

Preparatory Study to
establish the Ecodesign
Working Plan
2015-2017
implementing Directive
2009/125/EC
**Task 1 Draft Final
Report**

In collaboration with:



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Foreword

BIO by Deloitte is pleased to submit this draft Task 1 report for the project “Preparatory Study to establish the Ecodesign Working Plan 2015-2017 implementing Directive 2009/125/EC”, on behalf of the project team composed of BIO by Deloitte, Oeko-Institut and ERA Technology.

This report presents the work that has been conducted in Task 1 of the present study, to date (end August 2014). It consists of two main chapters that cover the three subtasks of Task 1 (as per the terms of references of the study).

Chapter 1, “Study definition and methodology”, summarises the results of Subtask 1.1, “Study definition”, and Subtask 1.3, “Methodology”. A joint chapter has been developed because the methodological approach is strongly determined by the study objectives and context. Chapter 1 provides background to the present study, discussing the regulatory context, the project’s objectives, existing work it can build on, and the challenges and possibilities arising from this, and derives conclusions for the approach of the present study.

Chapter 2, “Stakeholders”, deals with the stakeholder involvement that is being conducted in the course of the study. It describes the state of activities, as of end May 2014, namely the creation of the project website and the compilation of a stakeholder list. It thereby covers Subtask 1.2, “Stakeholders”.

1. Study Definition and Methodology

This chapter describes the background and objectives of the present study and derives conclusions for the study approach. This way, it covers Subtask 1.1, “Study Definition”, and Subtask 1.3, “Methodology”. Chapter 1.1 introduces the Ecodesign Directive, while Chapter 1.2 puts it into a broader context, describing its current status of implementation as well as ongoing discussions on a revision. On this background, Chapter 1.3 presents the objective of the present study. Chapter 1.4 analyses in some detail previous work conducted mainly in the Second Working Plan Study, in order to be able to base the current study on it. Chapter 1.5 discusses lessons learned and challenges identified by this exercise, while Chapter 1.6 derives conclusions for the approach of the present study.

1.1 The Ecodesign Directive

1.1.1 Presentation of the Directive

It is estimated that more than 80 % of all product-related environmental impacts as well as the major life cycle costs are determined in the design phase. The EU Ecodesign Directive (2009/125/EC) gives the framework for setting harmonised minimum standards for environmental aspects of products as well as for certain performance indicators, and introduces consumer information requirements for products that will be placed on the Single European Market. Thereby, it serves the goals of environmental policy, consumer protection, and free circulation of products at the same time.

While the previous Ecodesign Directive 2005/32/EC dealt with energy-using products (EuP), it has been extended to include energy-related products (ErP) in 2009, following the 2008 Commission Communication on Sustainable Consumption and Production and Sustainable Industrial Policy Action Plan (SCP/SIP)¹.

For energy-related products, the following main environmental aspects are considered according to Annex 1 of the current Ecodesign Directive (2009/125/EC):

- Energy consumption;
- Material consumption;
- Water consumption;
- Emissions to air, water and soil;
- Hazardous content; and
- Waste aspects (waste generation, possibilities for reuse, recycling and recovery).

¹ European Commission (2008), Commission Communication to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the Sustainable Consumption and Production and Sustainable Industrial Policy Action Plan. Brussels, COM(2008) 397 final. http://ec.europa.eu/environment/eussd/pdf/com_2008_397.pdf

Still, the regulations adopted so far focused on energy efficiency in the use phase. Also, the methodology applied (MEEuP, later MEErP) is best suited to assess energy aspects. For a better coverage of material efficiency, recent modifications have been proposed; see Chapter 1.1.2.

Most of these aspects are also addressed by other legislation. One type of legislation sets requirements to ensure a certain environmental performance, to reduce risks, and to improve resource efficiency in various life cycle stages. Among these instruments are the RoHS (Restriction of Hazardous Substances) Directive, the WEEE (Waste of Electric and Electronic Equipment) Directive, the REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals) Regulation and the EPBD (Energy Performance of Buildings Directive). Another type aims at creating a “market pull” to increase the market uptake of “environmental-friendly” products. This includes the EU Energy Label, the EU Energy Star, the EU Ecolabel and Green Public Procurement. The specific function of the Ecodesign Directive is to improve design on a product-specific level, eliminating the worst performing products from the market and shifting the economy towards solutions with least life cycle costs. When defining Ecodesign Implementing Measures, it is of crucial importance to analyse existing or possible coverage by other instruments and adjust interfaces properly in order to achieve good synergies and avoid double regulation.

The Ecodesign Directive is implemented through product group specific regulations (the so-called Implementing Measures). Art. 15 (2) specifies the criteria for choosing product groups:

- Significant volume of sales and trade within the Union (indicatively more than 200,000 units a year. This is, however, an indicative value that can be much lower in case of very significant impact and improvement potential);
- Significant environmental impact, considering the quantities placed on the market and/or put into service;
- Significant improvement potential without entailing excessive costs, taking into account in particular:
 - The absence of other relevant Community legislation or failure of market forces to address the issue properly; and
 - A wide disparity in the environmental performance of available products with equivalent functions² (unless all products have unnecessarily poor performance).

These aspects are investigated in a Preparatory Study, which is the first step in identifying and recommending ways to improve the environmental performance of specific product groups, following the relevant provisions of the Ecodesign Directive.

1.1.2 Legislative process

The Implementing Measures are adopted in accordance with the Regulatory Procedure with Scrutiny (Directive 2009/125/EC, Art. 15 and 19(3); Council Decision 1999/468/EC Art. 5). Based on the Preparatory Study, the Commission elaborates a Working Document capturing key information from the respective study and outlining potential policy options to reduce energy consumption and environmental impacts. This Working Document is discussed during a Consultation Forum, where all relevant stakeholders are invited. In parallel, an Impact Assessment of the proposed policy options is developed. After an Interservice Consultation in the Commission, the Regulatory Committee (made up from Member State representatives) votes on the planned measures. The European Parliament or

² However, if all products showed unnecessarily low performance, this would arguably also be a case for Ecodesign Implementing Measures.

Council may object within three months, on the grounds that the proposed measure exceeds the Commission's implementing powers, is not compatible with the aim or content of the Ecodesign Directive, or exceeds the EU's powers or remit (i.e. does not respect the principles of subsidiarity and proportionality). If the Council or the European Parliament does not object, the Commission adopts the regulation and it enters into force. Figure 1 presents the legislative process for products covered by the Ecodesign Directive. With the Lisbon Treaty, the Regulatory Procedure with Scrutiny has however been phased out, and the procedure will have to be changed with any future revision of the Ecodesign Directive.

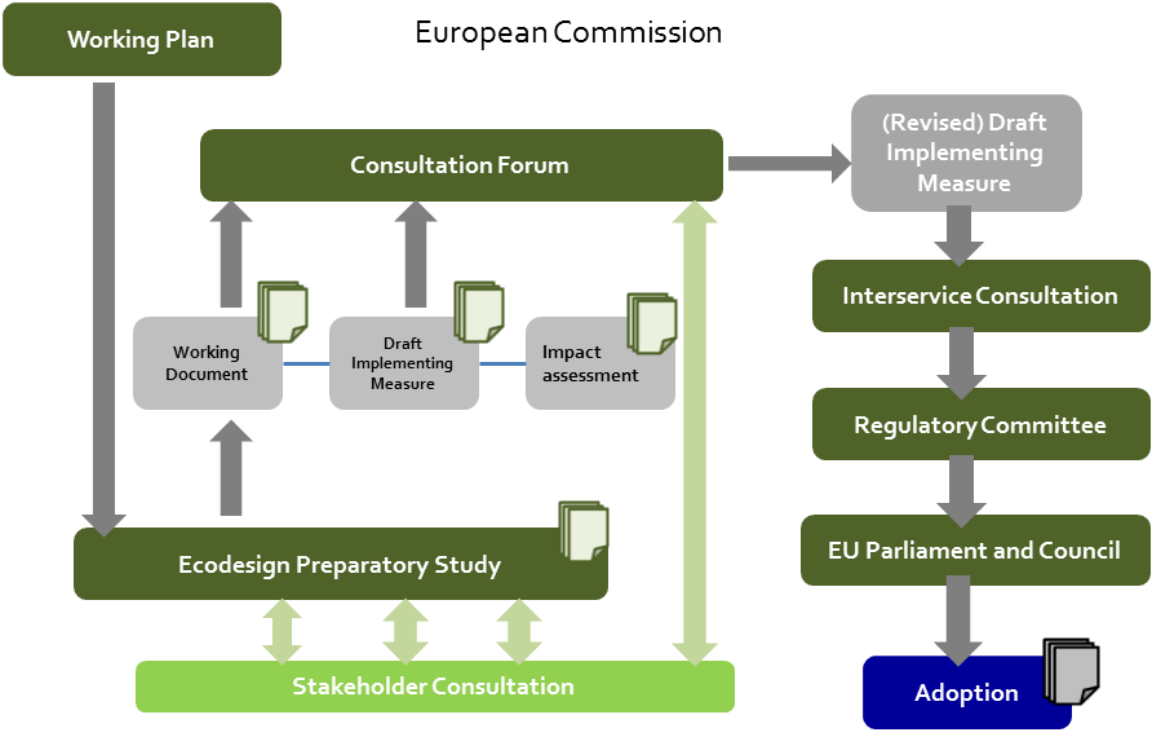


Figure 1: Ecodesign Directive: from Preparatory Study to Implementing Measures
 (Source: authors' own)

Three-year Working Plans determine an indicative list of priority products for which Preparatory Studies shall be conducted during a given period and eventually Implementation Measures shall be adopted. So far, three subsequent phases of implementation have taken place:

- The transitional period (starting from 2005). For this period, 8 indicative product groups had been defined in Art. 16 of the Ecodesign Directive that had later been split up into many more subgroups. For these groups, 20 preparatory studies were launched in 2006; one more study (on commercial wet appliances) was added in 2009, and four more studies on motor-related products followed in 2012 together with one update study on commercial refrigeration, making for 26 studies in total.³ Products covered were energy-using products (EuP), except means of transport as they are excluded from the Directive;

³ See for an overview Commission Staff Working Document, Establishment of the Working Plan 2012-2014 under the Ecodesign Directive, Brussels, 7.12.2012, SWD(2012) 434 final, Annex 1, and <http://www.eup-network.de/background/links/>

- The First Working Plan (2009-2011)⁴; also covering EuP. It was preceded by a Working Plan Study⁵ that ran from 2006 to 2007; its final report was published in December 2007. The study, conducted by EPTA, PE International and NTUA, classified all products within the scope of the Ecodesign Directive into 57 distinct product groups. Of those, 25 were chosen as priority “A” products, and 9 were ranked priority “B”. The Working Plan itself was published in October 2008. It contained 10 product groups, 9 of which were chosen from the study based on the criteria of sales and trade volume, energy consumption and improvement potential. The tenth group (water-using products) had been added by the Commission after consultation with stakeholders on the grounds that water scarcity and droughts were recognised as a growing problem in Europe⁶, even if it is debatable whether all water-using products can be categorised as energy-related. 12 preparatory studies were launched in 2009 and one more in 2012;
- The Second Working Plan (2012-2014)⁷, published in December 2012, covered energy-related products (ErP). It had also been developed on the basis of a Working Plan Study.⁸ The study, conducted by Van Holsteijn en Kemna from November 2010 to December 2011, presented a list of 36 product groups, ranked by energy savings potential, some of which had already been proposed by the first Working Plan Study. According to the Terms of Reference, the first twenty were considered as priority products. The actual Working Plan included seven broad groups and five conditional product groups. Basically, these cover the first priority groups of the study. Smart appliances / meters and wine storage appliances have been added; the latter, because there is a legal obligation under Ecodesign regulation 643/2009 to assess the need to adopt ecodesign requirements for this product group. Also, thermal insulation products have been chosen (as a conditional product) from the list of non-priority products. In addition to these twelve groups, a scoping study is envisaged for power generation below 50 MW, which was not included in Working Plans, but has been suggested by stakeholders later on.⁹ Five preparatory studies and three short or scoping studies have been launched in 2013; a further study will be launched in September 2014.

For an overview of the products suggested and actually covered in these phases, see Table 1. In red are products added later; in green, a re-uptake of products already suggested in an earlier phase.

Table 1: Overview of product groups included in the first three phases

| Working Plan Study Priority List | Included in the Ecodesign Directive or Working Plan | Preparatory Study Launched | Year launched |
|----------------------------------|---|---------------------------------------|---------------|
| Transitional Period 2005-2008 | | | |
| | Consumer Electronics | (Without Number) Simple set-top boxes | 2006 |
| | | ENER 5 TVs | 2006 |
| | | ENER 18 Complex set-top boxes | 2006 |

⁴ Communication from the Commission to the Council and the European Parliament, Establishment of the working plan for 2009-2011 under the Ecodesign Directive, Brussels, 21.10.2008, COM(2008) 660 final.

⁵ EPTA, PE International, NTUA (2007): Study for preparing the first Working Plan of the EcoDesign Directive.

⁶ COM(2008) 660 final; p.5

⁷ Commission Staff Working Document, Establishment of the Working Plan 2012-2014 under the Ecodesign Directive, Brussels, 7.12.2012, SWD(2012) 434 final.

⁸ Van Holsteijn & Kemna (2011/2012): Study on Amended Working Plan under the Ecodesign Directive (remaining energy-using products and new energy-related products).

⁹ Commission Staff Working Document SWD (2012) 434 final of 7.12.2012, Establishment of the Working Plan 2012-2014 under the Ecodesign Directive, p.5

| Working Plan Study Priority List | Included in the Ecodesign Directive or Working Plan | Preparatory Study Launched | Year launched |
|--|--|--|---------------|
| | Heating and water heating equipment | ENER 1 Boilers and combi-boilers | 2006 |
| | | ENER 2 Water heaters | 2006 |
| | Office equipment in both the domestic and tertiary sectors | ENER 3 PCs and monitors | 2006 |
| | | ENER 4 Imaging equipment | 2006 |
| | | ENER 7 Battery chargers and external power supplies | 2006 |
| | Standby losses | ENER 6 Standby and off-mode losses | 2006 |
| | Lighting in both the domestic and tertiary sectors | ENER 8 Office lighting | 2006 |
| | | ENER 9 Street lighting | 2006 |
| | | ENER 19 Domestic lighting part I "non-directional lamps" and part II "directional lamps" | 2006 |
| | HVAC (heating, ventilation and air conditioning) systems | ENER 10 Residential room conditioning appliances (air conditioners, residential ventilation and kitchen hoods, comfort fans => three separate studies) | 2006 |
| | Electric motor systems | ENER 11 Electric motors, circulators, fans, and pumps | 2006 |
| | | ENER 28 Waste water pumps | 2012 |
| | | ENER 29 Large clean water pumps and pumps for pools, fountains, aquariums | 2012 |
| | | ENER 30 Motors and drives (outside scope of Regulation 640/2009) | 2012 |
| | | ENER 31 Compressors | 2012 |
| | Domestic / professional appliances | ENER 12 Commercial refrigerators and freezers | 2006 |
| | | JRC study complementing ENER 12 study | 2012 |
| | | ENER 13 Domestic refrigerators and freezers | 2006 |
| | | ENER 14 Domestic dishwashers and washing machines | 2006 |
| | | ENER 15 Solid fuel small combustion installations | 2006 |
| | | ENER 16 Household tumble driers | 2006 |
| | | ENER 17 Vacuum cleaners | 2006 |
| | | ENER 24 Professional washing machines, dryers and dishwashers | 2009 |
| First Working Plan 2009-2011 | | | |
| Rank A | | | |
| In-house networking (LAN) and data processing, storing and providing equipment | Network, data processing and data storing equipment; | ENER 26 Networked stand-by losses | 2009 |

| Working Plan Study Priority List | Included in the Ecodesign Directive or Working Plan | Preparatory Study Launched | Year launched |
|---|---|---|---------------|
| Network equipment for all types of data processing (data, telecommunication, internet, and radio network equipment) | | | |
| Transformers | Transformers | ENTR 2 Distribution and power transformers | 2009 |
| Tool machines | Machine tools | ENTR 5 Machine tools | 2009 |
| Electric and fossil fuels heating equipment | Electric and fossil-fuelled heating equipment | ENER 20 Local room heaters | 2009 |
| | | ENER 21 Central heating products using hot air to distribute heat | 2009 |
| Surgical, patient recovery and healing equipment | | | |
| Industrial and laboratory furnaces and ovens | Industrial and laboratory furnaces and ovens | ENTR 4 Industrial and laboratory furnaces and ovens | 2009 |
| Domestic equipment for clothes caring and others | | | |
| Compressors | | | |
| Automatic and welding machines | | | |
| Electrodiagnostic apparatus | | | |
| Power electronics products (inverters, static converters, inductors, soft starters) | | ENER 27 Uninterruptible power supplies (UPS) | 2012 |
| Sound and image processing machines and equipment | Sound and imaging equipment | ENTR 3 Sound and imaging equipment | 2009 |
| Domestic food preparing equipment | Food-preparing equipment; | ENER 22 Domestic and commercial ovens | 2009 |
| | | ENER 23 Domestic and commercial hobs and grills | 2009 |
| | | ENER 25 Non-tertiary coffee machines | 2009 |
| Refrigerating equipment | Refrigerating and freezing equipment | ENTR 1 Refrigerating and freezing equipment | 2009 |
| Air condition systems and heat pumps | Air-conditioning and ventilation systems | ENTR 6 Air-conditioning and ventilation systems (two studies) | 2009 |
| Electromechanical hand tools | | | |
| Measuring Transformers | | | |
| Aerials, antennas, radars, radio navigation and control items | | | |
| Lifting, moving, and loading equipment | | | |
| Cashiers and ticketing machines | | | |
| Sound processing machines and equipment (including radio equipment) | | | |
| Other motors or motor driven equipment not covered by existing lots and the above | | | |

| Working Plan Study Priority List | Included in the Ecodesign Directive or Working Plan | Preparatory Study Launched | Year launched |
|--|--|--|-------------------------------|
| categories | | | |
| High energy diagnostic and healing equipment | | | |
| Lighting installations not covered by existing lots | | | |
| Rank B | | | |
| Food production equipment | | | |
| Vending machines for beverages and goods | | | |
| End equipment for data use and communication with option of net connection | | | |
| Motor-driven equipment for waste water process, hot water and chemical process | | ENER 28 Waste water pumps | 2012, see transitional period |
| Machines for personal care | | | |
| Ventilation equipment for underground infrastructures and special processes | | | |
| Mowers | | | |
| Boilers | | | |
| Generating sets using fossil fuels | | | |
| | Water-using equipment | | |
| Second Working Plan 2012-2014 | | | |
| Priority A (first 10) | | | |
| Taps and showerheads | Water-related products | JRC Taps and showers | 2013 |
| Window products | Window products | ENER 32 Window products | 2013 |
| Positive displacement pumps | (conditional) Positive displacement pumps | | |
| Fractional horsepower motors | (conditional) Fractional horse power motors under 200W | | |
| Power cables | Power cables | ENTR 8 Power cables in indoor electrical installations | 2013 |
| Servers and data storage equipment | Enterprises' servers, data storage and ancillary equipment | ENTR 9 Enterprise servers | 2013 |
| Steam boilers / systems | Steam boilers (< 50MW) | ENTR 7 Steam boilers | 2013 |
| Heating controls | (conditional) Heating controls | | |
| Lighting controls | (conditional) Lighting controls/systems | ENER 37 (short study) Lighting systems | 2013 |
| Elevators, escalators etc. | | | |
| Priority B (second 10) | | | |
| Medical equipment | | | |
| Blowers | | | |
| Electric kettles | | | |
| Small fans <125 W | | | |
| High temperature fans | | | |

| Working Plan Study Priority List | Included in the Ecodesign Directive or Working Plan | Preparatory Study Launched | Year launched |
|---|---|--|---------------|
| Point-of-sale / ATM equipment | | | |
| Clothes ironing products | | | |
| Non-domestic hot beverage equipment | | | |
| Traffic lighting | | | |
| Toilets | | | |
| Non-priority products | | | |
| Thermal insulation products for buildings | (conditional) Thermal insulation products for buildings | ENER 36 (short study) Thermal insulation in buildings | 2013 |
| Detergents | | | |
| Logistic systems | | | |
| Base station subsystems | | | |
| Mobile phones | | | |
| Home audio/video equipment | | | |
| Stationary agricultural equipment | | | |
| Mobile agricultural machinery | | | |
| Mobile construction machinery | | | |
| Mobile power generation sets | | | |
| Lawn and riding mowers | | | |
| Handheld power tools | | | |
| Stationary construction equipment | | | |
| Kitchen appliances | | | |
| Hot tubs / Spa's | | | |
| Sauna's | | | |
| | Wine storage appliances | ENER 34 Wine storage appliances (will be incorporated in Lot 13 review) | |
| | Smart meters / appliances | ENER 33 Smart appliances. Preparatory Study to be launched in Sept. 2014 | |
| | Power generating equipment under 50 MW | ENER 35 Power generating equipment under 50 MW (scoping study) | 2013 |

1.2 Current regulatory situation

1.2.1 Product groups covered

Products covered have evolved, since the beginning, from common consumer-related products to more complex, often industrial products. Additional complexity has been added by the advent of energy-related products. Therefore, the process is no longer as straightforward as described above. It has become more flexible, in order to adapt to increasing product complexity and evolving knowledge. For example, in many cases the completion of a Preparatory Study is not followed by a standard regulatory procedure but by an open policy making process where the Commission might present, in a Working Document, various policy options and discuss them with stakeholders. These may include Ecodesign Implementing Measures, Self-Regulating Initiatives, the development of benchmarks,

standardisation activities, the review of other legislation (including the introduction of “Ecodesign type” requirements in the latter), as well as questions of the optimal timing of policy instruments and the merging or splitting of product groups. Sometimes such policy processes are already launched before the final version of the Preparatory Study is published. Furthermore, in some cases “scoping studies” or short preparatory studies are conducted instead of full-fledged Preparatory Studies in order to assess the suitability of a product group quickly. Or previous studies are updated to incorporate new information. Also, an Omnibus study has been conducted on the review of a number of product groups together.

As of August 27th, 2014:

- 24 product-specific Ecodesign Regulations (excluding amendments) have been adopted;
- 2 voluntary industry agreements have been recognised by the Commission (and are continuously being reviewed and updated);
- 15 more product groups are in various stages of the policy making process;
- 1 Preparatory Study and 3 short studies have been completed;
- 5 Preparatory Studies are ongoing;
- 2 product groups have been reviewed, but no further action was deemed necessary; and
- 6 product groups are still in the review process¹⁰.

The number of Regulations is not completely identical with the number of original lots, as in some cases product groups have been split or merged during the process. Table 2 gives an overview.

Table 2: Ecodesign Product Groups as of August 27th, 2014

| Lot | Product | Stage | Requirements mandatory from | Review |
|------------------|---------------------------|-----------------------------------|------------------------------------|---|
| Completed | | | | |
| No number | Simple Set Top Boxes | Reg. 107/2009 | 25.02.2010 | Omnibus review study completed, no revision envisaged |
| ENER 1 | Boilers and combi-boilers | Reg. 813/2013 | 26.09.2015 | |
| ENER 2 | Water heaters | Reg. 814/2013 | 26.09.2015 | |
| ENER 3 | PCs and monitors | Reg. 617/2013 | 01.07.2014 | |
| ENER 4 | Imaging Equipment | Voluntary Agreement | 01.01.2012, recognised in Feb 2013 | Consultation Forum in June 2014 |
| ENER 5 | TVs | Reg. 642/2009 Amendm. 801/2013 | 07.01.2010 | Ongoing; includes displays |

¹⁰ The information had to be retrieved from various sources: Ecodesign Consultation Forum Interest Group on CIRCABC: <https://circabc.europa.eu/faces/jsp/extension/wai/navigation/container.jsp>, Aug 27th, 2014; DG ENTR: Ecodesign Legislation. Implementing regulations, 09/07/2014; http://ec.europa.eu/energy/efficiency/ecodesign/doc/list_of_ecodesign_measures.pdf; Slides from the Consultation Forum Meeting on horizontal issues on 5 May 2014: “Energy Labelling/Ecodesign Review of the directives. Update on state of play”; EuP Network: Overview Ecodesign, <http://www.eup-network.de/product-groups/overview-ecodesign/>, Aug 27th, 2014; various Preparatory Study websites; Personal communication with the Commission.

| Lot | Product | Stage | Requirements mandatory from | Review |
|----------------|--|------------------------------------|-----------------------------|--|
| ENER 6 | Standby and off-mode | Reg. 1275/2008 Amendm. 801/2013 | 07.01.2010 | |
| ENER 7 | Battery chargers and external power supplies | Reg. 278/2009 ¹¹ | 27.04.2010 | Ongoing; suggests update and minor adaptation of scope |
| ENER 8 | Office lighting | Reg. 245/2009 | 13.04.2010 | Omnibus review study completed, follow-up study launched |
| ENER 9 | Street lighting | Amendm. 347/2010 | | |
| ENER 10 | Room air conditioning | Reg. 206/2012 | 30.03.2012 | |
| | Comfort fans | | | |
| | Residential ventilation and kitchen hoods | Reg. 65/2014 and 66/2014 | 20.02.2015 | |
| ENER 11 | Electric motors | Reg. 640/2009 Amendm. 4/2014 | 27.01.2014 | |
| | Circulators | Reg. 641/2009 Amendm. 622/2012 | 01.01.2013 | |
| | Fans | Reg. 327/2011 | 01.01.2013 | |
| | Water pumps | Reg. 547/2012 | 01.01.2013 | Omnibus review study completed, no revision envisaged so far (with respect to test tolerances) |
| ENER 13 | Domestic refrigerators and freezers | Reg. 643/2009 | 01.07.2010 | Omnibus review study completed, new Prep Study to be launched in 2014, including ENER 34 Wine Storage Appliances |
| ENER 14 | Domestic dishwashers | Reg. 1016/2010 | 01.12.2011 | Tender for preparatory study launched |
| | Domestic washing machines | Reg. 1015/2010 | 01.12.2011 | |
| ENER 16 | Household tumble driers | Reg. 932/2012 | 01.11.2013 | |
| ENER 17 | Vacuum cleaners | Reg. 666/2013 | 01.09.2014 | |
| ENER 18 | Complex set-top boxes | Voluntary Agreement | 01.07.2010 | Consultation Forum on V4 in June 2014 |
| ENER 19 | Domestic lighting part I “non-directional lamps“ | Reg. 244/2009 Amendm. 859/2009 | 01.09.2009 | Omnibus review completed; Stage 6 review and follow-up study ongoing |
| | Domestic lighting part II “directional lamps” | Reg. 1194/2012 | 01.09.2013 | |

¹¹ The Regulation is only for external power supplies.

| Lot | Product | Stage | Requirements mandatory from | Review |
|-------------------------------------|--|---|-----------------------------|--------|
| ENER 22 | Domestic and commercial ovens | Reg.66/2014 | 20.2.2015 (Tier 1) | |
| ENER 23 | Domestic and commercial hobs and grills | | | |
| ENER 25 | Non-tertiary coffee machines | Reg. 801/2013 | 01.01.2015 | |
| ENER 26 | Networked standby | | | |
| ENTR 2 | Power Transformers | Reg. 548/2014 | 01.07.2015 | |
| In the policy making process | | | | |
| ENER 12 | Commercial refrigerators and freezers | Working Document; Consultation Forum has taken place on July 2 nd , 2014 | | |
| ENER 15 | Solid fuel small combustion installations | Draft Regulation; Ecodesign Committee meeting on 8.7.2014; adoption of the ED and EL measures foreseen before the end of 2014 | | |
| ENER 20 | Local room heating products | Draft Regulation; Ecodesign Committee meeting on 9.7.2014; adoption of the ED and EL measures foreseen before the end of 2014 | | |
| ENER 21 | Central heating products using hot air | Working document; CF took place on 25.9.2013; ED Committee meeting foreseen 3rd quarter 2014; adoption of the ED measure foreseen 1st quarter of 2015 | | |
| ENER 24 | Professional washing machines, dryers and dishwashers | Working document; no regulation envisaged at the moment; plan to mandate the development of harmonized standards | | |
| ENER 28 | Wastewater pumps | Short Working Document; suggestion to include in Regulation 547/2012 revision | | |
| ENER 29 | Clean water pumps (larger than those under Lot 11); aquarium and swimming pool pumps | Short Working Document; suggestion to include in Regulation 547/2012 revision | | |

| Lot | Product | Stage | Requirements mandatory from | Review |
|------------------------------------|--|---|-----------------------------|--------|
| ENER 30 | Motors and drives (outside scope of Regulation 640/2009) | Short Working Document; CF envisaged | | |
| ENER 31 | Compressors | Working Document introducing two policy options | | |
| ENTR, no number | Medical imaging equipment | Draft Voluntary Agreement | | |
| ENTR 1 | Refrigerating and freezing equipment | Draft Regulation | | |
| ENTR 3 | Sound and imaging equipment | Working Document; Draft Voluntary Agreement for Games Consoles | | |
| ENTR 4 | Industrial and laboratory furnaces and ovens | Working Document (introducing two policy options); Impact Assessment ongoing; CF on May 16, 2014 | | |
| ENTR 5 | Machine tools | Working Document (introducing various policy options); Draft Voluntary Agreement; Impact Assessment ongoing; CF took place on May 6, 2014 | | |
| ENTR 6 | Air-conditioning and ventilation systems | Draft Regulation | | |
| Preparatory Study completed | | | | |
| ENER 27 | Uninterruptible power supplies (UPS) | | | |
| ENER 35 | Power generation equipment under 50 MW (scoping study) | Scoping study completed, no Preparatory Study envisaged | | |
| ENER 36 | Thermal insulation (short study) | Short study completed, no Implementing Measures envisaged | | |
| ENER 37 | Lighting Systems (short study) | Short study completed in April 2014; launch of limited Preparatory Study planned until Dec 2016 | | |
| Preparatory Study ongoing | | | | |
| ENER 32 | Windows | Draft Task 1-4 available | | |
| ENTR 7 | Steam boilers | Draft Task 1-6 | | |

| Lot | Product | Stage | Requirements mandatory from | Review |
|--------|--------------------|---|-----------------------------|--------|
| | | available | | |
| ENTR 8 | Power cables | Draft Task 1-5 available | | |
| ENTR 9 | Enterprise servers | Stakeholder meeting took place; supporting document and presentations available | | |
| JRC | Taps and showers | Task 1-7 available | | |

1.2.2 Initiatives for evaluation and review of the Ecodesign directive

In 2012, an evaluation of the Ecodesign Directive 2009/125/EC took place in response to Article 21 of the Directive.¹² The consultants conveyed a generally positive view of the Directive's goals and approach but cautioned that it was in many cases too early to arrive at definitive conclusions because only nine Implementing Measures had been in force at the time, and only for a short period. It also pointed to some shortcomings in the implementation and application of the Directive, including lengthy procedures, insufficient standardisation efforts, insufficient resources at the Commission to deal with the growing regulatory and communication work, insufficient coordination with other EU policies or low level of ambition in certain product groups. The feasibility of extending the Directive to non-energy-related products was regarded with scepticism. In its related report¹³, the Commission confirmed that no revision or scope extension was deemed necessary. However, it announced a number of incremental improvements, including:

- Delegation of non-regulatory work such as communication to external bodies in order to free resources in the Commission;
- Extended use of external expertise, including the JRC, EACI, and stakeholders; including for standardisation work;
- Annual collection of market surveillance data, and increased efforts via the IEE programme to coordinate and reinforce market surveillance activities. In this context, projects have been launched such as MarketWatch (supporting civil society efforts in checking shops and testing products)¹⁴, CompliantTV (assessing the compliance of TVs with Ecodesign and Energy Labelling requirements)¹⁵, and Atlete II (checking the compliance of washing machines)¹⁶;
- The establishment of a product database on energy efficiency and other environmental aspects of products placed on the EU market. The work is being conducted by Sogeti Luxembourg S.A. together with the Austrian Environment Agency and Euroscript; an inception report has been

¹² Centre for Strategy and Evaluation Services (2012), Evaluation of the Ecodesign Directive (2009/125/EC). Final Report, March 2012. http://ec.europa.eu/enterprise/policies/sustainable-business/ecodesign/review/index_en.htm

¹³ Report from the Commission to the European Parliament and the Council: Review of Directive 2009/125/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for the setting of ecodesign requirements for energy-related products (recast). 2012 Review. <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2012:0765:FIN:EN:PDF>

¹⁴ Project website: www.market-watch.eu

¹⁵ Project website: <http://www.compliantv.eu/eu/about-the-project/home>

¹⁶ Project website: <http://www.compliantv.eu/eu/about-the-project/home>

published in November 2013.¹⁷ The database will however only cover six product groups: lighting products; air-conditioners; vacuum cleaners; tyres; computers and computer servers and one more product group that will be selected by the European Commission. Data will be collected from publicly available sources and voluntary contributions by manufacturers; there will be no obligation to contribute.

Furthermore, the Commission announced that some aspects that had not been able to be evaluated properly could be reassessed in the context of the evaluation of the Energy Labelling Directive, due in 2014. This study¹⁸ was awarded to a consortium led by Ecofys (NL). The issue of scope extension is being dealt with by IRC (University of Coimbra) and Oeko-Institut and started in January 2013. It focuses on the Energy Labelling Directive (2010/30/EU), but also reassesses certain aspects of the Ecodesign Directive, especially the relation to other policies and the feasibility and added value of extending the scope to non-energy related products, product systems, and means of transport. Furthermore, a better coverage of non-energy aspects and other life cycle phases is an issue. The first findings report has been published at the beginning of February 2014. The final technical report is currently being finalised and will be published in June 2014.

With respect to Ecodesign, the First Findings report concludes, much in line with the first evaluation study, that the policy in general is suitable to achieve its objectives, however could be improved in many specific respects: level of ambition of individual Implementing Measures, delays in rulemaking processes, lack of enforcement, or misguided assumptions in the modelling of energy savings. Also, it is suggested to improve the consistency check with other EU policies early in the decision process – if possible, already in the Working Plan stage. Various suggestions are made to improve the evidence base, including the introduction of a mandatory product database and the use of engineering analysis. It is also recommended to focus more on non-energy aspects and other life cycle phases than the use phase. On the other hand, an extension of scope to non-ErP or means of transport is currently not recommended. It is still possible that the political decision process following the study may result in such an extension, however, it does not seem very likely at present.

Additionally, there have been various initiatives to improve the coverage of resource / material aspects in Ecodesign. The DG JRC-IES had been running a project¹⁹ “Integration of resource efficiency and waste management criteria in European product policies” which comprised two phases: from December 2009 to September 2011²⁰, and from September 2011 to December 2012²¹. In the first phase, based on a review of existing methodologies and policies, it developed methodologies for the assessment of reusability / recyclability / recoverability; recycled content; use of priority materials; hazardous substances, and durability. Ecodesign requirements were suggested for an exemplary product group (Hard Disk Drive). In the second phase, the methods and indices were further developed, tested on several product groups, and possible Ecodesign requirements were derived. Furthermore, this phase dealt with the development of verification procedures.

¹⁷ Energy-Related Products Database: Development and management of a database on energy efficiency and other environmental aspects of products made available on the EU market. Inception report, 11 Nov 2013. <http://www.coolproducts.eu/resources/documents/2014-ALL/Inception-Report.pdf>

¹⁸ Study website: www.energylabelevaluation.eu

¹⁹ See presentation at JRC website: <http://lct.jrc.ec.europa.eu/assessment/projects>

²⁰ See: Ardente, F.; Wolf, M—A.; Mathieux, F.; Pennington, D.: Integration of resource efficiency and waste management criteria in the implementing measures under the Ecodesign Directive. Final Executive Summary. JRC, July 2011

²¹ See: Ardente, F.; Mathieux, F.: Integration of resource efficiency and waste management criteria in European product policies – Second phase. Final Executive Summary with logbook of comments from stakeholders. JRC, December 2012.

From November 2012 to September 2013, a study “Technical assistance for a material-efficiency Ecodesign report and module to the Methodology for the Ecodesign of Energy-related Products (MEErP)”²², was conducted for DG ENTR by a consortium led by BIO Intelligence Service. It assessed the possibility of strengthening Material Efficiency aspects in the Ecodesign methodology. The final report was published in December 2013 and an updated version of the EcoReport tool with guidance was elaborated. The study establishes a list of priority materials and identifies core parameters that can seem suitable for the consideration of material efficiency aspects in Ecodesign: the recyclability benefit rates (describing the “potential output” for future recycling), the recycled content (describing the “input” of recycled material), product lifetime, and a Critical Raw Material Index. The four new parameters are included in an updated version of the EcoReport Tool and tested on two product examples (TVs and washing machines). It is concluded that the tool is fully functional with the new parameters and can be used in future preparatory studies.

1.3 Objective and structure of the present study

The objective of the current study is to support the Commission in developing the next Working Plan 2015-2017 by:

- Developing a convincing classification of product groups; and
- Setting up an indicative list of no more than 20 priority products for Ecodesign (and Energy Labelling) legislation, taking into account the criteria of Art. 15 as well as existing Ecodesign regulations and ongoing regulatory processes.

In contrast to earlier Working Plan studies, the consumption of other resources is to be considered along with the consumption of energy when producing a preliminary ranking of products.

Stakeholder input is considered crucial for both filling data gaps and ensuring stakeholder support for the Ecodesign process. An important part of the study is therefore the development of a relevant and helpful stakeholder consultation process.

The study consists of the following tasks:

1.3.1 Task 1 – Study definition

The aim of this task is to specify the background and context of the study, to describe the approach for stakeholder consultation as well as the methodological approach.

Subtask 1.1 – Background

The objective of this subtask is to describe the background, context and objectives of the study, as well as the previous work on which it builds.

Subtask 1.2 – Stakeholders

The core objective of this subtask is to involve relevant stakeholders with the triple aim of:

- Ensuring stakeholder support for Ecodesign policies;
- Learning about stakeholder needs in order to be able to adapt policies; and
- Tapping into specific (product-related, consumer-related or environmental) information that stakeholders possess.

²² Study website: <http://meerp-material.eu>

Subtask 1.3 – Methodology

The aim of the subtask is outlining the methodology and describing the reasoning behind it.

1.3.2 Task 2 – Product groups

The objective of this task is to produce a systematic list of product groups from which priority groups will be chosen for analysis in Tasks 3 and 4.

Subtask 2.1 – Review of product groups already considered

The lists of products included either in the transitional period or in previous Working Plans will be re-assessed in order to identify for which of these product groups no Implementing Measures or self-regulation initiatives were introduced, in order to check whether these should be re-introduced.

Subtask 2.2 – Complementary list of product groups

The aim of this subtask is to draw up a complementary list of the remaining product groups and structure it in a way appropriate for choosing meaningful priority product groups for Ecodesign and Labelling measures.

1.3.3 Task 3 – Preliminary Analysis

The objective of this task is to choose no more than twenty (indicative value) priority product groups, ranked by resource improvement potential.

Subtask 3.1 – Volume of sales and trade

The objective of subtask 3.1 is to calculate stock data, sales and trade volumes for the product categories defined in task 2 within the EU-27 in order to assess the magnitude of resource consumption and improvement potential linked to each product group.

Subtask 3.2 – Resource consumption

In this subtask, the resource consumption of the product categories resulting from Task 2 (including energy consumption and consumption of other resources, specifically material efficiency) is calculated for EU-27 by considering the average resource consumption per individual product, the average use pattern and the volume of sales and trade.

Subtask 3.3 – Improvement potential

The goal of this subtask is to determine the resource improvement potential of each product group that can be realised without excessive cost. Product groups will be ranked according to this potential in a list which will constitute the main result of the preliminary analysis in Task 3.

Subtask 3.4 – Consistency check

The aim of subtask 3.4 is to check whether the improvement options identified suggest a different grouping of products. Also, suggestions for horizontal measures may be introduced at this stage.

1.3.4 Task 4 – Elaborated Analysis

The goal of this subtask is to produce a product matrix, where the ranking of product groups is complemented with quantitative and qualitative considerations to facilitate the decision making

process within the Commission to include specific product groups in the Ecodesign Working Plan 2015-2017.

Subtask 4.1 – Other environmental impacts

The goal of this subtask is to complement the analysis conducted in subtasks 3.2 and 3.3 with the analysis of additional environmental impacts and improvement potential with respect to these impacts.

Subtask 4.2 – Existing regulatory coverage / regulatory feasibility

The objective of this subtask is to present an overview of the regulatory situation, including all aspects that may support, impede or reduce the need for ecodesign measures.

Subtask 4.3 – Improved industrial competitiveness

This subtask will consider what returns in terms of improved competitiveness for a specific sector would be likely to be achieved if an Ecodesign Regulation for a given product group were to be introduced.

Subtask 4.4 – Final matrix of product groups

The objective of this subtask is to present the results of Task 3 and Subtask 4.1 to Subtask 4.3 in an integrated way to facilitate decision making. The consortium is not expected to develop an overall ranking integrating the results of the different subtasks with the result of task 3, but rather to summarise the considerations for inclusion of a given product group in the Ecodesign Working Plan 2015-2017.

1.4 Approach and experiences from previous Working Plan studies

This study intends to build as much as possible on the previous Working Plan studies: the First Working Plan study by EPTA and others,²³ running from 2006 to 2007; and the Second Working Plan study²⁴ by Van Holsteijn en Kemna (VHK), running from November 2010 to December 2011. Therefore, it seems appropriate to present the approach in some detail here in order to draw lessons (see chapter 1.5). The following section focuses on the second Working Plan study. Firstly, because, unlike the first Working Plan study but in line with the present study, it focuses on ErP and not only EuP, which made a different approach at classifying and prioritising products necessary. Secondly, because it already took up the experiences, findings, and methods of the first study and incorporated or modified them. It hence forms an excellent basis for the present study.

1.4.1 VHK study – Task 2: Product categorisation

Task 2 was dedicated to creating a meaningful product group categorisation. In **step 1**, the VHK study started out with the Prodcom list, reducing it by applying three sub-steps:

- Excluding non-energy related products;
- Excluding products that have been dealt with in the first Working Plan; and

²³ EPTA, PE International, NTUA (2007): Study for preparing the first Working Plan of the EcoDesign Directive. Final report: 22/11/2007. http://ec.europa.eu/enterprise/policies/sustainable-business/files/workingplan_finalreport_en.pdf.

²⁴ Van Holsteijn & Kemna (2011): Study on Amended Working Plan under the Ecodesign Directive (remaining energy-using products and new energy-related products). Version 16 December 2011. <http://www.ecodesign-wp2.eu/documents.htm>

- Excluding products that have been dealt with in the Ecodesign process.

These steps resulted in a remaining number of 838 Prodcum categories.

In **step 2**, an additional, complementary approach was applied for defining product groups: A top-down analysis was conducted, based on an energy flow diagram, to identify the product groups and economic sectors where most energy was used. Naturally, this exercise was restricted to energy-using products. It must be noted that categorisations in the energy flow statistics do not match Prodcum categories: While the former are defined by product functions, the latter are determined by industrial sector. It was concluded that a classification by product functions was more suitable for defining meaningful Ecodesign requirements than a classification by industrial sector. For example, for industrial products, it would make more sense to distinguish machines and processes for heating, cooling, mixing, or motion, instead of “paper production equipment” or “textile industry equipment”. This approach renders product groups that are technically more homogeneous and can therefore more easily be tackled by Implementing Measures. In addition, it avoids double regulation for functionally and technically very similar products. Furthermore, the study authors suggested to introduce a hierarchy of functions, distinguishing generic and specific functions.

From the groups identified in the energy flow diagram, those covered in the first Working Plan study were again excluded. The result was a list of 14 EuP product groups, defined by primary function.

In **step 3**, this classification approach was applied to the 57 product groups identified by the first Working Plan study. They were re-analysed, and partly re-grouped according to functions. For example, it was suggested to combine measuring equipment used in different industrial sectors in a single group “measuring equipment”. In this process, it became also clear that it would be necessary to distinguish products used in the industrial sector from those used in the tertiary or household sector. For example, an industrial oven is very different from an oven used in a domestic kitchen.

A **first result** was a revised product grouping. It applied a hierarchical approach, applying three levels of differentiation: The first level is the context of use (primary, secondary, tertiary sector or domestic). The second level is the primary function (e.g. movers, compressors, pumps, fans, heaters, ovens, etc.). The third level is specific function, adding detail to the generic function. Non-energy using ErP were considered by assigning, where appropriate, to energy-using products corresponding energy-related ones (e.g. “thermal insulation” was assigned as a non-energy using ErP to the energy-using product group “food presentation and storage”). This exercise resulted in a list of 51 energy-using product groups on the third hierarchical level, some of them with some related ErP (product groups already dealt with excluded).

1.4.2 VHK Study – Task 3: Preliminary (energy) assessment

In Task 3, a tentative ranking was developed based on an initial analysis of energy consumption and improvement potential. In a first step, some product groups were excluded from the list resulting from Task 2. This was not a principal decision about their suitability for Ecodesign, but an attempt to make the best of the limited resources. The following groups were excluded:

- “Product groups that are essentially industrial installations, and of which the environmental impact is already regulated by other forms of legislation [...]”;
- Groups for which “this study was not able to quantify this saving potential. Examples are:
 - Various industrial / process equipment (e.g. equipment for homogenizing, combining, dispersing, etc.);

- Various bonding equipment (welding, soldering, gluing equipment, possibly extended by other means of fastening equipment); and
- Various equipment for surface treatment e.g. equipment/machinery for metal plating (chrome plating, zinc plating), spraying (with solvents) or curing (powder coating, enamelling, UV hardening, etc.)”.

The study explicitly notes that “these product groups can be considered in a possible follow-up background study for the Ecodesign Working Plan for the years 2015-2017”;

- “The energy-related product "Variable speed drive" has been excluded [...] in the light of the 'extended product approach' as applied by the Commission, exemplified by measures relating to electric motor systems such as the Motor Regulation (No 640/2009) and Fan Regulation (No 327/2011).“

(all citations from VHK 2011, Final Report Task 3, p.20-21).

All in all, 36 product groups remained for which an assessment was conducted. For eight further product groups, sufficient information could not be retrieved. These were not ranked, but listed under a heading “For further consideration”.

The relationship of these product groups to the groups identified in Task 2 is not entirely transparent. Some pragmatic considerations have been applied to partly adjust the grouping. In the case of very broad product groups, specific subgroups have been selected, but the criteria for the choice are not described. Furthermore, two additional product groups have been added (lighting controls and fractional horsepower motors), and for two product groups (low voltage switchgear, lawn and riding mowers) it is not entirely clear whether they are covered by the original systematic. Table 3 compares the list of product groups that have been identified in Task 2 to those treated in Tasks 3 and 4. The numbers in column “Product groups in Tasks 3 and 4” indicate the chapters of the final report that deal with the respective product. Chapter 4 headings indicate that a product is covered in the main section, chapter 5 headings show that it is a product “for further consideration”.

Table 3: Product groups dealt with in Tasks 2, 3 and 4 of the Second Working Plan study

| Product groups in Task 2 | | Related non-energy using ErP | Product groups in Tasks 3 and 4 |
|--|--|---|---|
| Energy-using product group | Examples | | |
| Primary sector (agriculture and mining) | | | |
| mobile agricultural machinery | various mobile equipment for soil cultivation (plough, tiller, rotovator, cultivator, etc.), planting (seeder, etc.), fertilizing & pest control, harvesting / post-harvest, hay making, loading , etc. (includes mobile machinery for horticultural and forestry) | | 4.1 Mobile agricultural machinery |
| stationary agricultural equipment | various stationary equipment used in agricultural, horticultural and forestry applications (excluding equipment already dealt with by Ecodesign policy process), for instance poultry incubators/brooders, milking robots, etc. | | 4.4 Stationary agricultural equipment |
| mobile construction equipment | various moving equipment for mining & quarrying (dozers, crawlers), building construction (dozers, scrapers, cranes), road construction (excavators, road rollers, etc.), tunnel construction (tunnel boring machinery), bridges, dams & canal construction etc. | | 4.2 Mobile construction machinery |
| stationary construction equipment | various stationary equipment used in construction applications, including mining and quarrying. (excluding equipment already dealt with by Ecodesign policy process) | | 4.5 Stationary construction equipment |
| Secondary sector (manufacturing applications) | | | |
| logistic equipment | (intra)logistic systems (address single materials handling product and complete turnkey systems. It focuses on automation, control and IT, and integration of several types of materials handling equipment into one system) | belts, gears, drives, bearings | 4.30 Logistic systems |
| | various moving equipment (ride-on, hand-guided or towed) for internal and external transport purposes. Examples are: forklifts, mobile platforms, platform truck, airport people carrier, electric pallet jack, telescopic handler, etc. | | |
| tooling equipment | includes laser-cutting, electrode shaping, water-jet cutting | | |
| material processing equipment | homogenizing equipment (mixers, grinders, pulverizing, kneaders, etc.) | | |
| | combining equipment (rolling, laminating, calendaring) | | |
| | bonding equipment (gluing, fastening, ultrasonic welding, stitching, sewing) | | |
| | mechanical drying equipment: spinning, centrifuging | | |
| | dispersing, spraying, projecting equipment | | |
| handheld tools | various handheld / portable motor tools for professional and DIY use (lawn blowers, hand tools, etc.), | | 4.3 Handheld power tools |
| positive displacement pumps | both reciprocating and rotary (for industrial processes and also hydraulic applications) | belts, gears, drives, filters, piping / connections | 4.9 Positive displacement pumps |
| fluid handling | irrigation equipment, separators, reverse osmosis equipment, spraying equipment | valves, pipes, connectors, sprays, nozzles, filters | |
| small fans (< 125 W) | as applied in various household and tertiary equipment / appliances | belts, gears, drives, filters, piping / ductwork | 4.6 Small fans (< 125 W) 5.1 Air filters |

| Product groups in Task 2 | | | Product groups in Tasks 3 and 4 |
|--|---|--|--|
| Energy-using product group | Examples | Related non-energy using ErP | |
| | | | 5.2 Ducts and duct systems |
| blower (pressure ratio > 1.1) | as applied in various household an tertiary equipment / appliances | | 4.7 Blowers |
| pneumatic equipment | compressor, distribution, end-use equipment (spray guns, riveters, drills sand-blasting) incl. vacuum pumps | belts, gears, drives, terminal equipment | |
| hydraulic equipment | hydraulic pump, distribution, end-use equipment (cylinders, actuators, power washer, etc.) incl. suction pumps | | |
| medium/large electric power generation and storage | power generation and storage > 50 MW (fossil, nuclear, hydro and renewable fuels, separate or combined) | waste heat recovery | |
| medium large electric power transport/distribution | cables for electric power transport and distribution (high to medium voltage, not low voltage applications) | | |
| small scale electric power generation (<50 MW) | renewable energy installations: wind turbines, photovoltaic-, hydropower-, geothermal-, waste-heat driven installations (e.g. Organic Rankine Cycles) | waste heat recovery | |
| | fossil fuel installations: CHP equipment and power generating sets | | 4.10 Mobile power generators |
| small scale electric power storage (< 50 MW) | batteries, chemical accumulators, flywheels for UPS | | |
| small scale power distribution | power cables (low-voltage, for local distribution - within buildings) | | 4.36 Power cables |
| power handling equipment | non-utility power equipment (converters, inverters, transformers) | | (5.8 Low-voltage switchgear and control gear) |
| large scale electrolysis equipment | for instance used for aluminium production | | |
| small scale electrolysis equipment | for instance used for electrochemical surface treatment (electro galvanizing, chrome-plating, etc.) | | |
| (opto)chemical process equipment | for instance used for etching, vacuum deposition, wafer machines, etc. | | |
| process heating equipment | for instance used for distilling, drying, cleaning, sterilizing | | |
| radiation process equipment | for instance used for UV curing systems, cleaning by heat treatment heat recovery | | |
| thermal joining process equipment | for instance used for welding (gas arc, ultrasonic, IR, induction, laser, etc.) | heat recovery | |
| | for instance used for soldering, brazing | | |
| steam boilers steam/vapour boilers | (for chemical, paper, food production industry, etc.) | heat recovery, moisture recovery | 4.24 Steam boilers |
| (de)humidification equipment | various equipment for climate of process conditions: process humidification (clean rooms, paper mill, wood processing) and dehumidification | heat recovery, moisture recovery | |
| process control components | control panels, switchboards, powered valves, dosing systems (solenoids, magnetic couplings, | | |

| Product groups in Task 2 | | | Product groups in Tasks 3 and 4 |
|---|--|---|---|
| Energy-using product group | Examples | Related non-energy using ErP | |
| | etc.) | | |
| equipment for measurement / testing | measurement equipment for physical and chemical properties (weighing/scales, power meters, flow meters, clocks/timers) and testing equipment - includes utility meters, parking meters | | |
| | for instance X-ray equipment used for e.g. weld checking | | |
| Tertiary / household sector | | | |
| safety and signaling lighting equipment | lighting for emergency/safety lighting, traffic signalling, daylight systems | | 4.29 Traffic lights |
| commercial lighting equipment | illuminated displays, signs, electronic labels, decorative/festivity lighting (e.g. X-mas lighting etc.) | | |
| indoor climate equipment | for instance used for humidification, dehumidification, filtration, ionisation heating emitters, heating control equipment | thermal insulation, paints / window films, shading, distribution (ductwork, air vents / flaps, filters, etc.) | 4.11 Thermal insulation products for buildings 4.12 Window products for buildings 4.31 Heating controls 5.1 Air filters 5.2 Ducts and duct systems 5.3 Humidifiers (tertiary) 5.5 Solar shading devices |
| | district heating space heating/cooling equipment | | |
| special purpose ventilation | for high temperature, safety, smoke extraction, etc. | | 4.8 High temperature ventilation equipment |
| building control & access | automatic doors, burglar alarms, fire/smoke alarms, thermostats, sensors, building automation systems | | |
| person transport | person transport (elevators, escalators, moving walkways, telerepics, etc.) | belts, gears, drives | 4.27 Elevators, escalators and moving walkways |
| equipment for heated water applications | showerheads and taps (indirect ErP)water purification/filtering equipment (anti-legionella) | insulation, taps & showerheads, | 4.20 Taps and showerheads |
| | district heating water heating equipment | | |
| equipment for cold water applications | toilets, taps, water dispensing equipment (horticultural products, cleaning products), water purification/filtering | valves, waste water re-use | 4.21 Toilets |
| food presentation and storage equipment | heated displays/service cabinets, catering equipment | thermal insulation | |
| food/drink preparation equipment | kitchen appliances (mixers, juicers, blenders for both domestic or professional use), coffee/tea makers (nondomestic only) | | 4.16 Kitchen appliances 4.22 Electric kettles / water cookers 4.28 Non-domestic hot beverage equipment 5.6 Commercial kitchen |

| Product groups in Task 2 | | | Product groups in Tasks 3 and 4 |
|---|--|--------------------------------|--|
| Energy-using product group | Examples | Related non-energy using ErP | |
| | | | equipment |
| cleaning / hygienic equipment | floor cleaning equipment (floor washing / mopping) | detergents, thermal insulation | 4.14 Detergents |
| | professional mobile (self-propelled) cleaning/service products: cleaning trucks, sweepers, snow graders, etc. | | |
| personal care | personal care (hair dryers, waterbed, motorised mattress support, massage, sauna, personal weighing scale, clothes ironing products) for both domestic and tertiary applications | thermal insulation | 4.13 Clothes ironing products 4.26 Saunas 5.6 Personal care |
| diagnostic imaging equipment | for instance MRI, CT scan, X-ray and/or ultrasound equipment | | |
| therapeutic & support equipment | for instance various equipment for life support, patient monitoring, therapeutic applications, etc. | | 4.33 Medical equipment |
| indoor leisure equipment | music instruments, toys, animated displays, aquarium, sewing machines, hot tubs/whirlpools, saunas for both domestic and professional applications | | 4.25 Hot tub / Spa / Whirlpool 4.26 Saunas |
| outdoor leisure equipment | stationary equipment such as swimming pools (including indoor pools), amusement parks, playground equipment, etc. | | 5.4 Swimming pool equipment |
| | mobile (outdoor) equipment/machinery, such as snowmobiles, quads, etc. (not belonging to group 'transport' which is excluded from scope) | | (4.17 Lawn and riding mowers?) |
| (data / communication) domestic end-use equipment | consumer electronics (mostly limited to audio/video products and portable electronics not already dealt with by Ecodesign process) | | 4.15 Home audio products 4.34 Mobile phones |
| professional end-use equipment | TV-A/V equipment (AV studio, camera's, equipment for PA/public address) | | |
| | ICT equipment (blade servers, data storage, i/o, phone, local area network equipment) | | 4.19 Servers and data storage equipment |
| | financial transactions equipment (cashiers, ticketing, ATMs) | | 4.23 Point-of-sale and cash dispenser equipment |
| distribution of data/communication | ICT transmission/distribution equipment (landlines and wireless) - for TV, radio, internet, phone, data (e.g. base stations) | | 4.18 Base station subsystems |
| other radio wave transmission / positioning | other radio wave equipment (radar/radio) for positioning, navigation, etc. | | |
| not mentioned | | | 4.32 Lighting Controls (tertiary and public street lighting) |
| not mentioned | | | 4.35 Fractional horsepower motors (below 200 W, covering a broad range of household and tertiary applications) |

For the products indicated in the last column of the table above, the following aspects were assessed in Task 3:

- The volume of sales and trade;
- The energy consumption of the current stock (calculated on the basis of a “typical” product and average use pattern). For energy-related products that do not themselves consume energy, the energy consumption of the related energy-using product is used;
- The improvement potential,; calculated as the difference between a reference scenario and an improvement scenario, based on the projected stock in 2030; and
- An assessment of possible cost increases induced by improvement options. However, this assessment could not rely on actual cost information for improved products and was therefore conducted on the basis of various hypothetical scenarios. In many cases, the assessment had to remain entirely qualitative.

This resulted in a preliminary ranking, based on energy savings potential only, of those 36 groups for which sufficient data could be retrieved. The preliminary ranking is shown in Figure 2.

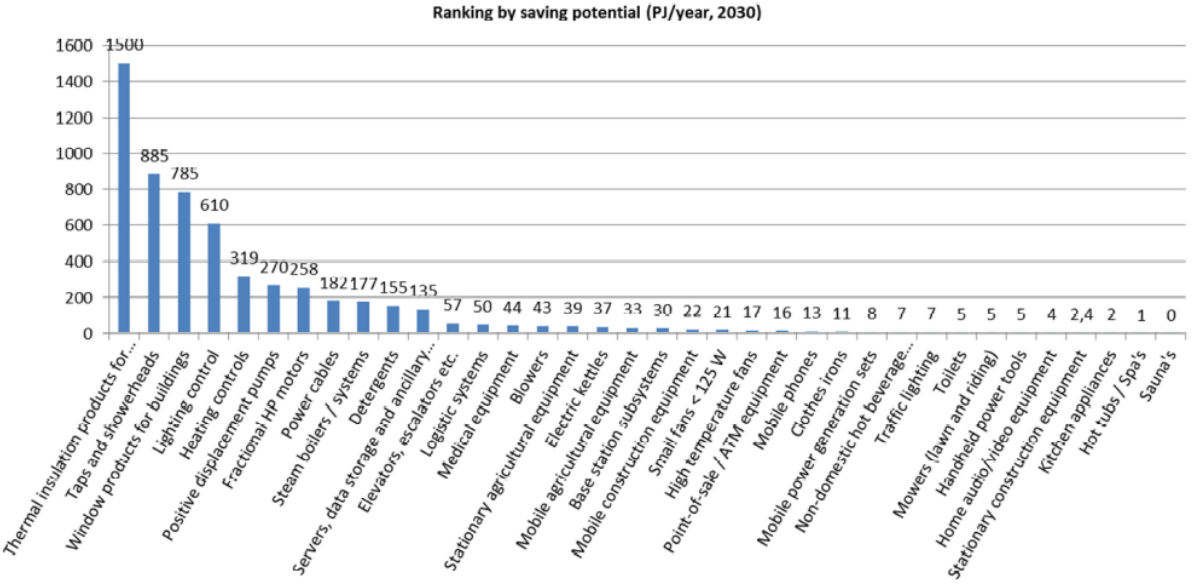


Figure 2: Preliminary ranking based on Energy Savings Potential in Second Working Plan study. Source: VHK 2011, Task 3 report, p.24.

The Task 3 report contains a short chapter on each product group considered, giving more detail on data, methodology, and results.

For both Tasks 3 and 4, the authors caution that due to limited resources, results are preliminary and must be refined in the course of preparatory studies.

1.4.3 VHK study – Task 4: Other environmental impacts and policy context

Task 4 was dedicated to assessing other environmental impacts and the policy context.

The environmental parameters to consider were selected according to the MEEuP methodology (MEEuP 2005) and comprised: consumption of resources; emissions to air, water, and soil; end-of-life aspects; other environmental impacts such as noise or radiation. Most of them are not measurable on the product itself. They were judged in a qualitative manner, based on desk research, as data constraints and the restricted time and budget did not allow for a full quantitative assessment on the basis of LCAs. This was done in two steps: first, each environmental impact category was analysed separately. It was identified in which ways a certain impact (e.g. acidification) comes about (e.g. by combustion processes) in order to derive which product groups may be relevant. In a second step, analysis was conducted on the level of product groups in order to identify, for each product group, environmental “aspects” (measurable qualities of the product that have an influence on the environmental impact parameters; e.g.: substance content).

In terms of policy context, the following aspects were qualitatively assessed: absence of Community legislation to regulate the environmental aspects properly, existing third country legislation, other Community legislation with an impact on the product, suitability for complementary measures such as energy labelling, eco-labelling and green public procurement.

These considerations were then applied to the product groups to produce a final ranking (which, for some product groups, differed considerably from the “energy only” ranking produced in Task 3). The consultants faced the challenge that extremely heterogeneous aspects and findings with, in some cases, high uncertainty had to be integrated into a single ranking. In the light of this problem, no formal methodology or scoring system was applied in order to arrive at the final ranking. Rather, qualitative arguments were developed and presented in order to justify up- or downgrading of products. The products were grouped into three priority categories, marked by colour. The first priority group (dark green) covered the products of rank 1-10, the second priority group (medium green) rank 11-20, and the remaining products (light green) cover rank 21-36. The final ranking is presented in Table 4.

Table 4: Final Ranking in Second Working Plan study

| Product group | Saving potential (PJ/year, 2030) | Energy ranking | Final ranking |
|---|----------------------------------|----------------|---------------|
| Taps and showerheads | 885 | 2 | 1 |
| Window products for buildings | 785 | 3 | 2 |
| Positive displacement pumps | 270 | 6 | 3 |
| Fractional HP motors | 258 | 7 | 4 |
| Power cables | 182 | 8 | 5 |
| Servers and data storage equipment | 135 | 11 | 6 |
| Steam boilers / systems | 177 | 9 | 7 |
| Heating controls | 319 | 5 | 8 |
| Lighting controls | 610 | 4 | 9 |
| Elevators, escalators etc. | 57 | 12 | 10 |
| Medical equipment | 44 | 14 | 11 |
| Blowers | 43 | 15 | 12 |
| Electric kettles | 37 | 17 | 13 |
| Small fans <125 W | 21 | 21 | 14 |
| High temperature fans | 17 | 22 | 15 |
| Point-of-sale / ATM equipment | 16 | 23 | 16 |
| Clothes ironing products | 11 | 25 | 17 |
| Non-domestic hot beverage equipment | 7 | 27 | 18 |
| Traffic lighting | 7 | 28 | 19 |
| Toilets | 5 | 29 | 20 |
| Thermal insulation products for buildings | 1500 | 1 | 21 |
| Detergents | 155 | 10 | 22 |
| Logistic systems | 50 | 13 | 23 |
| Base station subsystems | 30 | 19 | 24 |
| Mobile phones | 13 | 24 | 25 |
| Home audio/video equipment | 4 | 32 | 26 |
| Stationary agricultural equipment | 39 | 16 | 27 |
| Mobile agricultural machinery | 33 | 18 | 28 |
| Mobile construction machinery | 22 | 20 | 29 |
| Mobile power generation sets | 8 | 26 | 30 |
| Lawn and riding mowers | 5 | 30 | 31 |
| Handheld power tools | 5 | 31 | 32 |
| Stationary construction equipment | 2 | 33 | 33 |
| Kitchen appliances | 2 | 34 | 34 |
| Hot tubs / Spa's | 1 | 35 | 35 |
| Sauna's | 0 | 36 | 36 |

Source: VHK 2011, Final Report Task 4, p.9.

1.5 Lessons and Challenges

The review of the previous policy process and the existing Working Plan studies, specifically the Second Working Plan study as presented above, reveals the following challenges that are also relevant for the present study:

1.5.1 Definition of product groups

The definition of product groups determines not only the assessment of the eligibility criteria (sales and trade volume, environmental impact, improvement potential) but also the feasibility of conducting meaningful preparatory studies and defining meaningful ecodesign requirements. Product groups must be *broad enough* to have a relevant impact and *narrow enough* with regard to feasibility of ecodesign requirements. Furthermore, they must be sufficiently *homogeneous* (again with regard to feasibility) and sufficiently *consistent* with existing categorisations to allow data gathering (for example,

with Prodcum categories in order to collect sales and trade data, or with product definitions used in LCAs to collect environmental data). Regarding the whole system of categories, the categories should be *mutually exclusive* to avoid overlaps and *exhaustive* in the sense of covering all products in the scope of the Ecodesign Directive.

In previous studies, various different classification criteria have been applied, and often combined, each with their pros and cons:

- Classification according to industrial sector (as in Prodcum);
- Classification according to product type (such as the CPC (Central Product Classification) by the United Nations and, building on it, the European CPA (Classification of Products by Activities));
- Classification according to the functionality of the final product (VHK and EPTA study), or to their application in the agricultural / mining, industrial, tertiary or domestic sector (as developed by the VHK study); and
- Various other classification criteria, such as mobile / stationary, size, power range etc. (EPTA study).

All systems have their respective pros and cons. Prodcum allows for relatively easy access to sales and trade data, although suitable classifications are not always available and sometimes the sales data is inaccurate. It should also be considered that some types of ErP are not covered by Prodcum Eurostat statistics. This is, for example, true for buildings. The design of buildings makes a very large impact on lifetime energy consumption as building materials such as cement and steel are energy intensive materials and so the building's lifetime will be important, as well as energy consumption in the use phase.

Classifications such as CPC and CPA allow for a grouping that better reflects the characteristics of the actual product but there is no accordingly structured database for sales and trade data.

A focus on function is hoped to enable the formulation of consistent requirements across different sectors and applications and to avoid double effort. However, difficulties arise here, too. In the VHK study, different possible understandings of "functionality" are applied. In the primary and secondary sector, "function" seems to denote the technical function the product is expected to perform (such as: space heating, humidification, smelting, homogenizing, bonding, driving, mixing, grinding, smelting, etc.). The idea is that products that perform a similar technical function will actually be technically similar enough to allow for meaningful Ecodesign requirements to be applied to the group. For example, mixing machines are expected to be similar, regardless of whether the machine is used in the fabrication of paint, ice-cream, or detergents. However, this assumption is only valid for some products (e.g. pumps, fans, motors). Others, such as the mixing machines, are still very different. Mixers for powders, low viscosity liquids, high viscosity fluids, or mixers that also heat or grind, will all use different amounts of energy.

In household products, "function" rather seems to denote a social function such as: leisure, health, or personal care. This understanding of function can lead to product groups that are technically extremely heterogeneous, e.g. hair dryers and waterbeds in the "personal care" group, or music instruments, saunas and sewing machines in the "indoor leisure equipment" group. Therefore, smaller subgroups might have to be created.

The actual definition of product groups in Ecodesign policies so far reflects these difficulties in various ways: certain lots overlap (e.g. ENER Lots 1, 2, 20, 21), others had to be split (e.g. ENER Lots 10 and 11) or merged (e.g. ENER Lots 8 and 9) to produce homogeneous groups, and still others had to be created to fill gaps in previous lots (e.g. ENER Lots 28, 29 and 30). Another option is to develop

horizontal measures for parts or environmental aspects that are relevant for many different product groups (e.g. ENER Lots 6 and 26).

A further difficulty became apparent in the course of the Preparatory Study on industrial furnaces (ENTR Lot 4), conducted by ERA and BIO: Sometimes, the classification of products into separate groups may not be appropriate at all. In large industrial processes, many of the parts are dependent on other parts, e.g. excess heat from one part of the process may be used by another part (this could even be by a different process on the same site). Processes such as oil refineries and steel manufacture are difficult to split into separate parts for this reason and a system perspective is needed to fully capture the real performance of the process.

1.5.2 Data availability

Neither sales and trade data nor life cycle data or information on improvement potential is easily available for all products. Reasons are manifold: product group definitions may not be consistent with definitions in available data sets (one reason for the use of Prodcom categories), data just has not been collected, there are no established methods or indicators for doing so (or they are contested), or the information, especially on improvement potential, is confidential information from manufacturers. For example, during the DG ENTR Lot 4 study (on industrial furnaces and ovens), it became clear that Prodcom sales data was not available in terms of sold numbers (only value) and manufacturers were unable or unwilling to provide this data. This situation will be common for many types of industrial products.

The problem is aggravated if the scope is to be extended from the relatively straightforward indicators of use phase energy consumption and bill-of-materials to more complex environmental impacts across the life cycle. This is because the latter depend to a great deal on issues such as the origin of the materials, extraction methods or indirect impacts – issues that cannot be properly assessed with the limited resources of a Working Plan study.

The VHK study was unable to assess a number of product groups, due to lack of data or limitations of budget that prevented the consortium from researching the data. It remains unclear whether the situation has improved in the meantime.

1.5.3 Time and resource restrictions

One important challenge that was faced both by the VHK study and the present study is the appropriate assessment of a great number of product groups within a limited timeframe, both in terms of deadlines and of person-days available per product group. Furthermore, the great variety of product groups implies that specialised expertise may not be available in the project team for each of the groups.

1.5.4 Multi-criteria evaluation of product groups

The VHK study was, much as the present study will also be, confronted with the challenge to consider and weight various very different criteria, both for selecting priority product groups and for ranking them. The following presentation is based on the Terms of Reference for the present study, but in principle, the challenges haven't changed since the first Working Plan Study. The problem occurs both in Task 3 and in Task 4.

In **Task 3** – preliminary analysis – 20 product groups shall be selected, based on the following criteria:

- Volume of sales and trade;

- Resource consumption (including energy consumption); and
- The potential for improvement with regard to resource consumption, particularly energy consumption, without entailing excessive costs (considering both life cycle cost and purchase cost). According to Art. 15 (2)c, when assessing the improvement potential, the following aspects need also to be considered:
 - (i) the absence of other relevant Community legislation or failure of market forces to address the issue properly; and
 - (ii) a wide disparity in the environmental performance of products available on the market with equivalent functionality.

Although not explicitly stated in Art. 15, innovation cycles will also have to be taken into account when calculating improvement potential.

After the products have been chosen, they will have to be ranked by improvement potential.

The Terms of Reference explicitly state that resource consumption and improvement potential covers both the consumption of energy and of other resources. According to the work on material efficiency that has been conducted so far (see Chapter 1.2.2), different indicators are available and necessary for assessing material efficiency, including recycling benefit rate, recycled content, product lifetime, and critical raw materials index. Furthermore, depending on the product, different resources have to be taken into account. Also, conflicts may arise between optimising energy efficiency on the one hand and material efficiency on the other. Therefore, integrating energy aspects and other resource aspects into a single ranking poses a challenge.

In **Task 4**, additional criteria shall be considered:

- Quantitative/qualitative analysis of other environmental impacts, such as:
 - Consumption of resources;
 - Emissions to air, water, and soil;
 - End-of-life aspects;
 - If appropriate, other environmental impacts such as noise or radiation.
- Existing regulatory coverage/regulatory feasibility;
- Improved industrial competitiveness.

Finally, feasibility criteria will also have to be considered, such as

- Data availability;
- Possibilities for verification (measurability of environmental aspects on the product);
- Possibilities for complementary measures;
- Effects on industrial competitiveness; and
- Stakeholder support (although lack of support should not preclude Implementing Measures, it may indicate specific difficulties).

The application and weighting of such different criteria presents a challenge. It has to be decided which ones shall take precedence, how they shall be weighted, whether and how they can be aggregated to form an overall index, and so on. In the VHK study, the application of the individual criteria is elaborated in quite some detail, but the approach at weighting them for arriving at an overall ranking remains unclear.

1.6 Approach of the present study

Chapter 1.6.1 sketches the knowledge base that can be used to date in order to perform the tasks. 1.6.2 describes the general approach at meeting the challenges described in Chapter 1.5. Finally, Chapter 1.7 describes the tasks and general steps that will be conducted in the course of the study. A more detailed description of the methodology applied in each Task will follow at the beginning of the individual Task reports.

1.6.1 Knowledge base

The knowledge base to build on in the present study includes, but is not restricted to:

General

- Previous Working Plan studies, including:
 - The 2007 study by EPTA (EPTA et al. 2007); and
 - The 2011 study by VHK (van Elburg et al. 2011b, 2011a, 2011c).
- Initiatives for evaluation and review of the Ecodesign directive, including:
 - The 2012 review of the Ecodesign Directive 2009/125/EC3 (CSES und Oxford research 2012a ; 2012b,) ; and the related Commission's Report²⁵; and
 - The first findings report, and later the final report of the study on the 2014 review of the Energy Labelling and certain aspects of the Ecodesign Directive (Molenbroek et al. 2014)

Regulatory situation

- EUR-lex database²⁶;
- Description of relevant policies in the VHK 2011 study and in the ongoing study on the evaluation of the Energy Labelling Directive and selected aspects of the Ecodesign Directive²⁷;
- Lists of Ecodesign Regulations adopted or in the pipeline; besides the official EU website <http://ec.europa.eu/energy/efficiency/ecodesign/>, the websites of www.eceeee.org and www.eup-network.de;
- The first Working Plan 2009-2011²⁸;
- The second Working Plan 2012-2014²⁹; and
- Existing Voluntary Agreements and their websites.

²⁵ Report from the Commission to the European Parliament and the Council: Review of Directive 2009/125/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for the setting of ecodesign requirements for energy-related products (recast). 2012 Review. <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2012:0765:FIN:EN:PDF>

²⁶ <http://eur-lex.europa.eu/>

²⁷ www.energylabelevaluation.eu

²⁸ Communication from the Commission to the Council and the European Parliament, Establishment of the working plan for 2009-2011 under the Ecodesign Directive, Brussels, 21.10.2008, COM(2008) 660 final.

²⁹ Commission Staff Working Document, Establishment of the Working Plan 2012-2014 under the Ecodesign Directive, Brussels, 7.12.2012, SWD(2012) 434 final.

Non-energy aspects

- The 2012 evaluation study by CSES;
- The ongoing study on the evaluation of the Energy Labelling Directive and selected aspects of the Ecodesign Directive;
- The DG JRC-IE studies on inclusion of resource efficiency and waste management criteria in product policies (Ardente und Mathieux 2012a, 2012b, Ardente et al. 2012; Ardente et al. 2011b; Ardente et al. 2011a);
- The Product Environmental Footprint methodology; including the ongoing study on verification issues;
- The results of the recent project completed by BIO Intelligence Service for DG ENTR on the improvement of material efficiency considerations in the MEErP³⁰; and
- Other ongoing and recently completed work in the consortium about priority material efficiency issues and their possible inclusion in Ecodesign measures³¹.

Data and methods

- The MEErP methodology documents³² (including if relevant the updated 2013 EcoReport tool based on BIO Intelligence Service's study on material efficiency into MEErP);
- The VHK 2011 study; and
- Data sources as described below in the section "Collecting data and dealing with data gaps".

1.6.2 Addressing the challenges

The following general approach will be applied to addressing the challenges sketched above in Chapter 1.5.

General: Making maximum use of previous work

As extensive work has already been invested in the elaboration of previous Working Plans, it should be an aim to ensure maximum consistency with previous work and use it to the greatest extent possible while at the same time, if possible, correcting some of its shortcomings. We will therefore build as far as possible on the approach and results of the VHK study in particular, which demonstrates a rather systematic approach to product classification and prioritisation. Possible elements to build on are, in the VHK study:

Approach

- The general approach at product classification according to functions, especially for products in the industrial sector;
- The modelling of (energy-related) environmental impact and improvement potential; and
- The approach at assessing other environmental impacts.

³⁰ All documents on: <http://meerp-material.eu/>

³¹ E.g. "Regulatorische Ansätze zur Steigerung der Ressourceneffizienz im IT-Sektor" [Regulatory Approaches for Increased Resource Efficiency in the IT sector] for Germanwatch

³² See <http://www.meerp.eu/documents.htm>

Data and findings

- Sales and trade data (to be updated);
- Findings on environmental impact and improvement potential, both energy and non-energy (to be updated, if new information becomes available);
- Basic cost data; and
- Description of relevant policies and of options for complementary measures (to be updated).

The following elements would have to be refined:

- Product classification, especially in the household sector (as far as this sector remains relevant), but also in some other sectors, to define feasible subgroups with sufficient technical similarity. The translation from Prodcom categories into other types of categories needs to be considered (see chapter 1.4.1);
- If possible, retrieval of data for previously excluded product groups and for product groups listed under “for further consideration”;
- If possible, retrieval of more reliable data and filling of gaps on:
 - Improvement potential (for certain product groups);
 - The cost of improvement options; and
 - The assessment of other environmental impacts.
- The VHK study used the MEEuP, not yet the MEErP for the assessment of other environmental impacts; this may make a re-assessment of some products necessary; and
- Treatment of the “multi-criteria evaluation” problem; consistent and transparent approach at assessing and weighting different kinds of criteria (see chapter 1.5.4).

Defining product groups meaningfully

The core criteria for the definition of product groups will be:

- *Exhaustiveness and mutual exclusiveness* in order to ensure a systematic coverage of products;
- *Technical similarity* is core in order to allow for meaningful ecodesign requirements. This may lead to technically homogeneous product groups and/or to horizontal measures affecting certain parts or functions of products;
- *Similarity of function, field of application (household / industrial / tertiary) and/or industrial branch*, if not identical with technical similarity, will be applied as secondary criteria in order to facilitate the policy process (identifying relevant stakeholders and target groups; communication of the measure); and
- *Compatibility with existing categories, especially Prodcom*. As far as possible, compatibility with existing categories – especially Prodcom – will be ensured in the sense that a synopsis will be developed to “translate” the resulting categories to Prodcom categories, in order to assess sales and trade volume (or, to product categories that are used in LCA, in order to assess environmental impact). Other existing category systems such as CPC (Central Product Classification) may be used to aid in the classification.

Categories defined in the VHK study might have to be partially revised or amended according to these considerations. Especially in the household sector, as far as it remains relevant, the broad categories

according to social functions such as “leisure” need to be broken down in order to achieve technically sufficiently similar subgroups.

A specific subtask 3.4 (“Consistency check”) will aim at re-evaluating the grouping of product groups for the in-depth analysis to follow in Task 4.

Two more issues will be considered: First, given the fact that in many industrial applications, individual components cannot meaningfully be assessed separately; a list of issues where a system perspective suggests itself will be presented. Secondly, specifically with respect to material efficiency, challenges and possible solutions are often similar across product groups (e.g. the challenge of identifying plastics in the recycling stage which could be addressed by a marking of plastics). Therefore, the suggestion of horizontal measures will also be a core part of the present study.

Collecting data and dealing with data gaps

For data, the study will build on the following sources:

- Previous Working Plans studies and previous Ecodesign evaluation study;
- Prodcorn and other databases;
- Data gathered in the context of the ongoing Labelling and Ecodesign evaluation study (if validated by the Commission);
- Existing projects for which LCA data have already been gathered, e.g. Oeko-Institut: Top 100, EcoTopTen and other LCA / PCF projects, ELCD database;
- Complementing desk research on further LCA data; and
- Stakeholders will be invited to provide existing data sources, estimates and studies (if no reliable data is gathered, stakeholders will be invited to comment expert guesses of the project team).

In addition, product groups for which data availability proved to be a problem in the VHK study will be compiled and discussed in advance with the Commission and stakeholders in order to find out whether the situation has improved in the meantime or whether these groups might have to be excluded. The three consultants have different industrial contacts that may be exploited in order to maximise stakeholder input.

Efficient allocation of time and resources

In order to have sufficient time and resources to analyse individual product groups, a pre-screening will be introduced at the beginning of Task 3. Criteria such as availability of information and expertise, suitability of the product group for Ecodesign and Energy labelling measures, coverage by other policies, or market surveillance issues will be applied in a systematic way to exclude product groups for which it does not seem likely that meaningful and effective Ecodesign and Energy Labelling measures may be developed. On the other hand, products that suggest themselves on the basis of stakeholder input or previous experience of the consortium, e.g. from conducting preparatory studies, will be shortlisted.

A specific challenge is the comprehensive coverage of material efficiency issues. It does not seem efficient to do the analysis on a product by product basis for a broad array of products, because on the one hand, material efficiency aspects are similar for certain categories of materials or products, suggesting themselves for horizontal measures, and on the other, cross-cutting priority aspects and issues of material efficiency are already known. Therefore, the approach will be to first develop a cross-cutting analysis for material efficiency aspects that highlights these priority issues. In a second

step, it will be considered which of these issues may be addressed by Ecodesign Implementing Measures, and in a third step, corresponding product groups or horizontal measures will be identified.

Multi-criteria evaluation of products

The Terms of Reference for the current study do not necessarily call for an overall ranking to be developed: “Depending on the findings, in terms of other environmental impacts identified, the contractor should decide whether to bundle all impacts in one single categorisation or present them separately.” (ToR, Subtask 4.3). This opens the possibility for separate rankings according to various criteria. Separate rankings offer the advantage that, in contrast to an overall index, the relevance of the product group in the light of each individual set of criteria becomes very transparent. Different approaches may then be applied by policymakers in order to come to a final decision, including prioritising the various criteria and / or cross-checking which products rank high on several different criteria.

A preliminary ranking will be conducted in Task 3 based on improvement potential regarding the key environmental aspect (energy saving potential over the life cycle as well as other estimated resource saving potential (when relevant)).

Afterwards, in Task 4, the study will present the assessment of the supplementary criteria (improvement potential regarding other environmental aspects, coverage by existing legislation, effects on industrial competitiveness, disparity in the environmental performance, but also feasibility issues (availability of data and methods, complexity, stakeholder support) separately. To further support the decision making, product “profiles” will be developed for each product group.

1.7 Summary Approach

This chapter broadly describes the tasks and general steps in the process. A more detailed presentation of the methodology will be given in methodology sections at the beginning of each task report.

1.7.1 Task 1 – Study definition

Subtasks 1 and 3 - Background and context of the study as well as core elements of the methodological approach are described in the present document. More methodological details will be presented at the beginning of each individual Task report.

Subtask 1.2 – Stakeholder involvement – will be implemented by the following means:

- First, as an opportunity for low-level involvement, all identified stakeholders will be invited to register via the project website and read about ongoing work;
- Secondly, for more intensive involvement, stakeholders will be contacted at the start of the study and invited to provide input via the website;
- Thirdly, stakeholders will be invited to two stakeholder meetings. At the interim meeting, the draft reports of Task 1-3 will be discussed. At the final meeting, the draft report for Task 4 will be discussed. Minutes are kept for the stakeholder meetings and stakeholders will have the opportunity to comment on the minutes and upload submissions via the website; and
- Finally, selected stakeholders might be contacted on the telephone to discuss specific questions or provide specific information.

Stakeholder input will be considered in the further elaboration of the reports. A continuous feedback log will be kept, recording stakeholder comments and how they have been dealt with.

1.7.2 Task 2 – Product groups

The production of the list of product groups will take into account the criteria developed in Chapter 1.5.1: appropriate width, homogeneousness, mutual exclusiveness and exhaustiveness. In Subtask 2.1 – Review of product groups already considered, the reasons of why Implementing Measures or self-regulation initiatives have not been developed will be considered, where available. For example, were the products inherently unsuitable for Ecodesign measures or was there just a specific problem at this stage and in this context, such as data availability or lack of resources? Typical reasons for not developing Implementing Measures will be derived and depending on the reasons, it will be decided whether the products might be re-included into the list of products to be considered. Furthermore, the reasons can be used as an evaluation criterion for the pre-screening of other product categories (see Chapter 1.7.3). Subtask 2.2 – Complementary list of product groups, will start with the classification developed by the VHK study which will have to be refined and partially modified though. Especially, but not restricted to, the household sector, meaningful subcategories will have to be defined. For this purpose, the principles of compatibility with other classifications – specifically Prodcom –, technical similarity and similarity of function will be applied, as described in the section 1.6.2.

Furthermore, for industrial applications where individual components cannot meaningfully be assessed separately issues where a system perspective suggests itself will be suggested. For issues that are sufficiently homogeneous across product groups, possibilities for horizontal measures will also be suggested.

1.7.3 Intermediary pre-screening

The purpose of the intermediary pre-screening is to select no more than 25-30 product groups for which the preliminary analysis and the selection of 20 priority groups in Task 3 will be conducted. This will allow more time and resources to be dedicated to the analysis of the individual product groups. The pre-screening will use a combination of a “negative” approach aimed at excluding product groups that are not suitable or promising, and a “positive” approach highlighting especially interesting product groups.

The “negative” approach will consider the criteria:

- Current impossibility to further study these product groups; e.g. due to impossibility to find suitable data or expertise. In this case, approaches to gathering the necessary information in the future will be suggested, where possible;
- Obvious lack of impact or improvement potential;
- Obvious coverage by other legislation;
- Obvious and strong feasibility issues e.g. with respect to market surveillance or burdens on manufacturers. Such issues may, for example, lay in the fact that certain properties are not measurable on the product itself but occur in the supply chain and that insight of the manufacturers in the supply chain is lacking, or that standardisation work is not developed enough. In this case, suggestions for overcoming the problems in the future will be made, where possible.

The “positive” approach will consider input from stakeholders and from existing experience in the consortium, e.g. preparatory studies or work in the area of resource efficiency and sustainable resource use, which may all suggest especially interesting product groups. For material efficiency issues, a short background chapter will be developed sketching main material efficiency issues and how they can be addressed by Ecodesign measures, and suggesting corresponding product groups.

1.7.4 Task 3 - Preliminary Analysis

The task will start from the 25-30 product groups chosen in the intermediate pre-screening. For data, the sources described in the section 1.6.2 will be used. The subtasks 3.1 – Volume of sales and trade, 3.2 – Resource consumption, and 3.3 – Improvement potential will be carried out in parallel. When calculating the improvement potential, the following criteria will also be taken into account:

- Innovation cycles (improvement potential will, as far as possible; be harmonised to the year 2030 in order to ensure comparability (otherwise, 2020 will be used for products with short product lifetime and for which making estimate for 2030 will not be reliable enough);
- The avoidance of excessive cost (no significant net increase of life cycle costs for the consumer or significant increased price).

The ranking according to improvement potential with regard to energy efficiency and to other resources will, at first, be conducted individually. Later the two rankings will be combined by highlighting

- Which products have a high improvement potential both with respect to energy efficiency and other resources;
- Which products have a high improvement potential with respect to one of them.

Subtask 3.4 – Consistency check will be carried out in order to find out whether a revised grouping of product groups may be necessary for the in-depth analysis to follow in Task 4. Also, the issue of potential horizontal measures may be taken up again.

1.7.5 Task 4 – Elaborated Analysis

The Terms of Reference do not require the production of an overall ranking but allows for separate presentation – and maybe rankings – of various aspects. This approach seems appropriate for increasing transparency and allowing a political debate on the relative importance of various criteria. Therefore, the results of the subtasks **4.1 – Other environmental impacts**, **4.2 – Existing regulatory coverage / regulatory feasibility** and **4.3 – Improved industrial competitiveness** which will be carried out in parallel, will be presented separately, in addition to the ranking produced in Task 3. For each product, a product profile will be developed presenting the specific arguments with respect to each of the issues. The product profiles will also group products with specific implementation issues (e.g. high potential and high feasibility, high potential but difficult feasibility). Results will be summarised in **Subtask 4.4 – Final matrix of product groups** in an clearly arranged way in order to facilitate decision making.

The overall approach at selecting the 20 priority product groups is shown in Figure 3.

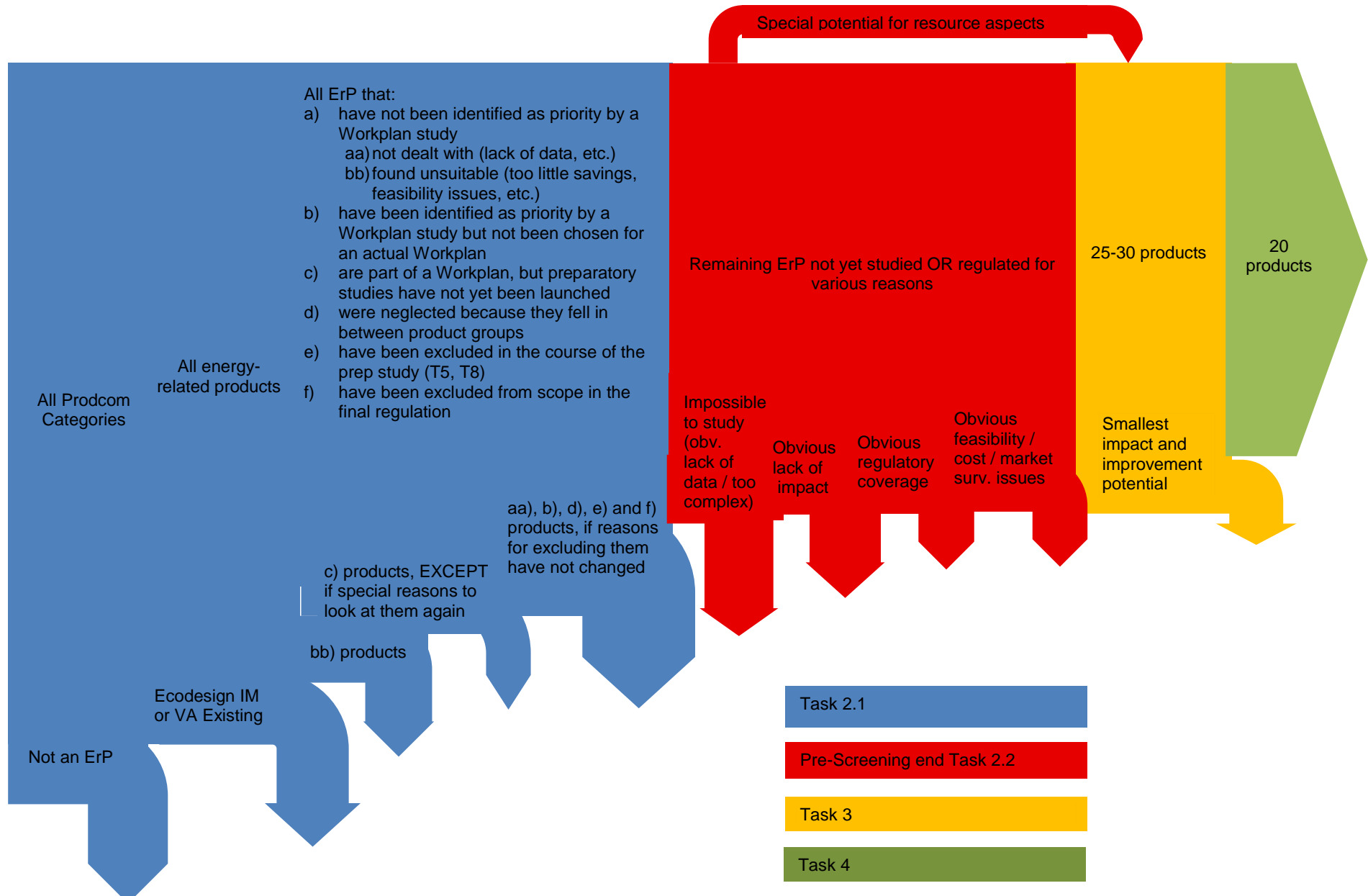


Figure 3: Product filtering process

2. Stakeholders

The project team developed a project website for the Ecodesign Working Plan 2015-2017 study. The domain name (www.ecodesign-wp3.eu) was validated by the Commission late January and was bought up by the project team. Then, the website was implemented, encompassing nine sections: home, introduction, methodology, documents, planning, meetings, links, team, register. The website provides the users with an overview of the study to date, it will host all documents developed by the project team until the end of the year, and allows stakeholders to register.

An email was sent to all potential relevant stakeholders that could be identified through previous projects and studies. Stakeholder lists from the following sources were used and compiled:

- Consultation Forum Distribution List;
- BIO IS study on inclusion of material efficiency aspects in Ecodesign (for DG ENTR, <http://meerp-material.eu/>);
- Ongoing study on the evaluation of the Energy Labelling Directive and selected aspects of the Ecodesign Directive (for DG ENER, <http://www.energylabelevaluation.eu/>);
- Stakeholder list from 2nd Working Plan study; and
- Recommendations from the European Commission.

The total list of stakeholders had 688 recipients, thereof 328 did open the email (i.e. 49.8%)³³. To date, 395 stakeholders subscribed to the project website. Registered stakeholders will receive updates on the study and notifications of when any new document is uploaded to the website, or new stakeholder meeting is announced. All personal data will be kept strictly confidential and will be used only in the context of this study.

A split up of registered stakeholders by country of location can be found in Figure 4 below.

³³ As of 28th August 2014.

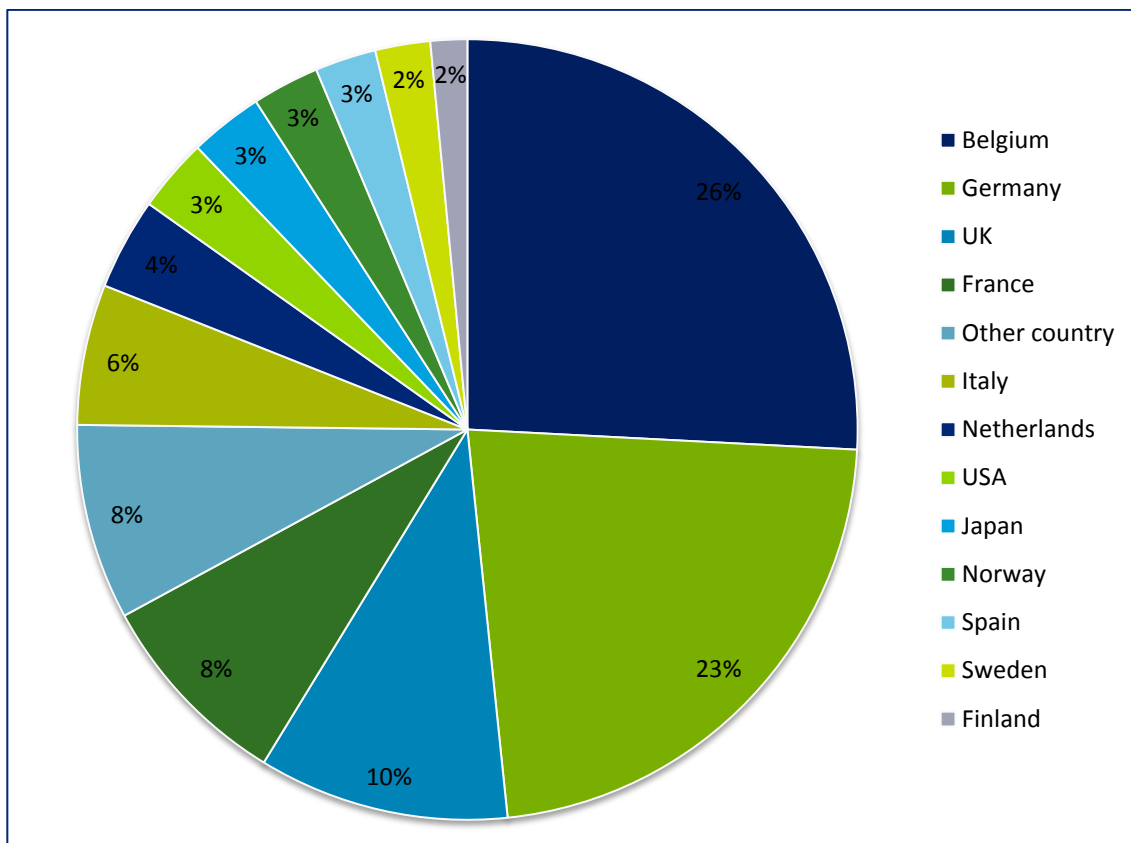


Figure 4: Stakeholders' registration by country of location (as of 28th August 2014)

Most of the registered stakeholders are based in Belgium, and of those, the majority is registered under the type of organisation: "Industry / Trade association". This indicates that the main European industry associations (who generally have their headquarters in Brussels) have been reached.

The same is true for the overall composition of the registered stakeholders. Representatives from industry account for a third of all registered stakeholders (see Figure 5). To this extent, it can be considered that the stakeholder registration reached its primary goal: most of key stakeholders, if not all of them, are aware of the study and will be kept posted on future developments. Also, they will be invited to the two stakeholders meetings which are to be held this year.

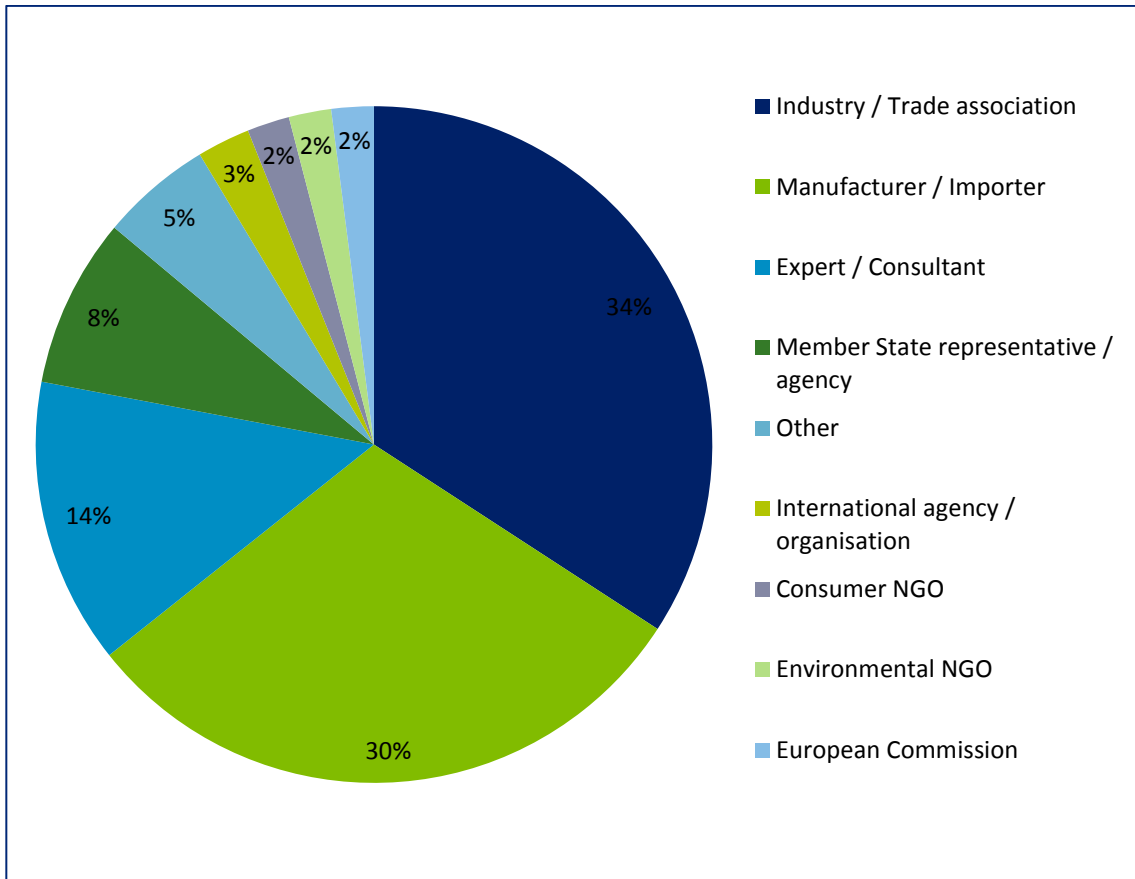


Figure 5: Stakeholders' registration by type of organisation (as of 28th August 2014)

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