyEff/InfProjMngers/Documents1/Market%20Transformation%20vfinal.pdf>

<sup>151</sup> Defra's Carbon Emissions Reduction Target is the third phase in a three-part energy supplier obligation. It will last for three years, from 2008-2011. Previous phases were the Energy Efficiency Commitment from 2002-2005, and the Energy Efficiency Commitment from 2005-2008 (Leung, 2009b).

<sup>152</sup> Defra news release on 2 April 2008: <http://www.defra.gov.uk/news/2008/080402a.htm>

<sup>153</sup> Exploratory analysis of Energy grant for multifamily dwellings for renovations that reduce CO<sub>2</sub> emissions (Heiskanen, 2009a);

<sup>154</sup> The grant covers 40% of the actual costs of the audit and 10-15% of the other measures. Grants are awarded by the local authority. The scheme is coordinated by ARA, the Housing Development Fund. In 2009, there are 20 MEUR allocated for energy grants for multifamily houses. Additionally, for 2009-2010, a stimulus grant of 10% is

(d) energy efficient heating systems and conversion to renewable energy. There are no quantitative targets. The scheme is coordinated by the Housing Finance and Development Centre (ARA), which aims to promote ecologically sound, high quality and reasonably priced housing.

The mechanism is mainly economic: the aim is to lower the relative prices of energy services and energy renovations vis-à-vis other costs. Energy investments are usually profitable as such in the long term but some investments (like outer casing insulation) may have a long payback period or may only make economic sense when done as part of a larger renovation. A 10% grant does not change this balance significantly, but it may provide a psychological incentive and signal that energy should be considered when making renovations.

The instrument mainly targets the professional facility managers<sup>155</sup>. In owner-occupied housing, the ultimate decision makers are the residents on a majority basis (Board and General Assembly for major decisions). The number of grants awarded is monitored. The municipalities, which hand out the grants and process the grant applications, also have information of the purpose of each grant allocation and how it was used. Each recipient is also asked to fill in a follow-up report about one year after the grant was received and return it to the municipality. There is no regular mechanism for the instrument review, but the decision needs to be taken each year as the allocations are coming from the annual state budget. The legislation has been amended a few times to take into account specific eligibility criteria.

The latest statistics published by ARA are from 2006: a total of 99 512 individual apartments (number of houses not known) received a bit more than 11 MEUR. In 2005, about 15 MEUR were granted (Alen and Kostianen 2006). An assessment of the impacts<sup>156</sup> has been made for the National Energy Efficiency Action Plan. The total annual estimated saving was 180 GWh/a (Heiskanen, 2009a).

### **On-site energy advice in Germany<sup>157</sup>**

The on-site energy support program financially supports the owners of residential buildings in planning investments in energy saving measures aiming at the reduction of heating and warm water energy demand. The instrument encourages such investments with a view to reduce the overall energy demand of residential buildings and subsequent environmental impacts, most notably CO<sub>2</sub> emissions.

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awarded for renovations (not necessarily energy renovations) started during this period. A total of 125 MEUR are allocated, part of which will be redirected specifically to energy renovations as of March 2010 (Heiskanen, 2009a).

<sup>155</sup> Professional facility managers may also be in the service of owner-occupied housing associations. They aim to provide a stimulus to find out about energy saving potentials via the energy audits (Heiskanen, 2009a).

<sup>156</sup> This is based on a sample of about 700 follow-up reports from grant recipients. Only the investments are included in this calculation; no energy saving impacts were estimated for the energy audits, so the estimate is perhaps a bit conservative (Heiskanen, 2009).

<sup>157</sup> Exploratory analysis of On-site energy advice in Germany (Schönherr, 2009)



The support program for on-site energy advice has been in place since 1991<sup>158</sup> and covers building insulation, heating systems, and renewable energies. The instrument is a subsidy under German law, so it is an economic instrument. The program provides financial assistance for building owners, of both single-family and multi-family residential buildings, seeking qualified advice on energy performance and investments in energy efficiency by professional energy advisors<sup>159</sup>.

The advisee and the energy advisor enter a service contract, comprising at least the following services: registration and assessment of constructional features and energy performance of the building in question, a detailed written consultancy report, listing and explanation of identified measures and investments for improvement of the energy performance of the building. Applications for financial support are filled out by the energy advisor on behalf of the advisee. The contribution currently amounts to 300EUR for single-family buildings, and 360EUR for multi-family buildings. The contribution must not exceed 50% of the total price of the energy advice. The aggregate amount of money available for the program as well as the extent of individual grants are re-examined on an annual basis – based on household considerations and not necessarily with a view to improving the instrument though.

After having received on-site energy advice, house owners invested on average 36,000EUR for energy performance improvements in 2005. The latest evaluation (period 2005 – 2007) attests a high net impact of the program (Schönherr, 2009c). However, it is not known how many of the advisees used this financial support for on-side energy advice when they already decided to renovate the building.

### **Guide of Sustainable Edification for Domestic Buildings (Basques Country, Spain) and accompanying financial subventions<sup>160</sup>**

The *guide* aims to present a series of recommendations about sustainable building to every possible actor in charge of one of the several stages in the process of designing, building and maintaining. There are subsidies (in 2006/2007) to people making use of the guide and introducing the corresponding criteria in their edification concepts, buildings and behaviour of maintaining them. This measure is meant to promote and foster the application of the guide, e.g. getting use of applying it, with the final objective to introduce sustainable criteria to all upcoming edification processes.

The guide itself has a *communicative function* presenting a range of possible measures for sustainable building. In general, the choice whether to apply the guide as well as which of the

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<sup>158</sup> It is valid for residential buildings built before 1994. The program was terminated in 1997 for financial reasons but reinitiated in July 1998.

<sup>159</sup> Qualified engineers, architects and other professionals with a qualification as laid out in annex 3 of the On-site Directive (2009) are publicly listed as energy advisers in a directory administered by BAFA. However, the term “energy adviser” is not protected. So, even if a professional is not on the list he can call himself energy adviser.

<sup>160</sup> Exploratory analysis of Guide of sustainable edification for domestic buildings (Basque Country, Spain) and accompanying financial subventions (Alcantud, 2009f)

included measures to choose is *voluntary*. The subsidies are meant to initially push its application. The guide understands itself as a kind of pioneer document for sustainable building. The long term target is that the guide presents the basis for every construction process in the Basque Country. For the evaluation of each of the steps in the building process exists a kind of checklist that defines the criteria every module demands. Those checklists are also relevant for the subsidies.

Regarding the instruments' outcomes there is no information available yet (Alcantud, 2009f).

### **Spanish Renewal Plan for airconditioning systems – *Planes Renove de sustitución de equipos de aire acondicionado, Spain*<sup>161</sup>**

The general objective of the instrument is to foster the replacement of old domestic appliances by new, low-energy consuming products giving financial aid for the purchase. The Potential beneficiaries are natural or legal persons, either public or private; replacing appliances included in the support lines. The aid is devoted to replacing electrical appliances of the following types by others with a class A (or higher) energy label. The value of the aid depends on each Autonomous Region. The final objective of this instrument is that consumers will not find any other appliances than those of energy class A on the market in the future.

As depending on the type of domestic appliance a certain amount of subsidy is paid by the state if the appliance has the required energy consumption criteria, the instrument has direct effects only on the purchase phase, even though the energy consumption during the use phase is lowered indirectly as the electric applications with qualitatively higher labels consume less. The actors involved in the most direct way by this instrument are the *consumers*. They are object of the benefits and of the corresponding information campaign.

The amount of subsidies is limited (e.g., in Catalonia, 800,000 EUR have been allocated and about 8,000 air conditioning systems were expected to be purchased during 2008, whereas about 7,500,000 people are living in Catalonia). The final objective of the instrument (having just level A appliances at the market) should be easily to prove. Regarding de facto effects of the instrument there is no empirical evidence available at a national level. In Catalonia, the whole sum (of the 800,000EUR in 2008) designated for subventions of the purchase of domestic appliances has been used by the citizens (Alcantud, 2009g).

### **Mense Bio (Organic school canteens), Italy<sup>162</sup>**

The general objective of the instrument is to incorporate organic food and high quality food (PDO<sup>163</sup> products) in public canteens to promote the consumption of local, seasonal and fresh food products (organic and PDO) in order to provide a healthier nutrition.

<sup>161</sup> Exploratory analysis of Spanish renewal plan for air conditioning systems (Alcantud, 2009g).

<sup>162</sup> Exploratory analysis of Mense Bio (Organic school canteens) Italy (Alcantud, 2009b)

<sup>163</sup> PDO: Protected Design of Origin



The first municipality that incorporated organic food in school canteens in 1986 was Cesena in Emilia- Romagna Region to introduce organic Mediterranean diet. In the 90's other municipalities joined this initiative: in 1996 there were 69, in 1997 - 97, in 1998 – 103, and in 1999 - more than 110 schools involved. Since the end of 1999, a national law<sup>164</sup> gives formal support to the introduction of organic food in public services canteens; basically in schools, hospitals and another social and health care public services (like old people's home). Regional and local authorities include in their respective public tender and in the regional laws the quantity and type of organic food that must be offered<sup>165</sup>.

The *Mense Bio* is a Green Public Procurement instrument that combines regulatory and communicative instruments. The regional law is the local regulation that provides the basis for the local action on *Mense Bio*. Usually the regional law includes on the one hand economic instruments in order to support the public services that include organic and PDO food in their canteens. On the other hand it incorporates informative, communicative and educational activities related to sustainable food consumption in schools. In this sense the aim of the instrument is to educate children to sustainable and healthy food intake.

In 2008, almost 1,400,000 organic meals every day have been distributed in public and private canteens and 983,243 were distributed in the canteens of schools. The increasing number of canteens at schools in Italy includes organic food in their meals: 99 schools in 1996 and 791 schools in 2008 (Alcantud, 2009b).

### Requirements for public catering to serve sustainable meals, Finland<sup>166</sup>

The goal of the instrument is to promote consumption and production of organic foods. An objective for the public catering is to be leaders in consuming organics. The public catering (of state institutions) should offer /serve sustainable meal choices at least once a week by 2010 and twice a week by 2015. Sustainable food is defined to be either organic, vegetarian or a seasonal food.

No particular role is assigned to consumers on implementation of the instrument or compliance with the targets on sustainable meals. However, if there are easily accessible vegetables and low-fat dairy products that replace meat and high-fat dairy products,

<sup>164</sup> Legge 23 Dicembre 1999, n. 488 " Disposizioni per la formazione del bilancio annuale e pluriennale dello Stato (legge finanziaria 2000)"pubblicata nella Gazzetta Ufficiale n. 302 del 27 dicembre 1999 - Supplemento ordinario n. 227

<sup>165</sup> For example, in Emilia Romagna Region 100% of the food products for kindergarten, nursery schools and primary schools must be organic food. In other public services and high schools must be 70%. In Friuli Venezia Giulia not less than 60%, in Basilicata not less than 30% in Trento Region not less than 80%...In Rome and Florence is as a minimum 90% for all the schools. ... The type of organic food that is introduced in public canteens varies in the different regions according to the regional traditional food habits, but the common ones in almost all experiences are: pasta, rice, fruit, milk, yogurt, tomatoes, pulse, flour, butter, mozzarella, olive oil and red meat (Alcantud, 2009b).

<sup>166</sup> Exploratory analysis of Requirements for public catering to serve sustainable meals, Finland (Heiskanen, Aalto, 2009a)

consumers may voluntarily achieve a quite significant change in diets that is not easy to accomplish in any other way (Heiskanen, Aalto, 2009a). The instrument promotes the demand for sustainable food and thus creates new markets for producers. Catering procurers are likely to ask for more information about sustainability aspects of foods procured. Some state food services are directly part of public administration (prisons, national defence forces). They are expected to comply with the targets. Other state departments (ministries, research institutes) procure food services from the private sector. In principle, they are expected to pass on these requirements to their service providers. Municipalities are not part of the state administration. They manage a large part of the public catering (schools, hospitals). For them, the targets are not binding but a recommendation. The potential for reaching consumers through state-contracted public catering is about 3% (in 2009) of population in Finland. In addition, when the targets have an impact on food services provided by or for municipalities<sup>167</sup>, the potential for reaching consumers is even larger: municipal employees – 9% of population and school aged children – about 15% of population in Finland (Heiskanen, Aalto, 2009a).

However, definitions of targets are somewhat ambiguous. This leave the addressees with a lot of scope on how to implement the requirements. If the targets are implemented and enforced vigorously, then it could be a quite ambitious instrument. It is not easy to influence the way people eat. The first evaluation will start in 2010 and the plan is to monitor the achievement of targets every two years.

The instrument is recently introduced and the first evaluation is scheduled at spring 2010. It is thus more feasible to calculate the impacts of this instrument once data on outcomes are available from the evaluation.

### **Deposit System for Beverage packaging in Germany<sup>168</sup>**

The analysis of the instrument will focus on targets, i.e. potential waste reduction in the field of beverage packaging and the market share of returnable and ecologically advantageous non-returnable packaging. The instrument thus targets at both the purchasing and the disposal phases of consumption.

The Packaging Ordinance was introduced in 1991 in order to solve the problem of increasing amounts of packaging waste<sup>169</sup>. This system is complemented by (deposit) returnable packaging systems, especially for beverages. The promotion of returnable beverage packaging was extended in 2003 when “a compulsory deposit on one-way drinks packaging.

<sup>167</sup> The scope for reaching many people depends on how far the targets are taken. At the moment, they are only a recommendation for municipalities. If municipalities comply with this recommendation, the scope is fairly large (Heiskanen, Aalto, 2009a).

<sup>168</sup> Exploratory analysis of Deposit System for Beverage Packaging in Germany (Schönherr, 2009d)

<sup>169</sup> It assigns the responsibility for the disposal of their products to producers and retailers in the context of the so-called *Duales System*: a term commonly used to describe the system of separate collection and recycling of household wastes in Germany as laid down in the Closed Substances and Recycling Act.



After the third amendment of the Packaging Ordinance in 2006, a deposit of 25 cents is now levied on most beverage packaging that are considered environmentally disadvantageous<sup>170</sup>. Once returned to the retailer, the waste packaging material must be recycled in a standardized nation-wide clearing system.

The Packaging Ordinance provides a legal obligation for fillers and retailers to participate in a nation-wide disposal/clearing system and a legal obligation to take back non-returnable packaging for deposit.

The deposit on disposable packaging is an economic instrument. At all stages of the supply chain, a mandatory deposit of 0.25 EUR per item is levied on almost all kinds of disposable beverage packaging. Non-compliance with the regulations is considered a misdemeanour and can be sanctioned with a fine. Due to the deposit an economic incentive is directed towards the consumers to return empty beverage packaging to the retail point and it no longer raises transaction costs to buy more environmentally friendly packaged beverages.

At this point there is no evidence of the *Dosenpfand* significantly contributing to sustainable consumption.

### **Beverage packaging tax, Finland<sup>171</sup>**

The goal of the instrument is to support existing, well-functioning beverage packaging deposit-refund systems, to reduce packaging waste and resource use. It also serves to meet the requirements of the Packaging and packaging waste directive (Directive 94/62/EC), including non-discrimination and proportionality. The instrument influences both purchasing (by making non-returnable packaging more expensive) and disposal decisions (by providing a refund for people who return their bottles). Because the refund is relatively high (0,1-0,4 EUR), some people make extra money by collecting packaging discarded by others, so it is not critical for the system if not everyone returns their bottles or cans.

Deposit-refund systems for refillable beverage packaging are traditional in Finland. Since 1976, reusable deposit-refund beverage packaging systems were incentivised in Finland by levying a tax on beverages packed in non-reusable packaging. The levy has been in use for soft drinks and alcoholic beverages and many say it is to credit for the fact that total packaging waste in Finland is only 60% of the European average. Until 1995, the Ministry of Environment approved the return systems that were exempted from the excise duty. However, there has been pressure on national legislation that favours reusable packaging for years, because reusable systems give domestic breweries a competitive advantage. The Packaging and packaging waste directive allows the promotion of reusable systems if they are non-discriminatory and adhere to the principle of proportionality.

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<sup>170</sup> For specific stipulations see the Annex directly taken from *Grüner Punkt* (2009).

<sup>171</sup> Exploratory analysis of beverage packaging tax, Finland (Heiskanen, Aalto, 2009c);

The system was operated by the Finnish Packaging Pool, which was often criticised as anti-competitive by importers and a few small breweries. In order to facilitate imports and smaller companies, the share of reusable/refillable packaging within the deposit-refund systems has declined. Beer cans, PET bottles and many glass bottles are now recycled as material, and only the glass beer bottles of the largest breweries are refilled.

The targets are measurable but not so ambitious: they aim to maintain the existing system under changing market conditions (increased imports). Return rates are monitored annually. The overall return rates are high (94% in 2008), so the system functions well and everybody is taking care of their own share, but beverages bought abroad by consumers are not included in the system. However, the total impact of beverage packaging compared to other consumption items is not very large: for 10 000 litres of beverages delivered to consumers, the CO<sub>2</sub> emissions are about 1000-2500 kg for the different packaging types (Virtanen, 2004). Finns consume about 130 litres of beverages (alcoholic and non alcoholic) per year (Beverage Industry Association 2009; Health and Welfare Institute 2009). So, the CO<sub>2</sub> emissions from beverage packaging are 13-32 kg CO<sub>2</sub>/person/year, whereas the emissions from all food items are about 2500 kg CO<sub>2</sub>/person/year (Mäenpää, 2005)..

### **Application of the deposit system to reusable packaging in Latvia<sup>172</sup>**

The analysis of the instrument will focus on aims related to consumers<sup>173</sup>. The instrument is aimed at promoting, supporting and encouraging the participation of consumers in the management system of packaging, as well as to ensure the convenient deposit management service for consumers. The deposit system for the reusable packaging is primarily an economic instrument mostly addressing the disposal behaviour phase as consumers are encouraged to bring back the packaging of beverages assigned to the deposit system. The possibility for recovering the deposit cost that is charged at the purchase shall serve as an economic stimulus for the consumer. Information about the deposit system and a special label on the packaging is applied to direct the consumer to make the purchasing decision.

Main provisions for establishment of the deposit system for reusable packaging are set by the national laws and regulations. However, up to now the deposit system in Latvia is voluntary and not applied fully to the requirements of the regulatory provisions to the deposit system for reusable packaging. Thus, the consumer may not have possibilities to return bottles due to undeveloped infrastructure, as well as the deposit sum is different in each shop or the

<sup>172</sup> Exploratory analysis of Application of the deposit system to reusable packaging in Latvia (Bremere, 2009).

<sup>173</sup> The instrument is primarily aimed at substantial decrease of the pollution to environment by achieving that pollution of forests, banks of water bodies and roadsides are minimized or eliminated. Another goal related to the environment is aimed at ensuring the prudent use of natural resources by diverting to the multiple use of glass and other packaging materials. In response to the EU requirements, the instrument is aimed to promote and ensure the reuse of packaging according to provisions of the Directive 94/62/EC and its amendments (Bremere, 2009).



collection point. These aspects do not promote the collection of reusable packaging for multiple use<sup>174</sup>.

Limited and non-efficient application of this instrument can be considered among the reasons for negligent attitude of consumers to the management of used beverage packaging. Thus, quite high number of emptied beverage bottles ends up in forests, banks of water bodies and roadsides causing aesthetical loss as well as damage to nature. Pollution of environment with the packaging waste can be considered as the hidden costs of packaging use that are to be covered by a society<sup>175</sup>. However, these costs can be even 4-5 times higher when compared to the average management costs of the household waste in Latvia (Bremere, 2009).

In 2009, the new project for regulations on application of the deposit system for reusable packaging has been prepared that envisages compulsory application of the deposit system to the reusable packaging (bottles of beer and non-alcoholic drinks). In parallel, the deposit system is planned to be extended also for application towards the non-reusable beverage packaging as well. Both projects for regulations have triggered the quite hot debate in the mass media advocating pro and against the system adoption<sup>176</sup>. It is projected that the new regulations for the deposit system for reusable packaging will enter into force in late 2010 or beginning of 2011.

### 6.3 Communication-based instruments

#### Energy efficiency information centre at “Latvenergo”, Latvia<sup>177</sup>

The objective of the instrument is to advise consumers on a safer and more efficient usage of various electrical appliances. In 1997, the Energy Efficiency Centre was established by initiative of the energy supply company in Latvia<sup>178</sup>. The instrument is targeted at options for

<sup>174</sup> Alternatives for consumer include disposal possibilities in waste separate collection containers (possibility for regeneration) or waste bins for non-sorted waste (ultimate disposal in landfill). However, high number of empty beverage bottles ends up in forests, banks of water bodies and roadsides causing aesthetical loss as well as damage to nature.

<sup>175</sup> Starting from 2004, the responsible management organizations (e.g., the State Forest Service) in cooperation with the non-governmental sector are organizing yearly campaign “Do not pollute in the forest” and joint work actions for clean-up of the polluted areas. The costs of these activities are covered by the public funds.

<sup>176</sup> E.g., „Long road to the packaging deposit system” (2009) (own translation) [www.tirgotajs.lv](http://www.tirgotajs.lv) ; T.Žabova comment (14.11.2008) [www.atkritumi.lv](http://www.atkritumi.lv);

<sup>177</sup> Exploratory analysis of Energy efficiency information centre at “Latvenergo”, Latvia (Aleksejeva, Bremere, 2009a)

<sup>178</sup> The public limited company Latvenergo AS is one of the largest corporate entities in Latvia. The company is an energy power supply enterprise engaged in the generation of electricity and thermal energy, electricity trade, as well as the provision of IT and telecommunication services ([www.latvenergo.lv](http://www.latvenergo.lv)).

providing an advice to consumers, e.g., through an expert consultation and by lectures and workshops that are organized in cooperation with the manufacturers (vendors) of the appliances. In principle, the advice (free of charge) is available for all inhabitants interested. The information centre offers an exhibition for its visitors where they encouraged using advices on energy efficiency and safer use of household appliances. For lectures and seminars the target groups are school children, students and their teachers.

On average, the information centre is consulting every year around 0.3% of the population in Latvia (Thomas and Huber, 2008). Seminars for professionals and targeted stakeholders are arranged approximately two times per month. However, there is no built-in mechanism to monitor and evaluate the outcomes of the instrument.

### **Energy expert, Finland<sup>179</sup>**

The goal of the instrument is to generate energy efficiency at the household level by training ordinary people to act as 'Energy Experts' within the dwellings they live in. Energy Experts are volunteer tenants/residents who have been trained to be active in energy issues<sup>180</sup>. The programme was developed by the Finnish energy agency, Motiva<sup>181</sup>, and the housing service company VVO in 1993. It has been ongoing since 1995, when first experts were trained. The 'Energy Expert' scheme operates in rental housing (private and social) as well as in owner-occupied apartment blocks.

The scheme does not have any quantitative targets. The Energy Expert scheme has no a built-in mechanism to monitor or evaluate its outcomes. The decision to join the scheme can come from individual active residents or from the housing management. Altogether over 3000 energy experts in Finland have been trained through the network.

The scheme itself and the fact that it has continued since 1995 is one successful outcome, as it serves to increase energy awareness and engage ordinary people with energy, which is a badly missing factor in Finland (Ruostetsaari, 2009). Especially in rental housing, energy conservation is linked via the Energy Expert scheme to tenant participation in decision-making (tenants need to appoint the Energy Expert). The fact that 3000 Energy Experts have been trained is another achievement. They reach an estimated 15,000 households, and probably also provide advice beyond their own house to relatives and colleagues (Heiskanen, 2009b).

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<sup>179</sup> Exploratory analysis of Energy expert, Finland (Heiskanen, 2009b).

<sup>180</sup> Energy Experts monitor changes in the energy, electricity and heating consumption within the building they live. They also provide advice and assistance to other residents/tenants about more efficient energy and water use practices. Furthermore, they act as contact persons towards the housing organization and the housing management company and vice versa. They concentrate on dissemination of information, advice and being focal contact point between housing organization and tenants/residents (Heiskanen, 2009b).

<sup>181</sup> The Energy Expert is a voluntary, privately organised instrument which gains support from the state in the form of Motiva's support for training, marketing and evaluation (Heiskanen, 2009b).



## The Blue Angel for domestic appliances in Germany<sup>182</sup>

The instrument of the Blue Angel follows two major goals: Firstly, it aims at contributing to consumer transparency and information on products and services that are environmentally superior to unlabelled products. The consumption phase addressed by the instrument is thus the purchasing phase. Secondly, by influencing consumer decisions, the Blue Angel aims at contributing to environmental protection following a holistic approach including health protection, climate protection, water protection, and protection of resources. The aim which is most relevant for this study is climate protection, i.e. energy efficiency, since basically all regulations concerning domestic appliances fall under that category.

The Blue Angel was introduced in 1978 as an eco-label for environmentally friendly services and non-food products. The regulations and criteria behind the label are set by an independent body<sup>183</sup>. Towards the consumer, the instrument functions as a label with the intention to provide concise and valuable information on how environmentally friendly the labelled product<sup>184</sup> is and why the product has been granted the right to bear the label. Compliance with the criteria<sup>185</sup> set out by the *Jury-Umweltzeichen* is voluntary for producers, yet, binding if a producer wishes to label its products. This in turn, according to the *Jury*, may indeed represent an economic incentive to producers as 80 per cent of the consumers know the label, 38 per cent pay attention to the label during the purchasing phase, and 66 per cent are willing to pay (more) for environmentally products.

There are no specific targets mentioned on the website of the Blue Angel that may be measurable in numbers and figures. There are no specific monitoring mechanisms mentioned. Various awarding criteria are regularly reviewed, usually every 3-4 years. In certain cases, this period may also be shorter in order to keep up with fast moving market segments and technologies. The general benefits of the Blue Angel are also attested by the Öko-Institut stating that the Blue Angel has essentially contributed to environmental reliefs (Öko-Institut, 2003 p. 24; p. 43; p. 77). This is done, for example by an 'ecologization' of the market and the setting of ecological standards for product development that some industries adhere to.

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<sup>182</sup> Exploratory analysis of The Blue Angel for domestic appliances in Germany (Schönherr, 2009e)

<sup>183</sup> *Jury-Umweltzeichen*, an independent body comprised of "representatives from environmental and consumer associations, trade unions, industry, trade, craftsmanship, communes, science, media, churches, and federal states

<sup>184</sup> The product range considered in this study represents a variety of products including, for example, calculators, computers, espresso machines.

<sup>185</sup> The criteria are specified for each product group and therefore turn out to be rather technical and not comprehensible to non-experts as the author and probably most consumers. For this reason and the reason of not going beyond the scope of this study, the criteria will not be touched upon in detail. Relevant information on the criteria to the consumers is, for example, high energy efficiency, low consumption of energy and resources, and reduced emissions (Schönherr, 2009e).

### UK WWF/FEC report<sup>186</sup> to reduce meat consumption<sup>187</sup>

The goal of this instrument is to encourage the government to take an active role in reducing meat consumption in the general population.

The World Wildlife Federation (“WWF”) and the Food Ethics Council (“FEC”) wrote a report, published in September 2009, calling on the UK government to encourage the reduction of meat consumption. According to the report, the consumption of livestock products constitutes approximately 8% of the UK’s total greenhouse gas emissions (“GHG”). The report is based on research conducted by these organisations, and it sets out a framework<sup>188</sup> to aid producers, environmental groups, and policy-makers to address and make progress on the issue. WWF has suggested numerous ways this can be achieved such as public health campaigns that encourage people to eat lower-impact livestock products, such as poultry. It also suggests extending nutritional information and introducing VAT-style taxes on high GHG foods.

The report features ambitious targets, but provides many options for the government to follow. The possible intended outcomes of this report are that the government will adopt some of the strategies suggested in the framework, and that consumers will reduce their consumption of high-GHG livestock products. If this instrument inspires producers, policy-makers, and environmental groups to act, and these actions encourage people to consume less high-GHG meat<sup>189</sup>, then it has the potential cut a large percentage of the UK’s GHG emissions.

### The Organic Food Label in Germany<sup>190</sup>

The eco-label (Bio-Siegel) aims at ensuring that certified products comply with the criteria set. From the perspective of the consumer, the eco-label following European legislation is primarily a communicative instrument.

According to the official website of the German eco label, the *Bio-Siegel* was initiated in 2001 as a nationally standardized eco label in order to bring about clarity and transparency for consumers of organic food. The legal basis for the labelling system is the Organic Labelling

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<sup>186</sup> The instrument refers to a report: Livestock consumption and climate change: A framework for dialogue.(MacMillan and Durrant, 2009). The World Wildlife Federation (“WWF”) and the Food Ethics Council (“FEC”) wrote a report, published in September 2009, calling on the UK government to encourage the reduction of meat consumption. According to the report, the consumption of livestock products constitutes approximately 8% of the UK’s total greenhouse gas emissions (“GHG”). The report is based on research conducted by these organisations, and it sets out a framework to aid producers, environmental groups, and policy-makers to address and make progress on the issue (Leung, 2009a).

<sup>187</sup> Exploratory analysis of UK WWF/FEC report to reduce meat consumption (Leung, 2009a)

<sup>188</sup> The report sets out a framework that points out that, in addition to climate change, livestock production impacts other environmental issues, such as animal welfare and the lives and well-being of producers and consumers. All of these issues can be improved by reduced consumption of livestock. The framework was developed through a combination of interviews with producers, a stakeholder roundtable, and desk research (Leung, 2009a).

<sup>189</sup> Livestock products currently account for 8% of the country’s total GHG emissions (Leung, 2009a).

<sup>190</sup> Exploratory analysis of the Organic food label in Germany (Schönherr, 2009f)



Act regarding the introduction and use of an Organic Label. In 2007, the legislation was adapted to the European standards set out in Council Regulation 834/2007/EC. Following this adaptation, the German legislation regulates the use and design of the German eco label and the European legislation articulates the eco-political targets of European eco-labelling. Producers who subscribe to the eco-labeling system and want to market their products as “eco”, “bio”, or “organic” need to fulfill the criteria set. Retailers are not specifically addressed by the instrument.

Regulation 834/2007/EC does not set out specific targets such as increasing the market share of organic food by a certain percentage or reducing the emission of CO<sub>2</sub> or methane from agriculture. It rather provides a regulatory framework for organic food production and the labelling of organic food products. Requirements are laid down for the monitoring of the compliance of producers with the regulations.

It should be noted that it appears at this point rather impossible to trace any direct causality to the Bio-Siegel. It seems much more likely that these developments are caused by a multitude of different factors. Effects attribute to a strong informative role during purchasing decisions. The contribution of the instrument alone is probably less significant. However, the label’s initial purpose of contributing to consumer transparency appears to be fulfilled.

### Label “Quality product”, Latvia<sup>191</sup>

The instrument relates to a voluntary label. The „Quality Product“ brand name was created by the owner – Marketing Board in 2001. It aims to encourage the consumers to select products which are grown and manufactured in Latvia and to increase the market share of such products. In 2008, the label was adjusted to the national food quality schemes (as required by the EU legislation) and now the label is represented on national and international scale. The labelled products need to satisfy the criteria of the Requirements for food quality schemes, its implementation operation, supervision and control, including the provisions on traceability of raw material origin status. The label can be obtained for these product groups: bread, vegetables, fruits and berries, fruit juices and nectars, non-refined rape seed oil.

Requirements for obtaining and applying the label are clearly specified: The label is awarded for the period of one year on basis of an expert board decision (a procedure for the extension of the label award is under developed). Users of the label are listed in a specially developed register. The use of the label is controlled. The misuse is pursued and can be fined with up to 1000 LVL (~1400 EUR) if the misuse is not averted timely.

The label is actively promoted on the Latvian market and communicated towards the consumer through supermarket chains and mass media in Latvia. In January 2008, 219 products of 34 Latvian companies were labelled with the trade mark “Quality Product”. The trademark is known to 70% of the population in Latvia (Aleksejeva, Bremere, 2009b).

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<sup>191</sup> Exploratory analysis of Label “Quality product” in Latvia (Aleksejeva, Bremere 2009b)

### UK “Carbon Trust” Labelling<sup>192</sup>

The Carbon Trust is a company that provides business ideas and investments to help the UK move to a low carbon economy. The Carbon Trust initiated the Carbon Reduction label in 2007. The goal of the instrument is to provide a measure of a product’s carbon footprint across its life cycle. The labels are most effective if they are widespread, and consumers can compare similar products. One of the objectives of the instrument is to encourage consumers to make educated choices when purchasing products.

When using the carbon footprint label, producers have the footprints of their products determined, put it on the package, and make an effort to reduce the footprint measures carbon emissions at every stage of the supply chain. Labelling enables retailers to decide which products to stock, and to give their customers more information about the products they are purchasing. The Carbon Trust label is designed to reach the general public. It is an innovative idea to put carbon footprints directly on packaging so consumers can see the footprint. It allows consumers to educate themselves and voluntarily switch to lower- carbon products.

The Carbon Trust labelling and carbon footprint initiative has supported the development of the product carbon foot-printing standard<sup>193</sup>. Carbon labelling has the potential to be very effective in helping consumers decide what product to buy, and encouraging producers to find ways to lower their footprints. However, in order for this to be effective, consumers must notice the labels and incorporate them into their shopping decisions. Producers also need to be willing to sign up for the footprint label (Leung, 2009c).

## 6.4 Voluntary and procedural

### UK Voluntary phase-out scheme for incandescent light bulbs<sup>194</sup>

The instrument relates to a voluntary initiative in the UK, which began tackling the issue of old-fashioned light bulbs before the EU requirements<sup>195</sup>. The initiative was agreed to by major

<sup>192</sup> Exploratory analysis of UK “Carbon Trust” labelling (Leung, 2009c).

<sup>193</sup> Contributions of the Carbon Trust are: The BSI British Standards PAS 2050:2008 (describing the assessment of life cycles of co2 emissions of goods and services (PAS 2010)); The Code of Good Practice for Product GHG Emissions and Reduction Claims (sets requirements for organisations making claims on products’ emissions and reductions); The Guide to PAS 2050 (helps laypeople understand the implementation of PAS 2050 and explains difficult parts of the PAS); The Business Case for carbon footprinting (analysis of potential benefits to companies that choose to have the carbon footprint of their products analysed) (Leung, 2009c).

<sup>194</sup> Exploratory analysis of UK Voluntary phase-out scheme for incandescent light bulbs (Leung, 2009d)

<sup>195</sup> The EU requirements on household lamps are endorsed by the EC Regulation (Commission Regulation (EC) No. 244/2009). Traditional incandescent and halogen bulbs are gradually phased out from the market starting from 2009 by the end of 2012. The EU will ban bulbs in a phased approach, beginning with frosted (non-clear) bulbs. These will be phased out by Sep 2009. From Sep 2009, clear bulbs over 100W will be made of more



retailers and energy suppliers. The overall goal for both Defra<sup>196</sup> and the EU is to reduce the amount of energy used by light bulbs. These old bulbs waste 95% of electricity as heat. The new bulbs are much more efficient. They will save electricity, and will reduce the electric bill for many consumers.

In 2007, the UK government was already aiming to phase out 150W traditional bulbs by January 2008, and all incandescent bulbs by 2011. Manufacturers will not be allowed to put into the market certain types of light bulbs after the deadlines given above. Consumer behaviour will be affected because they will not be able to purchase the type of light bulbs to which they are accustomed. The instrument is designed to reach every household, office, and light-bulb using location in the UK. This will affect the entire population. No monitoring and evaluation and instrument reviews are foreseen.

A switch to more energy efficient light bulbs has the potential to save the UK five million tonnes of CO<sub>2</sub> a year<sup>197</sup>.

### Electricity purchase in open electricity market conditions, Latvia<sup>198</sup>

The instrument addresses the purchasing behaviour of consumers, as they are having an opportunity to choose the electricity supplier<sup>199</sup>. The goal is to create prerequisites for the every electricity end-user to choose the most appropriate offer, and to promote electricity trading for an economically reasonable price and to stimulate competition on the electricity market.

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efficient material. Lower wattages will be phased out until end of 2012. By 2016, the EU will phase out C-class retrofit halogen lamps.

<sup>196</sup> Defra website on light bulbs: <http://www.defra.gov.uk/environment/business/products/roadmaps/lightbulbs.htm>

<sup>197</sup> Naughton, Phillippe. UK to phase out traditional light bulb by 2011. Times Online, 27 September, 2007.

<http://www.timesonline.co.uk/tol/news/politics/article2543056.ece>

<sup>198</sup> Exploratory analysis of Electricity purchase in open electricity market conditions, Latvia (Indriksone, Bremere, 2009a)

<sup>199</sup> The instrument was introduced by the Electricity Market Law (2005, amended in 2008) transposing the Directive 2003/54/EC concerning common rules for the internal market in electricity and repealing Directive 96/92/EC and by the deriving Cabinet of Ministers Regulations Nr. 793 "Regulations on Electricity Trade and Usage" (2009). The instrument provides the right to electricity end users, who have a connection to a transmission system, to change an electricity trader without restrictions, notifying in advance the trader with which he or she has concluded an electricity trade contract. It also gives the right to electricity end user, which has a connection to a distribution system, to change an electricity trader (electricity supplier) by taking into account the following conditions 1) by notifying in writing the trader with which he or she has concluded an electricity trade contract at least three months in advance; and 2) by notifying in writing the system operator to the network of which such user has been connected regarding the change of the trader at least three months in advance (Indriksone, Bremere, 2009a).

Since July 1, 2007 every client can freely choose his own electricity supplier from the list of accredited electricity trading companies. Changing the electricity supplier has to be free of charge. The instrument addresses all electricity end users, including households, who have a connection to a transmission or distribution system. No targets are set for numbers of companies or consumers to be reached. Electricity system operator is responsible for the management of the electricity flow in a transmission or distribution system. Electricity trader<sup>200</sup> has to obtain a licence. In Latvia, the competence for monitoring and regulation of the electricity market is delegated to the Public Utilities Commission and the Ministry of Economy. Yearly reports are prepared on situation in the electricity sector and these reports are made publicly available. There is no particular built-in mechanism requiring regular reviews of the instrument.

Currently, there are no real outcomes of the instrument to be reported. The instrument is used on case by case basis.

### Heat energy usage, Latvia<sup>201</sup>

The Cabinet of Ministers Regulation<sup>202</sup> sets the framework for the functioning of this instrument prescribing the energy user to pay for the heat energy supply according the indications of the heat energy measuring instrument. By contract, the heat energy user is obliged to register the amount of the heat energy used, and reports on that to the supplier and pay for it within given timelines. The instrument aims at setting the order and preconditions that the payment for heat energy is done according to amount of the heat used.

The instrument influences a large number of consumers as it tackles all energy users who are receiving heat energy from suppliers. In Latvia, households are widely connected to centralized heating systems<sup>203</sup>. The instrument allows the heat energy user to pay only for the heat energy consumed, by employing the voluntary measure to install individual measuring devices. The energy user is free to choose the method for accounting of the heat consumption, i.e., by floor space or based on the actual heat consumption. House managing companies are mediators between heat suppliers and consumers. The energy user has to register the amount of heat energy used and submit a report to the heat supplier.

Currently the implementation of the individual metering system is occurring on a house to house basis. An important precondition is that more than 50% of flat owners in a multi storey apartment building agree to install individual heat meters. This hinders the application of individual heat metering systems in Latvia (Indriksone, Bremere, 2009b).

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<sup>200</sup> An electricity user that purchases and sells (supplies – in the sense of selling) electricity to another user thereof.

<sup>201</sup> Exploratory analysis of Heat energy usage, Latvia (Indriksone, Bremere, 2009b)

<sup>202</sup> The Cabinet of Ministers (CM) Regulations Nr. 876 “Regulations of heat supply and usage” (2008).

<sup>203</sup> In 2005, share of households connected to the centralized heating system was 65.9% on average and 80% in towns and cities in Latvia (State Housing Agency, 2006).



### Voluntary quality standards for school canteens in Germany<sup>204</sup>

The project<sup>205</sup> is a typical hybrid instrument, showing features of voluntary, communicative (labelling + campaigning) and economic (GPP) instruments. The main goal of the project and its quality standards is to reach and ensure a constant nutritional quality of food served in school canteens. The main focus is on offering a healthy diet from a nutrition scientific point of view. The instrument does not feature any quantitatively measurable targets. As recommended by the quality standards, the share of organic products in the costs of goods purchased for catering a school should be at least 10 per cent. With regard to meat consumption the quality standards envisage a maximum cycle of eight times during a menu of four weeks. Since the project gives advice on a wide range of aspects concerning school canteen management and promoting a healthy diet it also touches upon all three phases, yet to different extents. The main focus therefore is on the purchasing phase of consumption.

The project is part of the national action plan<sup>206</sup>. Within this project, voluntary quality standards for school canteens have been designed and developed for two years now. The latest (second) edition of the quality standards was published in September 2009. The instrument addresses all-day schools/caterers as purchasers of food and pupils in order to educate them in their consumer behaviour. The target group comprises over 12,500 schools with over 1.7 Mio. pupils. School canteens or caterer that had themselves certified by the DGE are audited regularly in order to ensure a sustainable quality assurance. There is no particular mentioning of a built-in review mechanism.

For the instrument effects it is to notice that the main focus of this instrument is on healthy diets instead of sustainability and environmentally friendly consumer behaviour (Schönherr, 2009g).

### School Milk Scheme, Latvia<sup>207</sup>

The instrument is intended to encourage consumption among children of healthy dairy products containing important vitamins and minerals. The scheme does not only have a nutritional but also an educational character and contributes therefore greatly to the fight against obesity of children. The School Milk Scheme is there to provide quality products for

<sup>204</sup> Exploratory analysis of voluntary quality Standards for school canteens in Germany (Schönherr, 2009g)

<sup>205</sup> The project *Schule+Essen=Note1* (School+Food=GradeA) is part of the national action plan *In Form - Deutschlands Initiative für gesunde Ernährung und mehr Bewegung*. Within this project, voluntary quality standards for school canteens have been designed and developed for two years now, primarily in order to promote healthy diets among pupils (DGE 2009b). The latest (second) edition of the quality standards was published in September 2009 (DGE 2009a). The bodies participating in the project are the Federal Ministry of Food, Agriculture and Consumer Protection (BMELV) and the German Nutrition Society (*Deutsche Gesellschaft für Ernährung, DGE*), which is the main stakeholder in the project (Schönherr, 2009).

<sup>206</sup> *In Form - Deutschlands Initiative für gesunde Ernährung und mehr Bewegung*. The bodies participating in the project are the Federal Ministry of Food, Agriculture and Consumer Protection (BMELV) and the German Nutrition Society (*Deutsche Gesellschaft für Ernährung, DGE*), which is the main stakeholder in the project.

<sup>207</sup> Exploratory analysis of School Milk Scheme, Latvia (Aleksejeva, Bremere, 2009c)

children, to contribute to a healthy way of living and to nutritional education with a better knowledge on products.

Latvia is involved in the “School Milk” programme since 2004. The implementation of the programme includes the signing of voluntary agreements by schools for supply of subsidized milk. Health aspects and care for the balanced food consumption at schools have been underlying the implementation of the program. The program has gained certain popularity, especially after the implementation of an information campaign and educational establishments were actively joining the “School Milk” programme in previous years. In 2008, the programme was expanded to increase the range of products covered by the subsidy. However, the implementation of the programme has been affected by the economic crisis in Latvia when the governmental support was stopped as of 1 January 2009 (Aleksejeva, Bremere, 2009c).

However, opposing views on the health aspects were actively expressed from some NGOs in 2007 questioning the usefulness of consumption of the milk<sup>208</sup>. Environmental considerations were not tackled in this debate. The negative aspect of this instrument is that producing 1 litre of milk leads to the production of 1 kg of CO<sub>2</sub>, causing an undesirable environmental effect.

### **Collaboration Agreement between the Ministry of Health and Consumption and Spanish Association of Hotel Trade and the Restaurant Industry (FEHR) y (FEHRCAREM)<sup>209</sup>**

The collaboration agreement is a voluntary instrument. It shows the common will of the Ministry and the Hotel Trade sector to collaborate and to improve the food habits by means of offering to consumers the healthiest food<sup>210</sup> (vegetables, less fats food, fruits...) and by informing the companies of the sector and the consumers through campaigns and other informative actions.

Basically the agreement impacts on the framework conditions. The communication based instruments towards consumers depend on the target group. On the one hand, the school restaurant service companies will do playful activities to promote a healthy diet among the

<sup>208</sup> In 2007, the association “Zaļā alternatīva” (*The Green Alternative*) has published several articles in the mass media actively propagating the negative health effects of milk and pleading to call off the “School milk” program. Currently this association is not active and can not be traced (own search, December 2009).

<sup>209</sup> Exploratory analysis of Collaboration Agreement between the Ministry of Health and Consumption and Spanish Association of Hotel Trade and the Restaurant Industry (FEHR) y (FEHRCAREM) (Alcantud, 2009h)

<sup>210</sup> The instrument includes specific goals for different restaurant industry sectors (canteens – schools, hospitals- and modern restaurants chains). The main goal for the whole hotel trade and restaurant sector include a support to the NAOS strategy by the means of communication activities (campaigns, handbooks...) in the establishments; promote the consumption of fruits, vegetables and salads in the establishments; provide the nutritional information of the offered food products; reduce the saturated fats gradually: replace animal fats by vegetable fats and reduce trans and saturated fats in fried food; the restaurant industry commits not to encourage the giant size portions consumption (Alcantud, 2009h).

children; they also will collaborate with Schools Fathers and Mothers Associations to spread healthy lifestyle as well. On the other hand, the association of modern restaurant chains will give nutritional information to the customers. In this collaboration agreement case there is no economic support to the organizations that signed the agreement. The effectiveness of the instrument depends on the fulfilment of the agreements and the instrument foresees to elaborate a report every six-months. *Producers and retailers* (The Hotel Trade Companies Association) have agreed to improve the food products characteristics, to inform to the sector and the consumers.

The collaboration agreement includes specific targets for each organization. The formal agreement does not foresee a mechanism to monitor its outcomes. The collaboration agreement has no mechanism incorporated to be regularly reviewed.

Until now, the authors have not obtained any result or report on the effects of this instrument (Alcantud, 2009h).

## 7 On instrument effects: summary and outlook

The analysis of 30 SC instruments in the need areas of housing and food was carried out to elaborate on design and implementation of the policy instrument in an exploratory fashion.

The exploratory analysis on design of these instruments allowed us to identify:

- Instruments that are designed to tackle various consumption phases, i.e., purchasing, consumption and disposal in order to stimulate the consumer choice for more environmentally friendly products and services, that restrict consumption of environmental resources and to develop management practices to cope with waste in environmentally sound way.

The exploratory analysis of these instruments revealed difficulties in the assessment of the instruments' effects when the analysis is primarily based on considerations of the design considerations:

- Variety of effects that can be identified for each instrument has brought a challenge to conceptually define categories of instruments and build policy pathways that adequately capture the often non-linear relationship between instrument output – outcome – impacts. This was addressed by a sharper definition of these concepts and the development of a scheme capturing the different kinds of effects and their relationship with the original instrument (Wolf and Schönherr, 2009:10).
- The exploratory analysis showed that sometimes goal achievement was not an adequate benchmark for success or failure of an instrument. For example, in the case of disposal of waste electronic and electric equipment it became obvious that the target for separate

collection of these wastes was already reached in Germany before the introduction of the respective instrument (Schönherr, 2009). Valuing the instrument goal attainment and going beyond in the impact assessment implementation phase (WP3.2) will try to critically assess the instrument goals themselves (Wolf and Schönherr, 2009:24-26).

- The exploratory analysis highlighted that sometimes the goals of an instrument are stated very vaguely. As an alternative, a result-based evaluation approach treating intended and unintended effects symmetrically is elaborated for the impact assessment (Wolf and Schönherr, 2009:6).
- In assessing the instrument effects within the exploratory analysis framework we became aware of the fact that instrument effects play out along a long causal chain and may be influenced by intervening factors at each stage – this makes it difficult to identify and attribute effects to instruments and to assess factors that contributed to success or failure of the instrument.
- For the assessment of the instrument effects we noticed that the availability of data was a problem. The implementation of tasks within impact assessment of the instruments (WP3.2) investigating outputs and outcomes will involve a variety of qualitative and quantitative methods (Wolf and Schönherr, 2009:7).

The results from the exploratory analysis of SC instruments and the experience gained (WP3.1) provide a sufficient foundation for carrying out the in-depth analysis of the instruments (WP3.2). The selection criteria for the final selection of instruments for the in-depth analysis were based on the experiences gained throughout the implementation of WP3.1.



## 8 References

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- The public agreement with Spanish Association of Vending Machine.  
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## 9 Annexes

### 9.1 Annex I: Template of the Instrument inventory sheet

Instrument	Legal basis of instrument	Instrument type	Implementation level (EU, national, regional...."), country	Time frame	Is there an EU Directive transposed ? (please, indicate)	Implementation history

Goals of the instrument and ways of attaining the goals	Driver(s) tackled by the instrument:		Which consumption phases are addressed by the instrument		
	Type and energy efficiency	Consumption (usage) behaviour	Purchasing behaviour	Usage behaviour	Disposal behaviour

*) Are there review mechanisms set (yes/no)? *) The responsible institution *) The frequency of reviews of the instrument	Impact evaluation/ Data availability	Optional column
		Own judgement on how large an impact the instrument can generate, or add any general comments

## 9.2 Annex II: Instruments exploratory analysis template

Exploratory analysis of [name of SC instrument, incl. 'nationality']

Legal basis of the instrument:

Design of the instrument

Background and implementation history

Goals and objectives of the instrument

Please refer to the goal(s)/objectives as described in the legal document underlying the instrument. Please pay attention to possible changes in the goals/ objectives during the implementation history of an instrument, e.g. if the legal texts become amended.]

[This should include a reference to the consumption phase addressed by instrument]

Functioning of the instrument

The instrument's core governance mechanisms and pathways by which it is to attain its goals

Means by which the instrument shall affect consumer behaviour<sup>211</sup> and/ or framework conditions of consumption<sup>212</sup>

Innovative aspects of the instrument

Actors involved in instrument implementation and their responsibilities

Actor	Role and responsibility
Consumers	
Producers	
Retailers	
Public administration	
Etc.	

<sup>211</sup> E.g. by influencing consumer's knowledge, routines and habits, motivation and norms, confidence and empowerment, abilities and opportunities (Heiskanen and Schönherr 2009: 52).

<sup>212</sup> Framework conditions of consumption include the market and the social and physical environment (Heiskanen and Schönherr 2009: 52). An instrument may affect the market by changing relative prices or improving product information, consumption feedback, market transparency or the availability of products and services, or by government using its market power and example. An instrument can affect the social and physical environment by fostering systems of provision, through enabling infrastructures and conditions or supporting local sustainable communities and social groups.



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Instrument-related success criteria<sup>213</sup>

[The following should include, among others and where applicable, findings of existing research. Not all factors will be relevant for all instrument types.]

Scope and outreach

[Does the instrument address a broad range of products/services/technologies, and is it designed to reach many people?]

Depth

[Does the instrument aim at inducing or supporting substantive behavioural change?]

Targets

[Does the instrument feature ambitious and easily measurable targets?]

Monitoring and evaluation

[Has the instrument a built-in mechanism to monitor and evaluate its outcomes/ impact (e.g. requirements on collection of outcome/ impact data)?]

Instrument reviews<sup>214</sup>

[Has the instrument a built-in mechanism to be regularly reviewed, i.e. adjusted in order to improve its performance]

Negative repercussions of non-compliance to / non-use of instrument

[What are the negative consequences ('costs') of not using/ implementing the instrument for the consumer (e.g. when not making use of a SC subsidy; in case of regulations: sanctions)?]

Other criteria discussed in literature

Interaction of the instrument with other instruments or policies

[The description should include the embedding of the instrument in a wider policy package or instrument 'cascade' at national level]

Instrument or policy [type, full name, source]	Interaction [Direction of interaction: synergetic/ antagonistic?]
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<sup>213</sup> We assume that specific design aspects of a SC instrument support its effectiveness (cf. Heiskanen and Schönherr 2009; Wolff, Schönherr and Heiskanen 2009)

<sup>214</sup> By reviews we mean adjustments of the instrument, above all in order to improve its performance


Instrument effects<sup>215</sup>

[Please describe briefly the instrument's outcomes – if possible, both intended outcomes<sup>216</sup> and unintended outcomes (side effects)<sup>217</sup> – plus the resulting impacts in the Member States and at international level to the extent that data / estimations exist. I.e. existing empirical literature should be covered and relevant aspects summarised ]

Outcomes: effects on consumption patterns

[Please try to cover both intended outcomes<sup>218</sup> and unintended outcomes (side effects)<sup>219</sup>, to the extent that you find information on these, e.g. in literature]

Impacts: effects on sustainability

Impacts within [the Member State]

Impacts at international level

References

<sup>215</sup> By instrument effects, we mean both intended and unintended changes in consumption patterns (instrument outcomes) and resulting changes in the environment, society and economy (instrument impact).

<sup>216</sup> This includes outcomes that are reached through targeting consumer behaviour as well as outcomes reached through targeting framework conditions of consumption (definitions see above).

<sup>217</sup> Side effects are non-intended – though not necessarily unanticipated – effects of a sustainable consumption instrument.

<sup>218</sup> This includes such intended outcomes that are reached through targeting consumer behaviour as well as outcomes reached through targeting framework conditions of consumption (definitions see above).

<sup>219</sup> Side effects are non-intended – though not necessarily unanticipated – effects of a sustainable consumption instrument.



### 9.3 Annex III: List of instruments selected in food sector

Type of policy instrument	Regulatory instruments	Economic instruments	Communicative instruments	Procedural instruments and instruments of societal self-regulations
Food product characteristics	<p>Healthy food at schools (since 2003)</p> <p>Corporate social responsibility, reduction in energy consumption, ethical trading, food transport, water use, waste management, better regulation (since 2005)</p> <p>Sustainable development action plan (since 2006)</p> <p>Creating a legal base preventing the abuse of the terms concerning "biologic" and "ecologic" agriculture and products (2005)</p>	<p>Mense Bio: Organic Products in Italian Schools (since 1995)</p> <p>Requirements for public catering to serve sustainable meals (since 2009)</p> <p>Goals on organic production and consumption 2010 (since 2006)</p>	<p>Requirements for food quality schemes &amp; mandatory labelling (since 2008)</p> <p>Quality product label (since 2004)</p> <p>Information campaign "Vote for healthy food" (2007)</p> <p>Sustainable labelling (since 2003)</p> <p>Strategy for nutrition, physical activity and obesity prevention „NAOS strategy“ webpage (since 2006)</p> <p>National information campaign at retail outlets, fairs, consumers offices (2007-2010)</p> <p>Networking: Clarify the legal situation of ecolabelling to producers/merchants (2007-2010)</p> <p>Campaign of information and promotion of ecologic products within a national scope (2006-2008)</p> <p>GREECE: dietary guidelines for adults in Greece (1999)</p>	<p>Voluntary agreement - School Milk Scheme (since 2004)</p> <p>Public agreement with Spanish Federation of Food and Drinks Industry (since 2005)</p> <p>Public agreement with the Spanish Federation of associations of restaurant industry (since 2005)</p> <p>Public Agreement with Spanish Association of Vending Machine (since 2005)</p> <p>Public agreement with Spanish Association of Hotel Trade and the Restaurant Industry and the Association of retail chain of Modern Restaurant Industry (since 2005)</p> <p>Public agreement with Spanish Confederation of Bread making Organizations (since 2005)</p> <p>Voluntary quality standards for wholesale purchasers Schule +</p>

Policies to Promote Sustainable Consumption Patterns

			<p>Nordic Swan label for restaurants (since 2006)</p> <p>Club for organic food (?)</p> <p>Labelling of organic products (?)</p> <p>German Organic Food Label (Biosiegel) (since 2002)</p> <p>Bioland-label (since Mid-1970s)</p> <p>KAT - Label for eggs (1995)</p> <p>Information campaign Bio kann jeder (Everybody can bio) (since 2008)</p> <p>Naturland label (since 1982)</p> <p>Information campaign Nachhaltiger Warenkorb 2009 (Sustainable Shopping Basket 2009) (2009)</p> <p>Federal Program for organic farming (Bundesprogramm für ökologischen Landbau) (2001-2015)</p> <p>Stop Climate Change Label (since ?)</p>	<p>Essen = Note 1 (School + Eating = Mark 1) (2007-2020)</p> <p>Voluntary quality standards Job und fit (Job and fit) (since 2007)</p>
Beverage packaging	Producer responsibility for Packaging (since 1993/1997)	<p>Application of the deposit system to re-usable packaging (since 2003)</p> <p>Beverage packaging tax (since 2004)</p> <p>The Green Dot - Dual System</p>		



		<p>Germany / Der Grüne Punkt - Duals System Deutschland (since 1991)</p> <p>Deposit System for beverage packaging / Dosenpfand (since 2003)</p> <p>Beverage packaging deposit / Statiegeld (since 1980 for glass bottles)</p>		
Organic waste	<p>Catalan Waste Law (1993-2009)</p> <p>Regional waste management plans &amp; Municipal waste ordinances (since 1993)</p> <p>Helsinki Metropolitan Area Council Waste Management Regulations (since 2005)</p> <p>Waste separation instruction (since ?)</p> <p>Proportional cross subsidisation of organic waste (since ?)</p>			

## 9.4 Annex IV: List of selected instruments in housing sector

Type of policy instrument	Regulatory instruments	Economic instruments	Communicative instruments	Procedural instruments and instruments of societal self-regulations
Appliances (white goods, lighting, IT and home entertainment)	Municipal collection points for electronic equipment waste (2005)	Plan of renewing domestic appliances (2008-2012)	Electricity-saving-check (2009) Energy efficiency campaign (2002) Sustainable shopping basket (2009) Eco-label – The Blue Angel (1978) Campaign – Off? Really off? (2000-2002) Energy efficiency information centre (1997) A promotion campaign on low-energy light bulbs in households (2009)	Competition – Environmentally friendly trader (2008) Voluntary phase out scheme for incandescent light bulbs (2008???)
Green energy	Barcelona Solar Thermal Ordinance (since 2000) Renewable Energies Heat Act (since 2008)	Ecological tax reform with regard to electricity taxes (since 1999) Emissions reduction – white certificates (2008-2011)	Web-based information portal on GPP (since ?) Handbook on procurement of green electricity (2006) OK-Power label (since 2000)	Electricity purchase (since 2005)
Thermal energy demand - heating	Ordinance on the heating costs billing procedure (1989, amended 2009) Small scale Combustion Plant Ordinance ( since 1983) Living-space	KfW Loan and grant programme “Energy efficient rehabilitation” (since 2009 also individual measures are supported) KfW programme Energy efficient	Energy consultancy and promotion/support programme “On-Site-Energy Advice” (since 1991) The Blue Angel (since 1978) Energy saving trust	Voluntary system of inspection of boilers (2008-2016) Voluntary energy conservation agreement for housing properties (since 2002) Heat energy usage



	<p>definition and accommodation allowance (since ?)</p> <p>Emissions reduction (2008-2011)</p> <p>Market transformation programme (inc. Implementation of minimum standards and labelling for appliances) (since 1994)</p> <p>Limitation of energy demand (since 2006)</p> <p>Thermal systems performance (since 2007)</p> <p>Energy efficiency requirement for hot water boilers (since 2004)</p>	<p>construction (since 2009)</p> <p>Pro-Klima der energycity-Fonds (since 1998)</p> <p>Market incentive programmes (since 1999)</p> <p>Ecological tax reform with regard to heating oil/gas (since 1999)</p> <p>Stamp duty exemption for zero-carbon homes (2000-2012)</p> <p>Governmental financial support for energy savings (since 2004)</p> <p>Tax relief and tax allowance (2007-2010)</p> <p>Financial subventions for the acquisition of boiler (Plan de Renove 2008) (2008)</p> <p>Grant for detached houses to convert heating systems (2006-2008)</p> <p>Domestic help credit (tax deduction) (since 2001)</p> <p>Energy grants for multifamily dwellings (since 2003 ?)</p> <p>Energy grants based on income levels (since 1970s)</p> <p>Promoting implementation of energy efficiency measures at residential buildings</p>	<p>(since 1992)</p> <p>Information system about energy efficiency of boilers (website) (since?)</p> <p>Ecoabita (project) (since 2007)</p> <p>Guide of sustainable edification and economic support applying it (2006 – 2007)</p> <p>Energy expert – voluntary peer-to-peer advice scheme (since 1996)</p> <p>Motivoitaja – labelling scheme for low-energy housing (since 2002)</p> <p>Nordic Swan label for detached houses (since 2005)</p> <p>Nordic Swan label for various heating systems (since ?)</p> <p>Motiva – advice for households in energy efficient construction (since 1996)</p> <p>TopTenFinland (since 2007?)</p>	<p>(since 2008)</p>
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		<p>(since 2008)</p> <p>Financial subventions for the acquisition of insulation materials for landlords and lodgers (since ?)</p> <p>Grant schemes for insulation of buildings and use of RES (since 2009)</p>		
Air conditioning		<p>Financial subventions for the acquisition of low-energy air condition systems (Plan de Renove 2008) (2008)</p>		
Domestic water use	<p>Regulative restrictions of water use in periods of exceptional and/or emergency warning in Catalonia (2007-2008)</p>	<p>Selling water for prices according to the real costs weighted by usage behaviour (since 2010)</p> <p>Payment according to actually used amount of water (water counters) (since 2006)</p>	<p>Water Saving Group (2005-2008)</p>	



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