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New ANEC study

Requirements on Consumer Information about Product Carbon Footprint

SUMMARY

"Single number CO_2 labels make no sense" – this is one of the major conclusions of a new ANEC study carried out by the Öko-Institut (Germany). This study looks at risks and opportunities of product carbon footprinting (PCF) and analyses the suitability of the PCF approach for environmental labelling. It also gives recommendations for communicating climate protection information to consumers in seven product groups.

With climate change high up on the political and business agendas, carbon footprinting has become fashionable and the market demand is increasing. Moreover, there are more and more CO_2 or climate protection related labels more or less tailored to specific product groups on the European and global markets. These labels appear mainly on food products although other products such as household appliances or cars are known to have a much greater impact on climate change.

The new ANEC study highlights the existing methodological constraints in product carbon footprinting approaches which are similar to those that exist in Life Cycle Assessment approaches (e.g. data variability and reliability, uncertainies relating to model building). These constraints and the lack of harmonisation between methodologies render PCF information from different businesses barely comparable. The ISO standards on PCF currently under preparation will not solve the comparability problem (among other problems) as they only provide generic rules to be applied to all products and, therefore, need to be complemented by detailed and adequate rules for specific product groups (so-called Product Category Rules, PCRs). The study also identifies another threat of product carbon footprinting whereby the focus on greenhouse gas emissions may lead to other environmental impacts being ignored, or even amplified by the actions taken to lower the carbon footprint of some products. It is recommended that a company performs a comprehensive environmental assessment of a product instead of only determining the product's carbon footprint.

Our study also looks at PCF information addressed to consumers and demonstrates that such information cannot be understood by consumers and may even be misleading. It also shows that it does not offer any guidance in

consumers' purchasing decisions. First, most PCF information is given in the form of a single numerical value indicating the product's emissions level which is not reliable considering the lack of harmonised methodologies and methodological constraints. Second, consumers do not benefit from such CO_2 figures which give no guidance or possibility to identify the least emitting products (e.g. by means of rating scales or indications of excellence). They could even wrongly interpret the provision of mere numbers as a type I ecolabel[1].

ANEC considers that carbon footprinting currently presents many limitations and threats which ought to be addressed. We also believe that carbon footprint labels for consumer products (e.g. display of numerical figures of CO_2 emissions) is pointless. Other instruments than PCF may indeed be cheaper and more reliable to address climate protection in consumer information, such as instruments based on energy efficiency parameters which can be directly measured. PCF studies could nonetheless provide a useful starting point in the development of type I ecolabels.

[1] According to EN ISO 14024 on Type I environmental labelling

BACKGROUND

ANEC has commissioned several studies with a view to analyse the threats and opportunities arising from Life Cycle Assessment (LCA) based environmental information systems from a consumer perspective, looking at both methodological aspects and consumer understanding.

An ANEC 2007 study[2] clearly showed that type III Environmental Product Declarations (EPDs)[3], providing quantitative life cycle indicator results without benchmarks and rating scales are not suitable for consumer information. As an alternative, the study suggested to establish "Environmental Data Sheets (EDS)" to enable consumers to compare different categories of products. These EDS should combine indicators from various instruments (e.g. energy labelling and type I ecolabels) with LCA indicators which - normalised to the impacts created by an 'average citizen' and expressed as percentage of it – and be communicated to consumers using a graded, colour band scale similar to the EU Energy Label.

In another ANEC study from 2008[4], LCA methodology was investigated in more depth with respect to its suitability for labelling, product differentiation and benchmarking, and to give proposals as to how its inherent shortcomings could be solved. This study highlighted the benefits of the LCA approach – it helps provide a complete coverage of (certain) environmental impacts throughout the product life cycle "from cradle to grave" allowing cross-technology comparisons of products providing similar functions (e.g. different types of fuels). However, the study also highlighted the important shortcomings of the approach: incompleteness (e.g. disregard of issues which are for instance difficult to quantify such as biodiversity or local effects including noise, dust and indoor pollution), limited accuracy (e.g. as a result of limited data availability and subjective methodological choices) and limited comparability of products (in particular, when product differences are small).

Consequently, it was suggested to identify and use a broad range of environmental aspects and assessment instruments involving relevant stakeholders when developing Type I ecolabel criteria for products. It was also recommended to use LCA results primarily for orientation purposes in the initial phase of environmental product labelling (as is current practice in ecolabelling) rather than as a basis for product

[2] ANEC study 'Benchmarking and additional environmental information in the context of Type III environmental declarations', performed by Force Technology, December 2007, http://www.anec.eu/attachments/ANEC-R&T-2008-ENV-003final.pdf

[3] According to the EN ISO 14025 standard

[4] ANEC study 'Environmental product indicators and benchmarks in the context of environmental labels and declarations', performed by Öko-Institut, December 2008, http://www.anec.org/attachments/ANEC-R&T-2009-ENV-002final.pdf

criteria setting or labelling, particularly for similar products with reasonably small environmental performance differences.

Further, the 2008 study looked at the basic problems related to carbon footprinting in addition to those identified as applicable for LCA in general. Although life cycle CO_2 indicators offer some benefits compared with energy consumption figures – e.g. the ability to differentiate renewable energy from fossil energy or to attract consumer attention more easily as a result of the widespread presence of the global warming debate – there are significant drawbacks. One of the main problems associated with CO_2 indicators is the possible negligence of efficiency which may result in wasting of scarce renewable energy sources. Moreover, energy and CO_2 indicators share the same threat: a focus on energy or on CO_2 may disregard other important environmental impacts and could even lead to an increase of some environmental burdens.

In the light of these findings ANEC, in collaboration with BEUC, ECOS and EEB[5] sounded a note of caution with respect to carbon footprint labelling in a joint position paper[6] in which we questioned, in particular, a single issue carbon label providing mere quantitative figures following the bad example of Carbon Trust in the UK. Carbon information for consumers was found to be useful only in a limited number of cases (e.g. car emissions) and could only be useful for specific products to be identified on a case by case basis.

The new ANEC study was meant to analyse the methodological constraints of carbon footprint approaches in more depth as well as to evaluate consumer information needs about the carbon footprint of products.

[5] BEUC is the European Consumers' Organisation, ECOS the European Environmental Citizens Organisation for Standardisation and EEB the European Environmental Bureau.
[6] 'Sizing up product carbon footprint', ANEC/BEUC/ECOS/EEB joint position paper, December 2009, http://www.anec.eu/attachments/ANEC-ENV-2009-G-049.pdf

MAJOR FINDINGS OF THE NEW STUDY

Methodological constraints with the PCF approach

Although not all of the methodological constraints of the LCA approach identified in the earlier ANEC study[7] can be found in the PCF approach (e.g. site specific aspects are not relevant in PCF), both approaches surely have in common that they cannot eliminate uncertainties (e.g. parameter or model uncertainty[8]). These uncertainties with PCF/LCA results induce that PCF data will always have a restricted precision.

No comparability of products without Product Category Rules (PCRs)

A pre-condition for comparability of PCF results is that the methodological choices in the conduct of a footprint study (system boundaries, calculation rules, data quality etc) are made in an identical manner. The future ISO standards on PCF[9] currently under development will unfortunately not ensure comparability by themselves as they are meant to provide only generic rules applicable to all products. Therefore product specific rules so-called Product Category Rules (PCRs) are needed to complement the ISO standards.

Other environmental effects should not be disregarded

The study confirms earlier warnings that the narrow approach to focus only on greenhouse gas emissions bears the risk to overlook or even increase other relevant environmental impacts. Therefore at least a screening analysis of other environmental impacts must be included in every PCF study. Alternatively, a comprehensive environmental assessment could be performed.

Single number CO_2 labels for products are pointless

An analysis of existing product carbon footprint labels shows that the methodologies used present serious defects and that these labels seem to have been developed without considering consumer understanding nor involving stakeholders.

First, a single CO_2 figure allocated to a product reflects a precision and conclusiveness which cannot be achieved using available methodologies. There is even a risk that the

[7] ANEC study 'Environmental product indicators and benchmarks in the context of environmental labels and declarations, performed by Öko-Institut and Ökopol, December 2008, http://www.anec.eu/attachments/ANEC-R&T-2008-ENV-005final.pdf

[8] For more information, please refer to the full PCF study and this mentioned in above footnote.

[9] Standard on Carbon footprint of products — Part 1: Quantification and Part 2: Communication

sheer display of such a label makes consumers believe that the product might be better then another without a label. Second, the single display of a numerical value in absence of any rating schemes coupled with a colour coding system like the EU energy label do not enable consumers to identify the most environmentally friendly products (from a narrow climate change perspective) or compare products between themselves. Finally, labels wich are not accompanied by adequate and accessible background documentation showing all methodological choices in a transparent manner, and bringing evidence of a third party review, are barely reliable.

Traditional (type I) ecolabels are preferable to PCF labels

Traditional (type I) ecolabels such as the EU Ecolabel are clearly superior to PCF labels as they cover a broad range of relevant environmental impacts following the full life-cycle of products, using a variety of 'instruments'[10] and based on stakeholder involvement. These labels also give consumers a clear indication of the most environmentally friendly products (from a full life-cycle perspective) and are the most adequate and reliable labels to address products' impact on global warming.

Climate change might be addressed by other means than PCF in communication

Climate change issues (to be considered as a limited part of environmental protection issues) can be more easily (to a certain extent) addressed by energy efficiency parameters. The latter is cheaper and more reliable as it addresses a key parameter which can be directly measured and is easily verifiable. In the case of other product groups such as food products, PCF is a good basis for the development of general recommendations addressed to consumers taking into account climate change issues (e.g. "eat regional and seasonal food", "eat less meat" etc.) but needs not be communicated as PCF.

[10] E.g. calculation of noise limits, conformity assessment with forest management schemes, evaluation of the dangerous chemicals content.

Recommendations on how to address climate change in specific product groups

The following table summarizes the best options to address global warming for the seven product groups which have been investigated in the study:

Product category	Product group	Best options to address global warming
Energy using products	Cars	⇒ The existing mandatory EU label on CO_2 emissions for the marketing of new passenger cars should be mandatorily complemented by a benchmarking system e.g. in the form of a colour or letter code. ⇒ Fuel consumption tests which are more in line with real driving conditions and also applied to new types of cars such as electric cars should be performed. ⇒ Adequate measures to support the label in contributing to more climate friendly purchase decisions by consumers should be developed. ⇒ In the future, consider taking into account other greenhouse gases than CO_2 as well as emissions from fuel combustion and from the production phase of cars (in the form of average data for different size classes of cars).
	Household appliances	⇒ The EU energy label addresses energy efficiency and therefore indirectly also CO_2 emissions. Adding CO_2 values on the label would not bring any added value. ⇒ Type I labels should include in-depth PCF studies as starting point for the development of criteria. To set CO_2e values as a direct limit makes no sense.
Energy saving products	Insulation material	⇒ Instead of focusing on the PCF of insulation materials, it would be better to concentrate on energy certificates for buildings. About 80 percent of climate relevant emissions relate to the usage phase of the building and thus correlate with the energy standard of the building.

Product category	Product group	Best options to address global warming
Products with relevance to greenhouse gas emissions (during production phase)	Electricity	⇒ Consumer information concerning at least CO_2 emissions and radioactive waste production resulting from the electricity production (in order not to give advantage to nuclear energy against renewable energy) should be made mandatory. ⇒ Adequate measures to support consumer information in contributing to encourage consumers buy green electricity should be developed. ⇒ Type I labels for electricity should use in-depth PCF studies (looking at CO_2 and nuclear waste in particular) as starting point for the development of criteria. ⇒ Measures to reduce electricity consumption (e.g. communication measures) are also beneficial.
	Food	⇒ Development and communication of "simple" general recommendations taking into account climate change issues (PCF based) and recommending food purchase decisions and food preparation methods should be favoured. In order to do so, further in-depth PCF studies are necessary. ⇒ Basing on in-depth PCF studies integration of climate change issues in the development of the standards for organic agriculture. ⇒ The communication of CO_2 figures on consumer products is meaningless and not helpful for consumers.
	Paper	⇒ Type I labels should include in-depth PCF studies as starting point for the development of criteria. ⇒ Setting CO_2 values as a direct limit can be useful as far as production processes are concerned.
	Textiles	⇒ Inclusion of CO_2 emissions in the multi-criteria approach of type I labels for textiles is recommended. ⇒ Type I labels should help promote textiles made of fibres from organic agriculture. ⇒ A PCF label for textiles is pointless.

ANEC CONCLUSIONS FROM THIS AND EARLIER STUDIES COMMISSIONED

Concerning Product Carbon Footprint (PCF)

- Although carbon footprinting offers some new opportunities for product labelling and product specific environmental regulation in principle, the inherent methodological constraints of the approach limits its useful application in practice.
- As by nature, PCF only focuses on a single environmental aspect – emissions of greenhouse gases - it may lead to the disregard or even amplification of other environmental impacts.
- A single issue product carbon footprint label or declaration will in most cases not be reliable or useful. A reasonable environmental information system for products as well as environmental product regulation must cover all significant environmental aspects, at least in form of a screening analysis, covering the full product life-cycle.
- A fundamental problem of PCF studies – similar to this of LCA studies in general – is that the results depend strongly on numerous methodological choices made in the conduct of a study (e.g. relating to the definition of the functional unit including service life time, boundaries, selection of data, scenarios for transport, user behaviour or disposal, allocation rules, etc.). This makes the results reflect a rough approximation of the reality and lack precision, as opposed to results which could be obtained from energy measurements using harmonised, well defined test methods. As a consequence, PCF data from different businesses or other parties are barely comparable. Any policy measure based on such non-robust data would not be successful.
- The ISO standard on carbon footprint of products currently under development contains only generic rules leaving room for interpretation and will not solve the problem of comparability.
- Comparable PCF results can only be achieved on the basis of adequate product specific rules complementing generic rules – so-called Product Category Rules – provided that they are elaborated in a transparent and democratic manner involving all relevant stakeholders in a balanced way. However, it would require a high amount of resources to cover only the most important products and it is questionable whether it is worth the expense.
- Existing carbon labels providing numerical carbon figures are not only doubtful from a methodological perspective but they also do not bring any benefit for consumers. They are hardly understood by consumers and do not enable them to identify the most environmentally friendly products (from a climate change

perspective) or make product comparisons. Carbon labels consisting of quantitative CO_2 values are therefore pointless. The main drivers for the development of current carbon labels have been marketing, green image building and commercial interests of consultancies.

- Consumers need clear orientation about a product's environmental performance through either third-party verified labels of excellence (such the EU Ecolabel) or labels based on graded scales and colour/letter codes (such as the existing A-G energy label). The preferred option is to integrate climate protection aspects into Type-I ecolabels.

- Only in exceptional cases does the indication of a carbon emissions figure appear useful for consumer choice – e.g. for passenger cars or electricity supply. In these cases, the values should be based on proper and harmonised test methods (unfortunately although available, current test methods for cars are not in line with real life driving styles and petrol consumption) and the labelling scheme should make use of a rating scale based on colour/letter codes such as the EU energy labelling scheme.

- Other instruments are in our view often more suitable (and cheaper) to address the impacts of a product on climate change. In particular, energy efficiency measurements for products using (or having an impact on) energy are cheaper and deliver more precise and robust results while not presenting the same problems as PCF[11]. Moreover, energy efficiency information is more reliable and easily verifiable. In other cases, such as food products, the provision of guidance to consumers to reduce meat and beef consumption in particular, or the consideration of CO_2 intensive processes as criteria in organic food production seems more adequate than carbon labelling. For some other products, PCF is simply not relevant as other environmental aspects are much more important (chemicals use and water consumption in case of textiles for instance).

- Where carbon figures are used as a criterion for ecolabels or environmental law making, it is not always necessary to base the measures on data following the full life cycle. The must relevant greenhouse gases emissions are indeed often concentrated in a particular stage of the product life cycle (e.g. production phase in case of paper, use phase in case of domestic appliances). This criterion should then be combined with others (water consumption for instance).

[11] For instance, a carbon figure of electricity using appliances depends on the electricity mix and is thus different from country to country.

Life Cycle Assessment

- Like PCF, LCA is an excellent tool for orientation purposes in the initial phase of environmental product labelling and for comparing system alternatives, but only with respect to those aspects covered by LCA (e.g. global warming, total energy consumption). However, other instruments such as energy efficiency measurements may be more suitable for setting labelling requirements.
- LCA may only allow comparisons between products if the differences between these products are significant enough (at least 20-50% depending on the product group) compared with the precision of the LCA. LCAs are therefore more suitable for comparison between different product categories.
- The environmental indicators and benchmarks which are used in traditional (Type I) ecolabel schemes or in Best Available Technique Reference documents (BREF) for specific life cycle phases are often superior to LCA indicators – be it in terms of coverage, data availability and precision. They should thus be favoured for comparing products in particular if these products fall under the same category. This is even truer when a large proportion of the environmental impacts occurs in one single phase of the product life cycle.
- A graded coloured scale as this forming the basis of the EU Energy Label, using an appropriate normalisation (e.g. the annual burden per citizen) should be used to display LCA results.
- Due to the inherent shortcomings of life cycle assessment methodologies[12], LCA derived indicators cannot reflect all relevant environmental impacts of a product. Hence, other complementary tools such as human health and/or environmental risk assessment should be used.
- The 'Environmental Data Sheet' concept, which combines a product-specific selection of LCA indicators (for comparing different product categories) and indicators from other assessment tools, should be seen as the way forward and thus be developed further.
- Existing standards for LCA (ISO 14040 series) and Environmental Product Declarations (ISO 14025 and derived standards) should be revised in order to remove the inherent bias towards aggregatable and quantifiable life cycle indicators, and strengthen the weight of other instruments such as human and environmental risk assessments (so-called "additional environmental information"). Moreover, additional standards combining various instruments

[12] Omission of non-quantifiable impacts (biodiversity) or non-aggregatable impacts (noise, local emissions), for instance

and traditional LCA for a comprehensive environmental assessment should be prepared with the aim to produce a standardised Environmental Data Sheet.

- Current methodologies for aggregating impact indicator results (such as EcoGrade or Eco-indicator) are not convincing and should be avoided.

Environmental product policy

- The relevant environmental impacts and associated indicators and methodological choices need to be identified on a product-by-product basis and following a democratic process involving all stakeholders. As the decisions involve value choices and hence questions which are inherently political, they should not be delegated to LCA technical experts, industry or standardisation bodies. Policy-makers have a responsibility to ensure open and transparent discussions and a democratic decision-making process. The procedure followed under the Energy-Related Products (ERP) Directive[13] is a good model which could be followed in future environmental product policies.

- The current regulatory framework concerning environmental aspects of products is still insufficient. The ERP Directive in particular should ultimately be turned into an embracing Environmental Performance of Products Directive covering in principle all products and all environmental aspects during the full life-cycle of products.

- The identification of the significant environmental aspects of a product should, as far as possible, make use of synergies through co-ordinated approaches involving the setting of minimum performance levels in legislation, and the development of corresponding energy and ecolabel requirements. This should be linked to the development of BREF documents and the future sectoral reference documents under EMAS[14].

- Finally, environmental labelling alone is a weak instrument to drive the economy in a sustainable direction and change consumer behaviour. Bearing in mind that only a small proportion of consumers is responsive to environmental information, environmental labelling can only complement product related environmental legislation which must be the main driver towards more sustainable production.

[13] Directive 2009/125/EC establishing a framework for the setting of ecodesign requirements for energy-related products
[14] Regulation (EC) No 1221/2009 on a Community Eco-Management and Audit Scheme (EMAS)

ANEC in brief

ANEC is the European consumer voice in standardisation, representing and defending consumer interests in the processes of technical standardisation, conformity assessment and related legislation. ANEC was established in 1995 as an international non-profit association under Belgian law and represents consumer organisations from the 31 European countries. ANEC is funded by the European Union and EFTA, with national consumer organisations contributing in kind. Its Secretariat is based in Brussels.

The full study is available at http://www.anec.eu/attachments/ANEC-R&T-2010-ENV-001final.pdf.

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