

Executive Summary – Environmental Impact of Products (EIPRO)

Introduction

In June 2003 the European Commission adopted a Communication on Integrated Product Policy (IPP), in which it committed to identify the products with the greatest potential for improvement. However, when the Communication was published, there existed no analytically-based consensus on which products and services have the greatest impact, and hence no consensus on those which have the greatest potential for improvement.

On request of DG Environment, the JRC-IPTS therefore launched this study, with the objective to identify those products that have the greatest environmental impact throughout their life cycle, from cradle to grave. The project was carried out with the help of ESTO (TNO-CML Centre for Chain Analysis, the Flemish Institute for Technological Research (VITO) and the Danish Technical University (DTU)).

The methodology and the results of the different tasks were discussed at special workshops, followed by meetings with stakeholders. The draft final report was published on the Commission's website in May 2005 with an invitation for comments. The final results of the study were presented to the Member States and other stakeholders in November 2005.

Methodology

The methodological approach for this study was to take the results of existing studies and combine them with new research. This way, full advantage could be taken of existing research and knowledge of impacts, and the understanding could be developed further in key areas to close knowledge gaps. As part of the new research, an environmentally extended input-output model was developed – the CEDA EU-25 Products and Environment model – that allowed a systematic and detailed analysis (distinguishing several hundreds of products).

Analysis of existing studies

The review of existing studies showed that substantial and useful research had been undertaken already, and despite different methodological approaches and limitations, this research could provide quite robust results for aggregated groupings of products at the level of the main functional areas of consumption (corresponding to the highest level of the UN Classification of Individual Consumption According to Purpose – about a dozen product groupings) and, to some extent, also at aggregation levels that distinguish up to about 50 consumption domains or product groupings. However, the studies provided far less useful information for more disaggregated product groupings, and their geographical scopes were not at all identical. The review also showed that existing knowledge did not give a full picture of consumption in the EU-25.

New environmental input-output analysis model for the EU-25

To improve the situation, a model was built that allowed a systematic analysis of the environmental impacts of products for the EU-25 in sufficient detail to distinguish several hundreds of product groupings. The CEDA EU-25 Products and Environment model covers the environmental impacts of all products consumed in the EU-25 (produced in EU-25 and imported), including the life cycle stages of extraction, transport, production, use and waste management.

Although the principle of an environmental IO analysis is simple, getting the data right was challenging. Also, an IO analysis is based on the records of financial transactions between productive sectors and to final consumers, which do not generally cover the use and disposal phases of products. For a cradle-to-

grave analysis, specific solutions needed to be adopted to cover the use, waste management and recycling stages.

The model adapts the latest model developed with United States sectoral data (CEDA 3.0) to Europe. The resulting CEDA EU-25 Products and Environment model covers all resource use and emissions in the production, use and disposal phases of all products consumed in the EU-25.

The analysis used the following eight environmental impact categories:

- abiotic depletion
- acidification
- ecotoxicity
- global warming
- eutrophication
- human toxicity
- ozone layer depletion
- photochemical oxidation

The results were calculated as a percentage of the EU-25 total for each impact category.

Conclusions

The study identified products in the following three areas as having the greatest impact:

- food and drink
- private transport
- housing

Together they are responsible for 70 – 80% of the environmental impact of consumption, and account for some 60% of consumption expenditure.

- Food and drink cause 20 – 30% of the various environmental impacts of private consumption, and this increases to more than 50% for eutrophication. This includes the full food production and distribution chain ‘from farm to fork’. Within this consumption area, meat and meat products are the most important, followed by dairy products. Food and drink were covered by only some of the studies so the results for that area should be treated with more caution. However, the general conclusions can be taken with a reasonably high level of confidence.
- The contribution of passenger transport to the total environmental impacts of private consumption ranges from 15 to 35%, depending on the impact category. The greatest impact is from cars, despite major improvements in the environmental performance in recent years, especially on air emissions. The impact of private air travel is increasing but for methodological and data reasons, it has not been possible to adequately quantify its impact on the environment.
- The products under the heading of housing include buildings, furniture, domestic appliances, and energy for purposes such as room and water heating. Together they make up 20 to 35% of the impacts of all products for most impact categories. Energy use is the single most important factor, mainly for room and water heating, followed by structural work (new construction, maintenance, repair, and demolition). The next important products are energy-using domestic appliances, e.g. refrigerators and washing machines.
- All other areas of private consumption together (i.e. excluding food and drink, transport and housing) account for no more than 20 – 30% of most environmental impacts. There are uncertainties about the percentage contributions of the remaining products, but most of the evidence suggests that clothing ranks highest, accounting for between 2 and 10% of total environmental impact.