

ENVIRONMENTAL IMPACT OF PRODUCTS (EIPRO)

**Analysis of the life cycle environmental impacts related to the final consumption of
the EU25**

Annex report

May 2006

IPTS/ESTO project

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3 Annex 3: Participants at the expert workshops

Workshop 1: Brussels, 6 May 2004

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- Robert Goodschild, DG Environment
- Luis Delgado, DG Joint Research Centre – IPTS (chair)
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Workshop 2: Brussels, 2 September 2004

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- Julio Cardoso, DG Enterprise
- Orsolya Csorba, DG Environment
- Peter Eder, DG Joint Research Centre – IPTS (chair)
- Ursula Kirchholtes, DG Joint Research Centre – IPTS
- Klaus Koegler, DG Environment
- Michail Papadoyannakis, DG Enterprise
- David Pennington, DG Joint Research Centre – IES
- Gareth Steel, DG Trade

Stakeholder event, Brussels, 13 July 2005

External stakeholders and experts

- Bo Weidema, 2.-0 LCA Consultants, Denmark
- Jan De Vries, 2Eco, the Netherlands
- Wulf-Peter Schmidt, ACEA, Germany
- Franz Saykowski, Bayer AG, Germany
- Fabien Bronès, BIO Intelligence, France
- Pieter Lanser, CEMBUREAU (European Cement Association)
- Sam Cross, CEN Environmental Helpdesk (EHD)
- Albrecht Schmidt, CIAA (Confederation of the EU Food & Drink Industries), Kraft Food
- Pascal Gréverath, CIAA (Confederation of the EU Food & Drink Industries), Nestlé, chairman of the CIAA Working Group on Integrated Product Policy, France
- Mark Mistry, Eurometaux
- Stephan Moll, Wuppertal Institute, Germany
- Dennis Pohl, Federal Public Service Health, Food Chain Safety and Environment, Scientific advisor, Belgium
- Karine Thollier, ICEDD (Institut de Conseil et d'Etudes en Développement Durable), Belgium
- Frieder Rubik, Institute for Ecological Economy Research, Heidelberg, Germany
- Durk Nijdam, Milieu- en Natuurplanbureau – RIVM, the Netherlands
- Michael Betz, PE Europe, Germany
- Mikel Zaldunbide Solaun, SERCOBE, (Spanish association of manufacturers of electrical engineering goods), Ormazabal, Spain
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- Peter Eder, DG Joint Research Centre – IPTS (project co-ordinator)
- Frans Vollenbroek, DG Environment
- Luca Marmo, DG Environment
- Klaus Kögler, DG Environment (chair)
- Piere Henry, DG Environment
- Bengt Davidsson, DG Environment
- Orsolya Csorba, DG Environment
- Olga Barry, DG Enterprise
- Julio Cardoso, DG Enterprise
- Michail Papadoyannakis, DG Enterprise

4 Annex 4: Annexes to Chapter 4

4.1 Summary of evaluated studies

4.1.1 Introduction

As a first step in the analysis of Chapter 4, for each of the studies selected in Chapter 3 a summary report was made. Standard headings in each summary report were:

- Main characteristics (such as title, authors, commissioner)
- Methodological approach
- Main results
- Strengths and weaknesses
- Relevance for IPP
- References

The latter also includes, where possible, detailed tables with the results of the study analysed, usually in percentage contribution of a product grouping to the total theme score. Such overall review tables in the form presented here were not always available in the original study. They were compiled by the reviewer/analyst by putting data from relevant tables and figures into a spreadsheet, and if necessary by a subsequent calculation of the contribution per product group to the normalised score on an impact category (see also Chapter 4).

Note that the studies were originally written – in general – for other purposes than for use in EIPRO. The reviews by the EIPRO team do therefore in no way represent judgements on the quality of the studies as such.

The next sections give the summary reports of the studies (in alphabetical order of first author). The title also mentions the name of the person who wrote the summary (though each summary was cross-checked by at least one other member of the EIPRO project team). The summaries were checked back with the original authors. Some summaries use numbers in superscript to indicate the page number in the original study where the point discussed can be found.

4.1.2 Dall et al. (2002) – Summary by P. Nielsen

Main characteristics

Title of the report: The environmental impact of Danish households (in Danish).

Authors: Ole Dall (COWI A/S), Jesper Toft (ØkoAnalyse) and Trine Thorup Andersen (DHI Water & Environment)

Commissioned by: National Consumer Agency's Consumers' Information Service/Danish EPA7.¹⁵

Main approach: Environmental assessment of household consumption divided between activities and products. The product streams are based on monetary consumption statistics and the price index statistics and environmental impacts are determined by life cycle assessments (bottom up LCA approach).¹⁶

Methodological approach

Goal, scope and system boundaries: The study focuses on yearly impacts of products purchased and consumed by private households in Denmark in 2000⁸⁸, including products produced abroad. Environmental data are from the early 1990s, with the exception of more recent data on electricity and heat.

Aggregation level: Household consumption is represented by approximately 800 detailed product groupings²⁴ aggregated into larger product groupings corresponding to 30 sub-areas of consumption and seven main functional areas of consumption:

- Food consumption
- Clothing
- Health and hygiene
- Leisure
- House cleaning
- Housing
- Transport

Data on environmental impacts and raw material consumption are presented for the seven functional areas of consumption and the 30 sub-areas of consumption. The data cover 93% of household consumption, the remainder being public transport, charter travel and smaller consumption items for which environmental data have not been available²⁵.

Data inventory: The study initially distinguished some 800+ detailed product groupings or expenditure categories, which were transformed into kg or units of a product used in the household. Consumption data are derived from a broad spectrum of references related to each product grouping. National consumption statistics (Statistics Denmark) are frequently applied for determination of consumption patterns and national electricity consumption statistics (DEFU) are frequently used for products using electricity. This household consumption in material and product terms was further combined with general information about product composition. With the help of the EDIP database, this information was transformed into environmental interventions. While the authors judged that this procedure gave a result that was reliable at the level of the 30 sub-areas of consumption presented in the report, they warned that the few results given at product level should be used as examples only since the uncertainty at this level was simply too high. The report gives no comprehensive overview of the impacts of the detailed expenditure categories (though the information would in principle be available in the source database). We hence used results of this study only at the level of the 30 sub-areas of consumption. The 800 product groupings' environmental impacts were modelled with process data mostly derived from the Danish LCA database, EDIP.

Impact assessment: The impact assessment covers the following three indicators:

1. Raw material consumption (divided into “energy raw materials” and “other raw materials”),
2. Primary energy consumption (as a common indicator for energy related environmental impacts), and
3. Waste to landfill.

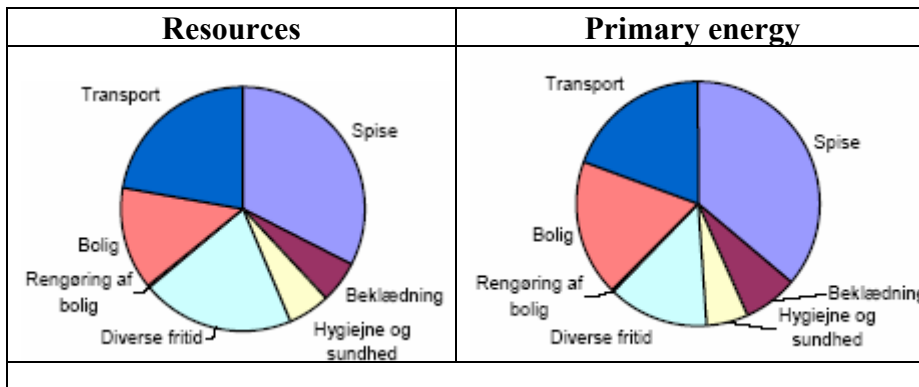
Raw material consumption is normalised with an average person’s yearly consumption and weighted according to known reserves of non-renewable raw materials or yearly productivity of renewable raw materials according to the EDIP method (Wenzel et al., 1997 and Hauschild and Wenzel, 1998). Renewable raw materials have only been considered when total consumption exceeds replacement. Primary energy consumption and waste to landfill has been normalised with an average person’s yearly consumption.

A semi-quantitative toxicity assessment of the most important household chemicals is also included in the study.

The energy related impact assessment can be broken down to mid-point indicators by consulting the model behind the study.

Main results

Concerning resource and primary energy consumption, the study comes up with priorities as given in the figure below. Waste generation is not reported here because uncertainty is considered very high by authors of the study.



Translation: “Bolig” ~ Housing, “Transport” ~Transport, “Spise” ~ “Food consumption”, Beklædning” ~ “Clothing” “Hygiejne og sundhed” ~”Hygiene and health”, “Diverse fritid” ~ “Leisure”.

Per functional area of consumption, a further sub-division is given (for instance, production of food is about half of food consumption whereas storage, cooking and serving/dishwashing represents the other half). By consulting the model behind the assessment, the results can be further broken down into the considered 800 product groupings (though some product groupings are based on the same data, because specific LCA data were missing).

Strengths and weaknesses

Methodological choices: The aggregation into seven activity groups is function-based and rational. Other function-based aggregation principles at the same aggregation levels would probably yield similar rankings and hence similar results from the environmental assessment. The allocation of sub-areas to the functional areas of consumption is generally logical and transparent, with only a few examples of ambiguousness. Furniture and lighting which is used for all purposes in the household is, for instance, categorised together with furniture.

The study makes a distinction between different phases in the product’s life cycle (production phase, use phase and disposal phase), but the importance of each phase is not reported. Importance of different life cycle phases can probably be revealed by analysing the model

behind the results. It is noted in the report that the recycling of materials is a weak point of the assessment and data on waste generation should therefore only be considered as weak indications.

Primary energy use and waste generation are the only environmental indicators applied. Primary energy is quite a good single indicator because energy is widely based on fossil fuel combustion in Denmark and is one of the most important sources of global warming, acidification, photochemical ozone formation and particulate formation. However, it should be noted that the indicator does not cover significant contributions to global warming from methane and laughing gas (mostly from agriculture), contributions to acidification from ammonia (mostly from agriculture) and emissions of volatile organic compounds, e.g. from plastic production and solvent application. Toxicity aspects are not covered for all products except for a selection of household chemicals.

The indicator for raw material consumption covers renewable and non-renewable raw materials (normalised and weighted). The applied weighting principle does not take the value of different raw materials into account and non-substitutable raw materials such as phosphate (for fertiliser) is not given more attention than lignite which can be replaced by a wealth of other resources. The coverage of non-renewable raw materials is good but a threatened renewable raw material such as wild fish and specific types of timber has not been considered in the study. Land occupation is also not considered.

Completeness: The list of products and activities covered by the study is comprehensive. Products that are missing are reported and the list includes for instance tobacco, make-up, and energy consumption of small electrical equipment. The modelling of processes related to the products and activities is not always complete due gaps of data. House construction and maintenance is, for instance, not considered and food and beverage production is, for instance, based on a simple and quite incomplete model.³⁹⁻⁴⁶

It is doubtful if diffuse emissions related to resource use in the use stage (see, e.g. van der Voet et al., 2003) have been covered. This is particularly relevant for, e.g. diffuse emissions of metals or toxic chemicals, but as stated above, emissions of toxic substances have not been covered in the study.

Reliability: This innovative study has method development as one of its aims and, as noted in the report, outcomes of the application of the method are subject to many uncertainties primarily due to gaps of data and uncertainties with the data.³⁹⁻⁵² The uncertainty is estimated to be at least a factor 2 and results therefore should only be treated as indicative³³. The study concludes that the consumption statistics are inadequate for a detailed assessment of the total household environmental impact, except for food products, and that the environmental product data need to be updated on a more regular basis. Furthermore, it should be noted that the aggregation of products into product groupings is associated with uncertainty and that the LCA process database that was available for the study is too limited to be complete for the assessment that was carried out.

Relevance for IPP

Geographical relevance: The study is specific for Denmark with respect to consumption of products and services, whereas applied process data refer to Danish and West European technology from the early 1990s (EDIP database⁹). Rixt et al. (2003) has observed large

variations within Europe and even within individual countries and results of the study should be treated with care when interpreted in a European context.

Product focus and aggregation level: The study has the focus on final consumption, and hence fulfils this requirement of being relevant for IPP. The study gives results on the level of functional areas of consumption and sub-areas thereof. The study does *not* report priorities at more detailed levels of product groupings, but the source database should be able to show such a priority list. The resolution into the 800 product groupings is reasonable. The study focuses on household consumption only rather than on total societal consumption.

General acceptance of the method: The study uses a bottom-up approach covering processes in households only. A bottom-up approach provides detailed information but is known to be incomplete compared with top-down approach studies. The limitation of indicators to primary energy, resources and waste generation is rather unusual and neglects important aspects of environmental product profiles. Focus on reserves during weighting of resources can be subject to discussion (Jolliet et al. (2003), as inventories of reserves are very uncertain and usually grow with increasing demand.

References:

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- EDIP database. Danish Environmental Protection Agency. Copenhagen. www.mst.dk
- Hauschild MZ and Wenzel H (1998): Environmental Assessment of Products. Vol. 2 – Scientific background. Chapman & Hall, United Kingdom, 1998, ISBN 0-412-80810-2 (scientifically reviewed).
- Jolliet O, Brent A, Goedkoop M, Itsubo N, Mueller-Wenk R, Peña C, Schenk R, Stewart M and Weidema BP. (2003). Final draft report of the LCIA Definition study. [Life Cycle Impact Assessment programme of The UNEP/SETAC Life Cycle Initiative.](http://www.unep.org/SETAC/LCIA/Definition/Definition%20Study%20Final%20Draft%20Report.pdf)
- Rixt K, Falkena H-J, Benders R, Moll HC and Noorman KJ (2003): Household metabolism in European countries and cities – Comparing and evaluating the results of the cities Fredrikstad (Norway), Groningen (the Netherlands), Guildford (UK), and Stockholm (Sweden). Toolsust Deliverable No. 9. Center for Energy and Environmental Studies, University of Groningen. www.toolsust.org
- Statistics Denmark: www.dst.dk
- van der Voet E, van Oers L and Nikolic I (2003): Dematerialisation: not just a matter of weight – Development and application of a methodology to rank materials based on their environmental impacts. CLM report 160. Leiden University, the Netherlands.
- Wenzel H, Hauschild MZ and Alting L (1997): Environmental Assessment of Products. Vol. 1 – Methodology, tools, techniques and case studies in product development. Chapman & Hall, United Kingdom, 1997, ISBN 0-412-80800-5 (scientifically reviewed).

Appendix A to Annex 4.1.2: Relation between functional areas of consumption and sub-areas

Area of consumption	Sub-area	Area of consumption	Sub-domain
<i>Food consumption</i>	Dining out of house Food storage Cooking Serving and dishwashing Production of food Wine and other alcohol	<i>Cleaning of house</i>	Washing floors and other cleaning Vacuum cleaning, sweepin,g etc. Others (e.g. polishing furniture)
<i>Clothing</i>	Textiles Textile washing Maintenance (repair, spot removal, shoe polish)	<i>Housing</i>	Room heating Waste of water House maintenance Garden maintenance Other electricity
<i>Health and hygiene</i>	Personal hygiene (shower, etc.) Toilet Others (make-up, etc.)	<i>Transport</i>	Car transport Bicycle transport Motorcycle and scooter transport Air transport Public transport
<i>Leisure</i>	Spare time, at home TV, computer, etc. Furniture, lighting, etc. Baby equipment.		

Appendix B to Annex 4.1.2: Detailed results of Dall et al. (2002), this presentation by the EIPRO team

Need area or function (Allocated to COICOP category)		Primary energy consumption				Resources (Total)				Resources (Energy)				Resources (Others)				Waste generation (PE)			
		Person equivalents		Percent		Person reserves		Percent		Person reserves		Percent		Person reserves		Percent		Person equivalents		Percent	
Food consump.		0.680		35%		0.112		32%		0.075		35%		0.037		28%		0.051		21%	
CP01	Food production		0.47		24%		0.069		20%		0.056		26%		0.01		10%		0.03		12%
CP04	Food storage		0.08		4%		0.009		3%		0.006		3%		0		2%		0		1%
CP04	Cooking		0.05		3%		0.012		3%		0.004		2%		0.01		6%		0.01		2%
CP04	Serving and dishwashing		0.04		2%		0.016		5%		0.004		2%		0.01		9%		0.01		3%
CP01	Beer, wine and alcohol		0.04		2%		0.006		2%		0.005		2%		0		1%		0.01		3%
CP02	Tobacco																		0		0
Housing		0.360		18%		0.048		14%		0.039		18%		0.007		5%		0.008		3%	
CP04	House maintenance																		0		0%
CP04	House cleaning						0.001		0%										0		0%
CP04	Heating		0.29		15%		0.038		11%		0.034		16%		0		3%		0		0%
CP04	Water wastage						0.001		0%										0		0%
CP04	Electricity (assorted)		0.07		4%		0.008		2%		0.005		2%		0		2%		0		0%
CP09	Garden maintenance																		0		2%
Clothing		0.145		7%		0.021		6%		0.011		5%		0.010		8%		0.036		15%	
CP03	Clothes		0.03		1%		0.003		1%		0.002		1%		0		1%		0.03		14%
CP04	Clothes washing		0.12		6%		0.016		5%		0.009		4%		0.01		5%		0		1%
CP03	Clothes maintenance				0%		0.002		1%		0		0%		0		2%		0		0%
Health and hygiene		0.120		6%		0.021		6%		0.013		6%		0.005		4%		0.009		4%	
CP12	Personal care		0.10		5%		0.018		5%		0.013		6%		0.01		4%		0		2%
CP12	Others (make-up, etc.)																		0		0%
CP04	Toilet		0.02		1%		0.003		1%				0%				0%		0		2%
Leisure,		0.265		14%		0.072		20%		0.023		11%		0.049		37%		0.116		49%	
CP09	Sparetime		0.06		3%		0.008		2%		0.005		2%		0		2%		0.05		19%
CP05	Furniture, lighting, etc.		0.13		6%		0.028		8%		0.011		5%		0.02		13%		0.06		27%
CP09	TV, computer, etc.		0.08		4%		0.036		10%		0.007		3%		0.03		22%		0.01		3%
Transport		0.380		19%		0.079		22%		0.054		25%		0.025		19%		0.017		7%	
CP07	Car transportation		0.35		18%		0.074		21%		0.049		23%		0.03		19%		0.02		6%
CP07	Bicycle						0.001		0%		0.001								0		1%
CP07	Motorcycle/scooter																				0%
CP07	Air transportation		0.03		2%		0.004		1%		0.004		2%				0%				0%
Total		1.950	1.950	100%	100%	0.353	0.353	100%	100%	0.215	0.215	100%	100%	0.133	0.133	100%	100%	0.237	0.237	100%	100%

Note: All data are taken from figures in the final report. Empty cells represent contributions too small to be read from the figures. The allocation to COICOP categories was made by the EIPRO team

4.1.3 Kok et al. (2003) – Summary by A. Tukker

Main characteristics

Title of the report: Household metabolism in European countries and cities - Comparing and evaluating the results of the cities Fredrikstad (Norway), Groningen (The Netherlands), Guildford (UK) and Stockholm (Sweden). Integration report of PW2 of the “Toolsust project” (2003).

Authors: Rixt Kok, Henk-Jan Falkena, René Benders, Henri C. Moll, Klaas Jan Noorman.

Name of institution: Centre for Energy and Environmental Studies. University of Groningen

Commissioned by: European Union under the Fifth Framework Programme (Energy, Environment and Sustainable Development).

Approach: Assessment of energy consumption (direct and indirect) of products and services applied in households via a model called the Energy Analysis Program (EAP). Product and material streams are determined from monetary input/output tables containing economic transactions between sectors. Energy use is determined by energy analysis based on simplified life cycle assessment principles¹⁹. Hybrid analysis combining input/output study and LCA¹⁷⁻¹⁸.

Methodological approach

Goal, scope and system boundaries: The study aims to prioritise household activities based on their energy requirements⁷ related to the total consumption of households in the four Northern and Western European cities mentioned above. The study considers the use of energy along the entire production and consumption chain of products and services^{17, 19} from raw material extraction through material production, product manufacture to use and waste management and eventual recycling²², including goods imported from abroad. The base year was in principle 1996.

Aggregation level: The number of industry sectors included in the study range between 31 and 75 depending on statistical accounting principles in the four countries considered²¹. The following final consumption categories of households were distinguished (divided over categories with direct and indirect energy use)^{24, 41}:

Indirect energy use

- Food including outdoor consumption
- House rent or mortgage repayments, including maintenance of the house
- Household effects: furniture, household appliances, etc.
- Clothing and footwear purchase and repair
- Hygiene: household services, nursery, cleaning equipment, personal care
- Education: tuition, computers, books, and other reading material
- Recreation: holidays, sports, games, toys, cultural activities, audio visual equipment, CDs, etc., smoking

- Transportation: public transport, purchase and insurance of vehicles, parking, driving lessons, telephone, and postage
- Other consumption; insurance premiums, contributions, donations, and family celebrations

Direct energy use

- Natural gas
- District heating
- Electricity
- Solid and liquid fuel
- Motor fuels

Depending on data availability per country, data were differentiated to national level, regional level and city level and to different household sizes and income levels³¹.

Data inventory: The study covers all major goods used by households in the four Northern and Western European³¹ countries, and the four selected cities, in the 1990's^{19, 23}, assuming they were produced with Western European technology (EAP database). The study gives comparisons and analyses at country level, and at city level. The original EAP model was developed for the Netherlands. The latest update is from 2001 and contains 1996 data. The EAP model has been converted into a country-specific model by use of country-specific energy data presumably for the countries where the non-Dutch cities Fredrikstad (Norway), Guildford (UK), and Stockholm (Sweden) are located.

Impact assessment No real impact assessment is applied. Impacts are expressed in terms of primary energy consumption¹⁷ and in a few cases as CO₂ emissions.

Main results

The average energy requirement of households in different countries and in different regions and cities varies considerably, and also varies considerably between different household types. Different explanations apply to different countries, for instance household size, type and income, setting type (urban or rural), transportation needs, infrastructure and climate.

Direct energy consumption (fuels, heat and electricity) is responsible for about 40 – 50 % of households' energy consumption. Direct energy consumption is due to house heating, car driving² and use of electrical appliances. Applied energy sources for house heating vary from country to country (e.g. natural gas dominates in the Netherlands, district heating, and solid and oil dominate in Sweden, and electricity is dominates in Norway) but appears to be a major source of energy use and hence resource consumption and environmental impact in all considered cases. Electricity use for household appliances cannot be distinguished from heating and no conclusions related to the specific importance of household appliances can be made.

Indirect energy consumption is responsible for 50 – 60 % of households' energy consumption. Indirect energy consumption varies considerably between countries and the share of indirect energy use is the highest in countries with the highest expenditures. The importance of

² Note that there is a transport category under indirect energy, but that only covers the indirect energy use related to transport and not direct fuel purchase.

different activities and products is quite uniform and food, recreation and transport (public transport, purchase and insurance of vehicles, telephone and postage etc.) appear to be major origins of energy consumption and, therefore, also resource consumption and environmental impact in all studied countries and cases, although the rank of transport and recreation vary in specific cases.

Strengths and weaknesses

Methodological choices: The aggregation of all products and services consumed by households is function based and rational, though sometimes ambiguous. The aggregation level is quite high and mostly commonsense and other function based aggregation principles at the same level of aggregation would probably yield similar rankings. There are, however, a few cases where also alternative aggregations might be applied (for instance computers and books could be allocated to “household effects”, “education” or “recreation”).

The only indicator applied in the study is primary energy (direct and indirect)³. Primary energy is quite a good single indicator because energy is largely based on fossil fuel combustion and is one of the most important origins of fossil fuel consumption and contributions to global warming, acidification, photochemical ozone formation, particulate formation and to some extent nutrient enrichment. It should be noted, however, that this indicator does not reflect significant contributions to global warming from methane and laughing gas (mostly from food production in agriculture), contributions to acidification from ammonia (mostly from agriculture) and emissions of volatile organic compounds, e.g. from plastic production and paints application. It doesn't cover either all other resource consumptions such as metals, minerals, wood, water, etc.

Completeness: The study covers a very complete list of products and services consumed in households in the Norwegian, British, Swedish and Dutch economy. Exceptions are for instance, taxation and expenditure on medical care since these costs are spread between households, employers and the government, making it difficult to ascertain how much each party contributes. It is mentioned in the study that previous investigations have shown that households' consumption is responsible for 60 – 70 % of total energy consumption in society¹⁴. Even this, however, leaves one point not solved. The direct energy consumption calculated in the study is about 40 – 50 % of the energy consumption in households; with households being responsible for 60 – 70 % of the total energy use in a country this would imply that direct energy use in households would be 25 – 35 % of a country's total energy use. However, p. 14 of the report states that in the OECD, the direct energy consumption by households is around 15 – 20 % of the total energy use. One would therefore expect a lower direct energy use percentage in the study, suggesting that the methodology ‘looses’ categories of indirect energy use.

Reliability: Since the final energy use is related to actual budget expenditures, products produced for export are excluded and imported products (used) are included. However, it is unclear if the Toolsust study, like the Dutch RIVM study, has differentiated energy intensities per sector to region.

The applied methodology brings about several uncertainties and four levels of uncertainty have been analysed and discussed:

³ To a very limited extent, CO₂ emissions have been included as well.

1. Uncertainties directly related to methodology,
2. Uncertainties in the applied national databases,
3. Uncertainties regarding the analyses of consumption items and
4. Uncertainties at the level of budget expenditures and household characteristics⁷¹.

Thus, as noted in the report, most of the results have a considerable margin of error⁸ and results will therefore only be treated as indicative.

Relevance for IPP

Geographical relevance: The overall goal of the study is to rank and compare households' activities with respect to environmental impacts (in terms of energy use) in a life cycle perspective and the study establishes an insight into the influence of households on the EU's 'metabolism' in terms of fuel consumption and associated environmental impact. The study is specific for Fredrikstad (Norway), Groningen (the Netherlands), Guildford (UK), and Stockholm (Sweden) with respect to consumption patterns, energy supply systems and processing systems during the 1990s. The study is relatively up-to-date and is geographically and technologically relevant for the EU's IPP strategy although Norway is not an EU member.⁴ Considerable variation^{7, 8} in energy consumption between different types of households (income and size) and between households located in different countries and settings (urban or rural) have been observed. This suggests that information derived from one situation in the European Union should be transferred to another only with caution and that advice which is relevant and useful for one group of the population may not be as relevant for another. This is relevant for interpretation of the present study as well as for other studies in EU which are made for only one geographic area.

Product focus and aggregation level: The study has a clear focus on final consumption but only gives an aggregation into 14 broad functional consumption areas. It is unclear if data at more detailed levels can be obtained from the source database.

General acceptance of the method: The Energy Analysis Program uses a mix of an input-output analysis, and a direct LCA type analysis of products (including services) that could not be covered by input-output analysis. The results are reported in energy intensities. All these methods are quite straightforward and accepted. The main discussion point raised from an IPP perspective (for which the study was not primarily carried out) is, of course, that only energy is used to measure impact, rather than a more extended list of impact categories and/or a true end-point oriented modelling.

⁴ This is certainly true for EU-15 but probably at this moment in time a bit problematic for the new Member States. However, technologies are likely to converge in the next 10 years. It is probably reasonable to assume that after these improvements, the production structure in the accession countries will not differ structurally from the situation in the countries covered by Toolsust.

Appendix A to Annex 4.1.3: Detailed results of Kok et al. (2003), processed by the EIPRO team

The three tables below give the steps how the data from the Toolsust study were transformed into data per functional area of consumption/COICOP category. The first table takes the data from the publication of Moll and Noorman (2002), essentially the same as presented in Kok et al. (2003), but given in a more readily interpretable form⁵. It concerns data on primary energy use and the relative contribution of various consumption activities to direct energy use. The second table re-calculates all these data, for the average household in the city of Groningen alone, into percentages contribution to the total direct and indirect energy use (216 GJ/hh/year). In that table, the direct energy uses have been further allocated to functional areas of consumption making use of distributions of Slob et al. (1996)⁶ and own estimates. Finally, the third table groups all information per COICOP category.

Table A4.1.3.1: Direct and indirect energy use in four European Cities according to Moll and Noorman (2002)

Category direct or indirect energy use		Per household, in GJ (direct energy use) or in % of indirect energy use			
		Average Groningen	Average Stockholm	Average Guildford	Average Frederikstadt
Direct (Total, GJ/hh)		119	95	140	126
	Fossil (heating)	71	62	55	18
	Electricity (1)	26	15	42	64
	Transport (fuel)	22	18	43	44
Indirect (Total, GJ/hh) (2)		97	141	234	182
	Feeding	29%	33%	29%	26%
	Shelter				
	# House	8%	8%	6%	5%
	# Household goods	13%	8%	15%	11%
	Clothing	5%	11%	5%	7%
	Personal care	4%	6%	4%	8%
	Leisure, education			21%	
	# Education	4%	5%		4%
	# Leisure	18%	17%		14%
	Transport	18%	11%	20%	24%
	Other	1%	1%		1%
	Total, % indirect	100%	100%	100%	100%
Total direct + indirect (GJ/hh)		216	236	374	308
Total, GJ per person		116	141	147	138
Persons per household		1,86	1,67	2,54	2,23

⁵ Henri C. Moll and Klaas Jan Noorman, Towards sustainable development at city level: evaluating and changing the household metabolism in five European cities. In E. Hertwich (2002), Life-cycle Approaches to Sustainable Consumption, Workshop Proceedings, 22 November 2002, Interim Report IR-02-073, IIASA, Laxenburg, Austria, p. 153-170. The advantage of this paper above Kok et al. (2003) is that its figures give rather easily readable percentages contribution to indirect energy use of various functional areas of consumption.

⁶ Slob, A. (ed, 1996). Trendanalyse Consumptie en Milieu (Trend Analysis Consumption and Environment). TNO-STB, CBS and Utrecht University for the Ministry of Environment, the Hague, the Netherlands

Table A4.1.3.2: Recalculating the data from Table A.4.1.3.1 by functional area of consumption, in % of total (total = 100)

Category direct or indirect energy use (between		Groningen, in % of total	Distribution of direct energy use to function areas of consumption	
Direct		55,1%		
	Fossil (heating)	32,9%		
	# Feeding, fossil (cooking c.a. - 4,5)	1,0%	3%	From Slob et al., 1996: 28
	# Shelter, fossil (heating c.a. -4,5)	25,3%	77%	
	# Personal care, fossil (hot water - 4,5)	6,6%	20%	
	Electricity (1)	12,0%		
	# Feeding, el. (fridge c.a. - 4, 5)	4,0%	33%	Estimate Tukker
	# Shelter, el. (light c.a. - 4, 5)	4,0%	33%	
	# Clothing, el. (wash c.a. - 4, 5)	4,0%	33%	
	Transport (fuel)	10,2%		
Indirect		44,9%		
	Feeding (1-2)	13,0%		
	Shelter (4-5)	0,0%		
	# House	3,6%		
	# Household goods/services	5,8%		
	Clothing (3)	2,2%		
	Personal care (6)	1,8%		
	Leisure, education	0,0%		
	# Education (10)	1,8%		
	# Leisure (9)	8,1%		
	Transport (7)	8,1%		
	Other (12)	0,4%		
	Total indirect	44,9%		
Total direct + indirect (GJ/hh)		100,0%		

Table A4.1.3.3: Regrouping the data from Table A4.1.3.2 clustered by COICOP category, in % of total

COICOP category	Contribution to energy use, Groningen	
CP01-02 Food		13,0%
# Feeding, indirect	13,0%	
CP03 Clothing		2,2%
# Clothing, indirect	2,2%	
CP04-05 Housing		54,2%
# House	3,6%	
# Household goods/services	5,8%	
# Shelter, fossil (heating c.a. -4,5)	25,3%	
# Shelter, el. (light c.a. - 4, 5)	4,0%	
# Personal care, fossil (hot water - 4,5)	6,6%	
# Feeding, fossil (cooking c.a. - 4,5)	1,0%	
# Feeding, el. (fridge c.a. - 4, 5)	4,0%	
# Clothing, el. (wash c.a. - 4, 5)	4,0%	
CP06 Health Care		1,8%
# Personal care, indirect	1,8%	
CP07 Transport		
# Transport, indirect	8,1%	18,3%
# Transport, fuel	10,2%	
CP09 Recreation (leisure)	8,1%	8,1%
CP10 Education	1,8%	1,8%
CP12 Other	0,4%	0,4%
Total	100%	100%

4.1.4 Labouze et al (2003) – Summary by M. van Holderbeke

Main characteristics

Title of the report: Study on external environmental effects related to the life cycle of products and services, carried out in 2003

Names of authors: E. Labouze, V. Monier, Y. Le Guern and J.-B. Puyou.

Name of Institution: Bio Intelligence Service, O2 France.

Commissioned by: European Commission, Directorate General Environment (Directorate A – Sustainable Development and Policy support)

Main approach: The study aimed at assessing the environmental impacts related to the life cycle of various categories of products and services consumed in the European Union by a market-oriented LCA (“bottom-up”). The environmental impacts were evaluated in monetary terms and 18 case studies were analysed in order to test how environmental impacts differ between various options providing the same function or service.

Methodological approach

Goal, scope and system boundaries: The goal of the study was to analyse the environmental impacts related to products and services consumed in the European economy (EU-15) in 1999 and to give an overview of the distribution of these impacts across the various stages of the full life cycle of these product groups. Imported products are part of the system boundaries, but exported products are not.

Aggregation level: Two complementary classifications of products and services are established to cover the entire economy. These are broadly representative to allow most products and services to be allocated to an individual category with representative environmental impacts: a final products classification and a major transversal product classification based on final products and services (not intermediary products). Products and services have are divided into 34 different categories (sub-areas of consumption) which are classified in 13 product families (functional areas of consumption).

- a) 13 functional areas of consumption:
- Food and beverages
 - Clothing and footwear
 - Housing
 - Healthcare and body care
 - Transport
 - Communication, recreation and culture
 - Other products and services
 - Electric and electronic products and equipment
 - Construction work
 - Building occupancy

- Packaging
 - Textile
 - Transport
- b) 34 sub-areas of consumption; see Appendix A
- c) Product groupings/products; see Appendix B

Most of the sub-areas of consumption consist of numerous products and product groupings (e.g. the ‘vegetable food’ category theoretically contains all sorts of fruits and vegetables) whose life cycle inventory (LCI) may differ more or less significantly. However, only those sub-systems for which LCI data were available were taken into account. Appendix B gives an overview of the products that were seen as relevant for the sub-areas of consumption.

Data inventory: The reference quantity related to functional units for each of the categories considered, was based on “*Consumers in Europe – Facts and figures*” (Eurostat, 2001).

The LCI of each product system was obtained by using the “cradle to gate” or “gate-to-gate” LCI directly available in three LCI databases:

- *Simapro version 4.0 (2001)*
- *Boustead version 4.1 (2000)*
- *Wisard & Team (version 1999).*

However, these databases do not cover all the unit processes of interest. For instance, with respect to the textile products, no ecoprofile is available regarding both the fabric production and the clothing manufacturing. When possible in such cases, bibliographic data were derived from Best Available Techniques reference documents which are available for many types of manufacturing industry (downloadable documents from the EU, DG Joint Research Centre, Seville – Bureau of Integrated Pollution Prevention and Control). However, the selected data are not always representative for the BAT; they correspond to an average technology in the EU.

To assess the environmental impacts, the characterisation factors used in this study are those published by the Centre of Environmental Science (CML, University of Leiden, NL, downloadable from <http://www.leidenuniv.nl/cml/lca2/>) CML, Department of Industrial Ecology. These data are not specific to the Dutch situation.

In accordance with the objectives of the study and its limited resources, the external cost factors used are based on data extracted from literature:

- *ExternE*
- *RDC-Environment & Pira Internl (2001)*
- *Spadaro & Rabl (1999)*
- *CML 2002*
- *Goedkoop & al. (1999 - Ecoindicator 99)*
- *COWI (2000)*
- *J.V. Spadaro & Ari Rabl, Int J.LCA 4 (4) 229-243 (1999).*

In order to simplify the study, three countries were chosen to be analysed according to their environmental taxes: Denmark, representing a high level of environmental taxation, France, representing a medium level of environmental taxation, and Poland, representing one of the new Member States. Most of the data used come from two main sources:

- The *database built by the OECD* (available on <http://www.oecd.org/EN/document/0,,EN-document-471-14-no-1-3016-471,00.html>).
- The *Eco-tax Database* of Forum of the Future, elaborated by Stefan Speck in 2001/2002. This database was used for France and Denmark, with taxes for 2000.

In addition, for France, the picture was completed by another database, established in 2001 by the 'Centre d'Information pour les Entreprises et Partenaires' (CIEPE), information centre for firms and partners. For some taxes, other databases were available that seemed more relevant, e.g. for taxes on energy products (provided by the European Environmental Agency).

The study covers the entire European economy (EU-15) in 1999 with mixed average technology in the EU.

Generally datasets based on allocation on mass basis have been used.

Most of the product and service categories selected consist of numerous sub-systems whose LCI may differ more or less significantly. But only those sub-systems for which LCI data are available were taken into account. Eventually, the composition of the categories was adjusted according to the availability of LCI data. Practically, following the following extrapolations were made: sub-systems with no available LCI are considered as having the same LCI as other sub-systems preferably presenting similar life cycle patterns. Making these extrapolations limits the representative character of some of the categories considered.

Impact assessment: Given the vast number of figures produced in this four dimensional study covering environmental impacts, external costs, life cycles, and the entire EU economy, the presentation of the results focused on the following key indicators:

- Indicators related to environmental impacts
- Indicators related to external costs
- Indicators related to the internalisation of external costs.

To assess the environmental impacts, emissions are multiplied by the corresponding weighting factor (CML, University of Leiden, NL) before being summed per category. The following impact categories are considered:

- Depletion of non-renewable resources
- Greenhouse effect (direct, 100 yrs)
- Stratospheric ozone depletion
- Air acidification
- Photochemical oxidation
- Eutrophication
- Human toxicity
- Years of life lost
- Aquatic ecotoxicity
- Sediment ecotoxicity
- Terrestrial ecotoxicity

Flows not taken into account in the environmental impacts above:

- Primary energy
- Dusts (the term "dusts" used throughout the report is assumed to be equal to "particulate matter")

- Dioxins
- Metals into air
- Metals into water
- Metals into soil
- Municipal and industrial waste
- Hazardous waste
- Inert waste

These categories are consistent with the use of existing European LCA inventory databases, except YOLL (Years of Life Lost).

Environmental impacts assessed from the life cycle inventory were monetarised as external costs. The monetarisation step may be seen as a way to obtain a global score for the life cycles analysed (= end-point approach).

Externalities are the costs imposed on society and the environment that are not accounted for by the producers and consumers:

- Global warming potential: 0,019 – 0,048 €/kg CO₂ eq.
- Acidification potential: 0,11E-03 – 5,25E-03 €/g SO₂ eq.
- Ozone depletion potential: 0,68 €/kg CFC eq.
- Tropospheric ozone creation: 0,66E-03 – 3,12E-03 €/g ethylene eq.
- Emissions of particulates: 1,39E-03 – 59,3E-03 €/g PM₁₀
- Emission of dioxins: 12,95 – 27,75 €/pg TEQ
- Eutrophication potential: 4,7 €/kg P eq.
- Land filled waste: 6 – 19 €/t
- Incinerated waste: 4 – 14€/t
- Human toxicity due to heavy metals emissions: Cd: 20,9 €/kg; Cr VI: 140 €/kg; Ni: 2,87 €/kg; As: 171 €/kg

External cost studies are more focused on air emissions than on other impact categories. Impacts specific to non-renewable resources other than those linked to air emissions are not yet well analysed and they are not included in the study.

Six key indicators were defined for analysing the internalisation of external costs into price:

- Environmental taxes/external cost (%) → D) Current internalisation level (high/low)
- Ext. cost not internalised life cycle (LC) price (%) → E) Ext. cost not internalised/LC price (high/low)
- External cost/LC price (%) → F) External cost/LC price (high/low)

Main results

There is not a general pattern for the distribution of environmental impacts across the main stage of the life cycle: it depends on both the environmental indicator and the product category. A summary of the life cycle stage contribution to the environmental impacts generated at the EU level is given in the table below.

Main LC stage contributing to the impacts	Main impacts and environmental indicators concerned
Use stage	Depletion of renewable energy, including primary energy Impacts linked to air emissions: greenhouse effect, ozone depletion, air acidification, photochemical oxidation, metals, dusts Metals into water Metals into soil Years of life lost (human health) Terrestrial ecotoxicity
Production stage	Eutrophication Hazardous waste
End of life stage	Dioxins into air Human toxicity Aquatic and sediment ecotoxicity Municipal, industrial and inert waste

Regarding the different impact categories, the study comes up with priorities as given in the table below (as % contribution to the total pressure related to European consumption). The most significant category for each impact is shown in bold.

	Contribution of the categories to total EU impacts				
	10 – 20 %	20 – 40 %	40 – 60 %	60 – 80 %	>80 %
Depletion of non-renewable resources	EEE	Building occupancy Transport			
Greenhouse effect					
Air acidification					
Ozone depletion		Building occupancy	Transport		
Photochemical oxidation	Building occupancy	Transports Food products			
Eutrophication	Water supply			Food products	
Human toxicity	Packaging			Water supply	
Years of life lost	EEE	Building occupancy	Transport		
Aquatic ecotoxicity	Packaging			Water supply	
Sediment ecotoxicity					
Terrestrial ecotoxicity		Building occupancy EEE			
Other Environmental Indicators					
Primary energy		Transport Building occupancy			
Dusts	EEE Transport	Building occupancy			
Dioxins		MSW management Packaging Transport EEE			
Metals into air		EEE	Building occupancy		
Metals into water					
Metals into soil		Transport Water supply	MSW management		
Municipal and industrial waste					MSW management
Hazardous waste		MSW management	Packaging		
Inert waste			Civil work Building structure		

Considering the current state of the art of environmental impacts monetarisation applied to LCA, the range in which the external cost varies is large (at least by factor 4): the minimum is

likely to be near 220 and the maximum is higher than 960 euros per capita per yr (several environmental impacts are not monetarised). More than 50 % of the external costs can be allocated to greenhouse effect and another significant proportion to human health effects caused by dusts. The use stage of the products consumed in the EU causes approximately 65 %, the production stage 25 % and the end of life stage 10 % of the overall external cost.

As shown in the table below, the main categories contributing to the overall external cost are those contributing the most to the greenhouse effect, photochemical oxidation and dust emissions: transport (goods transport and personal cars) and building occupancy (mainly room heating of domestic and commercial buildings).

	Contribution of the categories to total EU external costs			
	<10 %	10 – 20%	20 – 30 %	>30 %
External cost – min	All the others	EEE Building structure	Building occupancy (domestic + commercial) Transport (personal car + goods transport + transport services)	
External cost – max	All the others	Building occupancy	Transport	

The precise quantification of the six indicators about internalisation was not very conclusive. Overall, the level of “environmental taxes” often exceeds calculated environmental externalities. This statement should however be taken with much care as “environmental taxes” are often not used for environmental purposes. Furthermore, the identified levels of taxes tend to be maximum levels, as exemptions and subsidies are not fully taken into account whereas the calculated levels of environmental externalities tend to be minimum values due to the omission of factors for which there are insufficient data to allow monetarisation.

Case studies of individual products were carried out to test how environmental impact differences between various options providing the same function or service could be used by decision makers in the scope of IPP. We refer further to the report for detailed results of these case studies. More detailed results about the environmental impacts, external costs, life cycles etc. are shown in the report.

Strengths and weaknesses

Methodological choices: For the first time this study has combined several dimensions – environmental impacts, external cost, life cycles and the entire economy.

Similar to the other reviewed studies, the choice of functional areas and the allocation of activities to function areas is logical but in some cases ambiguous. For instance, one specific category, “transport”, was considered separately whereas other studies split transport between all or some of the other categories. Furthermore, only sub-systems for which LCI data were available are the basis for the quantitative results. Extrapolation was used to complete the picture, but this limits the representative character of some of the categories considered

The product and service categories selected were expected to cover the entire European economy. However, due to a lack of LCI data and in order to limit double-counting, pragmatic choices were made. As a result, some of European economic sectors are less represented than others (e.g. services, food products).

The study gives an overview of the distribution of the environmental impacts (both physical impacts and monetary quantification as far as possible) across the various stages of the life cycle.

Impacts provided in the report are basically “impact potentials” (as standard in most LCAs) which refer to the “full effects” of all emissions to air and water. The real environmental impacts can differ from the estimated impact potentials. The difference between impacts and impact potentials is determined by local and site-specific conditions. Environmental impacts assessed from a life cycle inventory were monetarised. No ready-for-use database for external cost factors exists today in such a macro-economic and LCA context. The external cost factors used in this study were predominantly derived from existing cost factors resulting from “impact pathway” approaches.

As an example, a comparison was made for 18 case studies focusing on specific products or services between alternative options fulfilling the same functions. The higher the differences between the options, the more likely policy measures can lead to a significant environmental improvement.

Completeness: The product and service categories selected were expected to cover the entire European economy. However, due to a lack of LCI data and in order to limit double-counting, some of the European economic sectors are less represented than others (e.g. services, food products). Only sub-systems for which LCI data were available were taken into consideration. Practically, this means that sub-systems with no available LCI are considered as having the same LCI as other sub-systems, preferably presenting similar life cycle patterns. Some life cycle steps are not taken into account, transformation or use steps as well as production steps of some product components or consumables are not systematically integrated due to a lack of LCI data.

The environmental indicators included in the study provide a broad picture of the environmental impacts associated with product and service consumption. However, inventory data and calculation methods for human toxicity and ecotoxicity are considered very uncertain and the results related to these aspects only provide rough indications. External cost studies are more focused on air emissions than other sources of impacts, even if some studies address impacts generated by water emissions or waste. In particular, impacts specific to non-renewable resources other than those linked to air emissions are not yet well analysed. They are not included in the study.

Reliability: As noted in the report, the study has to be seen as a pioneer in the field of integrated product policy (IPP); an early stage of the life cycle assessment of products and services in the entire European economy. Due to time and resource constraints, the study was based on a considerable amount of uncertain data and methodological simplifications and it is stressed by the authors that the results of the work should be seen as a first step in developing a suitable methodology for future work – not a definitive basis for policy making. The authors recommend the review of data and hypotheses, along with the refinement thereof before concrete measures are taken. A number of improvement options are suggested.

Relevance of the study for the EU's IPP

Geographical relevance: The study is general for Europe (EU-15) and provides geographically relevant average information for the region. Specific information for sub-regions (e.g. due to specific technology and specific climatic conditions) is not available.

Product focus and aggregation level: The study focuses on final consumption, and thus fulfils the requirement of being relevant for IPP. Results are given on the level of the functional areas of consumption and sub-areas. The study does not show results on the level of product groupings. Case studies of individual products were carried out to test how environmental impact differences between various options providing the same function or service could be used by decision makers in the scope of IPP.

General acceptance of the method: The study uses a combination of LCA and LC external costs. The LCAs follow to a very large extent the ISO 14040 standards and are based on various existing LCI databases. No ready-to-use database for external cost factors exists today in such a macro-economic and LCA context. The external cost factors in this study were predominantly derived from existing cost factors. The study is based on methodological simplifications and should be seen as a first step in developing a suitable methodology for future work.

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⁷ Since 1998, continued research on external costs has been funded by the European Commission under the ExternE banner.

Appendix A to Annex 4.1.4: Relation between functional areas of consumption and sub-areas

Functional area of consumption	Sub-areas of consumption
Food and beverages	Vegetables Animal food Alcoholic beverages
Clothing and footwear	Textile (apparels and non-domestic textiles) Footwear (leather)
Housing	Building structures (residential) Domestic appliances Building occupancy (residential sector) (heating, hot water, ventilation, domestic appliances, lighting) Water (supply and waste water treatment) MSW management (recycling, incineration, landfill) Furniture Cleaning agents
Healthcare and body care	Personal care products Baby products Medicines and pharmaceuticals
Transport	Public transport (road, rail, water, air) Personal cars
Communication, recreation and culture	Information technology equipment Paper products Games & toys Gardening Jewellery Restaurants & hotels Other services
Other products and services	Machinery, equipment & apparatus Other products Other services
<i>'Transversal products' classification – activity sectors or intermediate products or services common to most of the final products. (Out of the 14 sub-domains, seven are new compared to the 'final products' classification)</i>	
Electric and electronic products and equipment	Domestic appliances Information technology equipment
Construction work	Building structure (commercial and residential) Civil work (roads and other infrastructures)
Building occupancy	Residential sector (gas, fuel, electricity, biomass) Commercial sector (gas, fuel, electricity, biomass)
Packaging	Food (glass, paper, plastics, metals...) Non-food (glass, paper, plastics, metals...)
Textile	Apparel Home furnishing Industrial and non-domestic uses
Transport	Public transport (road, rail, water, air) Personal cars Goods transport (road, rail, water)

The LCI data available allowed the authors to eventually study 27 consumption domains out of the 34 different consumption domains distinguished.

Appendix B to Annex 4.1.4: Sub-areas of consumption and relevant product groupings/products

Sub-areas of consumption	Main products/services included	Main products/services not included (no LCA data available)
Food and beverages		
Vegetables	The overall quantity of vegetables consumed in the EU are considered as having an LCI equivalent to the average LCI of potatoes and wheat – wheat (19%) and potatoes (16%)	
Animal food	The quantity of beef and milk consumed in EU	Fish food products and other meats
Alcoholic beverages	Wine	Other alcoholic and non-alcoholic products
Clothing and footwear		
Textile (apparels and non domestic textiles)	Cotton, wool, polyester, polyamide, acrylic, polypropylene, cellulose...	Fine leather goods (gloves, bags...)
Footwear (leather)	Leather shoes, synthetic shoes and slippers	Specific shoes for industrial or professional uses
Housing		
Building structure (residential)	Building materials (concrete, bricks, wood, mineral wool, flat glass, paints, steel, plastics, aluminum, copper ...)	Building installation, equipments (boilers, sanitary equipment, ...)
Domestic appliances	Computers, TV, telephones, lamps, batteries, washing machines, dishwasher, vacuum cleaners, refrigerators	Small appliances (shavers, hair dryers, ...), faxes, micro-wave ovens
Building occupancy (residential sector)	Energy for room heating, hot water, domestic appliances, lighting, cooking	Room cooling, ventilation
Water (supply and waste water treatment)	Water supply, distribution by pipes, waste water treatment, and spreading of sewage sludge	
MSW management	Recycling, incineration, composting, landfilling	Collection
Furniture	Wood and non-wood interior & exterior furniture, textiles	Sanitary equipment
Cleaning agents	Domestic and professional detergent products (laundry detergent powders, liquids, fabric softeners, toilet cleaning agents,...)	Flagrances, perfumes
Healthcare and body care		
Personal care products	Toiletries, soap	Cosmetics, perfumes
Baby products	Nappies (disposable + reusable)	Creams, talcum powders,...
Medicines and pharmaceuticals		
Transport		
Public transport	Vehicles and fuels for road, rail, air, sea	
Personal cars	Automobiles and fuels	Motorcycles, bicycles...
Communication, recreation and culture		
Information technology equipment	Computers, telephones, videos and media recorders	Telephone and internet infrastructures
Paper products	Graphic and sanitary paper: newsprint, other graphic, woody uncoated, woody coated, uncoated wood-free, coated wood-free, case materials, folding boxboards, wrapping	
Games & toys		
Gardening	Fertilisers and pesticides	Tools, flowers, seeds...
Jewellery		
Restaurants & hotels		
Other services		

Sub-areas of consumption	Main products/services included	Main products/services not included (no LCA data available)
<i>Other products and services</i>		
Machinery, equipment & apparatus		
Other products		
Other services		
<i>Electric and electronic products and equipment</i>		
Domestic appliances	see above	
Information technology equipment		
<i>Construction work</i>		
Building structures (commercial and residential)	see above	
Civil work (roads and other infrastructures)	Concrete, asphalt, bitumen	Metallic constructions
<i>Building occupancy</i>		
Residential sector (gas, fuel, electricity, biomass)	see above	
Commercial sector (gas, fuel, electricity, biomass)	Energy for room heating, hot water, domestic appliances, lighting	Room cooling, ventilation
<i>Packaging</i>		
Food	Packaging materials (plastics, metals, paper, glass...)	Expanded polystyrene
Non food		
<i>Textile</i>		
Apparel	Textiles fibres (polyamide, wool, cotton...)	
Home furnishing	Textiles fibres (polyamide, wool, cotton...)	
Industrial and non domestic uses	Textiles fibres (polyamide, wool, cotton...)	
<i>Transport</i>		
Public transport (road, rail, water, air) Personal cars		
Goods transport (road, rail, water)	Vehicles and fuels for road, rail, air, sea	

Appendix C to Annex 4.1.4: Detailed results of Labouze et al. (2003), this presentation by the EIPRO team

Product grouping	CP	ADP	GWP (direct, 100 yr)	ODP	AC	POCP	EUT	HTTP	Years of Life Lost	AETP	Sediment Ecotoxicity	TETP	Primary Energy	Dusts	Dioxins	Metals into air	Metals into water	Metals into soil	Municipal, industrial waste	Hazardous waste	Inert waste
Unit		kg Sb eq.	g CO ₂ eq.	g CFC-11 eq.	g SO ₂ -eq.	g C ₂ H ₄ -eq.	g PO ₄ -eq.	g eq. 1-4 DCB	year	g eq. 1-4 DCB	g eq. 1-4 DCB	g eq. 1-4 DCB	MJ	g	g	g	g	g	kg	kg	kg
Food and beverages																					
Vegetables	01	0.0%	-0.3%	4.6%	3.2%	0.0%	64.1%	0.0%	0.0%	0.0%	0.0%	0.0%	4.5%	0.0%	1.3%	0.0%	6.1%	0.0%	9.6%	9.5%	0.0%
Animal food	01	0.0%	5.4%	1.3%	0.0%	13.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	4.6%	0.0%	0.0%
Alcoholic beverages	02	0.1%	0.0%	0.0%	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total food and beverages		0.1%	5.1%	6.0%	3.2%	13.3%	64.6%	0.0%	0.0%	0.0%	0.0%	0.0%	5.2%	0.0%	1.3%	0.0%	6.2%	0.0%	14.3%	9.5%	0.0%
Clothing and footwear																					
Footwear	03	0.1%	0.1%	0.0%	0.1%	0.1%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.4%	0.3%	0.0%
Total clothing and footwear		0.1%	0.1%	0.0%	0.1%	0.1%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.4%	0.3%	0.0%
Housing																					
Furniture		0.8%	1.7%	0.9%	1.0%	0.0%	13.8%	0.7%	3.5%	0.7%	0.7%	0.2%	1.5%	15.1%	2.2%	0.1%	0.5%	0.3%	0.9%	2.7%	0.1%
Furniture -domestic	05	0.1%	0.8%	0.4%	-0.3%	0.0%	9.2%	0.6%	1.7%	0.6%	0.6%	-0.2%	0.8%	11.2%	1.8%	-0.2%	-0.3%	0.2%	0.7%	1.5%	0.0%
Furniture -garden	05	0.0%	0.1%	0.0%	0.0%	0.0%	0.4%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.5%	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%
Furniture -office	05	0.1%	0.2%	0.1%	0.1%	0.0%	1.6%	0.1%	0.4%	0.1%	0.1%	0.0%	0.2%	1.8%	0.3%	0.0%	0.1%	0.0%	0.1%	0.3%	0.0%
Cleaning agents		3.2%	2.3%	3.1%	4.9%	6.6%	0.0%	0.1%	3.9%	0.1%	0.1%	1.1%	1.5%	3.3%	0.0%	0.3%	0.8%	0.0%	0.0%	4.7%	0.3%
Cleaning agents -personal care	05	0.6%	0.4%	0.6%	0.9%	1.2%	0.0%	0.0%	0.7%	0.0%	0.0%	0.2%	0.3%	0.6%	0.0%	0.0%	0.1%	0.0%	0.0%	0.8%	0.0%
Cleaning agents -textile	05	1.4%	1.0%	1.4%	2.1%	2.9%	0.0%	0.0%	1.7%	0.0%	0.0%	0.5%	0.6%	1.4%	0.0%	0.1%	0.3%	0.0%	0.0%	2.0%	0.1%
Cleaning agents -other household	05	0.8%	0.6%	0.8%	1.2%	1.7%	0.0%	0.0%	0.9%	0.0%	0.0%	0.3%	0.4%	0.8%	0.0%	0.1%	0.2%	0.0%	0.0%	1.1%	0.1%
Industrial cleaning agents	05	0.5%	0.3%	0.5%	0.7%	1.0%	0.0%	0.0%	0.6%	0.0%	0.0%	0.2%	0.2%	0.5%	0.0%	0.0%	0.1%	0.0%	0.0%	0.7%	0.0%
Water supply	04	0.8%	0.6%	0.3%	1.3%	0.5%	11.8%	68.0%	2.2%	76.0%	76.1%	13.1%	0.9%	7.8%	0.0%	1.4%	1.2%	29.2%	0.8%	0.3%	0.2%
Municipal waste	04	-0.3%	5.2%	-0.1%	-0.2%	5.2%	0.5%	0.1%	0.1%	0.1%	0.1%	0.3%	-0.4%	0.1%	15.5%	-0.1%	0.1%	37.9%	46.1%	28.3%	0.3%
Total housing		4.5%	9.7%	4.2%	7.0%	12.3%	26.1%	68.8%	9.7%	76.9%	76.9%	14.6%	3.5%	26.3%	17.7%	1.7%	2.6%	67.4%	47.8%	35.9%	0.8%
Healthcare and body care																					
Baby products	06	0.0%	0.0%	0.0%	0.2%	0.2%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%	0.1%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total healthcare and body care		0.0%	0.0%	0.0%	0.2%	0.2%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%	0.1%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Communication, recreation and culture																					
Paper products	08	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.6%	0.0%	7.0%	0.2%	0.0%
Gardening	09	0.1%	0.0%	0.0%	0.0%	0.0%	3.1%	0.0%	0.0%	0.0%	0.0%	2.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	9.6%	0.0%	0.0%
Total communication, recreation and culture		0.1%	0.0%	0.0%	0.0%	0.0%	3.1%	0.0%	0.0%	0.0%	0.0%	2.1%	0.0%	0.0%	0.0%	0.0%	2.6%	0.0%	16.6%	0.2%	0.0%
Electric and electronic products and equipment																					
EEE - domestic appliances	05	9.0%	7.6%	5.0%	10.3%	4.2%	0.3%	4.1%	9.1%	2.0%	2.0%	20.7%	10.5%	12.8%	4.3%	25.5%	18.6%	0.3%	0.9%	0.3%	0.1%
EEE -IT	05	1.7%	1.4%	0.7%	2.7%	0.9%	0.1%	0.5%	1.9%	0.0%	0.0%	3.4%	1.9%	1.8%	3.0%	4.2%	3.3%	0.0%	0.4%	1.2%	2.0%
Total electric and electronic products and equipment		10.7%	9.1%	5.7%	13.0%	5.1%	0.4%	4.5%	11.0%	2.0%	2.0%	24.1%	12.4%	14.7%	7.2%	29.6%	21.9%	0.3%	1.3%	1.5%	2.1%
Construction work																					
Building structure (commercial and residential)	04	3.6%	3.2%	3.3%	5.6%	7.0%	1.4%	8.4%	3.9%	0.7%	0.7%	1.0%	4.9%	4.2%	3.7%	0.9%	3.9%	1.9%	4.4%	0.0%	40.2%
Civil work (roads and other infrastructures)	04	2.8%	0.9%	0.0%	1.3%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.9%	0.3%	0.6%	0.0%	0.5%	0.0%	0.0%	0.0%	55.7%
Total construction work		6.4%	4.1%	3.3%	6.9%	7.7%	1.4%	8.4%	3.9%	0.7%	0.7%	1.0%	6.8%	4.6%	4.4%	0.9%	4.4%	1.9%	4.4%	0.0%	95.9%
Building occupancy																					
Building occupancy - domestic	04	26.3%	22.9%	21.2%	16.0%	7.6%	0.8%	0.7%	13.8%	0.8%	0.8%	28.1%	25.3%	17.2%	0.0%	31.1%	24.2%	0.0%	0.0%	0.0%	0.0%

Environmental Impact of Products (EIPRO)

Product grouping	CP	ADP	GWP (direct, 100 yr)	ODP	AC	POCP	EUT	HTTP	Years of Life Lost	AETP	Sediment Ecotoxicity	TETP	Primary Energy	Dusts	Dioxins	Metals into air	Metals into water	Metals into soil	Municipal, industrial waste	Hazardous waste	Inert waste
Unit		kg Sb eq.	g CO ₂ eq.	g CFC-11 eq.	g SO ₂ eq.	g C ₂ H ₄ eq.	g PO ₄ eq.	g eq. 1-4 DCB	year	g eq. 1-4 DCB	g eq. 1-4 DCB	g eq. 1-4 DCB	MJ	g	g	g	g	g	kg	kg	kg
Space heating - domestic	04	0.4%	15.7%	13.3%	10.9%	5.2%	0.0%	0.5%	0.0%	0.6%	0.6%	19.3%	17.4%	11.8%	0.0%	21.3%	16.6%	0.0%	0.0%	0.0%	0.0%
Water Heating - domestic	04	0.0%	3.5%	3.3%	2.4%	1.2%	0.0%	0.1%	0.0%	0.1%	0.1%	4.2%	3.8%	2.6%	0.0%	4.7%	3.7%	0.0%	0.0%	0.0%	0.0%
Cooking - domestic	04	0.0%	1.2%	0.0%	0.8%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	1.5%	1.3%	0.9%	0.0%	1.6%	1.3%	0.0%	0.0%	0.0%	0.0%
Appliances and lighting - domestic	04	0.0%	2.5%	3.3%	1.8%	0.8%	0.0%	0.1%	0.0%	0.1%	0.1%	3.1%	2.8%	1.9%	0.0%	3.5%	2.7%	0.0%	0.0%	0.0%	0.0%
Other build. occup - dom. (difference total - sum subcat.)	04	25.9%	0.0%	1.3%	0.0%	0.0%	0.8%	0.0%	13.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Building occupancy - commercial		14.3%	12.4%	10.6%	11.0%	4.1%	0.3%	0.4%	9.1%	0.4%	0.4%	21.7%	14.2%	9.8%	0.0%	25.5%	19.0%	0.0%	0.0%	0.0%	0.0%
Space heating - commercial	04	0.2%	0.0%	3.3%	5.7%	2.2%	0.0%	0.2%	0.0%	0.2%	0.2%	11.3%	7.4%	5.1%	0.0%	13.2%	9.9%	0.0%	0.0%	0.0%	0.0%
Water heating - commercial	04	0.0%	0.0%	0.0%	1.0%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	2.0%	1.3%	0.9%	0.0%	2.3%	1.7%	0.0%	0.0%	0.0%	0.0%
Cooking - commercial	04	0.0%	0.0%	0.0%	0.6%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	1.1%	0.7%	0.5%	0.0%	1.3%	0.9%	0.0%	0.0%	0.0%	0.0%
Appliances and lighting - commercial	04	0.0%	0.0%	0.0%	3.7%	1.4%	0.0%	0.1%	0.0%	0.1%	0.1%	7.4%	4.8%	3.4%	0.0%	8.7%	6.5%	0.0%	0.0%	0.0%	0.0%
Other build. occup - comm. (difference total - sum subcat.)	04	14.1%	12.4%	7.3%	0.0%	0.0%	0.3%	0.0%	9.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total building occupancy		40.6%	35.3%	31.9%	27.0%	11.8%	1.1%	1.1%	22.9%	1.2%	1.2%	49.9%	39.6%	27.0%	0.0%	56.6%	43.2%	0.0%	0.0%	0.0%	0.0%
Packaging																					
Packaging - household	01	2.1%	1.9%	2.8%	3.8%	1.6%	1.0%	7.8%	3.6%	8.7%	8.6%	1.2%	2.7%	3.5%	1.4%	0.3%	5.6%	0.5%	8.0%	32.5%	0.9%
Packaging - household products	05	0.1%	0.1%	0.2%	0.2%	0.1%	0.1%	0.8%	0.1%	0.9%	0.9%	0.0%	0.1%	0.1%	0.1%	0.0%	0.4%	0.1%	0.4%	0.5%	0.0%
Packaging - industrial	12	0.8%	0.5%	1.4%	1.5%	0.7%	1.3%	7.6%	1.3%	8.6%	8.6%	0.4%	1.1%	1.0%	9.5%	0.1%	2.0%	0.5%	5.9%	10.1%	0.1%
Total packaging		2.9%	2.5%	4.3%	5.5%	2.3%	2.4%	16.2%	5.0%	18.2%	18.1%	1.6%	3.9%	4.6%	11.1%	0.4%	8.0%	1.1%	14.3%	43.1%	1.0%
Textile																					
Textile - apparel	03	3.8%	3.2%	2.8%	5.9%	6.4%	0.0%	0.1%	5.1%	0.1%	0.1%	3.8%	3.0%	5.4%	0.1%	3.9%	3.9%	0.0%	0.4%	3.5%	0.2%
Textile - home	05	0.6%	0.6%	0.3%	1.1%	1.4%	0.0%	0.0%	1.1%	0.0%	0.0%	0.3%	0.5%	1.4%	0.0%	0.3%	0.8%	0.0%	0.2%	0.6%	0.0%
Textile - industrial	12	0.9%	0.8%	0.6%	1.4%	1.3%	0.0%	0.0%	1.3%	0.0%	0.0%	1.0%	0.8%	1.4%	0.0%	1.2%	1.3%	0.0%	0.2%	0.7%	0.0%
Total textile		5.2%	4.6%	3.7%	8.5%	9.2%	0.0%	0.1%	7.6%	0.1%	0.1%	5.2%	4.3%	8.2%	0.1%	5.4%	5.9%	0.0%	0.7%	4.8%	0.2%
Transport																					
Public transport (road, rail, water, air)	07	2.6%	2.6%	0.1%	3.6%	1.3%	0.0%	0.0%	3.9%	0.0%	0.0%	0.0%	2.2%	2.9%	0.1%	0.0%	0.1%	0.1%	0.2%	4.4%	0.0%
Personal cars	07	15.4%	17.0%	1.0%	10.0%	23.6%	0.3%	0.0%	15.8%	0.0%	0.0%	0.1%	11.8%	1.5%	49.5%	1.3%	0.0%	0.0%	0.0%	0.4%	0.0%
Goods transport (road, rail, water)	07	11.5%	9.9%	39.8%	14.8%	13.0%	0.4%	0.8%	19.7%	0.9%	0.9%	1.3%	10.0%	9.7%	8.7%	4.1%	5.1%	29.2%	0.0%	0.0%	0.0%
Total transport		29.5%	29.6%	40.9%	28.5%	38.0%	0.7%	0.8%	39.5%	0.9%	0.9%	1.5%	24.1%	14.1%	58.2%	5.3%	5.2%	29.3%	0.2%	4.7%	0.0%
TOTAL ALL CATEGORIES		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Note: Double-counted and nil value categories were not included in the calculations for this table. The allocation to COICOP categories was made by the EIPRO team

4.1.5 Moll et al. (2004) – Summary by G. Huppel

Main characteristics

Title of the report: Environmental implications of resource use – insights from input-output analysis – draft report⁸

Year of publication: 2003

Authors: Stephan Moll, José Acosta, Alejandro Villanueva.

Institutions: Wuppertal Institute for Climate, Environment and Energy and European Topic Centre on Waste and Material Flows.

Commissioned by: European Topic Centre on Waste and Material Flows

Main approach: Environmental assessment of product groups at a high macro-economic level using environmental extended input-output analysis with a special focus on identifying correlations or links between resource use and emission indicators. Several emission indicators have been defined.

Methodological approach

Goal, scope and system boundaries: The goal of the study is to find answers on the question of which resource uses are of most concern and should be addressed with priority by a policy of sustainable resource management.

The study covers all products manufactured in the German economy for consumption in Germany or abroad. Production processes from raw material extraction to the point of sale in Germany and abroad are included. However, the standard assumption for imported goods is applied, which means that foreign (imported) products and materials are assumed to be produced in the same way as products from the corresponding German industry. This assumption is problematic for imported products that are either not produced in Germany (i.e. steel ore) or produced in very different ways in Germany (e.g. some agricultural products). Environmental interventions in the use phase of the product or service are not included. Environmental interventions from waste management as far as they are related to the production of the commodities and services is included in the environmental extended input-output tables. However, waste management related to the use and disposal of the commodities is not included.

Aggregation level: The level of aggregation is determined by availability of primary data and varies for the different indicators. 57 product groupings are considered for total material requirement (TMR), primary energy supply, global warming potential, acidification potential and tropospheric ozone formation potential. 55 product groupings are considered for land-use

⁸ Only the draft report has been reviewed. The final version of the report has not been published yet. Therefore, some of the extra information, in the form of Excel-files supplied with the report, is missing. The basic input-output data upon which the report builds, were available from the Federal Statistical Office Germany (2002a,b).

and 27 product groupings are considered for waste generation. The grouping of products is in accordance with the NACE/CPA⁹ classification.

Data inventory:

Input-output table

A time series of German monetary input-output tables in constant 1995 prices for the period 1991 – 2000 has been used for the study (FSOG, 2002a) to provide the monetary industry sector × industry sector input-output table. Capital flows are not specially mentioned which probably means that they have not been accounted for as in CEDA 3.0. The monetary input-output tables originally distinguish 71 industry sectors which have been aggregated into 57, 55 or 27 production sectors according to the aggregation level as available for the several environmental indicators. The 71 industry sectors are shown in Appendix A. Notice that the indication of industry sectors and commodity groups seem to be used in a confused way (which is a common problem).

Also physical input-output tables for Germany for the year 1995, have been published by the Federal Statistical Office Germany (FSOG, 2002b). These are widely compatible with the monetary input-output table. It is not clear how this input-output table has been used in the study.

Environmental data

The Federal Statistical Office Germany not only publishes the monetary input-output table but also some environmental interventions per industry category in conjunction with these (FSOG, 2002a). The environmental interventions in the environmental extended input-output tables are shown in Appendix B.

In contrast to CEDA 3.0 only very few environmental interventions are covered and some of the environmental interventions are only covered on a very high level of aggregation e.g. “abfälle (waste)”.

Air emissions covered are:

- CO₂
- N₂O
- CH₄
- SO₂
- NO_x
- CO
- NMVOC
- Dust

Impact assessment: Resource use is assessed as the total material requirement (TMR) for several material categories, primary energy supply and land-use by built-up area. Environmental impact potentials are expressed as global warming potential, potential acidifying effect, tropospheric ozone formation potential and waste generation.

⁹ NACE: General Industrial Classification of Economic Activities within the European Communities, CPA: European Classification of Products by Activity.

Normalisation or weighting has not been applied and contributions to impacts are expressed in quantities of relevant equivalents (characterised data).

Main results

The following product groupings characterised by high resource uses and high environmental impact potentials are identified as important:

- Construction
- Biomass products (food and agricultural products)
- Metal products (motor vehicles, basic metals and machinery)
- Electricity, gas, steam and hot water supply
- Chemicals and chemical products

The study shows that the eight top-ranking product groupings score high on both resource use indicators and environmental impact indicators, implying that these product groupings are important in a number of ways.

The relationship between the resource use indicators and the environmental impact indicators were further investigated with the help of bivariate correlation analyses.

Not surprisingly, a strong relationship has been detected between the use of fossil fuels and “global warming potential” and “potential acidifying effect”. Emissions of CO₂, NO_x, and SO₂, which belong to the groups of greenhouse gases and acidifying substances, are closely linked to the combustion of fossil energy carriers. Also a strong correlation has been found between fossil fuels and generation of bulky-like Construction and Demolition wastes (C&D wastes) for this resource category. This can be explained by the high waste arising associated with coal and lignite mining, which is a specific German issue.

High correlations have also been found between the TMR for metals and the air emission related impact potentials, linked to the large energy consumption in the metal processing industries. Since the processing of construction minerals and the generation of construction and demolition wastes are both linked to the construction industry, it is not surprising that a correlation is found between the TMR for industrial and construction minerals, and the generation of bulky-like C&D waste.

Finally a correlation has been found between land-use in terms of built-up area and “potential acidifying effects” and “global warming potential”, which can be explained by the agriculture, construction and transport sectors. These sectors also contribute significantly to the air emission related impact potentials either due to high indirect energy requirements or due to NH₃ and CH₄ emissions in the specific case of agriculture.

Although causal explanations have been found for the identified correlations, it cannot be concluded that all environmental impacts can be causally linked to specific resource uses or vice versa. Correlations may hint at causal relationships, but cannot prove them. Some correlations may be accidental rather than causal, and in some cases where a causal relationship exists it may still not turn up as a significant correlation due to “noise” or aggregation uncertainties.

The study did not indicate any specific resource use indicators as more important than any others in terms of indicating environmental impact.

Evaluation of strengths and weaknesses

Methodological choices: The system boundary is functional, i.e. relating to the consumption within the region (Germany), but including exported products. Environmental interventions related to capital flows do not seem to have been taken into account.

Data on product volumes, resource use and environmental indicators are from 1995 – 2000 and represent the German economy. The quality of the data is high, but the assumption that foreign production (of imported products) is identical to German production adds significantly to the uncertainty of the results. The relevance of the results in the EU as a whole has not been discussed and the extent that results can be extrapolated for other EU countries depends on how different the EU economy is from the German economy. Especially with respect to agriculture, fisheries and resource extracting industries, significant differences may be found.

Nevertheless, the applied methodology can readily be applied in other countries, and the import assumption could be corrected by linking to foreign NAMEAs (national accounting matrix including environmental accounts). The implicit recycling credit given to industries/products using recycled material could also be corrected easily.

The applied impact assessment covers a broad range of resource pressure indicators and environmental impact indicators.

Completeness: The study covers the complete volume of products going to final demand in the German economy (+ exported products).

The degree of aggregation is very important for the ranking of product groupings (the environmental impacts are “spread” on many products when a product group is highly disaggregated and vice versa). The degree of disaggregation is determined by the data availability, and other principles of disaggregation or degrees of disaggregation could mean that other product groups could turn out to be important.

The study covers all production and recycling/waste management stages for the products consumed in Germany, but not the emissions during final use, although the latter are mentioned in Sections 3.2 and 3.3 of the report. These sections analyse the contributions to the indicators from different human activities. The study does not make a distinction between different phases in the products life cycle.

The study covers a comprehensive list of renewable and non-renewable resources, but no attention was given to renewable resources such as water and wild fish. Land has only been included as built-up land, i.e. excluding land use by agricultural and silvicultural production.

The environmental indicators included in the study provide a broad picture of the environmental impacts associated with product manufacturing. However, many toxic substances are not included in inventory data and the study does not provide any information relevant for toxicity to humans or ecosystems.

Impacts provided in the report are basically “impact potentials” (as standard in most environmental assessments of products) which refer to the “full effects” of all emissions to air and water. The environmental impacts noticed will therefore be smaller than the estimated impact potentials. The difference between impacts and impact potentials is determined by local and site-specific conditions.

Reliability: The results are based on reliable data sources and recognised methods for input-output analysis. The limitations of traditional input-output analysis (notably the import assumption, the implicit economic allocation and the high aggregation level) may be corrected by expanding the analysis. It would also be an advantage if the exported products were separated from the consumption in the region. Nevertheless, the general conclusions drawn are not likely to be affected by such improvements in methodology and presentation.

Like any input-output based study there are several limitations. These are shortly:

- High level of aggregation
- Assumed proportionality within the coefficient matrix
- Out of date input-output tables
- Omission of the environmental interventions from capital flows
- Potential errors due to the representation of the economic flows in monetary terms.

These shortcomings are further described in Guinée *et al.* (2002) or Suh&Huppes (2002).

Relevance of the study for the EU’s IPP

Geographical relevance: The study is specific for the German economy. Environmental interventions associated with imports to and exports from Germany are assumed to be generated by an economy structured the same way as Germany.

Temporal relevance: The study is valid for the year 1995.

Product focus and aggregation level: The study focuses on all products and services in the German that go to final demand (which in input-output terminology includes exports) in the period from 1995 to 2000 (for the different indicators data are available for the different years within this period). The maximum number of product groupings distinguished is 57.

General acceptance of the method: The goal of the study (to help to find answers to which resource uses are of most concern and should be addressed by a policy of sustainable resource management) relates directly to the European thematic strategy on sustainable use and management of resources.

For feasibility reasons, data are derived from Germany where a good database for resource related indicators (TMR) is available.

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Appendix A to Annex 4.1.5: List of commodities in the economic input-output database module

Nr. Gütergr. (SIO)	Gütergruppen
01	Erzeugnisse der Landwirtschaft, Jagd
02	Forstwirtsch. Erzeugnisse u. Dienstleistungen
05	Fische u. Fischereierzeugnisse
10	Kohle, Torf
11	Erdöl, Erdgas
12	Uran- u. Thoriumerze
13	Erze
14	Steine u. Erden, sonstige Bergbauerzeugnisse
15	Nahrungs- u. Futtermittel, Getränke
16	Tabakerzeugnisse
17	Textilien
18	Bekleidung
19	Leder u. Lederwaren
20	Holz, Holzwaren (o.Möbel), Flecht- u. Korbwaren
21	Papier, Karton, Pappe u. daraus hergestellte Waren
22	Verlags- u. Druckerz., besp.Ton-, Bild- u. Datenträger
23	Kokereierz., Mineralölerz., Spalt- u. Brutstoffe
24	Chemische Erzeugnisse
25	Gummi- u. Kunststoffwaren
26	Glas, Keramik, bearbeitete Steine u. Erden
27	Metalle u. Halbzeug daraus
28	Metallerzeugnisse
29	Maschinen
30	Büromasch., Datenverarbeitungsgeräte u.-einricht
31	Geräte der Elektrizitätserzeugung u. -vertlg. u.ä
32	Nachrtechn., Rundf.- u. Fernsehger.elekt. Bauelem
33	Medizin-, meß-, regelungst.- Erz., opt.Erz., Uhren
34	Kraftwagen u. Kraftwagenteile
35	Sonstige Fahrzeuge (Schiffe, Luft- u. Raumfz. u.a.)
36	Möbel, Schmuck, Musikinstr., Sportger., Spielw. u.ä
37	DL der Rückgewinnung (Sekundärrohstoffe)
40	Energie (Elektro,Gas) u. DL d. Energieversorgung
41	Wasser u. DL der Wasserversorgung
45	Bauleistungen
50	Handel mit Kfz, Instandh. u. Kfz-Rep., Kraftstoffe
51	DL des Großhandels u. der Handelsvermittlung
52	DL des Einzelhandels (o.Kfz, Tankst.), sonst.Rep
55	DL der Beherbergungen u. Gaststätten
60	DL des Landverkehrs u. der Rohrleitungen
61	DL der Schifffahrt
62	DL der Luftfahrt
63	Hilfs- u. Nebentätigkeiten für den Verkehr
64	DL der Nachrichtenübermittlung
65	DL der Kreditinstitute
66	DL d. Versicherungsgew. (o. gesetzl. Sozialvers.)
67	DL des Kredit- u. Versicherungshilfsgewerbes
70	DL d. Grundstücks- u. Wohnungswesens
71	DL b. d. Vermietung bewegl.Sachen
72	DL der Datenverarbeitung u. von Datenbanken
73	DL der Forschung u. Entwicklung
74	Unternehmensbezogene Dienstleistungen
75	DL d. öffentl. Verwalt., d. Verteidig., d. Sozialvers
80	Erziehungs- u. Unterrichtsdienstleistungen
85	DL des Gesundheits-, Veterinär- u. Sozialwesens

90	DL der Abwasser-, Abfallbeseitig. u.a. Entsorgung
91	DL von Interessenvertretungen, Kirchen
92	Kultur-, Sport- u. Unterhaltungsdienstleistungen
93	Sonstige persönliche Dienstleistungen
95	Häusliche Dienstleistungen
99	Exterritoriale Organisationen und Körperschaften

Appendix B to Annex 4.1.5: List of environmental interventions

Rest- und Schadstoffoutputs
Abfälle gesamt zur Verwertung
Abfälle zur Behandlung.
Abfälle zur Deponierung
Abraum / Bergematerial.
Sonstige Materialeinträge
Indirekt eingeleitetes Abwasser.
Direkt eingeleitetes Abwasser
Wasserdampf (Verdunstung)
Sauerstoff
Kohlendioxidemissionen
Kohlenmonoxidemissionen
Schwefeldioxidemissionen.
Stickoxidemissionen
Staubemissionen
NM VOC-Emissionen.
CH ₄ -Emissionen
N ₂ O-Emissionen

Appendix C to Annex 4.1.5: Detailed results of Moll et al. (2004), this presentation by the EIPRO team

Product grouping	TMR Total (calculated based on latter)	TMR Fossil Fuels (direct + indirect)	TMR Metals (direct + indirect)	TMR Ind. minerals (direct+ ind.)	TMR Construction minerals (direct + indirect)	TMR Biomass (direct + indirect)	Primary Energy (1999) (dir- ect + ind.)	Land Use (1997) (direct + indirect)	GWP (1999) (direct + indirect)	AC (1999) (direct + indirect)	POCP (direct + indirect)	Waste bulk (direct + indirect)	Waste without bulk (dir. + indirect)
Unit		1000 tonnes	1000 tonnes	1000 tonnes	1000 tonnes	1000 tonnes	PJ	km ²	CO2 eq.	SO2 eq.	NMVOE eq.		
01,02,05_MINING OF BIOTIC RESOURCES	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
#01_Products from agriculture, hunting and related service activities	2.9%	1.0%	0.1%	1.7%	1.6%	18.8%	0.0%	0.0%	3.6%	0.0%	0.0%	0.0%	0.0%
#02_Products from forestry, logging and related service activities	0.5%	0.0%	0.0%	0.0%	0.0%	4.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
10,11,12,13,14_MINING ABIOTIC RESOURCES	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.7%	0.0%
#10_Coal and lignite, peat	3.6%	8.1%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
#13,14_Metal ores and other mining and quarrying products	2.0%	0.1%	0.4%	8.4%	9.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
15,16_FOOD, BEVERAGES, TOBACCO	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
#15_Food products and beverages	7.1%	4.4%	0.8%	5.0%	4.8%	35.5%	5.7%	7.8%	9.0%	6.3%	5.0%	0.0%	9.3%
#20_Wood products/cork, except furniture; articles of straw/plaiting materials	0.5%	0.2%	0.1%	0.1%	0.1%	2.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
#21_Pulp, paper and paper products	1.8%	1.9%	0.2%	0.4%	0.4%	7.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.3%
#22_Products from publishing, printing and reprod. of recording media	0.7%	0.7%	0.1%	0.2%	0.1%	2.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
#23_Coke, refined petroleum products and nuclear fuel	2.7%	6.0%	0.0%	0.1%	0.1%	0.0%	3.0%	0.0%	2.1%	3.2%	2.3%	7.0%	0.0%
#24_Chemicals and chemical products	4.4%	7.4%	1.8%	2.9%	2.3%	1.8%	11.7%	0.0%	5.2%	6.3%	4.3%	0.0%	3.3%
#25_Rubber and plastic products	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
#26_Other non-metallic mineral products	2.6%	2.4%	0.1%	8.2%	7.3%	0.1%	0.0%	0.0%	1.8%	1.8%	0.0%	0.0%	0.0%
27,28_BASIC METALS; FABRICATED METAL PRODUCTS, EXCEPT MACHINERY AND EQUIPMENT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	6.4%
#27_Basic metals	11.2%	5.2%	27.5%	10.6%	11.6%	0.1%	3.8%	0.0%	4.4%	5.1%	3.3%	0.0%	0.0%
#28_Fabricated metal products, except machinery and equipment	3.2%	1.7%	8.3%	2.0%	2.1%	0.3%	2.1%	0.0%	2.1%	2.2%	0.0%	0.0%	0.0%
#29_Machinery and equipment n.e.c.	5.2%	3.3%	12.0%	3.4%	3.5%	1.0%	4.9%	0.0%	4.5%	5.0%	3.2%	0.0%	4.1%
#31_Electrical machinery and apparatus n.e.c.	1.8%	1.1%	4.3%	1.2%	1.2%	0.3%	1.4%	0.0%	1.4%	0.0%	0.0%	0.0%	0.0%
#32_Radio, television and communication equipment and apparatus	1.1%	0.7%	2.5%	0.6%	0.6%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
#33_Medical, precision and optical instruments, watches and clocks	0.8%	0.7%	1.0%	0.9%	0.8%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
#34_Motor vehicles, trailers and semi-trailers	9.8%	6.4%	22.5%	6.9%	7.0%	1.7%	9.3%	0.0%	8.4%	8.7%	5.4%	0.0%	5.3%
#35_Other transport equipment	1.0%	0.6%	2.5%	0.5%	0.5%	0.2%	0.0%	0.0%	0.0%	0.0%	33.5%	0.0%	0.0%
#36_Furniture; n.e.c.	1.7%	0.7%	4.1%	0.9%	0.9%	2.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
40,41_ELECTRICITY, GAS, STEAM AND HOT WATER SUPPLY; COLLECTION, PURIFICATION AND DISTRIBUTION OF WATER	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.1%	6.6%
#40_Electricity, gas, steam and hot water supply	8.7%	19.1%	0.2%	0.3%	0.3%	0.1%	9.9%	0.0%	15.6%	13.1%	3.8%	0.0%	0.0%
#45_Construction	11.4%	6.6%	5.4%	33.2%	33.1%	3.9%	7.4%	4.0%	7.0%	8.2%	5.4%	60.5%	7.1%
50,51,52_SALE, MAINTENANCE, REPAIR OF MOTOR VEHICLES (ETC)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.0%
#50_Sale, maintenance and repair of motor vehicles etc. and sale of fuel	0.8%	1.0%	1.1%	0.6%	0.6%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
#51_Wholesale trade and commission trade, except of motor vehicles[...]	0.6%	0.9%	0.2%	0.3%	0.3%	0.8%	1.6%	0.0%	0.0%	2.2%	0.0%	0.0%	0.0%
#52_Retail trade, except of motor vehicles and motorcycles; (etc.)	1.5%	2.4%	0.5%	0.7%	0.7%	1.8%	3.4%	2.1%	3.2%	3.4%	2.5%	0.0%	0.0%
#55_Hotels and restaurant services	1.5%	1.6%	0.2%	1.1%	1.1%	4.5%	1.9%	2.0%	2.2%	1.7%	0.0%	0.0%	0.0%
#60_Land transport services	0.8%	1.4%	0.4%	0.5%	0.5%	0.2%	2.7%	3.0%	2.5%	4.3%	3.8%	0.0%	0.0%
#62_Air transport systems	0.2%	0.3%	0.1%	0.0%	0.0%	0.0%	2.0%	0.0%	1.6%	2.7%	3.9%	0.0%	0.0%
70,71,72,73,74 BUSINESS SERVICES	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.8%	4.3%
#70_Real estate services	1.2%	1.0%	0.5%	2.4%	2.4%	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
#75_Public administration and defense; compulsory social security	2.1%	2.6%	0.6%	2.8%	2.9%	1.4%	3.5%	0.0%	3.0%	3.0%	3.7%	0.0%	4.4%
#80_Education	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
#85_Health and social work	1.6%	2.3%	0.5%	1.2%	1.2%	2.1%	3.4%	0.0%	3.1%	2.5%	0.0%	2.3%	3.4%
#92_Recreational, cultural and sporting services	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.4%	0.0%	0.0%	0.0%	0.0%	0.0%
Consumption of private households (domestic)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	53.2%	0.0%	0.0%	0.0%	0.0%	19.6%

4.1.6 Nemry et al. (2002) – Summary by M. van Holderbeke

Main characteristics

Title of the report: Identifying Key Products for the Federal Product & Environment Policy (2002, Final draft¹⁰ and final)

Names of authors: F. Nemry, K. Thollier, B. Jansen, J. Theunis.

Name of Institution: Institut Wallon de Développement Économique et Social et D'Aménagement Du Territoire ASBL and Vlaamse Instelling Voor Technologisch Onderzoek – Vito.

Commissioned by: The Federal Services of Environment – Department of Product Policy.

Main approach: Assessing the environmental impacts related to the life cycle of various categories of products and services consumed in Belgium by a market-oriented LCA (“bottom-up”), evaluation of environmental impacts based on environmental indicators.

Methodological approach

Goal, scope and system boundaries: The goal of the study is to determine which categories of products are a priority for product policy development on the level of the Belgian federal government. The study analyses the life cycle environmental impacts of products consumed by Belgian residents or business entities in 2000. Food, chemical products and biocides are not considered. The covered processes include mining of raw materials, manufacturing of materials, use of products and disposal/recycling of used products. Material processing to product parts, product assembly and distribution to consumers have not been considered.

Aggregation level: The study uses a function-oriented product classification as the starting point for aggregation. The authors defined functional areas of consumption, sub-areas thereof (consumption domains), as well as more detailed product groupings and products (in the original terminology: ‘function class, function group, product category and final product system’).

- (12) Functional areas of consumption:
 - Building structure
 - Building occupancy
 - Furniture for interior
 - Electric appliances
 - Health care and detergent
 - Leisure
 - Passenger transport
 - Garden
 - Information technologies and paper
 - Packaging
 - Textile and footwear
 - Cross-cutting & consumables

¹⁰ page numbers refer to the final draft report

- (about 45) Sub-areas of consumption, see Appendix A
- (about 120) Product grouping, see Appendix A
- (about 290) Products, relevant for the product groupings

Data inventory: The material and energy flows within the life cycles of products are modelled with data from various existing LCI databases such as IVAM LCA Data 3.0, Buwal 250, ETH-ESU 96, IDEMAT 2001, Pre4 database (all included in SimaPro 5.1), and other publicly available industry data such as APME for plastics, and FEFCO for paper and cardboard. The study covers products consumed in the Belgian economy in 2000. Full LCA's of products are not available for all considered products and were considered only useful when they are representative for an average consumed product unit, during 1995 – 2000. Because the authors wanted to compare products on an equal basis, they decided to carry out abridged LCA's for all product groupings considered (a first selection was based on resource indicators, resulting in 32 product groupings covering 116 products. A large part of the 290 products was thus not included in the second phase of the project). For this they used scattered information sources: existing (public) LCA studies, sector data, national statistics, material and energy flow studies, and other studies on average product compositions, mean life span, standard waste treatment scenario (all specific to Belgium).

The extrapolation from individual products to product groupings was made by multiplying the products with their consumption figures followed by addition. This was carried out on the basis of data from the national surveys on Belgian market penetration rates and statistics on household budgets by NIS.

The technology level modelled for the manufacturing of materials is preferably based on the technology in the country of origin, if possible from 1995 onwards. If this could not be traced, the preferable regional boundary is Europe. The energy use during the material production was, e.g. based on European technology, while the electricity consumption during the use phase was based on Belgian figures.

In this study, recovery of materials and energy are partly allocated to the product systems in question:

- A material recycling process is considered to have no inputs or outputs. This is a rough approximation because in reality 'recycling' also causes impacts and requires energy, but relative to virgin materials, these in- and outputs are mostly rather marginal. Also, no credits (avoided emissions from the replaced virgin content) are allocated, because it was not the objective of the study to demonstrate impact reductions due to existing recycling efforts compared to a system where no recycling at all would take place.
- All energy recovered from incineration in the disposal phase is allocated to the product in question and subtracted from the total energy requirement (energy recovery as a negative energy use).

Impact assessment: Ranking of the product groupings according to their environmental impacts has been done in two steps. In the first step, the resource intensive product groupings were identified; they were defined as the product groupings having the highest life cycle resource requirement at a national level. In the second step, the most resource intensive products were ranked according to both the input and output flows. From this ranking, the authors aimed to identify the 'highest impact products'.

Nine input related indicators were used for the first and second step:

- Five material intensity indicators (total material, mineral, metal, synthetic respectively natural organic materials)
- Three energy intensity indicators (life cycle perspective, production phase and use phase)
- One water intensity indicator

The gross energy requirement was based on “Kumulierte Energieaufwand (KEA)” as used by the Society of German Engineers (VDI 4600, 1997).

The following environmental output indicators were taken into account for the second step:

- Greenhouse effect
- Acidification
- Emission of photochemical pollutants
- Air emission of heavy metals
- Air emission of persistent organic pollutants
- Ozone layer depletion
- Chemical oxygen demand
- Heavy metals pollution to water
- Eutrophication potential
- Persistent organic pollutants (pops) pollution to water
- Waste

Greenhouse gases are characterised by using their global warming potential using the IPCC guidelines. Acidifying gases are characterised through their acidification potential, ozone depleting substances through their ozone depleting potential and photochemical pollutants through their ozone formation potential. (No methods are mentioned in the report, environmental interventions and characterization factors are given in Appendix A. Emissions of, e.g. waste were just added up and not characterised. With regard to waste, the authors report the difficulties on the interpretation of waste statistics because of different definitions and classifications used.)

Results for eutrophication, POPs and heavy metals are not reported because the collected data were inadequately representative or not available and did not allow the authors to come up with reliable results.

Further aggregation of all considered environmental impact categories (normalization, weighing, etc.), studying interactions between different environmental impacts, was not in the scope of this study.

Main results

Regarding the different impact categories, the study comes up with priorities as given in the table below (as % contribution to the total pressure related to Belgian consumption).

Function class	Inputs			Outputs						
	Energy	Water	Raw materials	Acidifying substances	Greenhouse gases	Photochemical substances	POPs	Ozone depletion	Eutrophying substances	Waste
Building structure	6%	0%	67%	10%	11%	4%		5%		82%
Building occupancy	44%	93%	1%	12%	39%	21%		0%		0%
Furniture for interior	0%	0%	1%	1%	1%	1%		0%		0%
Electrical appliances	5%	7%	0%	2%	3%	1%		0%		0%
Healthcare and detergents	1%	0%	1%	1%	0%	0%		7%		1%
Transport	34%	0%	17%	43%	33%	60%		1%		4%
Information technologies and paper	2%	0%	1%	6%	3%	2%		51%		0%
Packaging	7%	0%	13%	20%	9%	8%		36%		11%
Textile	1%	0%	0%	5%	1%	3%		0%		0%
	> 30%									
	15%	30%								

The quantification of environmental impacts is based on the resource intensive product groupings only and for some function classes (i.e. electrical appliances) quite a large group of product groupings is thus not included.

Results are also given on the level of product groupings and per life cycle phase (e.g. 43% of the emission of acidifying pollutants is caused by transport mainly due to the use phase). See Annex 11 of the report for more detailed results for each environmental impact.

Strengths and weaknesses

Methodological choices: The function oriented aggregation level of all products and services consumed by households in Belgium is sometimes ambiguous. Packaging was not allocated to the final products they actually pack, but was treated as two separate function groups: ‘industrial packaging’ and ‘household packaging’. ‘Soap and detergents’ that have been put under ‘healthcare and detergents’ could also have been put under ‘washing tableware’ (part of electrical appliances) in the use phase. Some function classes like food and chemical products are not considered. The sub-domains ‘food packaging’, ‘preparation (cooking, cutting) and storing of food’ are, however, included. Other aggregation principles and function classes would therefore provide other results.

The quantification of environmental impacts is based on the resource intensive product categories only and for some function classes (i.e. electrical appliances) quite a large group of product categories is thus not included. The results are provided on the level of function classes and product groupings.

The study gives an overview of the distribution of the environmental impacts across the various stages of the life cycle. Results led to the conclusion that for most of the products, the disposal phase had the smallest weight in the overall impacts. However, this result is at least partly explained by the methodological choices made to account for impacts from recycling. The in- and outputs, consequently the impacts from recycling processes, are considered zero.

The methodology is a “bottom-up” approach, first looking at the impacts of products individually, then transposing them to the level of annual Belgian consumption. This approach however leads to problems of data availability. Environmental data were sometimes

missing either for some products, or for some life cycle stages of products, or for some environmental impacts.

For all studies based on bottom-up approaches, the dependence of results on the aggregation principle together with the limited data availability are the Achilles heel of the (bottom-up) methodology.

Completeness: The selected products cover a large proportion of products consumed in Belgium and the importance of different phases in the life cycle of the products (production phase, use phase and disposal phase) can be differentiated. Function classes like food, chemicals and biocides, and the life cycle phases material processing, product assembly and distribution to consumers, have, however not been considered in the study

The indicators applied in the study provide a broad picture of impacts in terms of resource consumption and environmental impacts. However, for the application of results in the EU's IPP, it should be noted that results could not be provided for all impact categories (e.g. POPs, heavy metals) due to the lack of consistent data.

Reliability: The uncertainty of the results for the different life cycle phases is quite large, with confidence intervals ranging from more than half to twice the estimates that have been made based on the data gathered to calculate the indicators. The results should therefore more suitably be seen as order of magnitudes of the impacts rather than as absolute values.

The results of the study were compared with results of a Swedish (IVL) and a German (Lorek and Spangenberg) study. Both studies consider a 'food products' category, which was not included in the Nemry et al. study. Even if the definition of product as evaluated in these studies does not correspond to the Nemry et al. study, the authors could clearly see a correlation between the results.

The results have been reviewed by four international experts, see Annex 1 of the final report (December 2002), and a stakeholder consultation of the study was carried out in December 2002.

Relevance of the study for the EU's IPP

Geographical relevance: The study is specific to Belgium with respect to the consumption of products and services. Whenever possible, the technology level modelled is European technology from 1995 onwards. The results of this study are probably also valid for Western Europe because consumption patterns are quite similar.

Product focus and aggregation level: The study focuses on final consumption. Results are given on the level of consumption domains and product groupings. The study focuses on the product level, which is a real advantage compared to other methodologies such as input-output analysis.

General acceptance of the method: The methodology of the study had been developed in such a way as to be consistent with the key definitions and goals of a future Federal Belgian Product Policy. An abridged 'integrated (life cycle) approach' was chosen for this study: the entire life cycle of the product and all resulting in- and output fluxes during this life cycle are considered. Existing ISO standards set the framework for the methodology, e.g. ISO 14040 on LCA – life cycle assessment.

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Appendix A to Annex 4.1.6: Relation between functional areas of consumption, sub-areas, product groupings and relevant products

Functional area of consumption	Sub-area	Product groupings and relevant products
Building structure	Electricity and water distribution	Water distribution PVC pipes Copper pipes Wiring Copper/PVC coated wiring
	Exterior wall	Supporting wall Concrete Bricks and mortar Cellular concrete and glue/mortar Argex and mortar Glass and concrete Glass and steel Concrete and steel structure Wood frame and wood facing Exterior ornamental gable Bricks + mortar Wood Stone + mortar Roughcast Vapor screen Vapor screen Wall isolation Polyurethane Glass wool Flax Other organic material Rock wool Window Aluminium frame Painted wood frames Impregnated wood frames PVC frames Doors (exterior) Painted wood doors Protected wood door (impregnated) Glass door PVC wood door Aluminium door
	Floor	Supporting floor Wood soil

Functional area of consumption	Sub-area	Product groupings and relevant products
		Cast concrete Ornamental floor (top layer) Linoleum Synthetic floor covering Cork covering surface Wall-to-wall carpet Ceramic floor tiles Wood parquet
	Interior wall	Wall elements Cellular concrete wall Concrete wall Wood wall Argex wall Bathroom and kitchen walls decoration Cork covering surface Painted glass fibre Tiled surface Other room wall decoration Painted plaster Wallpapered plaster Painted glass fibre Stucco Doors (interior) Painted non-solid wood door Painted solid wood door Non-painted solid wood door Wall preparation for decoration Plastered wall Other non-plastered wall decoration Panelling Synthetic panelling
	Roof	Roof covering (top layer) Wooden tiles Natural slates Bitumen covering Synthetic slates Clay tiles Metallic tiles Roof insulation Polyurethane Other organic material Flax Glass wool Rock wool
	Sewerage system	Sewers PVC pipes Concrete pipes
	Stairs/elevators	Stairs Metal stairs Concrete stairs Wooden stairs Elevators Elevators
	Building foundation	Foundation and cellar Foundations and cellar Foundations
Building occupancy	Hot water	Water heaters Direct (flow-through) boiler Hot water boiler (recipient)
	Interior climate	Heating system Direct heating with multi-burner Central heating system (boiler and radiator) Central heating system (boiler and radiator)

Functional area of consumption	Sub-area	Product groupings and relevant products
		Direct heating with electricity Direct heating with fire stove (wood) Direct heating with natural gas stoves Air conditioning HCF refrigerant Methane refrigerant
	Lighting	Sockets and switches Sockets and switches Lamp armatures Lamp armatures Lighting systems Efficient light bulbs Light bulbs Neon tubes Halogen bulbs
	Sanitary equipment	Toilet Toilet Bathtub Bathtub Water tap for bathtub Water tap for bathtub Shower cabinet Shower cabinet Shower head Shower head Sink Sink Water tap for sink Water tap for sink Mirrors Mirrors House ceramics (non-tableware) House ceramics (non-tableware) Tableware Ceramic tableware Paper tableware Glass tableware Toilet emptying system Conventional toilet (20L/dayperson) Water-saving toilet (5L/dayperson)
	Security equipment	Fire-extinguisher Fire-extinguisher
Furniture for interior	Furniture	Furniture Plastic furniture Wood particles furniture Metal furniture Wooden furniture
	Relaxing	Sofas Metal sofas Wood sofas
	Sleeping	Bed mattress Polyether mattress Spring mattress Latex mattress
Electric appliances	Electrical appliances	Electrical razor, hair dryer, etc. Electrical razor, hair dryer, etc.
	Equipment for reparation / maintenance of building	Drill Drill

Functional area of consumption	Sub-area	Product groupings and relevant products
		Circular/band saw Circular/band saw Other Other equipment for repairation & maintenance
	Food preparation (cooking)	Stand alone ovens Electric stand alone oven Microwave Cookers Butane gas Electrical Natural gas Deep fryer Deep fryer Water cooking Kettle (+ hot plate) Electric kettle Coffee making Espresso machine Plastic coffee filter (+ hot plate) Coffee machine Other electrical appliances Other electrical appliances
	Food preparation (cutting)	Knives, scissors, cutlery Knives, scissors, cutlery Food mixers Hand blender Food processor Manual food shredder
	Storage of perishable food	Deep freezer With methane refrigerant With HFC refrigerant Refrigerator With HFC refrigerant With methane refrigerant
	Washing laundry	Washing machine Washing machine Laundry dryers Drying rack Spin dryer Drying machine
	Washing tableware & cooking utensils	Dishwasher Dishwasher
Healthcare & detergent	Baby products (excl healthcare)	Baby nappies Baby nappies
	Healthcare & detergents	Soap, detergents Soap, detergents Cosmetic products & parfums Cosmetic products & perfumes
	Toilet paper	Toilet paper Toilet paper
Leisures	Audio- & video equipment	Television Projector LCD/plasma television CRT television Equipment for receiving TV channels Digibox for digital TV Coax cable Satellite receiver & decoder Video recorders/players DVD recorders/players

Functional area of consumption	Sub-area	Product groupings and relevant products
		VHF recorders/players Video camera Digital camera Analogue camera Audio recorders/players Hi-Fi Radio (connected to grid) Portable radio (not walkman) Walkman Portable CD player Portable audiotape Minidisk player Audio, video carriers VHF tape Minidisks Audio tape DVD
	Games & toys for children	Computer games Game consoles connected to TV Game boys (no peripheral) Games for PC Other electrical toys Other electric toys Non-electrical toys Plastic toys Wooden toys
	Jewellery	Jewellery with diamonds Jewellery with diamonds Jewellery with gold
	Photography equipment	Camera Digital camera Analogue camera
Transport	Passenger transport	Regular trips up to 150 km Bicycle Diesel car Train Bus Tram Petrol car Motorcycle LPG car
	Transport of goods	Transport goods (domestic) Trailer
Garden	Garden furniture	Garden table + seats Metal garden table Wooden garden table Plastic garden table Garden lighting Solar energy Electrical
	Garden tools	Lawnmower Fuel lawnmower Solar energy lawnmower Electrical lawnmower Hedge-cutter Electrical hedge-cutter Gasoline hedge-cutter Chain-saw Chain-saw Shovel/spade/ho Shovel/spade/ho
Information technologies & paper	Equipment for data storage & processing	Computer Desktop

Functional area of consumption	Sub-area	Product groupings and relevant products
		Laptop Printers/plotters Laser printer Inkjet printer Other computer peripherals Amplifier speaker CD writer Scanner Other computer peripherals
	Equipment for sending & receiving messages	Oral communication Fixed telephone Mobile phone Written communication Fax machine
	Office machines	Copier Copier
	Paper and paper products	Newspapers, books and magazines Magazines Newspaper Books
Packaging	Household packaging	Beverage packaging Other material Plastic packaging Paper and cardboard packaging Glass packaging Steel packaging Aluminium packaging Beverage carton Food packaging Glass packaging Other packaging Steel packaging Aluminium packaging Paper and cardboard packaging Plastic packaging Other household packaging Paper and cardboard packaging Other packaging Glass packaging Aluminium packaging Plastic packaging Steel packaging
		Industrial packaging
Textile & Footwear	Clothing	Clothing Acrylic clothes Cotton clothes Nylon clothes Cellulosic clothes Other synthetics Polyester clothes Wool clothes Polypropylene clothes
	Footwear	Footwear (casual) Leather top + rubber sole Other combination...(PVC sole) Textile top + rubber sole Synthetic top + rubber sole Sports footwear Sports footwear
	Other textiles	House textiles: bedclothes, table-linen Home textile - cellulosic

Functional area of consumption	Sub-area	Product groupings and relevant products
		Home textile - polypropylene Home textile - polyester Home textile - wool Home textile - acrylic Home textile - cotton Home textile - other synthetic Home textile - nylon Bags/sacks Rucksacks Suitcases Soft-bags
Cross-cuttings & consumables		

Appendix B to Annex 4.1.6:

Environmental Interventions and characterisation factors used for global warming potential, acidification potential, ozone depletion potential and photochemical ozone formation potential

Substance	Global warming potential (CO ₂ equivalent, time horizon 100 years)
CO ₂	1
Methane	21
Nitrous oxide	310
HFC-23	11700
HFC-32	650
HFC-41	150
HFC-43	1300
HFC-125	2800
HFC134	1000
HFC-134a	1300
HFC-152a	140
HFC-143	300
HFC-143a	3800
HFC-227ea	2900
HFC-236fa	6300
HFC-245ca	560
SF ₆	23900
CF ₄	6500
C ₂ F ₆	9200
C ₃ F ₈	7000
C ₄ F ₁₀	7000
c-C ₄ F ₈	8700
C ₅ F ₁₂	7500
C ₆ F ₁₄	7400

Substance	Ozone depleting potential
CFC-11	1
CFC-12	1
CFC-113	0.8
CFC-114	1
CFC-115	0.6
Halon 1211	3
Halon 1301	10
Halon 2402	6
CCl ₄	1.1
Methyl chloroform	0.1

HCFC-21	0.04
HCFC-22	0.055
HCFC-31	0.02
HCFC-123	0.02
HCFC-124	0.022
HCFC-133	0.02 – 0.06
HCFC-141b	0.11
HCFC-142b	0.065
HCFC-225	0.02 – 0.07
HCFC-225ca	0.025
HCFC-225cb	0.033
HBFCs	0.02 – 1
Methyl bromide	0.4 – 0.6
Bromochloromethane	0.15

Substance	Acidification potential
SO ₂	1
NO _x	0.693
NH ₃	1.879

	Ozone formation potential (eq. C ₂ H ₄)
Carbon monoxide	0.04
Formaldehyde	0.3
Methane	0.007
VOC, aluminium	0.4
VOC, car (diesel)	0.5
VOC, power plant	0.4

Appendix C to Annex 4.1.6: Detailed results of Nemry et al. (2002), this presentation by the EIPRO team

Product grouping	CP	En- ergy	M_Total	M_Metal	M_Mineral	M_synthetic	M_organic	Water	ADP	AC	GWP	POCP	ODP	heavy metals	POPs	Desoxygen- isation	EUT	Waste
Unit		PJ	tonnes	tonnes	tonnes	tonnes	tonnes	Litre	Sb. Eq.									
TOTAL ALL PRODUCT GROUPINGS		100.0%	100%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
BUILDING STRUCTURE																		
exterior wall	04	1.39%	20.36%	3.79%	26.12%	1.67%	3.38%	0.00%	19.43%	3.14%	3.04%	1.01%	24.96%	3.74%	3.93%	2.98%	0.22%	19.72%
floor	04	1.03%	6.65%	7.27%	6.70%	9.75%	4.98%	0.00%	4.98%	1.81%	1.44%	0.63%	5.13%	4.88%	7.69%	0.28%	0.50%	6.43%
interior wall	04	1.64%	22.25%	0.00%	28.99%	1.43%	3.17%	0.00%	17.47%	1.64%	3.40%	0.42%	6.75%	1.80%	0.09%	0.10%	0.12%	22.90%
roof	04	0.54%	4.44%	4.31%	3.16%	3.30%	11.65%	0.00%	4.38%	2.99%	1.47%	0.53%	17.81%	5.79%	4.61%	1.58%	0.27%	4.46%
building foundation	04	1.41%	23.98%	6.87%	31.37%	1.46%	0.00%	0.00%	17.97%	0.86%	1.65%	0.57%	5.74%	2.21%	7.22%	0.16%	0.59%	24.98%
total building structure		6.02%	77.68%	22.24%	96.34%	17.61%	23.17%	0.00%	64.23%	10.43%	11.00%	3.16%	60.40%	18.41%	23.54%	5.10%	1.70%	78.48%
BUILDING OCCUPANCY																		
hot water	04	5.37%	0.04%	0.58%	0.00%	0.08%	0.00%	0.00%	0.34%	1.06%	5.02%	0.96%	0.07%	0.82%	0.56%	0.00%	0.02%	0.04%
interior climate	04	32.43%	0.03%	0.48%	0.00%	0.00%	0.00%	0.00%	0.27%	7.31%	30.84%	20.18%	0.04%	1.05%	0.46%	0.00%	0.01%	0.03%
lighting	04	6.20%	0.01%	0.03%	0.01%	0.00%	0.00%	0.00%	0.01%	2.06%	3.18%	1.22%	0.00%	0.13%	0.02%	0.00%	0.00%	0.01%
sanitary equipment	04	0.21%	0.17%	0.51%	0.00%	2.75%	0.00%	93.05%	0.06%	0.23%	0.05%	0.13%	0.20%	0.15%	0.54%	0.01%	0.11%	0.05%
total building occupancy		44.22%	0.25%	1.60%	0.01%	2.82%	0.00%	93.05%	0.69%	10.66%	39.09%	22.50%	0.31%	2.15%	1.59%	0.02%	0.13%	0.14%
FURNITURE FOR INTERIOR																		
furniture	05	0.29%	0.96%	3.73%	0.00%	1.23%	4.84%	0.00%	0.88%	1.23%	0.79%	0.50%	2.68%	2.35%	3.93%	0.04%	0.44%	1.02%
total furniture		0.29%	0.96%	3.73%	0.00%	1.23%	4.84%	0.00%	0.88%	1.23%	0.79%	0.50%	2.68%	2.35%	3.93%	0.04%	0.44%	1.02%
ELECTRICAL APPLIANCES																		
washing laundry	04	3.25%	0.14%	1.07%	0.03%	1.12%	0.00%	3.04%	0.25%	1.25%	1.72%	0.71%	0.32%	0.46%	1.08%	0.01%	0.01%	0.11%
washing tableware	04	1.81%	0.10%	1.05%	0.01%	0.70%	0.00%	3.91%	0.14%	0.67%	0.93%	0.41%	0.17%	0.33%	1.09%	0.01%	0.01%	0.08%
total electrical appliances		5.06%	0.25%	2.12%	0.04%	1.82%	0.00%	6.95%	0.39%	1.92%	2.65%	1.12%	0.48%	0.78%	2.17%	0.02%	0.02%	0.19%
HEALTHCARE AND DETERGENTS																		
baby products	06	0.43%	0.70%	0.00%	0.00%	2.67%	3.95%	0.00%	0.52%	0.88%	0.33%	0.22%	0.07%	0.24%	0.02%	7.06%	6.94%	0.76%
healthcare and detergents	06	0.69%	0.55%	0.00%	0.00%	10.46%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
total healthcare and detergents		1.13%	1.25%	0.00%	0.00%	13.13%	3.95%	0.00%	0.52%	0.88%	0.33%	0.22%	0.07%	0.24%	0.02%	7.06%	6.94%	0.76%
TRANSPORT																		
passenger transport	07	33.81%	4.24%	48.96%	0.14%	22.38%	1.58%	0.00%	15.16%	39.16%	32.76%	62.37%	6.40%	26.47%	47.71%	0.57%	0.52%	3.94%
transport of goods	07	0.11%	0.13%	2.29%	0.00%	0.00%	0.00%	0.00%	1.31%	0.59%	0.19%	0.17%	0.16%	2.04%	2.19%	0.01%	0.02%	0.05%
total transport		33.92%	4.37%	51.25%	0.14%	22.38%	1.58%	0.00%	16.46%	39.75%	32.95%	62.53%	6.56%	28.52%	49.91%	0.58%	0.55%	3.98%
INFORMATION TECHNOLOGIES AND PAPER																		
office machinery	08	2.32%	4.61%	0.03%	0.77%	0.23%	28.36%	0.00%	4.02%	6.71%	2.91%	1.80%	0.99%	1.83%	0.16%	50.63%	52.44%	4.16%
total information technologies and paper		2.32%	4.61%	0.03%	0.77%	0.23%	28.36%	0.00%	4.02%	6.71%	2.91%	1.80%	0.99%	1.83%	0.16%	50.63%	52.44%	4.16%
PACKAGING																		
household packaging	01	2.76%	4.15%	8.87%	2.64%	14.73%	6.31%	0.00%	1.96%	8.23%	3.62%	2.54%	7.45%	21.47%	8.76%	10.17%	2.77%	4.23%
industrial packaging	12	3.69%	6.16%	10.16%	0.06%	21.29%	31.20%	0.00%	10.60%	15.32%	5.41%	3.34%	20.35%	23.07%	9.94%	26.00%	27.57%	6.69%
total packaging		6.45%	10.30%	19.03%	2.70%	36.01%	37.52%	0.00%	12.56%	23.55%	9.02%	5.88%	27.80%	44.54%	18.70%	36.17%	30.34%	10.92%
TEXTILE																		
clothing	03	0.61%	0.33%	0.00%	0.00%	4.75%	0.54%	0.00%	0.25%	4.88%	1.25%	2.29%	0.71%	2.10%	0.01%	0.39%	7.45%	0.34%
total textile		0.61%	0.33%	0.00%	0.00%	4.75%	0.54%	0.00%	0.25%	4.88%	1.25%	2.29%	0.71%	2.10%	0.01%	0.39%	7.45%	0.34%

Note: allocation to COICOP categories by the EIPRO team.

4.1.7 Nijdam and Wilting (2003) – Summary by A. Tukker

Main characteristics

Title of the report: Milieudruk consumptie in beeld (A view on environmental pressure on consumption), in Dutch (2003)

Names of authors: D.S. Nijdam and H.C. Wilting.

Name of Institution: Rijksinstituut voor Volksgezondheid en Milieu (National Institute for Public Health and Environment)

Commissioned by: Dutch Ministry of Environment

Main approach: Assessing the environmental pressure related to Dutch consumption on the basis of annual household expenditures, economic input/output analysis, and environmental pressure per ‘cell’ in the I/O table (“top-down”).

Methodological approach

Goal, scope and system boundaries: The study analyses the life cycle environmental impacts per functional consumption area (‘consumption domain’) for the total Dutch consumption. It uses the total amount of products and services consumed by final consumers in the Netherlands in one year as a functional unit. As far as possible data were gathered for 1995 as the base year.

Aggregation level: The study uses final consumer expenditures as a starting point for aggregation. On the basis of earlier classifications and some adaptations, a number of main functional areas of consumption and sub-areas thereof were defined. The study in principle can give a prioritisation at three different levels:

- (7) Functional areas of consumption:
 - Housing (the building plus heating and electricity usage)
 - Furnishing (including plants, garden, and ‘light’; it is unclear how electricity use has been split between Furnishing and Housing)
 - Food (all activities related to food consumption)
 - Leisure (including holidays and related transport)
 - Hygiene
 - Labour (e.g. traffic to/from labour)
 - Clothing (including washing)
- (about 50) Sub-areas of consumption; see Appendix A
- (about 350) More detailed product groupings (‘categories of products/services’)

The two most aggregated levels are reported in the main text; the lowest resolution is supposed to be available in the source database but is not reported in detail.

Data inventory: For a full description of the data gathering, reference is made to Goedkoop et al. (2003). The environmental pressures per industry branch have been inventoried per economic region (the Netherlands: 105 sectors; OECD: 30 sectors; non-OECD: 30 sectors; see Appendix B for sector definitions) and translated into environmental pressures per Euro

turnover. The life cycle environmental pressures per Euro for 350 categories of products/services that are covered in the Dutch consumer budget survey are determined via input-output modelling. The economic input-output data were gathered from the Central Statistic Bureau (CBS) for the Netherlands and GTAP for other world regions. The main sources for determining environmental pressures were:

- The 105 sectors in the Netherlands: the Dutch Emission Registration system
- The 30 OECD and 30 non-OECD sectors:
 - The Edgar Database (reflecting emissions of CO₂, methane, N₂O, NO_x, SO_x and VOC per sector and world region in 1995); see www.rivm.nl
 - The GEIA Database (reflecting among others NH₃ emissions per sector and world region for the early 1990s); see www.rivm.nl
 - The FAOSTAT database was used to obtain data on land use, manure, pesticide use, irrigation, wood production and fisheries.
 - For water usage, the WRI (www.wri.org) data per sector and country were used
 - Various others.

In principle this study tried to model local technology, which was used in 1995. Probably all databases used are freely available (for example, the Dutch Emission records upon request to the Environment Ministry), but it is not clear if this is the case for the aggregated model constructed for the study.

Impact assessment: Two types of indicators are used: 1) indicators related to input to processing and 2) indicators related to output from processing. This distinction is not made explicit; the study uses a list of 'Environmental themes' that has been selected from a variety of literature sources:

Based on the CML LCIA methodology (Guineé et al., 2002)

- Greenhouse effect
- Acidification
- Nutrification (or Eutrophication)
- Smog formation

Other sources

- Pesticide use (unweighted aggregation per kg active ingredient)
- Road traffic noise (aggregated to car kilometres with weighting factors per type of transport means. Distinction is made between car kilometres in urban and rural areas. Trains and aircraft are not included. See Nijland, 2002).
- Land use (aggregation to type III land use with the help of weighting factors of Ahagen (1994), that reflect the extent of affection of natural values)
- Wood extraction (not explained in the report; presumably counting kg wood used)
- Water usage (not explained in the report; presumably counting m³ water used)
- Fish extraction (not explained in the report, presumably counting the kg fish consumed)

Due to the high uncertainty in emission data and equivalency factors for PAHs, heavy metals and pesticides, these have not been inventoried nor aggregated to a single indicator for toxic emissions. Energy use was also covered as a means for validation.

Normalisation or weighting has not been applied and contributions to impacts are expressed in quantities of relevant equivalents (characterised data). No modelling to end-points such as human health or biodiversity has been attempted.

Main results

Regarding the different impact categories, the study comes up with priorities as given in the table below (as % contribution to the total impacts related to Dutch consumption).

Impact category	Housing	Furnishing	Food	Leisure	Hygiene	Labour	Clothing
GWP	17	8	30	22	6	9	8
Acidification	8	9	40	22	3	8	10
Eutrophication	2	6	71	9	6	1	5
Smog formation	9	10	20	30	4	18	9
Land use	8	9	56	14	2	2	9
Noise emission	0	2	9	47	0	40	2
Fish use	2	4	72	12	1	1	8
Water use	7	8	53	14	7	2	9
Wood use	13	19	24	27	5	5	7
Pesticide use	1	15	70	8	1	1	4

The original report gives a further sub-division is given per functional area of consumption (e.g. within housing, 50% of GWP is caused by heating the house and 10% by electricity use).

Strengths and weaknesses

Methodological choices: Similar to the other reviewed studies, the choice of functional areas of consumption and the allocation of activities to these areas is logical but sometimes ambiguous. For instance, transport is divided between ‘labour’, ‘leisure’ and ‘food (shopping)’, whereas other studies treat ‘transport’ as a functional area of its own. Some studies group ‘housing’ and ‘furniture’ (that here encompasses furniture, the garden, etc.) into one category.

The study does not make a distinction between different phases in the life cycle of the products (production phase, use phase and disposal phase), though it does differentiate between direct/indirect impacts, and for the indirect impacts in which regions this takes place (Netherlands, OECD, or Non-OECD).

Impacts provided in the report are basically “impact potentials” (as standard in most LCAs) which refer to “full effects” of all emissions to air and water. The real environmental impacts will therefore be smaller than the estimated impact potentials. The difference between impacts and impact potentials is determined by local and site-specific conditions.

Completeness: The list of functional areas of consumption is comprehensive and results are provided both at this aggregated level and a disaggregated level (sub-areas). Due to the I/O approach, no sectors should have been ‘forgotten’, though it is strange that important expenditures like healthcare cannot be identified (see Appendix A). Since taxes and probably government expenditure are not included, this implies that the study cannot claim to reflect the *total* final Dutch consumption.

It is doubtful if diffuse emissions related to resource use in the use stage have been covered. This is particularly relevant for, e.g. diffuse emissions of metals or toxic chemicals, but as stated above emissions of toxic substances have not been covered in the study.

Reliability: The study includes a validation that consists of a comparison with other studies at the level of functional areas of consumption. The total impacts related to Dutch consumption in this study are in the same order of magnitude as calculated earlier by Blonk (1997). The same applies for energy use calculated by Vringer (2002).

Yet, the relatively important role of food is surprising. It comes out as the main priority here, while in many other studies the main priority is housing. Furthermore, at detailed level there might be irregularities that might be inherently related to the ‘top-down’ approach followed in this study. The main problem is the high level of aggregation of sectors or product categories in the I/O method applied here, particularly for the import flows from (non-)OECD countries. For instance, since the food industry is seen as one category no distinction is possible in deliveries to other sectors that include only fish, and only other products such as leather (relevant for the pressure indicator of fish consumption). What is also a bit surprising is that in the consumption area ‘clothing’, the production of clothing is for most impact categories a factor 5 – 6 more important than washing and drying. Detailed clothing LCAs show the opposite (i.e. washing and drying is typically a factor 2 or higher more important than clothing production). This might point at irregularities concerning allocation of activities in the household at a deeper level.

Relevance of the study for the EU’s IPP

Geographical relevance: The study is specific for the Netherlands with respect to consumption of products and services, but with respect to process data the study refer to actual processes applied in the base year 1995 in the different regions where these processes take place. It is likely that, with structural differences in consumption patterns apart, the underlying data are probably representative for Western European technology.

Product focus and aggregation level: The study focuses on final consumption, and, more specifically, household consumption . The study gives results on the level of functional areas of consumption and sub-areas thereof. The study does *not* report priorities at the level of product groupings, but the source database should in principle contain the information to produce such a priority list. The resolution into 350 product groupings is a bit lower than desired for the EIPRO study (500 – 1000).

General acceptance of the method: The study uses a combination of robust, well accepted methodologies like input-output analysis and an impact assessment mainly based on the CML LCIA method. The main problem might lie in the rather high level of aggregation of sectors in the I/O tables for imported goods and services.

Appendix A to Annex 4.1.7: Relation between functional areas of consumption and sub-areas

Functional consumption domain	Subdomain
Housing	Rent or mortgage Taxes Maintenance installation Heating Electricity Other
Furniture	Wall covering and paint Garden, excluding furniture Flowers and plants Furniture Curtains etc. Sun protection Resilient flooring 'Soft' flooring Various refurbishment Mattresses, pillows, sheets, etc. Lighting Electrical equipment Services Transport Other
Food	Cereals Potatoes, vegetables, fruit Jam and other sweet products Meat and meat ware Fat and oil Fish and fish products Milk and milk products Restaurant, pub, and other outside catering Gas, petrol (for shopping) and electricity Other
Leisure	Reading material Brown goods (TV, radio, etc.) Film and photo Games and toys CDs Smoking Telephone Pets Electra [?] Sports Transport for leisure Other Holidays
Hygiene	Energy for tap water Child care Water Toiletries Toilet paper, etc. Hairdresser, beauty shop Hair care articles Cosmetics, perfume Self medication Other
Work	Course expenditures Books and other learning tools Public transport Transport with own means
Clothing	Clothing (production) Shoes Accessoires Transport Washing, drying, ironing Other

Appendix B to Annex 4.1.7: Detailed results of Nijdam and Wilting (2003), this presentation (including allocation to COICOP categories) by the EIPRO team

Product grouping	CP	Expenditure	Land use	Acidification	Eutrophication	Smog	Climate	Wood use	Fish use	Water use	Noise	Crop protection
Unit		euro	m ² -III-eq*ha	g SO ₂ -eq	g PO ₄ -eq	g eth-eq	kg CO ₂ -eq	cm ³	g	l	car km eq	mg act. ingredient
TOTAL ALL PROD. GROUPINGS		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Work												
# Educational fees	10	0.84%	0.08%	0.22%	0.06%	0.18%	0.23%	0.34%	0.07%	0.15%	0.10%	0.05%
# Books and educational tools	10	0.36%	0.30%	0.31%	0.15%	0.25%	0.24%	2.90%	0.10%	0.15%	0.10%	0.14%
# Commuting, public transport	07	0.56%	0.20%	0.42%	0.06%	0.30%	0.38%	0.20%	0.07%	0.26%	0.16%	0.06%
# Commuting, private transport	07	5.77%	0.98%	7.09%	0.55%	17.03%	8.03%	2.01%	1.01%	1.40%	30.92%	0.58%
# Work - Other	10	0.02%	0.01%	0.03%	0.00%	0.02%	0.02%	0.01%	0.00%	0.00%	0.10%	0.00%
Total Work		7.56%	1.57%	8.06%	0.82%	17.78%	8.88%	5.46%	1.25%	1.98%	31.39%	0.83%
Clothing												
# Clothes	03	5.51%	4.36%	5.54%	3.82%	5.00%	4.20%	3.76%	4.88%	5.42%	3.01%	3.06%
# Shoes	03	1.25%	1.12%	1.77%	0.73%	1.76%	1.21%	1.16%	1.97%	0.80%	0.62%	0.53%
# Accessoires	03	0.97%	0.88%	1.32%	0.63%	1.07%	0.90%	1.23%	1.13%	0.81%	0.42%	0.46%
# Transport	07	0.28%	0.05%	0.24%	0.03%	0.32%	0.17%	0.10%	0.05%	0.07%	0.07%	0.03%
# Washing, drying, ironing	04	0.61%	0.15%	0.74%	0.09%	0.57%	0.97%	0.41%	0.19%	1.03%	0.21%	0.08%
# Washing, drying, ironing	04	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.98%	0.00%	0.00%
# Transport	07	0.00%	0.00%	0.11%	0.00%	0.46%	0.21%	0.00%	0.00%	0.00%	1.27%	0.00%
# Clothing - Other	03	0.29%	0.21%	0.30%	0.19%	0.25%	0.24%	0.22%	0.19%	0.28%	0.13%	0.15%
Total clothing		8.91%	6.77%	10.02%	5.49%	9.43%	7.90%	6.88%	8.42%	9.39%	5.73%	4.32%
Personal care												
# Energy, hot water		0.47%	0.07%	0.78%	0.03%	0.54%	3.06%	0.25%	0.05%	1.81%	0.05%	0.03%
# Child care / 'Kindergarten'	10	0.78%	0.13%	0.23%	0.13%	0.20%	0.22%	0.44%	0.16%	0.22%	0.21%	0.11%
# Personal care - Water	04	0.63%	0.06%	0.34%	0.03%	0.25%	0.51%	0.23%	0.05%	3.21%	0.05%	0.03%
# Toiletries	12	0.60%	0.16%	0.46%	0.11%	1.00%	0.41%	0.40%	0.22%	0.26%	0.33%	0.10%
# Hygienic paper	12	0.21%	0.18%	0.18%	0.09%	0.15%	0.14%	1.74%	0.06%	0.09%	0.07%	0.08%
# Barber and beauty services	12	0.83%	0.11%	0.22%	0.09%	0.21%	0.22%	0.48%	0.11%	0.19%	0.22%	0.07%
# Hair care products	12	0.33%	0.09%	0.26%	0.06%	0.92%	0.23%	0.22%	0.12%	0.14%	0.17%	0.06%
# Cosmetics and perfume	12	0.45%	0.12%	0.34%	0.09%	0.52%	0.31%	0.30%	0.16%	0.20%	0.24%	0.08%
# Self medication	06	0.73%	0.11%	0.25%	0.11%	0.20%	0.29%	0.25%	0.16%	0.19%	0.23%	0.09%
# Personal care - Other	12	1.06%	0.17%	0.41%	5.74%	0.36%	0.45%	0.44%	0.23%	0.32%	0.30%	0.14%
Total personal care		6.08%	1.21%	3.48%	6.48%	4.36%	5.83%	4.75%	1.33%	6.63%	1.87%	0.79%
Feeding												
# Cereals	01	2.49%	7.25%	3.81%	10.40%	2.38%	3.84%	2.67%	6.02%	10.81%	1.08%	11.46%
# Potatoes, groceries, fruits	01	2.19%	6.20%	3.14%	11.07%	2.19%	3.12%	7.52%	2.33%	6.47%	1.20%	20.87%
# Jam, sweets	01	0.84%	2.91%	1.55%	3.94%	0.92%	1.44%	1.16%	3.94%	4.46%	0.35%	4.03%
# Coffee, tea, cacao	01	0.48%	2.45%	0.95%	3.23%	0.54%	0.80%	0.62%	0.77%	3.94%	0.24%	2.81%
# Non-alcoholic beverages	01	0.83%	1.94%	1.50%	2.34%	0.80%	1.08%	1.35%	4.13%	3.12%	0.30%	1.70%
# Alcoholic beverages	02	1.56%	0.64%	0.93%	0.70%	0.93%	0.73%	0.80%	0.70%	0.86%	0.47%	0.70%
# Fat and oil	01	0.26%	0.86%	0.46%	1.17%	0.28%	0.44%	0.34%	1.11%	1.31%	0.11%	1.20%
# Meat and meatware	01	2.72%	5.72%	7.55%	14.05%	1.90%	4.24%	2.25%	3.26%	4.27%	1.31%	9.80%
# Fish and fish products	01	0.34%	0.49%	2.77%	0.41%	0.36%	1.01%	0.26%	37.30%	0.29%	0.13%	0.38%
# Milk, cheese, butter	01	2.26%	4.74%	6.78%	12.89%	1.69%	3.87%	2.31%	2.64%	3.84%	1.04%	8.06%
# Feeding - Other	01	0.93%	3.06%	2.04%	4.57%	0.96%	1.55%	1.12%	2.24%	4.45%	0.41%	4.08%
# Restaurant, pub, etc.	11	4.63%	3.67%	3.62%	5.15%	1.67%	2.77%	2.54%	6.43%	5.20%	0.98%	4.49%
# Kitchen appliances etc.	04	2.01%	0.51%	2.24%	0.30%	1.77%	1.53%	1.21%	0.63%	0.69%	0.68%	0.27%
# Feeding - direct energy (gas, electricity)	04	0.70%	0.11%	1.80%	0.04%	3.27%	3.50%	0.28%	0.07%	3.22%	6.09%	0.03%
Total feeding		22.26%	40.56%	39.13%	70.25%	19.63%	29.93%	24.41%	71.57%	52.91%	14.39%	69.89%

Product grouping	CP	Expenditure	Land use	Acidification	Eutrophication	Smog	Climate	Wood use	Fish use	Water use	Noise	Crop protection
Unit		euro	m ² -III-eq*ha	g SO ₂ -eq	g PO ₄ -eq	g eth-eq	kg CO ₂ -eq	cm ³	g	l	car km eq	mg act. ingredient
			%									
Leisure												
# Newspapers, periodicals, books	09	1.65%	1.41%	1.50%	0.72%	1.21%	1.16%	13.32%	0.48%	0.74%	0.55%	0.66%
# TV, radio ('brown goods'/electronics)	09	2.31%	1.18%	2.66%	0.54%	2.66%	1.92%	1.66%	2.46%	0.98%	0.98%	0.41%
# Film and photo	09	0.45%	0.12%	0.47%	0.06%	0.35%	0.32%	0.26%	0.16%	0.15%	0.18%	0.05%
# Games and toys	09	0.58%	0.24%	0.76%	0.15%	0.74%	0.70%	0.67%	0.31%	0.42%	0.20%	0.12%
# CDs, etc.	09	0.54%	0.27%	0.57%	0.16%	0.46%	0.40%	0.72%	0.44%	0.27%	0.23%	0.12%
# Smoking	09	0.83%	1.09%	0.60%	1.39%	0.46%	0.46%	0.79%	0.16%	1.70%	0.17%	1.20%
# Telephone	09	2.10%	0.17%	0.61%	0.11%	0.59%	0.68%	0.55%	0.18%	0.57%	0.23%	0.10%
# Pets	09	0.84%	0.44%	0.78%	0.81%	0.27%	0.45%	0.91%	0.27%	0.36%	0.26%	0.56%
# Electricity	09	0.25%	0.06%	0.61%	0.03%	0.28%	1.27%	0.19%	0.06%	1.67%	0.04%	0.03%
# Other	09	0.76%	0.26%	0.62%	0.17%	0.91%	0.56%	0.58%	0.31%	0.29%	0.25%	0.15%
# Sports	09	1.26%	0.38%	0.70%	0.26%	0.56%	0.65%	0.81%	0.38%	0.45%	0.40%	0.25%
# Mobility for leisure	07	5.98%	1.09%	7.23%	0.57%	16.72%	8.10%	2.10%	1.02%	1.56%	34.20%	0.61%
# Leisure - Other	09	0.98%	0.38%	0.54%	0.27%	0.39%	0.56%	0.54%	0.28%	0.42%	0.35%	0.27%
# Holidays	09	5.84%	3.24%	4.84%	3.95%	4.66%	4.77%	3.17%	5.24%	4.41%	1.26%	3.46%
Total leisure		24.38%	10.35%	22.50%	9.20%	30.24%	22.01%	26.26%	11.73%	13.99%	39.29%	7.98%
Living												
# Painting, etc.	04	0.36%	0.11%	0.27%	0.06%	2.06%	0.31%	0.86%	0.08%	0.10%	0.17%	0.05%
# Garden, excluding furniture	09	1.01%	1.38%	0.88%	2.07%	0.60%	1.23%	0.90%	0.30%	2.68%	0.43%	5.22%
# Flowers and plants (in house)	04	0.57%	0.88%	0.56%	1.31%	0.38%	0.78%	0.57%	0.19%	1.52%	0.27%	3.20%
# Furniture	05	2.37%	1.42%	2.72%	0.93%	1.99%	1.93%	5.84%	1.38%	1.37%	0.91%	0.77%
# Curtains, etc.	05	0.29%	0.30%	0.37%	0.32%	0.29%	0.30%	0.26%	0.17%	0.42%	0.09%	0.26%
# Sun protection	05	0.22%	0.12%	0.26%	0.07%	0.20%	0.18%	0.32%	0.19%	0.12%	0.10%	0.05%
# Resilient flooring	05	0.21%	0.37%	0.26%	0.19%	0.19%	0.19%	4.26%	0.19%	0.13%	0.08%	0.15%
# 'Soft' flooring	05	0.39%	0.42%	0.52%	0.44%	0.40%	0.41%	0.32%	0.25%	0.58%	0.12%	0.36%
# Various refurbishment	05	0.37%	0.22%	0.42%	0.11%	0.31%	0.33%	1.48%	0.19%	0.16%	0.16%	0.09%
# Mattresses, linen	05	0.53%	0.46%	0.58%	0.47%	0.48%	0.52%	0.86%	0.22%	0.62%	0.17%	0.42%
# Lighting	04	0.43%	0.13%	0.53%	0.07%	0.37%	0.34%	0.29%	0.19%	0.16%	0.15%	0.05%
# Electrical appliances	05	0.39%	0.11%	0.46%	0.06%	0.36%	0.30%	0.24%	0.17%	0.14%	0.14%	0.05%
# Cleaning attributions	05	0.25%	0.19%	0.34%	0.14%	0.78%	0.22%	1.73%	0.13%	0.14%	0.10%	4.17%
# Services	05	0.82%	0.03%	0.08%	0.03%	0.07%	0.08%	0.12%	0.04%	0.05%	0.07%	0.02%
# Mobility	07	0.28%	0.05%	0.33%	0.03%	0.78%	0.38%	0.10%	0.04%	0.07%	1.40%	0.03%
# Living - Other	05	0.65%	0.20%	0.67%	0.11%	0.60%	0.50%	1.10%	0.19%	0.23%	0.27%	0.09%
Total living		9.17%	6.41%	9.25%	6.40%	9.88%	7.99%	19.24%	3.94%	8.49%	4.64%	14.99%
Shelter												
# Rent and mortgage	04	16.51%	28.68%	3.45%	0.93%	2.62%	3.16%	9.85%	1.13%	1.61%	1.92%	0.78%
# Taxes	04	1.68%	1.60%	0.52%	0.16%	0.43%	0.81%	1.33%	0.15%	0.43%	0.22%	0.20%
# Maintenance	04	0.75%	0.81%	0.79%	0.08%	0.52%	0.52%	0.38%	0.15%	0.25%	0.23%	0.07%
# Heating	04	1.34%	1.02%	1.24%	0.10%	2.94%	9.20%	0.73%	0.16%	0.89%	0.16%	0.08%
# Electricity	04	0.38%	0.40%	1.07%	0.03%	0.36%	2.38%	0.23%	0.05%	3.24%	0.05%	0.02%
# Shelter - Other	04	0.98%	0.62%	0.50%	0.07%	1.80%	1.38%	0.47%	0.11%	0.19%	0.11%	0.05%
Total shelter		21.64%	33.14%	7.57%	1.36%	8.68%	17.46%	12.99%	1.75%	6.61%	2.68%	1.20%

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4.1.8 Weidema et al. (2005) – Summary by P. Nielsen

Main characteristics

Title of the report: Prioritisation within the integrated product policy.

Names of authors and institutions: Bo P. Weidema, Anne Merete Nielsen, Kim Christiansen, Greg Norris, Pippa Notten, Sangwon Suh, Jacob Madsen

Name of Institution: 2.-0 LCA consultants, CML, Leiden University, Pré Consultants

Commissioned by: Danish Environmental Protection Agency

Main approach: Assessing the environmental impacts and environmental improvement potentials related to Danish production and consumption on the basis of national accounting matrices including environmental accounts (NAMEA). “Top-down” approach based on input/output analysis.

Methodological approach

Goal, scope and system boundaries: The main goal of the study was to establish and apply a method for prioritising product areas and product groupings within the Danish production and consumption where Danish measures will give the largest improvement for the environment. The study addresses environmental impacts; environmental impact intensities¹¹ and environmental improvement potentials per product grouping and per functional area of consumption (need group). The study seeks to be prospective (by adjusting the Danish NAMEA from 1999 to the prospective market situation) and comprehensive with respect to included inputs and outputs (by adding further inputs/outputs to the NAMEA from a variety of Danish sources (published 1990s to 2004) adjusted to the near future at the most obvious points.

¹¹ Environmental impacts per monetary unit.

Aggregation level The results of the study are provided at the levels of 98 product groupings (called ‘product groups’ in the original study), 11 functional areas of consumption (called ‘need groups’ in the original study) and 138 process groups.

107 different types of final consumption in I/O tables have been rearranged (by aggregation and disaggregated as appropriate) into the 98 product groupings to reflect the functions of the different products in their combined use in households.

The definition of the ‘need groups’ is based on a slightly adjusted “core *economic needs*” approach by Segal (1998) and covers 11 groups:

- Housing
- Food
- Leisure
- Social care
- Education
- Health care
- Security
- Communication
- Clothing
- Hygiene
- Other

The grouping of processes is based on the sector division from the Danish NAMEA (130 sectors, see Appendix B) which has been reorganised into 138 sectors/process groups plus a sub-division of agriculture into 29 farm types.

Data inventory: Environmental exchanges related to Danish consumption and export have been inventoried from the Danish 130 sector NAMEA representing production in Denmark and the 493 sector US NAMEA representing production abroad.

To fit the goal of the project, the following types of information have been added to the Danish NAMEA:

- Danish consumption patterns (Gravgård 2003).
- Environmental impacts of basic food products (Dalgaard & Halberg 2004).
- Point sources of nitrogen and phosphorus emissions (Laursen et al 2000).
- Mass flow analyses of heavy metals (various references from Danish EPA¹² and Statistics Denmark¹³).
- Ozone depleting substances (reports from Danish EPA and Statistics Denmark).
- Particles (PM₁₀) (National Environmental Research Institute NERI, Denmark¹⁴).
- Pesticides (Danish EPA).
- Land use (Dalgaard & Halberg 2004 and area statistics from NERI).
- Use stage emissions (Various national sources and the Dutch prioritisation project).

¹² www.mst.dk

¹³ www.dst.dk

¹⁴ www.dmu.dk

Seventy per cent of Denmark's imported products come from other European countries and the US NAMEA has been adjusted at eleven specified points to fit European production and serve as a reasonable proxy for imported products in general.

The expanded NAMEA has been adjusted for market constraints, e.g. public constraints such as quotas (particularly agricultural products) and physical constraints (e.g. recycling industry which is constrained by scrap supply).

Improvement potentials have been investigated for the top 20 product groupings (BREF documents from the EU, BAT documents for the Nordic Council of Ministers, BATNEEC guidance documents from Ireland, and Cleaner Technology projects of the Danish EPA) and it is argued that a focus on improvement options does not change the overall ranking of product groupings. Improvement potentials have therefore not been quantified further but addressed qualitatively for the top 10 product groupings accounting for 45 % of the total environmental impact induced by Danish consumption and production.

Impact assessment: Impact assessment is based on a slightly extended version of the Danish EDIP method (Wenzel et al. 1997) and covers the following mid-point indicators:

- Global warming
- Ozone depletion
- Acidification
- Nutrient enrichment
- Photochemical ozone formation
- Ecotoxicity
- Human toxicity
- Nature occupation

Normalisation refers to the total environmental impacts caused by Danish production and consumption in 1999 as determined in the project. An equal weighting of the eight considered indicators is applied.

Main results

A variety of perspectives has been applied in analyses and result presentation. With a Danish consumption perspective (private and public), the following product groupings have been identified as the ones with the largest environmental impact potentials (all considered impact categories are weighted equally):

- Dwellings and heating in DK, private consumption
- Meat purchase¹⁵ in DK, private consumption
- Tourist expenditures by Danes travelling abroad, private consumption
- Clothing purchase and washing in DK, private consumption
- Catering, DK private consumption
- General public services, public order and safety affairs
- Personal hygiene in DK, private consumption
- Education and research, DK public consumption
- Car purchase and driving in DK, private consumption

¹⁵ The term "purchase" indicates that all production processes until final users' purchase are included, but that cooking is not included.

- Bread and cereals purchase in DK, private consumption

Together, the above 10 products groups account for about 57% of the total environmental impact from Danish consumption. Analyses of contributions to each impact category reveal not only subtle differences, but also more complex picture. For example, it is observed that ‘car purchase and driving’ have a high ranking on all impact categories except ecotoxicity and that ‘bread and cereals’ have a high ranking on all impact categories except global warming, photochemical ozone and human toxicity.

Strengths and weaknesses

Methodological choices: The inherent weaknesses of I/O studies are acknowledged in the report and significant adjustments of the applied NAMEAs are made to expand and qualify the basic data: unclassified imports are added, tourism expenditures are distributed between industries, missing emissions are added (use stage emissions, ozone depleting substances, emissions to soil and water, toxic substances such as heavy metals and pesticides, etc.), sectors are subdivided, accounting principles are adjusted, differences in production in Denmark and elsewhere are accounted for etc. The expansions, which are reported in detail, are based on numerous assumptions, which are in turn based on numerous information sources. The quality of information and assumptions behind these expansions is important for the final result, and has been discussed for substances contributing to toxicity – but not for others. In the study it is mentioned that certain product groups and activities may be over- or underestimated for contributions to toxicity, due to gaps in data. Consequences of data gaps and uncertainty of assumptions were not considered in the result presentation. It should also be noted that this study is based on marginal impacts, i.e. it analyses which *change* of impacts would occur if an extra monetary unit would be spent on a product. It also takes certain market constraints into account, implying that an increase in demand does not always automatically lead to an equivalent increase in production (for example, because of the quotas on milk production, a change in the output of milk from dairies does not mean that milk production in agriculture also increases. Instead it may lead to decreasing outputs of milk powder and butter from dairies.) This is different from all other studies reviewed, which attribute impacts according to fixed input per output ratios. The consequence is that those results of the Weidema et al. study for which such restrictions are assumed, must be interpreted carefully as they do not take into account the entire production chain in a proportional way. For example, environmental impacts of agricultural production may not be included proportionally in the life cycle impacts of certain food products down the production chain.

Clearly distinguished perspectives are applied in the results presentation, making results easy to interpret and useful for a variety of purposes.

Impacts provided in the study are basically “impact potentials” (as stated clearly in the report) which refer to “full effects” of all emissions to air and water. The real environmental impacts will therefore be smaller than the estimated impact potentials. The difference between impacts and impact potentials is determined by local and site-specific conditions.

Completeness: The list of functional areas of consumption is comprehensive and results are provided both at the aggregated level and a more disaggregated level (sub-areas).

Reliability: Uncertainty of results due to data uncertainty has been assessed using a probabilistic simulation analysis. The results of the uncertainty analysis are reported as “approximate 95% confidence intervals” for the largest contributors to all the considered impact categories. Cumulative probability curves have been determined for pair-wise analyses of the likelihood of an overlap between the contribution of the product groupings to the impacts. Examples are reported for a few product groupings and one impact category (human toxicity). The results indicate that product groupings ranking is very reliable when differences in environmental impacts between product groups is large (as is frequently the case for the highest ranking products (the top one to three)), whereas ranking is more uncertain when differences are small (as is frequently the case for the rest of product groupings). The results of the uncertainty analysis do not include modelling uncertainty, uncertainty of final use data and emissions, nor characterisation factors for impact assessment. Thus, it should be assumed that uncertainty estimates are therefore somewhat on the low side.

The inherent importance of product aggregation for the final ranking is acknowledged in the report, and results are therefore also divided on need groups which are less ambiguous.

Relevance of the study for the EU’s IPP

Geographical relevance: The study is specific for Denmark with respect to import, export and domestic consumption and with respect to market constraints and exchanges associated with domestic production. The US NAMEA is used as proxy for products imported to Denmark and has been adjusted to European conditions at eleven specified points because Danish trade is dominated by imports from other European countries.

Product focus and aggregation level: The study focuses on final consumption in the entire economy, and provides results at the level of functional areas of consumption and product groupings and hence fulfils the central requirement of being relevant for IPP.

General acceptance of the method: The study uses a combination of robust, well accepted methodologies like an input-output analysis and impact assessment.

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Appendix A to Annex 4.1.8: Sector definitions in original I/O tables (130 sectors).

No.	Name
11009	Agriculture, DK
11209	Horticulture, orchards etc., DK
14000	Agricultural services; landscape gardeners etc., DK
20000	Forestry, DK
50000	Fishing, DK
110000	Extraction of crude petroleum, natural gas etc., DK
140009	Extr. of gravel, clay, stone and salt etc., DK
151000	Production etc. of meat and meat products, DK
152000	Processing etc. of fish and fish products, DK
153000	Processing etc. of fruit and vegetables, DK
154000	Mfr. of vegetable and animal oils and fats, DK
155000	Mfr. of dairy products, DK
156009	Mfr. of starch, chocolate and sugar products, DK
158109	Mfr. of bread, cakes and biscuits, DK
158120	Bakers' shops, DK
158300	Manufacture of sugar, DK
159000	Mfr. of beverages, DK
160000	Manufacture of tobacco products, DK
170000	Mfr. of textiles and textile products, DK
180000	Mfr. of wearing apparel; dressing etc. of fur, DK
190000	Mfr. of leather and leather products, DK
200000	Mfr. of wood and wood products, DK
210000	Mfr. of pulp, paper and paper products, DK
221200	Publishing of newspapers, DK
221309	Publishing activities, excluding newspapers, DK
222009	Printing activities etc., DK
230000	Mfr. of refined petroleum products etc., DK
241109	Mfr. of industrial gases and inorganic basic chemicals, DK
241209	Mfr. of dyes, pigments and organic basic chemicals, DK
241500	Manufacture of fertilisers etc., DK
241617	Mfr. of plastics and syntethic rubber, DK
242000	Manufacture of pesticides and other agro-chemical products, DK
243000	Mfr. of paints, printing ink and mastics, DK
244000	Mfr. of pharmaceuticals etc., DK
245070	Mfr. of detergents and other chemical products, DK
251122	Mfr. of rubber products and plastic packing goods etc., DK
252300	Mfr. of builders' ware of plastic, DK
252400	Manufacture of other plastic products n.e.c., DK
261126	Mfr. of glass and ceramic goods etc., DK
263053	Mfr. of cement, bricks, tiles, flags etc., DK
266080	Mfr. of concrete, cement, asphalt and rockwool products, DK
271000	Mfr. of basic ferrous metals, DK
272030	First processing of iron and steel, DK
274000	Mfr. of basic non-ferrous metals, DK
275000	Casting of metal products, DK
281009	Mfr. of construct. materials of metal etc., DK
286009	Mfr. of hand tools, metal packaging etc., DK
291000	Mfr. of marine engines, compressors etc., DK
292000	Mfr. of other general purpose machinery, DK
293000	Mfr. of agricultural and forestry machinery, DK
294009	Mfr. of machinery for industries etc., DK
297000	Mfr. of domestic appliances n.e.c., DK
300000	Mfr. of office machinery and computers, DK
310000	Mfr. of other electrical machinery and apparatus, DK
320000	Mfr. of radio and communicat. equipm. etc., DK
330000	Mfr. of medical and optical instrum. etc., DK
340000	Manufacture of motor vehicles etc., DK
351000	Building and repairing of ships and boats, DK
352050	Mfr. of transport equipment excl. ships, motor vehicles etc., DK
361000	Mfr. of furniture, DK
362060	Mfr. of toys, gold and silver articles etc., DK
370000	Recycling of waste and scrap, DK
401000	Production and distribution of electricity, DK
402000	Manufacture and distribution of gas, DK

Environmental Impact of Products (EIPRO)

No.	Name
403000	Steam and hot water supply, DK
410000	Collection and distribution of water, DK
450001	Construction of new buildings, DK
450002	Repair and maintenance of buildings, DK
450003	Civil engineering, DK
450004	Construction materials, DK
501009	Sale of motor vehicles, motorcycles etc., DK
502000	Repair and maintenance of motor vehicles, DK
505000	Service stations, DK
510000	Ws. and commis. trade, exc. of m. vehicles, DK
521090	Retail trade of food etc., DK
522990	Department stores, DK
523000	Re. sale of phar. goods, cosmetic art. etc., DK
524190	Re. sale of clothing, footwear etc., DK
524490	Other retail sale, repair work, DK
551009	Hotels etc., DK
553009	Restaurants etc., DK
601000	Transport via railways, DK
602100	Other scheduled passenger land transport, DK
602223	Taxi operation and coach services, DK
602409	Freight transport by road and via pipelines, DK
610000	Water transport, DK
620000	Air transport, DK
631130	Cargo handling, harbours etc.; travel agencies, DK
634000	Activities of other transport agencies, DK
640000	Post and telecommunications, DK
651000	Monetary intermediation, DK
652000	Other financial intermediation, DK
660102	Life insurance and pension funding, DK
660300	Non-life insurance, DK
670000	Activities auxiliary to finan. intermediat., DK
701109	Real estate agents etc., DK
702009	Dwellings, DK
702040	Letting of non-residential buildings, DK
710000	Renting of machinery and equipment etc., DK
721009	Computer activities exc. software consultancy and supply, DK
722000	Software consultancy and supply, DK
730001	Research and development (market), DK
730002	Research and development (other non-market), DK
741100	Legal activities, DK
741200	Accounting, book-keeping, auditing etc., DK
742009	Consulting engineers, architects etc., DK
744000	Advertising, DK
747000	Industrial cleaning, DK
748009	Other business activities, DK
751100	General (overall) public service activities, DK
751209	Regulation of public service activities exc. for business, DK
751300	Regulation of and contribution to more efficient business operation, DK
752000	Provision of services to the community, DK
801000	Primary education, DK
802000	Secondary education, DK
803000	Higher education, DK
804001	Adult and other education (market), DK
804002	Adult and other education (other non-market), DK
851100	Hospital activities, DK
851209	Medical, dental, veterinary activities etc., DK
853109	Social institutions etc. for children, DK
853209	Social institutions etc. for adults, DK
900010	Sewage removal and disposal, DK
900020	Refuse collection and sanitation, DK
900030	Refuse dumps and refuse disposal plants, DK
910000	Activities of membership organiza. n.e.c., DK
920001	Recreational, cultural, sporting activities (market), DK
920002	Recreational, cultural, sporting activities (other non-market), DK
930009	Service activities n.e.c, DK
950000	Private households with employed persons, DK

Appendix C to Annex 4.1.8: Detailed results of Weidema et al. (2005), this presentation by the EIPRO team

Note: This presentation includes only the data that were used for the comparison in Chapter 6, i.e. scores on GWP, POCP, eutrophication and acidification.

Product grouping	GWP, In % of total	Accumulated %
Dwellings and heating in DK, private consumption	7,70%	8%
Car purchase and driving in DK, private consumption	6,00%	14%
Tourist expenditures by Danes travelling abroad, private cons.	3,70%	17%
Clothing purchase and washing in DK, private consumption	2,10%	20%
Personal hygiene in DK, private consumption	1,90%	21%
Meat purchase in DK, private consumption	1,70%	23%
Transport services in DK, private consumption	1,50%	25%
General public services, public order and safety affairs in DK	1,50%	26%
Education and research, DK public consumption	1,50%	28%
Catering, DK private consumption	1,50%	29%
Fruit and vegetables in DK, except potatoes, private consump.	1,50%	31%
Economic affairs and services, DK public consumption	1,50%	32%
Car driving as fringe benefit and car related services	1,50%	34%
Television, computer etc. in DK, incl. use, private consumption	1,50%	35%
Hospital services in DK, public consumption	0,80%	36%
Retirement homes, day-care etc. in DK, public consumption	0,80%	37%

Product grouping	Acidification, In % of total	Accumulated %
Car purchase and driving in DK, private consumption	5,00%	5%
Dwellings and heating in DK, private consumption	4,30%	9%
Meat purchase in DK, private consumption	3,40%	13%
Tourist expenditures by Danes travelling abroad, private cons.	3,30%	16%
Personal hygiene in DK, private consumption	1,30%	17%
Clothing purchase in DK, private consumption	1,30%	19%
Catering, DK private consumption	1,10%	20%
General public services, public order and safety affairs in DK	1,10%	21%
Transport services in DK, private consumption	1,00%	22%
Education and research, DK public consumption	0,90%	23%
Economic affairs and services, DK public consumption	0,80%	24%
Hospital services in DK, public consumption	0,60%	24%
Bread and cereals in DK, private consumption	0,60%	25%
Retirement homes, day-care etc. in DK, public consumption	0,60%	25%
Fruit and vegetables in DK, except potatoes, private consump.	0,50%	26%
Ice cream, chocolate and sugar products in DK, private cons.	0,50%	26%
Furniture & furnishing in DK, private consumption	0,50%	27%

Product grouping	POCP, In % of total	Accumulated %
Car purchase and driving in DK, private consumption	17%	17%
Dwellings and heating in DK, private	7,10%	25%
Personal hygiene in DK, private consumption	2,50%	27%
Tourist expenditures abroad, private, except car driving	2,10%	29%
Clothing purchase in DK, private consumption	2,00%	31%
Car driving for holiday abroad, private consumption	1,90%	33%
General public services, public order and safety affairs in DK	1,50%	35%
Education and research, DK public consumption	1,30%	36%
Hospital services in DK, public consumption	1,30%	37%
Meat purchase in DK, private consumption	1,20%	38%
Catering, DK private consumption	1,10%	40%
Economic affairs and services, DK public consumption	1,00%	41%
Furniture & furnishing in DK, private consumption	1,00%	42%
Transport services in DK, private consumption	0,90%	42%
Maintenance and repair of the dwelling in DK, private consump.	0,90%	43%

Product grouping	Nutrient enrichment, In % of total	Accumulated %
Meat purchase in DK, private consumption	9,00%	9%
Tourist expenditures by Danes travelling abroad, private cons.	3,30%	12%
Car purchase and driving in DK, private consumption	3,00%	15%
Dwellings and heating in DK, private consumption	2,10%	17%
Catering, DK private consumption	1,90%	19%
Clothing purchase and washing in DK, private consumption	1,50%	21%
Bread and cereals purchase in DK, private consumption	1,20%	22%
Fruit and vegetables in DK, except potatoes, private consump.	1,10%	23%
Personal hygiene in DK, private consumption	0,90%	24%
Ice cream, chocolate and sugar products in DK, private cons.	0,90%	25%
General public services, public order and safety affairs in DK	0,70%	25%
Retirement homes, day-care etc. in DK, public consumption	0,60%	26%
Toilet flush in DK, private	0,60%	27%
Pet food and veterinarian services in DK, private consumption	0,60%	27%
Education and research, DK public consumption	0,60%	28%

4.2 Data tables: important product categories per study (chapter 4.3)

4.2.1 Introduction

The following points are covered by each study:

- The total number of impact indicators considered in these studies and in this analysis (limited to common environmental themes from all studies and for which clear, interpretable results were available).
- An overview of the environmental indicators considered in these studies.
- The total number of product categories at sub levels considered in these studies.
- An overview of the product categories that are considered important for at least one of the environmental themes (the non-relevant categories are not listed). The ‘80-percentile’ shares are the highest product categories that cover 80% of the total for that impact category all together. The number of times a product category is listed in the 80-percentile shares (occurrence) is mentioned in the overview tables. The same is done for the ‘60-percentile’ shares and ‘40-percentile’ shares.

4.2.2 Dall et al. (2004)

Total number of impact indicators considered: 4

Indicators considered: primary energy consumption, resources total, resources energy, waste

Total number of product groupings: 25

Product groupings	%80	%60	%40
Food production	4	3	3
Furniture, lighting etc.	4	2	1
Car transportation	4	3	3
Heating	3	3	0
Clothes washing	3	0	0
Personal care	3	0	0
Food storage	1	0	0
Serving and dishwashing	1	0	0
Beer, wine and alcohols	1	0	0
Clothes	1	1	0
Sparetime	1	1	1
Tv, computer, etc.	1	1	0

Number of product groupings relevant in at least one impact category	12	7	4
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4.2.3 Kok et al. (2003)

Total number of impact indicators considered: 1

Indicators considered: direct and indirect energy use

Total number of product groupings: 13

Product groupings	%80	%60	%40
Heating natural gas and electr. (heating and appliances)	1	1	1
Transport, direct fuel + indirect	1	1	1
Feeding, indirect (food and outdoor consumption)	1	1	0
Leisure (holidays, sports, games, toys, cultural activities, audio visual equipment, etc.)	1	0	0
Personal care, fossil (hot water)	1	0	0
Tap water – natural gas	1	0	0
Number of product groupings relevant in at least one impact category	6	3	2

4.2.4 Labouze et al (2003)

Total number of impact indicators considered: 8

Indicators considered: primary energy, resource depletion, acidification, eutrophication, smog, greenhouse gases, municipal and industrial waste, inert waste

Total number of product groupings: 34

Product groupings	%80	%60	%40
Personal cars	5	5	5
Goods transport (road, rail, water)	5	5	2
Building structure (commercial and residential)	4	3	0
Textile – apparel	4	1	0
Vegetables	4	2	2
Space heating – domestic	4	3	3
EEE – domestic appliances	3	2	1
Animal based food	3	1	1
Packaging – household	2	1	1
Municipal Waste	2	0	0
Cleaning agents	2	1	0
Water heating – domestic	2	0	0
Space heating – commercial	2	2	0
Appliances and lighting – commercial	2	0	0
Civil work (roads and other infrastructures)	1	1	1
Packaging – industrial	1	0	0
Furniture	1	0	0
Gardening	1	1	1
Paper products	1	1	0
Public transport (road, rail, water, air)	1	0	0
Building occupancy – commercial	1	1	0
Appliances and lighting – domestic	1	0	0
Building occupancy – domestic	1	1	1
Number of product groupings relevant in at least one impact category	23	16	10

4.2.5 Moll et al. (2004)

Total number of impact indicators considered: 12

Indicators considered: primary energy supply, TMR total, TMR metals, TMR minerals, TMR biomass, TMR fossil fuels, land use, acidification, smog, greenhouse gases, total waste (excl. bulk), bulk waste

Total number of product groupings: 57 (aggregation depends on impact category i.e. for land use and waste, higher aggregation is used)

Product groupings	%80	%60	%40
#45_Construction	12	9	9
#15_Food products and beverages	10	8	5
#29_Machinery and equipment n.e.c.	9	5	1
#34_Motor vehicles, trailers and semi-trailers	9	8	6
#75_Public administration and defense; compulsory social security	8	1	0
#23_Coke, refined petroleum products and nuclear fuel	7	1	0
#24_Chemicals and chemical products	7	6	3
#27_Basic metals	7	6	2
#28_Fabricated metal products, except machinery and equipment	6	1	0
#40_Electricity, gas, steam and hot water supply	6	5	5
#52_Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods	6	2	0
#26_Other non-metallic mineral products	5	1	0
#55_Hotels and restaurant services	5	0	0
#60_Land transport services	5	2	0
#85_Health and social work	5	1	0
#21_Pulp, paper and paper products	4	1	0
#31_Electrical machinery and apparatus n.e.c.	4	0	0
#62_Air transport systems	4	1	0
#01_Products from agriculture, hunting and related service activities	3	2	1
#10_Coal and lignite, peat	2	2	1
#13,14_Metal ores and other mining and quarrying products	2	1	0
#36_Furniture; n.e.C.	2	0	0
40,41_ELECTRICITY, GAS, STEAM AND HOT WATER SUPPLY; COLLECTION, PURIFICATION AND DISTRIBUTION OF WATER	2	1	1
#51_Wholesale trade and commission trade, except of motor vehicles...	2	0	0
70,71,72,73,74 BUSINESS SERVICES	2	0	0
Consumption of private households (domestic)	2	2	2
01,02,05_MINING OF BIOTIC RESOURCES	1	0	0
#02_Products from forestry, logging and related service activities	1	0	0
10,11,12,13,14_MINING ABIOTIC RESOURCES	1	0	0
#20_Wood products and cork, except furniture; articles of straw and plaiting materials	1	0	0
#22_Products from publishing, printing and reproduction of recording media	1	0	0
#25_Rubber and plastic products	1	0	0
27,28_BASIC METALS; FABRICATED METAL PRODUCTS, EXCEPT MACHINERY AND EQUIPMENT	1	1	0
#32_Radio, television and communication equipment and apparatus	1	0	0
#35_Other transport equipment	1	1	1
50,51,52_SALE, MAINTENANCE AND REPAIR OF MOTOR VEHICLES AND MOTORCYCLES; RETAIL SALE OF AUTOMOTIVE FUEL; WHOLESALE TRADE AND COMMUNICATION TRADE, EXCEPT OF MOTOR VEHICLES AND MOTORCYCLES; REPAIR OF PERSONAL AND HOUSEHOLD GOODS	1	1	0
#70_Real estate services	1	0	0
#80_Education	1	0	0
#92_Recreational, cultural and sporting services	1	0	0
Number of product groupings relevant in at least 1 impact category	39	24	12

4.2.6 Nemry et al. (2002)

Total number of impact indicators considered: 12

Impact indicators considered: primary energy, total material intensity, material intensity metals, material intensity minerals, material intensity organic, material intensity synthetic, water use, resource depletion, acidification, smog, greenhouse gases, waste

Total number of product groupings: 16

Product groupings	%80	%60	%40
Passenger transport	9	6	6
Total building structure	8	6	3
Industrial packaging	7	5	3
Household packaging	4	1	1
Interior climate	4	2	2
Office machine	3	2	1
Furniture	1	0	0
Hot water	1	0	0
Lighting	1	0	0
Healthcare and detergents	1	0	0
Sanitary equipment	1	1	1
Number of product groupings relevant in at least one impact category	11	7	7

4.2.7 Nijdam and Wilting (2003)

Total number of impact indicators considered: 6

Indicators considered: land use, water use, acidification, eutrophication, smog, climate

Total number of product groupings: 65

Product groupings	%80	%60	%40
# Clothes	6	4	0
# Non-animal based food	6	6	6
# Animal based food	6	6	4
# Restaurant, pub, etc.	6	2	0
# Holidays	6	4	0
# Electricity	5	1	0
# Rent and mortgage	5	3	1
# Furniture	4	0	0
# Commuting, private transport	3	3	2
# Kitchen appliances etc.	3	0	0
# Newspapers, periodicals, books	3	0	0
# TV, radio ('Brown goods'/Electronics)	3	0	0
# Garden, excluding furniture	3	0	0
# Heating	3	2	1
# Shoes	2	0	0
# Accessoires	2	0	0
# Energy, hot water	2	0	0
# Shelter – other	2	0	0
# Personal care – water	1	0	0
# Personal care – other	1	0	0
# Alcoholic beverages	1	0	0
# Smoking	1	0	0
# Painting and wallpaper	1	0	0
# Flowers and plants (in house)	1	0	0
# Taxes	1	0	0
Number of product groupings relevant in at least one impact category	25	12	6

4.2.8 Weidema et al. (2005)

Total number of impact categories considered: 6

Indicators considered: global warming, ozone depletion, acidification, nutrient enrichment, photochemical ozone formation and nature occupation.

Total number of product groupings: 98

Product grouping	%25	%15	%5
Dwellings and heating in DK, private consumption	6	5	3
Car purchase and driving in DK, private consumption	6	5	2
Tourist expenditures by Danes travelling abroad, private cons.	5	4	0
Meat purchase in DK, private consumption	4	3	2
Clothing purchase and washing in DK, private consumption	4	2	0
Personal hygiene in DK, private consumption	4	1	0
General public services, public order and safety affairs in DK	4	1	0
Catering, DK private consumption	4	1	0
Education and research, DK public consumption	3	1	0
Transport services in DK, private consumption	3	0	0
Bread and cereals in DK, private consumption	3	0	0
Economic affairs and services, DK public consumption	2	1	0
Hospital services in DK, public consumption	2	1	0
Footwear in DK, private consumption	1	1	0
Furniture & furnishing in DK, private consumption	1	1	0
Retirement homes, day-care etc. in DK, public consumption	1	0	0
Ice cream, chocolate and sugar products in DK, private cons.	1	0	0
Number of product groupings relevant in at least one impact category	17	13	3

4.3 Data tables: important product groupings per environmental theme (Chapter 4.4)

4.3.1 Resources

	Nemry et al. (2002) Total material intensity (not raw materials; fuels for energy not considered)		Dall et al. (2002) Resources others (Resources non energy, to be comparable with IW/VITO study)		Dall et al. (2002) Resources total (resources incl. energy, to be more compatible with TMR total, Moll et al. (2004))		Moll et al. (2004) TMR total (incl. TMR fossil fuels, because besides use for energy, also for synthetic materials)	
Top 20%	Total building structure	56%	Tv, computer etc.	22%	Car transportation	21%	#45_Construction	11%
							#27_Basic metals	11%
Top 40%			Car transportation	19%	Food production	20%	#34_Motor vehicles, trailers and semi-trailers	10%
							#40_Electricity, gas, steam and hot water supply	9%
Top 60%	Industrial packaging	4%	Furniture, lighting etc.	13%	Heating	11%	#15_Food products and beverages	7%
			Food production	10%	Tv, computer etc.	10%	#29_Machinery and equipment n.e.c.	5%
							#10_Coal and lignite, peat	4%
							#24_Chemicals and chemical products	4%
Top 80%	Office machines	3%	Serving and dishwashing	9%	Furniture, lighting etc.	8%	#28_Fabricated metal products, except machinery and equipment	3%
	Passenger transport	3%	Cooking	6%	Personal care	5%	#01_Products from agriculture, hunting and related service activities	3%
	Household packaging	3%	Clothes washing	5%	Serving and dishwashing	5%	#23_Coke, refined petroleum products and nuclear fuel	3%
	Furniture	1%			Clothes washing	5%	#26_Other non-metallic mineral products	3%
	(Total	71%)					#75_Public administration and defense; compulsory social security	2%
	(Other	<0.5%)					#13,14_Metal ores and other mining and quarrying products	2%
							#21_Pulp, paper and paper products	2%
							#31_Electrical machinery and apparatus n.e.c.	2%

	Nemry et al. (2002) Metals		Moll et al. (2004) TMR metals (incl. category "27_Basic metals")		Moll et al. (2004) TMR metals (excl. category "27_Basic metals")	
Top 20%	Passenger transport	49%	#27_Basic metals	28%	#34_Motor vehicles, trailers and semi-trailers	31%
Top 40%			#34_Motor vehicles, trailers and semi-trailers	23%	#29_Machinery and equipment n.e.e.	17%
Top 60%	Total building structure	22%	#29_Machinery and equipment n.e.C.	12%	#28_Fabricated metal products, except machinery and equipment	11%
Top 80%	Industrial packaging	10%	#28_Fabricated metal products, except machinery and equipment	8%	#45_Construction	8%
			#45_Construction	5%	#31_Electrical machinery and apparatus n.e.c.	6%
			#31_Electrical machinery and apparatus n.e.c.	4%	#36_Furniture; n.e.c.	6%
					#32_Radio, television and communication equipment and apparatus	3%

	Nemry et al. (2002) Minerals		Moll et al. (2004) TMR industrial minerals (excl. of #13,14 does not affect results)		Moll et al. (2004) TMR construction minerals (excl. of #13,14 does not affect results)	
Top 20%	Total building structure	96%	#45_Construction	33%	#45_Construction	33%
Top 40%			#27_Basic metals	11%	#27_Basic metals	12%
Top 60%			#13,14_Metal ores and other mining and quarrying products	8%	#13,14_Metal ores and other mining and quarrying products	9%
			#26_Other non-metallic mineral products	8%	#26_Other non-metallic mineral products	7%
Top 80%			#34_Motor vehicles, trailers and semi-trailers	7%	#34_Motor vehicles, trailers and semi-trailers	7%
			#15_Food products and beverages	5%	#15_Food products and beverages	5%
			#29_Machinery and equipment n.E.C.	3%	#29_Machinery and equipment n.e.c.	3%
			#24_Chemicals and chemical products	3%	#75_Public administration and defense; compulsory social security	3%
			#75_Public administration and defense; compulsory social security	3%	#70_Real estate services	2%

	Nemry et al. (2002) Organic		Moll et al. (2004) TMR Biomass	
Top 20%	Industrial packaging	31%	#15_Food products and beverages	36%
Top 40%	Office machinery	28%	#01_Products from agriculture, hunting and related service activities	19%
Top 60%			#21_Pulp, paper and paper products	7%
Top 80%	Total building structure	23%	#55_Hotels and restaurant services	4%
			#02_Products from forestry, logging and related service activities	4%
			#45_Construction	4%
			#20_Wood products and cork, except furniture; articles of straw and plaiting materials	3%
			#22_Products from publishing, printing and reproduction of recording media	2%
			#36_Furniture; n.E.C.	2%

	Nemry et al. (2002) Synthetic		Dall et al. (2002) Resources energy		Moll et al. (2004) Fossil fuels	
Top 20%	Passenger transport	22%	Food production	26%	#40_Electricity, gas, steam and hot water supply	19%
Top 40%	Industrial packaging	21%	Car transportation	23%	#10_Coal and lignite, peat	8%
					#24_Chemicals and chemical products	7%
					#45_Construction	7%
Top 60%	Total building structure	18%	Heating	16%	#34_Motor vehicles, trailers and semi-trailers	6%
					#23_Coke, refined petroleum products and nuclear fuel	6%
					#27_Basic metals	5%
Top 80%	Household packaging	15%	Personal care	6%	#15_Food products and beverages	4%
	Healthcare and detergents	10%	Furniture, lighting etc.	5%	#29_Machinery and equipment n.E.C.	3%
			Clothes washing	4%	#75_Public administration and defense; compulsory social security	3%
					#26_Other non-metallic mineral products	2%
					#52_Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods	2%
					#85_Health and social work	2%
					#21_Pulp, paper and paper products	2%
					#28_Fabricated metal products, except machinery and equipment	2%

4.3.2 Depletion resources (abiotic)

	Labouze et al. (2003) Resource depletion (For "Building occupancy", no lower level data available)		Nemry et al. (2002) Resource depletion	
Top 20%	Building occup. – domestic	26%	Total building structure	64%
Top 40%	Personal cars	15%		
Top 60%	Building occupancy – commercial	14%		
	Goods transport (road, rail, water)	11%		
Top 80%	EEE – domestic appliances	9%	Passenger transport	15%
	Textile – apparel	4%		

4.3.3 Energy

	Nemry et al. (2002) <i>Primary energy</i>		Labouze et al. (2003) <i>Primary energy</i>		Kok et. al. (2003) <i>Direct + Indirect energy use</i>		Dall et al. (2002) <i>Primary energy consumption</i>		Moll et al. (2004) <i>Primary energy supply (direct + indirect)</i>	
Top 20%	Passenger transport	34%	Space heating - domestic	17%	Heating natural gas and shelter electr. (heating and appliances)	30%	Food production	24%	#24_Chemicals and chemical products	12%
			Personal cars	12%					#40_Electricity, gas, steam and hot water supply	10%
Top 40%	Interior climate	32%	EEE - domestic app.	10%	Transport, direct fuel + indirect	18%	Car transportation	18%	#34_Motor vehicles, trailers and semi-trailers	9%
									#45_Construction	7%
									#15_Food products and beverages	6%
Top 60%			Goods transport (road, rail, water)	10%	Feeding, indirect (food and outdoor consumption)	13%	Heating	15%	#29_Machinery and equipment n.E.C.	5%
			Space heating - commercial	7%			Furniture, lightening etc.	6%	#27_Basic metals	4%
			Building structure - commercial	5%					#75_Public administration and defense; compulsory social security	4%
									#85_Health and social work	3%
Top 80%	Lighting	6%	Appliances and lighting - commercial	5%	Leisure (holidays, sports, games, toys, cultural activities, audio visual equipment etc...)	8%	Clothes washing	6%	#52_Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods	3%
	Building structure	6%	Vegetables	4%	Personal care, fossil (hot water)	7%	Personal care	5%	#23_Coke, refined petroleum products and nuclear fuel	3%
	Hot water	5%	Water Heating - domestic	4%	Tap water - natural gas	7%	Food storage	4%	#60_Land transport services	3%
			Textile - apparel	3%					#28_Fabricated metal products, except machinery and equipment	2%
			Appliances and lighting - domestic	3%					#62_Air transport systems	2%
									#55_Hotels and restaurant services	2%
									#25_Rubber and plastic products	2%
									#51_Wholesale trade and commission trade, except of motor vehicles...	2%
									#80_Education	2%
									#31_Electrical machinery and apparatus n.E.c.	1%

4.3.4 Land use

	Nijdam and Wilting (2003) <i>Land use</i>		Moll et al. (2004) <i>Land use</i>		Weidema et al. (2005) <i>Land use</i>	
Top 20%	# Rent and mortgage	29%	Consumption of private households (domestic)	53%	Meat purchase in DK, private consumption	10%
					Dwellings in DK, private	6.4%
					Tourist expenditures abroad, private, except car driving	3.0%
Top 40%	# Non-Animal based food	24%				
Top 60%	# Animal based food	12%	#15_Food products and beverages	8%		
Top 80%	# Clothes	4%	01,02,05_MINING OF BIOTIC RESOURCES	6%		
	# Restaurant, pub, etc.	4%	#45_Construction	4%		
	# Holidays	3%	#60_Land transport services	3%		
	# Taxes	2%	#92_Recreational, cultural and sporting services	2%		
	# Furniture	1%	#52_Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods	2%		
	# Newspapers, periodicals, books	1%	#55_Hotels and restaurant services	2%		

4.3.5 Water use

	Nijdam and Wilting (2003) <i>Water use</i>		Nemry et al. (2002) <i>Water use</i> (only water public supply)	
Top 20%	# Non-animal based food	33%	Sanitary equipment	93%
Top 40%	# Animal based food	10%		
Top 60%	# Clothes	5%		
	# Restaurant, pub, etc.	5%		
	# Holidays	4%		
	# Electricity	3%		
Top 80%	# Feeding - Direct energy (gas, electricity)	3%		
	# Personal care - Water	3%		
	# Garden, excluding furniture	3%		
	# Energy, hot water	2%		
	# Smoking	2%		
	# Electricity	2%		
	# Rent and mortgage	2%		
	# Mobility for leisure	2%		
	# Flowers and plants (in house)	2%		

4.3.6 Acidification

	Labouze et al. (2003) Acidification		Nemry et al. (2002) Acidification		Nijdam and Wilting (2003) Acidification		Moll et al. (2004) Acidification		Weidema et al. 2004 Acidification	
Top 20%	Goods transport (road, rail, water)	15%	Passenger transport	39%	# Animal based food	18%	#40_Electricity, gas, steam and hot water supply	13%	Car purchase and driving in DK, private consumption	5.0%
	Space heating - domestic	11%			# Non-animal based food	13%	#34_Motor vehicles, trailers and semi-trailers	9%	Dwellings and heating in DK, private consumption	4.3%
									Meat purchase in DK, private consumption	3.4%
									Tourist expenditures by Danes travelling abroad, private cons.	3.3%
									Personal hygiene in DK, private consumption	1.3%
									Clothing purchase in DK, private consumption	1.3%
									Catering, DK private consumption	1.1%
Top 40%	EEE - domestic appliances	10%			# Mobility for leisure	7%	#45_Construction	8%		
	Personal cars	10%			# Commuting, private transport	7%	#24_Chemicals and chemical products	6%		
							#15_Food products and beverages	6%		
Top 60%	Textile - apparel	6%	Industrial packaging	15%	# Clothes	6%	#27_Basic metals	5%		
	Space heating - commercial	6%	Total building structure	10%	# Holidays	5%	#29_Machinery and equipment n.E.C.	5%		
	Building structure (commercial and residential)	6%			# Restaurant, pub, etc.	4%	#60_Land transport services	4%		
					# Rent and mortgage	3%	#52_Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods	3%		
Top 80%	Cleaning agents	5%	Household packaging	8%	# Furniture	3%	#23_Coke, refined petroleum products and nuclear fuel	3%		
	Packaging - household	4%	Interior climate	7%	# TV, radio ('brown goods'/electronics)	3%	#75_Public administration and defense; compulsory social security	3%		
	Appliances and lighting - commercial	4%			# Kitchen appliances etc.	2%	#62_Air transport systems	3%		
	Public transport (road, rail, water, air)	4%			# Feeding – direct energy (gas, electricity)	2%	#85_Health and social work	2%		
	Vegetables	3%			# Shoes	2%	#51_Wholesale trade and commission trade, except of motor vehicles...	2%		
					# Newspapers, periodicals, books	2%	#28_Fabricated metal products, except machinery and equipment	2%		
					# Accessoires	1%	#26_Other non-metallic mineral products	2%		
					# Heating	1%	#55_Hotels and restaurant services	2%		
					# Electricity	1%				
					# Alcoholic beverages	1%				
					# Garden, excluding furniture	1%				

4.3.7 Eutrophication

	Labouze et al. (2003) <i>Eutrophication</i>	Nijdam and Wilting (2003) <i>Eutrophication</i>	Weidema et al. (2005) <i>Eutrophication</i>
Top 20%	Vegetables 64%	# Non-Animal based food 36%	Meat purchase in DK, private consumption 9.0% Tourist expenditures by Danes traveling abroad, private cons. 3.3% Car purchase and driving in DK, private consumption 3.0% Dwellings and heating in DK, private consumption 2.1% Catering, DK private consumption 1.9% Clothing purchase and washing in DK, private consumption 1.5%
Top 40%		# Animal based food 29%	
Top 60%			
Top 80%	Furniture 14%	# Personal care - Other 6% # Restaurant, pub, etc. 5% # Holidays 4% # Clothes 4%	

4.3.8 Photochemical ozone formation ('smog')

	Labouze et al. (2003) Smog	Nemry et al. (2002) Smog	Nijdam and Wilting (2003) Smog	Moll et al. (2004) Smog	Weidema et al. (2005) Smog
Top 20%	Personal cars 24%	Passenger transport 62%	# Commuting, private transport 17% # Mobility for leisure 17%	#35_Other transport equipment 33%	Car purchase and driving in DK, private consumption 17% Dwellings and heating in DK, private 7.1%
Top 40%	Animal based food 13% Goods transport (road, rail, water) 13%		# Non-animal based food 8%	#34_Motor vehicles, trailers and semi-trailers 5% #45_Construction 5%	Personal hygiene in DK, private consumption 2.5% Tourist expenditures abroad, private, except car driving 2.1% Clothing purchase in DK, private consumption 2.0% Car driving for holiday abroad, private consumption 1.9% General public services, public order and safety affairs in DK 1.5% Education and research, DK public consumption 1.3% Hospital services in DK, public consumption 1.3% Meat purchase in DK, private consumption 1.2% Catering, DK private consumption 1.1%
Top 60%	Building structure (commercial and residential) 7% Cleaning agents 7%		# Clothes 5% # Holidays 5% # Animal based food 4% # Feeding – direct energy (gas, electricity) 3% # Heating 3%	#15_Food products and beverages 5% #24_Chemicals and chemical products 4% #62_Air transport systems 4% #60_Land transport services 4%	
Top 80%	Textile - apparel 6% Space heating - domestic 5% Municipal waste 5%	Interior climate 20%	# TV, radio ('brown goods'/electronics) 3% # Rent and mortgage 3% # Painting and 'wallpaper' 2% # Furniture 2% # Shelter – other 2% # Kitchen appliances etc. 2% # Shoes 2% # Restaurant, pub, etc. 2% # Newspapers, periodicals, books 1% # Accessoires 1%	#40_Electricity, gas, steam and hot water supply 4% #75_Public administration and defense; compulsory social security 4% #27_Basic metals 3% #29_Machinery and equipment n.E.C. 3% #52_Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods 3% #23_Coke, refined petroleum products and nuclear fuel 2%	

4.3.9 Global warming

	Labouze et al. (2003) Greenhouse effect		Nemry et al. (2002) Greenhouse effect		Nijdam and Wilting (2003) Greenhouse effect		Weidema et al. (2005) Greenhouse effect	
Top 20%	Personal cars	17%	Passenger transport	33%	# Non-animal based food	12%	Dwellings and heating in DK, private consumption	7.7%
	Space heating - domestic	16%			# Animal based food	10%	Car purchase and driving in DK, private consumption	6.0%
							Tourist expenditures by Danes travelling abroad, private cons.	3.7%
							Clothing purchase and washing in DK, private consumption	2.1%
							Personal hygiene in DK, private consumption	1.9%
							Meat purchase in DK, private consumption	1.7%
Top 40%	Other build. occup – commercial (difference total - sum subcat.)	12%	Interior climate	31%	# Heating	9%	General public services, public order and safety affairs in DK	1.5%
					# Mobility for leisure	8%	Education and research, DK public consumption	1.5%
							Catering, DK private consumption	1.5%
							Fruit and vegetables in DK, except potatoes, private consumption	1.5%
							Economic affairs and services, DK public consumption	1.5%
							Car driving as fringe benefit and car related services	1.5%
							Television, computer etc. in DK, incl. use, private consumption	1.5%
							Hospital services in DK, public consumption	0.8%
							Retirement homes, day-care etc. in DK, public consumption	0.8%
Top 60%	Goods transport (road, rail, water)	10%			# Commuting, private transport	8%		
	EEE – domestic appliances	8%			# Holidays	5%		
					# Clothes	4%		
					# Feeding – direct energy (gas, electricity)	4%		
					# Rent and mortgage	3%		
Top 80%	Animal based food	5%	Total building structure	11%	# Energy, hot water	3%		
	Municipal waste	5%	Industrial packaging	5%	# Restaurant, pub, etc.	3%		
	Water heating - domestic	3%			# Electricity	2%		
	Building structure (commercial and residential)	3%			# Furniture	2%		
					# TV, radio ('brown goods'/electronics)	2%		
					# Kitchen appliances etc.	2%		
					# Shelter – other	1%		
					# Electricity	1%		
					# Garden, excluding furniture	1%		

4.3.10 Waste

	Labouze et al. (2003) Municipal and industrial waste <i>(excl. category "municipal waste")</i>		Nemry et al. (2002) Waste (excl. building waste)		Dall et al. (2002) Waste		Moll et al. (2004) Total waste excl. bulk construction and demolition waste	
Top 20%	Gardening	18%	Industrial packaging	31%	Furniture, lighting etc.	27%	Consumption of private households (domestic)	20%
Top 40%	Vegetables	18%	Household packaging	20%	Sparetime	19%	#15_Food products and beverages	9%
	Packaging - household	15%					#45_Construction	7%
							40,41_ELECTRICITY, GAS, STEAM AND HOT WATER SUPPLY; COLLECTION, PURIFICATION AND DISTRIBUTION OF WATER	7%
Top 60%	Paper products	13%	Office machine	19%	Clothes	14%	27,28_BASIC METALS; FABRICATED METAL PRODUCTS, EXCEPT MACHINERY AND EQUIPMENT	6%
							#34_Motor vehicles, trailers and semi-trailers	5%
							50,51,52_SALE, MAINTENANCE AND REPAIR OF MOTOR VEHICLES AND MOTORCYCLES; RETAIL SALE OF AUTOMOTIVE FUEL; WHOLESALE TRADE AND COMMUNICATION TRADE, EXCEPT OF MOTOR VEHICLES AND MOTORCYCLES; REPAIR OF PERSONAL AND HOUSEHOLD GOODS	5%
Top 80%	Packaging - industrial	11%	Passenger transport	18%	Food production	12%	#75_Public administration and defense; compulsory social security	4%
	Animal based food	9%			Car transport	6%	70,71,72,73,74 BUSINESS SERVICES	4%
					Beer, wine and alcohols	3%	#29_Machinery and equipment n.e.c.	4%
							#85_Health and social work	3%
							#24_Chemicals and chemical products	3%
							#21_Pulp, paper and paper products	2%

	Labouze et al. (2003) Inert waste		Moll et al. (2004) Bulk construction and demolition waste	
Top 20%	Civil work (roads and other infrastructures)	56%	#45_Construction	61%
Top 40%				
Top 60%	Building structure (commercial and residential)	40%		
Top 80%			#23_Coke, refined petroleum products and nuclear fuel	7%
			10,11,12,13,14_MINING ABIOTIC RESOURCES	5%
			70,71,72,73,74 BUSINESS SERVICES	4%
			40,41_ELECTRICITY, GAS, STEAM AND HOT WATER SUPPLY; COLLECTION, PURIFICATION AND DISTRIBUTION OF WATER	3%

5 Annex 5: Annexes to Chapter 5

The annexes give full data where this seems possible and useful. Larger matrices cannot be printed. For these, only a general description is given in the annexes here, either with a reference to a website where the full matrices may be viewed at www.leidenuniv.nl/cml/ssp/, or as a remark that these files are available for inspection from CML. A manual of the original CEDA 3.0 model is also available from CML (Suh, 2004).

5.1 General modelling: elements

5.1.1 RAS procedure on CEDA 3.0

Introduction

The technology matrix A_{EU25} is estimated using three types of data. The US input-output (IO) table from CEDA 3.0 is the starting point for the RAS procedure, retaining the level of detail of that table. The main Europeanising restriction used is the total sales and purchases per sector from the 1990 country data of the OECD for 35 sectors (OECD,1995). (No later authoritative tables were available!) These data have been adapted to the EU-25 level for 2003, based on economic growth in the EU-15 and linked to the 480 BEA/CEDA categories. The resulting 480 x 35 transformation matrix is available from CML. The method used for combining these different sources is the RAS method¹⁶. This method transforms a set of partial data for a given framework into a consistent whole. In the next step, the energy sector has been Europeanised, by adapting the energy resource mix to the European situation. This Europeanised technology table is later split in a production and a disposal management matrix, see under A_{11} and A_{33} below.

The principle of RAS

The RAS method is a well established method that is used to estimate input-output tables with partial information based on similar input-output structural data. The main areas of application are updating IO tables and projecting future IO structures when part of the information required is given. In practice, the RAS method results in the input-output structure that is the most probable under the given constraints on total production and consumption values (Stone, 1963). Furthermore, if some figures in the new table are known beforehand, they can be incorporated with the RAS method to make the overall result more realistic (Lecomber, 1975). In general, the RAS method provides a reasonable way to estimate an input-output structure when information is incomplete. In this project we utilise the RAS method to estimate the input-output structure of the EU-25 that is adjusted by the industrial production and consumption values of EU-25, using the US structure as a starting point. The RAS method can be applied as long as the data refer to the format of the US structure, which has been safeguarded through a number of transformation links. Although the difference in the level of detail between CEDA and the constructed EU-25 input-output table is substantial, 480 against 35 sectors, this poses no problem. The mathematical basis for the RAS method used in this project is elaborated further below.

Please note that at this stage the detailed technology matrix has not yet been split into a production part A_{11} and disposal activities part A_{33} .

¹⁶ Restricted Additive Schwarz methods, a set of widely applied mathematical techniques, in economic input-output analysis used for estimation purposes.

In order to run the RAS method, it is necessary to have information on the total intermediate production and total intermediate input per product (in the literature on this subject the term ‘commodity’ is often used) at the same level of detail that the starting table holds. If the level of detail and the number of commodities differ, either of the two needs to be (dis)aggregated in an appropriate manner, in this case by disaggregating to the CEDA level. Let us denote the US technology matrix as \mathbf{A}_{US} ¹⁷, which is derived by:

$$(1) \quad \mathbf{A}_{US} = \mathbf{Z}_{US} \hat{\mathbf{x}}_{US}^{-1} = \mathbf{A}_1,$$

where \mathbf{Z}_{US} is the intermediate transaction matrix and \mathbf{x}_{US} is the total production vector of the US. Let \mathbf{w}_{US} be the total intermediate demand, which is calculated by

$$(2) \quad \mathbf{w}_{US} = \mathbf{Z}_{US} \mathbf{i},$$

where \mathbf{i} denotes an addition vector in the appropriate where all elements are 1.

Let us assume that the total production, \mathbf{x}_{EU25} , total intermediate input \mathbf{u}_{EU25} and total intermediate demand \mathbf{w}_{EU25} for the EU-25 are given. Then an intermediate transaction matrix that fulfils the total production of the EU-25 can be calculated by:

$$(3) \quad \mathbf{Z}_1 = \mathbf{A}_{US} \hat{\mathbf{x}}_{EU25}.$$

However, the derived \mathbf{Z}_1 does not satisfy the other constraints, namely \mathbf{u}_{EU25} and \mathbf{w}_{EU25} that are known to be reliable. Therefore, the derived \mathbf{Z}_1 is subject to further adjustments to be able to meet other requirements which is similar to equation (2):

$$(4) \quad \mathbf{w}_1 = \mathbf{Z}_1 \mathbf{i},$$

and we further define:

$$(5) \quad \mathbf{r}_1 = \hat{\mathbf{w}}_1^{-1} \mathbf{w}_{EU25}.$$

A new intermediate transaction matrix that fulfils the intermediate demand of the EU-25 can then be calculated by

$$(6) \quad \mathbf{A}_2 = \hat{\mathbf{r}}_1 \mathbf{A}_1.$$

However, again, the derived \mathbf{A}_2 does not generally satisfy the other constraint, namely \mathbf{u}_{EU25} . Thus \mathbf{A}_2 can be further adjusted by:

$$(7) \quad \mathbf{A}_3 = \mathbf{A}_2 \hat{\mathbf{s}}_2,$$

where

¹⁷ To avoid confusion with the naming of the nine production matrices below, other symbols have been used here. The \mathbf{A}_{US} and the \mathbf{A}_{EU25} do not correspond to any combination of the \mathbf{A}_{ij} s as developed below. For the same reason, the application of the RAS method is done in this section and not in the section where these matrices are developed.

$$(8) \quad \mathbf{s}_2 = \hat{\mathbf{u}}_2^{-1} \mathbf{u}_{\text{EU25}}$$

and

$$(9) \quad \mathbf{u}_2 = \mathbf{i}' \mathbf{A}_2 \hat{\mathbf{x}}_{\text{EU25}}.$$

However, again the derived \mathbf{A}_3 is generally incapable of fulfilling the other constraints. Therefore, the procedure described above is iteratively performed until both the \mathbf{r}_n and \mathbf{s}_n vector become close to \mathbf{i} . In general, the technology matrix \mathbf{A}_{EU25} using the RAS method satisfies:

$$(10) \quad \mathbf{A}_{\text{EU25}} = \mathbf{r} \mathbf{A}_{\text{US}} \mathbf{s},$$

where \mathbf{r} and \mathbf{s} represent element-wise multiplication of $\mathbf{r}_1, \mathbf{r}_2, \dots, \mathbf{r}_n$ and $\mathbf{s}_1, \mathbf{s}_2, \dots, \mathbf{s}_n$.

In practice, however, there is generally information available for some part of the intermediate transaction matrix. The modified RAS method is capable of incorporating such additional information within its estimation procedure (Lecomber, 1975). In particular, more accurate and detailed figures have been used for European agricultural production, power industry and energy related sectors to improve the reliability of the EU25 technology matrix resulting from the RAS method.

Data used in this RAS procedure

The US technology matrix has primarily been Europeanised in the RAS procedure using the OECD 35 sectors input-output data for: UK, France, Germany, Italy and Denmark (OECD, 1995).

Together they constitute 72 % of the EU25 economy in 1990. These partial IO tables have been integrated into EU-25 level using plain exchange rates for that purpose as these actual rates best reflect the technology connections. Then they have been scaled up to EU25 for year 2003 on the basis of the GDPs for both years. The excel files of eight linked sheets with these data are available for review from CML.

5.1.2 Normalisation and aggregation

The normalisation step refers to European totals as have been established by van Oers et al. (2001), adapted to the EU-25 and 2003 as ‘van Oers’. These emission data have been forced on the US based emission factors for all economic activities so that total emissions of total consumption, public and private together by necessity are equal to ‘van Oers’. For this European total, the characterised scores are per impact category. The scores for each product are expressed as a share of this total; that is in LCA terminology ‘normalised’. Thus, for each product, eight normalised scores result, one for each impact category. Table 5.1.1 gives the normalisation values used. Note that the (normalised) scores of the three themes related to ecotoxicity have been averaged to one score on ‘ecotoxicity’.

Table 5.1.1.: Normalisation values for the EU-25 used in the EIPRO study

Theme	Norm. value	Unit
Abiotic depletion	1,33E+10	kg antimony eq./yr
Global warming GWP100	4,71E+12	kg CO ₂ eq./yr
Ozone layer depletion ODP steady state	3,69E+07	kg CFC-11 eq./yr
Human toxicity HTP inf.	1,91E+12	kg 1,4-dichlorobenzene eq./yr
Freshwater aquatic ecotoxicity FAETP inf.	1,29E+12	kg 1,4-dichlorobenzene eq./yr
Marine aquatic ecotoxicity MAETP inf.	5,74E+15	kg 1,4-dichlorobenzene eq./yr
Terrestrial ecotoxicity TETP inf.	2,64E+11	kg 1,4-dichlorobenzene eq./yr
Photochemical oxidation (high NO _x)	3,84E+10	kg ethylene eq./yr
Acidification (incl. fate, average europe total, A&B)	4,31E+10	kg SO ₂ eq./yr
Eutrophication (fate not incl.)	1,05E+10	kg PO ₄ --- eq./yr

For aggregation of the scores per impact category into an overall score, as used for ordering products in graphical surveys, the weights as used in the Dutch environmental policy for the oil and gas producing industry (NOGEPa) have been used, see Table 5.1.2 below. For impact categories not present there, an average over all impact categories has been used.

Table 5.1.2 Weighting factors for aggregate environmental score (percentages)

ADP Guinee et al. 2002	GWP100 Houghton et al., 2001	ODP steady state (WMO, 1992, 1995 & 1999)	HTP inf. Huijbregts, 1999 & 2000	ETP average over three ecotox themes	POCP Jenkin & Hayman, 1999; Derwent et al. 1998; high NO _x	AP Huijbregts 1999; average Europe total, A&B	EP Heijungs et al. 1992	
5	35	5	17	7	9	7	15	100

5.2 Elaboration of the CEDA EU-25 product and environment model

5.2.1 Production technology matrix A₁₁

Adapted technology matrix

Starting point: Technology matrix resulting after applying the RAS procedure

Sectors specifically adapted are:

- Agriculture
- energy mix for electricity generation.

The following adaptations were made:

Agriculture

- 22% higher input of fertiliser, adapted cells: A_EU25_1-adapted G177..R177
- 51% higher input of pesticides, adapted cells: A_EU25_1-adapted G178..R178

Source: FAO (1999).

Energy

Electricity to consumers goes by 680100; electric services (utilities). The energy is mostly provided by coal, gas, oil and nuclear, but in differing shares in EU25 and US. The tables have been adapted to the European situation in this respect.

coal comes from: 70000 coal

gas comes from: 80001 crude petroleum and natural gas and 680202 natural gas distribution. Notice that it has been assumed that purchases in category 80001 only includes gas, as crude petroleum is not burnt in power plants but is used after refining out more valuable products.

oil comes from: 310101 petroleum refining

nuclear comes from: 270100 industrial inorganic and organic chemical. This item includes uranium.

Results:

- The input of coal is about 40% lower in the EU compared to the US
- The use of gas is about 12% higher in the EU compared to the US
- The use of oil is about 12% higher in the EU compared to the US
- The use of nuclear power generation is 75% higher in the EU as compared to the US

All the adaptations are documented in the file ‘Electricity by source EU 15 and North America.xls’, available from CML.

5.2.3. Technology matrix for disposal activities A₃₃

The explanation of this table is given in the treatment of the flows, see Annex 5.2.6 below, where the flows from and to these disposal activities are specified.

	810001 me-col	810001 pa-col	810001 pl-col	810001 gl-col	680302	810001 me-re	810001 pa-re	810001 pl-re	810001 gl-re
Description	metal collection	paper collection	plastic collection	glass collection	sanitary service....	scrap (metal recycling)	scrap (paper recycling)	scrap (plastic recycling)	scrap (glass recycling)
810001me-col metal collection	0	0	0	0	0	9.00E-01	0	0	0
810001pa-col paper collection	0	0	0	0	0	0	5.00E-01	0	0
810001pl-col plastic collection	0	0	0	0	0	0	0	5.00E-01	0
810001gl-col glass collection	0	0	0	0	0	0	0	0	9.00E-01
680302 sanitary services,....	0	0	0	0	5.52E-02	3.84E-02	3.84E-02	3.84E-02	3.84E-02
810001me-re scrap (metal recycling)	0	0	0	0	0	2.60E-04	0	0	0
810001pa-re scrap (paper recycling)	0	0	0	0	0	0	2.60E-04	0	0
810001pl-re scrap (plastic recycling)	0	0	0	0	0	0	0	2.60E-04	0
810001gl-re scrap (glass recycling)	0	0	0	0	0	0	0	0	2.60E-04

Input coefficients So much money is spent on metal from the metal collection service to generate 1 euro of recycled metal. Value added 10%

5.2.5 Sales from production sectors to households A_{12}

Sixteen household consumption categories have been devised as a combination of products purchased. As the model is driven by k_2 and the sales of products to households is in terms of k_0 , at this point the link between these two ways of specification is made. Conceptually the most simple entry is in Table 5.2.5.1, which states purchases in terms of k_2 and sales in terms of k_0 , and their mutual relationships. For the products and the consumption activities involved, the totals add up to the same amount of purchases. By dividing the Euro values by the k_0 , the Φ (Z') partitioning matrix emerges (only the parts having non-1 at the diagonal). By dividing by the k_2 , the A_{12} matrix results. The actual operation is different, as it starts with k_0 and Φ , and then produces A_{12} . All consumption activities involving more than one product are surveyed in Tables 5.2.5.1 – 3 below. See Annex 5.2.9.3 for a more mathematical explanation of the method.

A detailed explanation of the following four categories follows, as this specification also forms the main basis for specifying direct emissions from households:

- Heating
- Cooking
- Washing
- Car driving

Furthermore, electricity use has been distributed fully over twelve products using electricity, and water use has partly been attributed to washing (which also uses electricity). These sixteen activities have several other products assigned to them. As this then is a combined category, using other inputs in its functioning, it receives an asterisk to distinguish it from the “clean single” product as purchased. We go through the products in turn.

Heating and cooking 400300* (Heating with) heating equipment, except electric and warm air furnaces but including warm water
Washing 540300* (Washing with) household laundry equipment
Car driving 590301* (Driving with) motor vehicles and passenger car bodies
Use of agrochemicals 270300* (Use of) pesticides and agricultural chemicals.

The total amount spent on, for instance, car driving is the sum of the money spent on car + fuel + tires + car insurance. They exclude specific taxes on the having or driving of cars. It should be noted that coefficients in the consumption matrix relate to monetary flows and not ‘physical’ flows.

In heating and cooking, all gas use by households has been covered, according to Eichhammer et al. (2004). See p19: Total household energy use: water and room heating 89%; cooking 2% and electricity 10%. The oil used in heating has been treated as gas (for practical reasons only). This covers CO_2 and NO_x reasonably well but may underestimate other emissions.

All electricity consumption by households has been distributed over the twelve products using electricity, thus becoming electricity using consumption activities (Fawcett et al., 2000).

It should be noted that, in contrast to the first four consumer activities, electricity use and water use do not create direct emissions from households; these occur in the production and waste management stages of the life cycle.

Table 5.2.5.1: Expenditure on products and consumption activities combined

IO-code	Name	80001' (Use of) Crude petroleum & nat. gas	270300' (use of) pesticides & agr. chemicals	310102 Lubricating oils and greases	400300' (Heating with) heating equipment	510103' (use of) Electronic computers	510104' (use of) Computer peripheral equipment	540100' (use of) Cooking equipment	540200' (use of) refrigerators and freezers	540300' (Washing with) laundry equipment	540400' (use of) Electric housewares & fans	540500' (use of) Household vacuum cleaners	540700' (use of) Household appliances, n.e.c.	550100' (use of) Electric lamp bulbs and tubes	560100' (use of) audio & video equipment	560300' (use of) Telephone and telegraph	560500' (use of) Communication equipment	590301' (Driving with) motors & passenger cars	680301 Water supply and sewerage systems	k₀ (partly)	
80001	Crude petroleum&nat. gas	1.7E09	0	0	1.6E10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.7E10
270300	Pesticides&agr.chemicals	0	1.2E10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.2E10
310101	Petroleum refining	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.1E10	0	0	3.1E10
310102	Lubricating oils& greases	0	0	1.0E09	0	0	0	0	0	0	0	0	0	0	0	0	0	4.0E09	0	0	5.0E09
320100	Tires and inner tubes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.5E09	0	0	2.5E09
400300	Heating equipment	0	0	0	5.2E08	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.2E08
500100	Carburetors, pistons, etc.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.4E07	0	0	1.4E07
510103	Electronic computers	0	0	0	0	1.3E10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.3E10
510104	Computer peripheral	0	0	0	0	0	9.9E09	0	0	0	0	0	0	0	0	0	0	0	0	0	9.9E09
540100	Cooking equipment	0	0	0	0	0	0	4.7E09	0	0	0	0	0	0	0	0	0	0	0	0	4.7E09
540200	Refrigerators and freezers	0	0	0	0	0	0	0	5.0E09	0	0	0	0	0	0	0	0	0	0	0	5.0E09
540300	laundry equipment	0	0	0	0	0	0	0	0	4.3E09	0	0	0	0	0	0	0	0	0	0	4.3E09
540400	Electric housewares & fans	0	0	0	0	0	0	0	0	0	1.7E09	0	0	0	0	0	0	0	0	0	1.7E09
540500	Vacuum cleaners	0	0	0	0	0	0	0	0	0	0	1.7E09	0	0	0	0	0	0	0	0	1.7E09
540700	Other appliances	0	0	0	0	0	0	0	0	0	0	0	2.0E10	0	0	0	0	0	0	0	2.0E10
550100	Electric lamp and tubes	0	0	0	0	0	0	0	0	0	0	0	0	3.2E08	0	0	0	0	0	0	3.2E08
560100	Audio and video equipment	0	0	0	0	0	0	0	0	0	0	0	0	0	6.1E09	0	0	0	0	0	6.1E09
560300	Telephone and telegraph	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.0E09	0	0	0	0	2.0E09
560500	Communication equipment	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.7E09	0	0	0	1.7E09
590301	Motor cycles and cars	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.8E11	0	0	1.8E11
590302	Motor vehicle parts	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.9E09	0	0	4.9E09
680100	Electric services (utilities)	0	0	0	0	7.7E08	1.3E08	7.8E09	1.7E10	2.2E10	1.6E09	1.6E09	1.6E09	1.4E10	1.1E10	7.7E08	1.0E09	0	0	0	7.9E10
680202	Natural gas distribution	0	0	0	4.2E10	0	0	1.3E09	0	0	0	0	0	0	0	0	0	0	0	0	4.3E10
680301	Water supply and sewer	0	0	0	0	0	0	0	0	5.2E09	0	0	0	0	0	0	0	0	0	2.1E10	2.6E10
k₂ (partly)		1.7E09	1.2E10	1.0E09	5.8E10	1.4E10	1.0E10	1.4E10	2.2E10	3.2E10	3.3E09	3.3E09	2.2E10	1.4E10	1.7E10	2.7E09	2.7E09	2.2E11	2.1E10	4.7E11	

Table 5.2.5.2: Distribution of products from industry (in k₀ terms) over consumption activities (in k₂ terms)

	80001' (Use of) Crude petroleum&natural gas	270300' (use of) pesticides and agr. chemicals,	310102 Lubricating oils and greases	400300' (Heating with) heating equipment	510103' (use of) Electronic computers	510104' (use of) Computer peripheral equipment	540100' (use of) Household cooking equipment	540200' (use of) Household refrigerators and freezers	540300' (Washing with) household laundry equipment	540400' (use of) Electric housewares and fans	540500' (use of) Household vacuum cleaners	540700' (use of) Household appliances, n.e.c.	550100' (use of) Electric lamp bulbs and tubes	560100' (use of) audio and video equipment	560300' (use of) Telephone and telegraph apparatus	560500' (use of) Communication equipment	590301' (Driving with) motors and pass. car s	680301 Water supply and sewerage systems	Totals	
80001 Crude petroleum and nat. gas	0.1	0	0	0.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
270300 Pesticides and agr. chemicals	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
310101 Petroleum refining	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
310102 Lubricating oils and greases	0	0	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.8	0	1
320100 Tires and inner tubes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
400300 Heating equipment	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
500100 Carburetors, pistons and valves	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
510103 Electronic computers	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
510104 Computer peripheral equipment	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
540100 Cooking equipment	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
540200 Refriger. & freezers	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
540300 Laundry equipment	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
540400 Electric housewares and fans	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
540500 Vacuum cleaners	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
540700 Other appliances	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
550100 Electric lamp bulbs and tubes	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
560100 Audio and video equipment	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
560300 Telephone and telegraph	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
560500 Communication equipment	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
590301 Motors and carss	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
590302 Motor vehicle parts	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
680100 Electric services (utilities)	0	0	0	0	0.00974	0.00162	0.09808	0.20962	0.28269	0.02051	0.02051	0.02051	0.17115	0.14284	0.00974	0.01299	0	0	0	1
680202 Natural gas distribution	0	0	0	0.97	0	0	0.03	0	0	0	0	0	0	0	0	0	0	0	0	1
680301 Water supply and sewer	0	0	0	0	0	0	0	0	0.2	0	0	0	0	0	0	0	0	0	0.8	1

Table 5.2.5.3: Products used per consumption activity, selection from matrix A₁₂

CEDA code	Name	80001' (Use of Crude petroleum&nat.gas	270300' (Household use of pesticides&agric. chemicals.	310102 Lubricating oils&greases	400300' (Heating with) heating equipment	510103' (use of) Electronic computers	510104' (use of) Computer peripherals	540100' (use of) Cooking equipment	540200' (use of) Refrigerators and freezers	540300' (Washing with) Laundry equipment	540400' (use of) Electric housewares	540500' (use of) Vacuum cleaners	540700' (use of) Other appliances.	550100' (use of) Electric lamps&tubes	560100' (use of) Audio and video equipment	560300' (use of) Telephone and telegraph	560500' (use of) Communication equip.	590301' (Driving with) motors & cars	680301 Water supply and sewerage systems
80001	Crude petroleum&nat.gas	1.00			0.27														
270300	Pesticides&agric.chemic.		1.00																
310101	Petroleum refining																	0.14	
310102	Lubricating oils			1.00														0.02	
320100	Tires and inner tubes																	0.01	
400300	Heating equipment				0.01														
500100	Carburetors,pistons&valves																		
510103	Electronic computers					0.94													
510104	Computer peripherals						0.99												
540100	Cooking equipment							0.34											
540200	Refrigerators and freezers								0.23										
540300	Laundry equipment									0.14									
540400	Electric housewares										0.51								
540500	Vacuum cleaners											0.60							
540700	Other appliances												0.93						
550100	Electric lamps&tubes													0.02					
560100	Audio and video														0.35				
560300	Telephone and telegraph															0.72			
560500	Communication equipment																0.62		
590301	Motors&cars																	0.81	
590302	Motor vehicle parts																	0.02	
680100	Electric services (utilities)					0.06	0.01	0.57	0.77	0.70	0.49	0.40	0.07	0.98	0.65	0.28	0.38		
680202	Natural gas distribution				0.72			0.09											
680301	Water supply and sewer									0.16									1.00
Totals:		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

5.2.6 Sales from disposal services to households A_{32}

Waste management

Eventually, all material products purchased go into general waste management, involving waste collection, incineration and final disposal. First, the price consumers pay for the disposal service is specified. Specific products contribute to specific recyclable flows; these are specified next. The waste collectors sell the sorted material to the recyclers, at prices as indicated below. The value added at recycling results in the sales of products by the recyclers to industry.

Price of general waste management (waste collection, incineration and final disposal)

Based on Dutch household waste collection fees and average Dutch household waste generation: EUR 0.005/EUR product/service.

Ideally, the collection and sorting would have been a process separate from both incineration and landfill.

Amounts of recyclable paper, metal, plastic and glass

Total amounts are based on Eurostat waste management statistics (Eurostat, 2003). Per group of products contributing to the four main recyclable post-consumer recyclable materials, amounts per products have been estimated (unverified) based on their shares in sales. Table available from CML.

Prices of post consumer recyclable commodities

All prices are on the basis of collected and sorted commodity flows as delivered to recyclers:

EUR/tonne

- Paper 48
- Metal 38
- Plastic 125
- Glass 36

Prices of post consumer recyclable commodities have been taken from a Wisconsin State government survey. They refer to ‘newsprint’ for paper; ‘mixed PET’, for plastics; ‘steel cans’ for metals, and data refer to the year 2003. See:

<http://www.dnr.state.wi.us/org/aw/wm/Markets/RecMarPrices/>.

Data on prices for recyclable glass have been taken from the British market situation, taking the average from white and green prices. See:

http://www.competition-commission.org.uk/rep_pub/reports/2001/455sibelco.htm#summary, appendix 4.3.

5.2.7 Sales from production sectors to disposal services A_{13}

The sales from production sectors are derived from CEDA3.0, with a differentiation of the two sectors moved to the waste processing matrices into nine sectors. So the sales concern nine industries connected to the household waste flows as specified below.

A_{13}

810001me-col	metal collection
810001pa-col	paper collection
810001pl-col	plastic collection

810001gl-col	glass collection
680302	sanitary services, steam supply, and irrigation systems
810001me-re	scrap: metal recycling
810001pa-re	scrap: paper recycling
810001pl-re	scrap: plastic recycling
810001gl-re	scrap: glass recycling

5.2.8 Environmental intervention by consumption activities matrix B_2

Emissions from car driving

The consumption category car driving has been connected to a number of industrial outputs: cars, car fuel, tyres, etc. The environmental consequences of car driving thus derives from producing cars, car fuel, tyres, etc. The use phase, however, has one important additional source of environmental consequences. To account for that, the appropriate column of the B_2 matrix contains the emissions during the use phase of 1 euro of car driving. The principal source of the environmental data is the Ecoinvent database (Ecoinvent 2001,: Process = [P1763] operation, passenger car [RER]). These data give direct emissions per km of driving; upstream emissions are in B_1 , linked to the production matrix A_{11} . A conversion step has been made to bring these data to the appropriate form in B_2 .

From the Dutch NIBUD, National Institute for Budget Information

(http://www.nibud.nl/consum/consum_inh/Besparen.php?sub=Autokosten), we find that for a typical small middle class car, with an annual travel distance of 16000 km, a monthly amount of EUR 436 is required, of which EUR 116 is for fuel, EUR 194 for the depreciation of the car, EUR 30 for maintenance, EUR 72 for insurance, and EUR 24 for taxes. We left out the taxes from cost per km, as these do not link to production sectors. Thus, travelling the monthly 1333 km costs EUR 116 of fuel, and with EUR 1 spent on fuel, one typically drives 11.5 km.

Other sources indicate similar driving distances. The Danish Environment Agency states 20000 km per year for Denmark and 15000 km per year for Western Europe (Danish Environment Agency, 2004). Similar data on emissions per euro spent on car driving can be found in: <http://www.autoindustry.co.uk/features/articles/article->

These figures are all consumer prices. To bring them in line with the k_2 , which is in producer prices, they next have to be converted into producer prices, using the US transformation table. This table underestimates the level of excises on petrol and diesel as exists in varying degrees in all EU-25 countries, which are substantially higher in Europe when compared to the US. There are also excises on the sale of cars in a number of European countries, but on the whole these are less significant.

The emission data from Ecoinvent (2001) were cross-checked after a comment from ACEA during the stakeholder event for the EIPRO study on 13 July 2005. In summary, the argument brought forward was that the most recent air emission standards for car emissions such as NO_x , CO and VOC would imply emission factors several factors (or even a factor 10) lower than the emission factors available in Ecoinvent. Presuming this statement may be right, the comment did not take into account that in a specific year cars from various vintages make up the total European car fleet – and that even at the moment of publication of this study just a fraction of the European car fleet complies with such stringent standards. Ecoinvent gives

average emission data and hence a direct comparison with the latest emission standards is not appropriate. EIPRO used 2000 as base year, and for this year the Ecoinvent emission factors were cross-checked.

Regarding the vintages, estimates by the IPTS indicate that the share of cars purchased before the entry into force of the Euro III standard (before 1996) is far from negligible (see Table 5.2.8.1). As a result, in 2000 – which is the year considered in EIPRO – the average emission factor at the EU level would clearly be affected by the presence of Euro I, Euro II and even pre-ECE cars. This influence was of course lower in 2005, although it remains significant.

This is supported by the TREMOVE reports and databases (see xls files on <http://www.tremove.org/download/index.htm>). Using the results on vkm and emissions on CO, NO_x and NMVOC, average emission factors which correspond well with the Ecoinvent database are obtained.

Once the older cars have disappeared and the full car fleet will comply with the Euro IV and later standards, significant overall emission reductions can be expected.

Table 2.5.8.1: Vintages of the EU car fleet in 2001 and 2005 (IPTS estimates)

Age range \ Year	2001	2005
2005	0	8%
2000 – 2004	18%	40%
1996 – 1999	31%	25%
1992 – 1995	25%	15%
< 1992	27%	12%

Heating and cooking

For heating and cooking, similar connections have been made but here not hampered by the disturbances of specific excises. Heating includes warm water for kitchen washing and personal care. For the burning of gas we use from Ecoinvent 2001:

Process = [P1271] natural gas, burned in boiler, fan burner non-modulating <100kW[RER]

The data for NO_x and CO emissions have been derived from measurements under controlled conditions; no adjustment to real operation has been made due to lack of information. Other emission data are from different sources. Results state emissions per euro spent on heating by consumers:

- Caloric value of gas 37.19 MJ/m³ (n)
- Average price of gas 0.4717 EUR/m³
- Average price of gas 0.01268 EUR/MJ

These data have also been used for cooking, see the quantified results in the table below.

Washing

There are no direct emissions from washing as the effluent ends up in the sewer, which is handled by waste water treatment plants. These emissions are included in water purchases. Electricity use for washing similarly has emissions only in the production stage of the life cycle.

Agrochemicals

The use of pesticides is covered in CEDA category:

270300* (Household use of) pesticides and agricultural chemicals, n.e.c.

This category excludes: [A174] Industrial inorganic and organic chemicals and [A175] Nitrogenous and phosphatic fertilisers.

Background data: Pesticides and fertilisers are utilised in both industrial agriculture and for small scale, domestic endeavours. The European market for domestic fertilisers and pesticides is worth EUR 560 million of which two thirds are covered by Germany, France and the UK. (Euromonitor, 2004). Assume: half is spent on pesticides and half on fertilisers, then 280 million is spent on pesticides in Europe. This does not fit with the expenditure data we have in COICOP/CEDA, see the remark in the main chapter, in Section 5.5.4. See FAO (1999) for pesticide use in Europe.

To arrive at specific emission data, ideally the composition of the household purchases is known in the relevant detail for linking them to the human and ecotoxicity impact assessment factors. However, that is not possible, so we chose the approach to specify household emissions as a share of total (agriculture dominated) emissions. We had two main sources. According to www.pan-uk.org, about 20% of the total weight of active ingredients of pesticides sold in the UK is for domestic use. Their mass, however, is mainly due to FeSO_4 , used against moss in grass. So, probably the 20% is not quite relevant. According to US data, the private households share in more narrowly defined pesticides is 0.075173096, or 8%. These seem better, that is more adequate, data so we use these to specify the pesticide emissions per Euro spent for private consumption on pesticides and agricultural chemicals n.e.c. Of the total emissions in 'van Oers', 8 % are taken as household emissions.

See Aspelin and Grube (1999) for US data on share of private households in total pesticides use.

5.2.9 From household budget survey to k_0 and k_2 : method and data

5.2.9.1 From household budget survey to COICOP_{EU25, consumer prices} level 3: Method

The most detailed data on European household consumption are in Eurostat household budget surveys, which are available at country level, mostly in terms of COICOP level 3 for the EU-15, and at level 1 for the new Member States. The total expenditure in EU-25 has been estimated based on consumption expenditure per country, population and household size. The source for all data is the Eurostat databases (New Cronos – Theme 3: “Population and social conditions” – Household Budget Survey)¹⁸. The estimation procedure is as follows:

$$CE_{EU25} = \sum CE_i \cdot nHH_i \text{ and } nHH_i = POP_i / HS_i$$

Where CE_i is the mean consumption expenditure in country i .

nHH_i is the number of households in country i

POP_i is the population in country i

HS_i is the average household size in country i .

CE_i is classified according to the COICOP¹⁹ classification system, and expenditures are provided in purchasing power standard (PPS²⁰). The most recent and complete data from 1999 are applied.

COICOP has three levels as shown in Table 5.2.9.1. Mean consumption data at level 3 are generally available for the EU-15 whereas data are only available at level 1 for the 10 new EU Member States (EU-10).

Thus, mean consumption expenditures on level 2 and 3 for the new EU countries have been estimated by multiplying the average distribution of expenditures²¹ in EU15 ($AD_{CE, EU 15}$) with the mean consumption expenditure in $CE_{EU 10}$.

Table 5.2.9.1: Data availability in Household budget survey and estimation of mean consumption expenditures at level 2 and 3 for EU-10.

COICOP expenditure groups			Data on CE_i available		Estimation of CE_{EU10}
Level	Example		EU-15	EU-10	
	No.	Name			
1	CP01	Food and non-alc. bev.	Yes	Yes	-
2	CP011	Food	Yes	No	$(AD_{CE, EU15, level 2}) \cdot CE_{EU 10, level 1}$
3	CP0111	Cereals and bread	Yes	No	$(AD_{CE, EU 15, level 3}) \cdot CE_{EU 10, level 1}$

¹⁸Data on private households' expenditures in the EU are also available from the “National Accounts” (Eurostat database). This source was, however, disregarded in the present study because data are only available at COICOP level 1 and 2 and currently only available at level 2 for EU-15 and a limited number of EU-10 countries (Estonia, Cyprus, Latvia, Lithuania, Slovenia and Slovak Republic) representing only 20% of the population in EU-10.

¹⁹ Classification of Individual Consumption According to Purpose, see <http://unstats.un.org/unsd/cr/registry/regcst.asp?Cl=5&Lg=1>

²⁰ PPS is an artificial common currency which equalises the purchasing power of different national currencies. PPS are calculated from “Purchasing Power Parities” (PPP), which are currency conversion rates between national currencies and PPS. For a further explanation, see “Statistics in focus” – Economy and Finance – Theme 2: 64/2003

²¹ Non-weighted, i.e. all countries (big and small) counted equally.

This principle was justified by the facts that distribution of mean consumption expenditure in the EU-15 at level 2 and 3 generally followed the same pattern, and that distribution of consumption expenditure on level 2 for the EU-15 and the EU-10 mostly followed the same pattern.

Data on average household sizes were available for the EU-15 but not for the EU-10 and the non-weighted average household size for the EU-15 was applied for the EU-10.

Applied data on population size in the EU-25, average household size in the EU-15 and calculated average distribution of consumption expenditures in the EU at level 2 and 3 are shown in the tables below. The main result, total expenditure in COICOP level 3 categories for the EU-25 is shown in Table 5.2.9.4.

Table 5.2.9.2: Population in the EU-25 (2002).

Country	Population (x1000)	Country	Population (x1000)
Belgium	10310	Lithuania	3476
Czech Republic	10206	Luxembourg	444
Denmark	5368	Hungary	10175
Germany	82440	Malta	395
Estonia	1361	Netherlands	16105
Greece	10988	Austria	8039
Spain	40851	Poland	38633
France	59342	Portugal	10329
Ireland	3900	Slovenia	1994
Italy	56994	Slovakia	5379
Cyprus	706	Finland	5195
Latvia	2346	Sweden	8909
		United Kingdom	59140

Table 5.2.9.3: Average household sizes in the EU-15 (1999).

Country	Average household size
BE Belgium	2.49
DK Denmark	2.14
DE Germany	2.16
EL Greece	2.82
ES Spain	3.24
FR France	2.42
IE Ireland	3.11
IT Italy	2.62
LU Luxembourg (Grand-Duché)	2.66
NL Netherlands	2.26
AT Austria	2.45
PT Portugal	2.81
FI Finland	2.16
SE Sweden	2.17
UK United Kingdom	2.31

Table 5.2.9.4 Private consumer expenditure in COICOP categories, levels 1, 2 and 3, in consumer prices

COICOP code and name	Total EU-25 expenditure		
	[euro]	[euro]	[euro]
CP01 Food and non-alcoholic beverages	6.176E+11		
CP011 Food		5.681E+11	
CP0111 Bread and cereals			1.042E+11
CP0112 Meat			1.515E+11
CP0113 Fish and seafood			4.229E+10
CP0114 Milk, cheese and eggs			8.547E+10
CP0115 Oils and fats			2.149E+10
CP0116 Fruit			4.542E+10
CP0117 Vegetables			6.324E+10
CP0118 Sugar, jam, honey, chocolate and confectionery			3.475E+10
CP0119 Food products n.e.c.			1.988E+10
CP012 Non-alcoholic beverages		4.949E+10	
CP0121 Coffee, tea and cocoa			1.698E+10
CP0122 Mineral waters, soft drinks, fruit and vegetable juices			3.253E+10
CP02 Alcoholic beverages, tobacco and narcotics	1.126E+11		
CP021 Alcoholic beverages		5.681E+10	
CP0211 Spirits			1.034E+10
CP0212 Wine			2.833E+10
CP0213 Beer			1.816E+10
CP022 Tobacco		5.579E+10	
CP03 Clothing and footwear	2.560E+11		
CP031 Clothing		2.024E+11	
CP0311 Clothing materials			1.784E+09
CP0312 Garments			1.847E+11
CP0313 Other articles of clothing and clothing accessories			8.381E+09
CP0314 Cleaning, repair and hire of clothing			7.569E+09
CP032 Footwear including repair		5.020E+10	
CP0321 Shoes and other footwear			4.845E+10
CP0322 Repair and hire of footwear			1.743E+09
CP04 Housing, water, electricity, gas and other fuels	1.112E+12		
CP041 Actual rentals for housing		2.194E+11	
CP0411 Actual rentals paid by tenants			2.142E+11
CP0412 Other actual rentals			5.282E+09
CP042 Imputed rentals for housing		5.961E+11	
CP0421 Imputed rentals of owner-occupiers			5.681E+11
CP0422 Other imputed rentals			2.797E+10
CP043 Maintenance and repair of the dwelling		6.995E+10	
CP0431 Materials for the maintenance and repair of the dwelling			3.433E+10
CP0432 Services for the maintenance and repair of the dwelling			3.569E+10
CP044 Water supply and miscellaneous services relating to the dwelling		6.143E+10	
CP0441 Water supply			2.492E+10
CP0442 Refuse collection			1.445E+10
CP0443 Sewerage collection			1.320E+09
CP0444 Other services relating to the dwelling n.e.c.			1.750E+10
CP045 Electricity, gas and other fuels		1.648E+11	
CP0451 Electricity			7.914E+10
CP0452 Gas			4.337E+10
CP0453 Liquid fuels			2.097E+10
CP0454 Solid fuels			6.266E+09
CP0455 Heat energy			1.502E+10
CP05 Furnishings, household equipment and routine maintenance of the house	2.787E+11		
CP051 Furniture and furnishings, carpets and other floor coverings		1.193E+11	
CP0511 Furniture and furnishings			9.637E+10
CP0512 Carpets and other floor coverings			1.432E+10
CP0513 Repair of furniture, furnishings and floor coverings			2.364E+09
CP052 Household textiles		2.157E+10	
CP053 Household appliances		3.755E+10	
CP0531 Major household appliances whether electric or not			2.806E+10
CP0532 Small electric household appliances			3.805E+09
CP0533 Repair of household appliances			5.647E+09

COICOP code and name	Total EU-25 expenditure		
	[euro]	[euro]	[euro]
CP054 Glassware, tableware and household utensils		1.689E+10	
CP055 Tools and equipment for house and garden		1.954E+10	
CP0551 Major tools and equipment			3.346E+09
CP0552 Small tools and miscellaneous accessories			1.196E+10
CP056 Goods and services for routine household maintenance		6.378E+10	
CP0561 Non-durable household goods			4.101E+10
CP0562 Domestic services and household services			2.273E+10
CP06 Health	1.311E+11		
CP061 Medical products, appliances and equipment		6.262E+10	
CP0611 Pharmaceutical products			3.834E+10
CP0612 Other medical products			3.229E+09
CP0613 Therapeutic appliances and equipment			2.105E+10
CP062 Out-patient services		6.160E+10	
CP0621 Medical services			2.531E+10
CP0622 Dental services			2.521E+10
CP0623 Paramedical services			1.163E+10
CP063 Hospital services		6.037E+09	
CP07 Transport	5.425E+11		
CP071 Purchase of vehicles		2.350E+11	
CP0711 Motor cars			2.238E+11
CP0712 Motor cycles			6.904E+09
CP0713 Bicycles			4.361E+09
CP0714 Animal drawn vehicles			0.000E+00
CP072 Operation of personal transport equipment		2.514E+11	
CP0721 Spares parts and accessories for personal transport equipment			2.282E+10
CP0722 Fuels and lubricants for personal transport equipment			1.524E+11
CP0723 Maintenance and repair of personal transport equipment			5.187E+10
CP0724 Other services in respect of personal transport equipment			2.431E+10
CP073 Transport services		5.581E+10	
CP0731 Passenger transport by railway			1.800E+10
CP0732 Passenger transport by road			1.677E+10
CP0733 Passenger transport by air			1.055E+10
CP0734 Passenger transport by sea and inland waterway			1.769E+09
CP0735 Combined passenger transport			6.324E+09
CP0736 Other purchased transport services			2.398E+09
CP08 Communications	1.006E+11		
CP081 Postal services		6.236E+09	
CP082 Telephone and telefax equipment		4.297E+09	
CP083 Telephone and telefax services		9.006E+10	
CP09 Recreation and culture	3.987E+11		
CP091 Audio-visual, photographic and information processing equipment		6.454E+10	
CP0911 Equipment for the reception, recording and reproduction of sound and pictures			1.902E+10
CP0912 Photographic and cinematographic equipment and optical instruments			6.692E+09
CP0913 Information processing equipment			1.843E+10
CP0914 Recording media			1.641E+10
CP0915 Repair of audio-visual, photographic and information processing equipment			3.915E+09
CP092 Other major durables for recreation and culture		1.139E+10	
CP0921 Major durables for outdoor recreation			8.804E+09
CP0922 Musical instruments and major durables for indoor recreation			1.930E+09
CP0923 Maintenance and repair of other major durables for recreation and culture			6.913E+08
CP093 Other recreational items and equipment, gardens and pets		6.941E+10	
CP0931 Games, toys and hobbies			2.127E+10
CP0932 Equipment for sport, camping and open-air recreation			5.246E+09
CP0933 Gardens, plants and flowers			2.409E+10
CP0934 Pets and related products			1.169E+10
CP0935 Veterinary and other services for pets			1.332E+09
CP094 Recreational and cultural services		1.020E+11	
CP0941 Recreational and sporting services			2.166E+10
CP0942 Cultural services			5.304E+10
CP0943 Games of chance			2.739E+10
CP095 Newspapers, books and stationery		6.473E+10	
CP0951 Books			2.041E+10

COICOP code and name	Total EU-25 expenditure		
	[euro]	[euro]	[euro]
CP0952 Newspapers and periodicals			2.882E+10
CP0953 Miscellaneous printed matter			5.331E+09
CP0954 Stationery and drawing materials			1.018E+10
CP096 Package holidays		8.642E+10	
CP10 Education	3.481E+10		
CP11 Restaurants and hotels	2.424E+11		
CP111 Catering services		2.071E+11	
CP1111 Restaurants, cafés and the like			1.820E+11
CP1112 Canteens			2.511E+10
CP112 Accommodation services		3.506E+10	
CP12 Miscellaneous goods and services	2.902E+11		
CP121 Personal care		9.226E+10	
CP1211 Hairdressing salons and personal grooming establishments			3.554E+10
CP1212 Electrical appliances for personal care			1.347E+10
CP1213 Other appliances, articles and products for personal care			4.323E+10
CP123 Personal effects n.e.c.		2.510E+10	
CP1231 Jewellery, clocks and watches			1.495E+10
CP1232 Other personal effects			1.016E+10
CP124 Social protection		1.417E+10	
CP125 Insurance		1.188E+11	
CP126 Financial services n.e.c.		6.132E+09	
CP127 Other services n.e.c.		3.368E+10	

Table 5.2.9.5 COICOP categories, levels 1, 2 and 3: Description

Legend

- (ND) - non-durable goods
- (SD) - semi-durable goods
- (D) - durable goods
- (S) - services

			Category	Note
1			Food and non-alcoholic beverages	No explanatory note available for this code.
	1.1		Food	The food products classified here are those purchased for consumption at home. The group excludes: food products sold for immediate consumption away from the home by hotels, restaurants, cafés, bars, kiosks, street vendors, automatic vending machines, etc. (11.1.1); cooked dishes prepared by restaurants for consumption off their premises (11.1.1); cooked dishes prepared by catering contractors whether collected by the customer or delivered to the customer's home (11.1.1); and products sold specifically as pet foods (09.3.4).
		01.1.1	Bread and cereals (ND)	- Rice in all forms;- maize, wheat, barley, oats, rye and other cereals in the form of grain, flour or meal;- bread and other bakery products (crispbread, rusks, toasted bread, biscuits, gingerbread, wafers, waffles, crumpets, muffins, croissants, cakes, tarts, pies, quiches, pizzas, etc.);- mixes and doughs for the preparation of bakery products;- pasta products in all forms; couscous;- cereal preparations (cornflakes, oatflakes, etc.) and other cereal products (malt, malt flour, malt extract, potato starch, tapioca, sago and other starches). Includes: farinaceous-based products prepared with meat, fish, seafood, cheese, vegetables or fruit. Excludes: meat pies (01.1.2); fish pies (01.1.3); sweetcorn (01.1.7).
		01.1.2	Meat (ND)	- Fresh, chilled or frozen meat of:- bovine animals, swine, sheep and goat;- horse, mule, donkey, camel and the like;- poultry (chicken, duck, goose, turkey, guinea fowl);- hare, rabbit and game (antelope, deer, boar, pheasant, grouse, pigeon, quail, etc.);- fresh, chilled or frozen edible offal;- dried, salted or smoked meat and edible offal (sausages, salami, bacon, ham, pâté, etc.);- other preserved or processed meat and meat-based preparations (canned meat, meat extracts, meat juices, meat pies, etc.). Includes: meat and edible offal of marine mammals (seals, walruses, whales, etc.) and exotic animals (kangaroo, ostrich, alligator, etc.); animals and poultry purchased live for consumption as food. Excludes: land and sea snails (01.1.3); lard and other edible animal fats (01.1.5); soups, broths and stocks containing meat (01.1.9).
		01.1.3	Fish and seafood (ND)	- Fresh, chilled or frozen fish;- fresh, chilled or frozen seafood (crustaceans, molluscs and other shellfish, sea snails);- dried, smoked or salted fish and seafood;- other preserved or processed fish and seafood and fish and seafood-based preparations (canned fish and seafood, caviar and other hard roes, fish pies, etc.). Includes: land crabs, land snails and frogs; fish and seafood purchased live for consumption as food. Excludes: soups, broths and stocks containing fish and seafood (01.1.9).
		01.1.4	Milk, cheese and eggs (ND)	- Raw milk; pasteurized or sterilized milk;- condensed, evaporated or powdered milk;- yoghurt, cream, milk-based desserts, milk-based beverages and other similar milk-based products;- cheese and curd;- eggs and egg products made wholly from eggs. Includes: milk, cream and yoghurt containing sugar, cocoa, fruit or flavourings; dairy products not based on milk such as soya milk. Excludes: butter and butter products (01.1.5).
		01.1.5	Oils and fats (ND)	- Butter and butter products (butter oil, ghee, etc.);- margarine (including "diet" margarine) and other vegetable fats (including peanut butter);- edible oils (olive oil, corn oil, sunflower-seed oil, cottonseed oil, soybean oil, groundnut oil, walnut oil, etc.);- edible animal fats (lard, etc.). Excludes: cod or halibut liver oil (06.1.1).
		01.1.6	Fruit (ND)	- Fresh, chilled or frozen fruit;- dried fruit, fruit peel, fruit kernels, nuts and edible seeds;- preserved fruit and fruit-based products. Includes: melons and water melons. Excludes: vegetables cultivated for their fruit such as aubergines, cucumbers and tomatoes (01.1.7); jams, marmalades, compotes, jellies, fruit purées and pastes (01.1.8); parts of plants preserved in sugar (01.1.8); fruit juices and syrups (01.2.2).
		01.1.7	Vegetables (ND)	- Fresh, chilled, frozen or dried vegetables cultivated for their leaves or stalks (asparagus, broccoli, cauliflower, endives, fennel, spinach, etc.), for their fruit (aubergines, cucumbers, courgettes, green peppers, pumpkins, tomatoes, etc.), and for their roots (beetroots, carrots, onions, parsnips,

			Category	Note
				radishes, turnips, etc.);- fresh or chilled potatoes and other tuber vegetables (manioc, arrowroot, cassava, sweet potatoes, etc.);- preserved or processed vegetables and vegetable-based products;- products of tuber vegetables (flours, meals, flakes, purées, chips and crisps) including frozen preparations such as chipped potatoes. Includes: olives; garlic; pulses; sweetcorn; sea fennel and other edible seaweed; mushrooms and other edible fungi. Excludes: potato starch, tapioca, sago and other starches (01.1.1); soups, broths and stocks containing vegetables (01.1.9); culinary herbs (parsley, rosemary, thyme, etc.) and spices (pepper, pimento, ginger, etc.) (01.1.9); vegetable juices (01.2.2).
		01.1.8	Sugar, jam, honey, chocolate and confectionery (ND)	- Cane or beet sugar, unrefined or refined, powdered, crystallized or in lumps;- jams, marmalades, compotes, jellies, fruit purées and pastes, natural and artificial honey, maple syrup, molasses and parts of plants preserved in sugar;- chocolate in bars or slabs, chewing gum, sweets, toffees, pastilles and other confectionery products;- cocoa-based foods and cocoa-based dessert preparations;- edible ice, ice cream and sorbet. Includes: artificial sugar substitutes. Excludes: cocoa and chocolate-based powder (01.2.1).
		01.1.9	Food products n.e.c. (ND)	- Salt, spices (pepper, pimento, ginger, etc.), culinary herbs (parsley, rosemary, thyme, etc.), sauces, condiments, seasonings (mustard, mayonnaise, ketchup, soy sauce, etc.), vinegar;- prepared baking powders, baker's yeast, dessert preparations, soups, broths, stocks, culinary ingredients, etc.;- homogenized baby food and dietary preparations irrespective of the composition. Excludes: milk-based desserts (01.1.4); soya milk (01.1.4); artificial sugar substitutes (01.1.8); cocoa-based dessert preparations (01.1.8).
	1.2		Non-alcoholic beverages	The non-alcoholic beverages classified here are those purchased for consumption at home. The group excludes non-alcoholic beverages sold for immediate consumption away from the home by hotels, restaurants, cafés, bars, kiosks, street vendors, automatic vending machines, etc. (11.1.1).
		01.2.1	Coffee, tea and cocoa (ND)	- Coffee, whether or not decaffeinated, roasted or ground, including instant coffee;- tea, maté and other plant products for infusions;- cocoa, whether or not sweetened, and chocolate-based powder. Includes: cocoa-based beverage preparations; coffee and tea substitutes; extracts and essences of coffee and tea. Excludes: chocolate in bars or slabs (01.1.8); cocoa-based food and cocoa-based dessert preparations (01.1.8).
		01.2.2	Mineral waters, soft drinks, fruit and vegetable juices (ND)	- Mineral or spring waters; all drinking water sold in containers;- soft drinks such as sodas, lemonades and colas;- fruit and vegetable juices;- syrups and concentrates for the preparation of beverages. Excludes: non-alcoholic beverages which are generally alcoholic such as non-alcoholic beer (02.1).
2			Alcoholic beverages, tobacco and narcotics	No explanatory note available for this code.
	2.1		Alcoholic beverages	The alcoholic beverages classified here are those purchased for consumption at home. The group excludes alcoholic beverages sold for immediate consumption away from the home by hotels, restaurants, cafés, bars, kiosks, street vendors, automatic vending machines, etc. (11.1.1).The beverages classified here include low or non-alcoholic beverages which are generally alcoholic such as non-alcoholic beer.
		02.1.1	Spirits (ND)	- Eaux-de-vie, liqueurs and other spirits. Includes: mead; aperitifs other than wine-based aperitifs (02.1.2).
		02.1.2	Wine (ND)	- Wine, cider and perry, including sake;- wine-based aperitifs, fortified wines, champagne and other sparkling wines.
		02.1.3	Beer (ND)	- All kinds of beer such as ale, lager and porter. Includes: low-alcoholic beer and non-alcoholic beer; shandy.
	2.2		Tobacco	This group covers all purchases of tobacco by households, including purchases of tobacco in restaurants, cafés, bars, service stations, etc.
		02.2.0	Tobacco (ND)	- Cigarettes; cigarette tobacco and cigarette papers;- cigars, pipe tobacco, chewing tobacco or snuff. Excludes: other smokers' articles (12.3.2).
	2.3		Narcotics	No explanatory note available for this code.
		02.3.0	Narcotics (ND)	- Marijuana, opium, cocaine and their derivatives;- other vegetable-based narcotics such as cola nuts, betel leaves and betel nuts;- other narcotics including chemicals and man-made drugs.
3			Clothing and footwear	No explanatory note available for this code.
	3.1		Clothing	No explanatory note available for this code.
		03.1.1	Clothing materials (SD)	- Clothing materials of natural fibres, of man-made fibres and of their mixtures. Excludes: furnishing fabrics (05.2.0).
		03.1.2	Garments (SD)	- Garments for men, women, children (3 to 13 years) and infants (0 to 2 years), either ready-to-wear or made-to-measure, in all materials (including leather, furs, plastics and rubber), for everyday wear, for sport or for work:- capes, overcoats, raincoats, anoraks, parkas, blousons, jackets, trousers, waistcoats, suits, costumes, dresses, skirts, etc.;- shirts, blouses, pullovers, sweaters, cardigans, shorts, swimsuits, tracksuits, jogging suits,

			Category	Note
				sweatshirts, T-shirts, leotards, etc.;- vests, underpants, socks, stockings, tights, petticoats, brassières, knickers, slips, girdles, corsets, body stockings, etc.;- pyjamas, nightshirts, nightdresses, housecoats, dressing gowns, bathrobes, etc.;- baby clothes and babies' booties made of fabric. Excludes: articles of medical hosiery such as elasticated stockings (06.1.2); babies' napkins (12.1.3).
		03.1.3	Other articles of clothing and clothing accessories (SD)	- Ties, handkerchiefs, scarves, squares, gloves, mittens, muffs, belts, braces, aprons, smocks, bibs, sleeve protectors, hats, caps, berets, bonnets, etc.;- sewing threads, knitting yarns and accessories for making clothing such as buckles, buttons, press studs, zip fasteners, ribbons, laces, trimmings, etc. Includes: gardening gloves and working gloves; crash helmets for motorcycles and bicycles. Excludes: gloves and other articles made of rubber (05.6.1); pins, safety pins, sewing needles, knitting needles, thimbles (05.6.1); protective headgear for sports (09.3.2); other protective gear for sports such as life jackets, boxing gloves, body padding, belts, supports, etc. (09.3.2); paper handkerchiefs (12.1.3); watches, jewellery, cuff links, tiepins (12.3.1); walking sticks and canes, umbrellas and parasols, fans, keyrings (12.3.2).
		03.1.4	Cleaning, repair and hire of clothing (S)	- Dry-cleaning, laundering and dyeing of garments;- darning, mending, repair and altering of garments;- hire of garments. Includes: total value of the repair service (that is, both the cost of labour and the cost of materials are covered). Excludes: materials, threads, accessories, etc. purchased by households with the intention of undertaking the repairs themselves (03.1.1) or (03.1.3); repair of household linen and other household textiles (05.2.0); dry-cleaning, laundering, dyeing and hiring of household linen and other household textiles (05.6.2).
	3.2		Footwear	No explanatory note available for this code.
		03.2.1	Shoes and other footwear (SD)	- All footwear for men, women, children (3 to 13 years) and infants (0 to 2 years) including sports footwear suitable for everyday or leisure wear (shoes for jogging, cross-training, tennis, basket ball, boating, etc.). Includes: gaiters, leggings and similar articles; shoelaces; parts of footwear, such as heels, soles, etc., purchased by households with the intention of repairing footwear themselves. Excludes: babies' booties made of fabric (03.1.2); shoe-trees, shoehorns and polishes, creams and other shoe-cleaning articles (05.6.1); orthopaedic footwear (06.1.3); game-specific footwear (ski boots, football boots, golfing shoes and other such footwear fitted with ice-skates, rollers, spikes, studs, etc.) (09.3.2); shin-guards, cricket pads and other such protective apparel for sport (09.3.2).
		03.2.2	Repair and hire of footwear (S)	- Repair of footwear; shoe-cleaning services;- hire of footwear. Includes: total value of the repair service (that is, both the cost of labour and the cost of materials are covered). Excludes: parts of footwear, such as heels, soles, etc., purchased by households with the intention of undertaking the repair themselves (03.2.1); polishes, creams and other shoe-cleaning articles (05.6.1); repair (09.3.2) or hire (09.4.1) of game-specific footwear (ski boots, football boots, golfing shoes and other such footwear fitted with ice-skates, rollers, spikes, studs, etc.).
4			Housing, water, electricity, gas and other fuels	No explanatory note available for this code.
	4.1		Actual rentals for housing	Rentals normally include payment for the use of the land on which the property stands, the dwelling occupied, the fixtures and fittings for heating, plumbing, lighting, etc., and, in the case of a dwelling let furnished, the furniture. Rentals also include payment for the use of a garage to provide parking in connection with the dwelling. The garage does not have to be physically contiguous to the dwelling; nor does it have to be leased from the same landlord. Rentals do not include payment for the use of garages or parking spaces not providing parking in connection with the dwelling (07.2.4). Nor do they include charges for water supply (04.4.1), refuse collection (04.4.2) and sewage collection (04.4.3); co-proprietor charges for caretaking, gardening, stairwell cleaning, heating and lighting, maintenance of lifts and refuse disposal chutes, etc. in multi-occupied buildings (04.4.4); charges for electricity (04.5.1) and gas (04.5.2); charges for heating and hot water supplied by district heating plants (04.5.5).
		04.1.1	Actual rentals paid by tenants (S)	- Rentals actually paid by tenants or subtenants occupying unfurnished or furnished premises as their main residence. Includes: payments by households occupying a room in a hotel or boarding house as their main residence. Excludes: accommodation services of educational establishments and hostels (11.2.0) and of retirement homes for elderly persons (12.4.0).
		04.1.2	Other actual rentals (S)	- Rentals actually paid for secondary residences. Excludes: accommodation services of holiday villages and holiday centres (11.2.0).
	4.2		Imputed rentals for housing	For coverage see note to (04.1) above.
		04.2.1	Imputed rentals of owner-occupiers (S)	- Imputed rentals of owners occupying their main residence.
		04.2.2	Other imputed rentals (S)	- Imputed rentals for secondary residences;- imputed rentals of households

		Category	Note
			paying a reduced rental or housed free.
	4.3	Maintenance and repair of the dwelling	Maintenance and repair of dwellings are distinguished by two features: first, they are activities that have to be undertaken regularly in order to maintain the dwelling in good working order; second, they do not change the dwelling's performance, capacity or expected service life. There are two types of maintenance and repair of dwellings: those which are minor, such as interior decoration and repairs to fittings, and which are commonly carried out by both tenants and owners; and those which are major, such as replastering walls or repairing roofs, and which are carried out by owners only. Only expenditures which tenants and owner-occupiers incur on materials and services for minor maintenance and repair are part of individual consumption expenditure of households. Expenditures which owner-occupiers incur on materials and services for major maintenance and repair are not part of individual consumption expenditure of households. Purchases of materials made by tenants or owner-occupiers with the intention of undertaking the maintenance or repair themselves should be shown under (04.3.1). If tenants or owner-occupiers pay an enterprise to carry out the maintenance or repair, the total value of the service, including the costs of the materials used, should be shown under (04.3.2).
		04.3.1 Materials for the maintenance and repair of the dwelling (ND)	- Products and materials, such as paints and varnishes, renderings, wallpapers, fabric wall coverings, window panes, plaster, cement, putty, wallpaper pastes, etc., purchased for minor maintenance and repair of the dwelling. Includes: small plumbing items (pipes, taps, joints, etc.), surfacing materials (floorboards, ceramic tiles, etc.) and brushes and scrapers for paint, varnish and wallpaper. Excludes: fitted carpets and linoleum (05.1.2); hand tools, door fittings, power sockets, wiring flex and lamp bulbs (05.5.2); brooms, scrubbing brushes, dusting brushes and cleaning products (05.6.1); products, materials and fixtures used for major maintenance and repair (intermediate consumption) or for extension and conversion of the dwelling (capital formation).
		04.3.2 Services for the maintenance and repair of the dwelling (S)	- Services of plumbers, electricians, carpenters, glaziers, painters, decorators, floor polishers, etc. engaged for minor maintenance and repair of the dwelling. Includes: total value of the service (that is, both the cost of labour and the cost of materials are covered). Excludes: separate purchases of materials made by households with the intention of undertaking the maintenance or repair themselves (04.3.1); services engaged for major maintenance and repair (intermediate consumption) or for extension and conversion of the dwelling (capital formation).
	4.4	Water supply and miscellaneous services relating to the dwelling	No explanatory note available for this code.
		04.4.1 Water supply (ND)	- Water supply. Includes: associated expenditure such as hire of meters, reading of meters, standing charges, etc. Excludes: drinking water sold in bottles or containers (01.2.2); hot water or steam purchased from district heating plants (04.5.5).
		04.4.2 Refuse collection (S)	- Refuse collection and disposal.
		04.4.3 Sewage collection (S)	- Sewage collection and disposal.
		04.4.4 Other services relating to the dwelling n.e.c. (S)	- Co-proprietor charges for caretaking, gardening, stairwell cleaning, heating and lighting, maintenance of lifts and refuse disposal chutes, etc. in multi-occupied buildings;- security services;- snow removal and chimney sweeping. Excludes: household services such as window cleaning, disinfecting, fumigation and pest extermination (05.6.2); bodyguards (12.7.0).
	4.5	Electricity, gas and other fuels	No explanatory note available for this code.
		04.5.1 Electricity (ND)	- Electricity. Includes: associated expenditure such as hire of meters, reading of meters, standing charges, etc.
		04.5.2 Gas (ND)	- Town gas and natural gas;- liquefied hydrocarbons (butane, propane, etc.). Includes: associated expenditure such as hire of meters, reading of meters, storage containers, standing charges, etc.
		04.5.3 Liquid fuels (ND)	- Domestic heating and lighting oils.
		04.5.4 Solid fuels (ND)	- Coal, coke, briquettes, firewood, charcoal, peat and the like.
		04.5.5 Heat energy (ND)	- Hot water and steam purchased from district heating plants. Includes: associated expenditure such as hire of meters, reading of meters, standing charges, etc.; ice used for cooling and refrigeration purposes.
	5	Furnishings, household equipment and routine household maintenance	No explanatory note available for this code.
	5.1	Furniture and furnishings, carpets and other floor coverings	No explanatory note available for this code.
		05.1.1 Furniture and furnishings (D)	- Beds, sofas, couches, tables, chairs, cupboards, chests of drawers and bookshelves;- lighting equipment such as ceiling lights, standard lamps,

			Category	Note
				globe lights and bedside lamps;- pictures, sculptures, engravings, tapestries and other art objects including reproductions of works of art and other ornaments;- screens, folding partitions and other furniture and fixtures. Includes: delivery and installation when applicable; base mattresses, mattresses, tatamis; bathroom cabinets; baby furniture such as cradles, high chairs and playpens; blinds; camping and garden furniture; mirrors, candleholders and candlesticks. Excludes: bedding and sunshades (05.2.0); safes (05.3.1); ornamental glass and ceramic articles (05.4.0); clocks (12.3.1); wall thermometers and barometers (12.3.2); carrycots and pushchairs (12.3.2); works of art and antique furniture acquired primarily as stores of value (capital formation).
		05.1.2	Carpets and other floor coverings (D)	- Loose carpets, fitted carpets, linoleum and other such floor coverings. Includes: laying of floor coverings. Excludes: bathroom mats, rush mats and doormats (05.2.0); antique floor coverings acquired primarily as stores of value (capital formation).
		05.1.3	Repair of furniture, furnishings and floor coverings (S)	- Repair of furniture, furnishings and floor coverings. Includes: total value of the service (that is, both the cost of labour and the cost of materials are covered); restoration of works of art, antique furniture and antique floor coverings other than those acquired primarily as stores of value (capital formation). Excludes: separate purchases of materials made by households with the intention of undertaking the repair themselves (05.1.1) or (05.1.2); dry-cleaning of carpets (05.6.2).
	5.2		Household textiles	No explanatory note available for this code.
		05.2.0	Household textiles (SD)	- Furnishing fabrics, curtain material, curtains, double curtains, awnings, door curtains and fabric blinds;- bedding such as futons, pillows, bolsters and hammocks;- bedlinen such as sheets, pillowcases, blankets, travelling rugs, plaids, eiderdowns, counterpanes and mosquito nets;- table linen and bathroom linen such as tablecloths, table napkins, towels and face cloths;- other household textiles such as shopping bags, laundry bags, shoe bags, covers for clothes and furniture, flags, sunshades, etc.-; repair of such articles. Includes: cloth bought by the piece; oilcloth; bathroom mats, rush mats and doormats. Excludes: fabric wall coverings (04.3.1); tapestries (05.1.1); floor coverings such as carpets and fitted carpets (05.1.2); electric blankets (05.3.2); covers for motor cars, motorcycles, etc. (07.2.1); air mattresses and sleeping bags (09.3.2).
	5.3		Household appliances	No explanatory note available for this code.
		05.3.1	Major household appliances whether electric or not (D)	- Refrigerators, freezers and fridge-freezers;- washing machines, dryers, drying cabinets, dishwashers, ironing and pressing machines;- cookers, spit roasters, hobs, ranges, ovens and microwave ovens;- air-conditioners, humidifiers, space heaters, water heaters, ventilators and extractor hoods;- vacuum cleaners, steam-cleaning machines, carpet shampooing machines and machines for scrubbing, waxing and polishing floors;- other major household appliances such as safes, sewing machines, knitting machines, water softeners, etc. Includes: delivery and installation of the appliances when applicable. Excludes: such appliances that are built into the structure of the building (capital formation).
		05.3.2	Small electric household appliances (SD)	- Coffee mills, coffee-makers, juice extractors, can-openers, food mixers, deep fryers, meat grills, knives, toasters, ice cream makers, sorbet makers, yoghurt makers, hotplates, irons, kettles, fans, electric blankets, etc. Excludes: small non-electric household articles and kitchen utensils (05.4.0); household scales (05.4.0); personal weighing machines and baby scales (12.1.3).
		05.3.3	Repair of household appliances (S)	- Repair of household appliances. Includes: total value of the service (that is, both the cost of labour and the cost of materials are covered); charges for the leasing or rental of major household appliances. Excludes: separate purchases of materials made by households with the intention of undertaking the repair themselves (05.3.1) or (05.3.2).
	5.4		Glassware, tableware and household utensils	No explanatory note available for this code.
		05.4.0	Glassware, tableware and household utensils (SD)	- Glassware, crystal ware, ceramic ware and china ware of the kind used for table, kitchen, bathroom, toilet, office and indoor decoration;- cutlery, flatware and silverware;- non-electric kitchen utensils of all materials such as saucepans, stewpots, pressure cookers, frying pans, coffee mills, purée makers, mincers, hotplates, household scales and other such mechanical devices;- non-electric household articles of all materials such as containers for bread, coffee, spices, etc., waste bins, waste-paper baskets, laundry baskets, portable money boxes and strongboxes, towel rails, bottle racks, irons and ironing boards, letter boxes, feeding bottles, thermos flasks and iceboxes;- repair of such articles. Excludes: lighting equipment (05.1.1); electric household appliances (05.3.1) or (05.3.2); cardboard tableware (05.6.1); personal weighing machines and baby scales (12.1.3); ashtrays (12.3.2).
	5.5		Tools and equipment for house and garden	No explanatory note available for this code.

		Category	Note
	05.5.1	Major tools and equipment (D)	- Motorized tools and equipment such as electric drills, saws, sanders and hedge cutters, garden tractors, lawnmowers, cultivators, chainsaws and water pumps;- repair of such articles. Includes: charges for the leasing or rental of do-it-yourself machinery and equipment.
	05.5.2	Small tools and miscellaneous accessories (SD)	- Hand tools such as saws, hammers, screwdrivers, wrenches, spanners, pliers, trimming knives, rasps and files;- garden tools such as wheelbarrows, watering cans, hoses, spades, shovels, rakes, forks, scythes, sickles and secateurs;- ladders and steps;- door fittings (hinges, handles and locks), fittings for radiators and fireplaces, other metal articles for the house (curtain rails, carpet rods, hooks, etc.) or for the garden (chains, grids, stakes and hoop segments for fencing and bordering);- small electric accessories such as power sockets, switches, wiring flex, electric bulbs, fluorescent lighting tubes, torches, flashlights, hand lamps, electric batteries for general use, bells and alarms;- repair of such articles.
5.6		Goods and services for routine household maintenance	No explanatory note available for this code.
	05.6.1	Non-durable household goods (ND)	- Cleaning and maintenance products such as soaps, washing powders, washing liquids, scouring powders, detergents, disinfectant bleaches, softeners, conditioners, window-cleaning products, waxes, polishes, dyes, unblocking agents, disinfectants, insecticides, pesticides, fungicides and distilled water; - articles for cleaning such as brooms, scrubbing brushes, dustpans and dust brushes, dusters, tea towels, floorcloths, household sponges, scourers, steel wool and chamois leathers; - paper products such as filters, tablecloths and table napkins, kitchen paper, vacuum cleaner bags and cardboard tableware, including aluminium foil and plastic bin liners; - other non-durable household articles such as matches, candles, lamp wicks, methylated spirits, clothes-pegs, clothes hangers, pins, safety pins, sewing needles, knitting needles, thimbles, nails, screws, nuts and bolts, tacks, washers, glues and adhesive tapes for household use, string, twine and rubber gloves. Includes: polishes, creams and other shoe-cleaning articles; fire extinguishers for households. Excludes: brushes and scrapers for paint, varnish and wallpaper (04.3.1); fire extinguishers for transport equipment (07.2.1); products specifically for the cleaning and maintenance of transport equipment such as paints, chrome cleaners, sealing compounds and bodywork polishes (07.2.1); horticultural products for the upkeep of ornamental gardens (09.3.3); paper handkerchiefs, toilet paper, toilet soaps, toilet sponges and other products for personal hygiene (12.1.3); cigarette, cigar and pipe lighters and lighter fuel (12.3.2).
	05.6.2	Domestic services and household services (S)	- Domestic services supplied by paid staff employed in private service such as butlers, cooks, maids, drivers, gardeners, governesses, secretaries, tutors and au pairs; - similar services, including babysitting and housework, supplied by enterprises or self-employed persons; - household services such as window cleaning, disinfecting, fumigation and pest extermination; - dry-cleaning, laundering and dyeing of household linen, household textiles and carpets; - hire of furniture, furnishings, carpets, household equipment and household linen. Excludes: dry-cleaning, laundering and dyeing of garments (03.1.4); refuse collection (04.4.2); sewerage collection (04.4.3); co-proprietor charges for caretaking, gardening, stairwell cleaning, heating and lighting, maintenance of lifts and refuse disposal chutes, etc. in multi-occupied buildings (04.4.4); security services (04.4.4); snow removal and chimney sweeping (04.4.4); removal and storage services (07.3.6); services of wet-nurses, crèches, day-care centres and other child-minding facilities (12.4.0); bodyguards (12.7.0).
6		Health	This division also includes health services purchased from school and university health centres.
	6.1	Medical products, appliances and equipment	This group covers medicaments, prostheses, medical appliances and equipment and other health-related products purchased by individuals or households, either with or without a prescription, usually from dispensing chemists, pharmacists or medical equipment suppliers. They are intended for consumption or use outside a health facility or institution. Such products supplied directly to outpatients by medical, dental and paramedical practitioners or to in-patients by hospitals and the like are included in outpatient services (06.2) or hospital services (06.3).
	06.1.1	Pharmaceutical products (ND)	- Medicinal preparations, medicinal drugs, patent medicines, serums and vaccines, vitamins and minerals, cod liver oil and halibut liver oil, oral contraceptives. Excludes: veterinary products (09.3.4); articles for personal hygiene such as medicinal soaps (12.1.3).
	06.1.2	Other medical products (ND)	- Clinical thermometers, adhesive and non-adhesive bandages, hypodermic syringes, first-aid kits, hot-water bottles and ice bags, medical hosiery items such as elasticated stockings and knee supports, pregnancy tests, condoms and other mechanical contraceptive devices.
	06.1.3	Therapeutic appliances and equipment (D)	- Corrective eyeglasses and contact lenses, hearing aids, glass eyes, artificial limbs and other prosthetic devices, orthopaedic braces and

			Category	Note
				supports, orthopaedic footwear, surgical belts, trusses and supports, neck braces, medical massage equipment and health lamps, powered and unpowered wheelchairs and invalid carriages, "special" beds, crutches, electronic and other devices for monitoring blood pressure, etc.;- repair of such articles. Includes: dentures but not fitting costs. Excludes: hire of therapeutic equipment (06.2.3); protective goggles, belts and supports for sport (09.3.2); sunglasses not fitted with corrective lenses (12.3.2).
	6.2		Outpatient services	This group covers medical, dental and paramedical services delivered to outpatients by medical, dental and paramedical practitioners and auxiliaries. The services may be delivered at home, in individual or group consulting facilities, dispensaries or the outpatient clinics of hospitals and the like. Outpatient services include the medicaments, prostheses, medical appliances and equipment and other health-related products supplied directly to outpatients by medical, dental and paramedical practitioners and auxiliaries. Medical, dental and paramedical services provided to in-patients by hospitals and the like are included in hospital services (06.3).
		06.2.1	Medical services (S)	- Consultations of physicians in general or specialist practice. Includes: services of orthodontic specialists. Excludes: services of medical analysis laboratories and x-ray centres (06.2.3); services of practitioners of traditional medicine (06.2.3).
		06.2.2	Dental services (S)	- Services of dentists, oral hygienists and other dental auxiliaries. Includes: fitting costs of dentures. Excludes: dentures (06.1.3); services of orthodontic specialists (06.2.1); services of medical analysis laboratories and x-ray centres (06.2.3).
		06.2.3	Paramedical services (S)	- Services of medical analysis laboratories and x-ray centres;- services of freelance nurses and midwives;- services of freelance acupuncturists, chiropractors, optometrists, physiotherapists, speech therapists, etc.;- medically prescribed corrective-gymnastic therapy;- outpatient thermal bath or sea-water treatments;- ambulance services;- hire of therapeutic equipment. Includes: services of practitioners of traditional medicine.
	6.3		Hospital services	Hospitalization is defined as occurring when a patient is accommodated in a hospital for the duration of the treatment. Hospital day-care and home-based hospital treatment are included as are hospices for terminally ill persons. This group covers the services of general and specialist hospitals, the services of medical centres, maternity centres, nursing homes and convalescent homes which chiefly provide in-patient health care, the services of institutions serving old people in which medical monitoring is an essential component and the services of rehabilitation centres providing in-patient health care and rehabilitative therapy where the objective is to treat the patient rather than to provide long-term support. Hospitals are defined as institutions which offer in-patient care under direct supervision of qualified medical doctors. Medical centres, maternity centres, nursing homes and convalescent homes also provide in-patient care but their services are supervised and frequently delivered by staff of lower qualification than medical doctors. This group does not cover the services of facilities, such as surgeries, clinics and dispensaries, devoted exclusively to outpatient care (06.2). Nor does it include the services of retirement homes for elderly persons, institutions for disabled persons and rehabilitation centres providing primarily long-term support (12.4).
		06.3.0	Hospital services (S)	- Hospital services comprise the provision of the following services to hospital in-patients:- basic services: administration; accommodation; food and drink; supervision and care by non-specialist staff (nursing auxiliaries); first aid and resuscitation; ambulance transport; provision of medicines and other pharmaceutical products; provision of therapeutic appliances and equipment;- medical services: services of physicians in general or specialist practice, of surgeons and of dentists; medical analyses and x-rays; paramedical services such as those of nurses, midwives, chiropractors, optometrists, physiotherapists, speech therapists, etc.
7			Transport	No explanatory note available for this code.
	7.1		Purchase of vehicles	Purchases of recreational vehicles such as camper vans, caravans, trailers, aeroplanes and boats are covered by (09.2.1).
		07.1.1	Motor cars (D)	- Motor cars, passenger vans, station wagons, estate cars and the like with either two-wheel drive or four-wheel drive. Excludes: invalid carriages (06.1.3); camper vans (09.2.1); golf carts (09.2.1).
		07.1.2	Motor cycles (D)	- Motor cycles of all types, scooters and powered bicycles. Includes: sidecars; snowmobiles. Excludes: invalid carriages (06.1.3); golf carts (09.2.1).
		07.1.3	Bicycles (D)	- Bicycles and tricycles of all types. Includes: rickshaws. Excludes: toy bicycles and tricycles (09.3.1).
		07.1.4	Animal drawn vehicles (D)	- Animal drawn vehicles. Includes: animals required to draw the vehicles and related equipment (yokes, collars, harnesses, bridles, reins, etc.). Excludes: horses and ponies, horse or pony-drawn vehicles and related equipment purchased for recreational purposes (09.2.1).
	7.2		Operation of personal transport equipment	Purchases of spare parts, accessories or lubricants made by households with the intention of undertaking the maintenance, repair or intervention

			Category	Note
				themselves should be shown under (07.2.1) or (07.2.2). If households pay an enterprise to carry out the maintenance, repair or fitting, the total value of the service, including the costs of the materials used, should be shown under (07.2.3).
		07.2.1	Spare parts and accessories for personal transport equipment (SD)	- Tyres (new, used or rethreaded), inner tubes, spark plugs, batteries, shock absorbers, filters, pumps and other spare parts or accessories for personal transport equipment. Includes: fire extinguishers for transport equipment; products specifically for the cleaning and maintenance of transport equipment such as paints, chrome cleaners, sealing compounds and bodywork polishes; covers for motor cars, motorcycles, etc. Excludes: crash helmets for motorcycles and bicycles (03.1.3); non-specific products for cleaning and maintenance such as distilled water, household sponges, chamois leathers, detergents, etc. (05.6.1); charges for the fitting of spare parts and accessories and for the painting, washing and polishing of bodywork (07.2.3); radio-telephones (08.2.0); car radios (09.1.1); baby seats for cars (12.3.2).
		07.2.2	Fuels and lubricants for personal transport equipment (ND)	- Petrol and other fuels such as diesel, liquid petroleum gas, alcohol and two-stroke mixtures;- lubricants, brake and transmission fluids, coolants and additives. Includes: fuel for major tools and equipment covered under (05.5.1) and recreational vehicles covered under (09.2.1). Excludes: charges for oil changes and greasing (07.2.3).
		07.2.3	Maintenance and repair of personal transport equipment (S)	- Services purchased for the maintenance and repair of personal transport equipment such as fitting of parts and accessories, wheel balancing, technical inspection, breakdown services, oil changes, greasing and washing. Includes: total value of the service (that is both the cost of labour and the cost of materials are covered). Excludes: separate purchases of spare parts, accessories or lubricants made by households with the intention of undertaking the maintenance or repair themselves (07.2.1) or (07.2.2); roadworthiness tests (07.2.4).
		07.2.4	Other services in respect of personal transport equipment (S)	- Hire of garages or parking spaces not providing parking in connection with the dwelling;- toll facilities (bridges, tunnels, shuttle ferries, motorways) and parking meters;- driving lessons, driving tests and driving licences;- roadworthiness tests;- hire of personal transport equipment without drivers. Excludes: hire of a car with driver (07.3.2); service charges for insurance in respect of personal transport equipment (12.5.4).
	7.3		Transport services	Purchases of transport services are generally classified by mode of transport. When a ticket covers two or more modes of transport - for example, intra-urban bus and underground or inter-urban train and ferry - and the expenditure cannot be apportioned between them, then such purchases should be classified in (07.3.5).Costs of meals, snacks, drinks, refreshments or accommodation services have to be included if covered by the fare and not separately priced. If separately priced, these costs have to be classified in Division 11.School transport services are included, but ambulance services are excluded (06.2.3).
		07.3.1	Passenger transport by railway (S)	- Transport of individuals and groups of persons and luggage by train, tram and underground. Includes: transport of private vehicles. Excludes: funicular transport (07.3.6).
		07.3.2	Passenger transport by road (S)	- Transport of individuals and groups of persons and luggage by bus, coach, taxi and hired car with driver.
		07.3.3	Passenger transport by air (S)	Transport of individuals and groups of persons and luggage by aeroplane and helicopter.
		07.3.4	Passenger transport by sea and inland waterway (S)	- Transport of individuals and groups of persons and luggage by ship, boat, ferry, hovercraft and hydrofoil. Includes: transport of private vehicles.
		07.3.5	Combined passenger transport (S)	- Transport of individuals and groups of persons and luggage by two or more modes of transport when the expenditure cannot be apportioned between them. Includes: transport of private vehicles. Excludes: package holidays (09.6.0).
		07.3.6	Other purchased transport services (S)	- Funicular, cable-car and chairlift transport;- removal and storage services;- services of porters and left-luggage and luggage-forwarding offices;- travel agents' commissions, if separately priced. Excludes: cable-car and chairlift transport at ski resorts and holiday centres (09.4.1).
8			Communication	No explanatory note available for this code.
	8.1		Postal services	No explanatory note available for this code.
		08.1.0	Postal services (S)	- Payments for the delivery of letters, postcards and parcels;- private mail and parcel delivery. Includes: all purchases of new postage stamps, pre-franked postcards and aerogrammes. Excludes: purchase of used or cancelled postage stamps (09.3.1); financial services of post offices (12.6.2).
	8.2		Telephone and telefax equipment	No explanatory note available for this code.
		08.2.0	Telephone and telefax equipment (D)	- Purchases of telephones, radio-telephones, telefax machines, telephone-answering machines and telephone loudspeakers;- repair of such equipment. Excludes: telefax and telephone-answering facilities provided by personal computers (09.1.3).

		Category	Note
	8.3	Telephone and telefax services	No explanatory note available for this code.
	08.3.0	Telephone and telefax services (S)	- Installation and subscription costs of personal telephone equipment;- telephone calls from a private line or from a public line (public telephone box, post office cabin, etc.); telephone calls from hotels, cafés, restaurants and the like;- telegraphy, telex and telefax services;- information transmission services; Internet connection services;- hire of telephones, telefax machines, telephone-answering machines and telephone loudspeakers. Includes: radio-telephony, radio-telegraphy and radiotelex services.
9		Recreation and culture	No explanatory note available for this code.
	9.1	Audio-visual, photographic and information processing equipment	No explanatory note available for this code.
	09.1.1	Equipment for the reception, recording and reproduction of sound and pictures (D)	- Television sets, video cassette players and recorders, television aerials of all types;- radio sets, car radios, radio clocks, two-way radios, amateur radio receivers and transmitters;- gramophones, tape players and recorders, cassette players and recorders, CD-players, personal stereos, stereo systems and their constituent units (turntables, tuners, amplifiers, speakers, etc.), microphones and earphones. Excludes: video cameras, camcorders and sound-recording cameras (09.1.2).
	09.1.2	Photographic and cinematographic equipment and optical instruments (D)	- Still cameras, movie cameras and sound-recording cameras, video cameras and camcorders, film and slide projectors, enlargers and film processing equipment, accessories (screens, viewers, lenses, flash attachments, filters, exposure meters, etc.);- binoculars, microscopes, telescopes and compasses.
	09.1.3	Information processing equipment (D)	- Personal computers, visual display units, printers and miscellaneous accessories accompanying them; computer software packages such as operating systems, applications, languages, etc.;- calculators, including pocket calculators;- typewriters and word processors. Includes: telefax and telephone-answering facilities provided by personal computers. Excludes: pre-recorded diskettes and CD-ROMs containing books, dictionaries, encyclopaedias, foreign language trainers, multimedia presentations, etc. in the form of software (09.1.4); videogame software (09.3.1); video game computers that plug into a television set (09.3.1); typewriter ribbons (09.5.4); toner and ink cartridges (09.5.4); slide rules (09.5.4).
	09.1.4	Recording media (SD)	- Records and compact discs;- pre-recorded tapes, cassettes, video cassettes, diskettes and CD-ROMs for tape recorders, cassette recorders, video recorders and personal computers;- unrecorded tapes, cassettes, video cassettes, diskettes and CD-ROMs for tape recorders, cassette recorders, video recorders and personal computers;- unexposed films, cartridges and disks for photographic and cinematographic use. Includes: pre-recorded tapes and compact discs of novels, plays, poetry, etc.; pre-recorded diskettes and CD-ROMs containing books, dictionaries, encyclopaedias, foreign language trainers, multimedia presentations, etc. in the form of software; photographic supplies such as paper and flashbulbs; unexposed film the price of which includes the cost of processing without separately identifying it. Excludes: batteries (05.5.2); computer software packages such as operating systems, applications, languages, etc. (09.1.3); video game software, video game cassettes and video game CD-ROMs (09.3.1); development of films and printing of photographs (09.4.2).
	09.1.5	Repair of audio-visual, photographic and information processing equipment (S)	- Repair of audio-visual, photographic and information processing equipment. Includes: total value of the service (that is, both the cost of labour and the cost of materials are covered). Excludes: separate purchases of materials made by households with the intention of undertaking the repair themselves (09.1.1), (09.1.2) or (09.1.3).
	9.2	Other major durables for recreation and culture	No explanatory note available for this code.
	09.2.1	Major durables for outdoor recreation (D)	- Camper vans, caravans and trailers;- aeroplanes, microlight aircraft, gliders, hang-gliders and hot-air balloons;- boats, outboard motors, sails, rigging and superstructures;- horses and ponies, horse or pony-drawn vehicles and related equipment (harnesses, bridles, reins, saddles, etc.);- major items for games and sport such as canoes, kayaks, windsurfing boards, sea-diving equipment and golf carts. Includes: fitting out of boats, camper vans, caravans, etc. Excludes: horses and ponies, horse or pony-drawn vehicles and related equipment purchased for personal transport (07.1.4); inflatable boats, rafts and swimming pools for children and the beach (09.3.2).
	09.2.2	Musical instruments and major durables for indoor recreation (D)	- Musical instruments of all sizes, including electronic musical instruments, such as pianos, organs, violins, guitars, drums, trumpets, clarinets, flutes, recorders, harmonicas, etc.;- billiard tables, ping-pong tables, pinball machines, gaming machines, etc. Excludes: toys (09.3.1).
	09.2.3	Maintenance and repair of other major durables for	- Maintenance and repair of other major durables for recreation and culture. Includes: total value of the service (that is, both the cost of labour

		Category	Note
		recreation and culture (S)	and the cost of materials are covered); laying up for winter of boats, camper vans, caravans, etc.; hangar services for private planes; marina services for boats; veterinary and other services (stabling, feeding, farriery, etc.) for horses and ponies purchased for recreational purposes. Excludes: fuel for recreational vehicles (07.2.2); separate purchases of materials made by households with the intention of undertaking the maintenance or repair themselves (09.2.1) or (09.2.2); veterinary and other services for pets (09.3.5).
9.3		Other recreational items and equipment, gardens and pets	No explanatory note available for this code.
	09.3.1	Games, toys and hobbies (SD)	- Card games, parlour games, chess sets and the like;- toys of all kinds including dolls, soft toys, toy cars and trains, toy bicycles and tricycles, toy construction sets, puzzles, plasticine, electronic games, masks, disguises, jokes, novelties, fireworks and rockets, festoons and Christmas tree decorations;- stamp-collecting requisites (used or cancelled postage stamps, stamp albums, etc.), other items for collections (coins, medals, minerals, zoological and botanical specimens, etc.) and other tools and articles n.e.c. for hobbies. Includes: video-game software; video-game computers that plug into a television set; video-game cassettes and video-game CD-ROMs. Excludes: collectors' items falling into the category of works of art or antiques (05.1.1); unused postage stamps (08.1.0); Christmas trees (09.3.3); children's scrapbooks (09.5.1).
	09.3.2	Equipment for sport, camping and open-air recreation (SD)	- Gymnastic, physical education and sport equipment such as balls, shuttlecocks, nets, rackets, bats, skis, golf clubs, foils, sabres, poles, weights, discuses, javelins, dumb-bells, chest expanders and other body-building equipment; - parachutes and other sky-diving equipment; - firearms and ammunition for hunting, sport and personal protection; - fishing rods and other equipment for fishing; - equipment for beach and open-air games, such as bowls, croquet, frisbee, volleyball, and inflatable boats, rafts and swimming pools; - camping equipment such as tents and accessories, sleeping bags, backpacks, air mattresses and inflating pumps, camping stoves and barbecues; - repair of such articles. Includes: game-specific footwear (ski boots, football boots, golfing shoes and other such footwear fitted with ice-skates, rollers, spikes, studs, etc.); protective headgear for sports; other protective gear for sports such as life jackets, boxing gloves, body padding, shin-guards, goggles, belts, supports, etc. Excludes: crash helmets for motor cycles and bicycles (03.1.3); camping and garden furniture (05.1.1).
	09.3.3	Gardens, plants and flowers (ND)	- Natural or artificial flowers and foliage, plants, shrubs, bulbs, tubers, seeds, fertilizers, composts, garden peat, turf for lawns, specially treated soils for ornamental gardens, horticultural preparations, pots and pot holders. Includes: natural and artificial Christmas trees; delivery charges for flowers and plants. Excludes: gardening gloves (03.1.3); gardening services (04.4.4) or (05.6.2); gardening equipment (05.5.1); gardening tools (05.5.2); insecticides and pesticides for household use (05.6.1).
	09.3.4	Pets and related products (ND)	- Pets, pet foods, veterinary and grooming products for pets, collars, leashes, kennels, birdcages, fish tanks, cat litter, etc. Excludes: horses and ponies (07.1.4) or (09.2.1); veterinary services (09.3.5).
	09.3.5	Veterinary and other services for pets (S)	- Veterinary and other services for pets such as grooming, boarding, tattooing and training. Excludes: veterinary and other services (stabling, farriery, etc.) for horses and ponies purchased for recreational purposes (09.2.3).
9.4		Recreational and cultural services	No explanatory note available for this code.
	09.4.1	Recreational and sporting services (S)	- Services provided by: - sports stadiums, horse-racing courses, motor-racing circuits, velodromes, etc.; - skating rinks, swimming pools, golf courses, gymnasia, fitness centres, tennis courts, squash courts and bowling alleys; - fairgrounds and amusement parks; - roundabouts, see-saws and other playground facilities for children; - pin-ball machines and other games for adults other than games of chance; - ski slopes, ski lifts and the like; - hire of equipment and accessories for sport and recreation, such as aeroplanes, boats, horses, skiing and camping equipment; - out-of-school individual or group lessons in bridge, chess, aerobics, dancing, music, skating, skiing, swimming or other pastimes; - services of mountain guides, tour guides, etc.; - navigational aid services for boating. Includes: hire of game-specific footwear (ski boots, football boots, golfing shoes and other such footwear fitted with ice-skates, rollers, spikes, studs, etc.). Excludes: cable-car and chairlift transport not at ski resorts or holiday centres (07.3.6).
	09.4.2	Cultural services (S)	- Services provided by:- cinemas, theatres, opera houses, concert halls, music halls, circuses, sound and light shows;- museums, libraries, art galleries, exhibitions;- historic monuments, national parks, zoological and botanical gardens, aquaria;- hire of equipment and accessories for culture, such as television sets, video cassettes, etc.:- television and radio

			Category	Note
				broadcasting, in particular licence fees for television equipment and subscriptions to television networks;- services of photographers such as film developing, print processing, enlarging, portrait photography, wedding photography, etc. Includes: services of musicians, clowns, performers for private entertainments.
		09.4.3	Games of chance (S)	- Service charges for lotteries, bookmakers, totalizators, casinos and other gambling establishments, gaming machines, bingo halls, scratch cards, sweepstakes, etc. (Service charge is defined as the difference between the amounts paid for lottery tickets or placed in bets and the amounts paid out to winners.)
	9.5		Newspapers, books and stationery	No explanatory note available for this code.
		09.5.1	Books (SD)	- Books, including atlases, dictionaries, encyclopaedias, textbooks, guidebooks and musical scores. Includes: scrapbooks and albums for children; bookbinding. Excludes: pre-recorded tapes and compact discs of novels, plays, poetry, etc. (09.1.4); pre-recorded diskettes and CD-ROMs containing books, dictionaries, encyclopaedias, foreign language trainers, etc. in the form of software (09.1.4); stamp albums (09.3.1).
		09.5.2	Newspapers and periodicals (ND)	- Newspapers, magazines and other periodicals.
		09.5.3	Miscellaneous printed matter (ND)	- Catalogues and advertising material;- posters, plain or picture postcards, calendars;- greeting cards and visiting cards, announcement and message cards;- maps and globes. Excludes: pre-franked postcards and aerogrammes (08.1.0); stamp albums (09.3.1).
		09.5.4	Stationery and drawing materials (ND)	- Writing pads, envelopes, account books, notebooks, diaries, etc.:- pens, pencils, fountain pens, ballpoint pens, felt-tip pens, inks, erasers, pencil sharpeners, etc.:- stencils, carbon paper, typewriter ribbons, inking pads, correcting fluids, etc.:- paper punches, paper cutters, paper scissors, office glues and adhesives, staplers and staples, paper clips, drawing pins, etc.:- drawing and painting materials such as canvas, paper, card, paints, crayons, pastels and brushes. Includes: toner and ink cartridges; educational materials such as exercise books, slide rules, geometry instruments, slates, chalks and pencil boxes. Excludes: pocket calculators (09.1.3).
	9.6		Package holidays	No explanatory note available for this code.
		09.6.0	Package holidays (S)	- All inclusive holidays or tours which provide for travel, food, accommodation, guides, etc. Includes: half-day and one-day excursion tours; pilgrimages.
1 0			Education	This division covers educational services only. It does not include expenditures on educational materials, such as books (09.5.1) and stationery (09.5.4), or education support services, such as health-care services (06), transport services (07.3), catering services (11.1.2) and accommodation services (11.2.0).It includes education by radio or television broadcasting.The breakdown of educational services is based upon the level categories of the 1997 International Standard Classification of Education (ISCED-97) of the United Nations Educational, Scientific and Cultural Organization (UNESCO).
	10.1		Pre-primary and primary education	No explanatory note available for this code.
		10.1.0	Pre-primary and primary education (S)	- Levels 0 and 1 of ISCED-97: pre-primary and primary education. Includes: literacy programmes for students too old for primary school.
	10.2		Secondary education	No explanatory note available for this code.
		10.2.0	Secondary education (S)	- Levels 2 and 3 of ISCED-97: lower-secondary and upper-secondary education. Includes: out-of-school secondary education for adults and young people.
	10.3		Post-secondary non-tertiary education	No explanatory note available for this code.
		10.3.0	Post-secondary non-tertiary education (S)	- Level 4 of ISCED-97: post-secondary non-tertiary education. Includes: out-of-school post-secondary non-tertiary education for adults and young people.
	10.4		Tertiary education	No explanatory note available for this code.
		10.4.0	Tertiary education (S)	- Levels 5 and 6 of ISCED-97: first stage and second stage of tertiary education.
	10.5		Education not definable by level	No explanatory note available for this code.
		10.5.0	Education not definable by level (S)	- Educational programmes, generally for adults, which do not require any special prior instruction, in particular vocational training and cultural development. Excludes: driving lessons (07.2.4); recreational training courses such as sport or bridge lessons given by independent teachers (09.4.1).
1 1			Restaurants and hotels	No explanatory note available for this code.
	11.1		Catering services	No explanatory note available for this code.

		Category	Note
	11.1.1	Restaurants, cafés and the like (S)	- Catering services (meals, snacks, drinks and refreshments) provided by restaurants, cafés, buffets, bars, tearooms, etc., including those provided:- in places providing recreational, cultural, sporting or entertainment services: theatres, cinemas, sports stadiums, swimming pools, sports complexes, museums, art galleries, nightclubs, dancing establishments, etc.;- on public transport (coaches, trains, boats, aeroplanes, etc.) when priced separately;- also included are:- the sale of food products and beverages for immediate consumption by kiosks, street vendors and the like, including food products and beverages dispensed ready for consumption by automatic vending machines;- the sale of cooked dishes by restaurants for consumption off their premises;- the sale of cooked dishes by catering contractors whether collected by the customer or delivered to the customer's home. Includes: tips. Excludes: tobacco purchases (02.2.0); telephone calls (08.3.0).
	11.1.2	Canteens (S)	- Catering services of works canteens, office canteens and canteens in schools, universities and other educational establishments. Includes: university refectories, military messes and wardrooms. Excludes: food and drink provided to hospital in-patients (06.3.0).
	11.2	Accommodation services	No explanatory note available for this code.
	11.2.0	Accommodation services (S)	- Accommodation services of:- hotels, boarding houses, motels, inns and establishments offering "bed and breakfast";- holiday villages and holiday centres, camping and caravan sites, youth hostels and mountain chalets;- boarding schools, universities and other educational establishments;- public transport (trains, boats, etc.) when priced separately;- hostels for young workers or immigrants. Includes: tips, porters. Excludes: payments of households occupying a room in a hotel or boarding house as their main residence (04.1.1); rentals paid by households for a secondary residence for the duration of a holiday (04.1.2); telephone calls (08.3.0); catering services in such establishments except for breakfast or other meals included in the price of the accommodation (11.1.1); housing in orphanages, homes for disabled or maladjusted persons (12.4.0).
1 2		Miscellaneous goods and services	No explanatory note available for this code.
	12.1	Personal care	No explanatory note available for this code.
	12.1.1	Hairdressing salons and personal grooming establishments (S)	- Services of hairdressing salons, barbers, beauty shops, manicures, pedicures, Turkish baths, saunas, solariums, non-medical massages, etc. Includes: bodycare, depilation and the like. Excludes: spas (06.2.3) or (06.3.0); fitness centres (09.4.1).
	12.1.2	Electric appliances for personal care (SD)	- Electric razors and hair trimmers, hand-held and hood hairdryers, curling tongs and styling combs, sunlamps, vibrators, electric toothbrushes and other electric appliances for dental hygiene, etc.;- repair of such appliances.
	12.1.3	Other appliances, articles and products for personal care (ND)	- Non-electric appliances: razors and hair trimmers and blades therefor, scissors, nail files, combs, shaving brushes, hairbrushes, toothbrushes, nail brushes, hairpins, curlers, personal weighing machines, baby scales, etc.;- articles for personal hygiene: toilet soap, medicinal soap, cleansing oil and milk, shaving soap, shaving cream and foam, toothpaste, etc.;- beauty products: lipstick, nail varnish, make-up and make-up removal products (including powder compacts, brushes and powder puffs), hair lacquers and lotions, pre-shave and after-shave products, sunbathing products, hair removers, perfumes and toilet waters, personal deodorants, bath products, etc.;- other products: toilet paper, paper handkerchiefs, paper towels, sanitary towels, cotton wool, cotton tops, babies' napkins, toilet sponges, etc. Excludes: handkerchiefs made of fabric (03.1.3).
	12.2	Prostitution	No explanatory note available for this code.
	12.2.0	Prostitution (S)	- Services provided by prostitutes and the like.
	12.3	Personal effects n.e.c.	No explanatory note available for this code.
	12.3.1	Jewellery, clocks and watches (D)	- Precious stones and metals and jewellery fashioned out of such stones and metals;- costume jewellery, cuff links and tiepins;- clocks, watches, stopwatches, alarm clocks, travel clocks;- repair of such articles. Excludes: ornaments (05.1.1) or (05.4.0); radio clocks (09.1.1); precious stones and metals and jewellery fashioned out of such stones and metals acquired primarily as stores of value (capital formation).
	12.3.2	Other personal effects (SD)	- Travel goods and other carriers of personal effects: suitcases, trunks, travel bags, attaché cases, satchels, hand-bags, wallets, purses, etc.;- articles for babies: baby carriages, pushchairs, carrycots, recliners, car beds and seats, back-carriers, front carriers, reins and harnesses, etc.;- articles for smokers: pipes, lighters, cigarette cases, cigar cutters, ashtrays, etc.;- miscellaneous personal articles: sunglasses, walking sticks and canes, umbrellas and parasols, fans, keyrings, etc.;- funerary articles: coffins, gravestones, urns, etc.;- repair of such articles. Includes: lighter fuel; wall thermometers and barometers. Excludes: baby furniture (05.1.1); shopping bags (05.2.0); feeding bottles (05.4.0).
	12.4	Social protection	Social protection as defined here covers assistance and support services provided to persons who are: elderly, disabled, having occupational injuries and diseases, survivors, unemployed, destitute, homeless, low-income

			Category	Note
				earners, indigenous people, immigrants, refugees, alcohol and substance abusers, etc. It also covers assistance and support services provided to families and children.
		12.4.0	Social protection (S)	Such services include residential care, home help, day care and rehabilitation. More specifically, this class covers payments by households for:- Retirement homes for elderly persons, residences for disabled persons, rehabilitation centres providing long-term support for patients rather than health care and rehabilitative therapy, schools for disabled persons where the main aim is to help students overcome their disability;- help to maintain elderly and disabled persons at home (home-cleaning services, meal programmes, day-care centres, day-care services and holiday-care services);- wet-nurses, crèches, play schools and other child-minding facilities;- counselling, guidance, arbitration, fostering and adoption services for families.
	12.5		Insurance	Service charges for insurance are classified by type of insurance, namely: life insurance and non-life insurance (that is, insurance in connection with the dwelling, health, transport, etc.). Service charges for multi-risk insurance covering several risks should be classified on the basis of the cost of the principal risk if it is not possible to allocate the service charges to the various risks covered. Service charge is defined as the difference between claims due and premiums earned and premium supplement.
		12.5.1	Life insurance (S)	- Service charges for life assurance, death benefit assurance, education assurance, etc.
		12.5.2	Insurance connected with the dwelling (S)	- Service charges paid by owner-occupiers and by tenants for the kinds of insurance typically taken out by tenants against fire, theft, water damage, etc. Excludes: service charges paid by owner-occupiers for the kinds of insurance typically taken out by landlords (intermediate consumption).
		12.5.3	Insurance connected with health (S)	- Service charges for private sickness and accident insurance.
		12.5.4	Insurance connected with transport (S)	- Service charges for insurance in respect of personal transport equipment;- service charges for travel insurance and luggage insurance.
		12.5.5	Other insurance (S)	- Service charges for other insurance such as civil liability for injury or damage to third parties or their property. Excludes: civil liability or damage to third parties or their property arising from the operation of personal transport equipment (12.5.4).
	12.6		Financial services n.e.c.	No explanatory note available for this code.
		12.6.1	FISIM (S)	- Financial intermediation services indirectly measured.
		12.6.2	Other financial services n.e.c. (S)	- Actual charges for the financial services of banks, post offices, saving banks, money changers and similar financial institutions;- fees and service charges of brokers, investment counsellors, tax consultants and the like;- administrative charges of private pension funds and the like.
	12.7		Other services n.e.c.	No explanatory note available for this code.
		12.7.0	Other services n.e.c. (S)	- Fees for legal services, employment agencies, etc.:- charges for undertaking and other funeral services;- payment for the services of estate agents, housing agents, auctioneers, salesroom operators and other intermediaries;- payment for photocopies and other reproductions of documents;- fees for the issue of birth, marriage and death certificates and other administrative documents;- payment for newspaper notices and advertisements;- payment for the services of graphologists, astrologers, private detectives, bodyguards, matrimonial agencies and marriage guidance counsellors, public writers, miscellaneous concessions (seats, toilets, cloakrooms), etc.
1 3			Individual consumption expenditure of non-profit institutions serving households (NPISHs)	No explanatory note available for this code.
	13.1		Housing	The same function is covered under COPNI Group 01.0. This group corresponds to Group 04.1 (individual consumption expenditure of households on actual rentals for housing) and Group 14.1 (individual consumption expenditure of general government on housing).
		13.1.0	Housing (S)	As specified in COPNI 01.0.0. Corresponds to (04.1.1) and (14.1.0). eholds on actual rentals for housing) and Group 14.1 (individual consumption expenditure of general government on housing).
	13.2		Health	The same function is covered under COPNI Groups 02.1 to 02.6. This group corresponds to Division 06 (individual consumption expenditure of households on health) and Group 14.2 (individual consumption expenditure of general government on health).
		13.2.1	Pharmaceutical products (ND)	- As specified in COPNI 02.1.1. Corresponds to (06.1.1) and (14.2.1).
		13.2.2	Other medical products (ND)	- As specified in COPNI 02.1.2. Corresponds to (06.1.2) and (14.2.2).
		13.2.3	Therapeutic appliances and equipment (D)	- As specified in COPNI 02.1.3. Corresponds to (06.1.3) and (14.2.3).
		13.2.4	Outpatient medical services	- As specified in COPNI 02.2.1. Corresponds to (06.2.1) and (14.2.4).

		Category	Note
		(S)	
	13.2.5	Outpatient dental services (S)	- As specified in COPNI 02.2.2. Corresponds to (06.2.2) and (14.2.5).
	13.2.6	Outpatient paramedical services (S)	- As specified in COPNI 02.2.3. Corresponds to (06.2.3) and (14.2.6).
	13.2.7	Hospital services (S)	- As specified in COPNI 02.3.0. Corresponds to (06.3.0) and (14.2.7).
	13.2.8	Other health services (S)	- As specified in COPNI 02.4.0, 02.5.0 and 02.6.0.
13.3		Recreation and culture	The same function is covered under COPNI Groups 03.1 and 03.2. This group corresponds to Group 09.4 (individual consumption expenditure of households on recreational and cultural services) and Group 14.3 (individual consumption expenditure of general government on recreation and culture).
	13.3.1	Recreational and sporting services (S)	- As specified in COPNI 03.1.0. Corresponds to (09.4.1) and (14.3.1).
	13.3.2	Cultural services (S)	- As specified in COPNI 03.2.0. Corresponds to (09.4.2) and (14.3.2).
13.4		Education	The same function is covered under COPNI Groups 04.1 to 04.7. This group corresponds to Division 10 (individual consumption expenditure of households on education) and Group 14.4 (individual consumption expenditure of general government on education).
	13.4.1	Pre-primary and primary education (S)	- As specified in COPNI 04.1.0. Corresponds to (10.1.0) and (14.4.1).
	13.4.2	Secondary education (S)	- As specified in COPNI 04.2.0. Corresponds to (10.2.0) and (14.4.2).
	13.4.3	Post-secondary non-tertiary education (S)	- As specified in COPNI 04.3.0. Corresponds to (10.3.0) and (14.4.3).
	13.4.4	Tertiary education (S)	As specified in COPNI 04.4.0. Corresponds to (10.4.0) and (14.4.4).
	13.4.5	Education not definable by level (S)	- As specified in COPNI 04.5.0. Corresponds to (10.5.0) and (14.4.5).
	13.4.6	Other educational services (S)	- As specified in COPNI 04.6.0 and 04.7.0.
13.5		Social protection	The same function is covered under COPNI Groups 05.1 and 05.2. This group corresponds to Group 12.4 (individual consumption expenditure of households on social protection) and Group 14.5 (individual consumption expenditure of general government on social protection).
	13.5.0	Social protection (S)	- As specified in COPNI 05.1.0 and 05.2.0. Corresponds to (12.4.0) and (14.5.0).
13.6		Other services	These functions are covered under COPNI Groups 06.0, 07.1, 07.2, 07.3, 08.1, 08.2, 09.1 and 09.2. This group has no counterpart in Divisions 01 to 12 (individual consumption expenditure of households) or in Division 14 (individual consumption expenditure of general government).
	13.6.1	Religion (S)	- As specified in COPNI 06.0.0.
	13.6.2	Political parties, labour and professional organizations (S)	- As specified in COPNI 07.1.0, 07.2.0 and 07.3.0.
	13.6.3	Environmental protection (S)	- As specified in COPNI 08.1.0 and 08.2.0.
	13.6.4	Services n.e.c. (S)	- As specified in COPNI 09.1.0 and 09.2.0.
14		Individual consumption expenditure of general government	No explanatory note available for this code.
14.1		Housing	The same function is covered under COFOG Group 10.6. This group corresponds to Group 04.1 (individual consumption expenditure of households on actual rentals for housing) and Group 13.1 (individual consumption expenditure of NPISHs on housing).
	14.1.0	Housing (S)	- As specified in COFOG 10.6.0. Corresponds to (04.1.1) and (13.1.0).
14.2		Health	The same function is covered under COFOG Groups 07.1 to 07.4. This group corresponds to Division 06 (individual consumption expenditure of households on health) and Group 13.2 (individual consumption expenditure of NPISHs on health).
	14.2.1	Pharmaceutical products (ND)	- As specified in COFOG 07.1.1. Corresponds to (06.1.1) and (13.2.1).
	14.2.2	Other medical products (ND)	- As specified in COFOG 07.1.2. Corresponds to (06.1.2) and (13.2.2).
	14.2.3	Therapeutic appliances and equipment (D)	- As specified in COFOG 07.1.3. Corresponds to (06.1.3) and (13.2.3).
	14.2.4	Outpatient medical services (S)	- As specified in COFOG 07.2.1 and 07.2.2. Corresponds to (06.2.1) and (13.2.4).
	14.2.5	Outpatient dental services (S)	- As specified in COFOG 07.2.3. Corresponds to (06.2.2) and (13.2.5).
	14.2.6	Outpatient paramedical services (S)	- As specified in COFOG 07.2.4. Corresponds to (06.2.3) and (13.2.6).
	14.2.7	Hospital services (S)	- As specified in COFOG 07.3.1, 07.3.2, 07.3.3 and 07.3.4. Corresponds to (06.3.0) and (13.2.6).
	14.2.8	Public health services (S)	- As specified in COFOG 07.4.0.
14.3		Recreation and culture	The same function is covered under COFOG Groups 08.1 and 08.2. This group corresponds to Group 09.4 (individual consumption expenditure of

		Category	Note
			households on recreational and cultural services) and Group 13.3 (individual consumption expenditure of NPISHs on recreation and culture).
	14.3.1	Recreational and sporting services (S)	- As specified in COFOG 08.1.0. Corresponds to (09.4.1) and (13.3.1).
	14.3.2	Cultural services (S)	- As specified in COFOG 08.2.0. Corresponds to (09.4.2) and (13.3.2).
14.4		Education	The same function is covered under COFOG Groups 09.1 to 09.6. This group corresponds to Division 10 (individual consumption expenditure of households on education), Group 13.4 (individual consumption expenditure of NPISHs on education).
	14.4.1	Pre-primary and primary education (S)	- As specified in COFOG 09.1.1 and 09.1.2. Corresponds to (10.1.0) and (13.4.1).
	14.4.2	Secondary education (S)	- As specified in COFOG 09.2.1 and 09.2.2. Corresponds to (10.2.0) and (13.4.2).
	14.4.3	Post-secondary non-tertiary education (S)	- As specified in COFOG 09.3.0. Corresponds to (10.3.0) and (13.4.3).
	14.4.4	Tertiary education (S)	- As specified in COFOG 09.4.1 and 09.4.2. Corresponds to (10.4.0) and (13.4.4).
	14.4.5	Education not definable by level (S)	- As specified in COFOG 09.5.0. Corresponds to (10.5.0) and (13.4.5).
	14.4.6	Subsidiary services to education (S)	- As specified in COFOG 09.6.0.
14.5		Social protection	The same function is covered under COFOG Groups 10.1 to 10.5 and Group 10.7. This group corresponds to Group 12.4 (individual consumption expenditure of households on social protection) and Group 13.5 (individual consumption expenditure of NPISHs on social protection).
	14.5.0	Social protection (S)	As specified in COFOG 10.1.1 to 10.5.0 and 10.7.0. Corresponds to (12.4.0) and (13.5.0).

5.2.9.2 From COICOP_{EU25 cons. prices.} to CEDA EU-25 k₀ in producer prices: method

There are no official correspondence tables available between COICOP and CEDA product categories, so these have been constructed for the project. Where several CEDA categories are linked to one COICOP category, a quantification is needed for distributing them. In principle, the ratios between volumes as present in US final demand by private households have been applied here. The translation table may have defects due to the limited way categories on both sides have been specified, especially the categories of BEA (the US Bureau of Economic Analysis) on which CEDA is based. Using this distribution method, for each COICOP EU-25 expenditure category a distribution over one or more CEDA categories is made. These results are surveyed in Table 5.2.9.6.

As the table shows, there is some ambiguity in making the links, which has been resolved by making explicit and transparent choices. The choices made may influence outcomes if products differ substantially in their environmental impacts. In the analysis we have no reason to suspect these play a major role. However, in one case we were not able to match a COICOP category to CEDA. With *CP0933 Gardens, plants and flowers*, we did find a number of relevant CEDA categories for all fertilisers and chemicals related to gardening (CEDA/BEA nrs 100000; 270201; 270300; 270401), but none of these refers to the bulk of expenditure on gardening, like on plants and flowers. So, implicitly, the method of distribution of COICOP categories over CEDA categories has led to a too high expenditure on these chemicals. Independent data on fertiliser use by private households are around EUR 280 million (see Annex 5.2.8 under ‘Agrochemicals’). As this procedure leads to a total expenditure on *270300 Pesticides* of EURO 11.99 billion the emissions of pesticides are overestimated by a factor of nearly 50! We have not adapted the k₀ as this would induce more ambiguity. Instead, we have adapted the B₂ matrix accordingly, setting total household pesticide emissions equal to their share in total emissions according to ‘van Oers’.

Finally, the expenditures as have been derived from consumer expenditure statistics have been converted from the consumer price base to the producer price base, using the BEA US

conversion factors, see Table 5.2.9.6. This results in the k_0 , with one exception, car fuel expenditure. The difference in taxes on petrol and diesel between the EU and the US is so substantial (Walsh, 2002) that we corrected the expenditure data accordingly. Taking Germany as an average for petrol and diesel prices, the ratio with the US in consumer prices is 2.8 for petrol and 2.15 for diesel. As petrol has a higher share in personal car driving in the US, we set the additional correction factor for petrol purchased by private households at 2.5.

The result of this conversion step is the CEDA EU25 producer price based expenditure vector k_0 (Table 5.2.9.9). The full transformation matrix is available from CML.

Table 5.2.9.6: Transformation from COICOP level 3 to CEDA

The numbers in brackets give for each CEDA category the share in the corresponding COICOP category. (The shares add up to 1 for each COICOP category.) Note that some COICOP level 3 items are the same as level 2, as no further differentiation is available. Also, a few level 3 items were aggregated to level 2.

COICOP	CEDA
CP01 Food and non-alcoholic beverages	
CP011 Food	
CP0111 Bread and cereals	
	141401 Flour and other grain mill products (0.014140818)
	141402 Cereal breakfast foods (0.148264155)
	141403 Prepared flour mixes and doughs (0.087404288)
	141801 Bread, cake, and related products (0.351540178)
	141802 Cookies and crackers (0.150596261)
	141803 Frozen bakery products, except bread (0.051839784)
	143100 Macaroni, spaghetti, vermicelli, and noodles (0.026823087)
	143201 Potato chips and similar snacks (0.169391394)
CP0112 Meat	
	10302 Miscellaneous livestock (0.027445845)
	140101 Meat packing plants (0.444496691)
	140102 Sausages and other prepared meat products (0.183634311)
	140105 Poultry slaughtering and processing (0.344423085)
CP0113 Fish and seafood	
	30002 Commercial fishing (0.246649578)
	140700 Canned and cured fish and seafoods (0.418332309)
	141200 Prepared fresh or frozen fish and seafoods (0.335018069)
CP0114 Milk, cheese and eggs	
	10100 Dairy farm products (0.003503536)
	10200 Poultry and eggs (0.084238529)
	140200 Creamery butter (0.034014348)
	140300 Natural, processed, and imitation cheese (0.329458714)
	140400 Dry, condensed, and evaporated dairy products (0.122121796)
	140600 Fluid milk (0.426663101)
CP0115 Oils and fats	
	20600 Oil bearing crops (0.008935445)
	142900 Edible fats and oils, n.e.c. (0.991064548)
CP0116 Fruit	
	20401 Fruits (0.515446663)
	20402 Tree nuts (0.025184182)
	141000 Dehydrated fruits, vegetables, and soups (0.064829923)
	141301 Frozen fruits, fruit juices, and vegetables (0.394539207)
CP0117 Vegetables	
	20501 Vegetables (0.623405159)
	20702 Greenhouse and nursery products (0.376594841)
CP0118 Sugar, jam, honey, chocolate and confectionery	
	140500 Ice cream and frozen desserts (0.076321371)
	140900 Canned fruits, vegetables, preserves, jams, and jellies (0.355285853)
	141900 Sugar (0.064942539)
	142002 Chocolate and cocoa products (0.023473006)
	142005 Candy and other confectionery products (0.47997722)
CP0119 Food products n.e.c.	
	20503 Miscellaneous crops (0.000212936)
	140800 Canned specialties (0.154869363)
	141100 Pickles, sauces, and salad dressings (0.120050237)
	141302 Frozen specialties, n.e.c. (0.278073221)
	142004 Salted and roasted nuts and seeds (0.051085841)
	143000 Manufactured ice (0.013385337)
	143202 Food preparations, n.e.c. (0.382323027)
CP012 Non-alcoholic beverages	
CP0121 Coffee, tea and cocoa	
	142800 Roasted coffee (1)
CP0122 Mineral waters, soft drinks, fruit and vegetable juices	
	142200 Bottled and canned soft drinks (0.881588519)
	142300 Flavoring extracts and flavoring syrups, n.e.c. (0.118411519)
CP02 Alcoholic beverages, tobacco and narcotics	
CP021 Alcoholic beverages	

CP0211 Spirits	
	142104 Distilled and blended liquors (1)
CP0212 Wine	
	142103 Wines, brandy, and brandy spirits (1)
CP0213 Beer	
	142101 Malt beverages (1)
CP022 Tobacco	
	150101 Cigarettes (0.910631835)
	150102 Cigars (0.039997313)
	150103 Chewing and smoking tobacco and snuff (0.049370896)
CP03 Clothing and footwear	
CP031 Clothing	
CP0311 Clothing materials	
CP0312 Garments	
	180101 Women's hosiery, except socks (0.027149329)
	180102 Hosiery, n.e.c. (0.014808634)
	180400 Apparel made from purchased materials (0.958042085)
CP0313 Other articles of clothing and clothing accessories	
	190301 Textile bags (0.055777196)
	320500 Rubber and plastics hose and belting (0.043645717)
	340301 Leather gloves and mittens (0.053493917)
	340302 Luggage (0.485309273)
	340303 Women's handbags and purses (0.176803425)
	340304 Personal leather goods, n.e.c. (0.12204241)
	340305 Leather goods, n.e.c. (0.062928118)
CP0314 Cleaning, repair and hire of clothing	
	720201 Laundry, cleaning, garment services, and shoe repair (1)
CP032 Footwear including repair	
CP0321 Shoes and other footwear	
	320200 Rubber and plastics footwear (0.274766684)
	340100 Boot and shoe cut stock and findings (3.92388E-05)
	340201 Shoes, except rubber (0.710636556)
	340202 House slippers (0.014557583)
CP0322 Repair and hire of footwear	
	720201 Laundry, cleaning, garment services, and shoe repair (1)
CP04 Housing, water, electricity, gas and other fuels	
CP041 Actual rentals for housing	
CP0411 + 0421 Actual + imputed rentals	
	110101 New residential 1 unit structures, nonfarm (0.696100533)
	110102 New residential 2-4 unit structures, nonfarm (0.016210359)
	110105 New additions & alterations, nonfarm, construction (0.200902522)
	110108 New residential garden and highrise apartments construction (0.076743782)
	110501 New farm residential construction (0.010042819)
CP0412 Other actual rentals	
CP042 Imputed rentals for housing	
CP0421 Imputed rentals of owner-occupiers	
CP0422 Other imputed rentals	
CP043 Maintenance and repair of the dwelling	
CP0431 Materials for the maintenance and repair of the dwelling	
	30001 Forestry products (0.028255796)
	110105 New additions & alterations, nonfarm, construction (0.412729979)
	110108 New residential garden and highrise apartments construction (0.157660827)
	110400 New highways, bridges, and other horizontal construction (0.005877914)
	110501 New farm residential construction (0.020631758)
	120101 Maintenance and repair of farm and nonfarm residential structures (0.23733905)
	200903 Wood products, n.e.c. (0.025373567)
	290202 Polishes and sanitation goods (0.039592773)
	310103 Products of petroleum and coal, n.e.c. (0.000684617)
	361100 Concrete products, except block and brick (0.000149201)
	361500 Cut stone and stone products (0.005223604)
	361600 Abrasive products (0.003095152)
	361900 Minerals, ground or treated (0.003121573)
	362200 Nonmetallic mineral products, n.e.c. (0.001922522)
	370103 Steel wiredrawing and steel nails and spikes (0.000100245)
	370402 Primary metal products, n.e.c. (0.000862571)
	381000 Nonferrous wiredrawing and insulating (0.001079379)
	400901 Prefabricated metal buildings and components (0.000271205)

	410100 Screw machine products, bolts, etc. (0.00144228)
	410202 Crowns and closures (0.00028053)
	410203 Metal stampings, n.e.c. (0.013132056)
	420500 Miscellaneous fabricated wire products (0.004101485)
	420700 Steel springs, except wire (0.000540855)
	420800 Pipe, valves, and pipe fittings (0.018162165)
	421000 Metal foil and leaf (0.005396895)
	421100 Fabricated metal products, n.e.c. (0.012971976)
CP0432 Services for the maintenance and repair of the dwelling	
	110105 New additions & alterations, nonfarm, construction (0.47508949)
	110108 New residential garden and highrise apartments construction (0.181481853)
	110400 New highways, bridges, and other horizontal construction (0.006766011)
	110501 New farm residential construction (0.023749018)
	120101 Maintenance and repair of farm and nonfarm residential structures (0.273198694)
	300000 Paints and allied products (0.005524442)
	730102 Services to dwellings and other buildings (0.034190536)
CP044 Water supply and miscellaneous services relating to the dwelling	
CP0441 Water supply	
	680301 Water supply and sewerage systems (1)
CP0442 Refuse collection	
CP0443 Sewerage collection	
	680301 Water supply and sewerage systems (1)
CP0444 Other services relating to the dwelling n.e.c.	
	120101 Maintenance and repair of farm and nonfarm residential structures (1)
CP045 Electricity, gas and other fuels	
CP0451 Electricity	
	680100 Electric services (utilities) (1)
CP0452 Gas	
	680202 Natural gas distribution (1)
CP0453 Liquid fuels	
	80001 Crude petroleum and natural gas (1)
CP0454 Solid fuels	
	30001 Forestry products (0.985126019)
	70000 Coal (0.014874019)
CP0455 Heat energy	
CP05 Furnishings, household equipment and routine maintenance of the house	
CP051 Furniture and furnishings, carpets and other floor coverings	
CP0511 Furniture and furnishings	
	190200 House furnishings, n.e.c. (0.15135251)
	220101 Wood household furniture, except upholstered (0.250328094)
	220102 Household furniture, n.e.c. (0.007881532)
	220103 Wood television and radio cabinets (0.000175554)
	220200 Upholstered household furniture (0.150289163)
	220300 Metal household furniture (0.052809946)
	220400 Mattresses and bedsprings (0.076625079)
	230100 Wood office furniture (0.054506969)
	230400 Wood partitions and fixtures (0.055123914)
	230500 Partitions and fixtures, except wood (0.077471085)
	230600 Drapery hardware and window blinds and shades (0.048375957)
	230700 Furniture and fixtures, n.e.c. (0.063232832)
	270406 Chemicals and chemical preparations, n.e.c. (0.011827315)
CP0512 Carpets and other floor coverings	
	170100 Carpets and rugs (1)
CP0513 Repair of furniture, furnishings and floor coverings	
	720205 Watch, clock, jewelry, and furniture repair (1)
CP052 Household textiles	
	170900 Cordage and twine (0.013357579)
	171001 Nonwoven fabrics (0.047079116)
	171100 Textile goods, n.e.c. (0.002420142)
	190100 Curtains and draperies (0.249501914)
	190302 Canvas and related products (0.051451411)
	190303 Pleating and stitching (0.091845058)
	190304 Automotive and apparel trimmings (0.207062528)
	190305 Schiffli machine embroideries (0.005816363)
	190306 Fabricated textile products, n.e.c. (0.33146584)
CP053 Household appliances	
CP0531 Major household appliances whether electric or not	

	400300 Heating equipment, except electric and warm a furnaces (0.027457386)
	540100 Household cooking equipment (0.310840547)
	540200 Household refrigerators and freezers (0.295354933)
	540300 Household laundry equipment (0.23607558)
	540500 Household vacuum cleaners (0.130271554)
CP0532 Small electric household appliances	
	490300 Blowers and fans (0.251800627)
	540400 Electric housewares and fans (0.748199344)
CP0533 Repair of household appliances	
	720204 Electrical repair shops (0.601195335)
	730101 Miscellaneous repair shops (0.398804694)
CP054 Glassware, tableware and household utensils	
	320300 Fabricated rubber products, n.e.c. (0.127206743)
	320400 Miscellaneous plastics products, n.e.c. (0.530492306)
	320600 Gaskets, packing, and sealing devices (0.009566479)
	350100 Glass and glass products, except containers (0.147111669)
	350200 Glass containers (0.010598158)
	360701 Vitreous china table and kitchenware (0.00712075)
	360702 Fine earthenware table and kitchenware (0.038900796)
	360900 Pottery products, n.e.c. (0.086033382)
	500300 Scales and balances, except laboratory (0.042969793)
CP055 Tools and equipment for house and garden	
CP0551 Major tools and equipment	
	420300 Hardware, n.e.c. (0.051065445)
	430200 Internal combustion engines, n.e.c. (0.129018113)
	440002 Lawn and garden equipment (0.459724039)
	470401 Power-driven handtools (0.360192418)
CP0552 Small tools and miscellaneous accessories	
	420100 Cutlery (0.08996322)
	420201 Hand and edge tools, except machine tools and handsaws (0.059387907)
	420202 Saw blades and handsaws (0.020656876)
	540700 Household appliances, n.e.c. (0.112058766)
	550100 Electric lamp bulbs and tubes (0.059132583)
	550200 Lighting fixtures and equipment (0.061666202)
	550300 Wiring devices (0.001281541)
	580100 Storage batteries (0.120671123)
	580200 Primary batteries, dry and wet (0.112161882)
	621100 Instruments to measure electricity (0.363019913)
CP056 Goods and services for routine household maintenance	
CP0561 Non-durable household goods	
	640800 Non durable household goods / Brooms and brushes (1)
CP0562 Domestic services and household services	
	730107 Miscellaneous equipment rental and leasing (0.39757058)
	730109 Other business services (0.60242945)
CP06 Health	
CP061 Medical products, appliances and equipment	
CP0611 Pharmaceutical products	
	290100 Drugs (1)
CP0612 Other medical products	
CP0613 Therapeutic appliances and equipment	
	630200 Ophthalmic goods (1)
CP062 Out-patient services	
CP0621 Medical services	
	770100 Doctors and dentists (1)
CP0622 Dental services	
	770100 Doctors and dentists (1)
CP0623 Paramedical services	
	770303 Other medical and health services (1)
CP063 Hospital services	
	770200 Hospitals (1)
CP07 Transport	
CP071 Purchase of vehicles	
CP0711 Motor cars	
	590100 Truck and bus bodies (0.017051812)
	590301 Motor vehicles and passenger car bodies (0.982948184)
CP0712 Motor cycles	
	610500 Motorcycles, bicycles, and parts (1)
CP0713 Bicycles	

	610500 Motorcycles, bicycles, and parts (1)
CP0714 Animal drawn vehicles	
CP072 Operation of personal transport equipment	
CP0721 Spares parts and accessories for personal transport equipment	
	320100 Tires and inner tubes (0.270157158)
	590302 Motor vehicle parts and accessories (0.264070034)
	620101 Search and navigation equipment (0.465772808)
CP0722 Fuels and lubricants for personal transport equipment	
	310101 Petroleum refining (0.956679463)
	310102 Lubricating oils and greases (0.043320574)
CP0723 Maintenance and repair of personal transport equipment	
	500100 Carburetors, pistons, rings, and valves (0.00034386)
	750002 Automotive repair shops and services (0.999656141)
CP0724 Other services in respect of personal transport equipment	
	750001 Automotive rental and leasing, without drivers (0.772618115)
	750003 Automobile parking and car washes (0.227381885)
CP073 Transport services	
CP0731 Passenger transport by railway	
	650100 Railroads and related services (1)
CP0732 Passenger transport by road	
	650200 Local and suburban transit and interurban highway passenger transportation (1)
CP0733 Passenger transport by air	
	650500 Air transportation (1)
CP0734 Passenger transport by sea and inland waterway	
	650400 Water transportation (1)
CP0735 Combined passenger transport	
CP0736 Other purchased transport services	
	650301 Trucking and courier services, except a (0.866854548)
	650302 Warehousing and storage (0.052801792)
	650702 Arrangement of passenger transportation (0.080343686)
CP08 Communications	
CP081 Postal services	
	780100 Postal Service (1)
CP082 Telephone and telefax equipment	
	560300 Telephone and telegraph apparatus (0.587319493)
	560500 Communication equipment (0.412680537)
CP083 Telephone and telefax services	
	660100 Telephone, telegraph communications, and communications services n.e.c. (1)
CP09 Recreation and culture	
CP091 Audio-visual, photographic and information processing equipment	
CP0911 Equipment for the reception, recording and reproduction of sound and pictures	
	560100 Household audio and video equipment (1)
CP0912 Photographic and cinematographic equipment and optical instruments	
	630300 Photographic equipment and supplies (1)
CP0913 Information processing equipment	
	510102 Calculating and accounting machines (0.042248808)
	510103 Electronic computers (0.911695838)
	510400 Office machines, n.e.c. (0.040780559)
	570300 Other electronic components (0.005274826)
CP0914 Recording media	
	510104 Computer peripheral equipment (0.900186479)
	560200 Prerecorded records and tapes (0.077994458)
	580600 Magnetic and optical recording media (0.021819023)
CP0915 Repair of audio-visual, photographic and information processing equipment	
	720204 Electrical repair shops (1)
CP092 Other major durables for recreation and culture	
CP0921 Major durables for outdoor recreation	
	200703 Mobile homes (0.191118285)
	590200 Truck trailers (0.105328918)
	600100 Aircraft (0.35056299)
	610100 Ship building and repairing (0.031527299)
	610200 Boat building and repairing (0.118340604)
	610601 Travel trailers and campers (0.054752003)
	610603 Motor homes (0.069000885)
	610700 Transportation equipment, n.e.c. (0.079368994)
CP0922 Musical instruments and major durables for indoor recreation	

	640200 Musical instruments (1)
CP0923 Maintenance and repair of other major durables for recreation and culture	
	600200 Aircraft and missile engines and engine parts (1)
CP093 Other recreational items and equipment, gardens and pets	
CP0931 Games, toys and hobbies	
	640301 Games, toys, and children's vehicles (0.699104667)
	640302 Dolls and stuffed toys (0.300895333)
CP0932 Equipment for sport, camping and open-air recreation	
	130500 Small arms (0.070952073)
	130600 Small arms ammunition (0.050067332)
	640400 Sporting and athletic goods, n.e.c. (0.878980577)
CP0933 Gardens, plants and flowers	
	100000 Chemical and fertilizer minerals (0.002296754)
	270201 Nitrogenous and phosphatic fertilizers (0.102948613)
	270300 Pesticides and agricultural chemicals, n.e.c. (0.784476638)
	270401 Gum and wood chemicals (0.110277966)
CP0934 Pets and related products	
	20202 Feed grains (0.044866133)
	141501 Dog and cat food (0.847443819)
	141502 Prepared feeds, n.e.c. (0.107690044)
CP0935 Veterinary and other services for pets	
	770304 Veterinary services (1)
CP094 Recreational and cultural services	
CP0941 Recreational and sporting services	
	40001 Agricultural, forestry, and fishery services (0.016110748)
	720203 Portrait photographic studios, and other miscellaneous personal services (0.552596092)
	760202 Bowling centers (0.027859969)
	760203 Professional sports clubs and promoters (0.05584963)
	760204 Racing, including track operation (0.080283143)
	760205 Physical fitness facilities and membership sports and recreation clubs (0.267300397)
CP0942 Cultural services	
	660200 Cable and other pay television services (0.227540806)
	670000 Radio and TV broadcasting (0.026463781)
	730108 Photofinishing labs and commercial photography (0.037678562)
	760101 Motion picture services and theaters (0.077751115)
	760102 Video tape rental (0.060408786)
	760201 Theatrical producers (except motion picture), bands, orchestras and entertainers (0.061818223)
	760206 Other amusement and recreation services (0.508338749)
CP0943 Games of chance	
	760206 Other amusement and recreation services (1)
CP095 Newspapers, books and stationery	
CP0951 Books	
	260301 Book publishing (1)
CP0952 Newspapers and periodicals	
	260100 Newspapers (0.503876328)
	260200 Periodicals (0.496123642)
CP0953 Miscellaneous printed matter	
	260400 Miscellaneous publishing (0.395500779)
	260501 Commercial printing (0.077155985)
	641100 Signs and advertising specialties (0.527343214)
CP0954 Stationery and drawing materials	
	240400 Envelopes (0.025368275)
	240701 Paper coating and glazing (0.054759901)
	240702 Bags, except textile (0.135219827)
	240705 Stationery, tablets, and related products (0.02379423)
	240706 Converted paper products, n.e.c. (0.13530454)
	250000 Paperboard containers and boxes (0.033196159)
	260602 Blankbooks, looseleaf binders and devices (0.047256708)
	260700 Greeting cards (0.349269092)
	270402 Adhesives and sealants (0.048908401)
	640501 Pens, mechanical pencils, and parts (0.089883037)
	640502 Lead pencils and art goods (0.045710895)
	640503 Marking devices (0.001263473)
	640504 Carbon paper and inked ribbons (0.002999866)
	640700 Fasteners, buttons, needles, and pins (0.007065566)

CP096 Package holidays	
CP10 Education	
	770401 Elementary and secondary schools (0.201347798)
	770402 Colleges, universities, and professional schools (0.561932087)
	770403 Private libraries, vocational schools, and educational services, n.e.c. (0.183532298)
	770600 Job training and related services (0.05318784)
CP11 Restaurants and hotels	
CP111 Catering services	
CP1111 Restaurants, cafés and the like	
	740000 Eating and drinking places (1)
CP1112 Canteens	
	740000 Eating and drinking places (1)
CP112 Accommodation services	
	720101 Hotels (0.682494998)
	720102 Other lodging places (0.317505002)
CP12 Miscellaneous goods and services	
CP121 Personal care	
CP1211 Hairdressing salons and personal grooming establishments	
	720300 Beauty and barber shops (1)
CP1212 Electrical appliances for personal care	
	540700 Household appliances, n.e.c. (1)
CP1213 Other appliances, articles and products for personal care	
	240500 Sanitary paper products (0.25427708)
	290201 Soap and other detergents (0.233120933)
	290300 Toilet preparations (0.512602031)
CP123 Personal effects n.e.c.	
	540700 Household appliances, n.e.c. (1)
CP1231 Jewellery, clocks and watches	
	620700 Watches, clocks, watchcases, and parts (0.090925545)
	640101 Jewelry, precious metal (0.368748248)
	640102 Jewelers' materials and lapidary (0.27588132)
	640104 Silverware and plated ware (0.01640165)
	640105 Costume jewelry (0.059547469)
	720205 Watch, clock, jewelry, and furniture repair (0.188495725)
CP1232 Other personal effects	
CP124 Social protection	
	770301 Nursing and personal care facilities (0.439092368)
	770700 Child day care services (0.140400663)
	770800 Residential care (0.121291235)
	770900 Social services, n.e.c. (0.299215674)
CP125 Insurance	
	700400 Insurance carriers (1)
CP126 Financial services n.e.c.	
	700100 Banking (0.802764535)
	700200 Credit agencies other than banks (0.191717997)
	730303 Accounting, auditing and bookkeeping, and miscellaneous services, n.e.c. (0.005517476)
CP127 Other services n.e.c.	
	700300 Security and commodity brokers (0.11528682)
	710201 Real estate agents, managers, operators, and lessors (0.493741661)
	720202 Funeral service and crematories (0.020505538)
	730103 Personnel supply services (0.009031426)
	730106 Detective and protective services (0.007483176)
	730200 Advertising (0.002162393)
	730301 Legal services (0.11632745)
	730302 Engineering, architectural, and surveying services (0.042751342)
	770501 Business associations and professional membership organizations (0.00947914)
	770502 Labor organizations, civic, social, and fraternal associations (0.04324111)
	770503 Religious organizations (0.081806332)
	770504 Other membership organizations (0.058183663)

Table 5.2.9.6: BEA conversion table from consumer prices to producer prices

CEDA code	Product	Conversion factor
10100	Dairy farm products	0.965355
10200	Poultry and eggs	0.954515
10301	Meat animals	0.977617
10302	Miscellaneous livestock	0.914241
20100	Cotton	0.843729
20201	Food grains	0.648688
20202	Feed grains	0.82307
20203	Grass seeds	0.6949
20300	Tobacco	0.894527
20401	Fruits	0.42553
20402	Tree nuts	0.831864
20501	Vegetables	0.456585
20502	Sugar crops	0.931592
20503	Miscellaneous crops	0.506058
20600	Oil bearing crops	0.857938
20702	Greenhouse and nursery products	0.514839
30001	Forestry products	0.942008
30002	Commercial fishing	0.565255
40001	Agricultural, forestry, and fishery services	1
40002	Landscape and horticultural services	1
50001	Iron and ferroalloy ores, and miscellaneous metal ores, n.e.c.	0.839547
60100	Copper ore	0.967237
60200	Nonferrous metal ores, except copper	0.988932
70000	Coal	0.684228
80001	Crude petroleum and natural gas	0.830242
90001	Dimension, crushed and broken stone	0.65161
90002	Sand and gravel	0.674218
90003	Clay, ceramic, and refractory minerals	0.358291
90004	Nonmetallic mineral services and miscellaneous	0.392222
100000	Chemical and fertilizer minerals	0.381101
110101	New residential 1 unit structures, nonfarm	1
110102	New residential 2-4 unit structures, nonfarm	1
110105	New additions & alterations, nonfarm, construction	1
110108	New residential garden and high-rise apartments construction	1
110400	New highways, bridges, and other horizontal construction	1
110501	New farm residential construction	1
110601	Petroleum and natural gas well drilling	1
110602	Petroleum, natural gas, and solid mineral exploration	1
110603	Access structures for solid mineral development	1
110800	New office, industrial and commercial buildings construction	1
110900	Other new construction	1
120101	Maintenance and repair of farm and nonfarm residential structures	1
120214	Maintenance and repair of highways & streets	1
120215	Maintenance and repair of petroleum and natural gas wells	1
120300	Other repair and maintenance construction	1
130100	Guided missiles and space vehicles	1
130200	Ammunition, except for small arms, n.e.c.	0.980746
130300	Tanks and tank components	0.997483
130500	Small arms	0.657991
130600	Small arms ammunition	0.688485
130700	Ordnance and accessories, n.e.c.	0.947746
140101	Meat packing plants	0.743654
140102	Sausages and other prepared meat products	0.755006
140105	Poultry slaughtering and processing	0.78899
140200	Creamery butter	0.70769
140300	Natural, processed, and imitation cheese	0.774051

CEDA code	Product	Conversion factor
140400	Dry, condensed, and evaporated dairy products	0.792323
140500	Ice cream and frozen desserts	0.795564
140600	Fluid milk	0.751511
140700	Canned and cured fish and seafoods	0.387384
140800	Canned specialties	0.614511
140900	Canned fruits, vegetables, preserves, jams, and jellies	0.617025
141000	Dehydrated fruits, vegetables, and soups	0.832657
141100	Pickles, sauces, and salad dressings	0.771228
141200	Prepared fresh or frozen fish and seafoods	0.650515
141301	Frozen fruits, fruit juices, and vegetables	0.670142
141302	Frozen specialties, n.e.c.	0.669325
141401	Flour and other grain mill products	0.838361
141402	Cereal breakfast foods	0.597071
141403	Prepared flour mixes and doughs	0.673346
141501	Dog and cat food	0.570182
141502	Prepared feeds, n.e.c.	0.911529
141600	Rice milling	0.8064
141700	Wet corn milling	0.872328
141801	Bread, cake, and related products	0.750499
141802	Cookies and crackers	0.682029
141803	Frozen bakery products, except bread	0.668882
141900	Sugar	0.731874
142002	Chocolate and cocoa products	0.668379
142004	Salted and roasted nuts and seeds	0.766162
142005	Candy and other confectionery products	0.630152
142101	Malt beverages	0.548777
142102	Malt	0.812028
142103	Wines, brandy, and brandy spirits	0.552479
142104	Distilled and blended liquors	0.381525
142200	Bottled and canned soft drinks	0.640929
142300	Flavoring extracts and flavoring syrups, n.e.c.	0.78656
142400	Cottonseed oil mills	0.786156
142500	Soybean oil mills	0.886545
142600	Vegetable oil mills, n.e.c.	0.594385
142700	Animal and marine fats and oils	0.940308
142800	Roasted coffee	0.657755
142900	Edible fats and oils, n.e.c.	0.765112
143000	Manufactured ice	0.701852
143100	Macaroni, spaghetti, vermicelli, and noodles	0.466135
143201	Potato chips and similar snacks	0.721147
143202	Food preparations, n.e.c.	0.692347
150101	Cigarettes	0.682478
150102	Cigars	0.559237
150103	Chewing and smoking tobacco and snuff	0.713767
150200	Tobacco stemming and redrying	0.993335
160100	Broadwoven fabric mills and fabric finishing plants	0.845153
160200	Narrow fabric mills	0.630401
160300	Yarn mills and finishing of textiles, n.e.c.	0.903748
160400	Thread mills	0.923215
170100	Carpets and rugs	0.573229
170600	Coated fabrics, not rubberized	0.795421
170700	Tire cord and fabrics	0.807903
170900	Cordage and twine	0.550807
171001	Nonwoven fabrics	0.913559
171100	Textile goods, n.e.c.	0.809419
180101	Women's hosiery, except socks	0.493325
180102	Hosiery, n.e.c.	0.592217
180300	Knit fabric mills	0.893957
180400	Apparel made from purchased materials	0.322617

CEDA code	Product	Conversion factor
190100	Curtains and draperies	0.565215
190200	Housefurnishings, n.e.c.	0.522655
190301	Textile bags	0.70996
190302	Canvas and related products	0.74055
190303	Pleating and stitching	0.707128
190304	Automotive and apparel trimmings	0.869838
190305	Schiffli machine embroideries	0.813228
190306	Fabricated textile products, n.e.c.	0.616631
200100	Logging	0.913905
200200	Sawmills and planing mills, general	0.660292
200300	Hardwood dimension and flooring mills	0.720193
200400	Special product sawmills, n.e.c.	0.573462
200501	Millwork	0.641044
200502	Wood kitchen cabinets	0.678337
200600	Veneer and plywood	0.695144
200701	Structural wood members, n.e.c.	0.716648
200702	Prefabricated wood buildings and components	0.979218
200703	Mobile homes	0.732594
200800	Wood preserving	0.945277
200901	Wood pallets and skids	0.935988
200903	Wood products, n.e.c.	0.55548
200904	Reconstituted wood products	0.765373
210000	Wood containers, n.e.c.	0.871168
220101	Wood household furniture, except upholstered	0.465096
220102	Household furniture, n.e.c.	0.554437
220103	Wood television and radio cabinets	0.944829
220200	Upholstered household furniture	0.533322
220300	Metal household furniture	0.443643
220400	Mattresses and bedsprings	0.571425
230100	Wood office furniture	0.690279
230200	Office furniture, except wood	0.667456
230300	Public building and related furniture	0.946693
230400	Wood partitions and fixtures	0.915107
230500	Partitions and fixtures, except wood	0.884895
230600	Drapery hardware and window blinds and shades	0.489479
230700	Furniture and fixtures, n.e.c.	0.682331
240100	Pulp mills	0.803247
240400	Envelopes	0.779241
240500	Sanitary paper products	0.709224
240701	Paper coating and glazing	0.893193
240702	Bags, except textile	0.886846
240703	Die-cut paper and paperboard and cardboard	0.795129
240705	Stationery, tablets, and related products	0.730306
240706	Converted paper products, n.e.c.	0.591665
240800	Paper and paperboard mills	0.793476
250000	Paperboard containers and boxes	0.865224
260100	Newspapers	0.711249
260200	Periodicals	0.679689
260301	Book publishing	0.634491
260302	Book printing	1
260400	Miscellaneous publishing	0.606406
260501	Commercial printing	0.880852
260601	Manifold business forms	0.874409
260602	Blankbooks, looseleaf binders and devices	0.56512
260700	Greeting cards	0.433937
260802	Bookbinding and related work	1
260803	Typesetting	0.974802
260806	Platemaking and related services	0.95878
270100	Industrial inorganic and organic chemicals	0.852305

CEDA code	Product	Conversion factor
270201	Nitrogenous and phosphatic fertilizers	0.806171
270300	Pesticides and agricultural chemicals, n.e.c.	0.634187
270401	Gum and wood chemicals	0.646534
270402	Adhesives and sealants	0.702144
270403	Explosives	0.574225
270404	Printing ink	0.796749
270405	Carbon black	0.81966
270406	Chemicals and chemical preparations, n.e.c.	0.695597
280100	Plastics materials and resins	0.827791
280200	Synthetic rubber	0.882691
280300	Cellulosic manmade fibers	0.893844
280400	Manmade organic fibers, except cellulosic	0.887767
290100	Drugs	0.635696
290201	Soap and other detergents	0.591358
290202	Polishes and sanitation goods	0.650128
290203	Surface active agents	0.877867
290300	Toilet preparations	0.567398
300000	Paints and allied products	0.758766
310101	Petroleum refining	0.531785
310102	Lubricating oils and greases	0.765792
310103	Products of petroleum and coal, n.e.c.	0.577199
310200	Asphalt paving mixtures and blocks	0.958662
310300	Asphalt felts and coatings	0.862018
320100	Tires and inner tubes	0.412744
320200	Rubber and plastics footwear	0.135926
320300	Fabricated rubber products, n.e.c.	0.732936
320400	Miscellaneous plastics products, n.e.c.	0.729103
320500	Rubber and plastics hose and belting	0.807824
320600	Gaskets, packing, and sealing devices	0.929625
330001	Leather tanning and finishing	0.946009
340100	Boot and shoe cut stock and findings	0.86275
340201	Shoes, except rubber	0.103493
340202	House slippers	0.367559
340301	Leather gloves and mittens	0.224141
340302	Luggage	0.316778
340303	Women's handbags and purses	0.132811
340304	Personal leather goods, n.e.c.	0.320413
340305	Leather goods, n.e.c.	0.558435
350100	Glass and glass products, except containers	0.715358
350200	Glass containers	0.78285
360100	Cement, hydraulic	0.682892
360200	Brick and structural clay tile	0.554861
360300	Ceramic wall and floor tile	0.391052
360400	Clay refractories	0.861332
360500	Structural clay products, n.e.c.	0.579443
360600	Vitreous china plumbing fixtures	0.592493
360701	Vitreous china table and kitchenware	0.747632
360702	Fine earthenware table and kitchenware	0.149412
360800	Porcelain electrical supplies	0.756372
360900	Pottery products, n.e.c.	0.353325
361000	Concrete block and brick	0.678881
361100	Concrete products, except block and brick	0.819076
361200	Ready-mixed concrete	0.984437
361300	Lime	0.720095
361400	Gypsum products	0.782606
361500	Cut stone and stone products	0.399215
361600	Abrasive products	0.72544
361700	Asbestos products	0.140271
361900	Minerals, ground or treated	0.68708

CEDA code	Product	Conversion factor
362000	Mineral wool	0.948083
362100	Nonclay refractories	0.910617
362200	Nonmetallic mineral products, n.e.c.	0.747089
370101	Blast furnaces and steel mills	0.801421
370102	Electrometallurgical products, except steel	0.943101
370103	Steel wiredrawing and steel nails and spikes	0.335033
370200	Iron and steel foundries	0.945531
370300	Iron and steel forgings	0.945244
370401	Metal heat treating	0.99895
370402	Primary metal products, n.e.c.	0.815514
380100	Primary smelting and refining of copper	0.944454
380400	Primary aluminum	0.932979
380501	Primary nonferrous metals, n.e.c.	0.728508
380700	Rolling, drawing, and extruding of copper	0.855461
380800	Aluminum rolling and drawing	0.880399
380900	Nonferrous rolling and drawing, n.e.c.	0.846069
381000	Nonferrous wiredrawing and insulating	0.854769
381100	Aluminum castings	0.962036
381400	Nonferrous forgings	0.983018
390100	Metal cans	0.974468
390200	Metal shipping barrels, drums, kegs, and pails	0.849853
400100	Enameled iron and metal sanitary ware	0.665329
400200	Plumbing fixture fittings and trim	0.548496
400300	Heating equipment, except electric and warm air furnaces	0.670624
400400	Fabricated structural metal	0.935154
400500	Metal doors, sash, frames, molding, and trim	0.764076
400600	Fabricated plate work (boiler shops)	0.873869
400700	Sheet metal work	0.847233
400800	Architectural and ornamental metal work	0.754793
400901	Prefabricated metal buildings and components	0.886102
400902	Miscellaneous structural metal work	0.923265
410100	Screw machine products, bolts, etc.	0.730999
410201	Automotive stampings	0.984969
410202	Crowns and closures	0.943018
410203	Metal stampings, n.e.c.	0.874216
420100	Cutlery	0.555164
420201	Hand and edge tools, except machine tools and handsaws	0.571316
420202	Saw blades and handsaws	0.589866
420300	Hardware, n.e.c.	0.700608
420401	Plating and polishing	0.980796
420402	Coating, engraving, and allied services, n.e.c.	0.999551
420500	Miscellaneous fabricated wire products	0.805993
420700	Steel springs, except wire	0.803529
420800	Pipe, valves, and pipe fittings	0.768292
421000	Metal foil and leaf	0.896871
421100	Fabricated metal products, n.e.c.	0.708927
430100	Turbines and turbine generator sets	0.977816
430200	Internal combustion engines, n.e.c.	0.886388
440001	Farm machinery and equipment	0.709799
440002	Lawn and garden equipment	0.531868
450100	Construction machinery and equipment	0.706515
450200	Mining machinery, except oil field	0.747159
450300	Oil and gas field machinery and equipment	0.695761
460100	Elevators and moving stairways	0.905297
460200	Conveyors and conveying equipment	0.789267
460300	Hoists, cranes, and monorails	0.949411
460400	Industrial trucks and tractors	0.682086
470100	Machine tools, metal cutting types	0.73803
470200	Machine tools, metal forming types	0.806864

CEDA code	Product	Conversion factor
470300	Special dies and tools and machine tool accessories	0.934089
470401	Power-driven handtools	0.447879
470402	Rolling mill machinery and equipment	0.770536
470404	Electric and gas welding and soldering equipment	0.788431
470405	Industrial patterns	0.818686
470500	Metalworking machinery, n.e.c.	0.88498
480100	Food products machinery	0.677132
480200	Textile machinery	0.845296
480300	Woodworking machinery	0.649573
480400	Paper industries machinery	0.893993
480500	Printing trades machinery and equipment	0.824256
480600	Special industry machinery, n.e.c.	0.794853
490100	Pumps and compressors	0.789289
490200	Ball and roller bearings	0.763279
490300	Blowers and fans	0.888686
490500	Mechanical power transmission equipment	0.694364
490600	Industrial process furnaces and ovens	0.930432
490700	General industrial machinery and equipment, n.e.c.	0.848616
490800	Packaging machinery	0.838873
500100	Carburetors, pistons, rings, and valves	0.793271
500200	Fluid power equipment	0.701332
500300	Scales and balances, except laboratory	0.790312
500400	Industrial and commercial machinery and equipment, n.e.c.	0.891402
510102	Calculating and accounting machines	0.55854
510103	Electronic computers	0.773466
510104	Computer peripheral equipment	0.668862
510400	Office machines, n.e.c.	0.536198
520100	Automatic vending machines	0.828201
520200	Commercial laundry equipment	0.913678
520300	Refrigeration and heating equipment	0.74262
520400	Measuring and dispensing pumps	0.796281
520500	Service industry machinery, n.e.c.	0.77227
530200	Power, distribution, and specialty transformers	0.790902
530300	Switchgear and switchboard apparatus	0.795844
530400	Motors and generators	0.853505
530500	Relays and industrial controls	0.695164
530700	Carbon and graphite products	0.938756
530800	Electrical industrial apparatus, n.e.c.	0.963347
540100	Household cooking equipment	0.534123
540200	Household refrigerators and freezers	0.600815
540300	Household laundry equipment	0.651005
540400	Electric housewares and fans	0.5854
540500	Household vacuum cleaners	0.655121
540700	Household appliances, n.e.c.	0.510909
550100	Electric lamp bulbs and tubes	0.445383
550200	Lighting fixtures and equipment	0.749913
550300	Wiring devices	0.681643
560100	Household audio and video equipment	0.319228
560200	Prerecorded records and tapes	0.574843
560300	Telephone and telegraph apparatus	0.778565
560500	Communication equipment	0.934252
570100	Electron tubes	0.890452
570200	Semiconductors and related devices	0.849585
570300	Other electronic components	0.8529
580100	Storage batteries	0.48858
580200	Primary batteries, dry and wet	0.557641
580400	Electrical equipment for internal combustion engines	0.588312
580600	Magnetic and optical recording media	0.87106
580700	Electrical machinery, equipment, and supplies, n.e.c.	0.641421

CEDA code	Product	Conversion factor
590100	Truck and bus bodies	0.955273
590200	Truck trailers	0.945304
590301	Motor vehicles and passenger car bodies	0.808177
590302	Motor vehicle parts and accessories	0.809398
600100	Aircraft	0.98537
600200	Aircraft and missile engines and engine parts	0.926256
600400	Aircraft and missile equipment, n.e.c.	0.975597
610100	Ship building and repairing	0.997924
610200	Boat building and repairing	0.790136
610300	Railroad equipment	0.976533
610500	Motorcycles, bicycles, and parts	0.464874
610601	Travel trailers and campers	0.73767
610603	Motor homes	0.735252
610700	Transportation equipment, n.e.c.	0.771732
620101	Search and navigation equipment	0.930857
620102	Laboratory apparatus and furniture	0.89929
620200	Mechanical measuring devices	0.807526
620300	Environmental controls	0.851812
620400	Surgical and medical instruments and apparatus	0.769092
620500	Surgical appliances and supplies	0.810986
620600	Dental equipment and supplies	0.514154
620700	Watches, clocks, watchcases, and parts	0.159522
620800	X-ray apparatus and tubes	0.802817
620900	Electromedical and electrotherapeutic apparatus	0.865821
621000	Laboratory and optical instruments	0.890186
621100	Instruments to measure electricity	0.920701
630200	Ophthalmic goods	0.251586
630300	Photographic equipment and supplies	0.531486
640101	Jewelry, precious metal	0.286774
640102	Jewelers' materials and lapidary work	0.259256
640104	Silverware and plated ware	0.312658
640105	Costume jewelry	0.428759
640200	Musical instruments	0.465985
640301	Games, toys, and children's vehicles	0.169848
640302	Dolls and stuffed toys	0.064244
640400	Sporting and athletic goods, n.e.c.	0.518632
640501	Pens, mechanical pencils, and parts	0.401234
640502	Lead pencils and art goods	0.356965
640503	Marking devices	0.691886
640504	Carbon paper and inked ribbons	0.654783
640700	Fasteners, buttons, needles, and pins	0.729502
640800	Non durable household goods / 'Brooms and brushes'	0.439622
640900	Hard surface floor coverings, n.e.c.	0.714261
641000	Burial caskets	0.908988
641100	Signs and advertising specialties	0.667674
641200	Manufacturing industries, n.e.c.	0.461115
650100	Railroads and related services	0.543516
650200	Local and suburban transit and interurban highway passenger transportation	1
650301	Trucking and courier services, except air	0.582806
650302	Warehousing and storage	1
650400	Water transportation	0.928741
650500	Air transportation	0.877025
650600	Pipelines, except natural gas	0.520902
650701	Freight forwarders and other transportation services	1
650702	Arrangement of passenger transportation	1
660100	Telephone, telegraph communications, and communications services n.e.c.	1
660200	Cable and other pay television services	1

CEDA code	Product	Conversion factor
670000	Radio and TV broadcasting	1
680100	Electric services (utilities)	1
680201	Natural gas transportation	0.5
680202	Natural gas distribution	1
680301	Water supply and sewerage systems	1
680302	Sanitary services, steam supply, and irrigation systems	1
690100	Wholesale trade	0.533955
690200	Retail trade, except eating and drinking	0.500153
700100	Banking	1
700200	Credit agencies other than banks	1
700300	Security and commodity brokers	1
700400	Insurance carriers	1
700500	Insurance agents, brokers, and services	1
710100	Owner-occupied dwellings	1
710201	Real estate agents, managers, operators, and lessors	1
710202	Royalties	0.981375
720101	Hotels	1
720102	Other lodging places	1
720201	Laundry, cleaning, garment services, and shoe repair	1
720202	Funeral service and crematories	1
720203	Portrait photographic studios, and other miscellaneous personal services	1
720204	Electrical repair shops	0.96702
720205	Watch, clock, jewelry, and furniture repair	1
720300	Beauty and barber shops	1
730101	Miscellaneous repair shops	0.982263
730102	Services to dwellings and other buildings	1
730103	Personnel supply services	1
730104	Computer and data processing services; including own-account software	0.987778
730106	Detective and protective services	1
730107	Miscellaneous equipment rental and leasing	1
730108	Photofinishing labs and commercial photography	0.887933
730109	Other business services	1
730111	Management and public relations services	1
730112	Research, development, and testing services, except noncommercial	1
730200	Advertising	1
730301	Legal services	1
730302	Engineering, architectural, and surveying services	1
730303	Accounting, auditing and bookkeeping, and miscellaneous services, n.e.c.	1
740000	Eating and drinking places	1
750001	Automotive rental and leasing, without drivers	1
750002	Automotive repair shops and services	0.998483
750003	Automobile parking and car washes	1
760101	Motion picture services and theaters	0.942573
760102	Video tape rental	1
760201	Theatrical producers (except motion picture), bands, orchestras and entertainers	1
760202	Bowling centers	1
760203	Professional sports clubs and promoters	1
760204	Racing, including track operation	1
760205	Physical fitness facilities and membership sports and recreation clubs	1
760206	Other amusement and recreation services	1
770100	Doctors and dentists	1
770200	Hospitals	1
770301	Nursing and personal care facilities	1
770303	Other medical and health services	1
770304	Veterinary services	1
770305	Other medical and health services	1

CEDA code	Product	Conversion factor
770401	Elementary and secondary schools	1
770402	Colleges, universities, and professional schools	1
770403	Private libraries, vocational schools, and educational services, n.e.c.	1
770501	Business associations and professional membership organizations	1
770502	Labor organizations, civic, social, and fraternal associations	1
770503	Religious organizations	1
770504	Other membership organizations	1
770600	Job training and related services	1
770700	Child day care services	1
770800	Residential care	1
770900	Social services, n.e.c.	1
780100	Postal Service	1
780500	Other Federal Government enterprises	1
790300	Other State and local government enterprises	1
810001	Scrap	0.156956
820000	General government industry	1

5.2.9.3 Household consumption expenditure from k_0 to k_2 : method

The first conversion from COICOP-based household expenditure to the detailed CEDA based consumption expenditure results in household demand on product vector k_0 . A number of consumption activities require the use of more than one product as in electricity consumption with ‘refrigerators’, and fuel with ‘cars’. This results in the demand on products by a consumption activities vector as used in this study, k_2 . These two vectors are given in Table 5.2.9.9 below. The way of specification has to be consistent with the full matrices structure, setting requirements on formulations.

As an example, we give an aggregated private household expenditure vector k_0 which consists of only three products.

Table 5.2.9.7: k_0

	Private household expenditure [EUR]
Petrol	20
Cars	80
Chocolate	15

In order to link each consumption activity with corresponding household demand on products, we need to have additional information on which product is used for which consumption activity. For instance, suppose that we know that 50% of the petrol is being used in “driving with cars” and 50% has other uses. This information can be summarised in a matrix (Φ) format like:

Table 5.2.9.8: Partitioning matrix Φ

Consumption of commodity	Consumption activity		
	Petrol consumption (not for cars)	Car driving	Chocolate consumption
Petrol	0.5	0.5	0
Car	0	1	0
Chocolate	0	0	1

What we actually define in matrix Φ are what we call output coefficients saying “this fraction of a certain service or product from the industry sector will be used in this private household consumption category”.

Multiplying the partitioning matrix to the household expenditure vector yields

$$\mathbf{K} = \hat{\mathbf{k}}_1 \Phi = \begin{pmatrix} 10 & 10 & 0 \\ 0 & 80 & 0 \\ 0 & 0 & 15 \end{pmatrix},$$

which describes the use of products by consumption categories. For instance, the second column shows that 10 Euro of petrol (1st row) and 80 Euro of car (second row) is used in combination for the car driving consumption category. Using the derived matrix, \mathbf{K} , the total amount of environmental impacts per year by each consumption category is calculated. The \mathbf{k}_2 is simply the column sum of \mathbf{K} , in this case calculated to

$$\mathbf{k}_2 = \begin{pmatrix} 10 \\ 90 \\ 15 \end{pmatrix}.$$

This information is then used to derive environmental impact per Euro consumption figures. Dividing \mathbf{K} by its column sum yields

$$\bar{\mathbf{K}} = \mathbf{K} \hat{\mathbf{k}}_2^{-1} = \begin{pmatrix} 1 & 0.11 & 0 \\ 0 & 0.89 & 0 \\ 0 & 0 & 1 \end{pmatrix}$$

Needless to say the column sum of $\bar{\mathbf{K}}$ is always 1 and each element of $\bar{\mathbf{K}}$ shows how much is spent to purchase on each product involved, per Euro spent on each consumption category. Applying $\bar{\mathbf{K}}$ instead of \mathbf{K} yields environmental impacts per Euro of consumption by products.

Table 5.2.9.9: Household consumption expenditure (in Euro) as k_0 and k_2 .

BEA code	Name	k_0	k_2
10100	[A1] Dairy farm products	2.89E+08	2.89E+08
10200	[A2] Poultry and eggs	6.87E+09	6.87E+09
10301	[A3] Meat animals	0	0
10302	[A4] Miscellaneous livestock	3.79E+09	3.79E+09
20100	[A5] Cotton	0	0
20201	[A6] Food grains	0	0
20202	[A7] Feed grains	4.32E+08	4.32E+08
20203	[A8] Grass seeds	0	0
20300	[A9] Tobacco	0	0
20401	[A10] Fruits	9.96E+09	9.96E+09
20402	[A11] Tree nuts	9.51E+08	9.51E+08
20501	[A12] Vegetables	1.80E+10	1.80E+10
20502	[A13] Sugar crops	0	0
20503	[A14] Miscellaneous crops	2.14E+06	2.14E+06

BEA code	Name	k_0	k_2
20600	[A15] Oil bearing crops	1.65E+08	1.65E+08
20702	[A16] Greenhouse and nursery products	1.23E+10	1.23E+10
30001	[A17] Forestry products	6.73E+09	6.73E+09
30002	[A18] Commercial fishing	5.90E+09	5.90E+09
40001	[A19] Agricultural, forestry, and fishery services	3.50E+08	3.50E+08
40002	[A20] Landscape and horticultural services	0	0
50001	[A21] Iron and ferroalloy ores, and miscellaneous metal ores, n.e.c.	0	0
60100	[A22] Copper ore	0	0
60200	[A23] Nonferrous metal ores, except copper	0	0
70000	[A24] Coal	6.38E+07	6.38E+07
80001'	[A25] (Use of) Crude petroleum and natural gas	1.74E+10	1.74E+09
90001	[A26] Dimension, crushed and broken stone	0	0
90002	[A27] Sand and gravel	0	0
90003	[A28] Clay, ceramic, and refractory minerals	0	0
90004	[A29] Nonmetallic mineral services and miscellaneous	0	0
100000	[A30] Chemical and fertilizer minerals	2.11E+07	2.11E+07
110101	[A31] New residential 1 unit structures, nonfarm	1.49E+11	1.49E+11
110102	[A32] New residential 2-4 unit structures, nonfarm	3.47E+09	3.47E+09
110105	[A33] New additions & alterations, nonfarm, construction	7.41E+10	7.41E+10
110108	[A34] New residential garden and high-rise apartments construction	2.83E+10	2.83E+10
110400	[A35] New highways, bridges, and other horizontal construction	4.43E+08	4.43E+08
110501	[A36] New farm residential construction	3.70E+09	3.70E+09
110601	[A37] Petroleum and natural gas well drilling	0	0
110602	[A38] Petroleum, natural gas, and solid mineral exploration	0	0
110603	[A39] Access structures for solid mineral development	0	0
110800	[A40] New office, industrial and commercial buildings construction	0	0
110900	[A41] Other new construction	0	0
120101	[A42] Maintenance and repair of farm and nonfarm residential structures	3.54E+10	3.54E+10
120214	[A43] Maintenance and repair of highways & streets	0	0
120215	[A44] Maintenance and repair of petroleum and natural gas wells	0	0
120300	[A45] Other repair and maintenance construction	0	0
130100	[A46] Guided missiles and space vehicles	0	0
130200	[A47] Ammunition, except for small arms, n.e.c.	0	0
130300	[A48] Tanks and tank components	0	0
130500	[A49] Small arms	2.45E+08	2.45E+08
130600	[A50] Small arms ammunition	1.81E+08	1.81E+08
130700	[A51] Ordnance and accessories, n.e.c.	0	0
140101	[A52] Meat packing plants	4.99E+10	4.99E+10
140102	[A53] Sausages and other prepared meat products	2.09E+10	2.09E+10
140105	[A54] Poultry slaughtering and processing	4.10E+10	4.10E+10
140200	[A55] Creamery butter	2.06E+09	2.06E+09
140300	[A56] Natural, processed, and imitation cheese	2.18E+10	2.18E+10
140400	[A57] Dry, condensed, and evaporated dairy products	8.27E+09	8.27E+09
140500	[A58] Ice cream and frozen desserts	2.11E+09	2.11E+09
140600	[A59] Fluid milk	2.74E+10	2.74E+10
140700	[A60] Canned and cured fish and seafoods	6.85E+09	6.85E+09
140800	[A61] Canned specialties	1.89E+09	1.89E+09
140900	[A62] Canned fruits, vegetables, preserves, jams, and jellies	7.61E+09	7.61E+09
141000	[A63] Dehydrated fruits, vegetables, and soups	2.45E+09	2.45E+09
141100	[A64] Pickles, sauces, and salad dressings	1.84E+09	1.84E+09
141200	[A65] Prepared fresh or frozen fish and seafoods	9.22E+09	9.22E+09
141301	[A66] Frozen fruits, fruit juices, and vegetables	1.20E+10	1.20E+10
141302	[A67] Frozen specialties, n.e.c.	3.70E+09	3.70E+09
141401	[A68] Flour and other grain mill products	1.23E+09	1.23E+09
141402	[A69] Cereal breakfast foods	9.21E+09	9.21E+09
141403	[A70] Prepared flour mixes and doughs	6.12E+09	6.12E+09
141501	[A71] Dog and cat food	5.65E+09	5.65E+09
141502	[A72] Prepared feeds, n.e.c.	1.15E+09	1.15E+09
141600	[A73] Rice milling	0	0
141700	[A74] Wet corn milling	0	0
141801	[A75] Bread, cake, and related products	2.74E+10	2.74E+10
141802	[A76] Cookies and crackers	1.07E+10	1.07E+10
141803	[A77] Frozen bakery products, except bread	3.61E+09	3.61E+09
141900	[A78] Sugar	1.65E+09	1.65E+09
142002	[A79] Chocolate and cocoa products	5.44E+08	5.44E+08
142004	[A80] Salted and roasted nuts and seeds	7.79E+08	7.79E+08

BEA code	Name	k₀	k₂
142005	[A81] Candy and other confectionery products	1.05E+10	1.05E+10
142101	[A82] Malt beverages	9.99E+09	9.99E+09
142102	[A83] Malt	0	0
142103	[A84] Wines, brandy, and brandy spirits	1.56E+10	1.56E+10
142104	[A85] Distilled and blended liquors	3.93E+09	3.93E+09
142200	[A86] Bottled and canned soft drinks	1.84E+10	1.84E+10
142300	[A87] Flavoring extracts and flavoring syrups, n.e.c.	3.03E+09	3.03E+09
142400	[A88] Cottonseed oil mills	0	0
142500	[A89] Soybean oil mills	0	0
142600	[A90] Vegetable oil mills, n.e.c.	0	0
142700	[A91] Animal and marine fats and oils	0	0
142800	[A92] Roasted coffee	1.12E+10	1.12E+10
142900	[A93] Edible fats and oils, n.e.c.	1.63E+10	1.63E+10
143000	[A94] Manufactured ice	1.87E+08	1.87E+08
143100	[A95] Macaroni, spaghetti, vermicelli, and noodles	1.30E+09	1.30E+09
143201	[A96] Potato chips and similar snacks	1.27E+10	1.27E+10
143202	[A97] Food preparations, n.e.c.	5.27E+09	5.27E+09
150101	[A98] Cigarettes	3.47E+10	3.47E+10
150102	[A99] Cigars	1.25E+09	1.25E+09
150103	[A100] Chewing and smoking tobacco and snuff	1.97E+09	1.97E+09
150200	[A101] Tobacco stemming and redrying	0	0
160100	[A102] Broadwoven fabric mills and fabric finishing plants	0	0
160200	[A103] Narrow fabric mills	0	0
160300	[A104] Yarn mills and finishing of textiles, n.e.c.	0	0
160400	[A105] Thread mills	0	0
170100	[A106] Carpets and rugs	8.20E+09	8.20E+09
170600	[A107] Coated fabrics, not rubberized	0	0
170700	[A108] Tire cord and fabrics	0	0
170900	[A109] Cordage and twine	1.59E+08	1.59E+08
171001	[A110] Nonwoven fabrics	9.29E+08	9.29E+08
171100	[A111] Textile goods, n.e.c.	4.23E+07	4.23E+07
180101	[A112] Women's hosiery, except socks	2.48E+09	2.48E+09
180102	[A113] Hosiery, n.e.c.	1.62E+09	1.62E+09
180300	[A114] Knit fabric mills	0	0
180400	[A115] Apparel made from purchased materials	5.72E+10	5.72E+10
190100	[A116] Curtains and draperies	3.05E+09	3.05E+09
190200	[A117] Housefurnishings, n.e.c.	7.63E+09	7.63E+09
190301	[A118] Textile bags	3.32E+08	3.32E+08
190302	[A119] Canvas and related products	8.23E+08	8.23E+08
190303	[A120] Pleating and stitching	1.40E+09	1.40E+09
190304	[A121] Automotive and apparel trimmings	3.89E+09	3.89E+09
190305	[A122] Schiffl machine embroideries	1.02E+08	1.02E+08
190306	[A123] Fabricated textile products, n.e.c.	4.41E+09	4.41E+09
200100	[A124] Logging	0	0
200200	[A125] Sawmills and planing mills, general	0	0
200300	[A126] Hardwood dimension and flooring mills	0	0
200400	[A127] Special product sawmills, n.e.c.	0	0
200501	[A128] Millwork	0	0
200502	[A129] Wood kitchen cabinets	0	0
200600	[A130] Veneer and plywood	0	0
200701	[A131] Structural wood members, n.e.c.	0	0
200702	[A132] Prefabricated wood buildings and components	0	0
200703	[A133] Mobile homes	1.23E+09	1.23E+09
200800	[A134] Wood preserving	0	0
200901	[A135] Wood pallets and skids	0	0
200903	[A136] Wood products, n.e.c.	4.83E+08	4.83E+08
200904	[A137] Reconstituted wood products	0	0
210000	[A138] Wood containers, n.e.c.	0	0
220101	[A139] Wood household furniture, except upholstered	1.12E+10	1.12E+10
220102	[A140] Household furniture, n.e.c.	4.21E+08	4.21E+08
220103	[A141] Wood television and radio cabinets	1.60E+07	1.60E+07
220200	[A142] Upholstered household furniture	7.73E+09	7.73E+09
220300	[A143] Metal household furniture	2.26E+09	2.26E+09
220400	[A144] Mattresses and bedsprings	4.22E+09	4.22E+09
230100	[A145] Wood office furniture	3.63E+09	3.63E+09
230200	[A146] Office furniture, except wood	0	0

BEA code	Name	k_0	k_2
230300	[A147] Public building and related furniture	0	0
230400	[A148] Wood partitions and fixtures	4.86E+09	4.86E+09
230500	[A149] Partitions and fixtures, except wood	6.61E+09	6.61E+09
230600	[A150] Drapery hardware and window blinds and shades	2.28E+09	2.28E+09
230700	[A151] Furniture and fixtures, n.e.c.	4.16E+09	4.16E+09
240100	[A152] Pulp mills	0	0
240400	[A153] Envelopes	2.02E+08	2.02E+08
240500	[A154] Sanitary paper products	7.79E+09	7.79E+09
240701	[A155] Paper coating and glazing	4.99E+08	4.99E+08
240702	[A156] Bags, except textile	1.22E+09	1.22E+09
240703	[A157] Die-cut paper and paperboard and cardboard	0	0
240705	[A158] Stationery, tablets, and related products	1.77E+08	1.77E+08
240706	[A159] Converted paper products, n.e.c.	8.17E+08	8.17E+08
240800	[A160] Paper and paperboard mills	0	0
250000	[A161] Paperboard containers and boxes	2.93E+08	2.93E+08
260100	[A162] Newspapers	1.03E+10	1.03E+10
260200	[A163] Periodicals	9.71E+09	9.71E+09
260301	[A164] Book publishing	1.29E+10	1.29E+10
260302	[A165] Book printing	0	0
260400	[A166] Miscellaneous publishing	1.28E+09	1.28E+09
260501	[A167] Commercial printing	3.62E+08	3.62E+08
260601	[A168] Manifold business forms	0	0
260602	[A169] Blankbooks, looseleaf binders and devices	2.72E+08	2.72E+08
260700	[A170] Greeting cards	1.55E+09	1.55E+09
260802	[A171] Bookbinding and related work	0	0
260803	[A172] Typesetting	0	0
260806	[A173] Platemaking and related services	0	0
270100	[A174] Industrial inorganic and organic chemicals	0	0
270201	[A175] Nitrogenous and phosphatic fertilizers	2.00E+09	2.00E+09
270300'	[A176] (Household use of) pesticides and agricultural chemicals, n.e.c.	1.20E+10	1.20E+10
270401	[A177] Gum and wood chemicals	1.72E+09	1.72E+09
270402	[A178] Adhesives and sealants	3.50E+08	3.50E+08
270403	[A179] Explosives	0	0
270404	[A180] Printing ink	0	0
270405	[A181] Carbon black	0	0
270406	[A182] Chemicals and chemical preparations, n.e.c.	7.93E+08	7.93E+08
280100	[A183] Plastics materials and resins	0	0
280200	[A184] Synthetic rubber	0	0
280300	[A185] Cellulosic manmade fibers	0	0
280400	[A186] Manmade organic fibers, except cellulosic	0	0
290100	[A187] Drugs	2.43E+10	2.43E+10
290201	[A188] Soap and other detergents	5.96E+09	5.96E+09
290202	[A189] Polishes and sanitation goods	8.83E+08	8.83E+08
290203	[A190] Surface active agents	0	0
290300	[A191] Toilet preparations	1.26E+10	1.26E+10
300000	[A192] Paints and allied products	1.50E+08	1.50E+08
310101	[A193] Petroleum refining	3.09E+10	0
310102	[A194] Lubricating oils and greases	5.04E+09	1.01E+09
310103	[A195] Products of petroleum and coal, n.e.c.	1.36E+07	1.36E+07
310200	[A196] Asphalt paving mixtures and blocks	0	0
310300	[A197] Asphalt felts and coatings	0	0
320100	[A198] Tires and inner tubes	2.54E+09	0
320200	[A199] Rubber and plastics footwear	1.81E+09	1.81E+09
320300	[A200] Fabricated rubber products, n.e.c.	1.58E+09	1.58E+09
320400	[A201] Miscellaneous plastics products, n.e.c.	6.54E+09	6.54E+09
320500	[A202] Rubber and plastics hose and belting	2.95E+08	2.95E+08
320600	[A203] Gaskets, packing, and sealing devices	1.50E+08	1.50E+08
330001	[A204] Leather tanning and finishing	0	0
340100	[A205] Boot and shoe cut stock and findings	1.64E+06	1.64E+06
340201	[A206] Shoes, except rubber	3.56E+09	3.56E+09
340202	[A207] House slippers	2.59E+08	2.59E+08
340301	[A208] Leather gloves and mittens	1.00E+08	1.00E+08
340302	[A209] Luggage	1.29E+09	1.29E+09
340303	[A210] Women's handbags and purses	1.97E+08	1.97E+08
340304	[A211] Personal leather goods, n.e.c.	3.28E+08	3.28E+08
340305	[A212] Leather goods, n.e.c.	2.94E+08	2.94E+08

BEA code	Name	k₀	k₂
350100	[A213] Glass and glass products, except containers	1.78E+09	1.78E+09
350200	[A214] Glass containers	1.40E+08	1.40E+08
360100	[A215] Cement, hydraulic	0	0
360200	[A216] Brick and structural clay tile	0	0
360300	[A217] Ceramic wall and floor tile	0	0
360400	[A218] Clay refractories	0	0
360500	[A219] Structural clay products, n.e.c.	0	0
360600	[A220] Vitreous china plumbing fixtures	0	0
360701	[A221] Vitreous china table and kitchenware	9.00E+07	9.00E+07
360702	[A222] Fine earthenware table and kitchenware	9.82E+07	9.82E+07
360800	[A223] Porcelain electrical supplies	0	0
360900	[A224] Pottery products, n.e.c.	5.14E+08	5.14E+08
361000	[A225] Concrete block and brick	0	0
361100	[A226] Concrete products, except block and brick	4.19E+06	4.19E+06
361200	[A227] Ready-mixed concrete	0	0
361300	[A228] Lime	0	0
361400	[A229] Gypsum products	0	0
361500	[A230] Cut stone and stone products	7.15E+07	7.15E+07
361600	[A231] Abrasive products	7.70E+07	7.70E+07
361700	[A232] Asbestos products	0	0
361900	[A233] Minerals, ground or treated	7.36E+07	7.36E+07
362000	[A234] Mineral wool	0	0
362100	[A235] Nonclay refractories	0	0
362200	[A236] Nonmetallic mineral products, n.e.c.	4.93E+07	4.93E+07
370101	[A237] Blast furnaces and steel mills	0	0
370102	[A238] Electrometallurgical products, except steel	0	0
370103	[A239] Steel wiredrawing and steel nails and spikes	1.15E+06	1.15E+06
370200	[A240] Iron and steel foundries	0	0
370300	[A241] Iron and steel forgings	0	0
370401	[A242] Metal heat treating	0	0
370402	[A243] Primary metal products, n.e.c.	2.41E+07	2.41E+07
380100	[A244] Primary smelting and refining of copper	0	0
380400	[A245] Primary aluminum	0	0
380501	[A246] Primary nonferrous metals, n.e.c.	0	0
380700	[A247] Rolling, drawing, and extruding of copper	0	0
380800	[A248] Aluminum rolling and drawing	0	0
380900	[A249] Nonferrous rolling and drawing, n.e.c.	0	0
381000	[A250] Nonferrous wiredrawing and insulating	3.16E+07	3.16E+07
381100	[A251] Aluminum castings	0	0
381400	[A252] Nonferrous forgings	0	0
390100	[A253] Metal cans	0	0
390200	[A254] Metal shipping barrels, drums, kegs, and pails	0	0
400100	[A255] Enameled iron and metal sanitary ware	0	0
400200	[A256] Plumbing fixture fittings and trim	0	0
400300'	[A257] (Household heating with) heating equipment, except electric and warm a furnaces	5.17E+08	5.83E+10
400400	[A258] Fabricated structural metal	0	0
400500	[A259] Metal doors, sash, frames, molding, and trim	0	0
400600	[A260] Fabricated plate work (boiler shops)	0	0
400700	[A261] Sheet metal work	0	0
400800	[A262] Architectural and ornamental metal work	0	0
400901	[A263] Prefabricated metal buildings and components	8.24E+06	8.24E+06
400902	[A264] Miscellaneous structural metal work	0	0
410100	[A265] Screw machine products, bolts, etc.	3.62E+07	3.62E+07
410201	[A266] Automotive stampings	0	0
410202	[A267] Crowns and closures	9.07E+06	9.07E+06
410203	[A268] Metal stampings, n.e.c.	3.94E+08	3.94E+08
420100	[A269] Cutlery	5.99E+08	5.99E+08
420201	[A270] Hand and edge tools, except machine tools and handsaws	4.07E+08	4.07E+08
420202	[A271] Saw blades and handsaws	1.46E+08	1.46E+08
420300	[A272] Hardware, n.e.c.	1.20E+08	1.20E+08
420401	[A273] Plating and polishing	0	0
420402	[A274] Coating, engraving, and allied services, n.e.c.	0	0
420500	[A275] Miscellaneous fabricated wire products	1.13E+08	1.13E+08
420700	[A276] Steel springs, except wire	1.49E+07	1.49E+07
420800	[A277] Pipe, valves, and pipe fittings	4.79E+08	4.79E+08

BEA code	Name	k₀	k₂
421000	[A278] Metal foil and leaf	1.66E+08	1.66E+08
421100	[A279] Fabricated metal products, n.e.c.	3.15E+08	3.15E+08
430100	[A280] Turbines and turbine generator sets	0	0
430200	[A281] Internal combustion engines, n.e.c.	3.83E+08	3.83E+08
440001	[A282] Farm machinery and equipment	0	0
440002	[A283] Lawn and garden equipment	8.19E+08	8.19E+08
450100	[A284] Construction machinery and equipment	0	0
450200	[A285] Mining machinery, except oil field	0	0
450300	[A286] Oil and gas field machinery and equipment	0	0
460100	[A287] Elevators and moving stairways	0	0
460200	[A288] Conveyors and conveying equipment	0	0
460300	[A289] Hoists, cranes, and monorails	0	0
460400	[A290] Industrial trucks and tractors	0	0
470100	[A291] Machine tools, metal cutting types	0	0
470200	[A292] Machine tools, metal forming types	0	0
470300	[A293] Special dies and tools and machine tool accessories	0	0
470401	[A294] Power-driven handtools	5.40E+08	5.40E+08
470402	[A295] Rolling mill machinery and equipment	0	0
470404	[A296] Electric and gas welding and soldering equipment	0	0
470405	[A297] Industrial patterns	0	0
470500	[A298] Metalworking machinery, n.e.c.	0	0
480100	[A299] Food products machinery	0	0
480200	[A300] Textile machinery	0	0
480300	[A301] Woodworking machinery	0	0
480400	[A302] Paper industries machinery	0	0
480500	[A303] Printing trades machinery and equipment	0	0
480600	[A304] Special industry machinery, n.e.c.	0	0
490100	[A305] Pumps and compressors	0	0
490200	[A306] Ball and roller bearings	0	0
490300	[A307] Blowers and fans	8.53E+08	8.53E+08
490500	[A308] Mechanical power transmission equipment	0	0
490600	[A309] Industrial process furnaces and ovens	0	0
490700	[A310] General industrial machinery and equipment, n.e.c.	0	0
490800	[A311] Packaging machinery	0	0
500100	[A312] Carburetors, pistons, rings, and valves	1.42E+07	0
500200	[A313] Fluid power equipment	0	0
500300	[A314] Scales and balances, except laboratory	5.74E+08	5.74E+08
500400	[A315] Industrial and commercial machinery and equipment, n.e.c.	0	0
510102	[A316] Calculating and accounting machines	4.34E+08	4.34E+08
510103'	[A317] (use of) Electronic computers	1.30E+10	1.37E+10
510104'	[A318] (use of) Computer peripheral equipment	9.87E+09	1.00E+10
510400	[A319] Office machines, n.e.c.	4.02E+08	4.02E+08
520100	[A320] Automatic vending machines	0	0
520200	[A321] Commercial laundry equipment	0	0
520300	[A322] Refrigeration and heating equipment	0	0
520400	[A323] Measuring and dispensing pumps	0	0
520500	[A324] Service industry machinery, n.e.c.	0	0
530200	[A325] Power, distribution, and specialty transformers	0	0
530300	[A326] Switchgear and switchboard apparatus	0	0
530400	[A327] Motors and generators	0	0
530500	[A328] Relays and industrial controls	0	0
530700	[A329] Carbon and graphite products	0	0
530800	[A330] Electrical industrial apparatus, n.e.c.	0	0
540100'	[A331] (use of) Household cooking equipment	4.67E+09	1.37E+10
540200'	[A332] (use of) Household refrigerators and freezers	4.99E+09	2.16E+10
540300'	[A333] (Washing with) household laundry equipment	4.32E+09	3.19E+10
540400'	[A334] (use of) Electric housewares and fans	1.67E+09	3.29E+09
540500'	[A335] (use of) Household vacuum cleaners	2.40E+09	4.02E+09
540700'	[A336] (use of) Household appliances, n.e.c.	2.04E+10	2.20E+10
550100'	[A337] (use of) Electric lamp bulbs and tubes	3.16E+08	1.39E+10
550200	[A338] Lighting fixtures and equipment	5.55E+08	5.55E+08
550300	[A339] Wiring devices	1.05E+07	1.05E+07
560100'	[A340] (use of) Household audio and video equipment	6.07E+09	1.74E+10
560200	[A341] Prerecorded records and tapes	7.35E+08	7.35E+08
560300'	[A342] (use of) Telephone and telegraph apparatus	1.97E+09	2.74E+09
560500'	[A343] (use of) Communication equipment	1.66E+09	2.68E+09

BEA code	Name	k₀	k₂
570100	[A344] Electron tubes	0	0
570200	[A345] Semiconductors and related devices	0	0
570300	[A346] Other electronic components	8.28E+07	8.28E+07
580100	[A347] Storage batteries	7.07E+08	7.07E+08
580200	[A348] Primary batteries, dry and wet	7.51E+08	7.51E+08
580400	[A349] Electrical equipment for internal combustion engines	0	0
580600	[A350] Magnetic and optical recording media	3.12E+08	3.12E+08
580700	[A351] Electrical machinery, equipment, and supplies, n.e.c.	0	0
590100	[A352] Truck and bus bodies	3.65E+09	3.65E+09
590200	[A353] Truck trailers	8.76E+08	8.76E+08
590301'	[A354] (Driving with) motor vehicles and passenger car bodies	1.78E+11	2.20E+11
590302	[A355] Motor vehicle parts and accessories	4.87E+09	0
600100	[A356] Aircraft	3.04E+09	3.04E+09
600200	[A357] Aircraft and missile engines and engine parts	6.40E+08	6.40E+08
600400	[A358] Aircraft and missile equipment, n.e.c.	0	0
610100	[A359] Ship building and repairing	2.77E+08	2.77E+08
610200	[A360] Boat building and repairing	8.23E+08	8.23E+08
610300	[A361] Railroad equipment	0	0
610500	[A362] Motorcycles, bicycles, and parts	5.23E+09	5.23E+09
610601	[A363] Travel trailers and campers	3.55E+08	3.55E+08
610603	[A364] Motor homes	4.46E+08	4.46E+08
610700	[A365] Transportation equipment, n.e.c.	5.39E+08	5.39E+08
620101	[A366] Search and navigation equipment	9.89E+09	9.89E+09
620102	[A367] Laboratory apparatus and furniture	0	0
620200	[A368] Mechanical measuring devices	0	0
620300	[A369] Environmental controls	0	0
620400	[A370] Surgical and medical instruments and apparatus	0	0
620500	[A371] Surgical appliances and supplies	0	0
620600	[A372] Dental equipment and supplies	0	0
620700	[A373] Watches, clocks, watchcases, and parts	2.18E+08	2.18E+08
620800	[A374] X-ray apparatus and tubes	0	0
620900	[A375] Electromedical and electrotherapeutic apparatus	0	0
621000	[A376] Laboratory and optical instruments	0	0
621100	[A377] Instruments to measure electricity	4.01E+09	4.01E+09
630200	[A378] Ophthalmic goods	5.31E+09	5.31E+09
630300	[A379] Photographic equipment and supplies	3.56E+09	3.56E+09
640101	[A380] Jewelry, precious metal	1.59E+09	1.59E+09
640102	[A381] Jewelers' materials and lapidary work	1.07E+09	1.07E+09
640104	[A382] Silverware and plated ware	7.69E+07	7.69E+07
640105	[A383] Costume jewelry	3.83E+08	3.83E+08
640200	[A384] Musical instruments	8.99E+08	8.99E+08
640301	[A385] Games, toys, and children's vehicles	2.53E+09	2.53E+09
640302	[A386] Dolls and stuffed toys	4.12E+08	4.12E+08
640400	[A387] Sporting and athletic goods, n.e.c.	2.39E+09	2.39E+09
640501	[A388] Pens, mechanical pencils, and parts	3.68E+08	3.68E+08
640502	[A389] Lead pencils and art goods	1.66E+08	1.66E+08
640503	[A390] Marking devices	8.92E+06	8.92E+06
640504	[A391] Carbon paper and inked ribbons	2.00E+07	2.00E+07
640700	[A392] Fasteners, buttons, needles, and pins	5.26E+07	5.26E+07
640800	[A393] Non durable household goods	1.80E+10	1.80E+10
640900	[A394] Hard surface floor coverings, n.e.c.	0	0
641000	[A395] Burial caskets	0	0
641100	[A396] Signs and advertising specialties	1.88E+09	1.88E+09
641200	[A397] Manufacturing industries, n.e.c.	0	0
650100	[A398] Railroads and related services	9.78E+09	9.78E+09
650200	[A399] Local and suburban transit and interurban highway passenger transportation	1.68E+10	1.68E+10
650301	[A400] Trucking and courier services, except air	1.21E+09	1.21E+09
650302	[A401] Warehousing and storage	1.27E+08	1.27E+08
650400	[A402] Water transportation	1.64E+09	1.64E+09
650500	[A403] Air transportation	9.30E+09	9.30E+09
650600	[A404] Pipelines, except natural gas	0	0
650701	[A405] Freight forwarders and other transportation services	0	0
650702	[A406] Arrangement of passenger transportation	1.93E+08	1.93E+08
660100	[A407] Telephone, telgraph communications, and communications services n.e.c.	9.01E+10	9.01E+10

BEA code	Name	k_0	k_2
660200	[A408] Cable and other pay television services	1.21E+10	1.21E+10
670000	[A409] Radio and TV broadcasting	1.40E+09	1.40E+09
680100	[A410] Electric services (utilities)	7.91E+10	0
680201	[A411] Natural gas transportation	0	0
680202	[A412] Natural gas distribution	4.34E+10	0
680301	[A413] Water supply and sewerage systems	2.62E+10	2.10E+10
690100	[A414] Wholesale trade	0	0
690200	[A415] Retail trade, except eating and drinking	0	0
700100	[A416] Banking	4.92E+09	4.92E+09
700200	[A417] Credit agencies other than banks	1.18E+09	1.18E+09
700300	[A418] Security and commodity brokers	3.89E+09	3.89E+09
700400	[A419] Insurance carriers	1.19E+11	1.19E+11
700500	[A420] Insurance agents, brokers, and services	0	0
710100	[A421] Owner-occupied dwellings	0	0
710201	[A422] Real estate agents, managers, operators, and lessors	1.66E+10	1.66E+10
710202	[A423] Royalties	0	0
720101	[A424] Hotels	2.40E+10	2.40E+10
720102	[A425] Other lodging places	1.11E+10	1.11E+10
720201	[A426] Laundry, cleaning, garment services, and shoe repair	9.31E+09	9.31E+09
720202	[A427] Funeral service and crematories	6.91E+08	6.91E+08
720203	[A428] Portrait photographic studios, and other miscellaneous personal services	1.20E+10	1.20E+10
720204	[A429] Electrical repair shops	7.07E+09	7.07E+09
720205	[A430] Watch, clock, jewelry, and furniture repair	5.19E+09	5.19E+09
720300	[A431] Beauty and barber shops	3.55E+10	3.55E+10
730101	[A432] Miscellaneous repair shops	2.21E+09	2.21E+09
730102	[A433] Services to dwellings and other buildings	1.22E+09	1.22E+09
730103	[A434] Personnel supply services	3.04E+08	3.04E+08
730104	[A435] Computer and data processing services; including own-account software	0	0
730106	[A436] Detective and protective services	2.52E+08	2.52E+08
730107	[A437] Miscellaneous equipment rental and leasing	9.02E+09	9.02E+09
730108	[A438] Photofinishing labs and commercial photography	1.77E+09	1.77E+09
730109	[A439] Other business services	1.37E+10	1.37E+10
730111	[A440] Management and public relations services	0	0
730112	[A441] Research, development, and testing services, except noncommercial	0	0
730200	[A442] Advertising	7.29E+07	7.29E+07
730301	[A443] Legal services	3.92E+09	3.92E+09
730302	[A444] Engineering, architectural, and surveying services	1.44E+09	1.44E+09
730303	[A445] Accounting, auditing and bookkeeping, and miscellaneous services, n.e.c.	3.38E+07	3.38E+07
740000	[A446] Eating and drinking places	2.07E+11	2.07E+11
750001	[A447] Automotive rental and leasing, without drivers	1.88E+10	1.88E+10
750002	[A448] Automotive repair shops and services	5.18E+10	5.18E+10
750003	[A449] Automobile parking and car washes	5.53E+09	5.53E+09
760101	[A450] Motion picture services and theaters	3.88E+09	3.88E+09
760102	[A451] Video tape rental	3.20E+09	3.20E+09
760201	[A452] Theatrical producers (except motion picture), bands, orchestras and entertainers	3.28E+09	3.28E+09
760202	[A453] Bowling centers	6.05E+08	6.05E+08
760203	[A454] Professional sports clubs and promoters	1.21E+09	1.21E+09
760204	[A455] Racing, including track operation	1.74E+09	1.74E+09
760205	[A456] Physical fitness facilities and membership sports and recreation clubs	5.80E+09	5.80E+09
760206	[A457] Other amusement and recreation services	5.43E+10	5.43E+10
770100	[A458] Doctors and dentists	5.05E+10	5.05E+10
770200	[A459] Hospitals	6.04E+09	6.04E+09
770301	[A460] Nursing and personal care facilities	6.24E+09	6.24E+09
770303	[A461] Other medical and health services	1.16E+10	1.16E+10
770304	[A462] Veterinary services	1.33E+09	1.33E+09
770305	[A463] Other medical and health services	0	0
770401	[A464] Elementary and secondary schools	7.01E+09	7.01E+09
770402	[A465] Colleges, universities, and professional schools	1.96E+10	1.96E+10
770403	[A466] Private libraries, vocational schools, and educational services, n.e.c.	6.39E+09	6.39E+09

BEA code	Name	k_0	k_2
770501	[A467] Business associations and professional membership organizations	3.19E+08	3.19E+08
770502	[A468] Labor organizations, civic, social, and fraternal associations	1.46E+09	1.46E+09
770503	[A469] Religious organizations	2.76E+09	2.76E+09
770504	[A470] Other membership organizations	1.96E+09	1.96E+09
770600	[A471] Job training and related services	1.85E+09	1.85E+09
770700	[A472] Child day care services	1.99E+09	1.99E+09
770800	[A473] Residential care	1.72E+09	1.72E+09
770900	[A474] Social services, n.e.c.	4.25E+09	4.25E+09
780100	[A475] Postal Service	6.24E+09	6.24E+09
780500	[A476] Other Federal Government enterprises	0	0
790300	[A477] Other State and local government enterprises	0	0
820000	[A478] General government industry	0	0
	Total	2.516E+12	2.52E+12

5.3 Results

5.3.1 Environmental interventions: types and quantities

The nomenclatures of the European normalisation study of van Oers and the US sources as represented in CEDA 3.0 differ slightly. Mostly, a common CAS number present in both sources could resolve these differences. The chemical compound may, for example, go under the names of Halon 114 and also CFC 114, but both have the same CAS number. In other instances, there are different CAS numbers for the same compound. For example, metal compounds in the US are given as plain metal and in Europe as metals ions. We have converted these to the same basis, as ions. Finally, there are compounds which are treated as a group or in terms of the species within the group, sometimes by specifying isomers and sometimes referring to fully different compounds, as with dioxins. We matched the two files and included all substances for which data are available, and operational impact assessment methods are present. The full list of environmental interventions as used in the impact assessment is in Table 5.3.1 below. All emissions are grouped to the impact category to which they contribute and given in kg emitted substance. In the impact assessment step, these emissions have been transformed into contributions to environmental themes making use of the manual of Guinée et al. (2002), using for GWP: GWP100, ODP: Steady state, HPT: HPT infinity, FAETP: FAETP infinity; MAETP: MAETP infinity; TETP: TETP infinity; Acidification: incl. fate, average Europe total, A&B; POCP: POCP, high NOx; Eutrophication: fate not included.

For total consumption in the EU-25 the amount is specified as computed in the inventory step in CEDA_{EU25}. These data form the basis for the normalisation step as used in this study.

The interventions related to the three ecotoxicity impact categories (freshwater, marine and soil) have been combined into one in the impact assessment, based on equal weighting. However, here they are specified separately, for reasons of transparency.

Table 5.3.1 Environmental interventions of consumption, totals for the EU-25

Sub-table 5.3.1.a Abiotic depletion (fossil energy extractions only)

Resource extractions		
Hard coal	-6.26E+10	kg
Natural gas	-3.03E+11	m3
Crude oil	-3.36E+11	kg

Note: extractions of other resources like copper and steel have been left out to avoid confusion. They do not play a role in the depletion score and their magnitude does not reflect actual flows, as European resource extraction is only limited. Energy has been adapted to actual flows.

Sub-table 5.3.1.b Emissions contributing to global warming, in kg

Name	Value	Unit
1,1,1-trichloroethane[air]	9.46E+07	kg
Carbon dioxide[air]	3.52E+12	kg
CFC-11[air]	3.83E+05	kg
CFC-113[air]	6.26E+05	kg
CFC-114[air]	2.03E+05	kg
CFC-115[air]	2.50E+06	kg
CFC-12[air]	1.50E+07	kg
CFC-13[air]	8.48E+05	kg
Dichloromethane[air]	1.55E+08	kg
Dinitrogen oxide[air]	1.35E+09	kg
HALON-1211[air]	8.86E+03	kg
HALON-1301[air]	2.68E+05	kg
HCFC-123[air]	2.05E+06	kg
HCFC-124[air]	6.47E+05	kg
HCFC-141b[air]	1.06E+07	kg
HCFC-142b[air]	6.69E+06	kg
HCFC-22 [air]	3.58E+07	kg
HCFC-225ca[air]	1.38E+04	kg
HCFC-225cb[air]	2.22E+04	kg
Methane[air]	2.11E+10	kg
Methyl Chloride[air]	5.42E+06	kg
methylbromide[air]	1.02E+07	kg
Tetrachloromethane[air]	2.08E+06	kg
Trichloromethane[air]	7.56E+05	kg

Sub-table 5.3.1.c Emissions contributing to ozone layer depletion, in kg

Name	Value	Unit
1,1,1-trichloroethane[air]	9.46E+07	kg
CFC-11[air]	3.83E+05	kg
CFC-113[air]	6.26E+05	kg
CFC-114[air]	2.03E+05	kg
CFC-115[air]	2.50E+06	kg
CFC-12[air]	1.50E+07	kg
HALON-1211[air]	8.86E+03	kg
HALON-1301[air]	2.68E+05	kg
HCFC-123[air]	2.05E+06	kg
HCFC-124[air]	6.47E+05	kg
HCFC-141b[air]	1.06E+07	kg
HCFC-142b[air]	6.69E+06	kg
HCFC-22 [air]	3.58E+07	kg
HCFC-225ca[air]	1.38E+04	kg
HCFC-225cb[air]	2.22E+04	kg
Methyl Chloride[air]	5.42E+06	kg
Methylbromide[air]	1.02E+07	kg
Tetrachloromethane[air]	2.08E+06	kg

Sub-table 5.3.1.d: Emissions contributing to human toxicity, in kg

Name	Value	Unit
1,1,1-trichloroethane[air]	9.46E+07	kg
1,2,4-trichlorobenzene[air]	3.94E+05	kg
1,2-dichlorobenzene[air]	4.28E+05	kg
1,2-dichloroethane[air]	3.94E+06	kg
1,3-Butadiene[air]	6.39E+07	kg
1,3-dichlorobenzene[air]	2.78E+04	kg
1,4-dichlorobenzene[air]	2.43E+05	kg
2,4,5-trichlorophenol[air]	57	kg
2,4,6-trichlorophenol[air]	1.12E+04	kg
2,4-D[air]	1.32E+04	kg
2,4-dichlorophenol[air]	1.01E+03	kg
4-chloroaniline[air]	185	kg
acephate[air]	888	kg
Acrolein[air]	2.06E+07	kg
Acrylonitrile[air]	2.99E+06	kg
aldicarb[air]	413	kg
ammonia[air]	3.68E+09	kg
anthracene[air]	1.45E+06	kg
antimony[air]	7.89E+04	kg
arsenic (V) ion[air]	2.00E+05	kg
atrazine[air]	5.43E+04	kg
barium[air]	2.71E+06	kg
benomyl[air]	7.31	kg
Benzene[air]	3.18E+08	kg
benzylchloride[air]	5.21E+04	kg
beryllium[air]	3.78E+05	kg
bifenthrin[air]	1.44E+03	kg
cadmium (II) ion[air]	1.38E+05	kg
captan[air]	1.54E+04	kg
carbaryl[air]	1.03E+06	kg
carbofuran[air]	2.09E+04	kg
carbon disulfide[air]	1.80E+07	kg
chlordane[air]	4.36E+06	kg
chlorobenzene[air]	1.08E+06	kg
chloroethalonil[air]	7.89E+03	kg
chromium (III) ion[air]	5.37E+05	kg
cobalt[air]	2.72E+05	kg
copper (II) ion[air]	6.22E+05	kg
cyanazine[air]	272	kg
Di(2-ethylhexyl)phthalate[air]	8.34E+05	kg
diazinon[air]	5.83E+04	kg
Dibutylphthalate[air]	1.27E+05	kg
Dichloromethane[air]	1.55E+08	kg
dichlorprop[air]	157	kg
dichlorvos[air]	338	kg
dimethoate[air]	95.8	kg
dinoseb[air]	1.34E+03	kg
diuron[air]	1.20E+04	kg
DNOC[air]	86.4	kg
dust (PM10)[air]	1.40E+09	kg
ethoprophos[air]	2.65	kg
Ethylbenzene[air]	1.85E+08	kg
Ethylene[air]	5.29E+08	kg
Ethylene Oxide[air]	1.23E+06	kg
fentin chloride[air]	3.97	kg
fentin hydroxide[air]	2.46E+03	kg
folpet[air]	39.8	kg
Formaldehyde[air]	1.09E+08	kg
heptachlor[air]	689	kg
hexachloro-1,3-butadiene[air]	1.31E+04	kg
hexachlorobenzene[air]	8.82E+03	kg
hydrogen chloride[air]	7.59E+08	kg
hydrogen fluoride[air]	1.30E+08	kg
lead (II) ion[air]	1.30E+07	kg

Name	Value	Unit
lindane[air]	3.46E+05	kg
linuron[air]	2.68E+03	kg
malathion[air]	6.18E+03	kg
MCPA[air]	1.97E+03	kg
mecoprop[air]	2.87E+03	kg
mercury (II) ion[air]	1.70E+05	kg
meta-Xylene[air]	4.26E+08	kg
methylbromide[air]	1.02E+07	kg
Naphtalene[air]	8.85E+06	kg
nickel (II) ion[air]	1.64E+06	kg
nitrogen oxides (as NO2)[air]	1.47E+10	kg
ortho-Xylene[air]	3.69E+08	kg
parathion-methyl[air]	39.7	kg
para-Xylene[air]	2.26E+06	kg
pentachloronitrobenzene[air]	1.02E+03	kg
pentachlorophenol[air]	2.63E+06	kg
permethrin[air]	4.66E+03	kg
Phenol[air]	6.57E+06	kg
phthalic anhydride[air]	3.11E+05	kg
propachlor[air]	96.2	kg
propoxur[air]	53.1	kg
Propylene Oxide[air]	1.26E+06	kg
selenium[air]	1.36E+06	kg
simazine[air]	9.66E+03	kg
styrene[air]	8.66E+07	kg
sulphur dioxide[air]	2.49E+10	kg
tetrachloroethylene[air]	3.03E+07	kg
Tetrachloromethane[air]	2.08E+06	kg
thallium[air]	7.95E+03	kg
Thiram[air]	2.94E+03	kg
Toluene[air]	1.81E+09	kg
tri-allate[air]	1.25E+03	kg
tributyltinoxide[air]	11	kg
trichlorfon[air]	36.9	kg
Trichloroethylene[air]	2.55E+07	kg
Trichloromethane[air]	7.56E+05	kg
trifluarin[air]	1.46E+05	kg
vanadium (III) ion[air]	1.88E+04	kg
Vinyl Chloride[air]	4.25E+06	kg
Volatile Organic Compounds non-methane- (non methane VOC)(as ethylene)[air]	3.22E+10	kg
zinc (II) ion[air]	1.53E+07	kg
zineb[air]	10.2	kg
1,1,1-trichloroethane[fresh water]	2.91E+03	kg
1,2,4-trichlorobenzene[fresh water]	2.94E+03	kg
1,2-dichlorobenzene[fresh water]	14.6	kg
1,2-dichloroethane[fresh water]	9.74E+04	kg
1,3-butadiene[fresh water]	2.21E+03	kg
1,3-dichlorobenzene[fresh water]	518	kg
1,4-dichlorobenzene[fresh water]	2.63E+03	kg
2,4,5-trichlorophenol[fresh water]	29.2	kg
2,4,6-trichlorophenol[fresh water]	29.2	kg
2,4-D[fresh water]	122	kg
2,4-dichlorophenol[fresh water]	43.7	kg
4-chloroaniline[fresh water]	468	kg
Acrolein[fresh water]	1.51E+05	kg
acrylonitrile[fresh water]	1.46E+04	kg
anthracene[fresh water]	2.50E+03	kg
antimony[fresh water]	1.65E+04	kg
arsenic (V) ion[fresh water]	1.22E+05	kg
atrazine[fresh water]	3.20E+03	kg
barium[fresh water]	2.37E+06	kg
benzene[fresh water]	4.34E+06	kg
benzylchloride[fresh water]	1.72E+03	kg
beryllium[fresh water]	2.22E+03	kg
cadmium (II) ion[fresh water]	2.21E+04	kg
captan[fresh water]	13.2	kg

Name	Value	Unit
carbaryl[fresh water]	13.2	kg
carbofuran[fresh water]	296	kg
carbon disulfide[fresh water]	9.03E+03	kg
chlordanefresh water]	1.02	kg
chlorobenzene[fresh water]	4.34E+03	kg
chlorothalonil[fresh water]	9.95	kg
chromium (III) ion[fresh water]	2.82E+05	kg
cobalt[fresh water]	9.92E+04	kg
copper (II) ion[fresh water]	1.75E+06	kg
Di(2-ethylhexyl)phthalate[fresh water]	3.09E+03	kg
diazinon[fresh water]	18.7	kg
Dibutylphthalate[fresh water]	282	kg
Dichloromethane[fresh water]	2.42E+04	kg
dichlorvos[fresh water]	2.42	kg
dimethoate[fresh water]	13.2	kg
diuron[fresh water]	5.36E+03	kg
ethylbenzene[fresh water]	1.98E+05	kg
ethylene[fresh water]	3.98E+06	kg
ethylene oxide[fresh water]	1.62E+03	kg
folpet[fresh water]	11	kg
Formaldehyde[fresh water]	1.42E+06	kg
heptachlor[fresh water]	1.02	kg
hexachloro-1,3-butadiene[fresh water]	0.152	kg
hexachlorobenzene[fresh water]	42.9	kg
hydrogen fluoride[fresh water]	1.80E+04	kg
lead (II) ion[fresh water]	2.35E+06	kg
lindane[fresh water]	3.06E+03	kg
linuron[fresh water]	13.2	kg
malathion[fresh water]	13.2	kg
mercury (II) ion[fresh water]	1.48E+04	kg
meta-xylene[fresh water]	1.51E+06	kg
methylbromide[fresh water]	32.9	kg
naphtalene[fresh water]	6.30E+04	kg
nickel (II) ion[fresh water]	5.73E+05	kg
ortho-xylene[fresh water]	1.31E+06	kg
para-xylene[fresh water]	1.51E+06	kg
pentachloronitrobenzene[fresh water]	1.02	kg
pentachlorophenol[fresh water]	1.98E+03	kg
phenol[fresh water]	1.79E+05	kg
phthalic anhydride[fresh water]	77.9	kg
propylene oxide[fresh water]	8.02E+03	kg
selenium[fresh water]	3.42E+04	kg
simazine[fresh water]	1.02E+03	kg
styrene[fresh water]	4.85E+05	kg
tetrachloroethylene[fresh water]	4.12E+03	kg
Tetrachloromethane[fresh water]	3.59E+03	kg
thallium[fresh water]	4.45E+03	kg
Thiram[fresh water]	27.6	kg
toluene[fresh water]	1.07E+07	kg
tributyltinoxide[fresh water]	8.53	kg
Trichloroethylene[fresh water]	4.78E+03	kg
Trichloromethane[fresh water]	2.32E+04	kg
vanadium (III) ion[fresh water]	805	kg
Vinyl Chloride[fresh water]	145	kg
zinc (II) ion[fresh water]	1.17E+07	kg
2,4-D[agric. soil]	7.28E+07	kg
acephate[agric. soil]	2.97E+06	kg
aldicarb[agric. soil]	5.54E+06	kg
atrazine[agric. soil]	1.74E+08	kg
azinphos-methyl[agric. soil]	3.05E+06	kg
benomyl[agric. soil]	8.80E+05	kg
bentazone[agric. soil]	9.83E+06	kg
bifenthrin[agric. soil]	2.36E+05	kg
captan[agric. soil]	7.70E+06	kg
carbaryl[agric. soil]	6.82E+06	kg
carbofuran[agric. soil]	6.39E+06	kg
chlorothalonil[agric. soil]	1.51E+07	kg

Name	Value	Unit
chlorpyrifos[agric. soil]	2.44E+07	kg
copper (II) ion[agric. soil]	1.80E+07	kg
cyanazine[agric. soil]	4.44E+07	kg
cypermethrin[agric. soil]	2.11E+05	kg
cyromazine[agric. soil]	1.68E+04	kg
deltamethrin[agric. soil]	4.64E+04	kg
diazinon[agric. soil]	1.25E+06	kg
dimethoate[agric. soil]	3.16E+06	kg
disulfothon[agric. soil]	1.53E+06	kg
diuron[agric. soil]	6.34E+06	kg
endosulfan[agric. soil]	2.13E+06	kg
ethoprophos[agric. soil]	1.84E+06	kg
fentin hydroxide[agric. soil]	1.11E+06	kg
glyphosate[agric. soil]	4.84E+07	kg
iprodione[agric. soil]	8.83E+05	kg
lindane[agric. soil]	1.79E+05	kg
linuron[agric. soil]	6.00E+05	kg
malathion[agric. soil]	7.13E+06	kg
MCPA[agric. soil]	7.14E+06	kg
methomyl[agric. soil]	2.83E+06	kg
methylbromide[agric. soil]	4.33E+07	kg
metolachlor[agric. soil]	1.42E+08	kg
oxamyl[agric. soil]	1.19E+06	kg
oxydemethon-methyl[agric. soil]	2.83E+05	kg
parathion-ethyl[agric. soil]	7.92E+05	kg
parathion-methyl[agric. soil]	8.46E+06	kg
pentachloronitrobenzene[agric. soil]	9.58E+05	kg
permethrin[agric. soil]	1.98E+06	kg
propachlor[agric. soil]	2.24E+06	kg
simazine[agric. soil]	9.90E+06	kg
Thiram[agric. soil]	3.91E+05	kg
tri-allate[agric. soil]	2.69E+06	kg
trifluarin[agric. soil]	2.42E+07	kg
1,1,1-trichloroethane[indus. soil]	796	kg
1,2,4-trichlorobenzene[indus. soil]	240	kg
1,2-dichlorobenzene[indus. soil]	7.34	kg
1,2-dichloroethane[indus. soil]	709	kg
1,3-butadiene[indus. soil]	44.1	kg
1,4-dichlorobenzene[indus. soil]	1.32E+03	kg
2,4,5-trichlorophenol[indus. soil]	14.7	kg
2,4,6-trichlorophenol[indus. soil]	14.7	kg
2,4-D[indus. soil]	317	kg
2,4-dichlorophenol[indus. soil]	1.42	kg
Acrolein[indus. soil]	29	kg
acrylonitrile[indus. soil]	2.01E+03	kg
aldicarb[indus. soil]	363	kg
anthracene[indus. soil]	4.69E+04	kg
antimony[indus. soil]	4.05E+04	kg
arsenic (V) ion[indus. soil]	8.53E+04	kg
atrazine[indus. soil]	2.92E+05	kg
barium[indus. soil]	3.97E+07	kg
benzene[indus. soil]	2.56E+04	kg
benzylchloride[indus. soil]	38.8	kg
beryllium[indus. soil]	3.77E+05	kg
cadmium (II) ion[indus. soil]	4.88E+04	kg
carbaryl[indus. soil]	1.59E+04	kg
carbon disulfide[indus. soil]	284	kg
chlorobenzene[indus. soil]	46.2	kg
chromium (III) ion[indus. soil]	3.10E+07	kg
cobalt[indus. soil]	2.49E+06	kg
copper (II) ion[indus. soil]	1.98E+08	kg
cyanazine[indus. soil]	8.28E+04	kg
Di(2-ethylhexyl)phthalate[indus. soil]	3.87E+03	kg
Dibutylphthalate[indus. soil]	6.27E+03	kg
Dichloromethane[indus. soil]	1.37E+03	kg
dinoseb[indus. soil]	71.1	kg
DNOC[indus. soil]	1.48E+04	kg

Name	Value	Unit
ethoprophos[indus. soil]	8.56E+04	kg
ethylbenzene[indus. soil]	2.56E+04	kg
ethylene[indus. soil]	1.81E+03	kg
ethylene oxide (ind.)[indus. soil]	107	kg
Formaldehyde[indus. soil]	8.04E+03	kg
hexachloro-1,3-butadiene[indus. soil]	6.26	kg
hexachlorobenzene[indus. soil]	3.67	kg
hydrogen fluoride[indus. soil]	1.66E+05	kg
lead (II) ion[indus. soil]	8.46E+06	kg
MCPA[indus. soil]	220	kg
mecoprop[indus. soil]	110	kg
mercury (II) ion[indus. soil]	1.08E+04	kg
meta-xylene[indus. soil]	8.96E+03	kg
methylbromide[indus. soil]	3.88	kg
naphtalene[indus. soil]	1.75E+06	kg
nickel (II) ion[indus. soil]	9.36E+05	kg
ortho-xylene[indus. soil]	7.68E+03	kg
para-xylene[indus. soil]	8.96E+03	kg
pentachlorophenol[indus. soil]	21.4	kg
permethrin[indus. soil]	1.05E+04	kg
phenol[indus. soil]	2.03E+03	kg
phthalic anhydride[indus. soil]	1.12E+03	kg
propachlor[indus. soil]	7.22E+03	kg
propylene oxide[indus. soil]	7.51E+03	kg
selenium[indus. soil]	1.08E+03	kg
styrene[indus. soil]	8.94E+03	kg
tetrachloroethylene[indus. soil]	9.78E+03	kg
Tetrachloromethane[indus. soil]	125	kg
thallium[indus. soil]	1.81E+06	kg
Thiram[indus. soil]	723	kg
toluene[indus. soil]	2.64E+04	kg
tributyltinoxide[indus. soil]	0.711	kg
trichlorfon[indus. soil]	1.14E+04	kg
Trichloroethylene[indus. soil]	7.28E+03	kg
Trichloromethane[indus. soil]	576	kg
vanadium (III) ion[indus. soil]	2.40E+05	kg
Vinyl Chloride[indus. soil]	0.711	kg
zinc (II) ion[indus. soil]	3.33E+07	kg

Sub-table 5.3.1.e: Emissions contributing to freshwater aquatic ecotoxicity, in kg
(in the impact assessment combined with marine and terrestrial ecotoxicity)

Name	Value	Unit
1,1,1-trichloroethane[air]	9.46E+07	kg
1,2,4-trichlorobenzene[air]	3.94E+05	kg
1,2-dichlorobenzene[air]	4.28E+05	kg
1,2-dichloroethane[air]	3.94E+06	kg
1,3-Butadiene[air]	6.39E+07	kg
1,3-dichlorobenzene[air]	2.78E+04	kg
1,4-dichlorobenzene[air]	2.43E+05	kg
2,4,5-trichlorophenol[air]	57	kg
2,4,6-trichlorophenol[air]	1.12E+04	kg
2,4-D[air]	1.32E+04	kg
2,4-dichlorophenol[air]	1.01E+03	kg
4-chloroaniline[air]	185	kg
acephate[air]	888	kg
Acrolein[air]	2.06E+07	kg
Acrylonitrile[air]	2.99E+06	kg
aldicarb[air]	413	kg
anthracene[air]	1.45E+06	kg
antimony[air]	7.89E+04	kg
arsenic (V) ion[air]	2.00E+05	kg
atrazine[air]	5.43E+04	kg
barium[air]	2.71E+06	kg
benomyl[air]	7.31	kg
Benzene[air]	3.18E+08	kg

Name	Value	Unit
benzylchloride[air]	5.21E+04	kg
beryllium[air]	3.78E+05	kg
bifenthrin[air]	1.44E+03	kg
cadmium (II) ion[air]	1.38E+05	kg
captan[air]	1.54E+04	kg
carbaryl[air]	1.03E+06	kg
carbofuran[air]	2.09E+04	kg
carbon disulfide[air]	1.80E+07	kg
chlordane[air]	4.36E+06	kg
chlorobenzene[air]	1.08E+06	kg
chlorothalonil[air]	7.89E+03	kg
chromium (III) ion[air]	5.37E+05	kg
cobalt[air]	2.72E+05	kg
copper (II) ion[air]	6.22E+05	kg
cyanazine[air]	272	kg
Di(2-ethylhexyl)phthalate[air]	8.34E+05	kg
diazinon[air]	5.83E+04	kg
Dibutylphthalate[air]	1.27E+05	kg
Dichloromethane[air]	1.55E+08	kg
dichlorprop[air]	157	kg
dichlorvos[air]	338	kg
dimethoate[air]	95.8	kg
dinoseb[air]	1.34E+03	kg
diuron[air]	1.20E+04	kg
DNOC[air]	86.4	kg
ethoprophos[air]	2.65	kg
Ethylbenzene[air]	1.85E+08	kg
Ethylene[air]	5.29E+08	kg
Ethylene Oxide[air]	1.23E+06	kg
fentin chloride[air]	3.97	kg
fentin hydroxide[air]	2.46E+03	kg
folpet[air]	39.8	kg
Formaldehyde[air]	1.09E+08	kg
heptachlor[air]	689	kg
hexachloro-1,3-butadiene[air]	1.31E+04	kg
hexachlorobenzene[air]	8.82E+03	kg
hydrogen fluoride[air]	1.30E+08	kg
lead (II) ion[air]	1.30E+07	kg
lindane[air]	3.46E+05	kg
linuron[air]	2.68E+03	kg
malathion[air]	6.18E+03	kg
MCPA[air]	1.97E+03	kg
mecoprop[air]	2.87E+03	kg
mercury (II) ion[air]	1.70E+05	kg
meta-Xylene[air]	4.26E+08	kg
methylbromide[air]	1.02E+07	kg
Naphtalene[air]	8.85E+06	kg
nickel (II) ion[air]	1.64E+06	kg
ortho-Xylene[air]	3.69E+08	kg
parathion-methyl[air]	39.7	kg
para-Xylene[air]	2.26E+06	kg
pentachloronitrobenzene[air]	1.02E+03	kg
pentachlorophenol[air]	2.63E+06	kg
permethrin[air]	4.66E+03	kg
phenanthrene[air]	6.26E+06	kg
Phenol[air]	6.57E+06	kg
phthalic anhydride[air]	3.11E+05	kg
Polycyclic Aromatic Hydrocarbons (PAH) (unspecified)(as indeno[1,2,3-cd]pyrene)[air]	2.46E+06	kg
propachlor[air]	96.2	kg
propoxur[air]	53.1	kg
Propylene Oxide[air]	1.26E+06	kg
selenium[air]	1.36E+06	kg
simazine[air]	9.66E+03	kg
styrene[air]	8.66E+07	kg
tetrachloroethylene[air]	3.03E+07	kg
Tetrachloromethane[air]	2.08E+06	kg

Name	Value	Unit
thallium[air]	7.95E+03	kg
Thiram[air]	2.94E+03	kg
Toluene[air]	1.81E+09	kg
tri-allate[air]	1.25E+03	kg
tributyltin oxide[air]	11	kg
trichlorfon[air]	36.9	kg
Trichloroethylene[air]	2.55E+07	kg
Trichloromethane[air]	7.56E+05	kg
trifluarin[air]	1.46E+05	kg
vanadium (III) ion[air]	1.88E+04	kg
Vinyl Chloride[air]	4.25E+06	kg
Volatile Organic Compounds non-methane- (non methane VOC)(as ethylene)[air]	3.22E+10	kg
zinc (II) ion[air]	1.53E+07	kg
zineb[air]	10.2	kg
1,1,1-trichloroethane[fresh water]	2.91E+03	kg
1,2,4-trichlorobenzene[fresh water]	2.94E+03	kg
1,2-dichlorobenzene[fresh water]	14.6	kg
1,2-dichloroethane[fresh water]	9.74E+04	kg
1,3-butadiene[fresh water]	2.21E+03	kg
1,3-dichlorobenzene[fresh water]	518	kg
1,4-dichlorobenzene[fresh water]	2.63E+03	kg
2,4,5-trichlorophenol[fresh water]	29.2	kg
2,4,6-trichlorophenol[fresh water]	29.2	kg
2,4-D[fresh water]	122	kg
2,4-dichlorophenol[fresh water]	43.7	kg
4-chloroaniline[fresh water]	468	kg
Acrolein[fresh water]	1.51E+05	kg
acrylonitrile[fresh water]	1.46E+04	kg
anthracene[fresh water]	2.50E+03	kg
antimony[fresh water]	1.65E+04	kg
arsenic (V) ion[fresh water]	1.22E+05	kg
atrazine[fresh water]	3.20E+03	kg
barium[fresh water]	2.37E+06	kg
benzene[fresh water]	4.34E+06	kg
benzylchloride[fresh water]	1.72E+03	kg
beryllium[fresh water]	2.22E+03	kg
cadmium (II) ion[fresh water]	2.21E+04	kg
captan[fresh water]	13.2	kg
carbaryl[fresh water]	13.2	kg
carbofuran[fresh water]	296	kg
carbon disulfide[fresh water]	9.03E+03	kg
chlordane[fresh water]	1.02	kg
chlorobenzene[fresh water]	4.34E+03	kg
chlorothalonil[fresh water]	9.95	kg
chromium (III) ion[fresh water]	2.82E+05	kg
cobalt[fresh water]	9.92E+04	kg
copper (II) ion[fresh water]	1.75E+06	kg
Di(2-ethylhexyl)phthalate[fresh water]	3.09E+03	kg
diazinon[fresh water]	18.7	kg
Dibutylphthalate[fresh water]	282	kg
Dichloromethane[fresh water]	2.42E+04	kg
dichlorvos[fresh water]	2.42	kg
dimethoate[fresh water]	13.2	kg
diuron[fresh water]	5.36E+03	kg
ethylbenzene[fresh water]	1.98E+05	kg
ethylene[fresh water]	3.98E+06	kg
ethylene oxide[fresh water]	1.62E+03	kg
folpet[fresh water]	11	kg
Formaldehyde[fresh water]	1.42E+06	kg
heptachlor[fresh water]	1.02	kg
hexachloro-1,3-butadiene[fresh water]	0.152	kg
hexachlorobenzene[fresh water]	42.9	kg
hydrogen fluoride[fresh water]	1.80E+04	kg
lead (II) ion[fresh water]	2.35E+06	kg
lindane[fresh water]	3.06E+03	kg
linuron[fresh water]	13.2	kg

Name	Value	Unit
malathion[fresh water]	13.2	kg
mercury (II) ion[fresh water]	1.48E+04	kg
meta-xylene[fresh water]	1.51E+06	kg
methylbromide[fresh water]	32.9	kg
naphtalene[fresh water]	6.30E+04	kg
nickel (II) ion[fresh water]	5.73E+05	kg
ortho-xylene[fresh water]	1.31E+06	kg
para-xylene[fresh water]	1.51E+06	kg
pentachloronitrobenzene[fresh water]	1.02	kg
pentachlorophenol[fresh water]	1.98E+03	kg
phenanthrene[fresh water]	1.19E+04	kg
phenol[fresh water]	1.79E+05	kg
phthalic anhydride[fresh water]	77.9	kg
propylene oxide[fresh water]	8.02E+03	kg
selenium[fresh water]	3.42E+04	kg
simazine[fresh water]	1.02E+03	kg
styrene[fresh water]	4.85E+05	kg
tetrachloroethylene[fresh water]	4.12E+03	kg
Tetrachloromethane[fresh water]	3.59E+03	kg
thallium[fresh water]	4.45E+03	kg
Thiram[fresh water]	27.6	kg
toluene[fresh water]	1.07E+07	kg
tributyltinoxide[fresh water]	8.53	kg
Trichloroethylene[fresh water]	4.78E+03	kg
Trichloromethane[fresh water]	2.32E+04	kg
vanadium (III) ion[fresh water]	805	kg
Vinyl Chloride[fresh water]	145	kg
zinc (II) ion[fresh water]	1.17E+07	kg
2,4-D[agric. soil]	7.28E+07	kg
acephate[agric. soil]	2.97E+06	kg
aldicarb[agric. soil]	5.54E+06	kg
atrazine[agric. soil]	1.74E+08	kg
azinphos-methyl[agric. soil]	3.05E+06	kg
benomyl[agric. soil]	8.80E+05	kg
bentazone[agric. soil]	9.83E+06	kg
bifenthrin[agric. soil]	2.36E+05	kg
captan[agric. soil]	7.70E+06	kg
carbaryl[agric. soil]	6.82E+06	kg
carbofuran[agric. soil]	6.39E+06	kg
chlorothalonil[agric. soil]	1.51E+07	kg
chlorypyrifos[agric. soil]	2.44E+07	kg
copper (II) ion[agric. soil]	1.80E+07	kg
cyanazine[agric. soil]	4.44E+07	kg
cypermethrin[agric. soil]	2.11E+05	kg
cyromazine[agric. soil]	1.68E+04	kg
deltamethrin[agric. soil]	4.64E+04	kg
diazinon[agric. soil]	1.25E+06	kg
dimethoate[agric. soil]	3.16E+06	kg
disulfothon[agric. soil]	1.53E+06	kg
diuron[agric. soil]	6.34E+06	kg
endosulfan[agric. soil]	2.13E+06	kg
ethoprophos[agric. soil]	1.84E+06	kg
fentin hydroxide[agric. soil]	1.11E+06	kg
glyphosate[agric. soil]	4.84E+07	kg
iprodione[agric. soil]	8.83E+05	kg
lindane[agric. soil]	1.79E+05	kg
linuron[agric. soil]	6.00E+05	kg
malathion[agric. soil]	7.13E+06	kg
MCPA[agric. soil]	7.14E+06	kg
methomyl[agric. soil]	2.83E+06	kg
methylbromide[agric. soil]	4.33E+07	kg
metolachlor[agric. soil]	1.42E+08	kg
oxamyl[agric. soil]	1.19E+06	kg
oxydemethon-methyl[agric. soil]	2.83E+05	kg
parathion-ethyl[agric. soil]	7.92E+05	kg
parathion-methyl[agric. soil]	8.46E+06	kg
pentachloronitrobenzene[agric. soil]	9.58E+05	kg

Name	Value	Unit
permethrin[agric. soil]	1.98E+06	kg
propachlor[agric. soil]	2.24E+06	kg
simazine[agric. soil]	9.90E+06	kg
Thiram[agric. soil]	3.91E+05	kg
tri-allate[agric. soil]	2.69E+06	kg
trifluarin[agric. soil]	2.42E+07	kg
1,1,1-trichloroethane[indus. soil]	796	kg
1,2,4-trichlorobenzene[indus. soil]	240	kg
1,2-dichlorobenzene[indus. soil]	7.34	kg
1,2-dichloroethane[indus. soil]	709	kg
1,3-butadiene[indus. soil]	44.1	kg
1,4-dichlorobenzene[indus. soil]	1.32E+03	kg
2,4,5-trichlorophenol[indus. soil]	14.7	kg
2,4,6-trichlorophenol[indus. soil]	14.7	kg
2,4-D[indus. soil]	317	kg
2,4-dichlorophenol[indus. soil]	1.42	kg
Acrolein[indus. soil]	29	kg
acrylonitrile[indus. soil]	2.01E+03	kg
aldicarb[indus. soil]	363	kg
anthracene[indus. soil]	4.69E+04	kg
antimony[indus. soil]	4.05E+04	kg
arsenic (V) ion[indus. soil]	8.53E+04	kg
atrazine[indus. soil]	2.92E+05	kg
barium[indus. soil]	3.97E+07	kg
benzene[indus. soil]	2.56E+04	kg
benzylchloride[indus. soil]	38.8	kg
beryllium[indus. soil]	3.77E+05	kg
cadmium (II) ion[indus. soil]	4.88E+04	kg
carbaryl[indus. soil]	1.59E+04	kg
carbon disulfide[indus. soil]	284	kg
chlorobenzene[indus. soil]	46.2	kg
chromium (III) ion[indus. soil]	3.10E+07	kg
cobalt[indus. soil]	2.49E+06	kg
copper (II) ion[indus. soil]	1.98E+08	kg
cyanazine[indus. soil]	8.28E+04	kg
Di(2-ethylhexyl)phthalate[indus. soil]	3.87E+03	kg
Dibutylphthalate[indus. soil]	6.27E+03	kg
Dichloromethane[indus. soil]	1.37E+03	kg
dinoseb[indus. soil]	71.1	kg
DNOC[indus. soil]	1.48E+04	kg
ethoprophos[indus. soil]	8.56E+04	kg
ethylbenzene[indus. soil]	2.56E+04	kg
ethylene[indus. soil]	1.81E+03	kg
ethylene oxide (ind.)[indus. soil]	107	kg
Formaldehyde[indus. soil]	8.04E+03	kg
hexachloro-1,3-butadiene[indus. soil]	6.26	kg
hexachlorobenzene[indus. soil]	3.67	kg
hydrogen fluoride[indus. soil]	1.66E+05	kg
lead (II) ion[indus. soil]	8.46E+06	kg
MCPA[indus. soil]	220	kg
mecoprop[indus. soil]	110	kg
mercury (II) ion[indus. soil]	1.08E+04	kg
meta-xylene[indus. soil]	8.96E+03	kg
methylbromide[indus. soil]	3.88	kg
naphtalene[indus. soil]	1.75E+06	kg
nickel (II) ion[indus. soil]	9.36E+05	kg
ortho-xylene[indus. soil]	7.68E+03	kg
para-xylene[indus. soil]	8.96E+03	kg
pentachlorophenol[indus. soil]	21.4	kg
permethrin[indus. soil]	1.05E+04	kg
phenanthrene[indus. soil]	1.04E+06	kg
phenol[indus. soil]	2.03E+03	kg
phthalic anhydride[indus. soil]	1.12E+03	kg
propachlor[indus. soil]	7.22E+03	kg
propylene oxide[indus. soil]	7.51E+03	kg
selenium[indus. soil]	1.08E+03	kg
styrene[indus. soil]	8.94E+03	kg

Name	Value	Unit
tetrachloroethylene[indus. soil]	9.78E+03	kg
Tetrachloromethane[indus. soil]	125	kg
thallium[indus. soil]	1.81E+06	kg
Thiram[indus. soil]	723	kg
toluene[indus. soil]	2.64E+04	kg
tributyltinoxide[indus. soil]	0.711	kg
trichlorfon[indus. soil]	1.14E+04	kg
Trichloroethylene[indus. soil]	7.28E+03	kg
Trichloromethane[indus. soil]	576	kg
vanadium (III) ion[indus. soil]	2.40E+05	kg
Vinyl Chloride[indus. soil]	0.711	kg
zinc (II) ion[indus. soil]	3.33E+07	kg

Sub-table 5.3.1.f: Emissions contributing to marine aquatic ecotoxicity, in kg
(in the impact assessment combined with freshwater and terrestrial ecotoxicity)

Name	Value	Unit
1,1,1-trichloroethane[air]	9.46E+07	kg
1,2,4-trichlorobenzene[air]	3.94E+05	kg
1,2-dichlorobenzene[air]	4.28E+05	kg
1,2-dichloroethane[air]	3.94E+06	kg
1,3-Butadiene[air]	6.39E+07	kg
1,3-dichlorobenzene[air]	2.78E+04	kg
1,4-dichlorobenzene[air]	2.43E+05	kg
2,4,5-trichlorophenol[air]	57	kg
2,4,6-trichlorophenol[air]	1.12E+04	kg
2,4-D[air]	1.32E+04	kg
2,4-dichlorophenol[air]	1.01E+03	kg
4-chloroaniline[air]	185	kg
acephate[air]	888	kg
Acrolein[air]	2.06E+07	kg
Acrylonitrile[air]	2.99E+06	kg
aldicarb[air]	413	kg
anthracene[air]	1.45E+06	kg
antimony[air]	7.89E+04	kg
arsenic (V) ion[air]	2.00E+05	kg
atrazine[air]	5.43E+04	kg
barium[air]	2.71E+06	kg
benomyl[air]	7.31	kg
Benzene[air]	3.18E+08	kg
benzylchloride[air]	5.21E+04	kg
beryllium[air]	3.78E+05	kg
bifenthrin[air]	1.44E+03	kg
cadmium (II) ion[air]	1.38E+05	kg
captan[air]	1.54E+04	kg
carbaryl[air]	1.03E+06	kg
carbofuran[air]	2.09E+04	kg
carbon disulfide[air]	1.80E+07	kg
chlordane[air]	4.36E+06	kg
chlorobenzene[air]	1.08E+06	kg
chlorothalonil[air]	7.89E+03	kg
chromium (III) ion[air]	5.37E+05	kg
cobalt[air]	2.72E+05	kg
copper (II) ion[air]	6.22E+05	kg
cyanazine[air]	272	kg
Di(2-ethylhexyl)phthalate[air]	8.34E+05	kg
diazinon[air]	5.83E+04	kg
Dibutylphthalate[air]	1.27E+05	kg
Dichloromethane[air]	1.55E+08	kg
dichlorprop[air]	157	kg
dichlorvos[air]	338	kg
dimethoate[air]	95.8	kg
dinoseb[air]	1.34E+03	kg
diuron[air]	1.20E+04	kg

Name	Value	Unit
DNOC[air]	86.4	kg
ethoprophos[air]	2.65	kg
Ethylbenzene[air]	1.85E+08	kg
Ethylene[air]	5.29E+08	kg
Ethylene Oxide[air]	1.23E+06	kg
fentin chloride[air]	3.97	kg
fentin hydroxide[air]	2.46E+03	kg
folpet[air]	39.8	kg
Formaldehyde[air]	1.09E+08	kg
heptachlor[air]	689	kg
hexachloro-1,3-butadiene[air]	1.31E+04	kg
hexachlorobenzene[air]	8.82E+03	kg
hydrogen fluoride[air]	1.30E+08	kg
lead (II) ion[air]	1.30E+07	kg
lindane[air]	3.46E+05	kg
linuron[air]	2.68E+03	kg
malathion[air]	6.18E+03	kg
MCPA[air]	1.97E+03	kg
mecoprop[air]	2.87E+03	kg
mercury (II) ion[air]	1.70E+05	kg
meta-Xylene[air]	4.26E+08	kg
methylbromide[air]	1.02E+07	kg
Naphtalene[air]	8.85E+06	kg
nickel (II) ion[air]	1.64E+06	kg
ortho-Xylene[air]	3.69E+08	kg
parathion-methyl[air]	39.7	kg
para-Xylene[air]	2.26E+06	kg
pentachloronitrobenzene[air]	1.02E+03	kg
pentachlorophenol[air]	2.63E+06	kg
permethrin[air]	4.66E+03	kg
phenanthrene[air]	6.26E+06	kg
Phenol[air]	6.57E+06	kg
phthalic anhydride[air]	3.11E+05	kg
Polycyclic Aromatic Hydrocarbons (PAH) (unspecified)(as indeno[1,2,3-cd]pyrene)[air]	2.46E+06	kg
propachlor[air]	96.2	kg
propoxur[air]	53.1	kg
Propylene Oxide[air]	1.26E+06	kg
selenium[air]	1.36E+06	kg
simazine[air]	9.66E+03	kg
styrene[air]	8.66E+07	kg
tetrachloroethylene[air]	3.03E+07	kg
Tetrachloromethane[air]	2.08E+06	kg
thallium[air]	7.95E+03	kg
Thiram[air]	2.94E+03	kg
Toluene[air]	1.81E+09	kg
tri-allate[air]	1.25E+03	kg
tributyltinoxide[air]	11	kg
trichlorfon[air]	36.9	kg
Trichloroethylene[air]	2.55E+07	kg
Trichloromethane[air]	7.56E+05	kg
trifluarin[air]	1.46E+05	kg
vanadium (III) ion[air]	1.88E+04	kg
Vinyl Chloride[air]	4.25E+06	kg
Volatile Organic Compounds non-methane- (non methane VOC)(as ethylene)[air]	3.22E+10	kg
zinc (II) ion[air]	1.53E+07	kg
zineb[air]	10.2	kg
1,1,1-trichloroethane[fresh water]	2.91E+03	kg
1,2,4-trichlorobenzene[fresh water]	2.94E+03	kg
1,2-dichlorobenzene[fresh water]	14.6	kg
1,2-dichloroethane[fresh water]	9.74E+04	kg
1,3-butadiene[fresh water]	2.21E+03	kg
1,3-dichlorobenzene[fresh water]	518	kg
1,4-dichlorobenzene[fresh water]	2.63E+03	kg
2,4,5-trichlorophenol[fresh water]	29.2	kg
2,4,6-trichlorophenol[fresh water]	29.2	kg

Name	Value	Unit
2,4-D[fresh water]	122	kg
2,4-dichlorophenol[fresh water]	43.7	kg
4-chloroaniline[fresh water]	468	kg
Acrolein[fresh water]	1.51E+05	kg
acrylonitrile[fresh water]	1.46E+04	kg
anthracene[fresh water]	2.50E+03	kg
antimony[fresh water]	1.65E+04	kg
arsenic (V) ion[fresh water]	1.22E+05	kg
atrazine[fresh water]	3.20E+03	kg
barium[fresh water]	2.37E+06	kg
benzene[fresh water]	4.34E+06	kg
benzylchloride[fresh water]	1.72E+03	kg
beryllium[fresh water]	2.22E+03	kg
cadmium (II) ion[fresh water]	2.21E+04	kg
captan[fresh water]	13.2	kg
carbaryl[fresh water]	13.2	kg
carbofuran[fresh water]	296	kg
carbon disulfide[fresh water]	9.03E+03	kg
chlordane[fresh water]	1.02	kg
chlorobenzene[fresh water]	4.34E+03	kg
chlorothalonil[fresh water]	9.95	kg
chromium (III) ion[fresh water]	2.82E+05	kg
cobalt[fresh water]	9.92E+04	kg
copper (II) ion[fresh water]	1.75E+06	kg
Di(2-ethylhexyl)phthalate[fresh water]	3.09E+03	kg
diazinon[fresh water]	18.7	kg
Dibutylphthalate[fresh water]	282	kg
Dichloromethane[fresh water]	2.42E+04	kg
dichlorvos[fresh water]	2.42	kg
dimethoate[fresh water]	13.2	kg
diuron[fresh water]	5.36E+03	kg
ethylbenzene[fresh water]	1.98E+05	kg
ethylene[fresh water]	3.98E+06	kg
ethylene oxide[fresh water]	1.62E+03	kg
folpet[fresh water]	11	kg
Formaldehyde[fresh water]	1.42E+06	kg
heptachlor[fresh water]	1.02	kg
hexachloro-1,3-butadiene[fresh water]	0.152	kg
hexachlorobenzene[fresh water]	42.9	kg
hydrogen fluoride[fresh water]	1.80E+04	kg
lead (II) ion[fresh water]	2.35E+06	kg
lindane[fresh water]	3.06E+03	kg
linuron[fresh water]	13.2	kg
malathion[fresh water]	13.2	kg
mercury (II) ion[fresh water]	1.48E+04	kg
meta-xylene[fresh water]	1.51E+06	kg
methylbromide[fresh water]	32.9	kg
naphtalene[fresh water]	6.30E+04	kg
nickel (II) ion[fresh water]	5.73E+05	kg
ortho-xylene[fresh water]	1.31E+06	kg
para-xylene[fresh water]	1.51E+06	kg
pentachloronitrobenzene[fresh water]	1.02	kg
pentachlorophenol[fresh water]	1.98E+03	kg
phenanthrene[fresh water]	1.19E+04	kg
phenol[fresh water]	1.79E+05	kg
phthalic anhydride[fresh water]	77.9	kg
propylene oxide[fresh water]	8.02E+03	kg
selenium[fresh water]	3.42E+04	kg
simazine[fresh water]	1.02E+03	kg
styrene[fresh water]	4.85E+05	kg
tetrachloroethylene[fresh water]	4.12E+03	kg
Tetrachloromethane[fresh water]	3.59E+03	kg
thallium[fresh water]	4.45E+03	kg
Thiram[fresh water]	27.6	kg
toluene[fresh water]	1.07E+07	kg
tributyltin oxide[fresh water]	8.53	kg
Trichloroethylene[fresh water]	4.78E+03	kg

Name	Value	Unit
Trichloromethane[fresh water]	2.32E+04	kg
vanadium (III) ion[fresh water]	805	kg
Vinyl Chloride[fresh water]	145	kg
zinc (II) ion[fresh water]	1.17E+07	kg
2,4-D[agric. soil]	7.28E+07	kg
acephate[agric. soil]	2.97E+06	kg
aldicarb[agric. soil]	5.54E+06	kg
atrazine[agric. soil]	1.74E+08	kg
azinphos-methyl[agric. soil]	3.05E+06	kg
benomyl[agric. soil]	8.80E+05	kg
bentazone[agric. soil]	9.83E+06	kg
bifenthrin[agric. soil]	2.36E+05	kg
captan[agric. soil]	7.70E+06	kg
carbaryl[agric. soil]	6.82E+06	kg
carbofuran[agric. soil]	6.39E+06	kg
chlorothalonil[agric. soil]	1.51E+07	kg
chlorpyrifos[agric. soil]	2.44E+07	kg
copper (II) ion[agric. soil]	1.80E+07	kg
cyanazine[agric. soil]	4.44E+07	kg
cypermethrin[agric. soil]	2.11E+05	kg
cyromazine[agric. soil]	1.68E+04	kg
deltamethrin[agric. soil]	4.64E+04	kg
diazinon[agric. soil]	1.25E+06	kg
dimethoate[agric. soil]	3.16E+06	kg
disulfoton[agric. soil]	1.53E+06	kg
diuron[agric. soil]	6.34E+06	kg
endosulfan[agric. soil]	2.13E+06	kg
ethoprophos[agric. soil]	1.84E+06	kg
fentin hydroxide[agric. soil]	1.11E+06	kg
glyphosate[agric. soil]	4.84E+07	kg
iprodione[agric. soil]	8.83E+05	kg
lindane[agric. soil]	1.79E+05	kg
linuron[agric. soil]	6.00E+05	kg
malathion[agric. soil]	7.13E+06	kg
MCPA[agric. soil]	7.14E+06	kg
methomyl[agric. soil]	2.83E+06	kg
methylbromide[agric. soil]	4.33E+07	kg
metolachlor[agric. soil]	1.42E+08	kg
oxamyl[agric. soil]	1.19E+06	kg
oxydemethon-methyl[agric. soil]	2.83E+05	kg
parathion-ethyl[agric. soil]	7.92E+05	kg
parathion-methyl[agric. soil]	8.46E+06	kg
pentachloronitrobenzene[agric. soil]	9.58E+05	kg
permethrin[agric. soil]	1.98E+06	kg
propachlor[agric. soil]	2.24E+06	kg
simazine[agric. soil]	9.90E+06	kg
Thiram[agric. soil]	3.91E+05	kg
tri-allate[agric. soil]	2.69E+06	kg
trifluarin[agric. soil]	2.42E+07	kg
1,1,1-trichloroethane[indus. soil]	796	kg
1,2,4-trichlorobenzene[indus. soil]	240	kg
1,2-dichlorobenzene[indus. soil]	7.34	kg
1,2-dichloroethane[indus. soil]	709	kg
1,3-butadiene[indus. soil]	44.1	kg
1,4-dichlorobenzene[indus. soil]	1.32E+03	kg
2,4,5-trichlorophenol[indus. soil]	14.7	kg
2,4,6-trichlorophenol[indus. soil]	14.7	kg
2,4-D[indus. soil]	317	kg
2,4-dichlorophenol[indus. soil]	1.42	kg
Acrolein[indus. soil]	29	kg
acrylonitrile[indus. soil]	2.01E+03	kg
aldicarb[indus. soil]	363	kg
anthracene[indus. soil]	4.69E+04	kg
antimony[indus. soil]	4.05E+04	kg
arsenic (V) ion[indus. soil]	8.53E+04	kg
atrazine[indus. soil]	2.92E+05	kg
barium[indus. soil]	3.97E+07	kg

Environmental Impact of Products (EIPRO)

Name	Value	Unit
benzene[indus. soil]	2.56E+04	kg
benzylchloride[indus. soil]	38.8	kg
beryllium[indus. soil]	3.77E+05	kg
cadmium (II) ion[indus. soil]	4.88E+04	kg
carbaryl[indus. soil]	1.59E+04	kg
carbon disulfide[indus. soil]	284	kg
chlorobenzene[indus. soil]	46.2	kg
chromium (III) ion[indus. soil]	3.10E+07	kg
cobalt[indus. soil]	2.49E+06	kg
copper (II) ion[indus. soil]	1.98E+08	kg
cyanazine[indus. soil]	8.28E+04	kg
Di(2-ethylhexyl)phthalate[indus. soil]	3.87E+03	kg
Dibutylphthalate[indus. soil]	6.27E+03	kg
Dichloromethane[indus. soil]	1.37E+03	kg
dinoseb[indus. soil]	71.1	kg
DNOC[indus. soil]	1.48E+04	kg
ethoprophos[indus. soil]	8.56E+04	kg
ethylbenzene[indus. soil]	2.56E+04	kg
ethylene[indus. soil]	1.81E+03	kg
ethylene oxide (ind.)[indus. soil]	107	kg
Formaldehyde[indus. soil]	8.04E+03	kg
hexachloro-1,3-butadiene[indus. soil]	6.26	kg
hexachlorobenzene[indus. soil]	3.67	kg
hydrogen fluoride[indus. soil]	1.66E+05	kg
lead (II) ion[indus. soil]	8.46E+06	kg
MCPA[indus. soil]	220	kg
mecoprop[indus. soil]	110	kg
mercury (II) ion[indus. soil]	1.08E+04	kg
meta-xylene[indus. soil]	8.96E+03	kg
methylbromide[indus. soil]	3.88	kg
naphtalene[indus. soil]	1.75E+06	kg
nickel (II) ion[indus. soil]	9.36E+05	kg
ortho-xylene[indus. soil]	7.68E+03	kg
para-xylene[indus. soil]	8.96E+03	kg
pentachlorophenol[indus. soil]	21.4	kg
permethrin[indus. soil]	1.05E+04	kg
phenanthrene[indus. soil]	1.04E+06	kg
phenol[indus. soil]	2.03E+03	kg
phthalic anhydride[indus. soil]	1.12E+03	kg
propachlor[indus. soil]	7.22E+03	kg
propylene oxide[indus. soil]	7.51E+03	kg
selenium[indus. soil]	1.08E+03	kg
styrene[indus. soil]	8.94E+03	kg
tetrachloroethylene[indus. soil]	9.78E+03	kg
Tetrachloromethane[indus. soil]	125	kg
thallium[indus. soil]	1.81E+06	kg
Thiram[indus. soil]	723	kg
toluene[indus. soil]	2.64E+04	kg
tributyltinoxide[indus. soil]	0.711	kg
trichlorfon[indus. soil]	1.14E+04	kg
Trichloroethylene[indus. soil]	7.28E+03	kg
Trichloromethane[indus. soil]	576	kg
vanadium (III) ion[indus. soil]	2.40E+05	kg
Vinyl Chloride[indus. soil]	0.711	kg
zinc (II) ion[indus. soil]	3.33E+07	kg

Sub-table 5.3.1.g: Emissions contributing to terrestrial ecotoxicity, in kg
(in the impact assessment combined with freshwater and marine ecotoxicity)

Name	Value	Unit
1,1,1-trichloroethane[air]	9.46E+07	kg
1,2,4-trichlorobenzene[air]	3.94E+05	kg
1,2-dichlorobenzene[air]	4.28E+05	kg
1,2-dichloroethane[air]	3.94E+06	kg
1,3-Butadiene[air]	6.39E+07	kg
1,3-dichlorobenzene[air]	2.78E+04	kg
1,4-dichlorobenzene[air]	2.43E+05	kg
2,4,5-trichlorophenol[air]	57	kg
2,4,6-trichlorophenol[air]	1.12E+04	kg
2,4-D[air]	1.32E+04	kg
2,4-dichlorophenol[air]	1.01E+03	kg
4-chloroaniline[air]	185	kg
acephate[air]	888	kg
Acrolein[air]	2.06E+07	kg
Acrylonitrile[air]	2.99E+06	kg
aldicarb[air]	413	kg
anthracene[air]	1.45E+06	kg
antimony[air]	7.89E+04	kg
arsenic (V) ion[air]	2.00E+05	kg
atrazine[air]	5.43E+04	kg
barium[air]	2.71E+06	kg
benomyl[air]	7.31	kg
Benzene[air]	3.18E+08	kg
benzylchloride[air]	5.21E+04	kg
beryllium[air]	3.78E+05	kg
bifenthrin[air]	1.44E+03	kg
cadmium (II) ion[air]	1.38E+05	kg
captan[air]	1.54E+04	kg
carbaryl[air]	1.03E+06	kg
carbofuran[air]	2.09E+04	kg
carbon disulfide[air]	1.80E+07	kg
chlordane[air]	4.36E+06	kg
chlorobenzene[air]	1.08E+06	kg
chlorothalonil[air]	7.89E+03	kg
chromium (III) ion[air]	5.37E+05	kg
cobalt[air]	2.72E+05	kg
copper (II) ion[air]	6.22E+05	kg
cyanazine[air]	272	kg
Di(2-ethylhexyl)phthalate[air]	8.34E+05	kg
diazinon[air]	5.83E+04	kg
Dibutylphthalate[air]	1.27E+05	kg
Dichloromethane[air]	1.55E+08	kg
dichlorprop[air]	157	kg
dichlorvos[air]	338	kg
dimethoate[air]	95.8	kg
dinoseb[air]	1.34E+03	kg
diuron[air]	1.20E+04	kg
DNOC[air]	86.4	kg
ethoprophos[air]	2.65	kg
Ethylbenzene[air]	1.85E+08	kg
Ethylene[air]	5.29E+08	kg
Ethylene Oxide[air]	1.23E+06	kg
fentin chloride[air]	3.97	kg
fentin hydroxide[air]	2.46E+03	kg
folpet[air]	39.8	kg
Formaldehyde[air]	1.09E+08	kg
heptachlor[air]	689	kg
hexachloro-1,3-butadiene[air]	1.31E+04	kg
hexachlorobenzene[air]	8.82E+03	kg
hydrogen fluoride[air]	1.30E+08	kg
lead (II) ion[air]	1.30E+07	kg
lindane[air]	3.46E+05	kg

Name	Value	Unit
linuron[air]	2.68E+03	kg
malathion[air]	6.18E+03	kg
MCPA[air]	1.97E+03	kg
mecoprop[air]	2.87E+03	kg
mercury (II) ion[air]	1.70E+05	kg
meta-Xylene[air]	4.26E+08	kg
methylbromide[air]	1.02E+07	kg
Naphtalene[air]	8.85E+06	kg
nickel (II) ion[air]	1.64E+06	kg
ortho-Xylene[air]	3.69E+08	kg
parathion-methyl[air]	39.7	kg
para-Xylene[air]	2.26E+06	kg
pentachloronitrobenzene[air]	1.02E+03	kg
pentachlorophenol[air]	2.63E+06	kg
permethrin[air]	4.66E+03	kg
phenanthrene[air]	6.26E+06	kg
Phenol[air]	6.57E+06	kg
phthalic anhydride[air]	3.11E+05	kg
Polycyclic Aromatic Hydrocarbons (PAH) (unspecified)(as indeno[1,2,3-cd]pyrene)[air]	2.46E+06	kg
propachlor[air]	96.2	kg
propoxur[air]	53.1	kg
Propylene Oxide[air]	1.26E+06	kg
selenium[air]	1.36E+06	kg
simazine[air]	9.66E+03	kg
styrene[air]	8.66E+07	kg
tetrachloroethylene[air]	3.03E+07	kg
Tetrachloromethane[air]	2.08E+06	kg
thallium[air]	7.95E+03	kg
Thiram[air]	2.94E+03	kg
Toluene[air]	1.81E+09	kg
tri-allate[air]	1.25E+03	kg
tributyltinoxide[air]	11	kg
trichlorfon[air]	36.9	kg
Trichloroethylene[air]	2.55E+07	kg
Trichloromethane[air]	7.56E+05	kg
trifluarin[air]	1.46E+05	kg
vanadium (III) ion[air]	1.88E+04	kg
Vinyl Chloride[air]	4.25E+06	kg
Volatile Organic Compounds non-methane- (non methane VOC)(as ethylene)[air]	3.22E+10	kg
zinc (II) ion[air]	1.53E+07	kg
zineb[air]	10.2	kg
1,1,1-trichloroethane[fresh water]	2.91E+03	kg
1,2,4-trichlorobenzene[fresh water]	2.94E+03	kg
1,2-dichlorobenzene[fresh water]	14.6	kg
1,2-dichloroethane[fresh water]	9.74E+04	kg
1,3-butadiene[fresh water]	2.21E+03	kg
1,3-dichlorobenzene[fresh water]	518	kg
1,4-dichlorobenzene[fresh water]	2.63E+03	kg
2,4,5-trichlorophenol[fresh water]	29.2	kg
2,4,6-trichlorophenol[fresh water]	29.2	kg
2,4-D[fresh water]	122	kg
2,4-dichlorophenol[fresh water]	43.7	kg
4-chloroaniline[fresh water]	468	kg
Acrolein[fresh water]	1.51E+05	kg
acrylonitrile[fresh water]	1.46E+04	kg
anthracene[fresh water]	2.50E+03	kg
antimony[fresh water]	1.65E+04	kg
arsenic (V) ion[fresh water]	1.22E+05	kg
atrazine[fresh water]	3.20E+03	kg
barium[fresh water]	2.37E+06	kg
benzene[fresh water]	4.34E+06	kg
benzylchloride[fresh water]	1.72E+03	kg
beryllium[fresh water]	2.22E+03	kg
cadmium (II) ion[fresh water]	2.21E+04	kg
captan[fresh water]	13.2	kg

Environmental Impact of Products (EIPRO)

Name	Value	Unit
carbaryl[fresh water]	13.2	kg
carbofuran[fresh water]	296	kg
carbon disulfide[fresh water]	9.03E+03	kg
chlordanefresh water]	1.02	kg
chlorobenzene[fresh water]	4.34E+03	kg
chlorothalonil[fresh water]	9.95	kg
chromium (III) ion[fresh water]	2.82E+05	kg
cobalt[fresh water]	9.92E+04	kg
copper (II) ion[fresh water]	1.75E+06	kg
Di(2-ethylhexyl)phthalate[fresh water]	3.09E+03	kg
diazinon[fresh water]	18.7	kg
Dibutylphthalate[fresh water]	282	kg
Dichloromethane[fresh water]	2.42E+04	kg
dichlorvos[fresh water]	2.42	kg
dimethoate[fresh water]	13.2	kg
diuron[fresh water]	5.36E+03	kg
ethylbenzene[fresh water]	1.98E+05	kg
ethylene[fresh water]	3.98E+06	kg
ethylene oxide[fresh water]	1.62E+03	kg
folpet[fresh water]	11	kg
Formaldehyde[fresh water]	1.42E+06	kg
heptachlor[fresh water]	1.02	kg
hexachloro-1,3-butadiene[fresh water]	0.152	kg
hexachlorobenzene[fresh water]	42.9	kg
hydrogen fluoride[fresh water]	1.80E+04	kg
lead (II) ion[fresh water]	2.35E+06	kg
lindane[fresh water]	3.06E+03	kg
linuron[fresh water]	13.2	kg
malathion[fresh water]	13.2	kg
mercury (II) ion[fresh water]	1.48E+04	kg
meta-xylene[fresh water]	1.51E+06	kg
methylbromide[fresh water]	32.9	kg
naphtalene[fresh water]	6.30E+04	kg
nickel (II) ion[fresh water]	5.73E+05	kg
ortho-xylene[fresh water]	1.31E+06	kg
para-xylene[fresh water]	1.51E+06	kg
pentachloronitrobenzene[fresh water]	1.02	kg
pentachlorophenol[fresh water]	1.98E+03	kg
phenanthrene[fresh water]	1.19E+04	kg
phenol[fresh water]	1.79E+05	kg
phthalic anhydride[fresh water]	77.9	kg
propylene oxide[fresh water]	8.02E+03	kg
selenium[fresh water]	3.42E+04	kg
simazine[fresh water]	1.02E+03	kg
styrene[fresh water]	4.85E+05	kg
tetrachloroethylene[fresh water]	4.12E+03	kg
Tetrachloromethane[fresh water]	3.59E+03	kg
thallium[fresh water]	4.45E+03	kg
Thiram[fresh water]	27.6	kg
toluene[fresh water]	1.07E+07	kg
tributyltin oxide[fresh water]	8.53	kg
Trichloroethylene[fresh water]	4.78E+03	kg
Trichloromethane[fresh water]	2.32E+04	kg
vanadium (III) ion[fresh water]	805	kg
Vinyl Chloride[fresh water]	145	kg
zinc (II) ion[fresh water]	1.17E+07	kg
2,4-D[agric. soil]	7.28E+07	kg
acephate[agric. soil]	2.97E+06	kg
aldicarb[agric. soil]	5.54E+06	kg
atrazine[agric. soil]	1.74E+08	kg
azinphos-methyl[agric. soil]	3.05E+06	kg
benomyl[agric. soil]	8.80E+05	kg
bentazone[agric. soil]	9.83E+06	kg
bifenthrin[agric. soil]	2.36E+05	kg
captan[agric. soil]	7.70E+06	kg
carbaryl[agric. soil]	6.82E+06	kg
carbofuran[agric. soil]	6.39E+06	kg

Name	Value	Unit
chlorothalonil[agric. soil]	1.51E+07	kg
chlorpyrifos[agric. soil]	2.44E+07	kg
copper (II) ion[agric. soil]	1.80E+07	kg
cyanazine[agric. soil]	4.44E+07	kg
cypermethrin[agric. soil]	2.11E+05	kg
cyromazine[agric. soil]	1.68E+04	kg
deltamethrin[agric. soil]	4.64E+04	kg
diazinon[agric. soil]	1.25E+06	kg
dimethoate[agric. soil]	3.16E+06	kg
disulfoton[agric. soil]	1.53E+06	kg
diuron[agric. soil]	6.34E+06	kg
endosulfan[agric. soil]	2.13E+06	kg
ethoprophos[agric. soil]	1.84E+06	kg
fentin hydroxide[agric. soil]	1.11E+06	kg
glyphosate[agric. soil]	4.84E+07	kg
iprodione[agric. soil]	8.83E+05	kg
lindane[agric. soil]	1.79E+05	kg
linuron[agric. soil]	6.00E+05	kg
malathion[agric. soil]	7.13E+06	kg
MCPA[agric. soil]	7.14E+06	kg
methomyl[agric. soil]	2.83E+06	kg
methylbromide[agric. soil]	4.33E+07	kg
metolachlor[agric. soil]	1.42E+08	kg
oxamyl[agric. soil]	1.19E+06	kg
oxydemethon-methyl[agric. soil]	2.83E+05	kg
parathion-ethyl[agric. soil]	7.92E+05	kg
parathion-methyl[agric. soil]	8.46E+06	kg
pentachloronitrobenzene[agric. soil]	9.58E+05	kg
permethrin[agric. soil]	1.98E+06	kg
propachlor[agric. soil]	2.24E+06	kg
simazine[agric. soil]	9.90E+06	kg
Thiram[agric. soil]	3.91E+05	kg
tri-allate[agric. soil]	2.69E+06	kg
trifluarin[agric. soil]	2.42E+07	kg
1,1,1-trichloroethane[indus. soil]	796	kg
1,2,4-trichlorobenzene[indus. soil]	240	kg
1,2-dichlorobenzene[indus. soil]	7.34	kg
1,2-dichloroethane[indus. soil]	709	kg
1,3-butadiene[indus. soil]	44.1	kg
1,4-dichlorobenzene[indus. soil]	1.32E+03	kg
2,4,5-trichlorophenol[indus. soil]	14.7	kg
2,4,6-trichlorophenol[indus. soil]	14.7	kg
2,4-D[indus. soil]	317	kg
2,4-dichlorophenol[indus. soil]	1.42	kg
Acrolein[indus. soil]	29	kg
acrylonitrile[indus. soil]	2.01E+03	kg
aldicarb[indus. soil]	363	kg
anthracene[indus. soil]	4.69E+04	kg
antimony[indus. soil]	4.05E+04	kg
arsenic (V) ion[indus. soil]	8.53E+04	kg
atrazine[indus. soil]	2.92E+05	kg
barium[indus. soil]	3.97E+07	kg
benzene[indus. soil]	2.56E+04	kg
benzylchloride[indus. soil]	38.8	kg
beryllium[indus. soil]	3.77E+05	kg
cadmium (II) ion[indus. soil]	4.88E+04	kg
carbaryl[indus. soil]	1.59E+04	kg
carbon disulfide[indus. soil]	284	kg
chlorobenzene[indus. soil]	46.2	kg
chromium (III) ion[indus. soil]	3.10E+07	kg
cobalt[indus. soil]	2.49E+06	kg
copper (II) ion[indus. soil]	1.98E+08	kg
cyanazine[indus. soil]	8.28E+04	kg
Di(2-ethylhexyl)phthalate[indus. soil]	3.87E+03	kg
Dibutylphthalate[indus. soil]	6.27E+03	kg
Dichloromethane[indus. soil]	1.37E+03	kg
dinoseb[indus. soil]	71.1	kg

Name	Value	Unit
DNOC[indus. soil]	1.48E+04	kg
ethoprophos[indus. soil]	8.56E+04	kg
ethylbenzene[indus. soil]	2.56E+04	kg
ethylene[indus. soil]	1.81E+03	kg
ethylene oxide (ind.)[indus. soil]	107	kg
Formaldehyde[indus. soil]	8.04E+03	kg
hexachloro-1,3-butadiene[indus. soil]	6.26	kg
hexachlorobenzene[indus. soil]	3.67	kg
hydrogen fluoride[indus. soil]	1.66E+05	kg
lead (II) ion[indus. soil]	8.46E+06	kg
MCPA[indus. soil]	220	kg
mecoprop[indus. soil]	110	kg
mercury (II) ion[indus. soil]	1.08E+04	kg
meta-xylene[indus. soil]	8.96E+03	kg
methylbromide[indus. soil]	3.88	kg
naphtalene[indus. soil]	1.75E+06	kg
nickel (II) ion[indus. soil]	9.36E+05	kg
ortho-xylene[indus. soil]	7.68E+03	kg
para-xylene[indus. soil]	8.96E+03	kg
pentachlorophenol[indus. soil]	21.4	kg
permethrin[indus. soil]	1.05E+04	kg
phenanthrene[indus. soil]	1.04E+06	kg
phenol[indus. soil]	2.03E+03	kg
phthalic anhydride[indus. soil]	1.12E+03	kg
propachlor[indus. soil]	7.22E+03	kg
propylene oxide[indus. soil]	7.51E+03	kg
selenium[indus. soil]	1.08E+03	kg
styrene[indus. soil]	8.94E+03	kg
tetrachloroethylene[indus. soil]	9.78E+03	kg
Tetrachloromethane[indus. soil]	125	kg
thallium[indus. soil]	1.81E+06	kg
Thiram[indus. soil]	723	kg
toluene[indus. soil]	2.64E+04	kg
tributyltinoxide[indus. soil]	0.711	kg
trichlorfon[indus. soil]	1.14E+04	kg
Trichloroethylene[indus. soil]	7.28E+03	kg
Trichloromethane[indus. soil]	576	kg
vanadium (III) ion[indus. soil]	2.40E+05	kg
Vinyl Chloride[indus. soil]	0.711	kg
zinc (II) ion[indus. soil]	3.33E+07	kg

Sub-table 5.3.1.h: Emissions contributing to acidification, in kg

Name	Value	Unit
ammonia[air]	3.68E+09	kg
nitrogen oxides (as NO ₂)[air]	1.47E+10	kg
sulphur dioxide[air]	2.49E+10	kg

Sub-table 5.3.1.i: Emissions contributing to photochemical oxidant formation (POCP), in kg

Name	Value	Unit
1,1,1-trichloroethane[air]	9.46E+07	kg
1,2,4-trimethylbenzene[air]	1.72E+08	kg
1,3-Butadiene[air]	6.39E+07	kg
1-Butanol[air]	2.00E+08	kg
2-butanone[air]	1.11E+08	kg
2-Ethoxy-Ethanol[air]	1.77E+05	kg
2-Methoxy-Ethanol[air]	1.23E+06	kg
Acetaldehyde[air]	2.05E+07	kg
Acetone[air]	1.25E+08	kg
Benzene[air]	3.18E+08	kg
Butyraldehyde[air]	1.42E+07	kg
Carbon Monoxide[air]	4.45E+10	kg
Cyclohexane[air]	1.81E+05	kg
Cyclohexanol[air]	2.87E+07	kg
Dichloromethane[air]	1.55E+08	kg
Ethylbenzene[air]	1.85E+08	kg
Ethylene[air]	5.29E+08	kg
Ethylene Glycol[air]	1.61E+07	kg
Formaldehyde[air]	1.09E+08	kg
Formic acid[air]	2.93E+05	kg
Hexane[air]	1.91E+08	kg
isobutyraldehyde[air]	1.26E+07	kg
isopropanol[air]	5.73E+07	kg
isopropyl benzene[air]	5.73E+07	kg
meta-Xylene[air]	4.26E+08	kg
Methane[air]	2.11E+10	kg
Methanol[air]	2.41E+06	kg
Methyl Chloride[air]	5.42E+06	kg
Methyl Isobutyl Ketone[air]	1.97E+08	kg
Methyl tert-Butyl Ether[air]	1.81E+05	kg
ortho-Xylene[air]	3.69E+08	kg
para-Xylene[air]	2.26E+06	kg
Propionaldehyde[air]	1.88E+07	kg
Propylene[air]	1.59E+07	kg
sec-Butanol[air]	8.25E+05	kg
styrene[air]	8.66E+07	kg
sulphur dioxide[air]	2.49E+10	kg
tertiary-Butanol[air]	5.25E+05	kg
tetrachloroethylene[air]	3.03E+07	kg
Toluene[air]	1.81E+09	kg
Trichloroethylene[air]	2.55E+07	kg
Trichloromethane[air]	7.56E+05	kg
Non-methane VOC (as ethylene)[air]	3.22E+10	kg

Sub-table 5.3.1.j Emissions contributing to eutrophication, in kg

Name	Value	Unit
ammonia[air]	3.68E+09	kg
nitric acid[air]	3.36E+06	kg
nitrogen oxides (as NO2)[air]	1.47E+10	kg
Phosphorus[air]	9.52E+04	kg
ammonia[fresh water]	1.24E+07	kg
nitric acid[fresh water]	7.50E+04	kg
Phosphorus[fresh water]	2.37E+09	kg
ammonia[indus. soil]	2.99E+06	kg
nitric acid[indus. soil]	7.34E+04	kg
Phosphorus[indus. soil]	2.97E+05	kg

5.3.2 Normalised environmental impact scores of consumption activities (table)

Impact scores expressed as a fraction of the total impacts in the EU-25. Only products purchased for final consumption have been listed. Products covering more than one product in the use phase have their CEDA code in bold and italics. For reference, the expenditure and the fraction of expenditure have been included as the last two columns.

CEDA code	Name	Abiotic depletion	Global warming GWP100	Ozone layer depletion	Human toxicity htp inf.	Ecotoxicity score	Photo-chemic. oxidation	Acidification	Eutrophication	Euro (2003; k₂)	Fraction of total expenditure
10100	[A1] Dairy farm products	1.39E-04	1.87E-04	1.25E-04	1.38E-04	2.09E-04	1.49E-04	1.95E-04	4.13E-04	2.89E+08	1.15E-04
10200	[A2] Poultry and eggs	3.37E-03	4.77E-03	3.94E-03	3.60E-03	4.11E-03	4.22E-03	5.05E-03	8.53E-03	6.87E+09	2.73E-03
10302	[A4] Miscellaneous livestock	2.24E-03	3.42E-03	2.36E-03	2.36E-03	2.92E-03	2.67E-03	3.58E-03	6.41E-03	3.79E+09	1.51E-03
20202	[A7] Feed grains	2.13E-04	2.13E-04	1.59E-04	1.57E-04	2.78E-04	1.73E-04	1.49E-04	4.62E-04	4.32E+08	1.72E-04
20401	[A10] Fruits	5.19E-03	5.05E-03	5.79E-03	4.72E-03	7.15E-03	4.30E-03	3.19E-03	7.62E-03	9.96E+09	3.96E-03
20402	[A11] Tree nuts	4.48E-04	4.57E-04	2.76E-04	5.06E-04	5.94E-03	3.24E-04	2.95E-04	9.22E-04	9.51E+08	3.78E-04
20501	[A12] Vegetables	4.28E-03	7.13E-03	4.74E-03	5.94E-03	1.08E-02	5.19E-03	4.71E-03	3.65E-03	1.80E+10	7.15E-03
20503	[A14] Miscellaneous crops	8.03E-07	1.07E-06	7.46E-07	3.46E-06	1.37E-05	8.16E-07	7.62E-07	6.88E-05	2.14E+06	8.52E-07
20600	[A15] Oil bearing crops	5.14E-05	7.75E-05	5.98E-05	4.87E-05	3.94E-05	6.02E-05	4.93E-05	2.81E-05	1.65E+08	6.55E-05
20702	[A16] Greenhouse and nursery products	1.78E-03	1.53E-03	1.17E-03	1.37E-03	1.10E-03	1.45E-03	2.19E-03	1.04E-03	1.23E+10	4.87E-03
30001	[A17] Forestry products	1.61E-03	1.75E-03	1.75E-03	1.80E-03	1.82E-03	1.92E-03	1.82E-03	2.12E-03	6.73E+09	2.67E-03
30002	[A18] Commercial fishing	1.65E-03	1.45E-03	1.05E-03	8.61E-04	6.73E-04	1.02E-03	8.68E-04	4.68E-04	5.90E+09	2.34E-03
40001	[A19] Agricultural, forestry, and fishery services	1.52E-04	1.40E-04	1.48E-04	1.58E-04	1.58E-04	1.61E-04	1.47E-04	1.45E-04	3.50E+08	1.39E-04
70000	[A24] Coal	8.78E-05	1.77E-05	6.23E-06	1.17E-04	1.37E-04	7.72E-06	8.25E-06	2.84E-06	6.38E+07	2.54E-05
80001	[A25] Crude petroleum and natural gas	4.53E-03	1.54E-03	1.73E-04	3.16E-04	1.74E-04	3.89E-04	7.24E-04	2.00E-04	1.74E+09	6.93E-04
100000	[A30] Chemical and fertilizer minerals	3.37E-06	1.40E-05	1.72E-06	4.57E-06	4.38E-06	3.05E-06	3.21E-06	7.34E-07	2.11E+07	8.38E-06
110101	[A31] New residential 1 unit structures, nonfarm	2.67E-02	3.19E-02	3.63E-02	4.09E-02	3.51E-02	3.83E-02	3.01E-02	1.15E-02	1.49E+11	5.92E-02
110102	[A32] New residential 2-4 unit structures, nonfarm	6.24E-04	9.95E-04	8.08E-04	1.14E-03	9.02E-04	1.01E-03	9.39E-04	3.31E-04	3.47E+09	1.38E-03
110105	[A33] New additions & alterations, nonfarm, construction	1.49E-02	1.82E-02	1.99E-02	2.30E-02	1.92E-02	2.14E-02	1.82E-02	6.65E-03	7.41E+10	2.95E-02
110108	[A34] New residential garden and high-rise apartments construction	4.52E-03	6.59E-03	5.78E-03	8.21E-03	6.97E-03	7.00E-03	6.79E-03	2.29E-03	2.83E+10	1.12E-02
110400	[A35] New highways, bridges, and other horizontal construction	1.51E-04	1.17E-04	8.96E-05	1.29E-04	8.35E-05	1.21E-04	1.07E-04	3.53E-05	4.43E+08	1.76E-04
110501	[A36] New farm residential construction	7.13E-04	8.30E-04	8.31E-04	1.08E-03	8.74E-04	9.68E-04	8.33E-04	3.05E-04	3.70E+09	1.47E-03
120101	[A42] Maintenance and repair of farm and nonfarm residential structures	7.48E-03	6.94E-03	7.95E-03	9.14E-03	7.48E-03	8.91E-03	6.95E-03	2.69E-03	3.54E+10	1.41E-02
130500	[A49] Small arms	1.36E-04	1.35E-04	1.64E-04	2.28E-04	2.52E-04	1.44E-04	1.45E-04	5.12E-05	2.45E+08	9.74E-05

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130600	[A50] Small arms ammunition	1.14E-04	1.04E-04	1.26E-04	2.47E-04	3.75E-04	1.26E-04	1.27E-04	4.55E-05	1.81E+08	7.19E-05
140101	[A52] Meat packing plants	3.01E-02	5.54E-02	3.32E-02	3.59E-02	4.88E-02	3.88E-02	6.14E-02	1.10E-01	4.99E+10	1.98E-02
140102	[A53] Sausages and other prepared meat products	1.42E-02	2.52E-02	1.66E-02	1.78E-02	2.19E-02	1.93E-02	2.80E-02	4.83E-02	2.09E+10	8.32E-03
140105	[A54] Poultry slaughtering and processing	2.53E-02	3.93E-02	3.11E-02	2.96E-02	3.15E-02	3.42E-02	4.46E-02	6.68E-02	4.10E+10	1.63E-02
140200	[A55] Creamery butter	1.08E-03	1.48E-03	1.17E-03	1.18E-03	1.61E-03	1.31E-03	1.64E-03	2.91E-03	2.06E+09	8.18E-04
140300	[A56] Natural, processed, and imitation cheese	1.47E-02	2.11E-02	1.57E-02	1.64E-02	2.30E-02	1.81E-02	2.34E-02	4.32E-02	2.18E+10	8.66E-03
140400	[A57] Dry, condensed, and evaporated dairy products	4.12E-03	5.56E-03	4.53E-03	4.55E-03	6.34E-03	5.01E-03	6.01E-03	1.09E-02	8.27E+09	3.29E-03
140500	[A58] Ice cream and frozen desserts	1.20E-03	1.49E-03	1.48E-03	1.31E-03	1.67E-03	1.57E-03	1.65E-03	2.69E-03	2.11E+09	8.37E-04
140600	[A59] Fluid milk	1.72E-02	2.38E-02	1.87E-02	1.86E-02	2.61E-02	2.08E-02	2.63E-02	4.91E-02	2.74E+10	1.09E-02
140700	[A60] Canned and cured fish and seafoods	3.33E-03	3.52E-03	2.63E-03	2.55E-03	2.24E-03	2.76E-03	2.60E-03	1.91E-03	6.85E+09	2.72E-03
140800	[A61] Canned specialties	7.01E-04	8.70E-04	8.63E-04	9.20E-04	9.63E-04	9.68E-04	8.86E-04	1.10E-03	1.89E+09	7.53E-04
140900	[A62] Canned fruits, vegetables, preserves, jams, and jellies	3.10E-03	3.76E-03	3.48E-03	4.06E-03	4.52E-03	3.98E-03	3.47E-03	4.46E-03	7.61E+09	3.02E-03
141000	[A63] Dehydrated fruits, vegetables, and soups	1.16E-03	1.25E-03	1.32E-03	1.28E-03	1.34E-03	1.38E-03	1.15E-03	2.47E-03	2.45E+09	9.74E-04
141100	[A64] Pickles, sauces, and salad dressings	5.94E-04	7.50E-04	8.50E-04	7.73E-04	1.05E-03	8.22E-04	6.88E-04	1.65E-03	1.84E+09	7.32E-04
141200	[A65] Prepared fresh or frozen fish and seafoods	4.88E-03	5.74E-03	4.01E-03	3.70E-03	3.40E-03	4.16E-03	4.50E-03	4.51E-03	9.22E+09	3.66E-03
141301	[A66] Frozen fruits, fruit juices, and vegetables	6.11E-03	7.46E-03	7.53E-03	7.71E-03	8.88E-03	7.76E-03	6.24E-03	7.25E-03	1.20E+10	4.77E-03
141302	[A67] Frozen specialties, n.e.c.	1.72E-03	2.42E-03	2.15E-03	2.11E-03	2.58E-03	2.34E-03	2.52E-03	4.12E-03	3.70E+09	1.47E-03
141401	[A68] Flour and other grain mill products	6.63E-04	8.28E-04	5.32E-04	6.33E-04	6.73E-04	5.98E-04	5.84E-04	6.69E-03	1.23E+09	4.90E-04
141402	[A69] Cereal breakfast foods	4.21E-03	4.85E-03	4.69E-03	4.58E-03	5.35E-03	4.84E-03	4.31E-03	2.31E-02	9.21E+09	3.66E-03
141403	[A70] Prepared flour mixes and doughs	3.27E-03	4.05E-03	3.31E-03	3.51E-03	4.38E-03	3.60E-03	3.32E-03	2.51E-02	6.12E+09	2.43E-03
141501	[A71] Dog and cat food	3.15E-03	3.88E-03	3.93E-03	3.49E-03	3.85E-03	3.89E-03	3.28E-03	1.02E-02	5.65E+09	2.25E-03
141502	[A72] Prepared feeds, n.e.c.	7.35E-04	9.59E-04	8.93E-04	7.48E-04	9.98E-04	8.95E-04	7.08E-04	1.78E-03	1.15E+09	4.56E-04
141801	[A75] Bread, cake, and related products	7.48E-03	8.90E-03	8.05E-03	8.38E-03	1.10E-02	8.85E-03	8.32E-03	3.31E-02	2.74E+10	1.09E-02
141802	[A76] Cookies and crackers	3.53E-03	4.04E-03	4.20E-03	4.08E-03	5.73E-03	4.44E-03	3.92E-03	1.22E-02	1.07E+10	4.24E-03
141803	[A77] Frozen bakery products, except bread	1.75E-03	2.15E-03	2.31E-03	2.03E-03	2.87E-03	2.27E-03	2.08E-03	4.59E-03	3.61E+09	1.43E-03
141900	[A78] Sugar	1.10E-03	1.25E-03	7.44E-04	1.20E-03	4.06E-03	1.16E-03	1.53E-03	9.51E-03	1.65E+09	6.55E-04
142002	[A79] Chocolate and cocoa products	2.72E-04	3.23E-04	3.20E-04	3.25E-04	5.77E-04	3.35E-04	3.09E-04	8.21E-04	5.44E+08	2.16E-04
142004	[A80] Salted and roasted nuts and seeds	3.45E-04	4.58E-04	3.44E-04	4.33E-04	2.98E-03	3.71E-04	3.20E-04	6.10E-04	7.79E+08	3.10E-04
142005	[A81] Candy and other confectionery products	4.25E-03	4.88E-03	5.35E-03	4.98E-03	9.39E-03	5.56E-03	4.92E-03	1.03E-02	1.05E+10	4.17E-03
142101	[A82] Malt beverages	2.71E-03	3.04E-03	2.85E-03	3.82E-03	4.03E-03	3.56E-03	3.09E-03	5.69E-03	9.99E+09	3.97E-03
142103	[A84] Wines, brandy, and brandy spirits	5.00E-03	5.60E-03	5.65E-03	6.04E-03	6.56E-03	5.60E-03	4.53E-03	5.32E-03	1.56E+10	6.21E-03
142104	[A85] Distilled and blended liquors	7.94E-04	8.14E-04	1.11E-03	9.91E-04	7.28E-04	1.41E-03	7.34E-04	7.91E-04	3.93E+09	1.56E-03
142200	[A86] Bottled and canned soft drinks	7.90E-03	9.05E-03	1.16E-02	1.07E-02	1.04E-02	1.16E-02	9.48E-03	8.05E-03	1.84E+10	7.30E-03
142300	[A87] Flavoring extracts and flavoring syrups, n.e.c.	7.85E-04	8.25E-04	9.85E-04	8.52E-04	1.06E-03	9.83E-04	7.73E-04	1.42E-03	3.03E+09	1.20E-03
142800	[A92] Roasted coffee	6.17E-03	7.10E-03	7.50E-03	7.32E-03	9.17E-03	6.79E-03	4.87E-03	9.15E-03	1.12E+10	4.44E-03

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142900	[A93] Edible fats and oils, n.e.c.	8.80E-03	1.29E-02	1.13E-02	9.96E-03	1.66E-02	1.15E-02	9.55E-03	1.78E-02	1.63E+10	6.48E-03
143000	[A94] Manufactured ice	4.21E-05	4.33E-05	4.94E-05	3.99E-05	3.28E-05	4.52E-05	5.27E-05	1.45E-05	1.87E+08	7.43E-05
143100	[A95] Macaroni, spaghetti, vermicelli, and noodles	6.24E-04	6.75E-04	7.78E-04	6.62E-04	5.74E-04	7.44E-04	6.06E-04	2.55E-03	1.30E+09	5.17E-04
143201	[A96] Potato chips and similar snacks	4.49E-03	5.27E-03	6.32E-03	5.59E-03	7.10E-03	6.23E-03	4.47E-03	1.15E-02	1.27E+10	5.05E-03
143202	[A97] Food preparations, n.e.c.	2.17E-03	2.61E-03	2.93E-03	2.89E-03	4.71E-03	2.90E-03	2.40E-03	1.44E-02	5.27E+09	2.09E-03
150101	[A98] Cigarettes	6.79E-03	7.40E-03	7.56E-03	7.55E-03	9.46E-03	7.50E-03	5.95E-03	3.71E-03	3.47E+10	1.38E-02
150102	[A99] Cigars	2.51E-04	2.81E-04	2.52E-04	3.25E-04	3.96E-04	2.63E-04	2.33E-04	1.30E-04	1.25E+09	4.96E-04
150103	[A100] Chewing and smoking tobacco and snuff	3.14E-04	3.49E-04	3.61E-04	3.73E-04	4.43E-04	3.58E-04	2.95E-04	1.64E-04	1.97E+09	7.81E-04
170100	[A106] Carpets and rugs	3.13E-03	3.14E-03	5.76E-03	4.26E-03	8.13E-03	5.72E-03	3.22E-03	6.51E-03	8.20E+09	3.26E-03
170900	[A109] Cordage and twine	6.72E-05	7.14E-05	1.55E-04	9.35E-05	1.33E-04	1.11E-04	7.36E-05	8.38E-05	1.59E+08	6.32E-05
171001	[A110] Nonwoven fabrics	3.92E-04	4.15E-04	1.46E-03	4.54E-04	5.90E-04	7.00E-04	4.03E-04	3.42E-04	9.29E+08	3.69E-04
171100	[A111] Textile goods, n.e.c.	1.54E-05	1.61E-05	2.43E-05	1.92E-05	2.75E-05	2.28E-05	1.67E-05	2.01E-05	4.23E+07	1.68E-05
180101	[A112] Women's hosiery, except socks	7.58E-04	8.03E-04	1.13E-03	9.99E-04	2.20E-03	1.19E-03	8.65E-04	1.64E-03	2.48E+09	9.85E-04
180102	[A113] Hosiery, n.e.c.	5.03E-04	5.33E-04	7.24E-04	6.56E-04	1.55E-03	7.65E-04	5.58E-04	1.17E-03	1.62E+09	6.45E-04
180400	[A115] Apparel made from purchased materials	1.42E-02	1.64E-02	2.27E-02	1.87E-02	4.63E-02	2.18E-02	1.66E-02	3.58E-02	5.72E+10	2.27E-02
190100	[A116] Curtains and draperies	7.06E-04	8.39E-04	1.26E-03	9.78E-04	2.77E-03	1.20E-03	8.49E-04	2.16E-03	3.05E+09	1.21E-03
190200	[A117] Housefurnishings, n.e.c.	2.11E-03	2.41E-03	3.70E-03	2.85E-03	8.44E-03	3.51E-03	2.44E-03	6.62E-03	7.63E+09	3.03E-03
190301	[A118] Textile bags	8.55E-05	1.01E-04	2.19E-04	1.20E-04	2.48E-04	1.57E-04	1.00E-04	1.84E-04	3.32E+08	1.32E-04
190302	[A119] Canvas and related products	1.54E-04	1.65E-04	2.76E-04	1.88E-04	3.99E-04	2.18E-04	1.55E-04	2.92E-04	8.23E+08	3.27E-04
190303	[A120] Pleating and stitching	3.33E-04	3.82E-04	6.60E-04	4.07E-04	7.95E-04	5.31E-04	3.78E-04	6.11E-04	1.40E+09	5.57E-04
190304	[A121] Automotive and apparel trimmings	9.72E-04	1.12E-03	2.48E-03	1.19E-03	2.04E-03	1.70E-03	1.09E-03	1.62E-03	3.89E+09	1.55E-03
190305	[A122] Schiffli machine embroideries	1.66E-05	1.87E-05	2.27E-05	2.09E-05	5.79E-05	2.48E-05	1.90E-05	4.52E-05	1.02E+08	4.06E-05
190306	[A123] Fabricated textile products, n.e.c.	1.06E-03	1.22E-03	2.86E-03	1.42E-03	2.87E-03	1.88E-03	1.20E-03	2.12E-03	4.41E+09	1.75E-03
200703	[A133] Mobile homes	3.08E-04	3.70E-04	4.56E-04	5.03E-04	4.54E-04	4.69E-04	3.55E-04	1.62E-04	1.23E+09	4.90E-04
200903	[A136] Wood products, n.e.c.	1.23E-04	1.28E-04	1.44E-04	1.63E-04	1.32E-04	1.99E-04	1.37E-04	6.39E-05	4.83E+08	1.92E-04
220101	[A139] Wood household furniture, except upholstered	2.50E-03	2.69E-03	4.69E-03	3.18E-03	2.67E-03	3.58E-03	2.75E-03	1.18E-03	1.12E+10	4.46E-03
220102	[A140] Household furniture, n.e.c.	1.87E-04	1.78E-04	8.80E-04	1.95E-04	1.82E-04	3.64E-04	1.62E-04	7.63E-05	4.21E+08	1.67E-04
220103	[A141] Wood television and radio cabinets	5.00E-06	4.66E-06	6.94E-06	5.28E-06	4.16E-06	6.25E-06	4.68E-06	1.85E-06	1.60E+07	6.35E-06
220200	[A142] Upholstered household furniture	1.93E-03	2.22E-03	3.46E-03	2.73E-03	5.00E-03	3.11E-03	2.17E-03	3.42E-03	7.73E+09	3.07E-03
220300	[A143] Metal household furniture	7.28E-04	8.30E-04	1.93E-03	1.15E-03	1.08E-03	1.14E-03	8.17E-04	3.19E-04	2.26E+09	8.98E-04
220400	[A144] Mattresses and bedsprings	1.10E-03	1.28E-03	1.75E-03	1.59E-03	2.39E-03	1.98E-03	1.23E-03	1.35E-03	4.22E+09	1.68E-03
230100	[A145] Wood office furniture	8.58E-04	8.97E-04	1.66E-03	1.15E-03	1.13E-03	1.13E-03	9.04E-04	4.11E-04	3.63E+09	1.44E-03
230400	[A148] Wood partitions and fixtures	1.08E-03	1.15E-03	1.60E-03	1.41E-03	1.24E-03	1.49E-03	1.11E-03	4.42E-04	4.86E+09	1.93E-03
230500	[A149] Partitions and fixtures, except wood	2.27E-03	2.68E-03	2.50E-03	3.74E-03	3.79E-03	2.71E-03	2.56E-03	9.19E-04	6.61E+09	2.63E-03
230600	[A150] Drapery hardware and window blinds and shades	5.61E-04	6.29E-04	1.16E-03	9.00E-04	9.65E-04	8.12E-04	6.64E-04	3.43E-04	2.28E+09	9.07E-04

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230700	[A151] Furniture and fixtures, n.e.c.	7.39E-04	8.38E-04	1.07E-03	1.14E-03	1.13E-03	1.01E-03	8.16E-04	3.17E-04	4.16E+09	1.65E-03
240400	[A153] Envelopes	7.65E-05	8.09E-05	9.89E-05	1.04E-04	8.11E-05	1.13E-04	1.09E-04	3.43E-05	2.02E+08	8.01E-05
240500	[A154] Sanitary paper products	2.71E-03	2.90E-03	4.68E-03	3.82E-03	3.08E-03	4.42E-03	3.82E-03	1.39E-03	7.79E+09	3.10E-03
240701	[A155] Paper coating and glazing	2.14E-04	2.13E-04	4.47E-04	2.62E-04	2.12E-04	3.76E-04	2.34E-04	8.51E-05	4.99E+08	1.98E-04
240702	[A156] Bags, except textile	5.25E-04	5.32E-04	1.30E-03	6.34E-04	5.07E-04	9.56E-04	5.58E-04	1.90E-04	1.22E+09	4.86E-04
240705	[A158] Stationery, tablets, and related products	5.82E-05	6.22E-05	7.93E-05	8.20E-05	6.41E-05	8.96E-05	8.34E-05	2.74E-05	1.77E+08	7.04E-05
240706	[A159] Converted paper products, n.e.c.	3.49E-04	3.55E-04	4.97E-04	4.64E-04	3.73E-04	5.12E-04	4.64E-04	1.59E-04	8.17E+08	3.24E-04
250000	[A161] Paperboard containers and boxes	1.37E-04	1.35E-04	1.70E-04	1.78E-04	1.39E-04	1.93E-04	1.80E-04	5.75E-05	2.93E+08	1.16E-04
260100	[A162] Newspapers	1.68E-03	1.73E-03	2.20E-03	2.13E-03	1.67E-03	2.30E-03	2.18E-03	6.97E-04	1.03E+10	4.10E-03
260200	[A163] Periodicals	1.70E-03	1.87E-03	2.96E-03	2.32E-03	1.80E-03	2.76E-03	2.21E-03	7.48E-04	9.71E+09	3.86E-03
260301	[A164] Book publishing	2.05E-03	2.33E-03	4.50E-03	2.80E-03	2.23E-03	3.27E-03	2.68E-03	9.44E-04	1.29E+10	5.14E-03
260400	[A166] Miscellaneous publishing	1.66E-04	1.84E-04	2.86E-04	2.25E-04	1.74E-04	2.60E-04	2.12E-04	7.16E-05	1.28E+09	5.08E-04
260501	[A167] Commercial printing	9.47E-05	1.02E-04	1.81E-04	1.23E-04	9.46E-05	1.56E-04	1.23E-04	4.02E-05	3.62E+08	1.44E-04
260602	[A169] Blankbooks, looseleaf binders and devices	6.14E-05	6.50E-05	9.04E-05	7.91E-05	6.33E-05	8.69E-05	7.69E-05	2.66E-05	2.72E+08	1.08E-04
260700	[A170] Greeting cards	3.14E-04	3.31E-04	4.70E-04	4.03E-04	3.20E-04	4.41E-04	3.81E-04	1.30E-04	1.55E+09	6.14E-04
270201	[A175] Nitrogenous and phosphatic fertilizers	3.19E-03	1.14E-03	1.01E-03	1.32E-03	8.08E-04	1.46E-03	1.55E-03	6.28E-04	2.00E+09	7.95E-04
270300	[A176] (Household use of) pesticides and agricultural chemicals, n.e.c.	5.70E-03	4.40E-03	3.16E-02	6.90E-03	1.45E-02	8.19E-03	4.12E-03	1.93E-03	1.20E+10	4.76E-03
270401	[A177] Gum and wood chemicals	8.13E-04	8.12E-04	1.00E-03	2.56E-03	2.06E-03	2.52E-03	6.51E-04	3.65E-04	1.72E+09	6.83E-04
270402	[A178] Adhesives and sealants	2.28E-04	1.59E-04	3.40E-04	1.76E-04	1.42E-04	2.99E-04	1.38E-04	5.55E-05	3.50E+08	1.39E-04
270406	[A182] Chemicals and chemical preparations, n.e.c.	5.06E-04	4.00E-04	8.61E-04	4.96E-04	4.73E-04	6.79E-04	3.17E-04	6.25E-04	7.93E+08	3.15E-04
290100	[A187] Drugs	7.09E-03	7.49E-03	2.26E-02	7.29E-03	6.09E-03	9.13E-03	6.51E-03	3.98E-03	2.43E+10	9.68E-03
290201	[A188] Soap and other detergents	2.68E-03	2.09E-03	5.07E-03	2.39E-03	2.12E-03	4.35E-03	1.97E-03	1.07E-03	5.96E+09	2.37E-03
290202	[A189] Polishes and sanitation goods	3.68E-04	2.84E-04	6.03E-04	3.26E-04	2.83E-04	5.03E-04	2.78E-04	1.41E-04	8.83E+08	3.51E-04
290300	[A191] Toilet preparations	3.68E-03	3.14E-03	6.24E-03	3.54E-03	2.89E-03	5.09E-03	3.07E-03	1.35E-03	1.26E+10	4.99E-03
300000	[A192] Paints and allied products	7.14E-05	5.32E-05	1.60E-04	6.26E-05	5.56E-05	1.31E-04	4.80E-05	2.14E-05	1.50E+08	5.95E-05
310102	[A194] Lubricating oils and greases	1.94E-03	4.49E-04	5.63E-04	4.25E-04	2.82E-04	6.36E-04	4.71E-04	1.78E-04	1.01E+09	4.01E-04
310103	[A195] Products of petroleum and coal, n.e.c.	2.58E-05	5.48E-06	1.69E-05	4.08E-06	2.24E-06	6.07E-06	1.91E-05	1.52E-06	1.36E+07	5.39E-06
320200	[A199] Rubber and plastics footwear	6.35E-04	6.00E-04	1.38E-03	7.07E-04	9.12E-04	1.00E-03	6.10E-04	5.62E-04	1.81E+09	7.18E-04
320300	[A200] Fabricated rubber products, n.e.c.	6.36E-04	5.42E-04	1.08E-03	7.05E-04	5.77E-04	9.80E-04	5.78E-04	2.51E-04	1.58E+09	6.26E-04
320400	[A201] Miscellaneous plastics products, n.e.c.	2.75E-03	2.68E-03	8.15E-03	3.04E-03	2.58E-03	5.10E-03	2.47E-03	9.09E-04	6.54E+09	2.60E-03
320500	[A202] Rubber and plastics hose and belting	1.24E-04	1.05E-04	1.94E-04	1.32E-04	1.52E-04	1.87E-04	1.16E-04	7.58E-05	2.95E+08	1.17E-04
320600	[A203] Gaskets, packing, and sealing devices	4.70E-05	4.79E-05	8.40E-05	6.02E-05	5.19E-05	7.23E-05	4.71E-05	1.77E-05	1.50E+08	5.97E-05
340100	[A205] Boot and shoe cut stock and findings	6.51E-07	9.30E-07	2.80E-06	7.98E-07	8.91E-07	1.19E-06	9.28E-07	1.20E-06	1.64E+06	6.51E-07
340201	[A206] Shoes, except rubber	1.45E-03	2.00E-03	3.64E-03	1.81E-03	1.72E-03	2.63E-03	2.00E-03	2.28E-03	3.56E+09	1.41E-03

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340202	[A207] House slippers	4.53E-05	5.53E-05	1.31E-04	5.92E-05	5.70E-05	8.29E-05	5.63E-05	5.18E-05	2.59E+08	1.03E-04
340301	[A208] Leather gloves and mittens	4.53E-05	6.44E-05	6.21E-05	5.48E-05	7.35E-05	7.92E-05	6.57E-05	9.76E-05	1.00E+08	3.99E-05
340302	[A209] Luggage	3.57E-04	3.97E-04	8.57E-04	4.48E-04	7.19E-04	5.67E-04	3.86E-04	5.52E-04	1.29E+09	5.12E-04
340303	[A210] Women's handbags and purses	5.34E-05	7.57E-05	9.59E-05	7.19E-05	8.15E-05	9.56E-05	7.79E-05	9.46E-05	1.97E+08	7.82E-05
340304	[A211] Personal leather goods, n.e.c.	7.60E-05	1.00E-04	1.54E-04	1.03E-04	1.45E-04	1.31E-04	1.03E-04	1.37E-04	3.28E+08	1.30E-04
340305	[A212] Leather goods, n.e.c.	7.83E-05	9.53E-05	1.23E-04	8.95E-05	1.02E-04	1.21E-04	9.50E-05	1.12E-04	2.94E+08	1.17E-04
350100	[A213] Glass and glass products, except containers	6.96E-04	6.66E-04	8.38E-04	9.59E-04	7.09E-04	8.73E-04	6.34E-04	2.39E-04	1.78E+09	7.07E-04
350200	[A214] Glass containers	7.19E-05	6.85E-05	6.64E-05	7.96E-05	7.49E-05	7.14E-05	6.94E-05	2.79E-05	1.40E+08	5.57E-05
360701	[A221] Vitreous china table and kitchenware	1.70E-05	1.82E-05	1.16E-05	2.51E-05	1.91E-05	2.05E-05	1.47E-05	5.35E-06	9.00E+07	3.58E-05
360702	[A222] Fine earthenware table and kitchenware	4.14E-05	3.24E-05	3.38E-05	3.93E-05	2.30E-05	4.74E-05	2.64E-05	1.10E-05	9.82E+07	3.90E-05
360900	[A224] Pottery products, n.e.c.	1.59E-04	1.42E-04	1.49E-04	1.88E-04	1.20E-04	2.02E-04	1.15E-04	4.79E-05	5.14E+08	2.04E-04
361100	[A226] Concrete products, except block and brick	1.38E-06	2.31E-06	1.15E-06	2.04E-06	1.70E-06	1.56E-06	2.05E-06	6.03E-07	4.19E+06	1.67E-06
361500	[A230] Cut stone and stone products	1.82E-05	1.87E-05	2.35E-05	2.53E-05	1.95E-05	2.21E-05	1.79E-05	6.23E-06	7.15E+07	2.84E-05
361600	[A231] Abrasive products	2.77E-05	2.53E-05	4.79E-05	3.63E-05	3.01E-05	4.29E-05	2.35E-05	1.37E-05	7.70E+07	3.06E-05
361900	[A233] Minerals, ground or treated	2.46E-05	2.56E-05	2.20E-05	3.60E-05	3.08E-05	2.28E-05	2.12E-05	8.74E-06	7.36E+07	2.92E-05
362200	[A236] Nonmetallic mineral products, n.e.c.	2.09E-05	2.27E-05	2.93E-05	1.12E-04	2.20E-05	2.74E-05	2.21E-05	8.32E-06	4.93E+07	1.96E-05
370103	[A239] Steel wiredrawing and steel nails and spikes	7.38E-07	9.18E-07	7.02E-07	1.34E-06	1.48E-06	7.93E-07	8.64E-07	3.29E-07	1.15E+06	4.58E-07
370402	[A243] Primary metal products, n.e.c.	1.14E-05	1.30E-05	1.56E-05	2.01E-05	2.29E-05	1.43E-05	1.65E-05	4.11E-06	2.41E+07	9.59E-06
381000	[A250] Nonferrous wiredrawing and insulating	9.86E-06	1.22E-05	2.13E-05	3.62E-05	5.73E-05	1.68E-05	1.55E-05	4.67E-06	3.16E+07	1.26E-05
400300	[A257] (Household heating with) heating equipment, except electric and warm a furnaces	1.87E-01	4.73E-02	1.09E-02	1.77E-02	1.04E-02	3.76E-02	2.65E-02	1.00E-02	5.83E+10	2.32E-02
400901	[A263] Prefabricated metal buildings and components	3.12E-06	4.13E-06	3.48E-06	6.41E-06	7.05E-06	4.59E-06	3.99E-06	1.46E-06	8.24E+06	3.28E-06
410100	[A265] Screw machine products, bolts, etc.	9.18E-06	1.17E-05	1.07E-05	1.95E-05	2.34E-05	1.09E-05	1.20E-05	3.89E-06	3.62E+07	1.44E-05
410202	[A267] Crowns and closures	3.84E-06	4.71E-06	5.35E-06	6.62E-06	6.62E-06	5.41E-06	4.64E-06	1.61E-06	9.07E+06	3.61E-06
410203	[A268] Metal stampings, n.e.c.	1.29E-04	1.65E-04	1.53E-04	2.71E-04	2.98E-04	1.62E-04	1.66E-04	5.88E-05	3.94E+08	1.56E-04
420100	[A269] Cutlery	1.19E-04	1.34E-04	2.11E-04	1.70E-04	1.58E-04	1.56E-04	1.30E-04	4.49E-05	5.99E+08	2.38E-04
420201	[A270] Hand and edge tools, except machine tools and handsaws	8.81E-05	1.07E-04	1.15E-04	1.74E-04	1.90E-04	1.10E-04	1.08E-04	3.62E-05	4.07E+08	1.62E-04
420202	[A271] Saw blades and handsaws	3.43E-05	4.48E-05	4.07E-05	7.33E-05	8.05E-05	4.30E-05	4.72E-05	1.52E-05	1.46E+08	5.81E-05
420300	[A272] Hardware, n.e.c.	3.09E-05	3.85E-05	4.52E-05	6.70E-05	7.69E-05	4.29E-05	3.99E-05	1.35E-05	1.20E+08	4.76E-05
420500	[A275] Miscellaneous fabricated wire products	3.70E-05	4.87E-05	4.42E-05	6.92E-05	7.37E-05	4.36E-05	4.50E-05	1.58E-05	1.13E+08	4.51E-05
420700	[A276] Steel springs, except wire	5.21E-06	6.61E-06	4.77E-06	9.19E-06	9.80E-06	5.56E-06	6.13E-06	2.04E-06	1.49E+07	5.92E-06
420800	[A277] Pipe, valves, and pipe fittings	1.25E-04	1.57E-04	1.55E-04	2.81E-04	3.53E-04	1.54E-04	1.64E-04	5.57E-05	4.79E+08	1.90E-04
421000	[A278] Metal foil and leaf	6.24E-05	6.71E-05	1.03E-04	9.81E-05	9.05E-05	9.77E-05	8.17E-05	2.59E-05	1.66E+08	6.60E-05
421100	[A279] Fabricated metal products, n.e.c.	9.30E-05	1.21E-04	3.88E-04	2.02E-04	1.97E-04	1.37E-04	1.19E-04	3.93E-05	3.15E+08	1.25E-04

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430200	[A281] Internal combustion engines, n.e.c.	1.01E-04	1.35E-04	1.29E-04	2.04E-04	2.01E-04	1.42E-04	1.34E-04	4.44E-05	3.83E+08	1.52E-04
440002	[A283] Lawn and garden equipment	2.14E-04	2.78E-04	3.13E-04	4.12E-04	3.87E-04	3.24E-04	2.72E-04	9.35E-05	8.19E+08	3.26E-04
470401	[A294] Power-driven handtools	1.16E-04	1.43E-04	1.74E-04	2.10E-04	2.12E-04	1.63E-04	1.45E-04	4.79E-05	5.40E+08	2.15E-04
490300	[A307] Blowers and fans	1.83E-04	2.33E-04	2.57E-04	3.36E-04	3.46E-04	2.40E-04	2.32E-04	8.40E-05	8.53E+08	3.39E-04
500300	[A314] Scales and balances, except laboratory	1.09E-04	1.37E-04	2.08E-04	1.95E-04	1.97E-04	1.60E-04	1.39E-04	4.65E-05	5.74E+08	2.28E-04
510102	[A316] Calculating and accounting machines	3.87E-05	5.41E-05	7.20E-05	7.62E-05	7.23E-05	6.62E-05	5.55E-05	1.74E-05	4.34E+08	1.73E-04
510103	[A317] (use of) Electronic computers	1.67E-03	2.42E-03	2.66E-03	2.75E-03	2.63E-03	2.33E-03	3.09E-03	7.00E-04	1.37E+10	5.46E-03
510104	[A318] (use of) Computer peripheral equipment	1.30E-03	1.80E-03	2.43E-03	2.40E-03	2.29E-03	2.16E-03	1.99E-03	5.62E-04	1.00E+10	3.97E-03
510400	[A319] Office machines, n.e.c.	4.08E-05	5.44E-05	8.46E-05	7.20E-05	6.58E-05	7.17E-05	5.43E-05	1.71E-05	4.02E+08	1.60E-04
540100	[A331] (use of) Household cooking equipment	1.07E-02	1.00E-02	5.07E-03	7.09E-03	6.76E-03	5.93E-03	1.53E-02	2.49E-03	1.37E+10	5.45E-03
540200	[A332] (use of) Household refrigerators and freezers	1.17E-02	1.77E-02	9.82E-03	1.16E-02	1.15E-02	8.31E-03	2.95E-02	4.11E-03	2.16E+10	8.57E-03
540300	[A333] (Washing with) household laundry equipment	1.64E-02	2.37E-02	8.91E-03	1.52E-02	1.46E-02	1.07E-02	4.00E-02	5.63E-03	3.19E+10	1.27E-02
540400	[A334] (use of) Electric housewares and fans	1.45E-03	2.04E-03	1.26E-03	1.62E-03	1.58E-03	1.26E-03	3.25E-03	5.25E-04	3.29E+09	1.31E-03
540500	[A335] (use of) Household vacuum cleaners	1.70E-03	2.25E-03	2.03E-03	1.83E-03	1.73E-03	1.73E-03	3.43E-03	5.94E-04	4.02E+09	1.60E-03
540700	[A336] (use of) Household appliances, n.e.c.	7.80E-03	9.50E-03	1.64E-02	1.19E-02	1.19E-02	1.07E-02	1.02E-02	3.04E-03	2.20E+10	8.75E-03
550100	[A337] (use of) Electric lamp bulbs and tubes	7.98E-03	1.23E-02	3.25E-03	6.83E-03	6.55E-03	4.36E-03	2.23E-02	2.74E-03	1.39E+10	5.51E-03
550200	[A338] Lighting fixtures and equipment	1.54E-04	1.76E-04	3.21E-04	2.45E-04	2.33E-04	2.20E-04	1.78E-04	6.17E-05	5.55E+08	2.21E-04
550300	[A339] Wiring devices	2.55E-06	2.94E-06	4.19E-06	4.84E-06	5.65E-06	3.50E-06	3.05E-06	1.02E-06	1.05E+07	4.17E-06
560100	[A340] (use of) Household audio and video equipment	7.58E-03	1.15E-02	4.61E-03	7.43E-03	7.07E-03	5.19E-03	1.98E-02	2.69E-03	1.74E+10	6.90E-03
560200	[A341] Prerecorded records and tapes	8.35E-05	1.05E-04	2.64E-04	1.16E-04	8.68E-05	1.63E-04	1.08E-04	3.35E-05	7.35E+08	2.92E-04
560300	[A342] (use of) Telephone and telegraph apparatus	6.84E-04	1.00E-03	6.56E-04	8.05E-04	7.81E-04	6.37E-04	1.59E-03	2.52E-04	2.74E+09	1.09E-03
560500	[A343] (use of) Communication equipment	7.34E-04	1.11E-03	4.91E-04	7.72E-04	7.55E-04	5.38E-04	1.88E-03	2.64E-04	2.68E+09	1.07E-03
570300	[A346] Other electronic components	1.90E-05	2.26E-05	3.46E-05	3.51E-05	3.85E-05	2.80E-05	2.48E-05	7.75E-06	8.28E+07	3.29E-05
580100	[A347] Storage batteries	2.27E-04	2.40E-04	3.90E-04	5.65E-04	6.70E-04	3.40E-04	2.72E-04	8.62E-05	7.07E+08	2.81E-04
580200	[A348] Primary batteries, dry and wet	2.06E-04	2.22E-04	4.30E-04	3.48E-04	3.28E-04	3.26E-04	2.27E-04	7.69E-05	7.51E+08	2.98E-04
580600	[A350] Magnetic and optical recording media	1.12E-04	1.24E-04	3.34E-04	1.53E-04	1.31E-04	1.86E-04	1.25E-04	4.26E-05	3.12E+08	1.24E-04
590100	[A352] Truck and bus bodies	1.04E-03	1.30E-03	1.39E-03	1.87E-03	1.82E-03	2.38E-03	1.44E-03	4.73E-04	3.65E+09	1.45E-03
590200	[A353] Truck trailers	2.75E-04	3.48E-04	4.71E-04	5.09E-04	4.57E-04	4.67E-04	3.69E-04	1.28E-04	8.76E+08	3.48E-04
590301	[A354] (Driving with) motor vehicles and passenger car bodies	1.54E-01	1.50E-01	1.03E-01	2.07E-01	1.11E-01	1.66E-01	1.03E-01	4.75E-02	2.20E+11	8.76E-02
600100	[A356] Aircraft	4.64E-04	5.54E-04	9.27E-04	7.63E-04	7.54E-04	6.55E-04	5.60E-04	1.93E-04	3.04E+09	1.21E-03
600200	[A357] Aircraft and missile engines and engine parts	1.02E-04	1.24E-04	1.62E-04	1.72E-04	1.66E-04	1.29E-04	1.27E-04	4.01E-05	6.40E+08	2.54E-04
610100	[A359] Ship building and repairing	7.21E-05	8.57E-05	8.65E-05	1.24E-04	1.29E-04	9.15E-05	8.62E-05	2.96E-05	2.77E+08	1.10E-04
610200	[A360] Boat building and repairing	2.43E-04	2.87E-04	4.22E-04	4.07E-04	3.88E-04	3.74E-04	2.83E-04	1.13E-04	8.23E+08	3.27E-04
610500	[A362] Motorcycles, bicycles, and parts	1.10E-03	1.36E-03	1.61E-03	1.90E-03	1.81E-03	1.61E-03	1.30E-03	4.55E-04	5.23E+09	2.08E-03

CEDA code	Name	Abiotic depletion	Global warming GWP100	Ozone layer depletion	Human toxicity htp inf.	Ecotoxicity score	Photo-chemic. oxidation	Acidification	Eutrophication	Euro (2003; k ₂)	Fraction of total expenditure
610601	[A363] Travel trailers and campers	6.91E-05	9.07E-05	1.29E-04	1.25E-04	1.19E-04	1.45E-04	8.69E-05	4.28E-05	3.55E+08	1.41E-04
610603	[A364] Motor homes	8.49E-05	1.14E-04	1.92E-04	1.63E-04	1.49E-04	1.56E-04	1.09E-04	4.98E-05	4.46E+08	1.77E-04
610700	[A365] Transportation equipment, n.e.c.	8.34E-05	1.13E-04	1.74E-04	1.58E-04	1.43E-04	1.34E-04	1.07E-04	3.59E-05	5.39E+08	2.14E-04
620101	[A366] Search and navigation equipment	1.13E-03	1.41E-03	2.01E-03	1.94E-03	1.90E-03	1.71E-03	1.53E-03	4.82E-04	9.89E+09	3.93E-03
620700	[A373] Watches, clocks, watchcases, and parts	4.24E-05	4.74E-05	6.76E-05	7.50E-05	7.97E-05	5.69E-05	5.11E-05	1.62E-05	2.18E+08	8.65E-05
621100	[A377] Instruments to measure electricity	5.57E-04	6.71E-04	8.77E-04	9.59E-04	9.84E-04	7.85E-04	7.09E-04	2.26E-04	4.01E+09	1.59E-03
630200	[A378] Ophthalmic goods	8.92E-04	9.36E-04	2.11E-03	1.08E-03	8.78E-04	1.20E-03	8.91E-04	2.99E-04	5.31E+09	2.11E-03
630300	[A379] Photographic equipment and supplies	6.09E-04	6.18E-04	1.73E-03	9.71E-04	7.71E-04	9.95E-04	7.72E-04	2.22E-04	3.56E+09	1.41E-03
640101	[A380] Jewelry, precious metal	3.75E-04	4.41E-04	5.16E-04	1.81E-03	2.38E-03	5.23E-04	5.60E-04	1.86E-04	1.59E+09	6.30E-04
640102	[A381] Jewelers' materials and lapidary work	1.34E-04	1.58E-04	1.77E-04	6.21E-04	8.15E-04	1.87E-04	1.96E-04	6.59E-05	1.07E+09	4.26E-04
640104	[A382] Silverware and plated ware	1.89E-05	2.13E-05	2.05E-05	5.37E-05	7.36E-05	2.12E-05	2.32E-05	7.33E-06	7.69E+07	3.06E-05
640105	[A383] Costume jewelry	8.43E-05	9.79E-05	1.16E-04	2.03E-04	2.28E-04	1.05E-04	9.97E-05	3.44E-05	3.83E+08	1.52E-04
640200	[A384] Musical instruments	1.37E-04	1.38E-04	2.57E-04	1.65E-04	1.44E-04	1.79E-04	1.37E-04	4.85E-05	8.99E+08	3.57E-04
640301	[A385] Games, toys, and children's vehicles	6.66E-04	7.01E-04	1.39E-03	8.70E-04	7.99E-04	1.07E-03	7.08E-04	2.81E-04	2.53E+09	1.01E-03
640302	[A386] Dolls and stuffed toys	9.41E-05	1.05E-04	1.70E-04	1.46E-04	1.73E-04	1.44E-04	1.04E-04	6.06E-05	4.12E+08	1.64E-04
640400	[A387] Sporting and athletic goods, n.e.c.	5.49E-04	5.97E-04	9.51E-04	7.87E-04	7.75E-04	8.13E-04	5.89E-04	2.82E-04	2.39E+09	9.51E-04
640501	[A388] Pens, mechanical pencils, and parts	7.77E-05	7.50E-05	1.61E-04	9.92E-05	7.68E-05	9.90E-05	7.69E-05	2.66E-05	3.68E+08	1.46E-04
640502	[A389] Lead pencils and art goods	8.25E-05	5.57E-05	1.01E-04	6.39E-05	5.48E-05	8.51E-05	5.35E-05	2.40E-05	1.66E+08	6.61E-05
640503	[A390] Marking devices	2.38E-06	2.45E-06	4.97E-06	2.86E-06	2.46E-06	3.69E-06	2.29E-06	1.09E-06	8.92E+06	3.54E-06
640504	[A391] Carbon paper and inked ribbons	6.86E-06	6.43E-06	1.05E-05	8.04E-06	7.58E-06	1.05E-05	7.36E-06	3.80E-06	2.00E+07	7.96E-06
640700	[A392] Fasteners, buttons, needles, and pins	1.38E-05	1.48E-05	2.31E-05	3.33E-05	5.59E-05	1.80E-05	1.70E-05	9.50E-06	5.26E+07	2.09E-05
640800	[A393] Non-durable household goods	4.69E-03	5.16E-03	1.40E-02	6.63E-03	7.93E-03	7.63E-03	4.88E-03	8.38E-03	1.80E+10	7.16E-03
641100	[A396] Signs and advertising specialties	3.21E-04	3.47E-04	5.71E-04	4.48E-04	3.99E-04	4.85E-04	3.48E-04	1.24E-04	1.88E+09	7.46E-04
650100	[A398] Railroads and related services	3.67E-03	2.87E-03	2.13E-03	2.70E-03	2.15E-03	2.32E-03	3.29E-03	1.97E-03	9.78E+09	3.89E-03
650200	[A399] Local and suburban transit and interurban highway passenger transportation	1.07E-02	4.43E-03	4.07E-03	4.69E-03	3.62E-03	4.70E-03	4.79E-03	1.51E-03	1.68E+10	6.68E-03
650301	[A400] Trucking and courier services, except air	5.23E-04	3.74E-04	2.85E-04	5.20E-04	2.38E-04	5.64E-04	3.26E-04	1.39E-04	1.21E+09	4.82E-04
650302	[A401] Warehousing and storage	3.26E-05	3.45E-05	3.23E-05	4.35E-05	3.51E-05	4.13E-05	3.69E-05	1.18E-05	1.27E+08	5.04E-05
650400	[A402] Water transportation	4.65E-04	7.76E-04	5.45E-04	4.96E-04	4.23E-04	4.45E-04	6.69E-04	4.34E-04	1.64E+09	6.53E-04
650500	[A403] Air transportation	6.50E-03	3.17E-03	2.26E-03	2.18E-03	1.66E-03	2.25E-03	2.36E-03	8.60E-04	9.30E+09	3.69E-03
650702	[A406] Arrangement of passenger transportation	2.66E-05	2.74E-05	3.49E-05	2.95E-05	2.43E-05	2.96E-05	3.21E-05	9.66E-06	1.93E+08	7.66E-05
660100	[A407] Telephone, telgraph communications, and communications services n.e.c.	1.06E-02	1.34E-02	1.92E-02	1.70E-02	1.52E-02	1.61E-02	1.38E-02	4.53E-03	9.01E+10	3.58E-02
660200	[A408] Cable and other pay television services	1.81E-03	2.42E-03	3.69E-03	3.03E-03	2.68E-03	2.90E-03	2.50E-03	8.47E-04	1.21E+10	4.79E-03
670000	[A409] Radio and TV broadcasting	2.08E-04	2.65E-04	4.49E-04	3.18E-04	2.82E-04	3.10E-04	2.77E-04	1.06E-04	1.40E+09	5.57E-04

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680301	[A413] Water supply and sewerage systems	7.32E-03	6.68E-03	5.95E-03	5.68E-03	4.72E-03	6.17E-03	6.34E-03	2.06E-03	2.10E+10	8.34E-03
700100	[A416] Banking	3.61E-04	4.52E-04	5.69E-04	5.32E-04	3.99E-04	5.46E-04	4.60E-04	1.59E-04	4.92E+09	1.96E-03
700200	[A417] Credit agencies other than banks	8.75E-05	1.14E-04	1.52E-04	1.39E-04	1.08E-04	1.39E-04	1.15E-04	4.07E-05	1.18E+09	4.67E-04
700300	[A418] Security and commodity brokers	2.92E-04	3.99E-04	4.79E-04	4.67E-04	3.77E-04	4.61E-04	4.11E-04	1.33E-04	3.89E+09	1.54E-03
700400	[A419] Insurance carriers	9.36E-03	1.13E-02	1.37E-02	1.34E-02	9.52E-03	1.40E-02	1.14E-02	4.22E-03	1.19E+11	4.73E-02
710201	[A422] Real estate agents, managers, operators, and lessors	3.42E-03	4.05E-03	4.26E-03	4.81E-03	3.96E-03	4.68E-03	3.99E-03	1.46E-03	1.66E+10	6.61E-03
720101	[A424] Hotels	4.88E-03	5.74E-03	6.60E-03	5.93E-03	5.52E-03	6.07E-03	6.41E-03	2.61E-03	2.40E+10	9.52E-03
720102	[A425] Other lodging places	3.34E-03	4.16E-03	4.18E-03	4.04E-03	3.58E-03	3.99E-03	4.94E-03	2.05E-03	1.11E+10	4.43E-03
720201	[A426] Laundry, cleaning, garment services, and shoe repair	3.52E-03	2.67E-03	3.51E-03	2.69E-03	3.08E-03	3.13E-03	2.85E-03	1.78E-03	9.31E+09	3.70E-03
720202	[A427] Funeral service and crematories	1.69E-04	1.46E-04	2.22E-04	1.70E-04	1.47E-04	1.85E-04	1.53E-04	6.34E-05	6.91E+08	2.75E-04
720203	[A428] Portrait photographic studios, and other miscellaneous personal services	2.85E-03	2.91E-03	4.09E-03	3.36E-03	2.78E-03	3.41E-03	3.23E-03	1.15E-03	1.20E+10	4.77E-03
720204	[A429] Electrical repair shops	1.37E-03	1.42E-03	2.37E-03	1.90E-03	1.78E-03	1.78E-03	1.45E-03	4.99E-04	7.07E+09	2.81E-03
720205	[A430] Watch, clock, jewelry, and furniture repair	1.43E-03	1.27E-03	1.75E-03	1.53E-03	1.83E-03	1.58E-03	1.35E-03	1.14E-03	5.19E+09	2.06E-03
720300	[A431] Beauty and barber shops	1.11E-02	1.16E-02	3.91E-02	1.30E-02	1.18E-02	1.36E-02	1.27E-02	4.75E-03	3.55E+10	1.41E-02
730101	[A432] Miscellaneous repair shops	4.53E-04	4.45E-04	2.86E-03	5.59E-04	5.31E-04	5.17E-04	4.31E-04	1.61E-04	2.21E+09	8.80E-04
730102	[A433] Services to dwellings and other buildings	2.41E-04	1.77E-04	2.88E-04	2.02E-04	1.67E-04	2.53E-04	1.86E-04	7.15E-05	1.22E+09	4.85E-04
730103	[A434] Personnel supply services	1.73E-05	1.68E-05	2.62E-05	2.00E-05	1.71E-05	2.04E-05	1.73E-05	6.54E-06	3.04E+08	1.21E-04
730106	[A436] Detective and protective services	3.03E-05	1.95E-05	2.40E-05	2.16E-05	1.83E-05	2.17E-05	2.06E-05	7.45E-06	2.52E+08	1.00E-04
730107	[A437] Miscellaneous equipment rental and leasing	2.46E-03	2.43E-03	4.15E-03	3.10E-03	2.82E-03	2.88E-03	2.49E-03	8.89E-04	9.02E+09	3.59E-03
730108	[A438] Photofinishing labs and commercial photography	3.43E-04	2.95E-04	4.16E-04	3.37E-04	2.83E-04	3.35E-04	3.16E-04	1.05E-04	1.77E+09	7.05E-04
730109	[A439] Other business services	2.98E-03	2.34E-03	3.68E-03	2.69E-03	2.10E-03	2.78E-03	2.45E-03	8.51E-04	1.37E+10	5.43E-03
730200	[A442] Advertising	1.79E-05	1.92E-05	3.15E-05	2.32E-05	1.93E-05	2.53E-05	2.18E-05	7.59E-06	7.29E+07	2.90E-05
730301	[A443] Legal services	5.30E-04	5.12E-04	7.25E-04	5.86E-04	4.80E-04	6.05E-04	5.38E-04	1.98E-04	3.92E+09	1.56E-03
730302	[A444] Engineering, architectural, and surveying services	2.68E-04	2.76E-04	3.58E-04	3.04E-04	2.44E-04	3.06E-04	3.09E-04	9.92E-05	1.44E+09	5.73E-04
730303	[A445] Accounting, auditing and bookkeeping, and miscellaneous services, n.e.c.	5.57E-06	6.08E-06	8.70E-06	7.39E-06	5.99E-06	7.32E-06	6.45E-06	2.27E-06	3.38E+07	1.34E-05
740000	[A446] Eating and drinking places	6.17E-02	8.08E-02	7.88E-02	7.36E-02	8.10E-02	7.82E-02	8.45E-02	1.21E-01	2.07E+11	8.23E-02
750001	[A447] Automotive rental and leasing, without drivers	4.94E-03	5.55E-03	7.08E-03	7.28E-03	6.43E-03	6.81E-03	5.46E-03	2.05E-03	1.88E+10	7.46E-03
750002	[A448] Automotive repair shops and services	1.15E-02	1.22E-02	1.40E-02	1.59E-02	1.48E-02	1.40E-02	1.26E-02	4.15E-03	5.18E+10	2.06E-02
750003	[A449] Automobile parking and car washes	9.43E-04	8.82E-04	1.11E-03	8.85E-04	7.19E-04	9.19E-04	9.69E-04	2.97E-04	5.53E+09	2.20E-03
760101	[A450] Motion picture services and theaters	5.76E-04	6.62E-04	9.41E-04	7.62E-04	6.91E-04	7.90E-04	7.05E-04	3.44E-04	3.88E+09	1.54E-03
760102	[A451] Video tape rental	5.45E-04	6.50E-04	8.15E-04	6.98E-04	5.86E-04	6.96E-04	7.26E-04	2.48E-04	3.20E+09	1.27E-03
760201	[A452] Theatrical producers (except motion picture), bands, orchestras and entertainers	4.94E-04	5.68E-04	1.55E-03	6.74E-04	6.14E-04	6.82E-04	5.80E-04	2.64E-04	3.28E+09	1.30E-03

Environmental Impact of Products (EIPRO)

CEDA code	Name	Abiotic depletion	Global warming GWP100	Ozone layer depletion	Human toxicity htp inf.	Ecotoxicity score	Photo-chemic. oxidation	Acidification	Eutrophication	Euro (2003; k ₂)	Fraction of total expenditure
760202	[A453] Bowling centers	1.25E-04	1.40E-04	1.85E-04	1.17E-04	1.02E-04	1.14E-04	1.89E-04	4.55E-05	6.05E+08	2.40E-04
760203	[A454] Professional sports clubs and promoters	1.26E-04	1.55E-04	5.41E-04	1.90E-04	1.79E-04	1.87E-04	1.54E-04	7.34E-05	1.21E+09	4.82E-04
760204	[A455] Racing, including track operation	2.63E-04	2.92E-04	6.45E-04	3.11E-04	2.84E-04	3.23E-04	3.14E-04	1.82E-04	1.74E+09	6.92E-04
760205	[A456] Physical fitness facilities and membership sports and recreation clubs	1.06E-03	1.19E-03	2.11E-03	1.16E-03	1.05E-03	1.14E-03	1.46E-03	4.19E-04	5.80E+09	2.30E-03
760206	[A457] Other amusement and recreation services	7.76E-03	9.08E-03	1.97E-02	9.23E-03	8.87E-03	1.00E-02	1.01E-02	6.36E-03	5.43E+10	2.16E-02
770100	[A458] Doctors and dentists	4.20E-03	4.38E-03	6.69E-03	5.03E-03	4.11E-03	5.76E-03	4.50E-03	1.64E-03	5.05E+10	2.01E-02
770200	[A459] Hospitals	1.61E-03	1.70E-03	2.69E-03	1.89E-03	1.59E-03	2.09E-03	1.79E-03	9.31E-04	6.04E+09	2.40E-03
770301	[A460] Nursing and personal care facilities	9.65E-04	1.13E-03	1.14E-03	9.98E-04	9.19E-04	1.07E-03	1.35E-03	7.34E-04	6.24E+09	2.48E-03
770303	[A461] Other medical and health services	1.46E-03	1.33E-03	2.57E-03	1.57E-03	1.30E-03	2.01E-03	1.29E-03	4.99E-04	1.16E+10	4.61E-03
770304	[A462] Veterinary services	3.27E-04	3.64E-04	6.66E-04	3.68E-04	3.17E-04	4.21E-04	3.48E-04	2.88E-04	1.33E+09	5.29E-04
770401	[A464] Elementary and secondary schools	9.49E-04	1.11E-03	1.40E-03	1.30E-03	1.11E-03	1.26E-03	1.20E-03	3.83E-04	7.01E+09	2.78E-03
770402	[A465] Colleges, universities, and professional schools	2.26E-03	2.69E-03	3.70E-03	3.31E-03	2.78E-03	3.29E-03	3.35E-03	1.04E-03	1.96E+10	7.77E-03
770403	[A466] Private libraries, vocational schools, and educational services, n.e.c.	7.80E-04	8.28E-04	1.09E-03	9.72E-04	8.04E-04	9.48E-04	8.51E-04	2.89E-04	6.39E+09	2.54E-03
770501	[A467] Business associations and professional membership organizations	6.80E-05	7.57E-05	1.16E-04	8.50E-05	6.90E-05	9.09E-05	8.26E-05	2.79E-05	3.19E+08	1.27E-04
770502	[A468] Labor organizations, civic, social, and fraternal associations	3.13E-04	3.43E-04	4.41E-04	3.72E-04	3.02E-04	4.02E-04	3.86E-04	1.36E-04	1.46E+09	5.79E-04
770503	[A469] Religious organizations	2.27E-04	2.55E-04	4.96E-04	2.97E-04	2.55E-04	2.98E-04	2.54E-04	9.72E-05	2.76E+09	1.10E-03
770504	[A470] Other membership organizations	5.14E-04	6.11E-04	8.18E-04	7.07E-04	5.86E-04	7.20E-04	6.47E-04	2.25E-04	1.96E+09	7.79E-04
770600	[A471] Job training and related services	3.18E-04	3.13E-04	5.20E-04	3.61E-04	3.27E-04	3.91E-04	3.25E-04	1.41E-04	1.85E+09	7.36E-04
770700	[A472] Child day care services	3.66E-04	4.27E-04	4.85E-04	4.20E-04	4.04E-04	4.50E-04	4.55E-04	5.44E-04	1.99E+09	7.92E-04
770800	[A473] Residential care	3.40E-04	4.14E-04	3.88E-04	3.87E-04	3.85E-04	4.11E-04	4.41E-04	5.15E-04	1.72E+09	6.84E-04
770900	[A474] Social services, n.e.c.	1.29E-03	1.28E-03	1.67E-03	1.48E-03	1.28E-03	1.50E-03	1.34E-03	7.79E-04	4.25E+09	1.69E-03
780100	[A475] Postal Service	6.57E-03	5.75E-03	5.76E-03	5.79E-03	4.76E-03	5.66E-03	5.45E-03	2.32E-03	6.24E+09	2.48E-03
	Total:	1	1	1	1	1	1	1	1	2.52E+12	1

5.3.3 Normalised environmental impact scores per Euro of product (table)²²

All products have been covered in this table, including products which are only intermediate products in production. The scores of these products are not cradle-to-grave but cradle-to-gate only. This table has been produced by forcing a demand of 1 Euro for each product on the CEDA model.

CEDA code	Name	Abiotic depletion	Global warming	Ozone layer deplet.	Human toxicity	Eco-toxicity	Photo-chemical oxidat.	Acidi-fication	Eutrophi-cation	Aggre-gate score
10100	[A1] Dairy farm products	4.81E-13	6.47E-13	4.31E-13	4.76E-13	7.22E-13	5.13E-13	6.74E-13	1.43E-12	7.12E-13
10200	[A2] Poultry and eggs	4.89E-13	6.94E-13	5.72E-13	5.24E-13	5.98E-13	6.12E-13	7.35E-13	1.24E-12	7.20E-13
10301	[A3] Meat animals	4.36E-13	7.25E-13	4.50E-13	4.73E-13	6.75E-13	5.09E-13	7.73E-13	1.46E-12	7.45E-13
10302	[A4] Miscellaneous livestock	5.93E-13	9.03E-13	6.23E-13	6.23E-13	7.70E-13	7.05E-13	9.49E-13	1.69E-12	9.20E-13
20100	[A5] Cotton	3.17E-13	4.46E-13	3.35E-13	4.89E-13	8.24E-12	3.51E-13	2.98E-13	6.98E-12	1.95E-12
20201	[A6] Food grains	4.99E-13	5.13E-13	2.88E-13	3.58E-13	2.97E-13	3.28E-13	3.02E-13	6.22E-12	1.28E-12
20202	[A7] Feed grains	4.92E-13	4.93E-13	3.69E-13	3.64E-13	6.41E-13	4.00E-13	3.44E-13	1.07E-12	5.44E-13
20203	[A8] Grass seeds	3.26E-13	4.02E-13	2.52E-13	2.25E-13	1.66E-13	2.69E-13	2.32E-13	1.16E-13	2.77E-13
20300	[A9] Tobacco	6.44E-13	5.42E-13	3.68E-13	4.26E-13	8.34E-13	3.96E-13	3.34E-13	3.74E-13	4.86E-13
20401	[A10] Fruits	5.22E-13	5.08E-13	5.80E-13	4.74E-13	7.19E-13	4.33E-13	3.20E-13	7.65E-13	5.40E-13
20402	[A11] Tree nuts	4.72E-13	4.83E-13	2.90E-13	5.32E-13	6.25E-12	3.40E-13	3.10E-13	9.71E-13	9.33E-13
20501	[A12] Vegetables	2.38E-13	3.96E-13	2.64E-13	3.30E-13	6.01E-13	2.89E-13	2.61E-13	2.03E-13	3.36E-13
20502	[A13] Sugar crops	2.59E-13	3.83E-13	2.59E-13	3.16E-13	1.96E-12	2.68E-13	2.28E-13	5.03E-12	1.15E-12
20503	[A14] Miscellaneous crops	3.75E-13	4.96E-13	3.48E-13	1.61E-12	6.43E-12	3.80E-13	3.56E-13	3.20E-11	5.80E-12
20600	[A15] Oil bearing crops	3.11E-13	4.71E-13	3.63E-13	2.96E-13	2.39E-13	3.64E-13	2.98E-13	1.71E-13	3.45E-13
20702	[A16] Greenhouse and nursery products	1.45E-13	1.25E-13	9.58E-14	1.12E-13	9.00E-14	1.18E-13	1.79E-13	8.51E-14	1.17E-13
30001	[A17] Forestry products	2.39E-13	2.61E-13	2.60E-13	2.68E-13	2.71E-13	2.85E-13	2.70E-13	3.16E-13	2.73E-13
30002	[A18] Commercial fishing	2.79E-13	2.46E-13	1.79E-13	1.46E-13	1.14E-13	1.72E-13	1.47E-13	7.93E-14	1.79E-13
40001	[A19] Agricultural, forestry, and fishery services	4.33E-13	4.01E-13	4.24E-13	4.53E-13	4.52E-13	4.60E-13	4.22E-13	4.15E-13	4.25E-13
40002	[A20] Landscape and horticultural services	1.15E-13	8.13E-14	6.75E-14	7.96E-14	5.26E-14	9.49E-14	8.99E-14	3.98E-14	7.56E-14
50001	[A21] Iron and ferroalloy ores, and miscellaneous metal ores, n.e.c.	2.11E-13	3.22E-13	1.39E-13	5.44E-13	1.35E-12	2.16E-13	3.96E-13	1.43E-13	3.85E-13

²² Impact scores expressed as a fraction of total impacts in the EU-25 as related to public and private final expenditure together.

CEDA code	Name	Abiotic depletion	Global warming	Ozone layer deplet.	Human toxicity	Eco-toxicity	Photo-chemical oxidat.	Acidi-fication	Eutrophication	Aggre-gate score
60100	[A22] Copper ore	1.62E-13	2.91E-13	1.80E-13	3.89E-12	1.40E-11	2.68E-13	3.30E-13	6.58E-14	1.82E-12
60200	[A23] Nonferrous metal ores, except copper	1.53E-13	2.06E-13	1.93E-13	3.79E-12	4.43E-12	2.85E-13	1.88E-13	5.01E-14	1.09E-12
70000	[A24] Coal	1.37E-12	2.77E-13	9.75E-14	1.83E-12	2.14E-12	1.21E-13	1.29E-13	4.46E-14	6.59E-13
80001	[A25] (Use of) Crude petroleum and natural gas	2.60E-12	8.85E-13	9.92E-14	1.81E-13	9.96E-14	2.23E-13	4.15E-13	1.15E-13	5.49E-13
90001	[A26] Dimension, crushed and broken stone	1.34E-13	1.72E-13	7.15E-14	1.52E-13	1.20E-13	1.15E-13	1.41E-13	3.56E-14	1.30E-13
90002	[A27] Sand and gravel	1.22E-13	1.55E-13	5.20E-14	1.21E-13	9.61E-14	8.40E-14	1.25E-13	2.74E-14	1.11E-13
90003	[A28] Clay, ceramic, and refractory minerals	1.84E-13	2.31E-13	1.07E-13	3.09E-13	3.46E-13	1.80E-13	1.39E-13	3.54E-14	2.03E-13
90004	[A29] Nonmetallic mineral services and miscellaneous	2.47E-13	3.57E-13	2.70E-13	4.28E-13	3.97E-13	3.20E-13	2.77E-13	8.49E-14	3.12E-13
100000	[A30] Chemical and fertilizer minerals	1.60E-13	6.62E-13	8.16E-14	2.17E-13	2.08E-13	1.44E-13	1.52E-13	3.48E-14	3.24E-13
110101	[A31] New residential 1 unit structures, nonfarm	1.79E-13	2.14E-13	2.44E-13	2.75E-13	2.36E-13	2.58E-13	2.02E-13	7.72E-14	2.08E-13
110102	[A32] New residential 2-4 unit structures, nonfarm	1.80E-13	2.86E-13	2.32E-13	3.29E-13	2.59E-13	2.92E-13	2.71E-13	9.55E-14	2.54E-13
110105	[A33] New additions & alterations, nonfarm, construction	2.01E-13	2.46E-13	2.69E-13	3.11E-13	2.59E-13	2.88E-13	2.45E-13	8.95E-14	2.37E-13
110108	[A34] New residential garden and high-rise apartments construction	1.59E-13	2.33E-13	2.04E-13	2.90E-13	2.46E-13	2.48E-13	2.39E-13	8.05E-14	2.17E-13
110400	[A35] New highways, bridges, and other horizontal construction	3.41E-13	2.64E-13	2.02E-13	2.91E-13	1.88E-13	2.74E-13	2.42E-13	7.94E-14	2.36E-13
110501	[A36] New farm residential construction	1.92E-13	2.24E-13	2.24E-13	2.90E-13	2.35E-13	2.61E-13	2.25E-13	8.23E-14	2.17E-13
110601	[A37] Petroleum and natural gas well drilling	1.51E-13	1.46E-13	1.36E-13	1.50E-13	1.33E-13	1.62E-13	1.19E-13	4.11E-14	1.29E-13
110602	[A38] Petroleum, natural gas, and solid mineral exploration	1.49E-13	1.48E-13	1.09E-13	1.46E-13	1.29E-13	1.32E-13	1.18E-13	4.02E-14	1.25E-13
110603	[A39] Access structures for solid mineral development	1.01E-13	1.20E-13	1.48E-13	1.25E-13	1.01E-13	1.22E-13	1.24E-13	3.88E-14	1.08E-13
110800	[A40] New office, industrial and commercial buildings construction	1.51E-13	2.07E-13	2.29E-13	2.83E-13	2.64E-13	2.39E-13	1.98E-13	7.21E-14	2.04E-13
110900	[A41] Other new construction	1.62E-13	2.23E-13	2.36E-13	2.89E-13	2.69E-13	2.40E-13	2.11E-13	7.60E-14	2.14E-13
120101	[A42] Maintenance and repair of farm and nonfarm residential structures	2.11E-13	1.96E-13	2.25E-13	2.58E-13	2.11E-13	2.52E-13	1.96E-13	7.58E-14	1.97E-13
120214	[A43] Maintenance and repair of highways & streets	3.45E-13	1.94E-13	1.83E-13	2.16E-13	1.36E-13	2.28E-13	1.75E-13	6.54E-14	1.83E-13
120215	[A44] Maintenance and repair of petroleum and natural gas wells	1.11E-13	9.29E-14	8.90E-14	1.05E-13	8.08E-14	1.11E-13	1.04E-13	3.31E-14	8.83E-14
120300	[A45] Other repair and maintenance construction	1.45E-13	1.67E-13	2.42E-13	2.34E-13	2.14E-13	2.07E-13	1.67E-13	6.26E-14	1.72E-13
130100	[A46] Guided missiles and space vehicles	3.73E-13	3.96E-13	8.63E-13	5.27E-13	5.04E-13	4.46E-13	4.29E-13	1.39E-13	4.16E-13
130200	[A47] Ammunition, except for small arms, n.e.c.	5.77E-13	5.39E-13	7.04E-13	8.18E-13	8.85E-13	6.18E-13	5.75E-13	2.30E-13	5.84E-13
130300	[A48] Tanks and tank components	5.70E-13	6.02E-13	7.73E-13	8.35E-13	8.08E-13	7.00E-13	6.22E-13	2.22E-13	6.16E-13
130500	[A49] Small arms	5.55E-13	5.49E-13	6.72E-13	9.31E-13	1.03E-12	5.88E-13	5.91E-13	2.09E-13	6.09E-13
130600	[A50] Small arms ammunition	6.30E-13	5.74E-13	6.99E-13	1.36E-12	2.07E-12	6.94E-13	7.03E-13	2.51E-13	7.93E-13
130700	[A51] Ordnance and accessories, n.e.c.	2.97E-13	2.61E-13	3.61E-13	3.46E-13	3.65E-13	2.98E-13	2.78E-13	9.39E-14	2.69E-13
140101	[A52] Meat packing plants	6.05E-13	1.11E-12	6.65E-13	7.21E-13	9.77E-13	7.77E-13	1.23E-12	2.21E-12	1.13E-12

CEDA code	Name	Abiotic depletion	Global warming	Ozone layer deplet.	Human toxicity	Eco-toxicity	Photo-chemical oxidat.	Acidi-fication	Eutrophication	Aggre-gate score
140102	[A53] Sausages and other prepared meat products	6.76E-13	1.21E-12	7.92E-13	8.48E-13	1.05E-12	9.23E-13	1.34E-12	2.30E-12	1.24E-12
140105	[A54] Poultry slaughtering and processing	6.17E-13	9.58E-13	7.58E-13	7.20E-13	7.67E-13	8.33E-13	1.09E-12	1.63E-12	9.75E-13
140200	[A55] Creamery butter	5.24E-13	7.19E-13	5.67E-13	5.73E-13	7.79E-13	6.40E-13	7.96E-13	1.42E-12	7.84E-13
140300	[A56] Natural, processed, and imitation cheese	6.74E-13	9.65E-13	7.22E-13	7.54E-13	1.06E-12	8.29E-13	1.07E-12	1.99E-12	1.06E-12
140400	[A57] Dry, condensed, and evaporated dairy products	4.98E-13	6.70E-13	5.47E-13	5.50E-13	7.68E-13	6.04E-13	7.27E-13	1.32E-12	7.37E-13
140500	[A58] Ice cream and frozen desserts	5.67E-13	7.07E-13	7.05E-13	6.23E-13	7.92E-13	7.44E-13	7.85E-13	1.28E-12	7.86E-13
140600	[A59] Fluid milk	6.27E-13	8.69E-13	6.80E-13	6.78E-13	9.50E-13	7.61E-13	9.61E-13	1.79E-12	9.55E-13
140700	[A60] Canned and cured fish and seafoods	4.85E-13	5.15E-13	3.83E-13	3.72E-13	3.26E-13	4.03E-13	3.79E-13	2.79E-13	4.14E-13
140800	[A61] Canned specialties	3.71E-13	4.58E-13	4.55E-13	4.85E-13	5.07E-13	5.11E-13	4.67E-13	5.83E-13	4.86E-13
140900	[A62] Canned fruits, vegetables, preserves, jams, and jellies	4.08E-13	4.94E-13	4.58E-13	5.33E-13	5.94E-13	5.24E-13	4.56E-13	5.87E-13	5.15E-13
141000	[A63] Dehydrated fruits, vegetables, and soups	4.76E-13	5.11E-13	5.40E-13	5.23E-13	5.48E-13	5.64E-13	4.69E-13	1.01E-12	5.91E-13
141100	[A64] Pickles, sauces, and salad dressings	3.22E-13	4.07E-13	4.61E-13	4.20E-13	5.70E-13	4.45E-13	3.74E-13	8.97E-13	4.93E-13
141200	[A65] Prepared fresh or frozen fish and seafoods	5.30E-13	6.23E-13	4.35E-13	4.01E-13	3.69E-13	4.50E-13	4.88E-13	4.89E-13	5.08E-13
141301	[A66] Frozen fruits, fruit juices, and vegetables	5.09E-13	6.22E-13	6.27E-13	6.42E-13	7.40E-13	6.48E-13	5.19E-13	6.05E-13	6.21E-13
141302	[A67] Frozen specialties, n.e.c.	4.65E-13	6.52E-13	5.80E-13	5.69E-13	6.97E-13	6.32E-13	6.81E-13	1.11E-12	6.97E-13
141401	[A68] Flour and other grain mill products	5.38E-13	6.71E-13	4.32E-13	5.13E-13	5.46E-13	4.85E-13	4.73E-13	5.42E-12	1.30E-12
141402	[A69] Cereal breakfast foods	4.58E-13	5.27E-13	5.10E-13	4.98E-13	5.82E-13	5.24E-13	4.68E-13	2.50E-12	8.14E-13
141403	[A70] Prepared flour mixes and doughs	5.34E-13	6.62E-13	5.40E-13	5.73E-13	7.15E-13	5.88E-13	5.43E-13	4.11E-12	1.14E-12
141501	[A71] Dog and cat food	5.56E-13	6.87E-13	6.95E-13	6.16E-13	6.80E-13	6.85E-13	5.80E-13	1.80E-12	8.28E-13
141502	[A72] Prepared feeds, n.e.c.	6.41E-13	8.35E-13	7.79E-13	6.51E-13	8.72E-13	7.78E-13	6.15E-13	1.55E-12	8.81E-13
141600	[A73] Rice milling	7.27E-13	7.42E-13	8.39E-13	6.27E-13	5.44E-13	8.23E-13	5.34E-13	5.82E-12	1.47E-12
141700	[A74] Wet corn milling	5.70E-13	5.62E-13	4.02E-13	4.29E-13	6.00E-13	4.69E-13	6.15E-13	9.50E-13	5.88E-13
141801	[A75] Bread, cake, and related products	2.73E-13	3.23E-13	2.93E-13	3.05E-13	4.02E-13	3.22E-13	3.03E-13	1.20E-12	4.52E-13
141802	[A76] Cookies and crackers	3.30E-13	3.77E-13	3.93E-13	3.81E-13	5.37E-13	4.16E-13	3.68E-13	1.14E-12	5.05E-13
141803	[A77] Frozen bakery products, except bread	4.86E-13	5.95E-13	6.39E-13	5.64E-13	7.96E-13	6.29E-13	5.76E-13	1.27E-12	7.03E-13
141900	[A78] Sugar	6.64E-13	7.57E-13	4.51E-13	7.26E-13	2.47E-12	7.05E-13	9.27E-13	5.77E-12	1.61E-12
142002	[A79] Chocolate and cocoa products	4.99E-13	5.93E-13	5.88E-13	5.97E-13	1.06E-12	6.14E-13	5.68E-13	1.51E-12	7.58E-13
142004	[A80] Salted and roasted nuts and seeds	4.44E-13	5.88E-13	4.41E-13	5.56E-13	3.81E-12	4.77E-13	4.10E-13	7.84E-13	8.01E-13
142005	[A81] Candy and other confectionery products	4.05E-13	4.66E-13	5.09E-13	4.74E-13	8.95E-13	5.29E-13	4.70E-13	9.80E-13	5.80E-13
142101	[A82] Malt beverages	2.71E-13	3.04E-13	2.85E-13	3.82E-13	4.04E-13	3.56E-13	3.10E-13	5.72E-13	3.67E-13
142102	[A83] Malt	7.40E-13	7.27E-13	4.32E-13	5.60E-13	8.33E-13	5.37E-13	5.03E-13	1.28E-12	7.42E-13

CEDA code	Name	Abiotic depletion	Global warming	Ozone layer deplet.	Human toxicity	Eco-toxicity	Photo-chemical oxidat.	Acidi-fication	Eutrophication	Aggre-gate score
142103	[A84] Wines, brandy, and brandy spirits	3.19E-13	3.58E-13	3.62E-13	3.86E-13	4.19E-13	3.59E-13	2.90E-13	3.40E-13	3.58E-13
142104	[A85] Distilled and blended liquors	2.02E-13	2.07E-13	2.82E-13	2.52E-13	1.85E-13	3.59E-13	1.87E-13	2.01E-13	2.28E-13
142200	[A86] Bottled and canned soft drinks	4.30E-13	4.92E-13	6.30E-13	5.83E-13	5.68E-13	6.35E-13	5.15E-13	4.39E-13	5.23E-13
142300	[A87] Flavoring extracts and flavoring syrups, n.e.c.	2.59E-13	2.72E-13	3.25E-13	2.81E-13	3.49E-13	3.24E-13	2.55E-13	4.69E-13	3.14E-13
142400	[A88] Cottonseed oil mills	5.55E-13	6.51E-13	4.02E-13	6.41E-13	7.61E-12	6.44E-13	5.12E-13	6.40E-12	1.97E-12
142500	[A89] Soybean oil mills	5.62E-13	8.94E-13	6.19E-13	5.70E-13	5.66E-13	6.78E-13	5.54E-13	7.57E-13	7.22E-13
142600	[A90] Vegetable oil mills, n.e.c.	4.26E-13	6.34E-13	1.39E-12	5.61E-13	2.57E-12	5.59E-13	4.20E-13	2.26E-12	1.01E-12
142700	[A91] Animal and marine fats and oils	5.97E-13	7.20E-13	6.06E-13	5.42E-13	5.97E-13	5.99E-13	6.95E-13	9.15E-13	6.86E-13
142800	[A92] Roasted coffee	5.53E-13	6.35E-13	6.70E-13	6.54E-13	8.19E-13	6.07E-13	4.34E-13	8.16E-13	6.60E-13
142900	[A93] Edible fats and oils, n.e.c.	5.41E-13	7.90E-13	6.94E-13	6.11E-13	1.02E-12	7.05E-13	5.86E-13	1.09E-12	7.82E-13
143000	[A94] Manufactured ice	2.25E-13	2.32E-13	2.64E-13	2.13E-13	1.75E-13	2.42E-13	2.82E-13	7.75E-14	2.07E-13
143100	[A95] Macaroni, spaghetti, vermicelli, and noodles	4.80E-13	5.21E-13	5.99E-13	5.09E-13	4.41E-13	5.72E-13	4.66E-13	1.96E-12	7.32E-13
143201	[A96] Potato chips and similar snacks	3.54E-13	4.14E-13	4.97E-13	4.40E-13	5.59E-13	4.91E-13	3.52E-13	9.08E-13	5.06E-13
143202	[A97] Food preparations, n.e.c.	4.12E-13	4.97E-13	5.56E-13	5.49E-13	8.92E-13	5.50E-13	4.55E-13	2.73E-12	8.69E-13
150101	[A98] Cigarettes	1.96E-13	2.13E-13	2.18E-13	2.18E-13	2.73E-13	2.16E-13	1.72E-13	1.07E-13	1.99E-13
150102	[A99] Cigars	2.01E-13	2.25E-13	2.02E-13	2.61E-13	3.17E-13	2.10E-13	1.86E-13	1.04E-13	2.13E-13
150103	[A100] Chewing and smoking tobacco and snuff	1.60E-13	1.77E-13	1.83E-13	1.89E-13	2.25E-13	1.82E-13	1.50E-13	8.33E-14	1.67E-13
150200	[A101] Tobacco stemming and redrying	6.71E-13	7.39E-13	4.70E-13	6.43E-13	1.09E-12	5.41E-13	4.52E-13	4.23E-13	6.45E-13
160100	[A102] Broadwoven fabric mills and fabric finishing plants	3.00E-13	3.34E-13	4.40E-13	3.93E-13	1.50E-12	4.76E-13	3.48E-13	1.21E-12	5.74E-13
160200	[A103] Narrow fabric mills	3.10E-13	3.04E-13	5.08E-13	4.03E-13	6.30E-13	5.30E-13	3.50E-13	4.01E-13	3.92E-13
160300	[A104] Yarn mills and finishing of textiles, n.e.c.	3.85E-13	4.28E-13	6.60E-13	5.51E-13	2.05E-12	6.62E-13	4.72E-13	1.64E-12	7.78E-13
160400	[A105] Thread mills	3.98E-13	4.01E-13	6.07E-13	5.13E-13	1.38E-12	6.43E-13	4.35E-13	1.03E-12	6.18E-13
170100	[A106] Carpets and rugs	3.81E-13	3.82E-13	7.03E-13	5.19E-13	9.93E-13	6.98E-13	3.92E-13	7.95E-13	5.55E-13
170600	[A107] Coated fabrics, not rubberized	3.98E-13	3.95E-13	2.08E-12	5.52E-13	6.82E-13	8.06E-13	3.77E-13	4.17E-13	5.65E-13
170700	[A108] Tire cord and fabrics	3.96E-13	3.63E-13	8.19E-13	5.03E-13	7.38E-13	7.03E-13	4.22E-13	4.45E-13	4.85E-13
170900	[A109] Cordage and twine	4.22E-13	4.49E-13	9.73E-13	5.88E-13	8.38E-13	7.00E-13	4.63E-13	5.27E-13	5.60E-13
171001	[A110] Nonwoven fabrics	4.22E-13	4.47E-13	1.58E-12	4.89E-13	6.35E-13	7.53E-13	4.34E-13	3.68E-13	5.37E-13
171100	[A111] Textile goods, n.e.c.	3.65E-13	3.82E-13	5.74E-13	4.54E-13	6.50E-13	5.39E-13	3.92E-13	4.74E-13	4.51E-13
180101	[A112] Women's hosiery, except socks	3.06E-13	3.24E-13	4.58E-13	4.03E-13	8.88E-13	4.81E-13	3.49E-13	6.59E-13	4.49E-13
180102	[A113] Hosiery, n.e.c.	3.09E-13	3.29E-13	4.47E-13	4.04E-13	9.55E-13	4.71E-13	3.44E-13	7.18E-13	4.63E-13
180300	[A114] Knit fabric mills	3.98E-13	4.21E-13	5.59E-13	5.19E-13	1.33E-12	6.16E-13	4.25E-13	1.01E-12	6.14E-13

CEDA code	Name	Abiotic depletion	Global warming	Ozone layer deplet.	Human toxicity	Eco-toxicity	Photo-chemical oxidat.	Acidi-fication	Eutrophication	Aggre-gate score
180400	[A115] Apparel made from purchased materials	2.48E-13	2.88E-13	3.96E-13	3.27E-13	8.12E-13	3.82E-13	2.90E-13	6.24E-13	3.94E-13
190100	[A116] Curtains and draperies	2.32E-13	2.75E-13	4.12E-13	3.21E-13	9.07E-13	3.95E-13	2.79E-13	7.07E-13	4.08E-13
190200	[A117] Housefurnishings, n.e.c.	2.77E-13	3.15E-13	4.85E-13	3.74E-13	1.11E-12	4.60E-13	3.21E-13	8.69E-13	4.84E-13
190301	[A118] Textile bags	2.58E-13	3.05E-13	6.59E-13	3.63E-13	7.49E-13	4.74E-13	3.02E-13	5.56E-13	4.14E-13
190302	[A119] Canvas and related products	1.87E-13	2.01E-13	3.36E-13	2.28E-13	4.85E-13	2.65E-13	1.89E-13	3.55E-13	2.59E-13
190303	[A120] Pleating and stitching	2.38E-13	2.73E-13	4.71E-13	2.90E-13	5.65E-13	3.77E-13	2.70E-13	4.34E-13	3.38E-13
190304	[A121] Automotive and apparel trimmings	2.50E-13	2.89E-13	6.36E-13	3.07E-13	5.26E-13	4.37E-13	2.81E-13	4.18E-13	3.56E-13
190305	[A122] Schiffl machine embroideries	1.62E-13	1.82E-13	2.22E-13	2.04E-13	5.64E-13	2.43E-13	1.86E-13	4.43E-13	2.59E-13
190306	[A123] Fabricated textile products, n.e.c.	2.40E-13	2.76E-13	6.48E-13	3.21E-13	6.51E-13	4.26E-13	2.72E-13	4.82E-13	3.71E-13
200100	[A124] Logging	2.49E-13	2.44E-13	2.48E-13	2.54E-13	2.34E-13	2.72E-13	2.43E-13	2.26E-13	2.45E-13
200200	[A125] Sawmills and planing mills, general	2.29E-13	2.43E-13	2.22E-13	2.59E-13	1.96E-13	2.99E-13	2.54E-13	1.64E-13	2.35E-13
200300	[A126] Hardwood dimension and flooring mills	2.03E-13	2.01E-13	1.69E-13	2.12E-13	1.45E-13	2.68E-13	2.13E-13	9.58E-14	1.88E-13
200400	[A127] Special product sawmills, n.e.c.	4.24E-13	5.21E-13	3.70E-13	6.68E-13	3.28E-13	7.57E-13	4.84E-13	3.09E-13	5.07E-13
200501	[A128] Millwork	2.48E-13	2.78E-13	2.79E-13	3.42E-13	2.42E-13	3.80E-13	2.80E-13	1.30E-13	2.72E-13
200502	[A129] Wood kitchen cabinets	2.17E-13	2.33E-13	2.62E-13	2.78E-13	2.04E-13	3.50E-13	2.35E-13	1.00E-13	2.30E-13
200600	[A130] Veneer and plywood	3.13E-13	3.20E-13	3.31E-13	3.41E-13	2.52E-13	4.72E-13	3.26E-13	1.79E-13	3.12E-13
200701	[A131] Structural wood members, n.e.c.	2.66E-13	2.90E-13	5.06E-13	3.50E-13	2.41E-13	4.23E-13	2.84E-13	1.42E-13	2.95E-13
200702	[A132] Prefabricated wood buildings and components	2.92E-13	3.34E-13	3.64E-13	4.20E-13	3.20E-13	4.47E-13	3.21E-13	1.61E-13	3.30E-13
200703	[A133] Mobile homes	2.50E-13	3.01E-13	3.70E-13	4.08E-13	3.69E-13	3.79E-13	2.88E-13	1.31E-13	3.05E-13
200800	[A134] Wood preserving	3.44E-13	2.94E-13	3.92E-13	3.40E-13	2.38E-13	4.59E-13	2.83E-13	1.51E-13	2.98E-13
200901	[A135] Wood pallets and skids	2.27E-13	2.40E-13	2.87E-13	2.71E-13	1.80E-13	3.18E-13	2.44E-13	1.23E-13	2.33E-13
200903	[A136] Wood products, n.e.c.	2.54E-13	2.65E-13	2.98E-13	3.37E-13	2.73E-13	4.12E-13	2.83E-13	1.32E-13	2.73E-13
200904	[A137] Reconstituted wood products	4.17E-13	3.55E-13	5.81E-13	3.34E-13	2.58E-13	4.60E-13	3.55E-13	1.15E-13	3.32E-13
210000	[A138] Wood containers, n.e.c.	4.10E-13	4.43E-13	4.41E-12	4.89E-13	3.48E-13	1.51E-12	3.95E-13	2.07E-13	6.98E-13
220101	[A139] Wood household furniture, except upholstered	2.23E-13	2.39E-13	4.18E-13	2.83E-13	2.38E-13	3.17E-13	2.45E-13	1.05E-13	2.42E-13
220102	[A140] Household furniture, n.e.c.	4.45E-13	4.21E-13	2.09E-12	4.63E-13	4.33E-13	8.61E-13	3.83E-13	1.81E-13	5.15E-13
220103	[A141] Wood television and radio cabinets	3.12E-13	2.92E-13	4.34E-13	3.31E-13	2.60E-13	3.90E-13	2.93E-13	1.15E-13	2.87E-13
220200	[A142] Upholstered household furniture	2.50E-13	2.87E-13	4.47E-13	3.54E-13	6.48E-13	4.03E-13	2.81E-13	4.43E-13	3.63E-13
220300	[A143] Metal household furniture	3.22E-13	3.68E-13	8.55E-13	5.08E-13	4.78E-13	5.02E-13	3.60E-13	1.42E-13	3.99E-13
220400	[A144] Mattresses and bedsprings	2.61E-13	3.03E-13	4.14E-13	3.77E-13	5.66E-13	4.70E-13	2.90E-13	3.21E-13	3.54E-13
230100	[A145] Wood office furniture	2.37E-13	2.47E-13	4.56E-13	3.16E-13	3.10E-13	3.12E-13	2.50E-13	1.13E-13	2.59E-13

CEDA code	Name	Abiotic depletion	Global warming	Ozone layer deplet.	Human toxicity	Eco-toxicity	Photo-chemical oxidat.	Acidi-fication	Eutrophi-cation	Aggre-gate score
230200	[A146] Office furniture, except wood	2.75E-13	3.12E-13	4.44E-13	4.32E-13	4.81E-13	4.05E-13	3.08E-13	1.67E-13	3.35E-13
230300	[A147] Public building and related furniture	2.71E-13	3.17E-13	6.39E-13	4.39E-13	5.21E-13	4.25E-13	3.09E-13	2.27E-13	3.62E-13
230400	[A148] Wood partitions and fixtures	2.23E-13	2.35E-13	3.28E-13	2.91E-13	2.55E-13	3.06E-13	2.28E-13	9.09E-14	2.34E-13
230500	[A149] Partitions and fixtures, except wood	3.44E-13	4.06E-13	3.78E-13	5.65E-13	5.73E-13	4.11E-13	3.88E-13	1.39E-13	3.99E-13
230600	[A150] Drapery hardware and window blinds and shades	2.46E-13	2.74E-13	5.09E-13	3.94E-13	4.22E-13	3.55E-13	2.91E-13	1.50E-13	3.05E-13
230700	[A151] Furniture and fixtures, n.e.c.	1.77E-13	2.02E-13	2.57E-13	2.75E-13	2.73E-13	2.43E-13	1.96E-13	7.65E-14	2.05E-13
240100	[A152] Pulp mills	5.34E-13	4.80E-13	8.53E-13	7.93E-13	6.15E-13	8.27E-13	1.02E-12	3.35E-13	6.11E-13
240400	[A153] Envelopes	3.79E-13	4.00E-13	4.90E-13	5.17E-13	4.01E-13	5.61E-13	5.38E-13	1.70E-13	4.13E-13
240500	[A154] Sanitary paper products	3.48E-13	3.71E-13	6.01E-13	4.90E-13	3.95E-13	5.67E-13	4.89E-13	1.79E-13	4.00E-13
240701	[A155] Paper coating and glazing	4.29E-13	4.26E-13	8.97E-13	5.25E-13	4.24E-13	7.55E-13	4.69E-13	1.70E-13	4.61E-13
240702	[A156] Bags, except textile	4.29E-13	4.35E-13	1.06E-12	5.19E-13	4.14E-13	7.84E-13	4.56E-13	1.56E-13	4.70E-13
240703	[A157] Die-cut paper and paperboard and cardboard	3.95E-13	4.22E-13	5.78E-13	5.47E-13	4.33E-13	5.92E-13	5.53E-13	1.85E-13	4.39E-13
240705	[A158] Stationery, tablets, and related products	3.28E-13	3.50E-13	4.48E-13	4.63E-13	3.61E-13	5.06E-13	4.71E-13	1.55E-13	3.67E-13
240706	[A159] Converted paper products, n.e.c.	4.28E-13	4.35E-13	6.09E-13	5.69E-13	4.57E-13	6.28E-13	5.70E-13	1.95E-13	4.58E-13
240800	[A160] Paper and paperboard mills	5.52E-13	4.99E-13	6.51E-13	6.53E-13	5.60E-13	6.98E-13	7.23E-13	2.45E-13	5.35E-13
250000	[A161] Paperboard containers and boxes	4.67E-13	4.62E-13	5.82E-13	6.06E-13	4.73E-13	6.60E-13	6.15E-13	1.97E-13	4.82E-13
260100	[A162] Newspapers	1.63E-13	1.68E-13	2.13E-13	2.06E-13	1.62E-13	2.23E-13	2.11E-13	6.76E-14	1.69E-13
260200	[A163] Periodicals	1.75E-13	1.92E-13	3.05E-13	2.38E-13	1.85E-13	2.84E-13	2.28E-13	7.69E-14	1.98E-13
260301	[A164] Book publishing	1.59E-13	1.80E-13	3.48E-13	2.16E-13	1.72E-13	2.52E-13	2.07E-13	7.30E-14	1.85E-13
260302	[A165] Book printing	2.70E-13	2.98E-13	7.92E-13	3.49E-13	2.83E-13	4.39E-13	3.54E-13	1.30E-13	3.20E-13
260400	[A166] Miscellaneous publishing	1.30E-13	1.44E-13	2.24E-13	1.76E-13	1.36E-13	2.04E-13	1.66E-13	5.60E-14	1.46E-13
260501	[A167] Commercial printing	2.61E-13	2.82E-13	4.98E-13	3.41E-13	2.62E-13	4.32E-13	3.40E-13	1.11E-13	2.92E-13
260601	[A168] Manifold business forms	2.70E-13	2.98E-13	4.58E-13	3.72E-13	2.84E-13	4.12E-13	3.91E-13	1.26E-13	3.07E-13
260602	[A169] Blankbooks, looseleaf binders and devices	2.25E-13	2.38E-13	3.32E-13	2.90E-13	2.32E-13	3.19E-13	2.83E-13	9.80E-14	2.40E-13
260700	[A170] Greeting cards	2.03E-13	2.14E-13	3.04E-13	2.61E-13	2.07E-13	2.85E-13	2.46E-13	8.42E-14	2.14E-13
260802	[A171] Bookbinding and related work	1.89E-13	1.92E-13	2.49E-13	2.26E-13	1.97E-13	2.35E-13	2.11E-13	8.48E-14	1.90E-13
260803	[A172] Typesetting	1.23E-13	5.09E-13	3.78E-12	1.50E-13	1.26E-13	1.84E-13	1.40E-13	4.58E-14	4.41E-13
260806	[A173] Platemaking and related services	1.43E-13	1.88E-13	6.09E-13	1.82E-13	1.53E-13	1.83E-13	1.66E-13	5.27E-14	1.81E-13
270100	[A174] Industrial inorganic and organic chemicals	9.48E-13	5.10E-13	1.60E-12	6.16E-13	6.37E-13	9.05E-13	4.99E-13	1.96E-13	6.01E-13
270201	[A175] Nitrogenous and phosphatic fertilizers	1.59E-12	5.68E-13	5.04E-13	6.61E-13	4.04E-13	7.28E-13	7.74E-13	3.14E-13	6.11E-13
270300	[A176] (Household use of) pesticides and agricultural chemicals, n.e.c.	4.75E-13	3.65E-13	2.64E-12	5.76E-13	1.21E-12	6.82E-13	3.43E-13	1.61E-13	5.76E-13

CEDA code	Name	Abiotic depletion	Global warming	Ozone layer deplet.	Human toxicity	Eco-toxicity	Photo-chemical oxidat.	Acidi-fication	Eutrophication	Aggre-gate score
270401	[A177] Gum and wood chemicals	4.73E-13	4.72E-13	5.85E-13	1.49E-12	1.20E-12	1.47E-12	3.80E-13	2.12E-13	7.46E-13
270402	[A178] Adhesives and sealants	6.50E-13	4.54E-13	9.72E-13	5.01E-13	4.06E-13	8.59E-13	3.93E-13	1.58E-13	4.82E-13
270403	[A179] Explosives	3.14E-13	2.00E-13	1.94E-13	2.42E-13	1.75E-13	2.99E-13	3.00E-13	1.53E-13	2.20E-13
270404	[A180] Printing ink	6.15E-13	4.33E-13	1.09E-12	5.60E-13	4.66E-13	1.08E-12	4.52E-13	1.55E-13	5.17E-13
270405	[A181] Carbon black	1.76E-12	3.58E-13	2.22E-13	5.07E-13	2.05E-13	1.27E-12	1.57E-12	1.25E-13	5.69E-13
270406	[A182] Chemicals and chemical preparations, n.e.c.	6.38E-13	5.05E-13	1.09E-12	6.25E-13	5.97E-13	8.56E-13	3.98E-13	7.90E-13	6.35E-13
280100	[A183] Plastics materials and resins	6.93E-13	5.35E-13	2.07E-12	5.87E-13	5.42E-13	1.16E-12	4.53E-13	1.65E-13	6.24E-13
280200	[A184] Synthetic rubber	6.82E-13	4.42E-13	1.19E-12	5.73E-13	4.53E-13	1.01E-12	4.12E-13	1.64E-13	5.22E-13
280300	[A185] Cellulosic manmade fibers	7.12E-13	5.50E-13	1.52E-12	8.82E-13	8.28E-13	1.56E-12	9.09E-13	2.31E-13	7.51E-13
280400	[A186] Manmade organic fibers, except cellulosic	5.49E-13	4.31E-13	1.13E-12	6.30E-13	6.96E-13	9.59E-13	4.77E-13	3.77E-13	5.67E-13
290100	[A187] Drugs	2.92E-13	3.08E-13	9.28E-13	2.99E-13	2.50E-13	3.76E-13	2.68E-13	1.63E-13	3.14E-13
290201	[A188] Soap and other detergents	4.51E-13	3.51E-13	8.53E-13	4.01E-13	3.56E-13	7.33E-13	3.30E-13	1.80E-13	3.97E-13
290202	[A189] Polishes and sanitation goods	4.17E-13	3.22E-13	6.82E-13	3.70E-13	3.21E-13	5.69E-13	3.15E-13	1.60E-13	3.50E-13
290203	[A190] Surface active agents	6.64E-13	4.16E-13	1.11E-12	4.48E-13	4.27E-13	7.33E-13	3.51E-13	2.69E-13	4.71E-13
290300	[A191] Toilet preparations	2.93E-13	2.50E-13	4.98E-13	2.82E-13	2.30E-13	4.05E-13	2.44E-13	1.07E-13	2.61E-13
300000	[A192] Paints and allied products	4.78E-13	3.55E-13	1.07E-12	4.18E-13	3.71E-13	8.77E-13	3.21E-13	1.43E-13	4.22E-13
310101	[A193] Petroleum refining	2.88E-12	4.31E-13	2.36E-13	3.04E-13	1.58E-13	3.83E-13	4.93E-13	1.41E-13	4.60E-13
310102	[A194] Lubricating oils and greases	1.92E-12	4.46E-13	5.58E-13	4.22E-13	2.79E-13	6.33E-13	4.68E-13	1.76E-13	4.88E-13
310103	[A195] Products of petroleum and coal, n.e.c.	1.90E-12	4.05E-13	1.25E-12	3.01E-13	1.65E-13	4.48E-13	1.41E-12	1.12E-13	5.18E-13
310200	[A196] Asphalt paving mixtures and blocks	1.42E-12	3.74E-13	2.11E-13	3.01E-13	1.53E-13	3.48E-13	3.55E-13	1.09E-13	3.47E-13
310300	[A197] Asphalt felts and coatings	1.21E-12	3.50E-13	2.74E-13	3.36E-13	2.00E-13	3.46E-13	3.46E-13	1.09E-13	3.39E-13
320100	[A198] Tires and inner tubes	4.81E-13	3.60E-13	6.52E-13	4.54E-13	3.97E-13	7.56E-13	4.74E-13	2.07E-13	4.20E-13
320200	[A199] Rubber and plastics footwear	3.51E-13	3.32E-13	7.65E-13	3.91E-13	5.04E-13	5.55E-13	3.37E-13	3.11E-13	3.94E-13
320300	[A200] Fabricated rubber products, n.e.c.	4.03E-13	3.44E-13	6.84E-13	4.48E-13	3.67E-13	6.22E-13	3.68E-13	1.59E-13	3.82E-13
320400	[A201] Miscellaneous plastics products, n.e.c.	4.21E-13	4.09E-13	1.25E-12	4.66E-13	3.96E-13	7.82E-13	3.79E-13	1.39E-13	4.51E-13
320500	[A202] Rubber and plastics hose and belting	4.18E-13	3.56E-13	6.58E-13	4.47E-13	5.13E-13	6.33E-13	3.92E-13	2.56E-13	4.13E-13
320600	[A203] Gaskets, packing, and sealing devices	3.12E-13	3.19E-13	5.59E-13	4.00E-13	3.45E-13	4.81E-13	3.13E-13	1.18E-13	3.30E-13
330001	[A204] Leather tanning and finishing	5.28E-13	7.72E-13	7.21E-13	5.86E-13	6.56E-13	8.44E-13	8.16E-13	1.20E-12	7.92E-13
340100	[A205] Boot and shoe cut stock and findings	3.97E-13	5.68E-13	1.71E-12	4.88E-13	5.44E-13	7.27E-13	5.67E-13	7.31E-13	6.40E-13
340201	[A206] Shoes, except rubber	4.08E-13	5.61E-13	1.03E-12	5.08E-13	4.84E-13	7.39E-13	5.65E-13	6.40E-13	5.90E-13
340202	[A207] House slippers	1.75E-13	2.13E-13	5.04E-13	2.28E-13	2.20E-13	3.20E-13	2.17E-13	2.00E-13	2.37E-13

CEDA code	Name	Abiotic depletion	Global warming	Ozone layer deplet.	Human toxicity	Eco-toxicity	Photo-chemical oxidat.	Acidi-fication	Eutrophication	Aggre-gate score
340301	[A208] Leather gloves and mittens	4.53E-13	6.41E-13	6.17E-13	5.46E-13	7.30E-13	7.89E-13	6.55E-13	9.72E-13	6.84E-13
340302	[A209] Luggage	2.77E-13	3.08E-13	6.67E-13	3.47E-13	5.58E-13	4.40E-13	3.00E-13	4.29E-13	3.78E-13
340303	[A210] Women's handbags and purses	2.71E-13	3.85E-13	4.87E-13	3.65E-13	4.14E-13	4.85E-13	3.96E-13	4.80E-13	4.07E-13
340304	[A211] Personal leather goods, n.e.c.	2.32E-13	3.06E-13	4.68E-13	3.13E-13	4.41E-13	3.99E-13	3.15E-13	4.18E-13	3.47E-13
340305	[A212] Leather goods, n.e.c.	2.66E-13	3.24E-13	4.18E-13	3.04E-13	3.48E-13	4.11E-13	3.23E-13	3.81E-13	3.40E-13
350100	[A213] Glass and glass products, except containers	3.90E-13	3.75E-13	4.72E-13	5.39E-13	3.98E-13	4.91E-13	3.57E-13	1.34E-13	3.83E-13
350200	[A214] Glass containers	5.13E-13	4.89E-13	4.74E-13	5.68E-13	5.34E-13	5.08E-13	4.93E-13	1.99E-13	4.65E-13
360100	[A215] Cement, hydraulic	4.97E-13	6.19E-13	2.27E-13	6.18E-13	4.76E-13	4.19E-13	1.33E-12	2.58E-13	5.60E-13
360200	[A216] Brick and structural clay tile	5.97E-13	4.68E-13	3.80E-13	2.45E-12	3.44E-12	4.66E-13	3.35E-13	1.09E-13	9.53E-13
360300	[A217] Ceramic wall and floor tile	5.56E-13	4.65E-13	4.80E-13	6.39E-13	4.59E-13	6.79E-13	3.66E-13	1.42E-13	4.63E-13
360400	[A218] Clay refractories	5.32E-13	5.19E-13	4.27E-13	7.67E-13	4.69E-13	7.77E-13	3.83E-13	1.62E-13	5.14E-13
360500	[A219] Structural clay products, n.e.c.	6.11E-13	6.14E-13	4.36E-13	6.02E-13	5.13E-13	5.72E-13	3.30E-13	1.19E-13	4.98E-13
360600	[A220] Vitreous china plumbing fixtures	3.33E-13	3.06E-13	2.47E-13	3.93E-13	2.78E-13	3.75E-13	2.42E-13	8.77E-14	2.86E-13
360701	[A221] Vitreous china table and kitchenware	1.89E-13	2.02E-13	1.29E-13	2.79E-13	2.12E-13	2.27E-13	1.64E-13	5.94E-14	1.90E-13
360702	[A222] Fine earthenware table and kitchenware	4.20E-13	3.29E-13	3.44E-13	4.01E-13	2.34E-13	4.81E-13	2.68E-13	1.12E-13	3.17E-13
360800	[A223] Porcelain electrical supplies	2.51E-13	2.71E-13	2.62E-13	3.78E-13	2.78E-13	3.17E-13	2.38E-13	8.29E-14	2.62E-13
360900	[A224] Pottery products, n.e.c.	3.10E-13	2.77E-13	2.90E-13	3.66E-13	2.34E-13	3.94E-13	2.24E-13	9.32E-14	2.71E-13
361000	[A225] Concrete block and brick	3.30E-13	5.49E-13	2.08E-13	4.71E-13	3.44E-13	3.61E-13	5.51E-13	1.41E-13	4.15E-13
361100	[A226] Concrete products, except block and brick	3.30E-13	5.51E-13	2.75E-13	4.87E-13	4.06E-13	3.72E-13	4.91E-13	1.44E-13	4.24E-13
361200	[A227] Ready-mixed concrete	3.52E-13	4.31E-13	2.47E-13	4.84E-13	3.28E-13	4.20E-13	6.46E-13	1.64E-13	3.94E-13
361300	[A228] Lime	8.54E-13	1.86E-12	3.36E-13	8.04E-13	8.00E-13	4.63E-13	9.25E-13	2.13E-13	1.04E-12
361400	[A229] Gypsum products	3.68E-13	3.66E-13	2.25E-13	4.52E-13	3.65E-13	3.50E-13	3.19E-13	1.03E-13	3.30E-13
361500	[A230] Cut stone and stone products	2.55E-13	2.61E-13	3.29E-13	3.54E-13	2.73E-13	3.09E-13	2.50E-13	8.70E-14	2.58E-13
361600	[A231] Abrasive products	3.58E-13	3.30E-13	6.22E-13	4.71E-13	3.91E-13	5.56E-13	3.05E-13	1.77E-13	3.70E-13
361700	[A232] Asbestos products	3.64E-14	4.89E-14	4.09E-14	7.14E-14	4.78E-14	6.64E-14	4.26E-14	2.63E-14	4.94E-14
361900	[A233] Minerals, ground or treated	3.34E-13	3.49E-13	2.98E-13	4.89E-13	4.19E-13	3.09E-13	2.89E-13	1.19E-13	3.32E-13
362000	[A234] Mineral wool	3.78E-13	3.89E-13	8.83E-13	4.52E-13	3.95E-13	4.86E-13	3.55E-13	1.33E-13	3.92E-13
362100	[A235] Nonclay refractories	3.90E-13	4.76E-13	2.75E-13	5.85E-13	3.83E-13	4.98E-13	3.46E-13	1.28E-13	4.14E-13
362200	[A236] Nonmetallic mineral products, n.e.c.	4.25E-13	4.60E-13	5.95E-13	2.27E-12	4.46E-13	5.56E-13	4.48E-13	1.69E-13	7.36E-13
370101	[A237] Blast furnaces and steel mills	8.15E-13	9.67E-13	7.28E-13	1.43E-12	1.56E-12	8.32E-13	9.24E-13	3.67E-13	9.62E-13
370102	[A238] Electrometallurgical products, except steel	4.99E-13	6.47E-13	4.60E-13	1.43E-12	2.20E-12	5.20E-13	6.20E-13	1.94E-13	7.90E-13

CEDA code	Name	Abiotic depletion	Global warming	Ozone layer deplet.	Human toxicity	Eco-toxicity	Photo-chemical oxidat.	Acidi-fication	Eutrophication	Aggre-gate score
370103	[A239] Steel wiredrawing and steel nails and spikes	6.40E-13	7.97E-13	6.09E-13	1.16E-12	1.28E-12	6.89E-13	7.51E-13	2.86E-13	7.87E-13
370200	[A240] Iron and steel foundries	4.83E-13	5.70E-13	5.20E-13	7.82E-13	7.42E-13	5.51E-13	5.43E-13	2.42E-13	5.59E-13
370300	[A241] Iron and steel forgings	4.62E-13	5.96E-13	4.03E-13	7.62E-13	8.01E-13	4.64E-13	5.21E-13	1.80E-13	5.43E-13
370401	[A242] Metal heat treating	4.34E-13	3.94E-13	3.60E-13	4.08E-13	3.92E-13	3.84E-13	3.12E-13	1.37E-13	3.52E-13
370402	[A243] Primary metal products, n.e.c.	4.72E-13	5.38E-13	6.45E-13	8.34E-13	9.51E-13	5.93E-13	6.84E-13	1.70E-13	5.79E-13
380100	[A244] Primary smelting and refining of copper	3.12E-13	4.71E-13	3.38E-13	5.76E-12	1.37E-11	4.74E-13	1.21E-12	1.50E-13	2.28E-12
380400	[A245] Primary aluminum	7.53E-13	7.88E-13	1.00E-12	1.25E-12	1.12E-12	8.95E-13	1.19E-12	3.67E-13	8.73E-13
380501	[A246] Primary nonferrous metals, n.e.c.	5.73E-13	6.36E-13	6.98E-13	2.70E-12	3.94E-12	7.40E-13	8.14E-13	3.12E-13	1.19E-12
380700	[A247] Rolling, drawing, and extruding of copper	6.59E-13	7.66E-13	9.48E-13	3.16E-12	5.93E-12	8.60E-13	1.12E-12	3.94E-13	1.52E-12
380800	[A248] Aluminum rolling and drawing	5.23E-13	6.03E-13	6.97E-13	9.52E-13	8.60E-13	7.14E-13	8.58E-13	2.76E-13	6.60E-13
380900	[A249] Nonferrous rolling and drawing, n.e.c.	2.61E-13	3.25E-13	3.41E-13	1.28E-12	1.65E-12	3.56E-13	4.23E-13	1.28E-13	5.58E-13
381000	[A250] Nonferrous wiredrawing and insulating	3.12E-13	3.88E-13	6.72E-13	1.14E-12	1.81E-12	5.30E-13	4.90E-13	1.48E-13	6.10E-13
381100	[A251] Aluminum castings	3.03E-13	3.47E-13	3.93E-13	7.59E-13	9.14E-13	3.95E-13	4.54E-13	1.36E-13	4.37E-13
381400	[A252] Nonferrous forgings	2.61E-13	3.39E-13	3.26E-13	5.66E-13	6.40E-13	3.36E-13	3.54E-13	1.04E-13	3.60E-13
390100	[A253] Metal cans	4.48E-13	5.90E-13	6.06E-13	9.10E-13	8.49E-13	7.75E-13	7.14E-13	2.10E-13	6.25E-13
390200	[A254] Metal shipping barrels, drums, kegs, and pails	3.61E-13	4.64E-13	3.95E-13	6.64E-13	6.72E-13	5.59E-13	4.36E-13	1.45E-13	4.63E-13
400100	[A255] Enameled iron and metal sanitary ware	2.51E-13	2.99E-13	2.84E-13	5.39E-13	7.00E-13	3.00E-13	3.17E-13	1.04E-13	3.37E-13
400200	[A256] Plumbing fixture fittings and trim	2.43E-13	2.94E-13	3.96E-13	7.14E-13	1.07E-12	3.51E-13	3.44E-13	1.05E-13	4.02E-13
400300	[A257] (Household heating with) heating equipment, except electric and warm a furnaces	3.19E-12	8.11E-13	1.87E-13	3.03E-13	1.78E-13	6.45E-13	4.55E-13	1.72E-13	6.33E-13
400400	[A258] Fabricated structural metal	3.35E-13	4.35E-13	3.58E-13	6.62E-13	6.93E-13	4.19E-13	4.12E-13	1.51E-13	4.37E-13
400500	[A259] Metal doors, sash, frames, molding, and trim	3.08E-13	3.81E-13	4.90E-13	5.91E-13	5.71E-13	4.34E-13	4.16E-13	1.57E-13	4.05E-13
400600	[A260] Fabricated plate work (boiler shops)	3.30E-13	4.29E-13	4.44E-13	7.53E-13	8.15E-13	4.12E-13	4.16E-13	1.48E-13	4.62E-13
400700	[A261] Sheet metal work	3.24E-13	4.10E-13	3.90E-13	6.45E-13	6.68E-13	4.22E-13	4.24E-13	1.55E-13	4.27E-13
400800	[A262] Architectural and ornamental metal work	2.93E-13	3.70E-13	3.84E-13	5.61E-13	5.86E-13	3.63E-13	3.67E-13	1.31E-13	3.78E-13
400901	[A263] Prefabricated metal buildings and components	3.79E-13	5.01E-13	4.22E-13	7.77E-13	8.51E-13	5.58E-13	4.85E-13	1.77E-13	5.18E-13
400902	[A264] Miscellaneous structural metal work	3.85E-13	5.04E-13	4.02E-13	7.86E-13	8.39E-13	4.55E-13	4.95E-13	1.77E-13	5.10E-13
410100	[A265] Screw machine products, bolts, etc.	2.54E-13	3.24E-13	2.95E-13	5.39E-13	6.47E-13	3.00E-13	3.33E-13	1.08E-13	3.44E-13
410201	[A266] Automotive stampings	4.09E-13	5.55E-13	4.25E-13	8.41E-13	8.98E-13	5.01E-13	5.24E-13	1.81E-13	5.51E-13
410202	[A267] Crowns and closures	4.24E-13	5.20E-13	5.92E-13	7.30E-13	7.29E-13	5.96E-13	5.12E-13	1.77E-13	5.24E-13
410203	[A268] Metal stampings, n.e.c.	3.29E-13	4.18E-13	3.88E-13	6.88E-13	7.58E-13	4.13E-13	4.21E-13	1.49E-13	4.41E-13
420100	[A269] Cutlery	1.99E-13	2.24E-13	3.52E-13	2.84E-13	2.63E-13	2.61E-13	2.17E-13	7.49E-14	2.22E-13

CEDA code	Name	Abiotic depletion	Global warming	Ozone layer deplet.	Human toxicity	Eco-toxicity	Photo-chemical oxidat.	Acidi-fication	Eutrophication	Aggre-gate score
420201	[A270] Hand and edge tools, except machine tools and handsaws	2.16E-13	2.64E-13	2.83E-13	4.28E-13	4.67E-13	2.69E-13	2.67E-13	8.87E-14	2.79E-13
420202	[A271] Saw blades and handsaws	2.35E-13	3.06E-13	2.79E-13	5.02E-13	5.50E-13	2.95E-13	3.22E-13	1.04E-13	3.21E-13
420300	[A272] Hardware, n.e.c.	2.58E-13	3.21E-13	3.77E-13	5.59E-13	6.42E-13	3.58E-13	3.33E-13	1.12E-13	3.56E-13
420401	[A273] Plating and polishing	2.55E-13	2.69E-13	5.06E-13	3.64E-13	3.72E-13	3.28E-13	2.59E-13	1.17E-13	2.85E-13
420402	[A274] Coating,engraving, and allied services, n.e.c.	3.74E-13	4.46E-13	5.40E-13	6.49E-13	6.74E-13	5.21E-13	4.14E-13	1.57E-13	4.59E-13
420500	[A275] Miscellaneous fabricated wire products	3.26E-13	4.30E-13	3.90E-13	6.10E-13	6.49E-13	3.86E-13	3.98E-13	1.40E-13	4.19E-13
420700	[A276] Steel springs, except wire	3.51E-13	4.45E-13	3.20E-13	6.16E-13	6.58E-13	3.74E-13	4.11E-13	1.37E-13	4.23E-13
420800	[A277] Pipe, valves, and pipe fittings	2.61E-13	3.27E-13	3.24E-13	5.88E-13	7.39E-13	3.23E-13	3.43E-13	1.16E-13	3.66E-13
421000	[A278] Metal foil and leaf	3.77E-13	4.04E-13	6.20E-13	5.91E-13	5.46E-13	5.87E-13	4.92E-13	1.56E-13	4.41E-13
421100	[A279] Fabricated metal products, n.e.c.	2.95E-13	3.85E-13	1.23E-12	6.40E-13	6.26E-13	4.35E-13	3.76E-13	1.25E-13	4.48E-13
430100	[A280] Turbines and turbine generator sets	2.16E-13	2.87E-13	2.78E-13	4.30E-13	4.25E-13	2.84E-13	2.78E-13	9.42E-14	2.87E-13
430200	[A281] Internal combustion engines, n.e.c.	2.64E-13	3.54E-13	3.37E-13	5.33E-13	5.24E-13	3.69E-13	3.50E-13	1.16E-13	3.56E-13
440001	[A282] Farm machinery and equipment	2.12E-13	2.73E-13	2.65E-13	3.82E-13	3.73E-13	3.14E-13	2.61E-13	9.13E-14	2.70E-13
440002	[A283] Lawn and garden equipment	2.61E-13	3.40E-13	3.83E-13	5.03E-13	4.73E-13	3.96E-13	3.32E-13	1.14E-13	3.46E-13
450100	[A284] Construction machinery and equipment	2.61E-13	3.40E-13	3.23E-13	4.88E-13	4.81E-13	3.41E-13	3.22E-13	1.14E-13	3.35E-13
450200	[A285] Mining machinery, except oil field	2.48E-13	3.18E-13	3.05E-13	4.49E-13	4.42E-13	3.13E-13	3.01E-13	1.12E-13	3.12E-13
450300	[A286] Oil and gas field machinery and equipment	2.07E-13	2.61E-13	2.52E-13	3.68E-13	3.61E-13	2.67E-13	2.56E-13	8.70E-14	2.57E-13
460100	[A287] Elevators and moving stairways	3.57E-13	4.52E-13	4.62E-13	7.12E-13	7.89E-13	4.38E-13	4.40E-13	1.50E-13	4.68E-13
460200	[A288] Conveyors and conveying equipment	2.17E-13	2.77E-13	2.55E-13	4.05E-13	4.26E-13	2.72E-13	2.69E-13	9.32E-14	2.77E-13
460300	[A289] Hoists, cranes, and monorails	2.25E-13	2.81E-13	2.99E-13	3.96E-13	3.85E-13	2.79E-13	2.63E-13	8.87E-14	2.76E-13
460400	[A290] Industrial trucks and tractors	2.89E-13	3.70E-13	3.68E-13	5.43E-13	5.56E-13	3.79E-13	3.59E-13	1.24E-13	3.71E-13
470100	[A291] Machine tools, metal cutting types	2.31E-13	2.87E-13	2.87E-13	4.04E-13	4.05E-13	2.93E-13	2.81E-13	9.57E-14	2.84E-13
470200	[A292] Machine tools, metal forming types	2.42E-13	2.99E-13	2.71E-13	4.29E-13	4.47E-13	2.92E-13	2.89E-13	1.01E-13	2.96E-13
470300	[A293] Special dies and tools and machine tool accessories	1.91E-13	2.38E-13	2.58E-13	3.42E-13	3.36E-13	2.52E-13	2.40E-13	7.85E-14	2.39E-13
470401	[A294] Power-driven handtools	2.15E-13	2.65E-13	3.22E-13	3.89E-13	3.92E-13	3.01E-13	2.68E-13	8.85E-14	2.72E-13
470402	[A295] Rolling mill machinery and equipment	1.75E-13	2.30E-13	1.97E-13	3.35E-13	3.36E-13	2.18E-13	2.23E-13	7.90E-14	2.27E-13
470404	[A296] Electric and gas welding and soldering equipment	2.31E-13	2.74E-13	3.05E-13	4.60E-13	5.48E-13	3.11E-13	2.72E-13	1.42E-13	3.08E-13
470405	[A297] Industrial patterns	1.69E-13	2.03E-13	1.88E-13	3.65E-13	4.74E-13	2.00E-13	2.26E-13	7.34E-14	2.29E-13
470500	[A298] Metalworking machinery, n.e.c.	1.85E-13	2.27E-13	2.59E-13	3.43E-13	3.61E-13	2.37E-13	2.25E-13	7.63E-14	2.34E-13
480100	[A299] Food products machinery	1.99E-13	2.50E-13	2.55E-13	4.23E-13	4.97E-13	2.56E-13	2.55E-13	8.43E-14	2.71E-13
480200	[A300] Textile machinery	2.29E-13	2.79E-13	2.87E-13	4.65E-13	5.74E-13	2.85E-13	2.91E-13	9.55E-14	3.03E-13

CEDA code	Name	Abiotic depletion	Global warming	Ozone layer deplet.	Human toxicity	Eco-toxicity	Photo-chemical oxidat.	Acidi-fication	Eutrophication	Aggre-gate score
480300	[A301] Woodworking machinery	2.34E-13	2.98E-13	3.01E-13	4.49E-13	4.81E-13	3.06E-13	3.00E-13	9.90E-14	3.04E-13
480400	[A302] Paper industries machinery	1.82E-13	2.28E-13	2.32E-13	3.37E-13	3.64E-13	2.31E-13	2.23E-13	7.50E-14	2.31E-13
480500	[A303] Printing trades machinery and equipment	1.99E-13	2.48E-13	2.82E-13	3.83E-13	4.16E-13	2.69E-13	2.50E-13	8.50E-14	2.60E-13
480600	[A304] Special industry machinery, n.e.c.	2.13E-13	2.68E-13	2.95E-13	4.25E-13	4.70E-13	2.90E-13	2.80E-13	9.15E-14	2.84E-13
490100	[A305] Pumps and compressors	2.06E-13	2.57E-13	2.85E-13	3.86E-13	4.03E-13	2.79E-13	2.58E-13	8.74E-14	2.65E-13
490200	[A306] Ball and roller bearings	2.42E-13	3.07E-13	2.76E-13	4.06E-13	3.87E-13	2.64E-13	2.95E-13	9.29E-14	2.88E-13
490300	[A307] Blowers and fans	2.15E-13	2.73E-13	3.01E-13	3.94E-13	4.06E-13	2.82E-13	2.73E-13	9.88E-14	2.76E-13
490500	[A308] Mechanical power transmission equipment	2.20E-13	2.74E-13	2.38E-13	3.81E-13	3.94E-13	2.55E-13	2.71E-13	9.08E-14	2.67E-13
490600	[A309] Industrial process furnaces and ovens	1.95E-13	2.34E-13	3.27E-13	4.52E-13	4.00E-13	2.63E-13	2.36E-13	7.72E-14	2.65E-13
490700	[A310] General industrial machinery and equipment, n.e.c.	1.92E-13	2.39E-13	2.71E-13	3.68E-13	4.12E-13	2.59E-13	2.49E-13	8.62E-14	2.52E-13
490800	[A311] Packaging machinery	1.70E-13	2.10E-13	2.38E-13	3.29E-13	3.81E-13	2.26E-13	2.15E-13	7.29E-14	2.23E-13
500100	[A312] Carburetors, pistons, rings, and valves	2.75E-13	3.45E-13	3.40E-13	7.33E-13	1.04E-12	3.49E-13	3.94E-13	1.13E-13	4.25E-13
500200	[A313] Fluid power equipment	2.25E-13	2.79E-13	2.48E-13	4.28E-13	4.82E-13	2.67E-13	2.85E-13	9.29E-14	2.86E-13
500300	[A314] Scales and balances, except laboratory	1.90E-13	2.38E-13	3.63E-13	3.40E-13	3.43E-13	2.79E-13	2.42E-13	8.10E-14	2.47E-13
500400	[A315] Industrial and commercial machinery and equipment, n.e.c.	1.74E-13	2.23E-13	2.09E-13	4.07E-13	5.32E-13	2.16E-13	2.41E-13	7.40E-14	2.51E-13
510102	[A316] Calculating and accounting machines	8.94E-14	1.25E-13	1.66E-13	1.75E-13	1.66E-13	1.53E-13	1.28E-13	4.02E-14	1.27E-13
510103'	[A317] (use of) Electronic computers	1.21E-13	1.76E-13	1.94E-13	2.00E-13	1.91E-13	1.69E-13	2.25E-13	5.10E-14	1.64E-13
510104'	[A318] (use of) Computer peripheral equipment	1.30E-13	1.80E-13	2.43E-13	2.40E-13	2.29E-13	2.16E-13	1.99E-13	5.61E-14	1.80E-13
510400	[A319] Office machines, n.e.c.	1.01E-13	1.35E-13	2.10E-13	1.79E-13	1.64E-13	1.78E-13	1.35E-13	4.25E-14	1.37E-13
520100	[A320] Automatic vending machines	2.56E-13	3.43E-13	6.20E-13	4.54E-13	4.56E-13	3.68E-13	3.18E-13	1.08E-13	3.44E-13
520200	[A321] Commercial laundry equipment	2.46E-13	3.13E-13	3.16E-13	4.85E-13	5.37E-13	3.18E-13	3.09E-13	1.06E-13	3.24E-13
520300	[A322] Refrigeration and heating equipment	2.79E-13	3.80E-13	4.88E-13	6.02E-13	7.26E-13	3.91E-13	3.71E-13	1.23E-13	4.04E-13
520400	[A323] Measuring and dispensing pumps	2.66E-13	3.30E-13	3.93E-13	4.87E-13	5.11E-13	3.79E-13	3.33E-13	1.13E-13	3.41E-13
520500	[A324] Service industry machinery, n.e.c.	2.30E-13	2.84E-13	3.51E-13	4.16E-13	4.32E-13	3.20E-13	2.80E-13	9.66E-14	2.92E-13
530200	[A325] Power, distribution, and specialty transformers	3.34E-13	3.72E-13	3.82E-13	5.99E-13	6.97E-13	3.89E-13	3.84E-13	1.26E-13	3.97E-13
530300	[A326] Switchgear and switchboard apparatus	2.06E-13	2.49E-13	3.04E-13	4.13E-13	4.93E-13	2.78E-13	2.63E-13	8.65E-14	2.74E-13
530400	[A327] Motors and generators	2.91E-13	3.68E-13	4.08E-13	5.93E-13	6.55E-13	4.04E-13	3.79E-13	1.24E-13	3.92E-13
530500	[A328] Relays and industrial controls	1.86E-13	2.16E-13	2.90E-13	3.30E-13	3.70E-13	2.55E-13	2.28E-13	7.65E-14	2.32E-13
530700	[A329] Carbon and graphite products	4.95E-13	3.11E-13	4.96E-13	3.88E-13	2.98E-13	3.68E-13	4.66E-13	9.16E-14	3.25E-13
530800	[A330] Electrical industrial apparatus, n.e.c.	2.52E-13	3.39E-13	2.91E-13	4.83E-13	4.46E-13	3.73E-13	3.01E-13	1.04E-13	3.30E-13
540100'	[A331] (use of) Household cooking equipment	7.82E-13	7.30E-13	3.69E-13	5.16E-13	4.92E-13	4.32E-13	1.11E-12	1.81E-13	5.79E-13

CEDA code	Name	Abiotic depletion	Global warming	Ozone layer deplet.	Human toxicity	Eco-toxicity	Photo-chemical oxidat.	Acidi-fication	Eutrophication	Aggre-gate score
540200'	[A332] (use of) Household refrigerators and freezers	5.42E-13	8.19E-13	4.55E-13	5.39E-13	5.31E-13	3.85E-13	1.37E-12	1.90E-13	6.24E-13
540300'	[A333] (Washing with) household laundry equipment	5.16E-13	7.44E-13	2.79E-13	4.77E-13	4.59E-13	3.36E-13	1.26E-12	1.77E-13	5.58E-13
540400'	[A334] (use of) Electric housewares and fans	4.41E-13	6.18E-13	3.82E-13	4.93E-13	4.81E-13	3.82E-13	9.84E-13	1.60E-13	5.02E-13
540500'	[A335] (use of) Household vacuum cleaners	4.24E-13	5.60E-13	5.05E-13	4.55E-13	4.31E-13	4.33E-13	8.54E-13	1.48E-13	4.71E-13
540700'	[A336] (use of) Household appliances, n.e.c.	3.53E-13	4.32E-13	7.44E-13	5.38E-13	5.41E-13	4.87E-13	4.64E-13	1.38E-13	4.32E-13
550100'	[A337] (use of) Electric lamp bulbs and tubes	5.77E-13	8.91E-13	2.35E-13	4.93E-13	4.73E-13	3.14E-13	1.61E-12	1.97E-13	6.40E-13
550200	[A338] Lighting fixtures and equipment	2.78E-13	3.18E-13	5.80E-13	4.42E-13	4.20E-13	3.97E-13	3.21E-13	1.11E-13	3.34E-13
550300	[A339] Wiring devices	2.43E-13	2.80E-13	4.00E-13	4.62E-13	5.39E-13	3.34E-13	2.91E-13	9.69E-14	3.12E-13
560100'	[A340] (use of) Household audio and video equipment	4.37E-13	6.64E-13	2.65E-13	4.29E-13	4.09E-13	2.99E-13	1.14E-12	1.55E-13	4.99E-13
560200	[A341] Prerecorded records and tapes	1.14E-13	1.43E-13	3.58E-13	1.58E-13	1.18E-13	2.21E-13	1.47E-13	4.54E-14	1.46E-13
560300'	[A342] (use of) Telephone and telegraph apparatus	2.50E-13	3.65E-13	2.40E-13	2.94E-13	2.85E-13	2.33E-13	5.80E-13	9.24E-14	2.98E-13
560500'	[A343] (use of) Communication equipment	2.73E-13	4.13E-13	1.83E-13	2.87E-13	2.82E-13	2.00E-13	7.00E-13	9.82E-14	3.18E-13
570100	[A344] Electron tubes	2.95E-13	3.35E-13	3.95E-13	4.79E-13	4.17E-13	3.90E-13	3.35E-13	1.11E-13	3.37E-13
570200	[A345] Semiconductors and related devices	1.89E-13	2.00E-13	3.18E-13	2.92E-13	3.01E-13	2.73E-13	2.25E-13	7.24E-14	2.17E-13
570300	[A346] Other electronic components	2.30E-13	2.74E-13	4.17E-13	4.25E-13	4.65E-13	3.37E-13	2.99E-13	9.34E-14	2.98E-13
580100	[A347] Storage batteries	3.20E-13	3.40E-13	5.51E-13	7.99E-13	9.50E-13	4.81E-13	3.83E-13	1.22E-13	4.53E-13
580200	[A348] Primary batteries, dry and wet	2.74E-13	2.97E-13	5.72E-13	4.64E-13	4.37E-13	4.33E-13	3.02E-13	1.02E-13	3.31E-13
580400	[A349] Electrical equipment for internal combustion engines	2.16E-13	2.58E-13	3.42E-13	4.06E-13	4.49E-13	3.01E-13	2.74E-13	8.78E-14	2.78E-13
580600	[A350] Magnetic and optical recording media	3.58E-13	3.97E-13	1.07E-12	4.90E-13	4.22E-13	5.96E-13	4.01E-13	1.37E-13	4.26E-13
580700	[A351] Electrical machinery, equipment, and supplies, n.e.c.	1.82E-13	2.16E-13	3.04E-13	3.61E-13	4.31E-13	2.56E-13	2.40E-13	7.47E-14	2.42E-13
590100	[A352] Truck and bus bodies	2.86E-13	3.56E-13	3.82E-13	5.14E-13	5.00E-13	6.54E-13	3.95E-13	1.30E-13	3.86E-13
590200	[A353] Truck trailers	3.13E-13	3.95E-13	5.37E-13	5.80E-13	5.21E-13	5.33E-13	4.21E-13	1.46E-13	4.15E-13
590301'	[A354] (Driving with) motor vehicles and passenger car bodies	7.01E-13	6.81E-13	4.67E-13	9.40E-13	5.03E-13	7.55E-13	4.71E-13	2.15E-13	6.25E-13
590302	[A355] Motor vehicle parts and accessories	3.12E-13	4.00E-13	4.36E-13	6.08E-13	6.23E-13	4.41E-13	4.13E-13	1.35E-13	4.13E-13
600100	[A356] Aircraft	1.52E-13	1.82E-13	3.05E-13	2.51E-13	2.48E-13	2.15E-13	1.84E-13	6.35E-14	1.88E-13
600200	[A357] Aircraft and missile engines and engine parts	1.59E-13	1.94E-13	2.53E-13	2.68E-13	2.59E-13	2.02E-13	1.97E-13	6.26E-14	1.94E-13
600400	[A358] Aircraft and missile equipment, n.e.c.	1.44E-13	1.75E-13	3.61E-13	2.48E-13	2.46E-13	1.98E-13	1.82E-13	5.91E-14	1.85E-13
610100	[A359] Ship building and repairing	2.61E-13	3.10E-13	3.13E-13	4.49E-13	4.67E-13	3.30E-13	3.11E-13	1.07E-13	3.14E-13
610200	[A360] Boat building and repairing	2.96E-13	3.50E-13	5.12E-13	4.94E-13	4.71E-13	4.57E-13	3.44E-13	1.37E-13	3.65E-13
610300	[A361] Railroad equipment	2.07E-13	2.82E-13	2.14E-13	4.13E-13	4.37E-13	2.65E-13	2.63E-13	8.68E-14	2.76E-13
610500	[A362] Motorcycles, bicycles, and parts	2.09E-13	2.58E-13	3.08E-13	3.63E-13	3.46E-13	3.07E-13	2.48E-13	8.69E-14	2.60E-13

CEDA code	Name	Abiotic depletion	Global warming	Ozone layer deplet.	Human toxicity	Eco-toxicity	Photo-chemical oxidat.	Acidi-fication	Eutrophication	Aggre-gate score
610601	[A363] Travel trailers and campers	1.95E-13	2.55E-13	3.61E-13	3.52E-13	3.34E-13	4.09E-13	2.45E-13	1.20E-13	2.72E-13
610603	[A364] Motor homes	1.90E-13	2.55E-13	4.31E-13	3.64E-13	3.35E-13	3.49E-13	2.45E-13	1.11E-13	2.71E-13
610700	[A365] Transportation equipment, n.e.c.	1.55E-13	2.10E-13	3.22E-13	2.93E-13	2.66E-13	2.49E-13	1.99E-13	6.67E-14	2.12E-13
620101	[A366] Search and navigation equipment	1.14E-13	1.43E-13	2.03E-13	1.97E-13	1.92E-13	1.73E-13	1.55E-13	4.87E-14	1.47E-13
620102	[A367] Laboratory apparatus and furniture	1.74E-13	1.98E-13	2.73E-13	2.68E-13	2.51E-13	2.34E-13	1.96E-13	7.04E-14	2.00E-13
620200	[A368] Mechanical measuring devices	1.56E-13	1.88E-13	2.51E-13	2.80E-13	2.88E-13	2.18E-13	1.96E-13	6.38E-14	1.97E-13
620300	[A369] Environmental controls	1.72E-13	2.14E-13	2.99E-13	3.47E-13	3.98E-13	2.48E-13	2.28E-13	7.25E-14	2.34E-13
620400	[A370] Surgical and medical instruments and apparatus	1.53E-13	2.07E-13	5.86E-13	2.50E-13	2.63E-13	2.42E-13	1.84E-13	6.55E-14	2.15E-13
620500	[A371] Surgical appliances and supplies	1.79E-13	2.13E-13	4.15E-13	2.70E-13	2.93E-13	2.90E-13	2.13E-13	1.23E-13	2.30E-13
620600	[A372] Dental equipment and supplies	2.16E-13	2.35E-13	2.98E-13	4.65E-13	4.98E-13	3.06E-13	2.37E-13	8.85E-14	2.79E-13
620700	[A373] Watches, clocks, watchcases, and parts	1.95E-13	2.18E-13	3.10E-13	3.45E-13	3.66E-13	2.62E-13	2.35E-13	7.46E-14	2.37E-13
620800	[A374] X-ray apparatus and tubes	1.57E-13	1.90E-13	2.36E-13	2.68E-13	2.70E-13	2.17E-13	1.95E-13	6.20E-14	1.93E-13
620900	[A375] Electromedical and electrotherapeutic apparatus	1.71E-13	2.12E-13	2.88E-13	2.99E-13	3.01E-13	2.53E-13	2.19E-13	7.03E-14	2.17E-13
621000	[A376] Laboratory and optical instruments	1.75E-13	2.04E-13	3.15E-13	2.90E-13	2.70E-13	2.55E-13	2.14E-13	7.10E-14	2.13E-13
621100	[A377] Instruments to measure electricity	1.39E-13	1.67E-13	2.18E-13	2.39E-13	2.45E-13	1.95E-13	1.77E-13	5.63E-14	1.73E-13
630200	[A378] Ophthalmic goods	1.68E-13	1.76E-13	3.97E-13	2.03E-13	1.65E-13	2.26E-13	1.68E-13	5.63E-14	1.76E-13
630300	[A379] Photographic equipment and supplies	1.71E-13	1.74E-13	4.88E-13	2.73E-13	2.17E-13	2.80E-13	2.17E-13	6.26E-14	2.05E-13
640101	[A380] Jewelry, precious metal	2.37E-13	2.79E-13	3.25E-13	1.14E-12	1.50E-12	3.29E-13	3.52E-13	1.17E-13	4.97E-13
640102	[A381] Jewelers' materials and lapidary work	1.25E-13	1.48E-13	1.66E-13	5.79E-13	7.58E-13	1.74E-13	1.83E-13	6.13E-14	2.55E-13
640104	[A382] Silverware and plated ware	2.45E-13	2.77E-13	2.66E-13	6.98E-13	9.58E-13	2.76E-13	3.02E-13	9.51E-14	3.69E-13
640105	[A383] Costume jewelry	2.20E-13	2.55E-13	3.04E-13	5.29E-13	5.93E-13	2.75E-13	2.60E-13	8.98E-14	3.03E-13
640200	[A384] Musical instruments	1.53E-13	1.54E-13	2.86E-13	1.83E-13	1.59E-13	1.99E-13	1.52E-13	5.38E-14	1.55E-13
640301	[A385] Games, toys, and children's vehicles	2.63E-13	2.77E-13	5.51E-13	3.44E-13	3.16E-13	4.25E-13	2.80E-13	1.11E-13	2.93E-13
640302	[A386] Dolls and stuffed toys	2.28E-13	2.54E-13	4.13E-13	3.55E-13	4.19E-13	3.50E-13	2.53E-13	1.47E-13	2.82E-13
640400	[A387] Sporting and athletic goods, n.e.c.	2.29E-13	2.49E-13	3.97E-13	3.29E-13	3.23E-13	3.41E-13	2.47E-13	1.18E-13	2.63E-13
640501	[A388] Pens, mechanical pencils, and parts	2.11E-13	2.04E-13	4.38E-13	2.69E-13	2.08E-13	2.69E-13	2.09E-13	7.24E-14	2.14E-13
640502	[A389] Lead pencils and art goods	4.96E-13	3.34E-13	6.06E-13	3.83E-13	3.29E-13	5.12E-13	3.21E-13	1.44E-13	3.50E-13
640503	[A390] Marking devices	2.67E-13	2.75E-13	5.58E-13	3.21E-13	2.76E-13	4.14E-13	2.57E-13	1.22E-13	2.85E-13
640504	[A391] Carbon paper and inked ribbons	3.42E-13	3.21E-13	5.23E-13	4.01E-13	3.78E-13	5.21E-13	3.66E-13	1.90E-13	3.51E-13
640700	[A392] Fasteners, buttons, needles, and pins	2.62E-13	2.82E-13	4.39E-13	6.33E-13	1.06E-12	3.42E-13	3.23E-13	1.80E-13	3.96E-13
640800	[A393] Non durable household goods	2.60E-13	2.85E-13	7.76E-13	3.68E-13	4.40E-13	4.23E-13	2.70E-13	4.63E-13	3.71E-13

CEDA code	Name	Abiotic depletion	Global warming	Ozone layer deplet.	Human toxicity	Eco-toxicity	Photo-chemical oxidat.	Acidi-fication	Eutrophication	Aggre-gate score
640900	[A394] Hard surface floor coverings, n.e.c.	3.22E-13	2.94E-13	8.45E-13	3.10E-13	2.48E-13	5.84E-13	2.69E-13	9.06E-14	3.16E-13
641000	[A395] Burial caskets	1.93E-13	2.24E-13	3.91E-13	3.28E-13	3.88E-13	2.98E-13	2.13E-13	1.34E-13	2.52E-13
641100	[A396] Signs and advertising specialties	1.71E-13	1.85E-13	3.05E-13	2.39E-13	2.13E-13	2.58E-13	1.86E-13	6.63E-14	1.90E-13
641200	[A397] Manufacturing industries, n.e.c.	3.19E-13	3.45E-13	2.51E-12	4.53E-13	4.81E-13	4.62E-13	3.33E-13	1.83E-13	4.65E-13
650100	[A398] Railroads and related services	3.75E-13	2.94E-13	2.18E-13	2.76E-13	2.20E-13	2.37E-13	3.36E-13	2.01E-13	2.70E-13
650200	[A399] Local and suburban transit and interurban highway passenger transportation	6.36E-13	2.64E-13	2.42E-13	2.79E-13	2.16E-13	2.80E-13	2.85E-13	8.98E-14	2.57E-13
650301	[A400] Trucking and courier services, except air	4.32E-13	3.09E-13	2.35E-13	4.28E-13	1.97E-13	4.66E-13	2.69E-13	1.15E-13	3.06E-13
650302	[A401] Warehousing and storage	2.57E-13	2.72E-13	2.55E-13	3.43E-13	2.77E-13	3.26E-13	2.92E-13	9.30E-14	2.62E-13
650400	[A402] Water transportation	2.83E-13	4.72E-13	3.32E-13	3.02E-13	2.57E-13	2.71E-13	4.07E-13	2.64E-13	3.58E-13
650500	[A403] Air transportation	6.99E-13	3.42E-13	2.43E-13	2.35E-13	1.78E-13	2.42E-13	2.54E-13	9.25E-14	2.73E-13
650600	[A404] Pipelines, except natural gas	3.17E-13	2.47E-13	2.84E-13	2.78E-13	2.57E-13	3.16E-13	2.88E-13	9.08E-14	2.44E-13
650701	[A405] Freight forwarders and other transportation services	2.56E-13	2.61E-13	3.24E-13	3.53E-13	2.23E-13	2.82E-13	2.44E-13	8.64E-14	2.51E-13
650702	[A406] Arrangement of passenger transportation	1.38E-13	1.42E-13	1.81E-13	1.53E-13	1.26E-13	1.54E-13	1.67E-13	5.00E-14	1.34E-13
660100	[A407] Telephone, telgraph communications, and communications services n.e.c.	1.17E-13	1.49E-13	2.13E-13	1.89E-13	1.68E-13	1.79E-13	1.53E-13	5.03E-14	1.47E-13
660200	[A408] Cable and other pay television services	1.50E-13	2.00E-13	3.06E-13	2.51E-13	2.23E-13	2.40E-13	2.07E-13	7.02E-14	1.98E-13
670000	[A409] Radio and TV broadcasting	1.48E-13	1.89E-13	3.20E-13	2.27E-13	2.01E-13	2.22E-13	1.97E-13	7.56E-14	1.87E-13
680100	[A410] Electric services (utilities)	5.84E-13	9.06E-13	2.34E-13	4.97E-13	4.75E-13	3.15E-13	1.64E-12	2.01E-13	6.49E-13
680201	[A411] Natural gas transportation	1.76E-12	2.71E-13	1.82E-13	2.82E-13	1.53E-13	4.46E-13	6.09E-13	4.51E-13	4.01E-13
680202	[A412] Natural gas distribution	3.46E-12	4.09E-13	2.18E-13	3.31E-13	2.02E-13	8.06E-13	4.64E-13	1.88E-13	5.31E-13
680301	[A413] Water supply and sewerage systems	3.49E-13	3.19E-13	2.83E-13	2.71E-13	2.25E-13	2.94E-13	3.02E-13	9.82E-14	2.67E-13
690100	[A414] Wholesale trade	1.90E-13	1.71E-13	2.33E-13	1.99E-13	1.62E-13	2.03E-13	1.86E-13	6.49E-14	1.67E-13
690200	[A415] Retail trade, except eating and drinking	1.52E-13	1.56E-13	1.74E-13	1.62E-13	1.36E-13	1.61E-13	1.84E-13	5.42E-14	1.44E-13
700100	[A416] Banking	7.31E-14	9.17E-14	1.16E-13	1.08E-13	8.11E-14	1.11E-13	9.35E-14	3.22E-14	8.69E-14
700200	[A417] Credit agencies other than banks	7.46E-14	9.75E-14	1.29E-13	1.18E-13	9.19E-14	1.19E-13	9.78E-14	3.46E-14	9.35E-14
700300	[A418] Security and commodity brokers	7.51E-14	1.03E-13	1.23E-13	1.20E-13	9.71E-14	1.18E-13	1.05E-13	3.43E-14	9.62E-14
700400	[A419] Insurance carriers	7.86E-14	9.50E-14	1.15E-13	1.12E-13	8.00E-14	1.18E-13	9.58E-14	3.55E-14	9.02E-14
700500	[A420] Insurance agents, brokers, and services	9.60E-14	1.03E-13	1.29E-13	1.21E-13	9.25E-14	1.25E-13	1.05E-13	3.98E-14	9.89E-14
710100	[A421] Owner-occupied dwellings	1.23E-13	1.53E-13	1.70E-13	1.93E-13	1.60E-13	1.85E-13	1.44E-13	5.56E-14	1.47E-13
710201	[A422] Real estate agents, managers, operators, and lessors	2.05E-13	2.44E-13	2.56E-13	2.89E-13	2.38E-13	2.80E-13	2.41E-13	8.78E-14	2.29E-13
710202	[A423] Royalties	1.06E-13	1.40E-13	1.54E-13	1.77E-13	1.48E-13	1.68E-13	1.30E-13	5.04E-14	1.34E-13
720101	[A424] Hotels	2.04E-13	2.40E-13	2.76E-13	2.48E-13	2.31E-13	2.54E-13	2.68E-13	1.09E-13	2.24E-13

CEDA code	Name	Abiotic depletion	Global warming	Ozone layer deplet.	Human toxicity	Eco-toxicity	Photo-chemical oxidat.	Acidi-fication	Eutrophication	Aggre-gate score
720102	[A425] Other lodging places	3.00E-13	3.75E-13	3.75E-13	3.62E-13	3.21E-13	3.58E-13	4.45E-13	1.84E-13	3.40E-13
720201	[A426] Laundry, cleaning, garment services, and shoe repair	3.78E-13	2.86E-13	3.77E-13	2.89E-13	3.30E-13	3.35E-13	3.06E-13	1.91E-13	2.90E-13
720202	[A427] Funeral service and crematories	2.45E-13	2.11E-13	3.21E-13	2.47E-13	2.13E-13	2.67E-13	2.21E-13	9.16E-14	2.12E-13
720203	[A428] Portrait photographic studios, and other miscellaneous personal services	2.38E-13	2.43E-13	3.41E-13	2.80E-13	2.32E-13	2.85E-13	2.69E-13	9.56E-14	2.37E-13
720204	[A429] Electrical repair shops	1.93E-13	2.01E-13	3.36E-13	2.69E-13	2.52E-13	2.52E-13	2.06E-13	7.06E-14	2.08E-13
720205	[A430] Watch, clock, jewelry, and furniture repair	2.75E-13	2.44E-13	3.38E-13	2.95E-13	3.54E-13	3.04E-13	2.59E-13	2.20E-13	2.70E-13
720300	[A431] Beauty and barber shops	3.13E-13	3.27E-13	1.10E-12	3.65E-13	3.33E-13	3.83E-13	3.58E-13	1.34E-13	3.50E-13
730101	[A432] Miscellaneous repair shops	2.05E-13	2.00E-13	1.29E-12	2.53E-13	2.39E-13	2.33E-13	1.95E-13	7.26E-14	2.50E-13
730102	[A433] Services to dwellings and other buildings	1.97E-13	1.45E-13	2.36E-13	1.66E-13	1.37E-13	2.07E-13	1.52E-13	5.86E-14	1.48E-13
730103	[A434] Personnel supply services	5.70E-14	5.53E-14	8.61E-14	6.58E-14	5.62E-14	6.70E-14	5.68E-14	2.15E-14	5.48E-14
730104	[A435] Computer and data processing services; including own-account software	1.94E-13	2.15E-13	3.02E-13	2.65E-13	2.31E-13	2.60E-13	2.32E-13	7.81E-14	2.13E-13
730106	[A436] Detective and protective services	1.20E-13	7.71E-14	9.50E-14	8.58E-14	7.23E-14	8.60E-14	8.18E-14	2.96E-14	7.53E-14
730107	[A437] Miscellaneous equipment rental and leasing	2.73E-13	2.70E-13	4.60E-13	3.44E-13	3.12E-13	3.20E-13	2.76E-13	9.85E-14	2.74E-13
730108	[A438] Photofinishing labs and commercial photography	1.94E-13	1.66E-13	2.34E-13	1.90E-13	1.59E-13	1.90E-13	1.78E-13	5.92E-14	1.61E-13
730109	[A439] Other business services	2.18E-13	1.71E-13	2.69E-13	1.97E-13	1.53E-13	2.03E-13	1.79E-13	6.23E-14	1.69E-13
730111	[A440] Management and public relations services	1.98E-13	1.91E-13	3.17E-13	2.17E-13	1.78E-13	2.35E-13	1.93E-13	7.76E-14	1.88E-13
730112	[A441] Research, development, and testing services, except noncommercial	2.27E-13	2.01E-13	3.28E-13	2.25E-13	1.88E-13	2.45E-13	2.13E-13	8.30E-14	1.99E-13
730200	[A442] Advertising	2.45E-13	2.63E-13	4.32E-13	3.18E-13	2.65E-13	3.46E-13	2.99E-13	1.04E-13	2.66E-13
730301	[A443] Legal services	1.35E-13	1.31E-13	1.85E-13	1.49E-13	1.23E-13	1.55E-13	1.37E-13	5.04E-14	1.27E-13
730302	[A444] Engineering, architectural, and surveying services	1.86E-13	1.91E-13	2.48E-13	2.11E-13	1.69E-13	2.12E-13	2.14E-13	6.90E-14	1.81E-13
730303	[A445] Accounting, auditing and bookkeeping, and miscellaneous services, n.e.c.	1.65E-13	1.80E-13	2.58E-13	2.19E-13	1.77E-13	2.17E-13	1.90E-13	6.73E-14	1.77E-13
740000	[A446] Eating and drinking places	2.98E-13	3.90E-13	3.80E-13	3.55E-13	3.91E-13	3.77E-13	4.08E-13	5.86E-13	4.09E-13
750001	[A447] Automotive rental and leasing, without drivers	2.63E-13	2.94E-13	3.77E-13	3.87E-13	3.42E-13	3.64E-13	2.91E-13	1.09E-13	2.94E-13
750002	[A448] Automotive repair shops and services	2.23E-13	2.35E-13	2.70E-13	3.07E-13	2.85E-13	2.70E-13	2.42E-13	8.01E-14	2.32E-13
750003	[A449] Automobile parking and car washes	1.71E-13	1.60E-13	2.01E-13	1.60E-13	1.30E-13	1.66E-13	1.76E-13	5.37E-14	1.46E-13
760101	[A450] Motion picture services and theaters	1.48E-13	1.71E-13	2.43E-13	1.96E-13	1.78E-13	2.04E-13	1.81E-13	8.87E-14	1.69E-13
760102	[A451] Video tape rental	1.70E-13	2.03E-13	2.54E-13	2.18E-13	1.83E-13	2.18E-13	2.27E-13	7.75E-14	1.89E-13
760201	[A452] Theatrical producers (except motion picture), bands, orchestras and entertainers	1.51E-13	1.73E-13	4.73E-13	2.06E-13	1.87E-13	2.08E-13	1.77E-13	8.07E-14	1.83E-13
760202	[A453] Bowling centers	2.07E-13	2.31E-13	3.05E-13	1.94E-13	1.69E-13	1.89E-13	3.12E-13	7.54E-14	2.02E-13
760203	[A454] Professional sports clubs and promoters	1.04E-13	1.28E-13	4.47E-13	1.56E-13	1.48E-13	1.54E-13	1.27E-13	6.05E-14	1.41E-13
760204	[A455] Racing, including track operation	1.51E-13	1.67E-13	3.70E-13	1.78E-13	1.63E-13	1.86E-13	1.80E-13	1.05E-13	1.71E-13

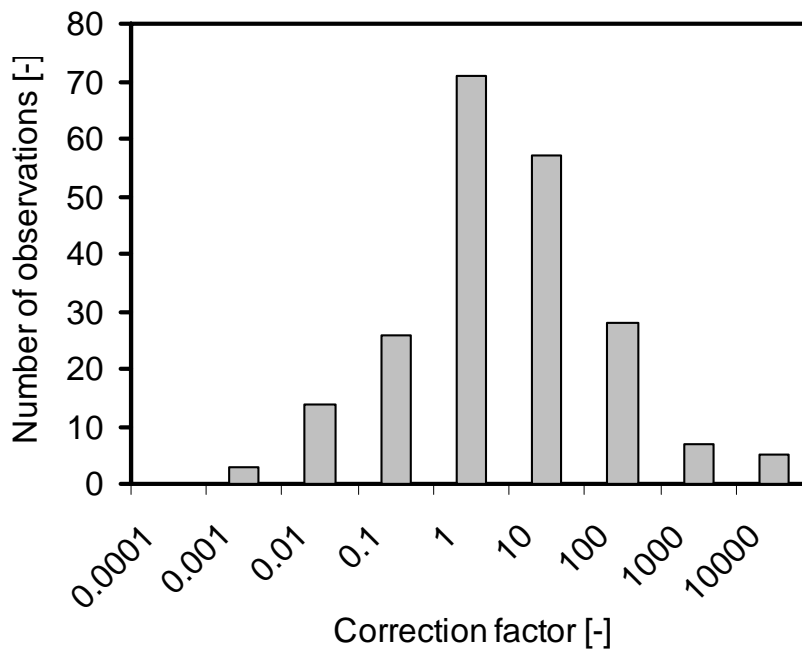
CEDA code	Name	Abiotic depletion	Global warming	Ozone layer deplet.	Human toxicity	Eco-toxicity	Photo-chemical oxidat.	Acidi-fication	Eutrophication	Aggre-gate score
760205	[A456] Physical fitness facilities and membership sports and recreation clubs	1.82E-13	2.05E-13	3.64E-13	2.00E-13	1.81E-13	1.96E-13	2.51E-13	7.22E-14	1.92E-13
760206	[A457] Other amusement and recreation services	1.43E-13	1.67E-13	3.62E-13	1.70E-13	1.63E-13	1.84E-13	1.86E-13	1.17E-13	1.71E-13
770100	[A458] Doctors and dentists	8.32E-14	8.69E-14	1.33E-13	9.97E-14	8.16E-14	1.14E-13	8.93E-14	3.25E-14	8.52E-14
770200	[A459] Hospitals	2.66E-13	2.80E-13	4.45E-13	3.12E-13	2.62E-13	3.45E-13	2.97E-13	1.54E-13	2.80E-13
770301	[A460] Nursing and personal care facilities	1.55E-13	1.81E-13	1.82E-13	1.60E-13	1.47E-13	1.72E-13	2.16E-13	1.18E-13	1.66E-13
770303	[A461] Other medical and health services	1.26E-13	1.15E-13	2.22E-13	1.36E-13	1.12E-13	1.73E-13	1.11E-13	4.30E-14	1.18E-13
770304	[A462] Veterinary services	2.45E-13	2.73E-13	5.00E-13	2.76E-13	2.39E-13	3.16E-13	2.61E-13	2.17E-13	2.76E-13
770305	[A463] Other medical and health services	1.58E-13	1.38E-13	2.80E-13	1.59E-13	1.33E-13	2.26E-13	1.38E-13	5.75E-14	1.45E-13
770401	[A464] Elementary and secondary schools	1.35E-13	1.59E-13	1.99E-13	1.86E-13	1.58E-13	1.80E-13	1.71E-13	5.46E-14	1.51E-13
770402	[A465] Colleges, universities, and professional schools	1.16E-13	1.38E-13	1.89E-13	1.69E-13	1.42E-13	1.68E-13	1.71E-13	5.32E-14	1.37E-13
770403	[A466] Private libraries, vocational schools, and educational services, n.e.c.	1.22E-13	1.29E-13	1.71E-13	1.52E-13	1.26E-13	1.49E-13	1.34E-13	4.53E-14	1.24E-13
770501	[A467] Business associations and professional membership organizations	2.13E-13	2.37E-13	3.65E-13	2.66E-13	2.16E-13	2.85E-13	2.59E-13	8.76E-14	2.29E-13
770502	[A468] Labor organizations, civic, social, and fraternal associations	2.14E-13	2.36E-13	3.03E-13	2.55E-13	2.08E-13	2.76E-13	2.65E-13	9.34E-14	2.24E-13
770503	[A469] Religious organizations	8.26E-14	9.24E-14	1.80E-13	1.08E-13	9.25E-14	1.08E-13	9.24E-14	3.53E-14	9.17E-14
770504	[A470] Other membership organizations	2.63E-13	3.12E-13	4.17E-13	3.61E-13	2.99E-13	3.68E-13	3.30E-13	1.14E-13	2.99E-13
770600	[A471] Job training and related services	1.72E-13	1.70E-13	2.81E-13	1.95E-13	1.77E-13	2.11E-13	1.75E-13	7.62E-14	1.70E-13
770700	[A472] Child day care services	1.84E-13	2.14E-13	2.43E-13	2.11E-13	2.03E-13	2.26E-13	2.28E-13	2.73E-13	2.23E-13
770800	[A473] Residential care	1.97E-13	2.40E-13	2.25E-13	2.25E-13	2.23E-13	2.38E-13	2.56E-13	2.99E-13	2.43E-13
770900	[A474] Social services, n.e.c.	3.05E-13	3.02E-13	3.92E-13	3.48E-13	3.02E-13	3.54E-13	3.16E-13	1.83E-13	3.02E-13
780100	[A475] Postal Service	1.06E-12	9.23E-13	9.24E-13	9.27E-13	7.63E-13	9.08E-13	8.72E-13	3.72E-13	8.32E-13
780500	[A476] Other Federal Government enterprises	5.65E-13	5.96E-13	6.36E-13	6.14E-13	6.43E-13	6.43E-13	6.24E-13	6.66E-13	6.20E-13
790300	[A477] Other State and local government enterprises	1.94E-12	1.32E-12	1.41E-12	1.35E-12	1.17E-12	1.37E-12	1.44E-12	4.92E-13	1.24E-12
820000	[A478] General government industry	3.10E-15	4.11E-15	7.54E-15	4.83E-15	3.40E-15	5.58E-15	3.39E-15	1.17E-15	3.95E-15

5.4 Interpretation

5.4.1 Validation of results

The validation aspect treated here is the correspondence between the US and the EU-25 emission factors, when applied to the EU-25 data set. The ratio between total scores per substance is surveyed in Figure 5.4.1 below. The numbers refer to substances only where a direct correspondence in CAS numbers could be established. A further analysis established a correspondence on virtually all emissions covered by van Oers et al. (2001). The median of the correction factors is 1.06.

Figure 5.4.1 Ratio of US scores to EU-25 scores on environmental interventions for which a direct correspondence between US and EU data could be established.



5.4.2 List of possible improvements on methods and data

1. Improving the quantified relation between COICOP, BEA, and also NAICS, NACE and other categorisations and classifications.
2. Including omitted items, especially COICOP CP0455 Heat energy; CP096 Package holidays; and CP0612 Other medical. CP123 → CP1232
3. Splitting up drinking water production and sewerage system and waste water treatment, to allow for “pure” water being used in the watering of gardens and for drinking, and linking waste water treatment to its specifically relevant consumption activities, like washing, bathing, toilets, etc.
4. Specifying energy use in consumption also taking into account wood and coal.
5. A more consistent solution with regard to housing. Housing is a difficult category in IO tables, as it is partly a capital good, partly a consumption expenditure and partly an imputed consumption expenditure (for houseowners).
6. Improvement of modelling of the use stage. Emissions in the use stage have now only been modelled for the most obvious products; for other products emission factors can be gathered and included.
7. Automating the calculation model in full, which now still requires the transfer of data files between different software programs. This allows for a much more interactive use of the model – and hence much easier implementation of any new insight in better data received in this interaction – than possible now.
8. Shifting to hybrid method, with parts of the relations in monetary terms and parts in product/function terms, as in process LCA, especially involving waste management.
9. Improvement of modelling of the waste stage on the basis of more detailed process descriptions for incineration, recycling, etc.
10. Public expenditure (now estimated on the basis of extrapolation from consumer expenditures) to be replaced by a true public expenditure on actual public consumption, when establishing totals.
11. Conversion of expenditure consumer prices to Europeanised expenditure producer prices, e.g. on the basis of OECD tables for EU Member States and the US.