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JOINT POSITION

## SIZING UP PRODUCT CARBON FOOTPRINTING

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## Summary

Following increased public awareness of the negative effects of global warming, the demand for more sustainable products has grown in recent years. As a natural consequence, consumers are seeking more information on the environmental impact of products and services in order to be able to make sustainable choices at the point of sale.

One of the ways to provide consumers with such information is environmental product labelling, and when considering the particular issue of climate change, so-called 'carbon footprint labelling'. Whilst carbon footprints offer some new opportunities for product labelling and criteria setting linking one of the most fundamental environmental problems – global warming – to purchasing decisions and legal requirements for products, many methodological and communication issues remain unsolved. The fundamental question remains: for which products and under which conditions is such information useful for various audiences, bearing in mind the fundamental constraints of underlying principles and methods which considerably limit its applicability. This paper focuses purely on the limitations inherent to the Life Cycle Assessment methodology underlying product carbon footprinting, as well as the value of carbon labelling as a consumer-facing communication tool. The paper also gives recommendations for a way forward. It does not address the wider policy objectives and tools needed to put potential labelling activities into a more coherent structure.



## Introduction

A majority of European consumers are concerned about possible negative environmental impacts of the products they purchase, according to the latest Eurobarometer survey on sustainable consumption<sup>1</sup>. Increasing consumer awareness and the urgent need to act on climate change have driven a new interest in influencing consumer choices through different types of environmental related product information schemes<sup>2</sup>.

Among the labelling schemes currently under development to address this demand is the so-called 'carbon footprint label': a calculation of the volume of carbon dioxide (CO<sub>2</sub>) and other greenhouse gas emissions of products during their life cycle<sup>3</sup>.

In 2001, the UK Government set up the 'Carbon Trust', an independent company aiming to help organisations move towards a low carbon economy. The Carbon Trust also calculates the impact of products for several businesses and created a 'carbon reduction label'<sup>4</sup>. This Carbon Trust carbon reduction label which includes providing quantitative figures in terms of grams of CO<sub>2</sub> to consumers is used for instance by the trade chain Tesco (UK). Similarly, some other trade chains have launched schemes providing quantitative figures (Casino, France<sup>5</sup>) or awarding climate friendly products (Migros, Switzerland<sup>6</sup>). Several food producers in Sweden are jointly creating rules for measuring carbon emissions to be included into existing labelling schemes or for use as a stand-alone label<sup>7</sup>. Pilot projects on carbon labels have also been initiated in some Member States<sup>8</sup> and France is already in the process of implementing legislation. Different carbon labelling schemes also exist in the US<sup>9</sup> and Canada<sup>10</sup>.

At the European level, the potential use of Product Carbon Footprints (PCFs) in the context of eco-labelling is being investigated, with the European Commission and Member States holding a meeting in 2008<sup>11</sup> to discuss a possible harmonised approach.

In addition to the above, standards have been (BSI PAS 2050<sup>12</sup>) or are in the process of being developed (ISO 14067<sup>13</sup>).

Given the publicity surrounding carbon footprinting, it comes as little surprise that the Eurobarometer survey, mentioned above, showed that over 70% of respondents asked for obligatory labelling of the carbon footprint of products<sup>14</sup>. This figure should, however, be considered in light of the other finding from the same study, showing that the most important information on environmental labels is whether it is possible to recycle or reuse a product. Information about the carbon footprint was considered to be *the least important* environmental information on a label.



While the high percentage for supporting mandatory CO<sub>2</sub> labelling could be taken to encourage a rapid roll out of carbon labelled products, we call for a more cautious approach. Most consumers would not be able to understand grams of CO<sub>2</sub> as a metric, particularly without being provided any benchmarks of whether the figure was high or low, thus raising serious doubts on the labels' value as a consumer-facing communication tool. Equally importantly, product carbon footprinting raises some fundamental methodological questions, as outlined in this paper, which must be addressed in order for meaningful carbon footprinting to be established.

### **The need for an integrated strategy on sustainable consumption and production**

Consumer information and labels alone will not be sufficient to bring about a shift in consumer behaviour towards more sustainable consumption. From our perspective there are strong limitations to what information alone can do to trigger more sustainable behaviour. As Consumer Focus<sup>15</sup> pointed out in a report on sustainability<sup>16</sup>, *even when the information is well-presented and simple it is rarely a sufficient mechanism to make a change in consumption patterns.*

We therefore emphasise the need for a sound common policy framework based on a variety of instruments and initiatives such as setting legal minimum requirements for products (eco-design), strengthening market transparency (EU Energy Label), and increasing the availability of sustainable products in shops (so-called choice editing<sup>17</sup>). Without such a holistic approach, any positive impact achieved through carbon footprinting and labelling would be lost<sup>18</sup>.

### **Instrument to identify business carbon hotspots or a consumer information tool?**

The determination of the carbon footprint of products and services might be a useful way for companies to identify "carbon hotspots" in their production chain. Supply chain assessment can reveal valuable information about the environmental impacts of products and services, enabling companies to focus their efforts on the most emissions-intensive phases of production. The use of carbon footprinting by and within companies can therefore be welcomed as one tool to reduce the negative environmental impact from their products and services. However, severe shortcomings of the methodology have to be addressed.

On the other hand, communicating the carbon footprint value to non-experts (be it private consumers, public procurement officials or even SMEs) by way of a static label makes little sense. While the establishment and communication of quantitative product carbon footprint data covering the complete life cycle of a product, or parts thereof, may be a valuable aspect of their decision-making, we consider such labels to suffer from inherent limitations and considerable risks which must be considered in order to avoid potential environmental damage, waste of resources and consumer confusion.



## **I. Methodological shortcomings to be addressed**

### **1. Focus on green house gases disregards other environmental aspects**

Climate change and related indicators such as the carbon footprint should not be the only criteria to differentiate the environmental performance of products and services. As Product Carbon Footprint labels are based on Life Cycle Assessment (LCA) methodology<sup>19</sup>, the problems inherent to LCA are also underlying PCFs<sup>20</sup>. While the undisputed benefit of LCA is that it provides for an assessment of the environmental impacts throughout the life cycle, from cradle to grave, a typical major problem of LCAs is that they are limited to the availability of data, which means they cannot treat impacts such as toxicity and eco-toxicity often relating to chemicals. In the case of a PCF, the analysis is limited to a single impact category, namely greenhouse gases. However, a wide range of other sustainability criteria such as the use of chemicals, impacts on biodiversity, water usage and pollution, should be considered when measuring and comparing the environmental footprint of products and services. Another potential negative impact would be to shift impacts from carbon-related elements to these other impacts, as a means of presenting products as more sustainable due to a lower CO<sub>2</sub> footprint.

PCF should normally not be used as the only environmental aspect in rule making for the environmental performance or information requirements of products. By contrast, any such rules need to be based on a broad and comprehensive assessment of all significant environmental aspects to avoid ignoring relevant environmental problems or improving certain environmental impacts at the expense of an increase of others.

While we consider that LCA is a good instrument to see where the main burdens occur – thus making it a useful tool for orientation purposes in the initial phase and for comparing system alternatives (e.g. electrical cars versus combustion cars) – we believe that other instruments, such as human health or environmental risk assessment should be considered for the actual labelling or criteria setting. Environmental indicators and benchmarks used in the traditional (Type I) eco-label and energy label schemes, or indeed in Best Available Technique Reference (BREF) documents for specific life cycle phases, will in many cases be superior to LCA indicators including PCF – in terms of coverage, data availability, and precision. LCA indicators, including PCF, will normally not offer a benefit for similar products - this holds even more true when a large proportion of a burden occurs in one phase of the life cycle.

The comprehensive assessment therefore needs to be broader than what is delivered by the current LCA methodology.



## **2. Low carbon values at the expense of energy efficiency?**

A focus on just one indicator may not only result in ignoring or shifting impacts to other important environmental aspects but may also lead to negative effects on energy efficiency. Manufacturers might put back efforts to enhance energy efficiency in cases where greenhouse gas reductions can be more easily achieved by replacing fossil fuels with renewable ones. Holding back investments into energy efficiency measures would lead to a waste of energy, and would not help to counter the rebound effect (of rising energy use from increased use or purchase of more efficient products).

In addition, manufacturers may favour electricity from unsustainable forms of non-fossil energy to lower a product's carbon footprint. Thus, a low carbon footprint could lead to an increase in unsustainable forms of electricity generation.

We emphasise the maximisation of energy efficiency as a higher priority than the promotion of renewable energy.

## **3. Lack of differentiation between similar products**

A precondition for consumers to contribute to more sustainable consumption is the possibility to differentiate between sustainable and unsustainable products at the point of sale. However, inherent shortcomings of the LCA methodology means it may not deliver sufficiently precise figures allowing to differentiate between products. In addition to focusing on a very limited number of environmental indicators, as explained above, LCA includes a number of subjective choices or variables such as the establishment of system boundaries, selection of data sources, transport scenarios, and assumptions (e.g. regarding user behaviour, recycling rates, etc). Many of these assumptions are approximations of reality, considering e.g. changes in transport chains or product use, or even seasonal variations<sup>21</sup>. Moreover, energy mixes and conversion factors vary from country to country. Using average data may be practical to avoid the indication of region or country-specific PCFs, but introduces a further deviation from the 'true' values. Furthermore, many product systems are moving targets (e.g. as a result of changing supply chains) and require frequent updating of the LCA results. Thus, the indication of a single value for a product would not reflect the real variability of the results and it may be even more appropriate to indicate a range of results reflecting best/worst case scenarios. Without precise results, LCA would not deliver figures that would allow to sufficiently differentiate between products.

In order to achieve a clear-cut indication of the environmental preferability of a product, data for not only one particular product but also for competing products – ideally covering the complete range of products on the market – would be needed. Without such differences (i.e. if all products have more or less the same value within the limit of uncertainty) and without improvement potential, any product carbon footprint declarations would be meaningless.

Hence, such differences and the environmental improvement potential must be identified before product requirements are set and before a consumer information system is created.



#### **4. Lack of transparency for data used**

In view of all the above-mentioned methodological difficulties which increase with the complexity of the product, it would also be extremely difficult to verify any claims, in particular when data confidentiality comes into play. There is more room for manipulation for PCF claims compared to e.g. the indication of petrol consumption of a car - which everyone can check for himself - or energy consumption figures, which can be measured. This problem may be amplified if product carbon footprinting is used in the public domain (e.g. criteria setting for eco-labels, public procurement, legal requirements), as some manufacturers may be disadvantaged by the methodological choices of a particular scheme and could even challenge the decisions taken.

## **II. Consumer communication and labelling**

### **1. PCFs are difficult to understand**

The usefulness of the provision of mere quantitative environmental information to consumers is questionable, in particular if this takes the form of a label such as the one developed by the Carbon Trust. Figures such as '50g CO<sub>2</sub> per 130g serving' are difficult to understand even by experts in this particular area and carbon labels have therefore been considered by several instances<sup>22</sup> as unsuitable for instructing the broad public on how to make sustainable purchasing decisions. Similarly, labels showing a reduction in CO<sub>2</sub> (eg. -30%) can be highly misleading to consumers as the worst performers are in a position to show the biggest improvements.

Consumers generally need very clear-cut messages either in the form of an environmental excellence message (such as the EU Ecolabel) or in the form of rating scales, such as traffic light systems or closed, banded energy consumption labels. Having clear and simple labels would also benefit professionals such as public procurement officials who need to assess the environmental superiority of products offered, but often lack the particular technical expertise needed to make a detailed assessment.

### **2. Proliferation of labels should be avoided**

An overflow of information and labels often has the unintended effect of distracting the consumer rather than stimulating interest in environmental questions and providing useful guidance<sup>23</sup>. What is needed is simple and succinct information. Providing product carbon footprint information on existing labels, or having a PCF label in addition to existing environmental labelling schemes would lead to consumer confusion and frustration, with the different information elements competing with one another. Also, a product with one or more environmental labels is more likely to be judged as superior simply due to the presence of the labels - regardless of the actual environmental impact of the product (which may be far worse than that of an unlabelled product).



Furthermore, a product carbon footprint label may not be of primary importance for consumers who are more interested in e.g. energy consumption and energy bills. We are therefore not in favour of complementing the EU Energy Labelling scheme with CO<sub>2</sub> figures.

Instead of developing new labels or simply adding meaningless CO<sub>2</sub> figures in existing labels, carbon emissions should, where relevant, be incorporated when setting criteria for existing Type I labelling schemes.

### **III. Recommendations for the way forward**

#### **1. No stand alone label**

The overall environmental superiority of one product versus another one cannot be established on the basis of a product carbon footprint alone, and consequently purchasing decisions should be based on an assessment of all relevant environmental aspects. This suggests the use of product carbon footprints in conjunction with other environmental information tools rather than as a stand-alone instrument.

We therefore do not support the concept of a stand-alone or single issue PCF label, such as the one issued by Carbon Trust. Wherever carbon footprint is considered relevant, it should be included in the criteria of an excellence label (Type I label or equivalent, such as the Eco-label). However, the information on the carbon footprint should in general not appear on the label itself.

For a limited number of product groups, such as cars, where the CO<sub>2</sub> emissions in the use phase are particularly relevant, the information on emissions should be included in rating scales using colour/letter codes. This should be introduced in the revision of the Energy Labelling Directive for cars (1999/94/EC).

Whether or not PCF is relevant for particular product groups should be identified on a case by case basis following sound feasibility studies including all relevant stakeholders.

#### **2. Role of LCA**

Bearing in mind the uncertainties and the considerable costs of an LCA and considering that at least for some products a large proportion of the environmental burdens is concentrated upon one particular stage in the life cycle, it may be preferable to identify the most relevant life cycle stage(s) using LCA (e.g. the use phase in case of a boiler), but use other instruments and established test methods as a basis for the environmental information system (e.g. focusing on energy consumption). Thus, LCA would serve as an orientation tool in the initial phase of the development of an information system.





### **3. Product-specific feasibility studies needed**

Due to the continuing inherent constraints of LCA methodology (data availability, subjective choices, scenarios for transport, use, disposal) the accuracy of life cycle indicator results remains limited. Depending on the assumptions made, results can differ significantly and it will not be possible to eliminate such variability through standardisation which would only lead to partial alignments, leaving product group specific details open. Tremendous resources would be required to standardise product-specific rules for all types of products.

We therefore consider that feasibility studies would need to be carried out for each product group to determine whether (significant) differences actually exist. The relevant environmental burdens and the associated indicators including methodological choices should be determined on a product-by-product basis in a democratic process involving all relevant stakeholders, as has been done under the eco-design process. This should include a case by case evaluation on whether PCF information provides real added value compared to other indicators. As the decisions involve value choices, the questions are inherently political and should therefore not be deferred to LCA practitioners, industry, or standardisation bodies. We believe policy-makers have an important responsibility in ensuring a democratic discourse and decision-making process.

### **4. PCF to be integrated into eco-label criteria or environmental product regulation**

If certain conditions are met, as expressed above, PCF could be used in cut-off criteria in eco-label criteria or any environmental product regulation complementing other environmental requirements, where appropriate. We consider this as the most beneficial use of PCF.

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- <sup>1</sup> DG Environment (ed.): Europeans' attitudes towards the issue of sustainable consumption and production, Eurobarometer, July 2009.  
[http://ec.europa.eu/environment/eussd/pdf/FL256\\_analytical%20report\\_final.pdf](http://ec.europa.eu/environment/eussd/pdf/FL256_analytical%20report_final.pdf).
- <sup>2</sup> For an assessment about the possible role of Eco-labels in influencing consumer behaviour, c.f. Ralph E. Horne (2009): *Limits to labels: The role of eco-labels in the assessment of product sustainability and routes to sustainable consumption*, International Journal of Consumer Studies 33, pp. 175-182.
- <sup>3</sup> There is no agreed definition of the term "carbon footprint" and no agreed measurement method to determine the carbon footprint available yet. We consider however the carbon footprint as a measurement of greenhouse gases directly or indirectly produced by an industry, an organisation, a service or a product, e.g. when burning fossil fuels for generating electricity, heating and transportation.
- <sup>4</sup> <http://www.carbontrust.co.uk/>
- <sup>5</sup> <http://www.produits-casino.fr/actualites/vos-marques/developpement-durable.html>
- <sup>6</sup> The Swiss Organisation 'climatop' licenses "climate-positive" products and services and identifies products with the lowest carbon footprint. Migros is one of their clients.  
<http://www.climatop.ch/index.php?l=d&p=products>  
[www.climatop.ch](http://www.climatop.ch).
- <sup>7</sup> <http://www.klimatmarkningen.se/in-english/>
- <sup>8</sup> See e.g. Product Carbon Footprint Project Germany, <http://www.pcf-projekt.de>
- <sup>9</sup> The Climate CO<sub>2</sub>nservancy: <http://www.climateconservancy.org/about.php>
- <sup>10</sup> CarbonCounted: <http://www.carboncounted.com/>
- <sup>11</sup> Commission coordination meeting on the carbon footprint measurement of products, 4 March 2008, DG Environment.  
[http://ec.europa.eu/environment/ecolabel/about\\_ecolabel/carbon/carbon\\_footprint\\_report.pdf](http://ec.europa.eu/environment/ecolabel/about_ecolabel/carbon/carbon_footprint_report.pdf)
- <sup>12</sup> BSI PAS 2050:2008 - Specification for the assessment of the life cycle greenhouse gas emissions of goods and services,  
<http://www.bsigroup.com/en/Standards-and-Publications/Industry-Sectors/Energy/PAS-2050/>
- <sup>13</sup> ISO: Carbon Footprint of products – Part 1: Quantification, ISO/WD 14067-1 and Carbon Footprint of products – Part 2: Communications, ISO/WD 14067-2.
- <sup>14</sup> DG Environment (ed.): Europeans' attitudes towards the issue of sustainable consumption and production, Eurobarometer, July 200,  
[http://ec.europa.eu/environment/eussd/pdf/FL256\\_analytical%20report\\_final.pdf](http://ec.europa.eu/environment/eussd/pdf/FL256_analytical%20report_final.pdf)
- <sup>15</sup> BEUC member organisation from the UK.
- <sup>16</sup> Sustainable Development Commission / National Consumer Focus: Looking back, looking forward. Lessons in choice editing for sustainability, May, 2006.



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- <sup>17</sup> Choice editing is achieved when industry (including retailers) removes from the retail stream unsustainable or less sustainable products in favour of a large choice of sustainable products and services in all price ranges. This directly shifts the field of choice for consumers towards real sustainable products. This can be achieved, inter alia, through work in the European Retail Forum and an ambitious Ecolabel scheme.
- <sup>18</sup> For more information see also the ANEC/BEUC joint position on consumer expectations on the Action Plans on sustainable consumption and production and on sustainable industrial policy, BEUC X/050/2007, ANEC-ENV-2007-G-028final, 20 September 2007, <http://www.anec.eu/attachments/ANEC-ENV-2007-G-028final.pdf>
- <sup>19</sup> Based on ISO 14040 and ISO 14044.
- <sup>20</sup> See e.g. ANEC statement on study on Environmental product indicators and benchmarks in the context of environmental labels and declarations, May 2009 <http://www.anec.eu/attachments/ANEC-R&T-2009-ENV-002final.pdf>
- <sup>21</sup> One product may be preferable to another one in the summer, whereas the situation may be reversed in the winter.
- <sup>22</sup> Coop Sustainability Fund presentation on How to reduce the environmental footprint of consumer goods, 27 April 2009, Wuppertal; PCF Pilot Project Germany 'Product Carbon Footprinting – the right way to promote low carbon products and consumption habits? (2009); ANEC study on Environmental product indicators and benchmarks in the context of environmental labels and declarations (by Öko-Institut and Ökopol, Germany), December 2008.
- <sup>23</sup> Warning: too much information can harm (UK National Consumer Council, July 2007).