EPA Network

Increasing Market Transparency with Environmental Product Information

Analysis, evaluation and communication
of the environmental impact of products

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Executive summary

Global production and consumption have risen continuously in the past and with them, energy and material use have also hit historical peaks. This, in turn, has consequences in terms of higher environmental impacts which are primarily connected with the production of goods and services. Production, however, is directly correlated with consumption patterns. Consumers do not sufficiently consider the overall impact caused by their consumption of products because there is generally a lack of information regarding product's environmental impacts. In order to lower the environmental impacts of consumption to a sustainable level, information that supports consumption decisions which are resource-saving must be provided. In other words, market transparency must be increased.

Rise in environmental impacts of consumption

This is also highlighted in the Roadmap to a Resource Efficient Europe. It states that "Accurate information based on the life cycle impacts and costs of resource use, is needed to help guide consumption decisions." In accordance, the Roadmap calls for appropriate incentives to be created by 2020 to allow citizens to choose the most resource efficient products and services, through – among other things – clear environmental information.

Roadmap to a Resource Efficient Europe

Even though some environmental information is available on certain products – through labels for instance – information is often insufficient and information on mass market products is generally scarce. In order to make consumption decisions that preserve resources, well-founded, environmentally relevant and comprehensible information is necessary and should fulfil 'true and fair' quality requirements. The true and fair view conveys a reliable and comprehensible image of the actual environmental impact. Thereby, all relevant environmental aspects are disclosed along the entire life cycle of products and calculations as well as evaluations of the environmental impact are transparently revealed.

Information necessary to influence consumption decisions

Environmental product information shall observe the following recommendations:

Quality recommendations

› total picture in focus (life cycle thinking)

In order to convey an image that corresponds with the real circumstances, the assessment/evaluation shall include all important environmental impacts (emissions and resource use) over the product's entire life cycle from extraction/production of resources to manufacturing, transport, utilisation and disposal/recycling (i.e. from cradle to grave).

› relevance of environmental information

Information shall cover the relevant environmental aspects. It shall enable decision makers to chose products with significant environmental advantages and avoid those with high environmental impact. Information based on irrelevant environmental aspects is misleading.

› coherence and comparability (consistent, steady and can be standardised)

› reliability (credible, trustworthy, scientifically sound and free from manipulation)

› transparency (traceable and verifiable)

› comprehensibility (easily understood, clear and unambiguous)

› availability (visible, accessible)

› being up to date

Environmental product information based on life cycle assessment (LCA) is the most promising approach.

Communication of the environmental impact of products shall always be comprehensible, relevant for consumption decisions and allow for comparisons. Information should be focused on few but relevant environmental impacts. Details should only be communicated if useful for consumption decisions. Quantitative information can be combined with qualitative information. Simplifications can be made in order to reach a broad public. Within product groups, information focuses on the same life cycle stages and the same environmental aspects. A distinction is made between main and background information.

1 Introduction

1.1 The scarcity of resources

Satisfaction of our material-based needs for food, heat, protection, mobility and leisure activities is based on the consumption of products (i.e. goods and services). With economic development, population growth and increasing standards of living, global production and consumption of products have risen continuously in the past and it is highly unlikely that this increase will diminish in the near future. In line with this increase of production and consumption and with changes in our consumer behaviour both energy and material use have hit peaks at the global level. Consequently, energy and material scarcity have achieved unprecedented levels of concern.

Production and consumption of products are rising

Besides the effect of increased scarcity, an increase in energy and resource use has consequences in terms of higher environmental and social impacts. Resources need to be extracted or recycled and infrastructures for energy generation need to be built or enlarged in order to meet the increased demand. Both have direct impacts on the environment (e.g. land use, emissions into air, water, soil, etc.) and both affect society or individuals (e.g. relocation of a village because of the construction of a dam, health and safety issues for mine workers, etc.). These impacts are primarily connected with the production of goods and services. However, production is demand driven and is thus directly correlated with consumption patterns.

Higher environmental and social impacts

The globalisation of production processes has led to the creation of value, supply and disposal chains beyond national territories. Raw materials may be extracted at one place whereas the production of the final product may occur at a totally different location. Consumption and disposal may occur elsewhere. It is clear that the effects of consumption cannot simply be considered at a national level, nor can policy-making focus on the consumption phase of the product; a global perspective with a life cycle approach is essential.

Global life cycle perspective is essential

The global aspect of consumption is one of the reasons why consumers (i.e. individuals, companies or the public sector) do not sufficiently consider the overall impact caused by the consumption of products, or underestimate it because the effect may be manifested in another country. Even for local products, the effects of their production, for example, is rarely directly visible. It does not show on a product whether its production has led to significant pollution, whether its disposal will consume a great amount of energy or if it consumed resources that were already scarce. The overall environmental impact mostly remains unknown and thus cannot be considered by consumers or influence their choices.

Consumers do not sufficiently consider the overall impact

Furthermore, the visible aspects of a product are often overrated. Packaging, for instance, usually makes up only a small proportion of a product's overall environmental impact but it is quite frequently the focus of concern. Environmental product information must be based on the consideration of all relevant environmental aspects over the entire product life cycle. False assumptions caused by insufficient information can mislead consumption decisions. Environmental product information should be tied to the instant when consumers make their choice in order to influence consumption decisions towards products with the best environmental performance.

Product information must foster environmentally friendly consumption decisions

The lack of information regarding products' environmental impacts, is what we call ecological 'intransparency' of the market. For example, existing labels only mark the best products within a product group and there are a lot of products

'Intransparency' of the market

without any environmental information at all. In addition, existing information often does not consider a product's entire life cycle. Furthermore, rarely are all relevant environmental impacts taken into account. In order to lower the environmental impacts of consumption to a sustainable level, information that supports consumption decisions which are resource-saving must be provided. In other words, there is a need to analyse, evaluate and communicate the amount of natural resources consumed and the impacts related to this resource consumption by different consumption sectors (e.g. housing, mobility, etc.) and products (e.g. food, cars, etc.) in order to increase market transparency and allow consumers to make fully informed consumption decisions.

Market transparency is important to making our production and consumption patterns more sustainable. Analysing, evaluating and communicating the environmental impact of products is an essential contribution to market transparency. Different countries have recognized this and started initiatives to establish comprehensible and transparent ways to display environmental information for products (cf. chapter 4 for examples). Internationally standardised procedures on how to evaluate products and on how to communicate the results of such evaluations are highly recommended and are being developed.

1.2   Scope and aim

This paper shall demonstrate the need for better environmental product information and market transparency. It primarily focuses on but is not limited to environmental declarations according to ISO 14025 [1]. Furthermore, it shall propose a set of quality recommendations for good environmental product information. And finally, it shall give some examples of current initiatives on environmental product information in Europe.

Sustainability includes ecological, social and economic aspects. This paper focuses on the ecological pillar of sustainability and is thus primarily concerned with environmental impacts of economic activities. When the term «sustainability» is used, it shall refer primarily to its ecological aspects. Approaches that tackle the social aspects of production and consumption are quite different from what is being discussed here which is why they have been left out in this paper.

Questions related to the implementation of what is being discussed here (including verification of the provided information, guidelines on how to overcome possible obstacles, harmonisation among different countries, etc.) will be addressed separately at a later stage.

The messages of this paper are aimed at policy makers as well as any person or organisation providing environmental product information.

The issue of enhancing market transparency contributes to the concept of «green economy» and the discussions on resource efficiency.

1.3   European context: policy and economic drivers

The Roadmap to a Resource Efficient Europe highlights that

> *Changing consumption patterns of private and public purchasers will help drive resource efficiency [...]. [This in turn] can help increase demand for resource efficient services and products. Accurate information based on the life cycle impacts and costs of resource use, is needed to help guide consumption decisions.* [2]

The Roadmap sets out the following milestone for 2020:

Milestone

> *By 2020, citizens and public authorities have the right incentives to choose the most resource efficient products and services, through appropriate price signals and clear environmental information. Their purchasing choices will stimulate companies to innovate and to supply more resource efficient goods and services. Minimum environmental performance standards are set to remove the least resource efficient and most polluting products from the market. Consumer demand is high for more sustainable products and services.* [3]

Transparent environmental product information is clearly needed to help achieve this milestone and this paper evaluates the quality requirements of product information.

The initiative, Unlocking the Single Market for Green Products, intends to address information failure as well as regulatory and market failure. The indicative road-map communicated from the Commission on Unlocking the Single Market for Green Products states that

Unlocking the Single Market for Green Products

> *Evidence shows that economic actors in different phases of the value chain do not have (or do not trust) clear and comparable information about the environmental benefits, cost savings, and business opportunities generated by higher resource efficiency. This might result in consumers or public administrations not buying green products, investors not freeing funds for environmental investments or not considering adequately environmental risk, etc. Existing tools such as [Green Public Procurement] and the EU Ecolabel improve the situation; however, their performance is not sufficient to correct this failure. This is further compounded by increasing burdens on business from disparate and rapidly growing government and private sector schemes for measuring and communicating environmental performance, especially penalising organisations active in several [member states] or internationally.* [4]

Finally, the EU Ecolabel is a voluntary label which designates products and services that have a reduced environmental impact throughout their life cycle (i.e. products are evaluated from raw materials to manufacturing, packaging, distribution and disposal). To qualify for the label, products have to comply with a set of criteria which have been developed through a multi stakeholder approach. Through this life cycle perspective, products' main environmental impacts are reduced in comparison to similar products on the market. [5]

EU Ecolabel

2   The need for environmental product information

During our lifetime, we make a lot of consumption decisions in order to satisfy our needs for food, heat, protection mobility and leisure activities. However, our consumption patterns are far from being sustainable. «[I]n 2007 humanity used the equivalent of 1.5 Earths to support its consumption» [6]. Projections indicate that by 2030, we will need twice the available (regenerative and assimilative) capacity of our planet to sustain our current levels of consumption [7]. If everyone were to consume as people in the western hemisphere, our resources would soon come to an end and thus gravely endanger the prosperity of future genera-

Unsustainable consumption patterns

tions. To prevent this from happening in the future, we must lower the total environmental impact of our consumption to a sustainable level now.

Generally speaking, products (e.g. hybrid cars) within a product group (e.g. cars) can be divided into three product categories (cf. Fig. 1). Some products do fulfil high environmental standards. These products are produced respecting specific standards (e.g. organic production) or are designed in such a way as to minimally harm the environment (e.g. choice of recycled raw materials). The additional effort made compared to the mandatory requirement level or the higher quality (resulting in longer life spans) often results in a slightly higher price. The higher acquisition cost is often compensated for by lower operating and disposal costs or longer life spans. These products often bear labels that indicate the advantageous characteristics.
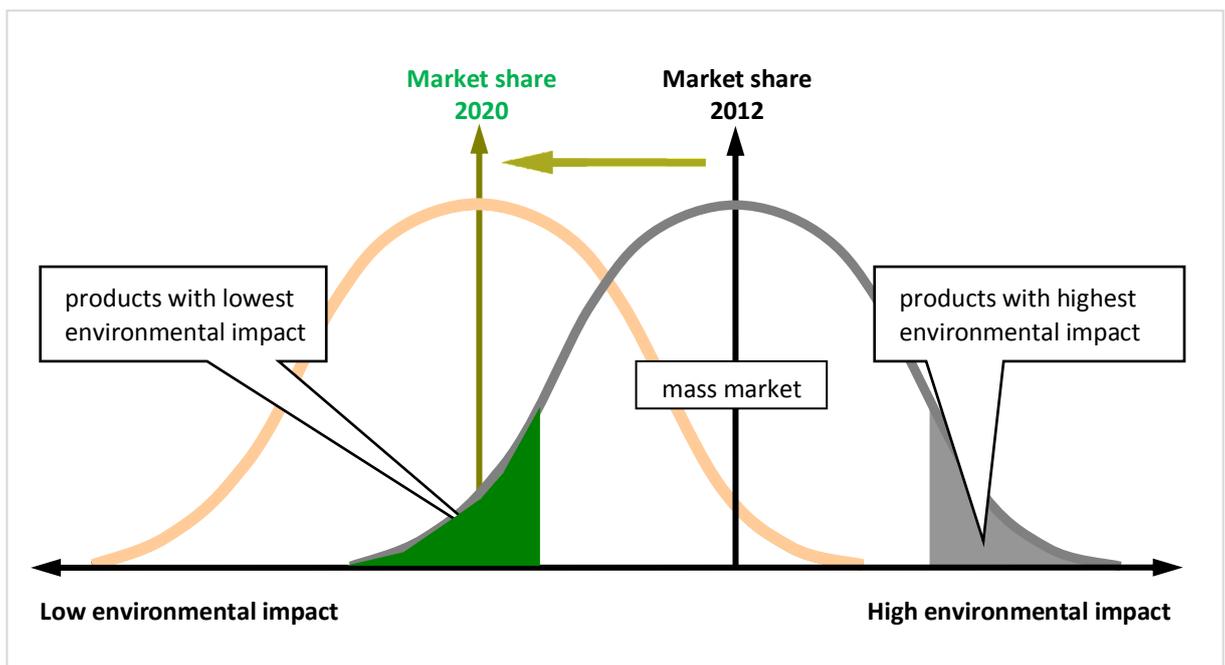
Fig. 1 **Market share of products within categories of different environmental impact (schematic)**

On the other end of the scale, there are products with high environmental impact. They are often produced without special consideration given to environmental concerns. Production can sometimes even intentionally be located in areas with low environmental regulation. These products are often designed to maximise profit and are frequently highly competitive with a low price. Low acquisition costs, however, often come with higher operating or disposal costs and shorter life spans. These products are usually not specifically labelled.

The products with lowest and with highest environmental impact make up a small proportion of the total market volume. The mass market is dominated by products in between the two. This is the most heterogeneous group of products. They differ in terms of price, quality, quantity, environmental and social impact. Some are labelled, others are not. Some are imported, others are produced locally. In fact, the only thing they might have in common may be their lack of similarity.

In order to attain a more sustainable level of our production and consumption patterns, the aim must be to move the mass of products towards lower levels of environmental and social impact. Today's products with the lowest impacts should serve as a reference and we should create incentives so that all other products strive for the same high standards. This would shift today's mass market

towards the product category with the lowest impact. In other words, the future mass market would meet the same criteria as the most environmentally friendly products of today. Certainly, some products would still be better and some would still be worse, but to focus on these product categories would not lead to the desired results. We must tackle the mass market.

To achieve this, information on the environmental impact of our consumption, among other things, is needed. This information must be well-founded, comprehensible and relevant. Only then can responsible consumption decisions be taken. At present, environmental product information is insufficient. Products generally contain a considerable amount of information on quality, mass, size or volume and price. However, only little information is available on ecological aspects (i.e. environmental impact of products).

Necessary for responsible consumption decisions

Certainly, there are labels that tell us about the CO_2 balance of products, that ingredients are biodegradable, that they are organic or that they have been transported by ship rather than by plane. However, the ecological information is neither based on comparable data nor are the same methodological approaches chosen and nor do they obey common principles for information. In addition, the multitude of different labels or simply too much information on a product can also create confusion and be a barrier for consumers to consider them. Certain labels do not consider the entire product life cycle or only focus on environmental impact categories, for which the product performs well. However, these impact categories might not be the relevant ones and thus a label can convey an environmentally-friendly image that may not correspond with the real circumstances.

Avoid confusing information

With the intention of fostering ecologically sound consumer decisions, we need to increase the market's transparency. This means that information on the environmental impacts of products (i.e. well-founded, comprehensible, relevant, considering the entire life cycle and all environmental impacts) should be laid open. With this information at hand, products can be compared and chosen according to their overall impact. Thus, the product with the smallest environmental impact within a product group can be favoured.

Market transparency fosters responsible consumption decisions

Having said this, environmental concerns are not the only factors in purchasing decisions (others are price, convenience, status conferred, etc.). Increased transparency through environmental product information would thus be more effective if coupled with other measures (e.g. marketing campaigns to increase understanding of the information, empowerment of consumers through allowing/helping them to develop choice hierarchies, choice editing, measures to mitigate rebound, pricing that reflects true cost).

Other factors that influence purchasing decisions

Nevertheless, policy makers could use environmental information to direct consumption towards the desired products through incentives. A general demand for information on the environmental impact of goods and services has manifested itself in a broad public within the recent past. On the political level, many initiatives have been started to this end (cf. chapter 4 for some examples).

Influence through incentives

3 Recommendations for environmental product information

3.1 Quality recommendations

Reaching more sustainable levels in our consumption means that we must favour products with little resource use and emissions over products with greater resource use and emissions. To this end, consumption decisions that preserve resources must be encouraged. In order to make such decisions, consumers need well-founded, environmentally relevant and comprehensible information on the environmental impacts of the products they buy.

Influencing consumption decisions

The quality level for informing about the environmental impacts of products should be defined from a 'true & fair' perspective. By 'true and fair' we mean that information on the environmental impact of products should correspond to a certain quality level (cf. boxed text below). The central recommendation include that on the one hand the information should be relevant with regard to the decision it seeks to influence, and on the other, the information should convey an image that reflects real circumstances. In other words, the information should draw the complete picture. This includes that all relevant environmental aspects and the entire life cycle be considered. This is especially true for the impact analysis. Communication of the results can be simplified if certain aspects are negligible in terms of impact.

True & fair quality level

> ### A true and fair view
> *From the perspective of environmental reporting, the true and fair view conveys a reliable and comprehensible image of the actual environmental impact of economies, firms and products. Thereby, all relevant environmental aspects are disclosed along the entire life cycle of products. Calculations and evaluations of the environmental impact are transparently revealed.* [8]

Consumers are faced with a multitude of different labels and declarations. However, not all of them are true and fair. This leads to distorted information and misled consumption decisions. In order to make decisions that preserve resources consumers need information on the environmental impacts of products. Information shall observe the following recommendations. Although all recommendations should be observed, some may require more attention than others. Also, recommendations may depend on each other: «reliability», for instance, involves «being up to date».

Recommendations

› Total picture in focus (life cycle thinking)

In order to convey an image that corresponds with the real circumstances, the assessment/evaluation shall include all important environmental impacts (emissions and resource use) over the product's entire life cycle from extraction/production of resources to manufacturing, transport, utilisation and disposal/recycling (i.e. from cradle to grave).

Correspondence with real circumstances

Why consider the whole life cycle? – an example

Considering the whole life cycle is essential to draw the right conclusions. The following example shall demonstrate why. If you were to choose between two sorts of apples, ones are grown locally the others are imported from overseas, which would you buy if you wanted to minimize the overall environmental impact of your purchase?

Most people would say that the locally grown apples are environmentally friendlier. But what if the apples from overseas are produced organically and the local ones not? It even gets more complicated, if the local apples are out of season at the time of purchase. Let us presume, that the locally grown apples are in fact out of season and they have spent several months in a refrigerator since they were picked. This might have consumed more energy and generated more green house gas emissions than the transport from overseas.

As you can see, deciding which apples have the smaller environmental impact is everything but trivial.

Why consider all relevant environmental aspects? – an example

Considering all relevant environmental aspects is essential to draw the right conclusions. When browsing across a supermarket shelf we come across many products that bear some sort of label telling us about a particularly positive aspect of the product.

Public discourse on climate change has put concerns over CO_2 emissions on the table for some time. At some point it seemed, that all possible sorts of effort were undertaken to reduce CO_2 emissions regardless of what it may cost. This has also lead to the creation of terms like "CO_2 neutral" or to the appearance of labels indicating a positive CO_2 balance. The focus was directed towards the climate problem in such a manner that all other environmental concerns appeared to be secondary.

However, such a mono-dimensional point of view can be quite misleading. What if the CO_2 emissions of a product are not at all significant? What if emissions into soil or water preponderate? Such a product bearing a label that indicates a positive CO_2 balance gives the impression of being environmentally friendly whereas in fact the opposite might be the case. It has been demonstrated [9] [10] that the most relevant environmental impacts of agricultural products (e.g. biofuels) are connected with the cultivation of the raw materials (i.e. water and energy use, pollutants resulting from use of fertilizers and pesticides, biodiversity). Information only on the transport phase or CO_2 emissions of such products would therefore not meet the requirements for a well-founded overall picture of the most relevant environmental impacts.

› Relevance of environmental information

Relevance

Information shall cover the relevant environmental aspects. It shall enable decision makers to chose products with significant environmental advantages and avoid those with high environmental impact. Information based on irrelevant environmental aspects is misleading.

» *Example: When informing about the environmental impacts of products one cannot only consider a single impact, if several are relevant. With tomatoes, for example, cultivation method, water use in dry regions, long transport distances as well as the heating of greenhouses are among the major impacts. Environmental product information which takes into account all these aspects allows for resource-saving consumption decisions.*

› Coherence and comparability

Coherence and comparability

Coherent and comparable information is *consistent*, *steady* and *can be standardised*. Information is *coherent* if pieces of information are logically linked and compatible (i.e. self-consistent). It allows for comparing products through ho-

mogenous indicators and reference data. Information is *steady* if the definitions, approaches and methods used are consistent over time. Changes are communicated and explained. Specific rules are being developed to govern the extent to which already evaluated product groups are to be re-evaluated if methods change. Information *can be standardised* if definitions, approaches and methods are transferable to different and imported products. Widely accepted approaches and methods are preferred.

» *Example: In order to compare the environmental impact of instant coffee compared to drip filter coffee one can evaluate the environmental impacts of 1 cup of coffee or 1 kg of coffee. If the reference is 1 cup of coffee, instant coffee generates less environmental impact than drip filter coffee. However, the opposite is the case with the reference being 1 kg. The important point here is to choose the same reference within a product group.*

» *Example: Quantitative information often requires a reference value or a basis of comparison in order to classify the information, such as the classification into quality categories (e.g. A-G) or by use of the traffic light colours (green, yellow and red) or an H_2O label that shows the proportion of water consumption reduction on environmentally friendly T-shirts compared with a conventional production process.*

› Reliability

Reliable information is *credible* (trustworthy), *scientifically sound* and *free from manipulation*. Information is *credible* if it can be verified by third parties. Information is *scientifically sound* if it is based on consistent data as well as academic findings and the internationally recognised state of knowledge. Information is *free from manipulation* if it lacks false statements and distortive factors.

Reliability

› Transparency

Transparent information is *traceable* and *verifiable*. Information is *traceable* if the underlying definitions, approaches and methods as well as the sources, place and time references of the data are described; scientific evaluation steps are separated from those based on ethical values and political goals and are explained separately. Information is *verifiable* if documentation thereof is publicly available and contains all indications necessary for the verification of the represented facts. Third party verification is recommended.

Transparency

› Comprehensibility

Comprehensible information is commonly *easily understood*, *clear* and *unambiguous*. The information is preferably transmitted via a single indicator. Chosen indicators must be explained.

Comprehensibility

» *Example: The display of multiple indicators (e.g. water consumption and land consumption) on a product is informative but could be confusing if for instance product A had inferior water consumption than product B, and product B, on the other hand, caused less land consumption. The consumer is therefore forced to make an evaluation. The goal of the indicator to facilitate the consumption decision is thus just missed. The evaluation of which indicator (water consumption or land consumption) is to be given greater weight for the respective product, should be done by aggregating information that considers all relevant environmental impacts.*

8

› Availability of information

Product declarations are *visible* and detailed background information is *available*.

> » *Example: Distinct declaration on the product and detailed information on the internet.*

Availability

› Information and data are up to date

Information, Methods and data are *up to date* as far as necessary for the reliability of the statement (cf. reliability).

Being up to date

3.2 Recommendations regarding analysis and evaluation

Methodologies that are used for the provision of product information shall comply with the eight true & fair quality requirements (cf. chapter 3).

True & fair

Environmental product information should always cover the whole life cycle and all relevant environmental impacts. Therefore, environmental product information based on life cycle assessment (LCA) is the most promising approach. The internationally standardised LCA method according to the ISO standards 14040 and 14044 is therefore recommended for the quantification of environmental impacts of products.

Life cycle perspective and relevance

It is encouraged, to establish specific product groups (e.g. textiles, food etc.) and rules for the environmental information that should be reported for products in each group. These rules should be reviewed regularly and allow for simplification and comparing products within a product category.

Product category rules

This being said, the foremost prerequisite for meaningful environmental product information is the availability of the necessary data. In other words, the compilation of further datasets in life cycle inventories should be encouraged and supported in order to have reliable data on as much different products and processes as possible.

Data availability

Also, the level of experience with life cycle assessments may vary considerably across Europe. Therefore, the compilation of information on databases, methodologies and studies should be encouraged, easy access to this information should be fostered and its dissemination should be facilitated. Finally, if necessary, planning and funding instruments to support the development of expertise in this area where it is needed, should be created.

Levelling regional differences

It should be understood that this paper is not calling for life cycle assessments to be carried out for all products. In some cases, this may not be possible (e.g. artisanal products made by small producers). It is clear that a full LCA requires considerable financial and human resources. Requiring LCA for all products would possibly favour mass production and/or large retailers, who can afford this. This might not be the most sustainable or the most environmentally-friendly policy.

Exceptions

3.3 Recommendations regarding communication

Communication of the environmental impact of products shall always be comprehensible, relevant for consumption decisions and allow for comparisons. To this end, the following recommendations apply.

Comprehensible, relevant and comparable

Information should be focused on few but relevant environmental impacts. These impacts can be communicated by use of indicators with a reference unit.

» *Example: The environmental label of "Les Mousquetaires/Intermarché" in France informs about CO_{2eq}, SO_{2eq} and phosphate per 100 g of the product (biscuits).*

Should it be useful for consumers to know about details and/or additional environmental impacts, it shall be part of the information.

» *Example: Additional information on economical use, e.g. low dosage of detergent or on the filling of washing machines.*

To improve comprehensibility, quantitative information (indicator with a reference unit) can be combined with qualitative information (text, graphics).

» *Example: The environmental label of "Les Mousquetaires/Intermarché" in France combines quantitative information (different indicators) with a representation of categories (A-G).*

Simplifications can be made in order to reach a broad public. It is sensible to concentrate on particularly relevant life cycle stages or environmental impacts when other stages or impacts are negligible.

» *Example: If information on the environmental impact of the production phase alone is sufficient to demonstrate which product saves more resources, just the environmental impact up to the point of sale can be communicated (e.g. biscuits).*

» *Example: Environmental information for windows that is restricted to the production phase, however, is not sensible because energy savings through well insulated windows (use phase) would not be considered.*

Within product groups, information focuses on the same life cycle stages and the same environmental aspects.

» *Example: Considering the offer of beans in wintertime in Switzerland, fresh beans imported from Egypt cause the greatest environmental impact due to their transport by plane. With deep frozen beans it is their cultivation and the energy needed for deep freezing that accounts for the greatest impact over the whole life cycle. Here, information just on the transport phase of the Egyptian beans or just on the cultivation and storage phase of the deep frozen beans would not be relevant for the consumption decision because it does not allow to compare the two products. Both offers each at least require information on the cultivation, storage and transport phases.*

Comparability contributes to better comprehensibility.

» *Example: Comparison of a product with a representative average product (the average would have to be transparently defined).*

» *Example: Creation of categories that allow for comparing different products within a product group (e.g. classes of the energy label).*

» *Example: Comparison to the environmental impact of an average consumption value (e.g. Casino's environmental index compares the environmental impact of the consumption of 100 g of a product with the daily impact of a person's food consumption in France.)*

A distinction is made between main and background information. Main information directly supports consumption decisions. It refers to the environmental impact of the product. Optionally, information on the relevant life cycle stages and other detailed information can be added. Background information includes in-

formation on the context und describe quality and validity of the main information. The former also serves the verification of the latter.

Main information is displayed either on the product itself or in its immediate vicinity (shelf). Background information do not necessarily need to be available with the product but need to be easily accessible by the consumer and should at least be available on the internet.

4 Examples of initiatives

4.1 Germany

4.1.1 Political context

The consumption of private households alone is responsible for more than a quarter of all greenhouse gases in Germany. And this does not even include the production of the consumer goods. The German government therefore regards the development of a comprehensive product-specific environmental policy as being an important step towards the further development of a European environmental policy. It is therefore also part of the National Sustainable Development Strategy.

National Sustainable Development Strategy

The Integrated Product Policy (IPP) constitutes an independent approach to this policy. One of the most important features of the IPP is that it takes the entire life cycle of a product throughout the various processing stages into consideration. The design must already take into account the processes involved in manufacturing, using and disposing of the product, as well as the necessary flow of materials. This holistic approach is intended to enable consideration of all environmental impacts that are associated with a product. It should offer a means of reducing pollution and intensifying ecological benefits at every point throughout the product's life cycle.

Integrated Product Policy

The acquisition and communication of information concerning the environmental impact of a product constitute an essential prerequisite for a product-specific environmental policy of this nature.

Product-specific environmental policy

4.1.2 Studies and findings

Every two years the Environmental Awareness Study gives a representative picture about environmental awareness and behaviour in Germany. Consumer behaviour constitutes one part of the questions. In 2012, 52 percent of respondents said they buy energy efficient equipment. About 80 percent know the German Ecolabel Blue Angel and 34 percent take it into account for their buying decision.

Environmental Awareness Study

4.1.3 Databases and methodologies

There are a series of statutory requirements which must be met by companies with respect to product-specific environmental information. In addition, a considerable number of statutory and regulatory standards exists. Companies are free to use the latter in order to respond to ecological concerns from the general public or customers, and to present their achievements in terms of product specific environmental production in a transparent manner. Against this background, the fundamental significance of product-specific environmental information will

Requirements and standards

grow over the next few years and will become an important element in sustainable development.

The DIN EN ISO 14000 series of standards and the incorporated DIN EN ISO 14020 series in particular [11] provide the general rules to govern the way in which product-specific environmental information can be developed and used.

Life cycle assessments (LCA) are used to examine the environmental impacts of a product throughout its entire life, i.e. from the acquisition of raw materials via production and use, right through to recovery and recycling. A life cycle assessment identifies opportunities to improve the environmental aspects of a product and, in doing so, supports product development. To the same extent, an LCA may provide the foundation for substantiated environmental claims directed at customers, business partners and stakeholders.

The publicly available database PROBAS [12] provides more than 8.000 data sets for materials and processes as a basis which can be used for screening products assessments and environmental management tasks.

4.1.4 Implementation, tools, practice and examples

For companies, product-specific environmental information is an important instrument which can be used to improve relationships with customers, suppliers and stakeholders. By positively identifying their products and providing information on a high quality level, companies can increase their credibility and provide documentary evidence of the responsibility that they have assumed with respect to environmental issues.

The following instruments are of special importance in Germany:

» The most well known product-related environmental policy instrument in Germany is the Ecolabel "Blue Angel" (Blauer Engel). It has been used for more than 30 years now and covers assessments of more than 11,500 products and services. The Blue Angel is a label which manufacturers can use on a voluntary basis. It guarantees consumers a particularly environmentally friendly and functional product. Since its review in 2009, the Blue Angel focuses even more on the environmental protection aspects of products. At present, it is being awarded in the sectors of climate, water, health and resource protection. A special section on the Blue Angel website [13] allows consumers to search for specific products with the Blue Angel label.

» The EU Energy Efficiency Label is another important instrument of consumer information. This EU-wide instrument has made a substantial contribution to increasing energy efficiency since 1998 and the German Government is actively involved in the stakeholder consultation processes accompanying the implementation of the Energy Labelling Directive. [14]

» The German Bio-Siegel [15] is an important orientation guide when buying organically grown food. It is a trusted source of information used by many consumers to guide their buying choices.

» The growing variety of product labels within recent years has lead to a need for more guidance in order for consumers to be able to compare the different labels. An online portal [16] and the "Sustainable Shopping Basket" [17] published by the German Sustainable Development Council (RNE) offer comprehensive advice when buying goods.

» It was the construction industry who was among the first sectors to apply environmental product declarations. Construction is a large market where planners, architects, house builders and tenants show growing interest in information regarding the environmental and health aspects. The characteristics of building products are not generally evident until they are in fact used in structural components and constructions, which is why their environmental impact can frequently only be assessed in the context of a finished building. ISO type III declarations [18] therefore constitute a differentiated instrument for the communication of environmental information and their incorporation into a holistic study of buildings or components. The German Institute "Construction and Environment" [19], an association of construction product manufacturers, is concerned with all aspects of Type III declarations.

Environmental declarations in construction

» The National Climate Protection Initiative has its own consumer focus. It finances projects on sustainable mobility behaviour, how to choose energy-saving electrical appliances, and other aspects of interest to householders, including building a new home.

National Climate Protection Initiative

The Top-Runner Approach

The Top-Runner Approach (sometimes also called Top Performer Approach) is the guiding principle for the German Federal Government in product related environmental protection. It is aimed at a swift market penetration of the most environmentally friendly or resource and energy efficient technologies and products. The following instruments are currently available within the Single European Market to implement a European Top-Runner approach:

Top-Runner Approach

» Minimum efficiency standards (Ecodesign Directive): The Ecodesign Directive [20] is the legal framework in Europe for the definition of design requirements for energy related products. With the implementation of the Ecodesign Directive particularly inefficient products will be excluded from the European market. Energy efficiency in products is currently the most important requirement of the directive. However, the directive also grants fundamental regulatory leeway for the inclusion of other environmental aspects in products such as resource consumption. Germany developed a concept on how to set more ambitious and dynamic requirements. The product specific implementing measures also set requirements on product information which manufacturers have to provide on packaging, technical documentation or websites. Scientific preparatory studies including a streamlined life cycle assessment and life cycle cost calculations provide the basis for the establishment of regulations and thereby increase publicly available product specific knowledge.

Ecodesign Directive

» Mandatory energy consumption labelling: Due to EU-wide mandatory labelling of energy and resource consumption for the use phase of products (energy label), consumers can gain and compare information on the energy and resource consumption of the products they buy and make their purchases accordingly. This also serves as an incentive to manufacturers to continually improve their products. This policy enhances the market penetration of particularly energy efficient products.

Energy labelling

» Voluntary environmental labelling of top-runner products (EU Ecolabel and Blue Angel) and environmental criteria in public procurement provide incentives for manufactures to design more efficient and environmentally sound products.

Voluntary labelling

4.2 Switzerland

4.2.1 Political context

The Swiss Government has, as part of its green economy strategy, identified six primary fields of action. Among these figure better information on the environmental impact of products. Today, environmental product information is available for only a few products and the information often does not consider the entire life cycle. Furthermore, rarely are all relevant environmental impacts taken into account. The market is therefore not transparent enough regarding environmental impacts and resource use which is why the Swiss Government is currently working on improving market transparency.

Green economy

The Swiss Federal Council has adopted an action plan which is the basis for planned amendments of the Environmental Protection Act. It serves as an indirect counterproposal to the popular initiative «In favour of a sustainable and resource efficient economy (Green Economy).» The action plan includes measures to improve environmental product information. The Federal Council shall be empowered to introduce regulation on environmental product information for products with high environmental impact. However, mandatory requirements shall only be introduced in accordance with international regulations, particularly those of the EU. Based on the EU pilots testing the EU Guidelines of Product Environment Footprinting, providers of products with particularly high environmental impact could be obliged to inform consumers on the environmental performance of these products according to a set of rules (e.g. descriptive information of the environmental impact such as water use, green house gas emission, etc.).

Action plan

These envisaged regulations are subject to a stakeholder consultation. First reflections on how to implement such measures are being discussed with private and public stakeholders. The definite form of the implementation is, however, still open at this time.

Implementation to be defined

4.2.2 Studies and findings

The Federal Office for the Environment FOEN has dedicated itself to increasing the ecological market transparency. This concept is lead by the vision that consumption decisions are increasingly made from a perspective of resource efficiency and that the absolute consumption of resources is oriented towards the long-term portable environmental burden. Products can be chosen without environmental concerns due to the increasingly resource preserving product offer. Unaltered, the responsibility remains with the consumer to chose products in such a way as to meet the needs while preserving resources.

Market transparency

This vision lead to the formulation of four goals. First, relevant environmental information is available in well-funded and comprehensible form for consumption decisions. Second, environmental information is appropriately considered by decision makers. Third, Switzerland defines the absolute limits for its long-term portable resource use. Finally, the limits of a sustainable resource use are defined on an international level.

Goals

In view of these goals, the following studies have been conducted by the Swiss Federal Office for the Environment (FOEN) and can be found on the FOEN website [21].

Studies on environmentally conscious and ecologically sound consumption
A study on environmentally conscious consumption [22] comes to the conclusion that housing, mobility and nutrition are the fields of action of highest priority on

Key factors: housing, mobility and nutrition

an individual level. Housing and mobility have the greatest impact on the individual environmental balance and there are significant amelioration potentials in nutrition, however, only few key factors or key decisions influence the overall environmental impact.

According to a study on consumption behaviour and the promotion of ecologically sound consumption [23], only a small proportion of all consumption decisions are based on a conscious and rational process of active information seeking. Most consumption decisions are routine driven. The study comes to the conclusion that the willingness to adopt ecologically sounder behaviours in the areas housing, mobility and nutrition can positively be influenced by good information. Such measures are most promising where consumption decisions are taken consciously, where changed living circumstances demand for a change in habits and where there is a high level of awareness.

Feasibility study for environmental product information based on life cycle approaches

A study conducted in 2011 [24] demonstrated how the environmental impact of products could be analysed, evaluated and communicated. They recommend a life cycle approach and that the ecological scarcity method and the ecoinvent database be used. The study also shows that there are different levels of consumption decisions and that decisions on higher levels have greater environmental consequences. When planning a meal, for instance, the decision on whether to include animal and vegetable ingredients ranks higher than the decision on which type of vegetable to serve. Thus, information should first be provided for higher decision levels. Environmental information should be made available for product groups with significant environmental impacts and actual room for manoeuvre. The authors recommend analysing and evaluating from cradle to shop. The environmental impacts of the entire life cycle (including use phase) should additionally be communicated if they are significant for the overall environmental impact. The results of the product analysis and evaluation should be connected with a target value and be converted into a commonly known unit.

Environmental impacts of consumption and production in Switzerland

A research project investigated for the first time the total environmental impacts due to consumption and production in Switzerland [25]. About 60 % of environmental impacts are caused abroad due to the trade in goods and services. The most important area of consumption is nutrition, which accounts for about 30 % of total impacts, followed by mobility and energy use of private households. Within this study life cycle assessment and input-output analysis are combined in order to get a true and fair view on impacts of consumption and production.

Study on the communication of environmental information

A study on the communication of environmental information [26] analysed what kind of environmental information influences consumer decisions. It concluded that environmental information is generally well noticed and that environmental product declarations are considered helpful. Information that is put directly on the product is used most frequently.

For implementation, the study makes the following recommendations: first, comprehensibly presented comparison values within product groups are important, second, graphic solutions are usually favoured over just numerical representations (more easily comprehensible), third, building on established solutions helps comprehensibility and acceptance and fourth, multiple environmental aspects can be represented on product declarations under the condition that it is visible at a glance whether the product has a positive or negative overall environmental balance.

Finally, the study reveals that a stronger governmental implication with environmental product declaration is broadly welcomed within the public.

4.2.3 Databases and methodologies

ecoinvent Centre

The ecoinvent Centre is a joint initiative of the Swiss Federal Institutes of Technology Zurich (ETH Zürich) and Lausanne (EPFL), the Paul Scherrer Institute (PSI), the Swiss Federal Laboratories for Materials Testing and Research (EMPA) and the Swiss Federal Research Station Agroscope Reckenholz-Tänikon (ART). It was created in 1997 and is one of the world's leading supplier of consistent and transparent life cycle inventory (LCI) data. All datasets are subject to a uniform quality management of very high standard. It offers one of the most comprehensive international LCI databases currently available.

Ecological scarcity method

The Federal Office for the Environment of Switzerland (FOEN) has supported the development of an LCIA method called the "Ecological Scarcity Method". The latest version (Eco-Factors 2006) has been published in an English translation in 2009 [27].

The ecological scarcity method rates environmental impacts using an "eco-point" metric. Each environmental impact is weighted with an eco-factor, which reflects an environmental law or a corresponding political target. High levels of emissions or resource consumption in comparison to an environment protection target result in greater eco-factors. Each environmental impact is expressed in eco-points: the greater the number of eco-points, the greater the environmental impact. The fact that every individual impact is expressed by means of a common unit allows for aggregation resulting in a statement of the overall environmental impact of any given product or service.

4.2.4 Implementation, tools, practice and examples

Pilot projects for better environmental product information

The EU's proposal for a «Single Market for Green Products» strives for a uniform environmental impact assessment of products. The EU plans to develop and determine both assessment methods (product category rules) and communication modalities in pilot projects within the next three years. Switzerland is actively engaged in these pilot projects.

Energy label

The energy label enables consumers of household appliances and lamps to evaluate at a single glance the energy consumption a product. The energy consumption was divided into categories from A to G, A (green) being the best and G (red) the worst classification. The label contains additional information on the exact energy consumption in kWh, the capacity of refrigerators and the washing performance of washing machines and dish washers.

The continuous improvement in terms of energy efficiency of electric appliances has lead to the fact that a major proportion of offered products figured in the best efficiency category of the energy label (class A). In order to differentiate between the best products, additional classes (i.e. A+, A++ and A+++) were introduced.

The energy label is a good example for better environmental product information. It analyses the product's entire life cycle and focuses on electricity consumption, which is the most relevant environmental impact factor of electric appliances. The communication of the environmental impact with the categories

A to G in combination with the colours green, yellow and red represented a clear and easily understandable indication for consumption decisions. However, the addition of classes such as A+, A++ and A+++ are a negative example for communication practices. With a range of categories from A to G it is clear that the best category is A and later letters stand for a decrease in energy efficiency. Adding one or more plus (+) to a category always evokes doubt on how many pluses the best category bears and leads to the contradiction that the first letter in the alphabet (stand alone) does not correspond with the best category.

Teaching units

The Swiss Government has elaborated two sets of teaching material for pupils in elementary school (teaching unit I) and high school (teaching unit II). Both focus on the topics environment and consumption and are based on life cycle thinking [28].

Education

The teaching units I and II sensitise pupils on the complexity and multi-dimensionality of evaluating the environmental impact of product. The focus is on the products entire life cycle and encourages pupils to find out about the relevant environmental impact and how to deal with the information that is communicated.

4.3 United Kingdom

4.3.1 Political context

Environmental product information is addressed in the government's Green Economy Programme – as one way of stimulating the market towards more sustainable products. Good product information can (a) enable business to understand their impacts and how to reduce them (b) help to raise wider awareness about the environmental impact of products (c) enable consumers to make more informed choices (if communicated) and (d) drive business to compete and develop products with reduced impacts. However, the true value of environmental product information communicated externally, rests on the assurance that it is accurate, easy to understand, credible, and not misleading. Too much, or unclear information, may confuse rather than encourage consumers towards more sustainable products. Information about the environmental impact of products is extremely important for businesses to understand their impacts and how to reduce them, but if communicated externally great care is needed to ensure it is clear and accurate.

Green Economy

To enable business to provide robust and accurate information the UK has a number of policies/activities geared towards this including:

Policies and activities to enable business to provide information

» Development of consistent methods/guidance for assessing environmental impacts

    − Sponsoring the PAS 2050 method in 2008 for product carbon footprinting, currently under review [29]. The review of the PAS 2050 is updating the document based on user feedback and aims to align with approaches developing internationally.

PAS 2050 method

    − Carrying out research on available water footprinting tools – with the view to providing guidance for business in 2012 (cf. [30]).

Water footprint

» Green Claims Guidance [31] – guidance for business on how to communicate environmental information clearly and accurately. This was developed through evidence (see below) and close consultation with industry.

Guidance for business

» Since 2003, Government Departments have been mandated to buy products that meet environmental standards called Government Buying Standards that help to drive the market to better product information and move towards more sustainable products. The Greening Government Commitments (GGC) 2011 have confirmed that the Government's policy aim is for sustainability to be completely embedded in the procurement process so that it becomes "business as usual".

Government Buying Standards

» Providing information through websites/working with partners: *Directgov*, the official UK government website for citizens, provides some information on sustainable consumption. Providing a solid evidence base to help consumers make a difference by, first, working with the government's partners to give consumers the information they need to be able to make informed choices and, second, supporting industry and NGOs in their work towards encouraging sustainable consumption. One example is the UK Government funded website "Love Food Hate Waste" which provides advice on reducing food waste through aspects such as meal planning, appropriate storage of unused food and use of leftovers.

Directgov

» The UK Government's Knowledge Transfer Networks Initiative (KTN) included one on Environmental Sustainability. The KTNs' objective is to improve the UK's innovation performance by increasing the breadth and depth of transfer of technology into UK-based businesses and accelerating the rate at which this process occurs.

Knowledge Transfer Networks

» Courtauld Commitment – an agreement in the grocery retail and supply chain (with the Department for Environment, Food and Rural Affairs' delivery body WRAP) to reduce food and packaging waste. Part of the work being undertaken involves encouraging the adoption of more resource efficient food packaging design, such as the use of blister packs rather than trays for the packaging of meat. Other initiatives include better date labelling of food and the provision of consumer advice and information about the storage and consumption of food.

Courtauld Commitment

» Building on from the Courtauld Commitment WRAP have established a Product Research Forum [32]. This is a multi-stakeholder, pre-competitive, collaborative forum that has come together to quantify, reduce and communicate the life cycle environmental impacts of everyday products. The forum aims to provide the evidence, data and tools to enable business work together to reduce the environmental impact of grocery and home improvement products.

Product Research Forum

4.3.2 Studies and findings

A summary of a selection of research projects can be found in the table below. The following list is not exhaustive – further studies related to sustainable consumption and production commissioned by the Department for Environment, Food and Rural Affairs (Defra) can be found on the Defra website [33].

Research projects

Research project	Summary of research / key findings
Product Research Forum (ongoing)	There is currently a range of research projects being carried out including: • Research on developing metrics and indicators to form the quantification framework. • Research on gathering product environmental data and hotspots impact research. • Specific research on gathering water footprint data for products.

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UK Consumption Emissions by Sector & Origin (2011), University of Leeds [34]	The study looked to quantify the UK's consumption emissions, split by source country and product. It found that: • 15 product groups account for over 75 % of total product emissions • Over 55 % of the emissions associated with these products occurred overseas Only a fifth of the emissions embodied in imports into the UK occurred in the EU
Consumer understanding of Green Terms (2011), Brook Lyndhurst and Icaro Consulting [35]	This reserach looked into consumer awareness, familiarity, understanding and meaningfulness of different terms. It found that overall familarity of environmental terms is increasing overtime and as familiarity with green terms increases, so does people's sense of how meaningful those terms are. But despite high levels of awareness of terms, many participants lacked a detailed understanding of what terms really meant. And not all terms were easily understood - if a term/phrase is not immediately intuitive, it may be less likely to gain traction or become meaningful overtime; and potentially more likely to be misinterpreted e.g. 'Carbon negative' and 'biodiversity'. The research includes a supplementary report that breaks down consumer response to individual environmental terms in detail.
Green Expectations, Consumer Understanding of Green Claims in Advertising (2009) – Consumer Focus (Part funded by Defra) [36]	This research provided insight for companies about what factors influence trust and confidence in environmental claims. It found that two thirds of consumers find it difficult to know which products are better for the environment. To improve consumer confidence, and enable consumers to make informed choices, it suggests companies should follow the 3C's – clarity, credibility and comparability.
Assessment of Green Claims in Marketing (2010) – Brook Lyndhurst [37]	This research assessed environmental claims in marketing and advertising. It found that: • Adverts carrying a green claim made up 0.68 % of all adverts sampled, however this figure rose to up to 2.7 % for the most prominent sectors; automotive, energy and the public sectors. • Green claims tripled in number between 2006 and 2007/8, although have fallen back since. • 68 % of claims were found in print media, mainly in the broadsheets. • Around 61 % of green claims relate to a specific product or service, with around 21 % relating to a company's broader brand message. • Confusion for both consumers and the marketing industry, particularly around terminology, was still considered a barrier. Many marketers felt a 'fear to tread' with respect to green claims due to awareness of the brand damage that can be caused through negative publicity from poor claims.
Assessment of Green Claims on Products 2010 – Five Winds International Environmental [38]	This research found that **green claims assessed on products were widespread**. About 2/3 of the items had at least one environmental claim, dropping to under half if advisory claims (i.e. advice or informational in nature rather than a claim about the product) are excluded. Consumers will see a **wide variety of claims** on a typical shopping trip. Fabric washing products, T-shirts, jackets, cars and household surface cleaner had the highest number of different claims. Conversely, WC's and lipstick only had one type of claim (water- and recycle-based, respectively).

Effective Approaches to Environmental Labelling of Food Products) [39]	This research project reviewed existing environmental labelling schemes and methodologies for measuring and presenting environmental impacts, and consulted industry, experts and stakeholders to estimate the costs and effects (on consumer and industry behaviour, and resulting environmental outcomes) of different labelling approaches. The information collated informed recommendations on the feasibility and value of developing environmental labels for food to inform consumers' choice and its potential to achieve environmental benefits. The report concluded that – • currently it is not possible to develop a broad-based eco-label due to gaps in knowledge and methodologies, which would result in prohibitively high costs to industry; • there continues to be a role for industry to provide such information voluntarily alongside other initiatives to reduce the impacts of the food chain – and support the development of methodologies for eco-labels; • Government should continue supporting and working with others to support the development of methodologies for measuring and presenting environmental impacts.
Sustainability and the Supermarket Shopper: Analysis of the Promotors for and Barriers to Sustainable Food Purchasing Behaviour [40]	This research highlighted the challenges and complexities associated with communicating information on food packaging and the need for a joined-up approach to interventions pre-store and in store to raise environmental awareness to improve understanding and promotion of low carbon choices.

4.3.3 Databases and methodologies

A key aim of the Product Research Forum mentioned above is to provide research/data on the environmental impacts of products, and enable companies to share data.

Defra provide Greenhouse Gas (GHG) Conversion Factors for Company Reporting [41]. The conversion factor dataset is updated on an annual basis and is intended for use in conjunction with the 'Guidance on how to measure and report your GHG emissions' which was published in October 2009 (by Defra and the Department of Energy and Climate Change (DECC)) and is available on the Defra website [42]. It also includes life-cycle emission factors relevant for products.

Greenhouse gas conversion factors

Defra and other government departments (Department for Business, Innovation and Skills (BIS) and DECC) sponsored the PAS 2050 method for product carbon footprinting. This method does include some default data for product carbon footprinting. A number of independent schemes have arisen to provide databases that use the underlying PAS methodology e.g. Carbon Calculations over the life-cycle (CCALC) [43].

PAS 2050 method for product carbon footprinting

4.3.4 Implementation, tools, practice and examples

The first Ecodesign requirements have only been in place since 2009, so no post-hoc evaluation has been carried out yet but will be done so in 2-3 years time. In the meantime, information is collected on market take-up of products in different labelling classes, on which some analysis has been carried out including a comparative analysis across Europe. The UK chairs the IEA 4E Mapping and Benchmarking Annex which seeks to compare performance of products in different markets to help policy makers identify scope for improvements in energy efficiency.

Ecodesign

To ensure that the benefits of Ecodesign and energy labelling are realised, it is important to have a credible enforcement regime. To this end, the UK has appointed the National Measurement Office as the Market Surveillance Authority. The NMO take an intelligence led and risk-based approach to enforcement, providing information and working closely with businesses to help them to comply with product regulations, and taking proportionate further action as necessary.

Credible enforcement regime

Evidence supports this work – for example:

» the updates to the Green Claims Guidance was based on the evidence commissioned above;

» the Market Transformation Programme [44] provides research on products under the Ecodesign directive;

» the first phase of developing guidance on water footprinting is commissioning evidence to assess the different methods and tools available;

» 'evaluation trials' of the PAS 2050 [45] underpinned the review of the PAS 2050 this year.

In addition, the UK has looked extensively into evidence on encouraging longer product lifetimes [46] (i.e. the environmental impacts/benefits of increasing product lifetimes, consumer understanding and possible policy measures), and are currently looking to develop further actions in this area.

Longer product lifetimes

The following practical examples or projects have been successful:

» Green claims guidance – overall feedback on the guidance has been that it is useful and practical for industry.

Green claims guidance

» PAS 2050 Product carbon footprinting – A survey of those that had downloaded the PAS in late 2010 found that 52 % of respondents identified 'a better understanding of their organization's processes', whilst 42 % claimed to have achieved a reduction in GHG emissions, and 32 % cited achievement of cost savings and efficiencies.

Product carbon footprinting

» Phase I of the Courthauld Commitment has been successful in halting the growth in packaging and food waste in the retail supply chain. This has delivered a reduction in household waste of 1.2 Mt over its 5 years of operation. Without intervention, packaging growth was expected to increase at around 2 % per annum, the same rate as household waste historically

Courthauld Commitment

» The Government Buying Standards are aligned with the EU GPP (green public procurement) criteria as far as possible, and have been developed through a vigorous market capacity and cost/benefit analysis process which has identified cost savings over the whole life of the product for central government e.g. Furniture £ 40m, IT £ 27m, food £ 39m etc.

Government buying standards

Glossary

Term	Definition
Analysis	cf. inventory analysis
Environmental impact	Effect on the environment caused by both resource and energy use and pollutant emissions into the environment
Environmental product information	Statement on a product's environmental aspects
Ecological Scarcity Method	Method to evaluate the environmental impacts of products and that indicates the aggregated result in an eco point metric. The method relies on legal thresholds and goals for pollutant emissions and resource use. The farther away the environmental impact from the respective environmental goal, the higher the eco point (distance to target). Regional variations are taken into account.
Evaluation	Appraisement of the magnitude and the significance of the environmental impact of a product
Indicator	Parameter indicating environmental impact(s)
Inventory analysis	Compilation and quantification of the environmental impacts of products
Life cycle	Stages of a product system from the extraction or production of resources up to the final disposal
Life cycle assessment	A method to compile an evaluate environmental impacts of products over the entire life cycle. The method is standardised by ISO 14040 and ISI 14044.
Product group	Products with equivalent functions
Products	Goods and services
Reference unit	Product unit (e.g. kg, piece) to which an indicator refers to
True & fair view	A picture that corresponds with the real circumstances

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