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accompanying the

COMMUNICATION FROM THE COMMISSION 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

IMPACT ASSESSMENT

{COM(2008) 397 final}
{SEC(2008) 2111}

This impact assessment report accompanies the Proposal for a Communication on a Sustainable Consumption and Production and Sustainable Industrial Policy Action Plan. This Action Plan is the overarching element of a package of measures that will also include concrete legislative proposals. This impact assessment focuses on a proposal for an extended Integrated Package, which could improve the environmental performance of the European Union through the promotion of production and consumption of environmentally better performing products.

The IA identifies several market failures that EU policy currently already addresses or where there could be a need for some form of public intervention:

- Environmental externalities resulting from prices not reflecting the negative environmental impacts of the production or consumption of products,
- Information asymmetries due to high transaction costs for consumers to obtain relevant information on product characteristics that influence environmental performance,
- Bounded rationality meaning that even well informed consumers do not always act rationally in the sense of taking a long term view when making purchasing decision,
- Principal agent problems as a result of a misalignment of incentives between economic actors ,
- And negative effects of these market failures on innovation.

In addition there are what can be described as regulatory failures as, for example, some Member States' actions in the area of procurement or fiscal incentives can fragment the internal market for products.

Although there are already policies in place on greenhouse gas emissions, air and water quality, waste, product policy, energy efficiency, etc. that address these market failures, several problems remain. The analysis shows that some environmental externalities could be avoided without incurring additional costs. More important however is evidence that information asymmetries are not being addressed sufficiently by existing tools and that even when they are, there is evidence that without updating the information provided by labels (such as the energy efficiency label) they lose their informational value, and thus usefulness, over time. Moreover, there is evidence to suggest that even if consumers have all the necessary information to make purchasing decision based on what is in their best private and social interest, they fail to do so because of short-sighted behaviour. Principal agent problems persist in the area of housing and existing policies related to energy performance of buildings cannot reduce them substantially in the near future. Due to the existence of remaining market failures, incentives to innovate are less than socially optimal.

Furthermore, a multitude of diverging national criteria exists with respect to Green Public Procurement rules and fiscal incentives. This leads to fragmentation of the internal market that should be avoided. Finally, the policies in place are not sufficiently aligned and linked with each other to realise synergies but send conflicting signals and have gaps that lead to a fragmented regulatory framework rather than a consistent one.

The general objective of the action plan is to render the EU’s product policy more effective, thus contributing to the goals of the Lisbon Strategy and those of the Reviewed Sustainable Development Strategy.

More specifically: to raise dynamically the market share of products with more environmentally performing features; to provide consumers with relevant information on product performance; to help overcome problems caused by a misalignment of incentives and to reduce the potential for suboptimal outcomes as a result of myopic consumer behaviour; to avoid fragmentation of incentives and stimuli (e.g. fiscal incentives and public procurement); to remove barriers to trade to ensure that Environmental Industries can benefit from the advantages of the Internal Market; and to maximize the environmental contribution of the EU's standards internationally whilst ensuring that the possible short run incidence on the competitive position of EU industry is addressed, where necessary.

Three options were considered to address these objectives: no further action or the baseline scenario (no change of existing policies) and two alternative packages of measures.

The no further action option would imply that the identified market and regulatory failures would not be addressed.

The first alternative package is mostly focused on enhancing the role of the voluntary eco-label scheme and linking it with other policies. This option would promote a combination of instruments that would reinforce voluntary actions (Eco-label, Open Method of Coordination for the use of incentives), promote Environmental Management and Audit Scheme, Green Public Procurement and identify internal market barriers for eco-industries (competitiveness screening). The different market and regulatory failures would essentially be addressed through the provision of information and the development of voluntary incentives. The co-ordination of existing policies would be done within the existing framework.

The second alternative package consists of a set of measures that are centred around an extended Integrated Package. This option would integrate a set of instruments to extend the scope of mandatory actions (Eco-design Directive for Energy Using products, Energy Labelling Directive, including mandatory level of product performance for public procurement) and link them with voluntary actions (Eco-label, Green Public Procurement, Environmental Management and Audit Scheme). The use of incentives by Member States would be further harmonised and internal market barriers for eco-industries would be identified (competitiveness screening). The difference to option 2 is that this option places greater emphasis on mandatory requirements.

The analysis of the impacts of each option presents a qualitative assessment of the positive and negative impacts. It gives an indication on the extent to which each of the options can resolve the remaining market and regulatory failures established in the problem definition as well as indications of potential drawbacks or costs. A quantitative estimation of the effects on product prices, resource use, life-cycle costs and CO2 emissions are provided for a number of product categories for which data is available. The analysis is indicative only since a comprehensive quantitative assessment would require large amounts of detailed data, which is not currently available, and complex modelling that would go beyond the scope of proportionality for this impact assessment.

Given that the Action Plan does not represent a concrete legislative proposal and that the detailed impacts of any measures that may subsequently be adopted will be analysed in separate impact assessments, the level of analysis is deemed proportionate. Individual impact assessments will be carried for each of the envisaged measures and more detailed analysis will be provided for these.

The conclusion for this impact assessment is that the second package of measures is preferable, which rests on an extended Integrated Package based on the Ecodesign Directive and a more harmonised use of criteria for Public Procurement and fiscal incentives across the

European Union. This option would enable substantial improvements in resource efficiency and reduce environmental externalities.

The action plan will be regularly monitored in order to adapt the actions and optimise the impacts in a cost-effective manner.

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1. PROCEDURAL ISSUES AND CONSULTATION OF INTERESTED PARTIES

1.1. Organisation and timing

This Impact Assessment accompanies the Communication on Sustainable Consumption and Production and Sustainable Industrial Policy Action Plan (SCP/SIP). This document is prepared as a basis for comments and does not pre-judge the final form of any decision to be taken by the Commission.

An internal DG Environment Taskforce and two Inter-Service Groups (one on Sustainable Consumption and Production, the other one on Sustainable Industrial Policy) were established, involving relevant Commission services. The aim of the Communication is to present the global objective and coherence in both fields of action.

Specific actions to be presented together with the Action Plan will be accompanied with separate Impact Assessments as needed.

1.2. Consultation and expertise

This impact assessment is based on the results of dedicated stakeholder consultations and consultations on specific actions to be proposed; as well as on a broad range of studies and consultations carried out with respect to related policies (Annex I). This includes the Integrated Product Policy (IPP), the Thematic Strategy on the sustainable use of natural resources, the Thematic Strategy on the prevention and recycling of waste, the Environmental Technology Action Plan and others. It also takes stock of the work undertaken by the High Level Group "Competitiveness, Energy and Environment". A more comprehensive overview of existing EU policies related to the Action Plans can be found in the Annex III.

1.2.1 Studies

The results of a number of studies have been considered. Some of the most important are: the EIPRO project[1], the SUSPROC initiative[2], the IMPRO project[3], several waste and recycling related studies (e.g. on End of Waste criteria); Tools for Environmentally Extended Input-Output Analysis (EE-IO) for Europe[4], Environmental Product Declarations and work of the Life Cycle Assessment platform[5], the European Environmental Agency's (EEA) work on Household Consumption and the State of the Environment[6], and the Environmental Input-Output Analyses based on NAMEA data[7], ASCEE and SCORE projects[8] funded by the Directorate General for Research, Directorate General Transports and Energy studies on the Energy using Products (EuP) Directive[9], work of the Directorate General EUROSTAT Task Force on developing indicators[10], a DG Enterprise (ENTR) study on fostering EU internal market for Competitive Technologies for a low carbon economy[11].

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1 http://ec.europa.eu/environment/ipp/identifying.htm
2 http://www.jrc.es/activities/sustainable_development/susproc.cfm
3 http://ec.europa.eu/environment/ipp/identifying.htm
4 http://ec.europa.eu/environment/ipp/identifying.htm
5 http://ec.europa.eu/environment/ipp/lca.htm
6 http://reports.eea.europa.eu/eea_report_2005_11/en
7 http://www.jrc.es/publications/pub.cfm?prs=1366
8 http://ec.europa.eu/research/environment/pdf/global_change_ecosystem.pdf p.403 and http://www.score-network.org/score/score_module/index.php
9 http://ec.europa.eu/energy/demand/legislation/eco_design_en.htm
10 Implementing measure of the Resource Thematic Strategy COM(2005) 670
11 http://ec.europa.eu/enterprise/environment/sip_en.htm

In addition relevant studies and other expert inputs in particular when related to the climate policy dimension of Sustainable Consumption and Production and Sustainable Industrial Policy have been continuously analyzed and their results considered when developing this Impact Assessment.

External environmental reports have provided further important input. Examples include the Organisation for Economic Co-operation and Development (OECD) Environmental Outlook[12], UK Department for Environment, Food and Rural Affairs (DEFRA) Sustainable Consumption and Production research studies[13], European Roundtable on Sustainable Consumption and Production[14], The European Environment - State and Outlook 2005[15], Worldwatch Institute[16], Europe's Environment – 4th Assessment by the EEA[17] and the UK Stern report[18].

More detail in particular about studies and research launched by the services responsible for drafting the Action Plan is given in Annex I.

1.2.2. Stakeholder Consultations

DG Environment (ENV) and DG ENTR launched a joint internet stakeholder consultation on Sustainable Consumption and Production (SCP) and on Sustainable Industrial Policy (SIP)[19]. The consultation was based on a background document[20] drafted by DGs ENV and ENTR (Annex II). DG ENTR also launched a dedicated consultation of companies participating at the "European Business Test Panel"[21].

Two stakeholder meetings were organised in September and October 2007[22]. Stakeholders from Member States, industry, Non-Governmental Organisations, private companies, trade associations, and management consultancies participated. In parallel, DG ENV targeted selected stakeholders to obtain feedback on specific aspects of the Plan.

Three workshops with selected experts were held: *Japanese Top Runner* (to better understand its transferability to the European market); *Retailers* (to explore the potential for greening supply chains and sustainable consumer behaviour); and *Green Private Procurement* (exploring opportunities in the private sector).

DG ENV also established an EU Member States' Experts Group on Sustainable Consumption and Production, which will meet twice a year. The biannual "Integrated Product Policy Regular Meetings" with Member States and key stakeholders[23] were also used to discuss elements of a Sustainable Consumption and Production Action Plan. The latter were also discussed at the Environment Policy Review Group (EPRG) which brings together high level Member State environment representatives.

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12 http://www.oecd.org/LongAbstract/0,3425,fr_2649_37465_38126171_119693_1_1_37465,00.html
13 http://www.defra.gov.uk/environment/business/scp/research/
14 http://www.erscp2007.net/cms/
15 http://reports.eea.europa.eu/state_of_environment_report_2005_1/en
16 http://www.worldwatch.org/
17 http://www.eea.europa.eu/pan-european/fourth-assessment
18 http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/sternreview_index.cfm
19 http://ec.europa.eu/environment/eussd/escp_en.htm
20 http://ec.europa.eu/enterprise/environment/sip.pdf
21 http://ec.europa.eu/yourvoice/ebtp/
22 http://ec.europa.eu/environment/eussd/escp_en.htm
23 http://ec.europa.eu/environment/ipp/meetings.htm

DG ENTR took advantage of the recommendations of the High Level Group on "Competitiveness, Energy and Environment" when identifying the different activities to include in the Action Plan.

1.3 Opinion of the Impact Assessment Board

This impact assessment report was drafted following the remarks in the request for resubmission of the Impact Assessment Board (4 December 2007) and the Final Opinion of the Board on the final draft issued on 8 April 2008. The following improvements have been made:

The problem definition has been substantially reworked to explain the nature of the existing market and regulatory failures, how the policies in place aim to address them and what problems are still unsolved. The need for action at EU level has been illustrated more clearly by pointing out the risk of a fragmentation of the internal market resulting from diverging criteria at national level with respect to the provision of fiscal incentives and for purposes of Green Public Procurement.

The objectives have been revised to strengthen the link between the remaining problems and the policy options.

The options have been redesigned to reflect two different policy choices (in addition to the baseline option): a largely voluntary approach based on the existing eco-label or one that relies mostly on cost-effective mandatory measures by extending the existing eco-design framework (including several flanking measures). The presentation of the options has been revised to emphasize even more the voluntary versus mandatory character of each scenario, and to make the synergies between the activities included in each option more visible. More attention has been given to specify the added value of presenting a package of measures instead of a set of individual actions. With respect to the potential for simplification it should be noted that this has not been an objective of the initiative. The justification for maintaining complementing labelling schemes has nevertheless been further developed. Subsequent impact assessments will establish references to this impact assessment to ensure coherency and maximize synergies between the actions.

It has to be emphasized that the present document assesses only whether strengthened voluntary or mandatory existing instruments are likely to successfully achieve the objectives of the Action Plan. It does not prejudge the future analysis of the measures nor the legal form of individual actions. The report clearly points out that future impact assessments of the specific actions will have to be undertaken to show their necessity and pertinence. References to alternative legal instruments have been removed from the text. The Monitoring and evaluation section has been expanded to be more precise on the scope of indicators.

A glossary has been added in Annex VI explaining the essential abbreviations and technical terminology.

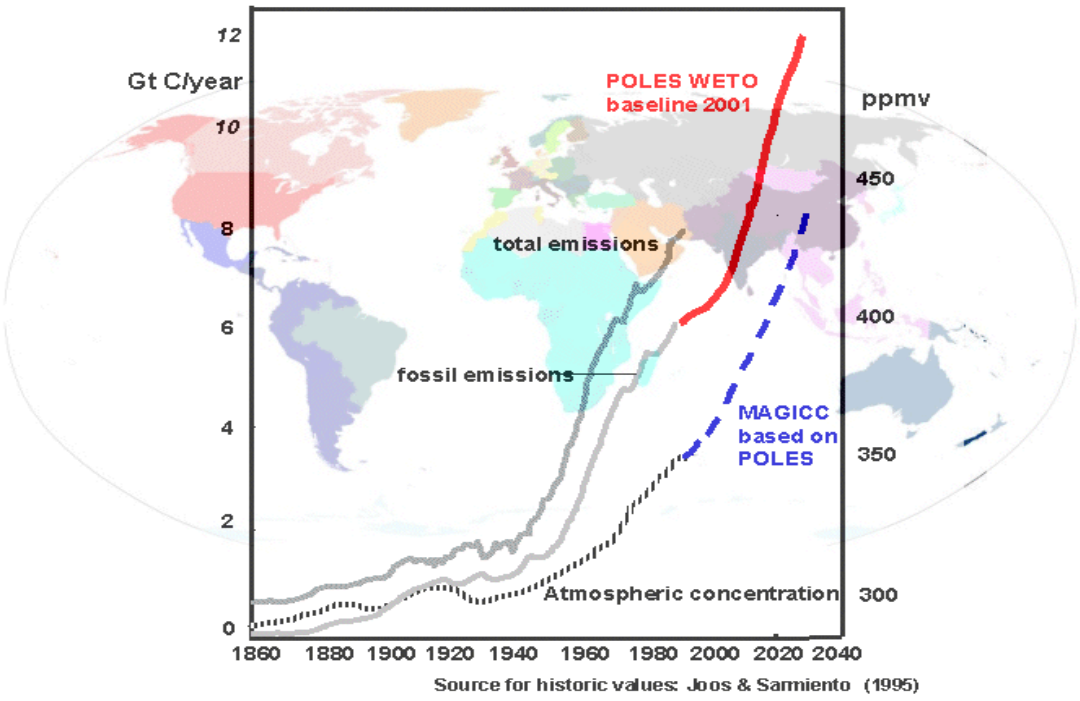
2. PROBLEMS AND UNDERLYING DRIVERS

2.1. Background and context

Continuing economic growth of the world economy will lift millions out of poverty in the coming decades, but coupled with an increasing world population from 6 billion in 2000 to 8.3 billion in 2030 there will also be pressures on resources and on the environment. Consumption and production can lead to negative environmental consequences. For example, the use of fossil fuels in production has been the biggest contributor to increases in total

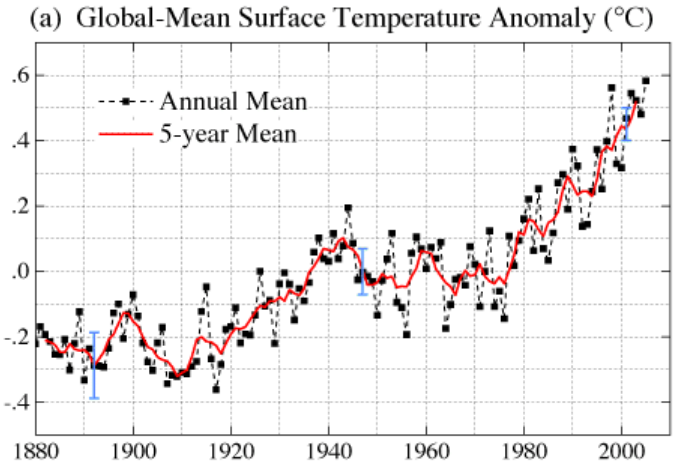
greenhouse gas emissions and the concentration of CO2 in the atmosphere (Graph 1) which cause global climate change and temperatures to rise (graph 2). And fossil emissions are expected to continue to grow if no action is taken (see Graph 1, line POLES WETO baseline 2001).

Graph 1: Historic development of carbon emissions and the POLES projection.



Source : JRC (http://energy.jrc.ec.europa.eu/)

Graph 2: Historic temperature development



Source: Impact assessment accompanying the Communication "Limiting Global Climate Change to 2 degrees Celsius The way ahead for 2020 and beyond", p. 14.

To combat climate change the EU has set ambitious targets for reducing greenhouse gas

(GHG) emissions by 20 %[24] by 2020. At the same time, the EU is heavily dependent on imported energy and natural resources. On current projections, e.g. assuming no further action, energy consumption in the EU is likely to increase by 9% from 2005 to 2020[25]. And compared to 2000[26] the use of natural resources in the EU-15 is expected to grow by around 19% in EU 15 and 60% in the EU 10 by 2020.

The challenges related to climate change and to the use of and access to natural resources are directly linked to how we produce and the efficiency of the products we consume[27]. Projections show a doubling of total household consumption in terms of expenditure in the EU-25 by 2030[28]. This leads to significant contributions to greenhouse gasses, pollution, material use, and natural resource depletion. For example, even though air quality in Europe has been steadily improving, air pollution contributes to 750,000 years of life lost each year in Europe[29]. More progress to diminish risks related to the use of hazardous materials and substances is still needed. Public intervention is needed to decrease these negative environmental externalities while fostering economic growth.

2.2 The problem

Rationales for public intervention are generally found in market and regulatory failure arguments. Energy generation and industrial processes, transportation activities and household energy consumption generate GHG emissions, pollution, waste and other negative effects on the environment whose costs are not always reflected in market prices or, when they are, do not trigger the desired demand response.

2.3. Negative Externalities

Consumers when making their consumption choices do not necessarily act in the interest of society as a whole. This can happen if prices of goods do not reflect the total cost of environmental pollution to society and rational consumers maximise private utility rather than social welfare. Free-riding becomes a dominant strategy and the result is a collective action problem: while everybody agrees that it would be better to avoid the negative environmental and thus health impacts, no-one has a sufficiently strong incentive to act accordingly.

Negative externalities arise not only during the production and consumption of a product but also when it is disposed. Greenhouse gas and pollutants emissions, for example, lead to climate change, acid rain that degrades forests and air and water pollution which lead to negative health effects. Toxic substances can be released when waste is burned and require expensive abatement technology to prevent environmental harm. By and large, there is often no incentive for consumers to purchase products that generate less hazardous waste as the disposal costs are not charged to the consumer individually but to taxpayers.

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24 30% in the case of an international agreement

25 COM (2008) 30 final Annex

26 Europe's Environment Fourth Assessment (EEA, 2007)

27 EIPRO study Joint Research Centre and NAMEA EEA. These studies show that in the EU, the consumption areas of eating and drinking, housing, and travelling bear between 70% to 80% of all environmental impacts, and where "housing" includes: heating, water, and domestic appliances – and these account for 24% of all environmental impacts.

28 EEA, 2005

29 Health Aspects of Air Pollution (WHO, 2004)

2.4. Other market failures

2.4.1. Information asymmetries

Consumers - in a wider sense - do not always make decisions based on what is in their own long term interest or benefit. For example, consumers often fail to buy the products that are cheapest over their entire life span but rather make their decisions based on the purchasing price of a product. This kind of seemingly ill-informed behaviour is partly due to a lack of information. A majority of companies (80.3%) that responded to the European Business Test Panel[30] survey indicated that the lack of consumer awareness was the main reason as to why demand for better performing products is not higher, while 62% of respondents of the SCP/SIP public internet consultation[31] also raised lack of information as an important issue.

If producers do not provide the necessary information on the life-time performance of their products and if it is costly and time consuming for consumers to acquire that information, this so-called information asymmetry may lead to more resource efficient products not being bought. The consequence is unnecessary energy consumption leading to avoidable emissions of greenhouse gases and pollutants

Similar information issues exist in the housing market. Finding out about a building's "energy value" is difficult as there is only r very limited information available in terms of, for example, potential renovation costs, not least "due to a lack of standardised information about the energy consumption of the building (such as a certified label[32])". So that "as a result there is no specific demand for energy efficient buildings which could induce owners to improve the Energy Efficiency of their buildings" (Jakob 2007, for the case of Switzerland).

But information asymmetries also pertain to public procurement decisions: A questionnaire by the OECD on green public procurement revealed that 17 of the 19 responding States saw a lack of information about the long term financial benefits as a main barrier to the uptake of green public procurement[33].

In summary, demand for energy efficiency currently is very limited with the result that the formation of a distinguished (higher value) market segment often does not occur.

2.4.2. Bounded rationality

However, even when the relevant information is easily available (and consumers have access to credit if that is needed to finance purchasing a more expensive product) they may still not decide rationally but act in a myopic (i.e. short-sighted) way and buy the low price – high lifetime cost product. Empirical studies and laboratory experiments show that individuals do not always make optimal decisions despite having all the necessary information. The cause for this lies in the limited cognitive capabilities to process the relevant information needed for drawing the correct (rational) conclusions. In the economic literature this phenomenon is sometimes referred to as bounded rationality.

As pointed out by the High Level Group on Competitiveness, Energy and the Environment, bounded rationality "in the large non-energy intensive sectors and the public sector…" is

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30 European Business Test Panel Sustainable Industrial Policy – Sustainable Consumption Policy (17.09.2007 – 17.10.2007) Aggregate results

31 SCP/SIP public internet consultation (27 July – 23 September 2007)

32 Building certification and labelling is part of the European Directive of Building Performance (EPBD) and is also being discussed in Switzerland, cf. Baumgartner et al. (2004) and Rieder et al. (2006).

33 OECD (2007) Improving the environmental performance of public procurement: report on Implementation of the Council Recommendation.

mainly due "to a lack of awareness and poor motivation, complexity of contracts and the difficulty of measuring savings"[34].

The Stern report also mentions that "some economists have suggested that people use simple decision rules when faced with complexity, uncertainty or risk.[35] For example, many people are unable to calculate the long-run value of energy savings, which will depend in any case of the frequency of use of the devise, or have difficulties determining appropriate responses to risks and uncertainties around future energy costs or the potential impacts of climate change. As a result, individuals and firms commonly make decisions which simply meet their short-term needs, rather than undertaking complex analysis to determine the best possible decision[3637]".

The result is that despite the availability of the relevant information and the potential for internalisation of negative externalities, consumers may still not behave in a privately and socially optimal way.

2.4.3. Principal agent problems

Aside from information asymmetries, a misalignment of incentives between economic agents may induce inefficient long term behaviour. A typical example is the owner renter problem (Jakob 2006; Econcept 2002; UNDP/WEC/UNDESA 2000). The owner (the agent) rents out the house or the apartment and mostly provides some appliances with the rented property such as water heaters, boilers, and refrigerators. Yet, it is the tenant (the principal) who has to pay the energy bill. Although tenants would benefit from more energy efficient appliances or better insulation, landlords have no incentive to invest in more energy efficient products and instead maximise their utility by buying the product with the lowest price.

Another example is television set-top boxes. A set-top box is an electronic device that receives a video signal and converts it for display on a television. The service provider (the agent) provides the consumer (the principal) with a box as part of the subscription. The service provider selects the set-top box and the consumer pays the electricity bill. The service provider seeks to minimise the cost of these boxes and does not care about energy efficiency. Studies demonstrate that currently a simple set top box uses 800 kwh over its life cycle and has a life cycle cost of €83. However, there are already set top boxes with a life cycle cost of €56 on the market using only 134 kWh[38].

2.5. Impacts of the above market failures on Innovation

The production of environmentally friendly goods tends to be more complex so that production is typically high up the learning curve (leading edge technology). Due to their higher production costs these products often have higher upfront costs (a higher purchase price) than those made by using conventional technology and may in their initial stages of being introduced on the market have higher life-time costs. However, because of learning effects and economies of scale future production costs could be lower thus bringing down

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34 http://ec.europa.eu/enterprise/environment/hlg/hlg_en.htm

35 Kahneman & Tversky (1979, 1986, 1992) developed the idea of 'prospect theory' in which people determine the value of an outcome based on a reference point.

36 See Simon, H.A. (1959) for concept of 'satisficing'. See also transcript of 2005 Bowman Lecture: Energy Demand - Rethinking from Basics, Professor David Fisk submitted to Stern Review Call for Evidence http://www.hm-treasury.gov.uk/media/F7E/46/climatechange-fisk_1.pdf

37 See p 380 of Stern (2007) Stern Review: The Economics of Climate Change.

38 Technical study for the implementing measures on simple set top boxes (study 5 and study 7) http://www.ecostb.com/

life-cycle cost to a level below that of conventional (older) products. But getting to this lower level of production costs can be problematic as producers may be unwilling to incur temporary losses in order to sponsor the new technology until sufficient learning has taken place and critical mass is reached, while on the consumption side, perhaps due to the market failures outlined above, demand is limited. This prevents a move down the learning curve. The outcome is that the initial phase during which the product is more costly is not overcome and these new products do not become competitive in the longer run and that overall investment in new leading edge technologies is suboptimal. It is worth noting that these specific problems come on top of the usual market failures identified for innovation, such as imperfect appropriation of benefits of innovation due to knowledge spillovers.

Another reason for too low innovation speed has been pointed out by the High Level Group on Competitiveness, Energy and the Environment: "Long term policy predictability is seen as essential for (…) industries as well as for energy suppliers, since investment cycles are long[39]", particularly in the building sector. Predictability can be improved by sending out clear policy signals assuring the market that innovation will be rewarded in the future, particularly if uncertainty prevents the emergence of new technologies.

2.6. Internal market fragmentation due to uncoordinated public intervention

Many member states provide financial incentives, such as grants for substitution of electricity for heating (Sweden), ecological tax reform (Germany), refunds for Category A++ appliances (Belgium) that intend to induce consumers to buy more environmentally friendly products. However, the criteria that these products have to meet can differ substantially from one country to another. The result is a fragmentation of the internal market for the products concerned, since no harmonised approach exists that would send consistent signals to producers and consumers and allow a level playing field for environmentally friendly products across the EU. Similarly, some Member States link their procurement policies to national labelling schemes which can equally cause a fragmentation of the internal market. While the cause of this problem is not a market failure, it may be described as a regulatory failure.

3. CURRENT SITUATION AND EXISTING POLICY RESPONSES TO CHALLENGES

A number of policies are already in place to address negative environmental impacts of production and consumption. This section presents the major ones and illustrates how they deal with the market failures described above. A more detailed analysis can be found in Annex III. The policies listed below are not exhaustive. There are other policies on some of the market failures identified in the previous section, but those policies are not relevant as far as the scope of the present initiative is concerned.

3.1. Internalising greenhouse gas emissions

The European Union is committed to a 20% reduction of greenhouse gases *[or 30 % if an international agreement is reached]*, a 20% share of renewable energy and a 10% biofuels target by 2020[40]:

- The Emission Trading Scheme (ETS) will be expanded to cover: all greenhouse gases as compared to only CO2 emissions. All major industrial emitters will be included in the

[39] http://ec.europa.eu/enterprise/environment/hlg/hlg_en.htm

[40] Presidency conclusions (2007) 7224/1/07

ETS, covering 40% of the greenhouse gas emissions in the EU. The establishment of unified EU wide rules that replace the national allocation plans.

- For sectors not covered by ETS a target of 10% reduction from the 2005 levels is set to be reached by action at MS level and at Community level.
- The setting of modulated targets for renewable energy at Member States level, fostering the internal market for renewable energies, updating the regulatory framework and creating a comprehensive system to promote sustainable biofuels production for which a target of 10% is set
- A 10% biofuels target is set.

These measures are expected to lead to higher production costs for products that are very energy intensive in their production. It is likely that these additional production costs will be passed on to consumers. In particular energy prices are expected to rise by 10 Euro/MWh for a CO2 price of 20€/tn CO2 equivalent[41]. This will give a price signal to consume less energy and make investment in environmental technologies leading to lower greenhouse gas emissions more cost effective. However, this price signal might not be sufficient to address bounded rationality and principal-agent problem.

3.2. Air quality, industrial emissions and waste legislation

Apart from the internalisation of greenhouse gas emissions there is command & control legislation in place to regulate the environmental pollution of the production and waste stage and specific legislation related to air quality.

- The directive on industrial emissions aims at minimising pollution from various industrial sources throughout the European Union taking into account the whole environmental performance of the plant, covering e.g. emissions to air, water and land, generation of waste, use of raw materials, energy efficiency, noise, prevention of accidents, and restoration of the site upon closure. About 52.000 installations are covered. Environmental pollution during the production stage is controlled by this.
- The environmental pollution during the waste stage is covered by general legislation on waste management, e.g. the Waste Framework Directive, the Hazardous Waste Directive, the Waste Shipment Regulation and the Landfill and Incineration Directives and by legislation to regulate the management of specific waste streams (waste oils, PCBs/PCTs and batteries). Recycling and recovery targets have been set for some key waste flows, i.e. packaging, end-of-life vehicles (ELVs) and waste electrical and electronic equipment (WEEE). Heavily polluting landfills and incinerators are being cleaned up. Hazardous substances are being removed from vehicles and electrical and electronic equipment. The levels of dioxins and other emissions from incineration are being reduced.
- The future directive on Ambient Air Quality and Cleaner Air for Europe, which implements the thematic strategy on air pollution, sets targets for Member States to reduce environmental pollution stemming from particulate matter, ammonia, nitrogen oxides, sulphur dioxide, volatile organic compounds and ground level ozone. The Thematic Strategy on Air Pollution will drive down air pollution significantly with reductions between 27% and 82% of the five main polluting substances.

[41] McKinsey

3.3 Product policy

The Community has a number of building blocks in place that affect the environmental characteristics of products that can be put on the internal market and influences to some extent consumer choice through the provision of information:

- The Eco-Design of Energy-using Products Directive defines conditions and criteria for setting, through subsequent implementing measures, minimum requirements regarding environmentally relevant product characteristics of energy using products.
- Voluntary Green Public Procurement aims at making public procurement more environmentally friendly. It does so by aiming at average levels of GPP similar to those in the best performing Member States [voluntary targets for Member States] and by providing information to public procurers on green public procurement and environmental friendly products.
- The Eco-label is a voluntary scheme that identifies products or services with the highest overall environmental performance based on life cycle considerations (production, use and disposal). Similar labels are also awarded in some Member States (such as the Swan label in Sweden, Blauer Engel label in Germany)
- The Energy Labelling Directive (ELD) imposes a mandatory label for energy using household appliances that account for a significant proportion of electricity consumption in households. The label provides information on the consumption of energy and of other essential resources during the use phase.
- The Energy Star label is a voluntary U.S. label covering energy using and energy saving products/materials[42]. Only those products that can offset higher initial purchase prices by energy savings during their expected life span are awarded the label. The label is also used in the EU for Personal Computer systems and imaging equipment and it is mandatory for public procurement.

Green public procurement and the mandatory procurement under Energy Star contribute to solving the information asymmetries for public procurers. The labelling schemes solve the information asymmetries for the covered products by showing the 'hidden' costs of use over the expected life span. For example, the EELD has contributed to 34 Terrawatthours (TWh) in primary energy savings from 1995 until 2006. Half of the savings would be due to the labelling[43]. Once the implementing measures of the eco-design directive are introduced

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42 The current list of products covered include: Appliances (Battery Chargers, Clothes Washers, Dehumidifiers, Dishwashers, Refrigerators & Freezers, Room AC, Room Air Cleaners, Water Coolers) Heating & Cooling (Air-source Heat Pumps, Boilers, Central AC, Ceiling Fans, Dehumidifiers, Furnaces, Geothermal Heat Pumps, Home Sealing (Insulation), Light Commercial, Programmable Thermostats, Room AC, Ventilating Fans) Home Envelope (Home Sealing (Insulation and Air Sealing), Roof Products, Windows, Doors, & Skylights), Home Electronics (Battery Charging Systems, Cordless Phones, Combination Units, Digital-to-Analog Converter Boxes (DTAs), DVD Products, External Power Adapters, Home Audio, Televisions, VCRs), Office Equipment (Computers, Copiers and Fax Machines, Digital Duplicators, Notebook Computers/Tablet PCs, Mailing Machines, External Power Adapters, Monitors, Printers, Scanners, and All-in-Ones), Lighting (Compact Fluorescent Light Bulbs (CFLs), Residential Light Fixtures, Ceiling Fans, Exit Signs), Commercial Food Service (Commercial Dishwashers, Commercial Fryers, Commercial Hot Food Holding Cabinets, Commercial Ice Machines, Commercial Solid Door Refrigerators & Freezers, Commercial Steam Cookers), Other Commercial Products (Battery Charging Systems, Exit Signs, External Power Adapters, Roof Products, Vending Machines, Water Coolers)

43 SEC(2006)1174

information asymmetries and bounded rationality should no longer pose problems for energy using products, since the consumer will buy those products that have the lowest life cycle cost whether he is informed or not. Principal-agent problems will be solved for energy using products since agents do not have the possibility to buy products which are not in the interest of the principal. Furthermore, the minimum requirements will limit negative externalities caused by energy using products to the extent that they are covered by the standards. It is expected to avoid 200 mio tonne of CO2 per year by 2020, compared to today's emissions.

3.4. Energy Efficiency

The action plan on energy efficiency aims to improve energy efficiency:

- The Energy Performance of buildings directive (EPBD) promotes the improvement of the energy performance of buildings. Member States are requested to identify minimum requirements regarding the energy performance of new buildings and the refurbishing of existing buildings bigger than 1000 m². The EPBD can solve negative externalities resulting from poor energy performance, information asymmetries and bounded rationality problems with respect to new buildings.
- The eco-design directive, the energy star label and the EELD described above are important pillars of the action plan.

The action plan is set to realise a 20% saving potential in EU annual primary energy consumption. The Action Plan recognises that the achievement of this objective will require a significant further strengthening of product policy.

3.5. Other policies

- ETAP is a European strategy for eco-innovation and environmental technologies. It is composed of actions around three main themes: Getting from Research to Markets; Improving Market Conditions; Acting globally. Actions include increased and more focused research, demonstration and dissemination activities within the 7th Framework Programme for Research, support to the activities of the Technology Platforms and the setting up of a verification scheme.
- The Eco-management and audit scheme (EMAS) certifies through an independent verification mechanism that a firm complies with environmental legislation and has an environmental management system. Compliance with EMAS, even if costly, facilitates the identification of green producers.
- Member States promote the uptake of energy and environmental efficient products by a variety of fiscal incentive schemes.
- The Enterprise Europe Network and other dissemination channels encourage SMEs to adopt environmentally friendly and energy efficient solutions.

4. REMAINING PROBLEMS, TAKING ACCOUNT OF EXISTING POLICIES

The current initiatives go some way towards addressing the market failures outlined in Section 2 and hence align better our consumption and production with the socially optimal outcome. However, further issues remain and they need to be dealt with. This section sets out what they are, who is affected and explains their causes and drivers.

4.1. Externalities

A study[44] undertaken for the Joint Research Centre estimates that due to negative externalities, the social cost of per capita consumption at EU level is between EUR 219 and EUR 946 per year. The biggest contributors are direct greenhouse gases (169€), eutrophication (12€), phothochemical oxidation (11€) disaminities caused by landfilling (10€) and human health effects caused by dust (9€). Greenhouse gas emissions are thus by far the most important externality.

In its current form the EUP directive addresses energy using products. According to the study mentioned above, per capita externalities of these products account for only 38 to 43% of total externalities. The potential to deal with externalities generated by the use of other products not covered by the EUP Directive, both in terms of greenhouse gases and other environmental impacts, is somewhat limited.

EMAS could help avoid externalities through better consideration of the environmental impacts when identifying production processes. However, the uptake of EMAS remains limited and costly. For example, the results of a consultation undertaken for a recent study[45] indicate that almost half of the respondents believed that the monetary costs of EMAS outweighed the benefits, even if more than two third of the respondents considered EMAS as a success when comparing the financial as well as non-financial benefits and costs. In 2007 3,935 organisations were registered in Europe. These organisations have 6,000 registered EMAS sites employing 1.34 Million people – 0.6% of total employment in EU-27. The same study points out that 62% of all respondents think that EMAS remains regarded and used as "best practice" for environmental management among industrial sectors or other types of organisations. EMAS thus provides a signalling function and can reduce information asymmetries to some extent but due to its voluntary nature and limited participation, it does not appear to have the potential to overcome most problems related to information asymmetries, particularly as it relates to the production process and not to the characteristics of the actual products.

4.2. Information asymmetries

In spite of the labelling schemes in place, information asymmetries remain, meaning that consumers are lacking important information or are given information whose value has declined.

The current Energy Efficiency Label only solves information asymmetries with respect to one aspect, namely the amount of electricity that a product uses over its expected life-span. Other environmental aspects are not covered, such as the amount of energy required and pollution caused to produce the device or negative impacts related to its disposal. In addition, only very few product categories are covered by the label. The limitation of the scope of the EELD labels to household appliances does not address the information asymmetries faced by professional buyers of energy using products. This is particularly true for SMEs that sometimes lack the time or expertise to judge the energy performance of, for example, motor systems. Similarly, the scope of the energy star label in the EU is limited to office equipment and there presently is no link with the EuP directive.

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[44] Labouze et al (2003) Externali environmental effects related to the life cycle of products and services. Bio-intellince Service – O2 FRANCE

[45] EVER study: "Perceptions of EMAS Registration – A summary report". p.3

The EELD are also updated at too low a pace. As a result the market penetration of Category A for most of the labelled products is very high - between 47 and 81% depending on the appliance - (Annex IV, Table 2), even if it varies among Member States (79% of appliances in EU15 belonging to categories A and A+, 67% of mostly category A in 8 new Member States and Candidates Countries (JRC, 2007[46]) (Annex IV Figure 1). This means that the current information content of the label has been devalued since the majority of products are in the same category.

There is also a lack of information of other environmental impacts. Only the eco-label, based on life-cycle analysis, could in theory solve this information asymmetry but it is a voluntary scheme and there are only 25 products groups that use this label, with so far only around 400 companies producing Eco-label products. Total sales of Eco-labelled products amount to around €800 million per year. This represents less than 1% of the potential EU market[47]. Given that 99% of the products on the market are not covered by eco-label, information asymmetries are currently barely addressed by the Eco-label scheme.

Moreover in a recent Eurobarometer Survey[48], only 11 % of the respondents correctly said that it is a label for ecological products and services. In comparison, 80 % of Germans know the Blue Angel and 67 % of people in the Nordic countries understand the Swan.[49] The Eurobarometer also found that apart from being widely unknown the logo is also confusing to consumers.

4.3. Bounded rationality and principal agent problems

As explained above, reducing information asymmetries alone might not be sufficient.

Principal agent and bounded rationality problems for products beyond energy using ones remain unsolved as they are not subject to minimum standards as energy using products are. Take insulation and the landlord / tenant case: incentives for installing the optimal level of insulation, once renovation has been decided, can be distorted if the costs of installing insulation are not borne by the one who reaps the benefits. The typical case is that of the landlord and the tenant already mentioned above. A case study for the residential house market in the Netherlands demonstrates that less insulation is installed in rented houses. For example, 48% of private rentals are equipped with insulated glazing, while 70% of privately owned dwellings have this insulation feature (Annex IV, Table 3). Since 47% of all houses are rented the incentive problem is of a substantial nature.

Currently the Energy Performance of Buildings Directive does not solve this problem either. Indeed, the energy efficiency of buildings directive does not cover refurbishments below 1,000 square meters, which thus excludes most residential housing. This is precisely the area where, due to the significant presence of households, principal agent problems are of serious concern.

4.4. Impacts of the above market failures on Innovation

The internalisation of CO2 costs that is for instance due to the ETS and other measures (see above) will aid innovation to the extent that it reduces the initial phase during which the new technology may not be competitive. In Graph 3 below this is represented by a move from A to B as a result of the upward shift of the green line. Thus it may not fully solve the issue of

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46 http://sunbird.jrc.it/energyefficiency/pdf/EnEff%20Report%202006.pdf

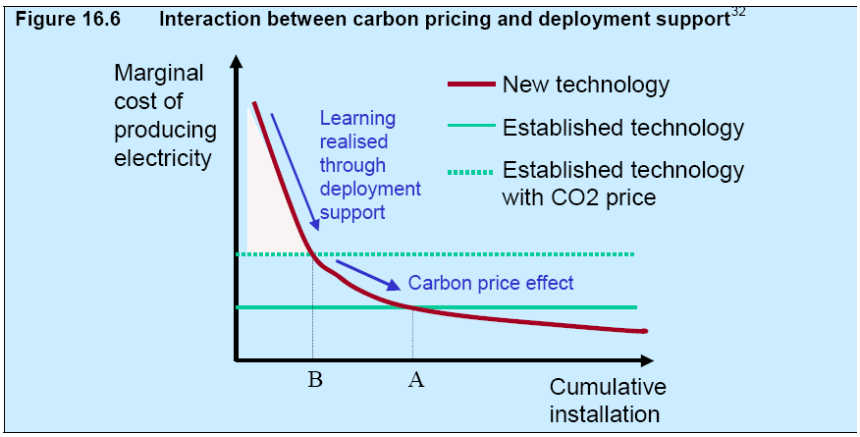
47 Proposal for on a revised Community Ecolabel award scheme, forthcoming.

48 http://ec.europa.eu/environment/ecolabel/pdf/studies/eurobarometer_survey.pdf

49 Source: http://www.svanen.nu

certain innovations having relatively high prices in the early stages of the learning curve. During these early stages it is unlikely that there will be sufficient demand as prices are too high, thus deterring consumers from making purchases, and companies may not be able to generate the revenue to stay afloat. However, it is in the public interest to move along the learning curve to generate the CO2 savings of lower energy and resource use that otherwise would be foregone. Randon and Naimzada (2006) indicate that the rate of decreasing costs has a strong influence on reaching a steady state[50], which supports public intervention to accelerate the rate. The existence of the other market failures described above however impedes innovation.

Graph 3: Interaction between carbon pricing and deployment support



Source: Stern Report (2007) p. 359

Innovation will only occur if there is sufficient demand for innovative products. In the absence of the market failures mentioned above (information asymmetry, bounded rationality, principal agent problems), environmental externalities would be better internalised by consumers and there would be a higher demand for products that use less resources (energy, water, etc). This demand would provide incentives for firms to invest into new technologies to improve product characteristics. However, the presence of the market failures leads to lower demand than is socially optimal and thus to too low levels of innovation.

4.5. Regulatory failures

4.5.1. Internal market fragmentations due to uncoordinated public intervention

Green Public Procurement

Green Public Procurement has not been uniformly successful (Annex IV Graph 2). The degree of uptake shown by the study "Take 5"[51] is in some cases quite substantial (around 50% of procurement) while in other cases it is quite low (Annex IV Graph 2). Some Member States link Public Procurement to national labels, which can create market barriers for foreign producers.

Fiscal incentives

The differences in national fiscal incentive schemes with respect to eligibility criteria persist. The following table illustrates for the example of roof insulation and energy saving windows

50 Randon E., Naimzada A. (2006) Dynamics of the non linear learning curve with spillovers in a differentiated oligopoly: effects on industry structure. J Evol Econ (2006) 17: 95–106

51 http://www.ec.europa.eu/environment/gpp/pdf/take_5.pdf

how fiscal incentives in countries with similar climate conditions are based on quite different performance criteria. For example, a producer that supplies windows with a U value[52] of 2.0 will benefit from increased demand due to fiscal incentives only in Belgium but not for example in Luxembourg or Germany (Annex IV Tables 4 and 5). This limits the economies of scale that the producer could realise if fiscal incentives were harmonised to foster the highest performance across Member States for similar climate conditions.

4.5.2. Fragmentation of existing policy measures

An additional problem is that the policies described under point 2 are currently not sufficiently aligned and linked with each other. Current labelling systems, such as the energy efficiency label, the national "green" labels and the eco-label that coexist but are not part of an overall scheme that would foresee a particular role to play for each label. This creates gaps - some products do not carry any label despite causing significant environmental externalities - which prevents solving information asymmetries in a satisfactory way.

Furthermore, policies that aim at fostering environmental performance are not linked to each other and thus do not inform and reinforce each other. Green Public Procurement measures for example do not include a uniform provision that only products carrying a particular label should be purchased. Rather, a multitude of national or regional approaches exists that due to diverging requirements can send conflicting signals to producers and can cause fragmentation of the internal market. The same applies to diverging fiscal incentive schemes.

Thus producers are faced with a complex regulatory environment with a multitude of national requirements that hinder an efficient product design on an EU-wide level. This leads to foregoing economies of scale that could be realised if an internal market with uniform criteria existed.

5. EU'S RIGHT TO ACT

5.1. Treaty establishing the European Community

Article 94 & 95 of the EC Treaty state that the Council shall adopt the measures for the approximation of the provisions laid down by law, regulation or administrative action in Member States which have as their object the establishment and functioning of the internal market. This applies to all aspects of production, products and consumption in the EU.

Article 174 of the EC Treaty states that Community policy on the environment shall include:

- Preserving, protecting and improving the quality of the environment.
- Protecting human health
- Prudent and rational use of natural resources
- Promoting measures at international level to deal with regional or worldwide environmental problems.

Patterns of production and consumption are manifest at global, European, national and local level and are integral to each of the considerations above.

[52] The U-value describes how well a building material conducts heat. It measures the rate of heat transfer through a material of known thickness over a given area under standard conditions.

5.2. Policy background

Specific impetus to act was recognised by the European Council in June 2006 when it adopted the renewed EU Sustainable Development Strategy (SDS). This identifies unsustainable consumption and production patterns as one of the key challenges for the EU and called upon the Commission to develop an Action Plan on Sustainable Consumption and Production, to:

- identify and overcome barriers for Sustainable Consumption and Production,
- ensure better coherence between the different related policy areas;
- rise awareness among citizens and change unsustainable consumption habits.

Actions on Sustainable Industrial Policy and on Sustainable Consumption and Production lie at the heart of furthering the Lisbon Growth and Jobs Agenda.

In the Mid-term review of the industrial policy[53] thrust is provided for a new initiative on a sustainable industrial policy, envisaged to help industry contributing to solve the challenges while also benefiting from the emergence of new markets in environmental technologies. The main thrust is to turn potential challenges into opportunities for EU industry, in order to lead the transition towards a low carbon and resource efficient economy.

More globally, the need for action was clearly voiced at the World Summit on Sustainable Development in 2002. The Johannesburg Plan of Implementation (JPI) signed at this Summit urged all countries to promote sustainable consumption and production patterns, with the developed countries taking the lead. This calls for countries to promote the development of a 10-year framework of programmes on Sustainable Consumption and Production (10YFP). At global level, the EU is committed to international efforts to develop the 10YFP, the "Marrakech process"[54].

Subsidiarity and EU added value

Action at the Member States level is unlikely to address environmental performance either efficiently or effectively. The impacts of climate change and air and water pollution are of a global or at least a cross border nature. Member States may fail to take into account the effects of domestically generated pollution which impacts outside its national borders and carry out insufficient abatement.

Individual Member States action risks leading to fragmentation of the internal market, particularly if that means implementing different standards and labelling or verification schemes. Where necessary, homogenous labelling or standards schemes avoid internal market fragmentation, facilitate the realisation of economies of scale and increase consumer understanding and acceptance.

6. OBJECTIVES

The **general objective** of the action plan is to contribute to the goals of the Lisbon Strategy and to help achieve the policy aims of the Sustainable Development strategy of the European Union by rendering product policy in the EU more effective. More concretely, the goal is to allow industry to transform environmental challenges into economic opportunities by fostering sustainable production and consumption on the basis of a strong framework for

[53] COM(2007)374

[54] http://www.un.org/esa/sustdev/sdissues/consumption/Marrakech/conprod10Y.htm

product policy. This requires an **integration** of different building blocks and a strengthening, where necessary, of the different tools to ensure that:

– For products with significant environmental externalities, notably with regard to energy use, thresholds are set as a minimum requirement for putting products on the internal market that lead to a more socially desirable outcome;

– For products with significant environmental externalities placed on the Internal Market consumers are provided with relevant information on the differentiation in this performance; e.g. through an appropriate labelling scheme;

– Fragmentation of incentives and stimuli (e.g. fiscal incentives and public procurement) for consuming products with more environmentally performing features in the Internal Market is avoided;

– Barriers to trade across the Internal Market are identified and eliminated to ensure that Environmental Industries can benefit from the advantages of the Internal Market;

– Innovation with regard to environmentally performing products is facilitated by removing market and regulatory failures and by providing early information on top performing products;

– Ensuring a regular updating of the key parameters defining the framework for product policy to ensure that, as innovation picks up, the framework remains relevant to products actually sold on the Internal Market;

– Maximising the environmental contribution of the EU's standards internationally whilst ensuring that the possible short run incidence on the competitive position of EU industry is addressed, where necessary.

This is to be done on the basis of a coherent set of measures centred around a strengthened Integrated Package which builds on existing tools, strengthening them where appropriate and providing for better linkages. Indeed, the operational objectives are to focus on existing tools, such as EuP, EELD, Eco-label and others. They are:

(1) To investigate ways of making better use of eco-labelling to help overcome information asymmetries

(2) To assess possible developments of the EUP directive so that it can better deal with bounded rationality and principle agent problems as well as reduce internal market fragmentation

(3) To examine if and how GPP and EELD can help find solutions to innovation difficulties and help contribute to addressing internal market/market fragmentation issues

(4) To see where further measures are needed and to help develop them.

The Action Plan therefore does not aim at environmental legislation for industrial processes or at air quality legislation. It also does not target the use of economic instruments to internalise externalities per se. It is important to note however that should such a pricing policy be developed it would be complementary and consistent with the above defined objectives for product policy since the thresholds for putting products on the markets are set such that a more socially desirable outcome will be achieved. A pricing policy would obviously further strengthen incentives for innovation.

These **objectives** of the initiative follow directly from the market and regulatory failures outlined above and the problems they lead to in terms of negative environmental impacts. The possible actions that will follow from the proposals resulting from this action plan will be subject to further, detailed impact analysis where considerations such as costs and benefits, efficiency and effectiveness in achieving the objectives will form the fundamental basis upon which they will be judged. At that stage, more specific objectives that each of the concrete actions are then to achieve will be spelt out.

7. OPTIONS

These further impact assessments will of course also include a baseline (or no policy change option) as a real alternative against which the new measures will be analysed. Moreover, detailed analysis pertaining to, for example, the impact on administrative burdens will be carried out when the individual measures are assessed. Thus the role of the current action plan is to identify ways and measures for further analysis so that the objectives of the previous section can be attained. In accordance with the present set of Commission IA guidelines, the options and the analysis of their impact in what follows hereunder is proportionate in the sense that there is sufficient detail to show how the options can achieve the objectives and why, based on the preliminary analysis presented hereunder, they deserve (or do not deserve) further, more detailed analysis.

Three mutually exclusive options that seek to contribute to solving the market and regulatory failures identified in the problem definition and improve environmental performance will be analysed. The baseline option consists of continuing current policy (a set of voluntary and mandatory actions). The second option places much more emphasis on voluntary action whereas the third option makes use of mandatory measures based on existing legislation with some limited support in the form of voluntary action.

Option 1: No policy change (baseline)

This option consists of the policies currently in place as described in the problem definition (see current situation). To summarize, product policy as it stands would introduce via the eco-design directive mandatory standards for a limited set of energy-using products, while the energy efficiency label and eco-label would continue to provide information to consumers and procurers on the energy use of appliances and life-cycle performance of a limited number of products respectively. The energy star label would facilitate the procurement of more efficient computers. The energy efficiency action plan would foster improvement in energy use, in particular through the implementation of the Energy Performance Buildings Directive. The Environmental Technologies Action Plan and EMAS would promote improvements in environmental performance, notably of production processes. Greenhouse gas emissions reduction would be addressed through the Climate package. Air pollution would be tackled by the directives on industrial emissions on ambient air quality and Cleaner air for Europe. Waste related environmental impacts would be covered by waste directives. No new measures would be introduced.

Option 2: Strengthen the role of Eco-label (mostly voluntary measures)

This option would promote a combination of instruments to reinforce voluntary actions (Eco-label, Open Method of Coordination), promote Green Public Procurement and identify internal market barriers for eco-industries (competitiveness screening). The different market and regulatory failures would essentially be addressed through the provision of information and the development of incentives. New regulatory action setting mandatory requirements

would not be developed and the co-ordination of existing policies would be dealt with within the existing framework.

The actions would consist of:

The main building block would be the Eco-label regulation, substantially revised. The revision would consist of simplifying the mechanisms for granting it while maintaining its voluntary character. The new Eco-label regulation would promote a reduction of the number and stringency of criteria to be applied for the identification of eco-labelled products, by concentrating only on the most important environmental impacts from a life-cycle perspective. A simplified process and the use of more limited criteria, regularly updated, would allow more product groups to apply for the eco-label, thus reducing information asymmetries on environmental impacts of products not addressed by EUP. The Eco-label would become a voluntary "label of common environmental standard" throughout the European Union. The Energy Efficiency Label could be repealed if the extended number of products covered by Eco-label became sufficiently large.

Implementing measures for EUP would be developed that include not only minimum requirements but also indicate the expected date of revision of these requirements to introduce a dynamic adjustment mechanism into the process to take account of developments and to provide predictability for the sectors concerned. Energy performance would continue to be used as the main criterion to set minimum requirements for energy using products, while it would be one of the criteria of Eco-label for these products.

Measures to reinforce Green Public Procurement would include utilising Eco-label as an indicative criterion of procurement for some specific products such as portable computers, appliances, etc.

The Commission would promote the use of the open method of coordination by those Member States that would like to harmonise the use of economic incentives to promote eco-labelled products and more generally identify benchmarks, share best practices and develop guidelines for green public procurement.

A strong effort would be put in promoting the use of EMAS by companies to improve their environmental performance.

A study would be launched to carry out a competitiveness screening of barriers to the expansion of eco-industries to identify internal market problems for this sector. On the basis of the results, the Open Method of Coordination could be mobilised to set up a common approach by Member States to eliminate these barriers. Finally, existing instruments (EuP, labelling, GPP etc) would be better coordinated by developing concrete measures by the Commission and the use of the Open Method of Co-ordination.

In summary, this option foresees no new mandatory measures. The emphasis is on the voluntary provision of information coupled with a more dynamic approach to already planned mandatory measures such as EUP.

Option 3: Strengthen the role of Product Policy (mandatory measures)

This option would integrate a set of instruments to extend the scope of mandatory actions (EUP, EELD) and link them with voluntary actions (Eco-label, EMAS, GPP). The use of incentives by Member States would be further harmonised. The main element would be an Integrated Package that provides information to consumers about life-cycle costs and establishes a harmonized level of ambition for the use of incentives to promote environmentally better performing products. The difference to option 2 is that this option

consists of a greater emphasis on mandatory requirements, whilst also including voluntary components.

The main building block of the Integrated Package would be the Eco-Design Directive. The scope of the directive would be extended beyond energy using products. The implementation would comprise, besides mandatory minimum requirements, the identification of indicative advanced performance benchmarks. Requirements and benchmarks would evolve dynamically. The impact assessments of the implementing measures for each product would identify key environmental criteria to be fulfilled.

Another important building block of the Integrated Package would be an enhanced labelling framework. The Eco-design Directive would be accompanied by a revised Energy Labelling Directive (ELD) which would be further developed to cover energy-using products (except vehicles[55]) and energy related products (such as windows). The ELD will focus on the energy consumption/conservation in the use phase while taking into account other environmental impacts where appropriate. This scheme would be mandatory and would reflect the evolving boundaries of the advance performance benchmarks. The implementing measures of the Labelling Directive will define, where appropriate, the precise modalities of the label. Labelling will be used for indicating, , on the one hand, use phase energy consumption/savings and, on the other hand, other significant and relevant environmental parameters of the product, .

Distinct form these mandatory labelling schemes, the voluntary Eco-label would be complementary by indicating environmental excellence, providing the benchmark levels for top performance. In order to achieve this, the Eco-label regulation would be revised to simplify the procedures of obtaining the label and reducing fees, as well as improve its coverage of other product groups and boost marketing. Eco-label criteria would be used to inform the process of identification of advance performance benchmarks for the Eco-design Directive.

The final building block of the Integrated Package would relate to economic incentives and Public Procurement. The labelling system would fix mandatory level of product performance for public procurement. Besides, and to avoid fragmentation of the Internal Market, the use of economic incentives by Member States would also be linked to this level of product performance. Member States could continue to use economic incentives of their choice, such as tax credits, reduced tax rates, lower interest rates for specific loans, cash subsidies, etc. but would have to base them on this level of product performance.

The accompanying measures would include actions to address environmental performance in production processes and reinforce existing legislation. A strengthened and inter-linked EMAS scheme would aim to increase functionality and up-take of the EMAS scheme through the revision of the existing Regulation (EC) No 761/2001 to enhance the possibilities for companies, particularly SMEs, to apply EMAS and to establish best practise benchmarks for operating and managing enterprises. An Environmental technologies verification scheme would be set up to act as framework to provide technology developers with the possibility of having a reliable third-party verification of the environmental performance of their new technologies, thus increasing their credibility vis-à-vis customers and facilitating their up-take by the market. Moreover, actions would aim at developing content for training and dissemination of tailor made information on subject of energy saving and environmental

[55] Already addressed by other Community legislative initiatives.

compliance in SMEs. Other voluntary measures and targets to promote uptake of Greening Public procurement would be set up.

As in option 2, a study would be launched to identify competitiveness issues for eco-industries such as internal market barriers. However, in case of proven barriers, action would be taken to remove them within the framework of the Commission's industrial policy, accompanied with a thorough impact assessment of the possible options and their consequences. Table 1 summarises the actions within each option and the market failure they address.

Table 1: identified market failures and proposed actions to address them in each option.

Market failure	Option 1	Option 2	Option 3
Information asymmetries	Ecolabel/EELD/EnergyStar	Enhanced Ecolabel Promotion of EMAS	Revised EELD, Eco-label, enhanced EMAS, Environmental Technologies Verification Scheme
Bounded rationality	EUP	Dynamic Implementing measures EUP	Extended EUP
Principal Agent problems	EUP	Dynamic Implementing measures EUP	Extended EUP
Innovation	CIP/FP7/EnergyStar/Enterprise Europe Network	Voluntary GPP at Ecolabel level	Mandatory product performance for public procurement. GPP
Fragmentation of Internal Market	EuP	GPP at Ecolabel level (Open Method of Coordination), EUP, Screening of single markets barriers	Mandatory product performance for public procurement. GPP. Harmonised requirements for national incentive schemes; enhanced EuP; screening of single market barriers

8. ANALYSIS OF IMPACTS

Option 1 (baseline):

As mentioned above, under the 'no policy change' scenario, several policies already partially address the identified market failures. The following table summarizes the positive and negative impacts in the future, compared to the *status quo*.

Table 2: Current policies and their impacts

Market failure	Actions	Positive impacts	Limitations and negative impact

Information asymmetries	Ecolabel/EELD/ EnergyStar	Positive impact on energy efficiency for products covered	Limited coverage. Outdated performance criteria (EELD)
Bounded rationality	EUP	Can be solved for energy using products by implementing measures	Not solved for energy related products. Higher purchase prices (but offset by savings over lifespan of product) Firms not being able to meet minimum requirements have to exit the market
Principal Agent problems	EUP	Can be solved for energy using products by implementing measures	Not solved for energy related products. Higher purchase prices (but offset by savings over lifespan of product). Firms not being able to meet minimum requirements have to exit the market
Innovation	CIP/FP7/ EnergyStar Enterprise Europe Network	Improved learning curves leading to lower costs for new technologies. SMEs networking for innovation.	The persistence of market failures for non-energy using products hinders innovation. Insufficient information for SMEs not tailor-made.
Fragmentation of Internal Market	EuP	Can partly be solved for energy using products by implementing measures	Where national criteria for GPP or fiscal incentives are not granted based on uniform criteria high risk of fragmentation of internal market

Option 2: Strengthen the role of Eco-label (mostly voluntary measures)

Overall, the impacts of this option would depend on the degree of participation of companies in the voluntary schemes. Their participation would be promoted by a simplified access to the eco-label scheme and increased demand for more environmentally friendly products in those Member States adopting the eco-label as criteria for public procurement. A more proactive promotion of EMAS would also advocate its voluntary uptake and improve environmental performance. Additional demand would be stimulated by fiscal incentives in those Member States that decide to coordinate their actions and ambitions. However, the remaining presence of low performing, low priced products on the markets would slow down the move towards improved environmental performance.

Positive impacts:

The information asymmetries identified above would be dealt with by extending the scope of the still voluntary basis. Less stringent criteria for Eco-label as well as lower cost of compliance would induce a large number of eco-labelled products on the market thus enabling the consumer to take better informed decisions. The success of this in terms of leading to a more efficient outcome depends on the number of products with the eco-label and the number of consumers making use of the information. . Environmental performance of companies would be clearly identified for those companies adopting EMAS.

Public procurement would benefit from the additional information so that procurement criteria could be linked to the eco-label. Moreover, making eco-label a voluntary criterion for public procurement and coupling it with more ambitious indicative targets should increase the demand for these products and reward those who use the eco-label. The reference to a harmonised label across the EU could prevent fragmentation of the internal market through Green Public Procurement.

Member States could use the open method of coordination to prevent a fragmented approach to giving incentives. Using the eco-label as a criterion for granting fiscal incentives would further stimulate demand, facilitate the use of economies of scale, and reward those producers who participate in the eco-label scheme.

Bounded rationality and principal agent problems would be dealt with through the adoption of implementing measures for energy using products within the framework of the current EuP Directive complemented by self-regulatory approaches.

Barriers to innovation would be partly offset by using dynamic criteria for ecolabel products and the use of dynamic minimum requirements in the implementing measures under the EuP Directive. Increased demand for these products and GPP would provide additional stimuli to innovation.

Internal market barriers for eco-industries would be identified by the screening exercise. These would be addressed as far as possible within the framework of the industrial policy.

Voluntary compliance with eco-label criteria would in addition drive up the environmental performance of companies from outside the European Union willing to put Eco-labelled products on the European market.

No additional short-term financial burden would be imposed on Low income households because they would be able to continue purchasing less performing products.

The different measures contained in this option are complementary in that each of them improves demand for eco-labelled products by addressing the above mentioned market failures and by decreasing market fragmentation. Higher demand should allow the realisation of economies of scale in production that otherwise would not be feasible.

Negative impacts

Information asymmetries would be solved only for products covered by Eco-label. A substantially simplified procedure would make it more attractive to participate in the scheme, however the problem remains that participation is voluntary. Unless a significant fraction of consumers buys eco-label products, the incentive for producers to participate would remain somewhat limited.

High cost of compliance with EMAS would remain, even if the scheme would be better known by companies.

The magnitude of the impacts on bounded rationality and principal agent failures would be restricted to those covered by the EUP Directive. In comparison to the baseline option, the only difference would be that the implementing measures and the minimum requirements would be updated more regularly. However, many products with significant environmental impacts would remain outside the scope of the Directive and many badly performing products would remain on the market and be bought due to, for example, bounded rationality and principal agent problems

The effects on innovation would be constrained by the voluntary nature of GPP and depend on how much use public authorities make of the criteria. It is doubtful whether this would lead to sufficient demand for triggering major investments in innovation.

A fragmentation of incentives would only be addressed by Member States participating in the Open Method of Coordination. Due to the voluntary nature of this approach it is likely that the fragmentation of the internal market would persist, although probably at reduced levels compared to the baseline.

Products with superior performance are likely to have higher purchasing costs. Low income households would not be able to benefit from the long term life-cycle gains if they are not able to finance the initial investment.

The impacts on administrative burden cannot be assessed at this stage but the impact assessment reports that need to be prepared for any legislative proposals that might follow would address this.

Table 3 summarizes the envisaged actions and their impacts.

Table 3: Actions and their impacts under option 2.

Market failure	**Actions**	**Positive impacts**	**Limitations and negative impact**
Information asymmetries	Enhanced Ecolabel	Extended coverage but impact remains limited (voluntary labelling), reduced cost of compliance for participating firms	Could lead to higher prices but limited impacts on low income households
Bounded rationality	Dynamic Implementing measures for EUP	Can be solved for energy using products, regularly updated efficiency improvements to maintain incentives to innovate	Limited scope, higher purchase prices (but offset by savings over lifespan of product), firms not being able to meet minimum requirements have to exit the market
Principal Agent problems	Dynamic Implementing measures for EUP	Can be solved for energy using products, regularly updated efficiency improvements to maintain incentives to innovate	Limited scope, higher purchase prices (but offset by savings over lifespan of product), firms not being able to meet minimum requirements have to exit the market

Innovation	Voluntary GPP at Ecolabel level, Dynamic Implementing measures for EUP	Higher uptake induces economies of scale, incentives to innovate via dynamic criteria for ecolabel	Budget impacts for governments purchasing leading edge technology
Fragmentation of Internal Market	GPP at Ecolabel level (Open Method of Coordination), EUP, Screening of single markets barriers	Help avoiding fragmentation of internal market	Limited to Member States' participation with high impact on Member States budget

Option 3: Strengthen the role of Product Policy (mandatory measures)

Overall, this option would induce the strongest impact on environmental conditions given the mandatory character of the measures and synergies flowing from the combination of the actions in the Integrated package. Although some initial costs of this option such as purchase prices might be higher, it is expected that in the long term product prices would go down due to learning effects and economies of scale and that life cycle costs in particular would be lower l.

Positive impacts

The revised Energy label and the Eco-label would provide information on the environmental impacts for a broad range of products. The dynamic elements envisaged for those labels also guarantee that the information that is provided is relevant. An improved EMAS and the environmental technologies verification scheme would recognise more environmental friendly production processes by awarding a certificate. All these measures would substantially contribute to solving information asymmetries.

The enlarged scope for Eco-design would decrease bounded rationality and principal agent problems through the implementation of mandatory minimum requirements for an extended number of products, beyond energy-using ones, such as insulation material that have significant environmental impacts. This can not be said of pricing policies such as ETS, as explained above. Mandatory minimum requirements would remove from the market products inefficient from a life-cycle perspective whenever their impact would lead to a desirable social outcome. The dynamic nature of the system would ensure that regular improvements in the environmental characteristics of products take place in the future. Both would help improve environmental quality and decreasing energy consumption. The extent of the impacts would depend on the products for which implementing measures would be adopted and the precise nature of the product characteristics. Due to the focus on least life-cycle cost, for minimum requirements the improvements would also be cost effective.

Predictability for companies and incentives to innovate would be improved by harmonised environmental performance criteria for Public Procurement and economic incentives across the EU. Higher mandatory level of performance for public procurement would further accelerate innovation and reward front-runner companies. In addition, the mandatory use of the same EU-level of performance in these two areas will eliminate a fragmentation of the

internal market. In the longer term, this would allow attaining economies of scale, boost innovation and lower product prices for consumers.

SMEs would have access to more adequate, tailor-made solutions to improve their environmental performance and foster innovation.

The formal linkage between Eco-design and the labelling scheme, whose criteria would be informed by Eco-label, provides a harmonized and coherent framework to continually improve the performance of products on the market while at the same time assuring that this is done in a cost-effective way.

Internal market barriers for eco-industries would be identified by the screening exercise. These would be addressed as far as possible within the framework of the industrial policy. No difference exists in comparison to option 1 in that regard.

Compliance with minimum requirements would be required from non-EU producers who want to market their products in the EU. This could lead to improved products being offered on other markets as well. If consumers elsewhere understand the life-cycle cost savings that can be realised by products complying with EU minimum requirements this might create additional demand for improved products. At the same time, the competitiveness of European producers on non-EU markets should not be impaired since EuP product standards only apply to products being marketed in Europe. Thus exports to third countries of products not fulfilling minimum requirements are still possible. Clearly, however, manufacturers with small sales volumes and all single production lines would be more affected.

The common focus of the enlarged EUP and the labelling scheme, dealt with by the same comitology procedure with common members, would speed up the process of adopting implementing measures and the identification of requirements for the labelling system.

The different elements of this option are designed to complement and reinforce each other. The main synergy consists of a strong increase in demand for environmentally friendly products that satisfy harmonised criteria across the entire EU. This will encourage firms to engage in innovation and will allow them to realise economies of scale in production, which in the medium term should lead to lower prices for more environmentally friendly products.

Negative impacts

In the short term the prices of products having to fulfil minimum requirements would most likely increase, but in the long run this would be offset by life cycle savings. In particular low income households could be affected, either by having to buy more expensive products or by having to pay higher rent (if landlords need to provide more performing equipment). The precise impacts would be carefully analysed in the impact assessments that would accompany each implementing measure.

Companies that would like to adopt EMAS and utilise the Environmental Technologies Verification Scheme would also face additional costs to obtain the certificate. In comparison with the baseline scenario, a larger number of firms not being able to meet the minimum requirements set by the implementing measures of the extended Ecodesign Directive would have to exit the market. For each implementing measure, these effects would be scrutinised carefully in the accompanying impact assessment for the measure.

Mandatory Public Procurement of environmentally performing products would impose some upfront budgetary burdens on public authorities. However, the level of performance would be fixed so as to ensure equal or lower life-cycle costs when compared with current procurement practices.

Foreign companies whose products do not fulfil minimum requirements have to incur cost to change their product design or stop supplying the European market.

The impacts on administrative burden cannot be assessed at this stage but the impact assessment reports that need to be prepared for any legislative proposals that might follow would address this. Producers concerned by the extension of the scope of the Ecodesign Directive may incur some additional administrative burden, which will have to be considered in the impact assessment of the implementing measures.

Table 4 summarizes for this option the actions and their impacts.

Table 4: Actions and their impacts under option 3

Market failure	**Actions**	**Positive impacts**	**Limitations and negative impact**
Information asymmetries	Revised Energy label, Eco-label, enhanced EMAS, Environmental Technologies Verification Scheme	Solved also for products beyond energy-using ones with the highest environmental impacts. Lower environmental impacts of production processes	Higher costs for companies affected.
Bounded rationality	Extended Ecodesign	Solved also for products beyond energy – using ones, regularly updated efficiency improvements to maintain incentives to innovate	Higher purchase prices (but offset by savings over lifespan of product) for consumers and procurers. Firms not being able to meet minimum requirements have to exit the market
Principal Agent problems	Extended Ecodesign	Solved also for products beyond energy-using ones with the highest environmental impacts, regularly updated efficiency improvements to maintain incentives to innovate	Higher purchase prices (but offset by savings over lifespan of product) for consumers and procurers. Firms not being able to meet minimum requirements have to exit the market
Innovation	Mandatory level of product performance for PP, voluntary measures on GPP	Accelerated market uptake of more performing products. Induced economies of scale. Front-runners rewarded. More adequate solutions for SMEs available	Additional budgetary burden

Fragmentation of Internal Market	Mandatory level of product performance for PP, Harmonised requirements for national incentive schemes; extended Ecodesign; screening of single market barriers	Accelerated market uptake of more performing products. Uniform product requirements for incentives. Induce economies of scale. Front-runners rewarded.	Additional budgetary burden

Based on the qualitative reasoning presented so far, it is clear that all three options would help reduce the problems to do with the market and regulatory failures outlined in the problem definition of this document. However, the analysis of the baseline that is also contained in that section showed that a number of issues would remain unaddressed. Although the discussion above points to the baseline option being the one that produces the least amount of initial new costs, at least when excluding environmental costs that result from no further action, this option would only very partially achieve the objectives set out in section 6. To name but two objectives, information to consumers would remain very limited and the fragmentation of public incentives, and thus trade barriers, are unlikely to be resolved.

In spite of the more voluntary nature of the measures foreseen in option 2 and the possible extension of mandatory measures in option 3, it would be wrong to assume that option 2 would be less costly. Indeed, the analysis below shows that the introduction of new mandatory measures, for example in the context of dealing with the principle agent problem explained above, could be less costly. When taking into account the likely benefits, the argument tilts even further in favour of option 3 as its mandatory measures mean that in order for option 2 to achieve the same benefits one would have to assume a high degree of take up of its voluntary measures. And such an assumption is likely to be much too optimistic since uptake rates are typically very low. For example, regarding labelling schemes such as eco-label, existing schemes in some member states tell us that uptake rates are at best 20%.

Clearly, a precise quantification of the costs and benefits of the different options is not possible at this stage, inter alia, since they all depends crucially on the supply and demand characteristics of the product categories to which the framework would be applied. They will be determined through subsequent Impact Assessments.

However, the likely effects can be illustrated on a case by case basis. The following paragraphs provide some illustrative calculations based on information that is readily available of the expected costs and benefits of using more energy efficient products. The methodology for these calculations is presented in Annex V. The calculations are not intended to provide a full cost benefit analysis of all the measures foreseen in the three options since they only focus on water heaters (energy using product) and windows (energy related product). They do however add further arguments to the sections above so that a decision can be made as to the direction in which further analysis should go – e.g. whether it will be targeted on a set of measures that are essentially voluntary or towards a more mandatory approach.

In the case of energy using products, the first scenario reflects the current situation where implementing measures have not yet been adopted. Option 2 would mean that water heaters could apply for the eco-label and that those that correspond with the best performing product on the market would receive the label. Option 3 would entail, as already expected, the

inclusion of water heaters in EUP. When looking at the life-cycle costs option 3 turns out to be significantly cheaper than option 2. Interestingly though, option 3 would mean substantially higher purchase costs for the consumer (but also greater benefits in terms of less energy use and CO2 emissions) (Annex V, table 4).

The case of energy related products, e.g. windows, is even more interesting as, contrary to the above analysed case, according to current arrangements these products would not come within the scope of the EUP. Thus option 1 represents the baseline with low purchase prices but relatively high energy use and CO2 emissions. Similar to the case of water heaters, very low emissivity windows would receive the eco-label. That would lead to a more than doubling of the purchase price for consumers for this product. Option 3 envisages rolling out Ecodesign to also include windows with higher insulation performance (for the purpose of the example, double glazing windows are considered even if in some cases single glazing could also apply)[56] , which would result in an increase in the purchase price of ca. 50%, but lower life-cycle costs (Annex V, table 8).

At the aggregate level (Tables 5 and 6), the importance of the impacts of option 2 would depend on the degree of market penetration of the different products. For this analysis, one a market penetration of 20% of eco-labelled products[57] is assumed, based on the penetration rates of national labelling schemes which so far have achieved at best rates of up to 20%. In the case of option 3, mandatory minimum requirements for products translate into full penetration.

For both examples (energy using and energy related) aggregate initial purchase costs for consumers and procurers of option 3 would be clearly higher than those induced by option 2. This is explained by the fact that under option 2 only a limited share of all purchased products has the highest environmental performance, which makes them more expensive.

Over time, however, option 3 would pay off in terms of life-cycle costs, energy savings and CO2 emissions avoided. Whereas most other environmental policies are implemented at positive cost, the measures envisaged in this report imply cost reductions in the long term, positive environmental impacts and lower energy consumption, as shown in the following tables.

Table 5: Aggregated impacts of the options for the case of water heaters (covered by EUP)

	Option 2 (20%)	Option 3
Purchase costs	48.29%	99.19%
Energy impacts	-7.49%	-29.13%
CO2 impacts	-7.49%	-29.13%
Life cycle cost	-3.19%	-16.94%

[56] It is clear that this is a simplification for the purpose of the argument. In many regions in Europe double windows might not be required.

[57] These percentages seem justified by the fact that this scheme would remain voluntary but would lead to a higher penetration than at the moment due to the simplification of the granting procedures and criteria on the one hand and some additional demand from public procurement on the other hand,

Sources: own estimations on the basis of results from Technical studies for the implementing measures of the EuP and data from Prodcom

Table 6: Aggregated impacts of the option for the case of windows (not covered by EUP)

	Option 2 (20%)	Option 3
Total purchase price	30.00%	50.00%
Total energy consumption in lifespan	-6.50%	-22.86%
Total CO2 emissions in life span	-6.18%	-20.91%
Total Life-cycle costs	-1.34%	-10.70%

Sources: own estimations with data from Prodcom, French prices for windows from Lapeyre website, and degree of performance by Price Waterhouse Cooper

Under Option 2, access to better performing products would be substantially more difficult for low income households due to higher purchase costs. It should be reminded that this category of household spend the highest proportion of their income (30.6%) on housing, water, energy gas, and other fuels and the lowest portion (5.7%) of their income on appliances and renovation (Annex IV, Graph 3). However, as less performing (low price) products would still be present in the markets, therefore it is unlikely that these households would change their consumption behaviour. This would prevent them from energy savings in the long-term. Option 3 would have bigger benefits but may create some adjustment difficulties for low income households. Under budgetary constraints, the decision to renew appliances, or renovate buildings might be postponed, implying also that these households would not be able to take advantage of more efficient products. The use of incentives by Member States could help in overcoming these possible drawbacks for low income households. However in the long run Option 3 would guarantee that also these households benefit from lower energy bills.

Public procurement can help in creating a sufficient level of demand to accelerate innovation. Assuming that 5 %[58] of the market for small size water heaters (860000 units per year) are bought by public authorities[59], even if under option 2, 100% of public purchases would be eco-label products (as assumed in table below), it can still be shown that option 3 would lead to lower purchase costs and lower life-cycle costs while still achieving a substantial improvement of energy use (Table 7).

Table 7: Impacts of mandatory public procurement for water heaters

	Option 2	Option 3
total purchase	241.46%	99.19%
Total emissions	-37.47%	-29.13%
Total energy use	-37.47%	-29.13%

[58] This is a conservative estimation. Pricewater House Cooper (2007) estimates a 7% of market share by public procurement of water heaters.

[59] No data is available on the procurement for this item.

Total life-cycle	-15.97%	-16.94%

In terms of use of incentives to promote the most efficient products, the mandatory level of ambition identified in the implementing measures of the Ecodesign Directive or through the Ecodesign label would be more proactive and reduce the fragmentation of the Internal Market than a voluntary approach through the Open Method of Coordination, whose impact would be limited to the participating Member States.

It is expected that incentives would induce economies of scale in time due to faster learning curves. Lower prices combined with the dynamic approach for requirement of an enlarged number of products setting in option 3, in which indicative advance performance benchmarks would become minimum requirements in a given period of time, are expected to induce very significant effects. The case of water heaters shows a strong decrease of energy use, CO2 emissions and life cycle costs would be reduced under the hypothesis of a 3% yearly price decrease of the best performing product. However, this would impose some burden on Member States budgets.

Table 8: Impacts of improving minimum requirements for the case of water heaters.

	Aggregate results	% compared to BAU
Total energy consumption in lifespan (GWh)	11,083	-87.49%
Total CO2 emissions in life span (Mt CO2)	7,758,450	-87.49%
Total Life-cycle cost (million €)	1,495	-83.19%

Sources: own estimations from the same sources indicated above

For all the products considered, option 2 shows higher purchase prices and higher life-cycle cost.

9. COMPARISON OF OPTIONS

The table below summarises the results of the previous analysis.

Table 9: Comparison of the options

Impact	Option 1 (baseline)	Option 2	Option 3
Economic	No immediate impact but **in the long run efficiency gains would be foregone** (except for energy using products). Fragmentation of the internal market would remain.	For energy using products same as Option 1. For other products **high purchase prices likely to limit voluntary uptake**. Fragmentation of internal market could continue depending on MS willingness to cooperate. Financial	In the short run price increases since less performing products have to exit the market. In the long run **significant savings on energy** more than offset this. Fragmentation of the internal market would be reduced. High procurement pressure for Member States budget in

		burden for those MS voluntarily adopting ambitious Green public procurement and granting incentives for best performing products.	the short term but offset in the long run by energy savings. High budget pressure for Member States granting incentives for best performing products.
Environmental	**Limited** improvements only due to minimum requirements for **energy using products**.	For energy using products same as Option 1. For other products **some improvements but limited by voluntary nature**.	**Substantial improvements due to mandatory minimum requirements**.
Social	**No major impacts**, prices of energy using products might rise but offset over time by life cycle savings.	No major impacts, For energy using products same as Option 1, for other products the high purchase prices **limit access by low income households.**	For energy using products same as Option 1, for other products increases in purchase prices that could affect low income households, but **more than offset in the long run by energy savings.**

The qualitative analysis has shown that option 3 has the largest positive overall impacts. It may create some adjustment difficulties in the short term, particularly on the budgets of Member States and for low income households. However, in the long run option 3 leads to substantial economic, environmental and social benefits. Therefore option 3 should be the preferred option, which is supported by the illustrative quantitative comparisons as well.

Table 10 summarizes the set of actions in each option and whether they would be accompanied by an impact assessment.

Table 10 Summary of the Actions and Impact Assessments included in each option (In bold those Impact Assessment already developed)

	Option 2		**Option 3**	
Instrument	Action	IA	Action	IA
Eco-label	Comprehensive revision	Yes	Revision to simplify	**Yes**
EUP	no change to Directive	Yes, for each implementing measure	Amend	**Yes**, for the Directive and for each implementing measure

EELD	Eventually repeal	Yes	Extend scope and include mandatory procurement levels as well as harmonize the use of incentives	Yes
Complementary labelling scheme	/	/	New instrument or through the extension of scope of existing ones	Yes
Incentives	Open Method of Coordination	No	Included in the revised label	
Green Public Procurement			Communication setting voluntary measures for products not covered by the labels	**Yes**
Competitiveness Screening	Study	No	Study	No
EMAS	Proactive promotion	No	Revision to simplify	**Yes**
Environmental Technology Verification Scheme			Regulation	Yes
Post-2008 measures			To be determined	If necessary

10. COST-EFFECTIVENESS

The examples presented indicate that option 3 is the most cost-effective from the environmental and life-cycle perspective.

The cost effectiveness of the different actions will be re-evaluated when data becomes available through the Impact Assessments of the individual actions.

11. MONITORING AND EVALUATION

Monitoring and evaluation will be an important part of the EU sustainable consumption and production policy and the sustainable industrial policy. Progress on the objectives will be monitored both to check the implementation of the measures and the contribution to the objectives of the Climate package, the renewed Lisbon agenda for Growth and Jobs and more generally the Renewed Sustainable Development Strategy.

To this end, it is foreseen to review the policy on a regular basis (2-4 years) and to submit regular implementation/progress reports to the European Parliament and the Council. EUROSTAT already gathers data and estimates indicators related to Sustainable Production and Consumption within the framework of the sustainable development indicators. Indicators of particular importance for this Action Plan are greenhouse gas emissions and projections, electricity consumption by households, environmental management systems, as well as the number of Eco-labels. They could be complemented with indicators on the market share of the different categories of products covered by Eco-design and labelling directives and indicators on Eco-industries, such as value added, employment, SMEs and innovation rates.

Annex I

to the

Impact Assessment on the SCP and SIP Action Plans

Summary of stakeholder consultations

Table of Content

1. SECTION 1: STAKEHOLDER CONSULTATIONS

This section presents the main consultations carried out by the Commission in preparation of the SCP and the SIP Action Plans. It highlights key messages received from stakeholders and puts them into perspective with regard to the SIP/SCP background document published by DG ENV and DG ENTR on 27 July 2007. This document is available in Annex II to this impact assessment.

In addition, separate stakeholder consultations and Impact Assessments have been carried out for a number of specific actions that are intended to be presented with or are related to the Action Plans. These include reviews of the EMAS and Eco-label regulations, a communication on Green Public Procurement, a Communication on a SME compliance scheme and a Communication on Market Based Instruments. Summaries of the Impact Assessments and related documents prepared for these initiatives are available in Annex III.

Besides, the Action Plans take into consideration the recommendations of the high level group on Competitiveness, Energy and the Environment.

In addition, substantial input from stakeholders has been collected by DG ENV over the past years in the course of numerous conferences, workshops and other events, related to the ongoing development and implementation of EU Waste Policy, the Thematic Strategy on the sustainable use of natural resources, the Thematic Strategy on the prevention and recycling of waste, and the Integrated Product Policy (IPP). Stakeholder contributions to these activities have been reported elsewhere and are not repeated here in detail. They are however an integral part of the Commission services' considerations in developing the SCP Action Plan.

1.1. Highlights from the SCP/SIP public internet consultation, 27 July to 23 September 2007

A web-based public consultation was carried out from 27 July to 23 September 2007. It was based on a common background document of DG ENV and DG ENTR.

Responses were given via a multiple-choice questionnaire. In total 658 responses were received, of which 479 were exploitable. Responses came from industry associations and NGOs, trade and consumer associations, private companies, public bodies, academic bodies, private companies, SMEs, and individuals. Important results include:

- Stakeholders strongly support the need for Action Plans and the key challenges identified in the Commission background document.
- A large majority see environmental concerns as either equally ("tackle environmental problems cost-efficiently"; 70%) or more important ("solve environmental problems regardless of costs"; 19%) than cost issues ("be cost-efficient even if positive environmental impact is not maximized"; 7%)
- Mandatory policy instruments are clearly favoured over voluntary instruments.
- Consumption is seen as the most important challenge.
- A lack of market pull (several questions) is the main barrier to a wider up-take of better products.
- Overwhelming support for (mandatory) green public procurement, green private procurement to stimulate smarter consumption and initiatives through retailers.

- Market based instruments, public procurement and a dynamic system to qualify performance are the most important instruments to promote better products

In more detail:

a) 97.5% of respondents agreed that there is a need for action in the fields of sustainable industrial policy and of sustainable consumption and production.

b) 81% agree with the five key challenges identified in the background document.

c) There is a large consensus that 'consumption' is the most important challenge to tackle, followed by 'production', 'innovation' and 'products' in decreasing order;

d) A large majority see environmental concerns as either equally ("tackle environmental problems cost-efficiently"; 70%) or more important ("solve environmental problems regardless of costs"; 19%) than cost issues ("be cost-efficient even if positive environmental impact is not maximized"; 7%) (See also under point i).

e) Most barriers to "innovation" point to uncertainty for investments respectively a lack of trust in long-term 'market pull'. They include: lack of long-term policy and insufficient stringency of legal instruments, lack of consumers' awareness and knowledge, and lack of Green Public Procurement. This leads to high risk of investments by industry. Production costs and higher prices rank significantly lower in terms of barriers. Lack of financing available, potential pay-off, lack of partners and 'red tape' do not appear to be important barriers.

f) Barriers for the adoption of energy and resource-efficient production systems are lack of incentives (36.8%), followed by disadvantages to international competitiveness (20.8%).

g) Barriers to wider use of better products are lack of incentives to consumers and their lack of awareness of long-term pay-off as well as a perceived insufficient environmental ambition of the "better" products available. The quality of product labels, or a lack of trust in labels are not important barriers.

h) 65% of all respondents and 75% of the general public are in favor of mandatory instruments. Only 25% of all respondents favour voluntary instruments.

i) For the choice of products on which one should act, environmental concerns including improved resource and energy efficiency are of highest priority while "potential EU market leadership" is of very low concern (see also under d).

j) Enhanced eco-design, labeling and strict performance standards are of high importance for better products.

k) The options 'eco-design for more products via an 'extended EuP' and 'additional eco-design policy' have equal support, but the EuP option has more explicit opponents.

l) Top priorities for improved product policy should be: more use of taxation and more green public procurement (in both cases questions were specifically asked for energy and resource efficiency), dynamic minimum requirements together with benchmarks for best performers (not dynamic evolution of minimum requirements alone), a broader range of products covered and strengthened labeling.

m) Most important instrument to develop sustainable consumption is differentiated tax, followed by actions to address misleading advertising and public procurement. Consumer educating and training and awareness ranked lower.

n) Over 70% agreement on questions regarding the need for EU level initiatives to help retailers to green the supply chain and improve the reliability of their environmental claims and stimulating green procurement by private purchasers.

o) Overwhelming support for public procurement to concentrate on green products, even if they are more expensive (80.6%) with 60% considering that green procurement should be mandatory.

p) Overwhelming support to promote Global Sectoral Agreements and for negotiating international minimum requirements.

Core messages from position papers

During the consultation, some respondents also submitted position papers. The sixty-six written contributions uniformly expressed support in sustainability and overall welcomed the European Commission's proposed actions. The consultation attracted a wide range of diverse position papers by stakeholders, sometimes resulting in unavoidable contradictions. Main comments received by Member States include the need to clarify the coherence and clear links between the two Action Plans, and explore the potential of developing a joint SC/SIP Plan. In addition, some respondents sought further clarification on the development of indicators, methodologies, timelines etc.

Many position papers by Member States support the need for clear and more ambitious targets for resource efficiency. The majority of industries were not fully supportive of the proposed targets on the grounds these are already ambitious as many improvements have already been made over the last decades, they were already developing their own indicators. Companies also express the fear that the measurement methodologies are not yet well enough developed nor the indicators well enough defined. Further clarification of the methodology to quantify impacts should be developed before proposing any new regulations. There is broad support to streamlining existing regulations as well as to learning from former failures. For labelling schemes this would also be helpful to prevent consumers' confusions.

One of the most important aspects is to ensure global competitiveness. Further analysis is needed on how import and export markets will be affected by any policy. Regulatory costs for companies, notably from regionally differentiating regulations, have to be considered before implementation. There is agreement that legislation should keep the administrative burdens as small as possible.

SIP-SCP consultation through the European Business Test Panel (EBTP)

The EBTP addresses companies throughout the European Union who have signed up to participate in surveys related to business concerns. The Questionnaire on SCP-SIP was very similar to the one for the open consultation. It was translated in all the official languages of the EU and was available for over 5 weeks until middle of October, 2007. There were 354 responses, 309 of those were completed.[60]

Of the companies that filled out the questionnaire the majority saw the need for further action towards a more sustainable industrial policy. 61% fully agreed with that statement and 29% somewhat agreed. About the same accounts for the need of more sustainable consumption and production patterns: the percentages are respectively 55% and 31%.

[60] The companies that did not complete the questionnaire probably do not feel affected directly by the policy field.

According to the companies in the European Business Test panel, the key challenges to promote a more sustainable industrial policy were rated as follows:

(1) Leveraging innovation

(2) Designing new products that are produced in a sustainable way

(3) Leaner and cleaner ways of current production methods

(4) Increasing sustainable consumption by consumers

(5) Creating global markets for sustainable products

The main focus to promote SIP-SCP were all rated the same. EBTP members are of the opinion that 'cost efficient solutions', 'environmental issues as main priority' and 'socially viable solutions' should all be treated with the same importance.

1.2. SCP selected stakeholders consultation, August/September 2007

Supplementing the general stakeholder consultation, industry and consumers associations, NGOs, think tanks, academia in addition to Member States (via Permanent Representations and Waste Directors Group[61]) were requested for their specific comments through a targeted mailing action. 48 organizations (industry and consumers associations, NGOs, think tanks, academia) in addition to Member States' (via Permanent Representations and Waste Directors Group) were contacted. As responses are still being received the following is a preliminary summary of responses received until now:

1.2.1. General Issues

- Overall supportive responses on the proposed SCP approach and measures (e.g. on coherence, strengthening existing tools, focus on products).
- Ambition levels need to be high and new additional actions need to be added as necessary.
- Sustainable development needs to be addressed as a whole.
- Taking strong action on consumption is core to SCP.
- Make best use of different Market-Based Instruments.
- Provision of and access to robust consumer information is essential.

1.2.2. Better products

Eco-design

Overall support for strengthening existing eco-design requirements. Support for extending the scope of EuP Directive to non energy-using products; also support for Dynamic Performance Requirements. But: before making changes learn first from lessons and experience of the EuP Directive; let it mature before moving to evaluating it; however move on with actions in priority areas (food and drink, housing, private transport). It is important to look not only at eco-design but also at the continuous environmental improvement at all life-cycle stages.

Environmental Product Declarations (EPDS), sustainability labels and data collection

Support for strengthening the role, wider application and coherence between the different schemes. However, it is important to build on existing experiences; there is no need for

[61] The Waste Directors Group is a non-statutory group of high level officials from Member States and the Commission, set up by DG ENV

developing new EPDs or new labels; some support for extending the FLEGT scheme to other products (e.g. soy bean and palm oil).

Dynamic performance requirements through standardisation

Some support but caution that standardization is a lengthy process.

1.2.3. Leaner production

Targets: resource & material efficiency, eco-innovation

A range of different options were given: Support, but difficult to achieve; need to distinguish targets from instruments to reach the goal; a 3% overall target rather difficult, but separate objectives should be set for resource efficiency of different areas/sectors; also consider competitiveness issues; be ambitious in setting targets

Reinforce eco-innovation & eco-technologies

Overwhelming support, including the technology verification scheme.

Boost EMAS

Overall support for a strong EMAS, when reviewed, especially with regard to improving resource efficiency.

Sustainability labelling of imported products

Support improving existing labels to strengthen their coherence, but not creating new ones so as not to confuse the public.

SMEs support and advice

Support for existing initiatives to work efficiently. Any new actions need to carefully consider impacts on SMEs and at what level they should best be taken.

1.2.4. Smarter consumption

Environmental performance agreements with retailers

Overall support of the principle and need for action. But it should be carefully considered where more value can be added, i.e. at EU or Member State level. There is no support for developing an EU logo of “environmental commitment' for retailers. Ensure SMEs are not discriminated against. Consider developing guidelines to help evaluating environmental performance of products. Use more CSR.

Market-Based Instruments

A patchy picture was painted. There is some support for reducing/differentiating VAT rates. Role of MBIs to boost new markets doubtful. Better consider sharing information on best practices and leave taxation matters to Member States.

EU Eco-label overhaul

There was full support for a strong revised EU Ecolabel.

Misleading advertising/false environmental claims

There was support for taking action to ensure consumers are not misled.

Green public and private procurement

Strong support for strengthening public procurement and for taking actions to encourage private procurement.

Education/awareness raising campaigns

Support; overwhelmingly most respondents. But it would need to be carefully considered at what level most value is added (EU and/or national); also need to consider economic instruments; and to link with actions in other consumer related areas (health and safety).

1.3. SCP Stakeholder Meeting, 2 October 2007

Following the closing date of the general stakeholder consultation, a meeting was organized to inform stakeholders of preliminary results and obtain their reactions.

At the meeting, there was consensus that action needs to be taken to tackle the challenges posed by current unsustainable consumption patterns. The added value of the SCP Action Plan will be in building on and strengthening existing instruments, whilst going a step further to meet the SCP challenges and objectives. However, SCP would have to be addressed within the context of the economy, development and society and not solely tackled from an environmental perspective. Any future actions should not be taken on the premise that one size fits all, but should consider the specificities of individual sectors or product groups, and should be balancing gains and losses. To do so, the different roles the SCP and SIP Action Plans can play will need to be clearly defined so that they complement each other effectively. From the areas to be tackled within SCP, consumption represents the biggest challenge as information only is not sufficient to change consumer behaviours; different initiatives will need to be taken in parallel. To effectively address it, cooperation is needed, in particular with those who are closer to the consumer. In addition, measures will need to be taken at the most appropriate levels. The continuous improvement of products is also key in SCP, and needs to be supported by robust scientific evidence and research looking at their whole life-cycle.

Overall, opinions voiced at the meeting were very much in line with written contributions of both the general and the targeted consultations.

1.4. SIP Stakeholder Meeting, 17 September 2007

Around 50 representatives of industrial sectors participated at the meeting. In general, there was a strong degree of support for the directions proposed in the Background document, in particular its systemic perspective, even if the participants indicated that the number of measures should be limited in the final action plan. The thrust to improve competitiveness and decouple growth from environmental degradation was welcome. Also several participants indicated that there is a need to concentrate the activities on a limited number of environmental impacts in order to deliver concrete environmental improvement.

More specific comments include

- Continuing support to SMEs for innovation is important.
- Many outstanding products and technologies already exist and the process of improving the energy efficiency could take place in the short-term.
- A regulatory approach combined with voluntary commitments was highly appreciated.
- Implementing measures are essential for achieving a quick success in terms of environmental impacts.
- The promotion of products fulfilling “Advanced performing benchmarks” through tax incentives was welcomed.

- Support to Life Cycle Assessment, scientifically determined, is essential for the identification and comparison of the impacts of products and for the selection of those more relevant for action. It was recognized though that there is no sufficient data to carry out LCA for some environmental impacts. The Value chain approach should also be considered.
- It is very difficult to identify/define "green" standards. Eco-design produces better results.
- Front-runners have experienced frustration when dealing with eco-label. It is important to identify concrete ways to reward them.
- More information might not be sufficient to modify consumers' behaviour. More attention should be paid to this issue. But consumers should be free to decide.
- Affordability of products ("reasonable price") should be also taken into consideration. Enough available income is also essential to purchase "better" products.
- Provide retailers and stakeholders with information on essential environmental impacts to drive Business to Business activities and Business to Public procurement. A Website would be welcome.
- Support was provided for pushing public procurement towards a limited number of products which respond to advance performance benchmarks.
- Public authorities should show the way towards energy efficiency through its own actions.

1.5. Recommendations of the High Level Group (HLG) on Competitiveness, Energy and the Environment

To develop the potential for improving energy efficiency, the HLG has proposed establishing a list of priorities. It would like to see closer analysis of the payback time for investments, further development of district heating and wider use of eco-designs with their minimum energy efficiency requirements.

1.6. SCP Conference organized by the Slovenian Presidency: "Time for Action-Towards Sustainable Consumption and Production in Europe", Ljubljana, 27-28 September 2007

This Conference, organised by the European Environment Agency, the Ministry of the Environment and Spatial Planning of the Republic of Slovenia and the UNEP/Wuppertal Institute Collaborating Centre on Sustainable Consumption and Production, brought together 100 experts from governments in Europe, researchers, NGOs and business.

Three top-priority recommendations for the forthcoming EU Action Plan on Sustainable Consumption and Production were:

- include clear sustainability targets;
- make concrete steps to internalise environmental costs into prices;
- develop legislation on green public procurement.

Discussions focused on the three consumption areas which have been identified by separate studies of the European Commission and the European Environment Agency to have the highest environmental impacts over their lifecycle: housing, food and drink, and mobility.

It was recommended that at the national level, priority action should be taken to internalise environmental costs through an environmental fiscal reform, to identify 'beacons' of sustainable living and to develop a long term vision of sustainable consumption and production.

Finally, participants recommended that the United Nations' process to develop a 10-year framework of programmes on sustainable consumption and production, the so-called Marrakech process, should encourage national governments to integrate sustainable consumption and production objectives into ministries beyond environment. Further the Marrakech process should develop communications strategies and campaigns with national organisations to reach out to consumers for actions and involve financial institutions in its process.

1.7. Environment Policy Review Group meeting (EPRG[62]), 19 September 2007

EPRG Members expressed overall support for the elements for an Action Plan under consideration by the Commission. Ambitious targets for resource efficiency, linked to sectors, were seen as important, although difficult to establish and to agree upon. The product focus, specifically targeted at priority products (focus should be on cars, food, drinks, housing), was supported, as was the need for ambitious, dynamic standards, without there being defined views as to the instrument/ process for reaching those. Some supported the setting of binding eco-design principles. Public procurement: was stressed to be a leaver, and further concrete steps at EU level were needed, the same for eco-label. Some pronounced support for reducing VAT to drive the change to better performing products. The consumption side needs to be further emphasised, also as concerns the rebound effect, and benchmarks should also be set for consumption patterns. Initiating changes to 'different lifestyles' clearly links with education, and also advertising deserves to be considered. Retailers are seen as very important actors; need further assessment of what is the best level to address them, and how EU initiatives could look like. Some considered that choice-editing by retailers needed to be considered. Overall, dialogue with actors, possibly sector-specific was seen as crucial. It was also mentioned that there was a need to be more inclusive as regards the focus of SCP policies- not only environment, but also including, for instance, fair trade and social aspects.

1.8. Integrated Product Policy (IPP) Regular Meetings

Integrated Product Policy (IPP) Regular Meetings consist of Member States' representatives and key stakeholders assisting the Commission in developing and implementing the Communication on IPP and monitoring progress in the Member States. They also provide a forum for the Commission to inform Member States and stakeholders of its IPP related activities, and for Member States and stakeholders to report and inform back to the Commission. Meetings were held once to twice annually since adoption of the IPP Communication in 2003[63]. Several working groups established under the umbrella of this group have treated issues of immediate relevance to SCP, such as on Environmental Product Declarations (EPDs) and indicators to assess product policy impacts.

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62 The EPRG is a regular meeting of Directors General for the Environment from Member States, chaired by the Commission, to discuss environmental issues at an early stage before formal policy proposals are made to the EU legislators.

63 COM(2003)302

1.8.1. Last meeting, 2 October 2007

The meeting was dedicated to share views and discuss in-depth the Commission's proposals on the Sustainable Consumption and Production (SCP) Action Plan. The participants clearly recognised the need for action on changing unsustainable consumption and production patterns in the EU. There was overall support for the proposed approach, with emphasis on coherence and consistency between the various policy instruments in order to have a robust product policy. To do so, the different roles of SCP and SIP would merit from further clarity as well as clear roles of all actors, a clear vision with objectives, timeframes, monitoring, and concrete actions. The need to deal not only with environment, but also with all three pillars of sustainable development was also mentioned. Consumption was recognized as a difficult area needing further development; the Commission's proposed approach to consumption seemed to be more about greening supply chains, and not about changing consumption patterns. Strengthening eco-design was supported, but by first building on lessons learnt from the EuP Directive, given that it is not mature enough to enable broadening its application. The use of economic instruments to get the prices right was seen as important as were Dynamic Performance Requirements to have a long-term perspective. With regard to carbon footprinting and labelling, these are initiatives led by certain retailers, without having been put into place yet, measured or piloted. Actions to be taken at EU level include making legislation more coherent, sharing best practice on consumer behaviours, developing standards and targets, establishing a European Top Runner scheme, and a strong Eco-label. At Member States level include work with retailers and consumer education in schools.

1.8.2. Penultimate meeting, 15 November 2006

A meeting dedicated to preparatory discussion and exchange of first ideas on a future SCP Action Plan. Overall, the Member States and stakeholders from the regular meeting supported extending EU eco-design legislation and developing product performance targets, based on the Japanese top-runner approach, also including chemicals and WEEE products. They confirmed that legal performance standards should exclude "bad" products from the market, and focus on "priority product" areas from the EIPRO study (food and drink; housing; private transport) and on suppliers of products with high impacts. The Group also supported market-based instruments, financial drivers, subsidies and differentiation, and more emphasis on the consumer side, in particular through Green Public and Private Procurement and agreements with retailers to change products on the shelves. They also confirmed the development of the ecological footprint concept, integration of different data systems, and facilitation of green investments.

1.9. European Consumer Consultative Group[64], 19 September 2007

In its Decision (2003/709/EC) of 9 October 2003, the Commission created the European Consumer Consultative Group (ECCG). This body replaced the Consumer Committee as the Commission's main forum for engaging with consumer organisations. In the meeting the SCP/SIP background document (see Annex II) was discussed. Reference was made to good examples already existing in Member States; the Commission should set an example in making its own policy more sustainable, in particular the Common Agricultural Policy. It was pointed out that the social dimension was not addressed in the consultation document. High awareness of consumers about environmental problems does not translate into behaviour when buying products. Measures were needed to address the whole production chain, which

64 http://ec.europa.eu/consumers/cons_org/associations/committ/index_en.htm

should be more transparent and producer responsibility needs to be reinforced (e.g. reparability of products poor/insufficient).

1.10. **Roundtable on Sustainable Consumption, 20 September 2007**

The debate, organised by the Cabinets of DG ENV and DG SANCO and The Centre Think Tank, focused on the importance of information and the necessity of incentives for consumers and of "getting the prices right" (not only focus on carbon). Indicators to measure progress in sustainable consumption. There was a strong plea for including social and economic aspects, not only environment. The forthcoming CAP check will be crucial to see if the Commission is willing to apply sustainability criteria to its own policy. Examples to push SC were presented, such as VAT differentiation, Code for GPP, Tax reduction for environmental investments, sustainable wood labels for retailers, mandatory energy label for housing.

1.11. Concluding remarks

Summarizing the contributions from stakeholders it can be stated that there is large agreement on the need for action towards more sustainable consumption and production patterns. There is also large support for the approach outlined in the SIP/SCP background document and a high degree of consensus on several key issues. They include in a non-exhaustive list:

- to act on production and consumption issues
- to employ a mix of approaches, including consumer information, eco-design of products, and eco-efficient production
- to use a tailored mix of policy instruments for each specific problem, including market based instrument, fiscal means, product legislation and voluntary schemes
- to focus initiatives on products with the strongest environmental impacts, notably food and drink, housing and transport

It appears fair to state that neither the present consultation nor previous consultations on related policy initiatives have cast severe doubt on the value of the approach proposed or on the level of expectation/support among stakeholders from all parts of society.

2. SECTION 2: OVERVIEW OF EXPERTISE INPUT

This section gives an overview of main sources of input of expertise to the present SCP Action Plan, notably as concerns studies and workshops launched by the Commission services responsible for drafting the SCP Action Plan (ENV G4).

The large number of highly relevant reports and other literature of key relevance for the SCP Action Plan published by other institutions and individuals almost daily are far too numerous to be listed here. They nevertheless form the core of information used in assessing production and consumption trends, the ensuing state of the environment and proposals for possible solutions or actions. Reports by the European Environment Agency, the OECD and UNEP are just a small selection of this wealth of information to which many research institutes, government organizations and other organizations/initiatives have to be added.

2.1. Commission research on the environmentally most damaging products and their potential for improvement (EIPRO[65] and IMRPO[66] projects)

In the context of Integrated Product Policy (IPP) the Commission has carried out over the last four years substantial work to identify which products are environmentally most damaging and should therefore receive most attention of policy initiatives. This work, carried out under the "Environmental Impact of PROducts" (EIPRO) project was concluded in 2005. It is being followed up by a series of still ongoing projects that identify main options for improving the products identified by EIPRO, the IMPRO studies.

2.1.1. The EIPRO project

Key findings of the project are:

- Food and drink products, private transport and housing have the biggest environmental impacts across the impact categories investigated (global warming, acidification, photochemical ozone formation, and eutrophication).
- Food and drink is responsible for 20-30% of the different environmental impacts of total consumption, and in the case of eutrophication for even more than 50%. Meat and meat products have the greatest environmental impact, contributing 4-12 % to global warming of all products. The second product grouping is dairy products, followed by plant-based food products, soft and alcoholic drinks, with lower levels of environmental impacts for most impact categories considered.
- Housing constitutes 20-35% of the total for most impact categories, with household heating being one of the most important contributors for each impact category. Energy use for heating, hot water and electrical appliances contribute most to global warming, acidification, and photochemical oxidation. Residential structures also have high impacts (3–4% of all products), followed by other energy-consuming products. Wooden products may also have high impacts on biodiversity or natural resources.
- Transport contributes 15% to global warming potential and acidification of all products, but less to eutrophication and more to photochemical oxidation. Cars and private cars account for about four fifths of the transport related impacts of consumption.

A more detailed overview of the EIPRO project is set out below:

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

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

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65 http://ec.europa.eu/environment/ipp/identifying.htm

66 Environmental Improvement of Products: Passenger cars project (IMPRO-car), Meat and dairy products (IMPRO-food), Environmental Improvement Potentials of Residential Buildings (IMPRO-building)

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

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

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

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

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

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

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

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

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

- food and drink
- private transport
- housing

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

Food and drink cause 20-30% of the various environmental impacts of private consumption, and this increases to more than 50% for eutrophication. This includes the full food production and distribution chain 'from farm to fork'. Within this consumption area, meat and meat products are the most important, followed by dairy products. Food and drink were covered by only some of the studies so the results for that area should be treated with more caution. However, the general conclusions can be taken with a reasonably high level of confidence.

The contribution of passenger transport to the total environmental impacts of private consumption ranges from 15 to 35%, depending on the impact category. The greatest impact is from cars, despite major improvements in the environmental performance in recent years, especially on air emissions. The impact of private air travel is increasing but for methodological and data reasons, it has not been possible to adequately quantify its impact on the environment.

The products under the heading of housing include buildings, furniture, domestic appliances, and energy for purposes such as room and water heating. Together they make up 20 to 35% of the impacts of all products for most impact categories. Energy use is the single most important factor, mainly for room and water heating, followed by structural work (new construction, maintenance, repair, and demolition). The next important products are energy-using domestic appliances, e.g. refrigerators and washing machines.

All other areas of private consumption together (i.e. excluding food and drink, transport and housing) account for no more than 20-30% of most environmental impacts. There are uncertainties about the percentage contributions of the remaining products, but most of the evidence suggests that clothing ranks highest, accounting for between 2 and 10% of total environmental impact.

2.1.2. The "Environmental IMprovement of PROducts" (IMPRO) project

Building on the results of the EIPRO work, the IMPRO project identifies possible ways in which the life-cycle environmental impacts can be reduced for some of the products that are among those with the greatest environmental impacts. From the interim reports (final reports are expected for the end of 2007), improvement options are:

- Cars: options for improvement are weight reduction, hybrid cars, using bio-ethanol, power train improvements, driving behaviour, smaller car
- Meat and dairy: Agriculture: Nitrogen management, cereal intensification; Feed: requirement on feed contents; Meal planning and home delivery; Prolonged durability
- Housing: (not yet available)

It is expected that the IMPRO results, when available in their final form, can give valuable input to eco-design initiatives that will be launched under the forthcoming SCP Action Plan.

2.2. Commission research on the environmental impact of raw materials and commodities, the "Environmentally weighted Material Consumption" (EMC) Study[67]

This study approached the problem of greatest environmental impacts of materials that are used in the EU 15 economy. As materials are the basis of manufacturing products the reduction of environmental impacts of materials production and use would contribute directly to more sustainable production and eco-design of products.

The study assessed the environmental impacts of materials across a number of environmental impact categories, such as Greenhouse Gas Emissions, resource depletion, eco-toxicity etc. It then established a specific impact per kilogram of each material. Multiplying this specific impact by the overall amount of the material used in the economy (based on Direct Material Consumption statistics) it concluded which materials cause the greatest environmental impacts overall. It concluded that the following materials have by far the greatest environmental impacts:

- animal products
- crops
- plastics
- oil, households
- brown coal for electricity in households

There is a remarkable coherence with the results of the product-based EIPRO analysis. The EMC approach is presently further investigated as part of a basket of environmental impact indicators of resource use[68]. Together with the EIPRO/IMPRO results the EMC results can inform future actions on eco-design and raw material choices under the SCP Action Plan.

2.3. Commission Pilot Projects under Integrated Product Policy

The Commission, together with Nokia Corporation and Groupe Carrefour organized two voluntary pilot projects to investigate how multi-stakeholder groups can work together with industry towards the improvement of environmental impacts from consumer products. The projects had a duration of one to two years and led to concrete action on the side of business.

- In the case of tropical wood garden furniture it was recognized that the origin of the wood and the distribution by road transport of the furniture cause major impacts. Sourcing of the wood was subsequently changed and more economic packaging methods for the products were investigated.
- In the case of mobile telephones a number of technology/eco-design options were identified for improvement. They are presently being assessed wit regard to the feasibility of implementing them.

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67 Policy review on decoupling: development of indicators to assess decoupling of economic development and environmental pressure in the EU-25 and AC-3 countries CML report 166. Van der Voet, E., L. van Oers, S. Moll, H. Schütz, S. Bringezu, S. de Bruyn, M. Sevenster and G. Warringa. 2005. Leiden, The Netherlands: Institute of Environmental Sciences (CML), Leiden University, on behalf of the European Commission.

68 Potential of the Ecological Footprint for monitoring environmental impact from natural resource use: Analyse the potential of the Ecological Footprint and related assessment tools for use in the EU's Thematic Strategy on the Sustainable Use of Natural Resources. Ecologic, 2007. Ongoing.

Both projects showed also that involving consumers is crucial but in many cases faces particular difficulties.

2.4. List of main studies

A number of further studies are accessible through the Commission websites on Integrated Product Policy[69], the Thematic Strategy on the sustainable use of natural resources[70], the Thematic Strategy on the prevention and recycling of waste[71] and on EU Waste Legislation[72].

Studies contributing in particular to SCP Policies in the context of IPP:

- Support for the Impact Assessment on expected environmental benefits and costs savings of a European legislative framework for the eco-design of products (ongoing).
- Environmental Impact of PROducts (EIPRO) - Analysis of the life-cycle environmental impacts related to the final consumption of the EU-25. This study supports the development of an EU Integrated Product Policy by clarifying which products that are consumed in the EU have the greatest environmental impacts from a life-cycle perspective.[73]
- Environmental IMprovement of PROducts (IMPRO) is a study identifying possible ways in which the life-cycle environmental impacts can be reduced for some of the products that are among those with the greatest environmental impacts, in particular for cars, meat and dairy products and buildings.[74]
- DG TREN's studies on the Energy using Products (EuP-Directive)[75]
- Household consumption and the environment, EEA Report No 11/2005. With an aim to provide input for European policy-making, this report analyses the environmental effects of household consumption in Europe. [76]
- SCORE network supported by the EU`s 6th Framework Programme. The Network project acts as one of the EU`s central support structures for the UN`s 10 Year Framework of Programs for Sustainable Consumption and Production (SCP). [77]
- ASCEE (Assessing the potential of various instruments for sustainable consumption practises and greening of the market) supported by the EU`s 6th Framework Programme [78]
- Environmentally Extended Input-Output Tables and Models for Europe (EEIO). This study explores how methodologies based on analysis of environmentally

69 http://ec.europa.eu/environment/ipp/
70 http://ec.europa.eu/environment/natres/index.htm
71 http://ec.europa.eu/environment/waste/strategy.htm
72 http://ec.europa.eu/environment/waste/index.htm
73 http://ec.europa.eu/environment/ipp/pdf/eipro_report.pdf
74 http://ec.europa.eu/environment/ipp/identifying.htm
75 http://ec.europa.eu/energy/demand/legislation/eco_design_en.htm
76 http://reports.eea.europa.eu/eea_report_2005_11/en
77 http://www.score-network.org/score/score_module/index.php
78 http://ec.europa.eu/research/environment/pdf/global_change_ecosystem.pdf p.403

extended input-output tables can be further developed and applied in policy making. [79]

- Sustainable Production and Consumption (SUSPROC). The objective of the action is to support the implementation and further development of the EU Strategy for Sustainable Development, the EU Environmental Action Plan as well as the integration of environmental concerns in other European policy areas. [80]
- European Platform on Life Cycle Assessment (LCA). The objective of the project is to promote life cycle thinking in business and in policy making in the European Union by focusing on underlying data and methodological needs. [81]
- Making life cycle information and interpretative tools available. This study is looking at the level of awareness regarding life cycle thinking in small European firms, retailers and consumer organisations, and their needs for further information and support was finalised. [82]
- Development of Indicators for an Integrated Product Policy. [83]
- Evaluation of Environmental Product Declaration Schemes. [84]
- Study on external environmental effects related to the life cycle of products and services. [85]

Studies contributing in particular to SCP Policies in the context of the sustainable use of natural resource:

- Potential of the Ecological Footprint for monitoring environmental impact from natural resource use: Analyse the potential of the Ecological Footprint and related assessment tools for use in the EU's Thematic Strategy on the Sustainable Use of Natural Resources. (Ongoing)
- Strengthening the Knowledge Base for the implementation of the Thematic Strategy on the Sustainable Use of Natural Resources. Forthcoming, on behalf of the European Commission. (Ongoing)
- Work led by Eurostat, with JRC and EEA, on indicators to measure progress, identify priorities and set targets (Ongoing).
- Resource Use in European Countries (Zero Study). This study provides the baseline data on material flows for the further development of the "Resources Strategy". [86]
- Public Private Interface. This study seeks to find concrete proposals for target setting and instrumentation based on the experience of Member States. [87]

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79 http://www.jrc.es/publications/pub.cfm?prs=1366
80 http://www.jrc.es/activities/sustainable_development/susproc.cfm
81 http://ec.europa.eu/environment/ipp/lca.htm
82 http://ec.europa.eu/environment/ipp/pdf/study_final_clean_report.pdf
83 http://ec.europa.eu/environment/ipp/pdf/eu_incdicators_ipp_final_rep.pdf
84 http://ec.europa.eu/environment/ipp/pdf/epdstudy.pdf
85 http://ec.europa.eu/environment/ipp/pdf/ext_effects_finalreport.pdf
86 http://ec.europa.eu/environment/natres/pdf/zero_study_final.pdf
87 http://ec.europa.eu/environment/natres/titles1_2.htm

- Dynamic View on Resources. This study aims to assess the feasibility of decoupling resource use from economic growth. [88]
- Policy review on decoupling and development of resource productivity indicators. [89]

Studies contributing in particular to SCP Policies in the context of waste policies[90] :

- Coherence of Waste Legislation – Assessment of Lessons learnt from the EU "Recycling Directives" (planned)
- Study addressing the buildings (considered as one of the consumption area with highest environmental impact), in particular Construction and Demolition Waste Management Practices and their Economic Impacts[91]
- Studies concerning End of Life Vehicles, to improve their eco-design and waste management
- Studies regarding mining, as one important production stage
- A number of studies addressing packaging and packaging waste
- A number of studies concerning Persistent Organic Pollutants (POPs), with links to some products, production and consumption processes
- A number of studies on PVC, their use in product, waste management, etc.
- Support in the drafting of an ExIA on the Thematic Strategy on the Prevention and Recycling of Waste (TSPRW)[92]
- The study 'Waste Prevention and Minimisation' examines some of the best waste minimisation practices on both industrial and municipal waste flows. [93]
- The study 'Waste Management Options and Climate Change' assess the climate change impacts of options for municipal solid waste management in the EU. [94]

Study contributing to identifying barriers to and impacts of technology adoption

- Study on fostering EU internal market for competitive technologies for a low carbon economy

2.5. SCP experts' workshops, June and July 2007

In preparation of possible specific actions three workshops were organized with experts from industry, NGOs and other organizations. The purpose was to understand better the potential strengths and weaknesses of the possible actions and the particular advice or concerns of different stakeholder groups. A summary of the three workshops is given below:

88 http://ec.europa.eu/environment/natres/pdf/dynamic_view_final_report.pdf
89 http://ec.europa.eu/environment/natres/pdf/fin_rep_natres.pdf
90 http://ec.europa.eu/environment/waste/studies/index.htm
91 http://ec.europa.eu/environment/waste/studies/cdw/cdw_report.htm
92 http://ec.europa.eu/environment/waste/pdf/epec_report_05.pdf
93 http://ec.europa.eu/environment/waste/studies/prevention_minimisation.htm
94 http://ec.europa.eu/environment/waste/studies/climate_change.htm

2.5.1. Workshop on the Japanese Top Runner scheme

- In Japan, Green Public Procurement is obligatory and public authorities have to purchase TR products; this helps the demand.
- Extension of Top Runner from energy other environmental aspects such as material/resources and hazardous substances could be done step by step, in a dynamic process, no major obstacles identified for establishing a similar concept in EU.
- Administrative burdens for business would be low as the data, criteria, and format needed would be already available.
- Impacts of the Top Runner to consumers would be higher product prices. These would be acceptable at business to business level and they can go down gradually.

2.5.2. Workshop on greening retailers' supply chains

- It is paramount to focus on both consumption and production.
- Choice editing is already happening to some extent already, but if it were not implemented by all competitors, retailers would be reluctant to pursue such a concept. A level playing field should be established to guarantee equal treatment.
- A robust revision of the Eco-label would boost more and better products, quicker process, simpler criteria, and would allow national labels to get the Eco-label logo.
- The Commission should make available user-friendly science-based information on Life-Cycle Approach of products.
- Affordability of products is concern for all; consumers look at price first. Economic incentives for greener products and for innovation are important to change behaviour.
- A common framework is needed, with a light touch from the legislator and strong communication (strong communication strategy, similar to climate change). A common knowledge base would also make it easier for industry to green supply chains.
- SMEs need to be engaged through the right incentives for them, e.g. web portal.
- Create for SCP a similar mechanism to the UK Corporate Leaders Group on Climate Change but by avoiding duplication and building on it.

2.5.3. Workshop on Green Private Procurement

- A common legal framework (level playing field) on what we want to achieve with objectives and rules is needed. A framework which encourages green leadership in industry; ensures harmonised methods, data and simple tools for life cycle analysis and footprint calculations of products; and sends a clear message to business and industry that "legal compliance only would not be enough" if they want to remain competitive in the long run.
- To change unsustainable behaviours, it is important to know the key objective (e.g. moving towards a low carbon economy); need for prioritisation (not to do all in once).
- A main objective should be ensuring minimum environmental impacts of products; this can be done through the Life-Cycle Approach.
- Frontrunners in industry are already practicing some green purchasing; the more suppliers for a product/service exist, the easier it is for industry to impose green requirements.

- Purchasing is largely driven by price and functionality. Eco-Label criteria should play a central role in providing technical specifications for products.
- Carbon footprints would need a standardised approach and should be established per product group.

The results of these workshops, together with further work, will inform the development of possible future actions under the SCP Action Plan.

2.6. Environmental Product Information Working Group, November 2006

The European Commission's Regular Meeting on Integrated Product Policy decided in its second meeting in September 2004 to set up a working group on Environmental Product Information. This working group examines the issue of life cycle information throughout the product chain. Its objectives are to identify the needs, examine the tools, identify the gaps and opportunities, and propose how the situation should be improved. In its Final report *Making Product Information Work for the Environment*, the Group recommended that the Commission should draw up a "package" consisting of three kinds of actions:

- A clear statement of vision and framework thinking to set the course for future policy, with clear signals to market players. This could cover a vision for the role of product information in helping to deliver the EU's IPP, SCP and sustainable development objectives; the roles which governments, businesses, stakeholder groups and household consumers are expected to play in delivering these aims; in the case of the governmental role, setting an emphasis on framework-setting to enable, push, reward or correct the way that market players deliver the results in the market, rather than governments trying to do the delivery themselves.
- A plan for supporting administrative and practical measures to strengthen the knowledge base, the accessibility of relevant and useful information, the harmonisation of frameworks, and the practical measures to achieve synergies with other EU policies. This should cover continued strengthening of the public knowledge base on product impacts and the product life-cycle knowledge base available to the market; keeping the adequacy of knowledge-based tools under review – and helping to fill the gaps; keeping the efficiency of the whole information 'system' under review – stimulating forms of standardisation, harmonisation and simplification to make the task as economical as possible for business; and building up the administrative connections with other 'systems' used to deliver EU policies – a key example being the green public procurement (GPP) agenda.
- A proposal for supporting a legal and regulatory framework that will enable the market to deliver, ensuring a fair and competitive market, stimulating standardisation and comparability in key areas, and building up the awareness and use of product information. This should include ensuring a good quality of product information placed on the market, to support market confidence and fair competition; establishing an enabling power for requiring information on the key impacts of certain key products to be declared in a standardised form; and setting a duty at national level to promote the awareness of all forms of good-quality product information.

2.7. Key recommendations from the EPDs workshop (January 2007)

One of the working groups set up under the Integrated Product Policy Regular Meeting assessed the way forward for a business-to-business communication tool on the environmental characteristics of intermediate products, materials, components etc. Such "Environmental Product Declarations (EPDs) have been suggested and developed by a number of actors but

there is yet no harmonized or generally agreed scheme available. There is an opportunity for the Commission to play a co-ordinating role towards a generally accepted scheme.

At the workshop, it was concluded that:

- EPDs can be very useful for developing and implementing policies on environmental management such as eco-design and green purchasing.
- The Commission should establish a common EU harmonisation EPD system with the EU Member States in an advisory role
- The Commission should develop an EU EPD Platform based on common environmental product information.

A full report of this working group is available on the IPP website[95].

2.8. Marrakech process, 3rd International SCP experts meeting, Stockholm, June 2007

Outcomes from workshops and discussions at the meeting include:

- Existing policy tools, i.e. EU regulations, should be more coherent.
- Develop a better understanding and ensure access to markets for sustainable products, and mechanisms to overcome market barriers, also by: developing policies that set the right conditions for products to be labelled as "sustainable"; and creating a level playing field. A regulatory framework with clear parameters and a market-driven approach that encourages competitive innovation beyond minimum standards, i.e. introducing environmental taxation on unsustainable products, communicating lifecycle costs and benefits of sustainable products to consumers.
- Regulation is needed to promote innovation, and incentives, awards and certification systems all will yield competitiveness benefits.
- Market forces to drive demand for sustainable products should be identified and a distinction between "best in class" products versus the market conditions should be made to drive innovation and changes in markets.
- Phase out unsustainable products and discouraging demand for and use of unsustainable products through building on existing approaches and processes for example in chemicals.
- Environmental labels and clear product information to be available to consumers
- A lifecycle approach focusing on products having the biggest environmental impact such as food, housing, transport (EIPRO study).
- Business to provide to consumers information on the life-cycle costs of products (e.g. product labelling, transparency for investors from the financial sector, and corporate social responsibility in the supply chain).
- Make strong links between trade and investment policies; governments to work with the financial sector to promote socially responsible investment by industry.

[95] http://ec.europa.eu/environment/ipp/pdf/20070115_resume.pdf

Annex II

to the

Impact Assessment on the SCP and SIP Action Plan

(Background Document by DGs ENV and ENTR on Sustainable Industry Policy and Sustainable Consumption and Production Action Plans; This document was the basis for the public consultation from 27 July to 23 September 2007)

Background document to the consultation

On the action plans on

Sustainable consumption and production

And

Sustainable industrial policy

Table of contents

1. INTRODUCTION

Achieving sustainable consumption and production is a key challenge for the future. Current patterns of consumption and production are causing major environmental degradation, in addition future energy supply and raw materials availability is not guaranteed. The carrying capacity of the planet on which our well-being is based is in jeopardy, with unsustainably high rates of energy and raw material use, soil and habitat degradation. Although advancement of technology has increased the efficiency of products, in many cases this is offset by an even higher consumption level.

This problem has a global dimension. Already many products produced in the EU have components made from resources which are extracted, processed and transported from elsewhere and their use and disposal is felt globally. Furthermore, by 2050, the world may have more than 3 billion more people all of whom have a legitimate claim to a comparable quality of life to that enjoyed in the EU. To meet this challenge, there is a need for advancement in technological development and in innovation. We also need to change our consumption patterns. In the near future, climate change and security of energy supply need to be tackled by rapidly moving towards a low carbon economy at global level.

The EU can foster its contribution to tackle these issues through an ambitious industrial and sustainable consumption and production policy. On one hand, a sustainable industrial policy can aim at turning the environmental challenges into economic opportunities for society. On the other hand, as the EU is one of the biggest consumers at global level and as products are traded globally, European policies standards to foster sustainable consumption and production will tend to become global benchmarks. By developing robust sustainable consumption and production policies, the EU can therefore contribute in a concrete way to sustainability worldwide.

The EU Heads of State and government committed to tackle these challenges in the European Council on 8 and 9 March 2007. They set ambitious targets for greenhouse gas reduction, energy efficiency and an increased share of renewable energy. The mid-term review of the Industrial policy called for actions in the field of a sustainable industrial policy and sustainable production and consumption. The renewed Sustainable Development Strategy identified the promotion of sustainable consumption and production as one of the key challenges. The Council, in June 2007, confirmed that environmental technologies and ecoinnovations are one of the strongest pillars of the EU's economy. The EU's economic competitiveness will, to a large extent be based on its energy and resource efficiency and its capability to develop appropriate technological solutions. Key to future jobs, growth and wealth as well as to environmental protection will be efficient eco-innovations and resource and material efficiency.

The Commission will contribute to this political momentum by presenting Action Plans on Sustainable Industrial Policy and on Sustainable Consumption and Production.

Since the envisaged Action Plans cover products, production and consumption, stakeholder engagement is crucial. The purpose of this Background document is to explain to stakeholders and to the public the rationale behind the different possible actions and ask for feed-back on them. Interested parties are invited to participate to the on-line consultation using the following link http://ec.europa.eu/yourvoice/ipm/forms/dispatch?form=SurveySIPSCP. The consultation closes on September 23, 2007.

2. KEY CHALLENGES

Future policy will aim to achieve economic growth, whilst respecting environmental carrying capacity, find ways to minimise environmental damage and make a sustainable use of the earth's resources. Therefore, a shift in incentives is needed for both producers and consumers, so that firms and individuals acting in their own interest take society towards sustainability. In this way the EU's goals of both continuous prosperity and environmental sustainability can be achieved in synergy.

Policy intends to focus on the following five key challenges:

2.1. Leveraging Innovation: stimulating the development and commercialisation of low carbon, energy and resource efficient technologies, products and services

It is clear that technology will need to play a central role in addressing sustainability challenges through being successfully translated into innovative products and services and could also provide significant competitive strengths. This requires an integrated policy approach that combines a number of tools, such as legal framework conditions, investment in research and development, intellectual property rights (IPR), technology transfer and networking between actors in industry, research, finance, etc.

Therefore, it will be necessary to reflect on how to better use the Communities' instruments, notably the Competitiveness and Innovation Programme, the Framework Programme for Research and structural funds, to provide a more targeted stimulus to finance technology development, innovation and encourage the uptake of environmentally friendlier products and services.

2.2. Better Products: creating a dynamic internal market for better performing products

More than 80% of all product-related environmental impacts are determined by product design. The Commission intends to develop a strong product policy and remove remaining obstacles in the internal market. Promoting "eco-design" for the most significant products will be the cornerstone of this approach[96].

Dynamic incentives for producers are needed to improve the environmental performance of all types of products. For example by fostering lead markets and creating incentives for frontrunners. This may require appropriate financing instruments and the development of market-based instruments that encourage the uptake of environmentally friendlier products and services. Environmental management schemes and energy services for firms and households will also be promoted, supported by a simple, user-friendly framework.

It is paramount that policies which influence the performance of products are coherent and reinforce each other, for the continuous improvement of products' environmental performance. The key challenges of climate change, energy and resource efficiency or carbon profile of products should play an important role in assessing the environmental performance of products.

2.3. Leaner and Cleaner Production: increasing the efficiency of EU production

Leaner or more efficient production processes reduce resources intensity, which contributes to cost competitiveness of companies. The future policy will need to assist producers to improve resource efficiency, promote the uptake and development of new eco-efficient technologies along the whole supply chain and close the "resource loop" from manufacture to the use phase

[96] COM(2007) 374 final

and final disposal, through the utilisation of recycled, reused and remanufactured goods and materials and through waste prevention. Also, Information and communication technologies are enablers to improve energy efficiency in various sectors.

2.4. Smarter Consumption: changing behaviours

Households in Europe are major contributors to environmental problems such as climate change, air pollution, water pollution, land use and waste generation[97] – and household expenditures are projected to double across the EU-25 by 2030. Although the environmental performance of many individual products is improving, increases in total consumption and production often outstrip the progress made. Consumers therefore play a crucial role in moving towards more sustainable consumption patterns by the choices and decisions they make. Accordingly, an ambitious mix of policy measures can enable consumers to make better choices in consuming, owning, and using more sustainable products and services.

2.5. Global markets: exploiting first mover advantages and levelling the playing field for industry worldwide

Faster uptake of environmental technologies and standards for more sustainable technologies, products and services in the EU can pave the way for the development of international standards which better integrate environmental aspects, taking a life-cycle approach. This can give European companies "first-mover" advantages in global competition. International sectoral approaches for energy intensive industries offer a significant potential to set global benchmarks for energy and material efficiency and foster technologies that are meeting these benchmarks. Such sectoral approaches, which must comply with competition rules and meet environmental objectives, should help create export markets for leading European technologies, services and products. They can be complemented through international or bilateral agreements on the diffusion and use of environmental technologies, by facilitating the use of the Kyoto flexible instruments and through trade and development policy.

3. ENVISAGED APPROACH TO FACE THE KEY CHALLENGES

The above key challenges cut across a wide range of policy areas and therefore have economic, social and environmental aspects.

Ambitious but well-focused future policies which clearly prioritise key areas are needed. The Plans should help shift unsustainable consumption and production patterns and use industrial policy as an efficient tool to create market conditions conducive to low carbon and sustainable technologies, products and services. In particular, the scope could concentrate on the following four elements:

3.1. Focusing on key environmental issues

Global climate change and the sustainable use of natural resources are presently among the greatest environmental concerns. To be most effective, the Commission therefore intends to focus on:

- Climate change and a low-carbon economy;
- Sustainable and efficient use of natural resources, energy and materials; and

[97] Organisation for Economic Co-operation and Development (OECD), 2002a

- The SCP Action Plan could also address the further phasing out hazardous substances and endangered materials[98] from production processes and products.

The two Action Plans will fully take into account competitiveness, energy, environmental and social aspects.

3.2. A product-based approach

Recent Commission research confirms that a large portion of environmental impacts in the EU are caused by consumer products throughout their life-cycle, from extraction to production, transportation, consumption and final disposal. A strong product-focus is therefore needed, aiming at those product types where the potential for improving resource and energy efficiency is greatest, where the EU industry could lead the markets worldwide or whose consumption causes most environmental damage. Such a product-based approach would be efficient as it allows addressing competitiveness issues and key environmental impacts of selected products where it is most appropriate in their life-cycles. Thus, it can create a dynamic process of continuous improvement in the environmental performance of products.

3.3. Building on existing policy instruments

The approach would build on several existing EU policies related to products and resources, such as the Industrial Policy (as reviewed in July 2007), Integrated Product Policy[99], the ecodesign of Energy-Using Products[100], the Sustainable Use of Natural Resources strategy[101], the Energy Policy for Europe[102], Cohesion policy and other product legislation and labelling schemes.

While all these wide ranging policy instruments already exist in different policy areas to address unsustainable consumption and production the aim is to focus on a selected set of existing policy instruments and choose those which are most appropriate to reinforce each other and ensure coherence. In particular, these instruments should:

– reinforce the EU's competitiveness;

– have a clear sustainability focus; and

– be the most suited to address the key challenges.

A selected number of new instruments might be considered for achieving the objectives and reinforcing the impact of existing policy instruments.

3.4. A contribution to policy coherence

The approach will complement policies that already tackle unsustainable consumption or production. It will focus on strengthening existing and developing new policy instruments, identifying gaps, ensuring policy coherence and avoiding overlaps. It will create a framework for better knowledge and information on products, so as to identify policy priorities and suitable actions.

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98 For example overharvested tropical timber.

99 http://eur-lex.europa.eu/LexUriServ/site/en/com/2003/com2003_0302en01.pdf

100 http://ec.europa.eu/enterprise/eco_design/index_en.htm

101 http://ec.europa.eu/environment/natres/pdf/com_natres_en.pdf

102 http://ec.europa.eu/energy/energy_policy/documents_en.htm

4. MAIN ACTIONS UNDER CONSIDERATION

This section provides an overview of the policies and instruments being considered:

4.1. Leveraging Innovation

The improvement of the conditions for innovation is a priority in the Lisbon agenda.

The new European Institute for Technology, and instruments like the Competitiveness and innovation programme (with funding of 430 million available for eco-innovation) could provide further financial input to leverage innovation. These instruments should be further focussed onto those few areas where the EU, compared to its competitors could make a difference by providing technologies and the type of products needed by carbon-constrained economies (low energy housing, efficient boilers and motors for industry, renewable energy, renewable raw materials, low emissions cars, etc).

Investment in research through funding programmes like the Framework programme for research, (FP7), the structural funds and policy initiatives like the Strategic Energy Technology plan (SET) and the Environmental Technologies Action Plan (ETAP) should be used also in support of sustainable industrial development.

Joint Technology Initiatives (combining EU and industry funds) and Article 169 measures (for pooling national research funds) such as the Euro Stars initiative, which seeks to support research is small and medium sized companies, were identified as important tools for mobilising private and public funds.

4.1.1. Lead Market Initiative

The "lead markets concept" is about spurring the growth of markets for innovative products and services by creating conducive market conditions. The lead market concept has to align with potential European industrial strengths where the EU may be positioned to lead worldwide markets and increase industrial competitiveness.

The Commission has announced[103] that it will table in December 2007 a Lead Market Initiative. The initiative will tailor policy instruments to a small number of defined areas with a lead market potential.

The measures could be designed to accelerate deployment, leading to market acceptability of the technology and rapid economies of scale. The selected areas will contribute to broad EU policy objectives, such as environment protection, health or climate change and resource efficiency.

4.1.2. Networking of innovation stakeholders and closer cooperation between research and industry

Supporting networking among innovation actors, including public private partnerships, is part of the innovation policy tools. Cooperation among clusters is particularly addressed by the EU helping enterprises share knowledge and access knowledge intensive services.

Only the successful translation of new technologies and research results into innovative products and services can render the desired return on the research investments, be they of

[103] 'Putting knowledge into practice: A broad-based innovation strategy for the EU' adopted on 13.09.2006 (COM(2006)502)

economic, societal or environmental nature. To spur this, the conditions for more and closer cooperation between research, higher education and business are crucial.[104]

4.2. Better Products: creating a strong EU market for sustainable products

Measures for improving the environmental performance of products should include an ambitious and more dynamic framework for benchmarking and establishing requirements for products. It is important that policies enable all producers, including small and medium sized enterprises, to benefit. They should also make it easier for consumers to identify the products with the best environmental performance in the marketplace and increase the demand for such products. In this process, other aspects such as safety performance of products will be considered as appropriate with regard to their contribution to sustainability.

To this end, the following actions could be considered:

4.2.1. Dynamic Performance Requirements

Product policy could be better used as a competitiveness and sustainability tool. Products entering the Internal Market could be subject to demanding but realistic requirements. This may require a more strategic approach.

Advanced performance benchmarks (describing the best performing products in the market) could be coupled with minimum requirements already foreseen in Community legislation (notably in the Eco-design of energy using products Directive) and market incentives so as to reward frontrunners and drive performance upwards. This approach would be dynamic and predictable, driving performance upwards.

An essential incentive could be to enhance product labelling, by giving information to consumers on the performance of the product, so as to facilitate a shift of demand towards the most sustainable products. Categorization of environmental performance and labelling requirements can be established for each product group in the different implementing measures being developed within the "Eco-design of energy using products" Directive[105]. A similar approach could be considered for non-energy using products.

Incentives could be of economic nature, such as taxation policy, or subsidies for consumers buying better performing products from a sustainability point of view. Public procurement, which is an instrument that could be geared towards purchasing the most performing products and innovative services, could accelerate market development for the highest performing products. For this to happen, common priorities and approaches for taxation and public procurement might be developed and agreed between Member States, through increased cooperation within the existing networks. Moreover, dialogue between users, industry and procurers should be encouraged to increase the awareness of procurers, notably local on the existence of the most innovative products[106].

EU standards should also be taken to the international level. This should build on the advantages Europe has in terms of its regulatory influence. There are several examples of EU

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[104] See the Communication from the Commission on 'Delivering on the Modernisation Agenda for Universities:
Education, Research, Innovation' (COM(2006)0208) ass well as the Communication from the Commission on 'Improving knowledge transfer between research institutions and industry across Europe: embracing open innovation' (COM(2007)182).

[105] 2005/32/EC

[106] see COMMISSION STAFF WORKING DOCUMENT Procurement: "Guide on dealing with innovative solutions in public procurement."; SEC (2007) 280

environmental regulation put in place in other parts of the world. This can give European companies a first mover advantage in global competition.

The reinforcement of market surveillance should also be considered as a way to ensure not only a level playing field within the EU, but also between imported and domestically manufactured products.

4.2.2. Environmental product declarations, sustainability labels and data collection

Further developing instruments with the view of informing both producers and consumers on the environmental performance of products could be considered.

It is envisaged to integrate and expand the existing European Platform for Life-Cycle Assessment into a Data Centre for the environmental performance of products, technologies and services. This Data Centre would pool the relevant knowledge on the best performance products on the market and the environmental impacts of products in general.

More standardized European Environment Product Declarations would have multiple benefits. In addition to having direct consumer benefits, manufacturers could sell their products more easily to other producers on the EU market and the purchases would not have to track the environmental performance of product on a case by case basis. A more robust European system of product declarations could also prevent false claims and control efficiently self-certified declarations.

European product labelling rules could be streamlined and reinforced with the objective to improve the synergies and coherence between labelling schemes. This analysis will look at the existing labelling schemes such as energy labelling and eco-labels as well as possible new labelling such as carbon labelling and sustainability labelling for key raw materials (e.g. fish). The outcome of the ongoing revision of the Energy Labelling Directive 92/75/EEC could be considered in this context. The objective should be to inform consumers of the best performing products, thereby rewarding producers of the best performing products in the marketplace.

It will also be examined whether additional actions are needed to limit further false environmental claims.

Tackling the international impacts of unsustainable production could include options such as extending the application of the Forest Law Enforcement, Governance and Trade (FLEGT) model to other products, or conceiving similar approaches. This could improve the environmental sustainability of the commodities production and trading process and enhance access to technology in developing economies, especially for the poorest countries.

4.2.3. Enhanced use of eco-design instruments at EU level

A range of EU legislation on the environmental performance of products and eco-design requirements is already in place. The future policy could consider the need for an enhanced use of the EU's eco-design policy instruments, including broadening their scope, in order to ensure coherence and reinforce synergies with existing legislation, which would reduce the administrative burden for industry. The Action Plans could therefore contain an assessment of the need for and content of a new policy for the eco-design of non energy using products.

4.2.4. Standardisation

The future policy could assess possibilities for developing new standards on resource efficiency and will ask standardisation bodies to address the environmental dimension of European standards, to make best use of tools for standardisation and to report on progress ('greening of standards'). It would be necessary to mobilise funding for this.

4.3. Leaner and Cleaner Production: increasing the efficiency of EU production

Actions to support leaner production at EU level should promote more efficient and environmentally sound production and cleaner and greener technologies. They should also aim at improving the provision of information about the environmental impacts of the components or materials used in production and at providing incentives to promote more efficient production. All manufacturers should comply with the production requirements, irrespective of their location.

The following actions could be considered:

4.3.1. Resource and material efficiency targets

Progress towards more sustainable consumption and production needs to be measured against the right indicators. The Commission has been and will be working on developing these indicators.

Resource productivity (€/kg) of the EU-15 economy has developed favourably over the past decades. In the period 1980-2000 it increased by 52%, which is 2.2% per year. On the basis of this trend, and assuming even a modest further increase in resource productivity, it is reasonable to expect a rate of 3% resource productivity improvements annually for the period 2000-2030. Assuming an average economic growth of 3% per year as well, resource use in absolute quantities will be more or less stable. It could be considered to set an overall target of around 3% annual resource productivity gains for the EU to underpin this development.

4.3.2. Reinforcement of eco-innovation and environmental technologies

The future policy could help maximise the impact of the Commission's support to promoting environmental technologies and eco-innovation. This could be done through the EU Environmental Technologies Action Plan (ETAP) and with the support of funding of the EU Competitiveness and Innovation Programme by doing more to increase demand in particularly promising areas such as construction, food and drink, transport, recycling, and waste water.[107]

Further initiatives could include a technology verification scheme, providing reliable information on the environmental performance of new technologies, which will further market confidence in environmental technologies.

Consideration should be given to further develop ETAP to give guidance on decision making regarding the financing of market introduction of eco-technology.

There is also room to examine in more detail how environmental regulation could promote even more the uptake and the development eco-innovation and eco-technologies, for instance by developing synergies between reviews of relevant environmental regulation and ETAP objectives; specific measures will be proposed in this regard.

4.3.3. Setting targets for eco-innovation and the uptake on environmental technologies

The work underway on developing indicators for eco-innovation can provide the basis for setting measurable targets for eco-innovation and the uptake of environmental technologies in the EU. Indicators could be based on a number of aspects such as: uptake levels, public procurement levels, investments and financing, patent submissions, selected company

[107] For more background information see the ETAP Report 2005-2006: http://ec.europa.eu/environment/etap/pdfs/comm_pdf_com_2007_0162_f_en_acte.pdf

performance, etc. The setting of targets could further enhance, in the longer term, the EU's share of eco-friendly products and technologies in the global market.

4.3.4. Review of the legislation on eco-management and audit schemes/pollution from big industrial installation

The Eco-Management and Audit Scheme (EMAS) Regulation is a powerful tool for managing and reducing the environmental impacts of industrial plants and institutions. This instrument is currently under review and could be further reinforced to increase and strengthen their focus on the energy and resource efficiency and on the reduction of the use of hazardous and endangered material and their discharges.

It will also be crucial that the Directive on Integrated Pollution Prevention and Control (IPPC) ensures the uptake of Best Available Techniques (BAT) in a more homogeneous way.

Furthermore, for innovative techniques, beyond BAT, incentives both financially and regulatory, should be provided. Market-based instruments could also play a role in this context.

4.3.5. Small and medium size enterprises (SMEs)

Specific actions should target the particular situation of small and medium sized enterprises, which are often not sufficiently aware of new energy efficient and environmentally friendly solutions or do not always have the financial resources required for acquiring new technologies. At the same time SMEs are an important source of eco-innovation and new energy and resource saving technologies and need support in bringing their innovations to the market.

In the context of the future policy, it could be envisaged to enhance existing policy instruments to provide market incentives for SMEs to improve environmental performance and energy efficiency. The Commission already provides specific financial support for research and innovation in SMEs (FP7, CIP, structural funds), in particular the Euro-info Centres and Innovation Relay Centres. It could also be envisaged to fund a new programme providing free advice to SMEs to help them to sustain their competitiveness, become more resource and energy efficient and generate less environmental impacts. This could be done by making available to SMEs a free helpline, organising on-site visits by expert advisors, and building on successful models in Member States. A specific environmental compliance assistance programme for SMEs is also envisaged.

4.4. Smarter Consumption: Changing behaviour

EU actions for promoting smarter and more sustainable consumption could introduce and reinforce measures to internalise environmental cost into product prices, to improve consumer access to information on the environmental performance of products, and to stimulate markets for best performing products and the sustainable use of products. The following actions could be envisaged:

4.4.1. Environmental Performance Agreements with retailers

The policies and practices of large retailers in the EU could become an important element in moving towards more sustainable consumption. Sales of greener products very much depend on their availability and promotion at retail outlets. Large retailers can also influence the environmental performance of their supply chains, passing on incentives for green production and product design.

Therefore, in addition to existing initiatives[108] it could be explored with large retailers how to promote and purchase better products and how to green supply chains with a view to establishing EU-wide guidelines to assess the environmental performance of products.

In order to facilitate these developments, an EU logo of "environmental commitment" for retailers could be created. It would reward companies or/and retailers for demonstrating the use of energy and material efficient products or services or selling a given share of highly performing products. Therefore, the logo would become an additional incentive for the production and use of environmentally better products, including for SMEs.

4.4.2. Enhanced use of market-based instruments

As price is one of the main determinants of purchasing choices, market-based instruments can help get prices right and internalise environmental costs. EU proposals to link purchase taxes on cars to their climate impact are a step in this direction. Market-based instruments could be used to address the consumption of natural resources and the production of waste. It is considered to facilitate further discussion and implementation by coordination of experiences in Member States in a Forum on Market-based Instruments.

At the moment, 47,7% of EU government tax revenue comes from labour and only 7,5% from taxes on resource use and pollution.[109] Therefore, future policy could set out the potential for further fiscal reform, particularly of consumption taxes based on the recent Green Paper on the Use of Market-Based Instruments in Environment Policy.

4.4.3. Differentiation of value-added tax rates

The Commission will examine the opportunity and efficiency of differentiating VAT rates according to the environmental performance of products.

4.4.4. Revision of the EU Eco-label Regulation

Eco-label could further contribute to shift demand to better performing products The revision of the EU Eco-label Regulation will extend the scheme to cover all important product groups, increase uptake by producers, and link it to other policy instruments. The key elements of the revision are: a mechanism for selecting priority product groups, more efficient process for developing Eco-label criteria, a flexible decision-making process involving stakeholders and simplification of the operation of the scheme. It will be analysed how the Eco-label Regulation links with other EU eco-design policies and how synergies could be further reinforced.

4.4.5. Misleading advertising/false environmental claims

The provision of clear, understandable and correct information on the environmental performance of products should stimulate public and private purchases of greener products. In this context, there is a need to further protect consumers against misleading advertising practices. The Directive 2005/29/EC on Unfair Commercial Practices[110], applicable as of December 2007 aims to protect consumers against a broad range of misleading practices and claims. It could be explored how the application of this legislation can be supported by supporting environmental product data in order to determine the existence of unfair commercial practices.

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108 Such as the Energy Labelling Directive 92/75/EEC, eco-label, or other voluntary initiatives

109 Of which only approximately 0.3% come from pollution taxes.

110 OJ L 149, 11/06/2005, replacing with respect to business-consumer relations an earlier Directive from 1984 on misleading advertising.

4.4.6. Green Procurement

In 2007, the Commission will propose further guidance to strengthen Green Public Procurement (GPP) in the EU. Public procurement could be used to accelerate the market uptake of the most performing products. The future policy could explore whether it would be more effective to focus on the most impacting products belonging to lead markets or whether it is better to raise the proportion of "green" products overall in public purchases. Another issue is whether such priorities should be compulsory for public procurement or remain indicative.

Additionally, initiatives to stimulate large private sector purchasers to green their procurement could also be considered.

4.4.7. Consumer information/ education and /training campaigns

In order to develop smarter consumption, raising awareness, education and training of consumers is important for them to be able to make sustainable consumer choices. In cooperation with consumer organisations and Member States, future policy could explore further appropriate ways, for example through information campaigns, or through education and training initiatives, to promote sustainable lifestyle choices and to ensure consumers are adequately informed about the products with the best environmental performance. In this context, it could be explored, for instance, to further develop 'on line consumer education tools' focusing on sustainable consumption.

4.5. Global markets: exploiting first mover advantages and levelling the playing field worldwide for sustainable technologies and products

4.5.1. Adapt EU policies to fostering energy and resource efficiency

There is little doubt that over time the world will have to evolve towards a low carbon and resource-efficient economy. The momentum created by adopting climate change policies within the EU and the renewed Sustainable Development Strategy should be used to drive efforts to achieving similar commitments internationally. This is a prerequisite for succeeding in both, containing climate change, a sustainable use of natural resources and preserving the EU industrial competitiveness. It requires coherence across policy areas and in particular a more pro-active use of the EUs trade and development policies.

Several studies are showing that eco-technology is a fast-growing market. European companies have so far succeeded in taking advantage of these opportunities.

In the future, low carbon and resource-efficient technologies, products and services will dominate the markets. Internally, a faster development and uptake of ambitious standards in the EU can pave the way to the adoption of international standards, notably if the standards are developed with international participation and can in turn help open foreign markets for the benefit of leading European companies as well as the global environment.

Trade policy can also contribute to this process, by working towards the elimination of trade tariffs for low carbon and resource-efficient products and through the creation of a global trading scheme for carbon. An increased industrial dialogue with major emitting countries could also facilitate this task. The enforcement of the compliance of imports with claimed environmental requirements and labels need also be improved.

EU development policy can proactively promote the uptake of low carbon, resource efficient technologies, processes and products, in particular by fostering investment in clean energy and resource technologies. This process will need to be accompanied with decisions on the

issue of intellectual property rights in technology diffusion to safeguard the protection of rights belonging to EU companies.

4.5.2. Global Sectoral Approaches

The impetus in adopting climate change and resource efficient policies within the EU should be matched by an equal deployment of efforts to achieve similar commitments internationally, which is a prerequisite for succeeding in both containing climate change, a sustainable use of natural resources and preserving our industrial competitiveness.

Different industrial sectors have started working on global sectoral approaches, with a view to agreeing on and committing to specific targets (energy efficiency of the process of production or CO2 content of the product). Sectoral approaches could constitute an effective tool both to reduce the environmental impact of industry and to create a level playing field for industry sectors internationally, thus addressing the current competitive disadvantage for EU energy intensive industries exposed to international competition. At the same time, this provides an effective way to engage developing countries in action that will help mitigate climate change but without placing a constraint on growth.

Public authorities have to play a role in creating an appropriate institutional and legal framework to underpin these approaches, in particular by providing a credible monitoring and enforcement system and ensuring that targets defined by industry are sufficiently ambitious. The compatibility of global sectoral approaches and the EU Emissions Trading Scheme should be ensured.

The European Union could negotiate bilateral industrial agreements between governments to provide industry sectors with such framework. The launching of a pilot project in 2008, working with advanced sectors exposed to international competition and the main relevant international partners, is being considered.

4.5.3. Strengthened international cooperation on sustainable consumption and production

International cooperation on sustainable consumption and production, particularly on work and initiatives led by the United Nations under the Marrakech process, and international co-operation on the sustainable use of natural resources could be further strengthened.

Annex III

to the

Impact Assessment on the SCP and SIP Action Plan

Description of current polices

A number of policies are already in place aiming to address negative environmental impacts resulting from production and consumption. This section presents the major ones and illustrates how they intend to address the market failures described above. It should be noted that the policies listed below are not an exhaustive list and that there are other policies that can be related to the market failures described above. These other policies are however not relevant as far as the scope of the present initiative is concerned.

Integrated Product Policy

IPP advocates life-cycle thinking, in order to take appropriate action at the problem stages in the life-cycle. The objective is to avoid shunting the environmental impact from one phase of the life-cycle to another.

It promotes the application of Life-Cycle thinking through actions such as Environmental Management Systems (like the Eco-Management and Audit Scheme – EMAS) and Product design obligations (such as those requested by the Eco-design of Energy Using Products – EUP). On the public consumer side, the IPP Communication underlines the importance of Green Public Procurement, Greener Corporate Purchasing and Environmental labelling (like eco-label or the energy efficiency label).

Eco-Management and Audit Scheme (EMAS)

EMAS certifies through an independent verification mechanism that a firm complies with environmental legislation and has an environmental management system. It is a voluntary EU instrument which acknowledges organisations that improve their environmental performance on a continuous basis. EMAS registered organisations are recognised by the EMAS logo, which guarantees the reliability of the information provided. EMAS helps to minimise information costs for purchasers who value environmentally sound production techniques by providing them with the possibility to rely on the logo when making a purchasing decision.

Energy-using Products Directive (EuP)

Directive 2005/32/EC on the eco-design of Energy-using Products (EuP) covers products such as electrical and electronic devices or heating equipment. The Directive does not introduce directly binding requirements for specific products, but defines conditions and criteria for setting, through subsequent implementing measures, minimum requirements regarding environmentally relevant product characteristics (such as energy consumption) and allows them to be improved quickly and efficiently. The minimum requirements are set such that the combined purchase and use costs are minimised. A key element is that the Directive provides coherent EU-wide rules for eco-design and ensures that disparities among national regulations do not become obstacles to intra-EU and external trade.

Taking into account the exclusion of the transport sector, the directive potentially covers 68% of total energy use in Europe. Currently implementing measures are under preparation for 20 products in heating and water heating equipment, electric motor systems, lighting in the domestic and tertiary sectors, domestic appliances, office equipment in both the domestic and tertiary sectors, consumer electronics and HVAC (heating ventilating air conditioning) systems.

Once the implementing measures of EuP are introduced information asymmetries and bounded rationality should no longer pose problems for energy using products, since the consumer will buy those products that have the lowest life cycle cost whether he is informed or not. Principal-agent problems will be solved for energy using products since agents do not have the possibility to buy products which are not in the interest of the principal. Furthermore,

the minimum requirements will limit negative externalities caused by energy using products to the extent that they are covered by the standards.

The minimum requirements of the EuP directive will limit the emissions of significant environmentally harmful impacts. It is expected to save 200 mio tonne of CO2 per year by 2020 which is approximately 5% of current total emissions.

Green Public Procurement

In terms of GPP, the Integrated Product Policy initiated several actions to stimulate it: 1. Determination of the extent of greener public procurement in the EU; 2. Encouragement of Member States to develop by the end of 2006 publicly available action plans for greening their public procurement (National Action Plans); 3. Elaboration of information measures for public authorities- a practical handbook for public authorities (Handbook on Green Public Procurement), a Product Group Database , a GPP website.

The Presidency Conclusions of the European Council (7775/1/06 REV 1, March 2006) indicated that Member States decided to review specific actions to bring about more sustainable consumption and production patterns at EU and global level. EU governments said this could be achieved by pursuing a variety of actions – from fostering green public procurement to promoting environmental criteria and performance targets. Moreover, the Renewed EU Sustainable Development Strategy (SDS) (10117/06 June 2006) indicated that the EU Member States decided to aim at achieving by 2010 an EU average level of Green Public Procurement (GPP) equal to that currently achieved by the best performing Member States. Green public procurement policies contribute to limiting negative environmental impacts. The EU GPP in addition aims at protecting a distortion of the internal market.

EU Energy Star Programme

The recently adopted Council Decision on Energy Star for office equipment [Council Decision 2006/1005/EC] requires that EU institutions and central Member State government authorities use energy efficiency criteria no less demanding than those defined in the ENERGY STAR programme when purchasing office equipment. The energy star label is a voluntary U.S. label covering energy using appliances (such as personal computers and printers) as well as insulation materials[111] that promotes energy efficiency. Only those products that can offset higher initial purchase prices by energy savings during their expected life span are awarded the label. The label thus has the potential to solve the information asymmetry regarding these products. The energy star label will be used in the EU for office equipment within the framework of the EU ENERGY STAR programme following an

[111] The current list of products covered include: Appliances (Battery Chargers, Clothes Washers, Dehumidifiers, Dishwashers, Refrigerators & Freezers, Room AC, Room Air Cleaners, Water Coolers) Heating & Cooling (Air-source Heat Pumps, Boilers, Central AC, Ceiling Fans, Dehumidifiers, Furnaces, Geothermal Heat Pumps, Home Sealing (Insulation), Light Commercial, Programmable Thermostats, Room AC, Ventilating Fans) Home Envelope (Home Sealing (Insulation and Air Sealing), Roof Products, Windows, Doors, & Skylights), Home Electronics (Battery Charging Systems, Cordless Phones, Combination Units, Digital-to-Analog Converter Boxes (DTAs), DVD Products, External Power Adapters, Home Audio, Televisions, VCRs), Office Equipment (Computers, Copiers and Fax Machines, Digital Duplicators, Notebook Computers/Tablet PCs, Mailing Machines, External Power Adapters, Monitors, Printers, Scanners, and All-in-Ones), Lighting (Compact Fluorescent Light Bulbs (CFLs), Residential Light Fixtures, Ceiling Fans, Exit Signs), Commercial Food Service (Commercial Dishwashers, Commercial Fryers, Commercial Hot Food Holding Cabinets, Commercial Ice Machines, Commercial Solid Door Refrigerators & Freezers, Commercial Steam Cookers), Other Commercial Products (Battery Charging Systems, Exit Signs, External Power Adapters, Roof Products, Vending Machines, Water Coolers)

Agreement between the Government of the US and the European Community (EU) to co-ordinate energy labelling of office equipment. It can contribute towards solving a principal-agent problem in private enterprises and public administrations by mandating procures to buy office equipment with the ENERGY STAR label.

EU Eco-Label

The Eco-label identifies overall environmental preference of a product or service within a specific product/service category based on life cycle considerations (production, use and disposal). It is a voluntary scheme designed to encourage businesses to market products and services that are more environment friendly and for European consumers - including public and private purchasers - to easily identify them. Currently, products from twelve product categories are covered[112].

For those products that have the eco-label it contributes to solving information asymmetries with respect to lifecycle costs of a product.

Energy labelling directive (ELD)

The Energy Labelling Directive (ELD) introduced mandatory labelling for energy using household devices that account for a significant proportion of electricity consumption in households. The label has to provide information on the consumption of energy and of other essential resources by using the device.

It applies to the following types of household appliances, even where these are sold for non-household uses: refrigerators, freezers and their combinations, washing machines, driers and their combinations, dishwashers, ovens, water heaters and hot-water storage appliances, lighting sources and air-conditioning appliances.

The labelling solves the information asymmetries for these products by showing the 'hidden' costs of use over the expected life span. With the current system, according to the producers 34 Terrawatthours (TWh) or 7 million tons of oil equivalent (Mtoe) in primary energy savings for appliances have been achieved from 1995 until 2006. It is assumed that more than half is due to labelling, the remaining part is due to structural technical improvements[113]. In the case of washing machines, Figure XXX shows the efficiency gains observed in the last decade.

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112 APPLIANCES (washing machines, dishwashers, refrigerators, vacuum cleaners, TVs AND ELECTRICAL EQUIPMENT (television sets, light bulbs), HOUSEHOLD FURNISHINGS (bed mattresses, textiles), COMPUTERS (personal computers, portable computers), CLOTHING (textiles for clothes and accessories), FOOTWEAR (shoes and boots), PAPER PRODUCTS (copying and graphic paper, tissue paper products), DO-IT-YOURSELF (hard floor coverings, indoor paints and varnishes), LUBRICANTS (hydraulic oils and greases), GARDENING (potting compost, soil improvers), CLEANING UP (all-purpose cleaners, detergents for dishwashers, hand dishwashing, detergents, laundry detergents), HOLIDAY ACCOMODATION (campsite service, tourist accommodation service).

113 SEC(2006)1174

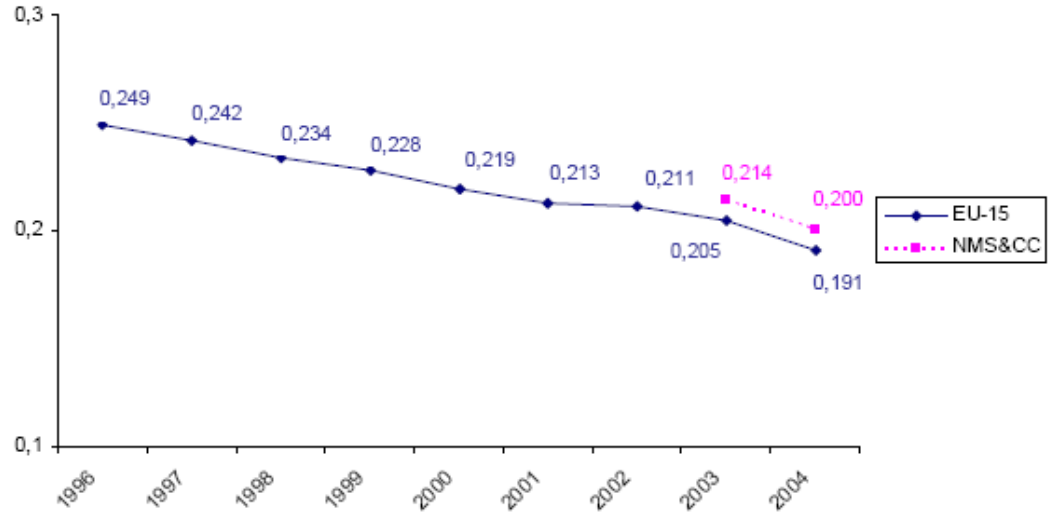


Fig. 13.: EU-15 and NMS&CC washing machines energy efficiency index progress (in kWh/kg), based on production weighted average (source [CEC2004] and JRC)

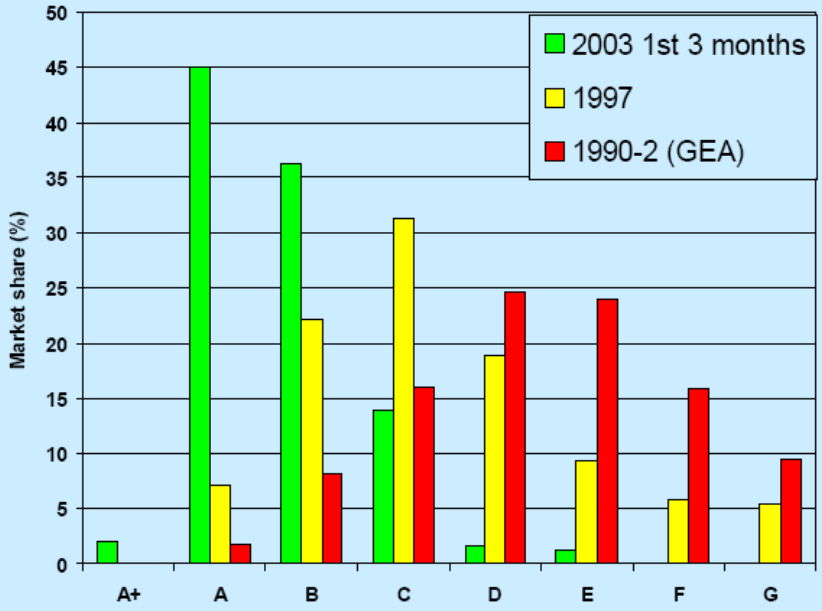
A study carried out in 2004 analysed the degree of public awareness about the energy efficiency label. It showed that in Slovenia, 43 % of the surveyed public recognised the label for appliances, in Finland, the appliance labels is known by 60 %, in Castilla y Leon, the number of end consumers recognising energy labels 36 % and in Upper Austria, the energy label for buildings in known by 49 %.

Thus, a significant fraction of the population is aware of the existence of the label and it can be concluded that for the products covered information asymmetry is not a serious concern.

The effectiveness of the EELD for the products covered is also acknowledged in the Stern Report: "The introduction of an EU labelling scheme on refrigerators is estimated to have delivered one-third of the 29% improvement in the energy efficiency of refrigeration products between 1992 and late 1999.[114] The figure below shows a clear and strong evolution of the market toward higher-efficiency products since the introduction of the EU label (contrasting favourably with the predominantly flat efficiency trends immediately prior to its announcement)."

[114] Bertoldi (2000).

Impact of the EU refrigerator energy label: sales of refrigerators in the EU by energy label class, 1992-2003.



Source: Stern report

Environmental Technology Action Plan (ETAP)

ETAP is a European strategy for eco-innovation and environmental technologies. It is composed of actions around three main themes: Getting from Research to Markets; Improving Market Conditions; Acting globally. In terms of the first theme, actions include increased and more focused research, demonstration and dissemination activities within the 7th Framework Programme for Research, support to the activities of the Technology Platforms and the setting up of a verification scheme. To improve market conditions, the Commission envisages to set environmental performance targets for industries, mobilise funding for innovation through the use of the Competitiveness and Innovation Programme, use market based instruments to promote adoption, "green" public procurement and foster awareness raising and training campaigns. Supporting the adoption of eco-technologies in developing countries and promoting foreign investment are activities envisaged to address "Acting globally". ETAP contributes towards increasing innovation for environmental technologies.

Action Plan on Energy Efficiency

The action plan proposes an energy efficiency strategy for the EU. It aims to realise a 20% saving potential in EU annual primary energy consumption (equivalent to about 390 millions tons of oil equivalent by 2020). The plan underlines the importance of minimum energy performance standards for a wide range of appliances and equipment (from household goods such as fridges and air conditioners to industrial pumps and fans), and for buildings and energy services. The Action Plan also lists a range of cost-effective measures, such as a coherent use of taxation, and the potential use of tax credits as incentives for enterprises to promote the increased production of certified energy-efficient appliances and equipment at lower prices for consumers.

The implementation of the Energy Efficiency Action Plan adopted in October 2006 will continue in 2008. Notable actions already adopted in 2007 were the amended Energy Star Regulation[115], introducing for the first time an obligation to use energy efficiency criteria at least as demanding as the Energy Star efficiency levels in public procurement of office equipment; and a Green Paper on urban mobility[116], including a proposal on financing for market introduction of efficient vehicles. The 3rd internal energy market package reinforces the requirements placed on energy regulators concerning energy efficiency. The Strategic Energy Technology Plan aims at accelerating the development of promising energy technologies and creating the conditions to bring such technologies to market. On 19 December 2007, the Commission adopted a proposal for a Regulation on emission performance standards for new passenger cars[117].

Energy performance of buildings directive (EPBD)

The Directive promotes the improvement of the energy performance of buildings. This Directive lays down requirements as regards: (a) the general framework for a methodology of calculation of the integrated energy performance of buildings; (b) the application of minimum requirements on the energy performance of new buildings; (c) the application of minimum requirements on the energy performance of buildings bigger than 1000 square meter that are subject to major renovation (defined as implying a renovation cost higher to 25% of the buildings' value).

Member States are requested to identify minimum requirements regarding the energy performance of buildings in accordance with a common methodology. Thirty one standards have been issued by the CEN under the EBPD. They deal notably with the common methodology to calculate the energy performance of buildings but it is still up to MS to define parameters. It means that, even with a common methodology, the calculation of the energy performance of a building does not lead to the same result in all MS.

The EPBD solves negative externalities resulting from poor energy performance, information asymmetries and bounded rationality problems with respect to new buildings (and large ones undergoing renovation) by requiring that the minimum standards are fulfilled.

Climate policy

As presented above, Greenhouse gas emissions contribute to climate change. To satisfy the EU commitments in terms of emissions reduction (minus 8% when compared with the 1990 emission's level) within the framework of the Kyoto protocol, the Commission decided to utilise a Market based instrument: the Emission Trading Scheme (ETS), addressing mainly CO2 emissions. It covers sources for 40% of the Greenhouse gas emissions in the EU, namely over 11.500 energy-intensive installations across the EU (such as combustion plants, oil refineries, coke ovens, iron and steel plants and factories making cement, glass, lime, brick, ceramics, pulp and paper).

For the post-Kyoto period, the European Union adopted the ambitious target of a 20% reduction *[or 30 % if an international agreement is attained]* by 2020[118]. To reach this target, among the tools proposed in the Communication "20 20 by 2020" (COM(2008) 30 Final), the following ones will help internalising the externalities into prices:

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115 Regulation No 2422/2001 on a Community energy efficiency labelling programme for office equipment

116 COM (2007) 551

117 COM (2007) 856

118 Presidency conclusions (2007) 7224/1/07

(1) the updating of the Emission Trading Scheme, by extending the scope to include other Green House Gases (GHG) and all major industrial emitters; a harmonized ETS covering the whole Union, replacing National Allocation Plans by auctioning or free allocation through single EU wide rules; and the use of Clean Development Mechanisms to fulfil the targets;

(2) the emission reduction effort will also tackle sectors not covered by ETS, with a target of 10% reduction from the 2005 levels;

(3) the setting of modulated targets for renewable energy at Member States level, fostering the internal market for renewable energies, updating the regulatory framework and creating a comprehensive system to promote sustainable biofuels production.

In 2007, the Spring Council also proposed a mandatory EU target of 20% renewable energy by 2020 including a 10 % biofuels target. It also stressed the need to increase energy efficiency in the EU so as to achieve the objective of saving 20% of the EU's energy consumption.

It is expected that electricity generators will adapt their dispatch behaviour in order to reflect CO2 costs. According to an electricity wholesale market model for the European power sector developed by McKinsey, under fully competitive assumptions the resulting average increase of electricity prices across Europe would be in the order of 10 Euro/MWh for a 20 Euro/t CO2 price, assuming a full pass through of the value of allowances to power prices. The 20 Euro CO2 price is consistent with the spot and futures (2008, 2012) values observed in EEX. Electricity prices in EU 27 (Table 2) have significantly risen since the first semester of 2005, in particular for industries consuming more than 2000 MWh/year (0.0672 €/kWh in 2005 to 0.0822 €/kWh in 2007).

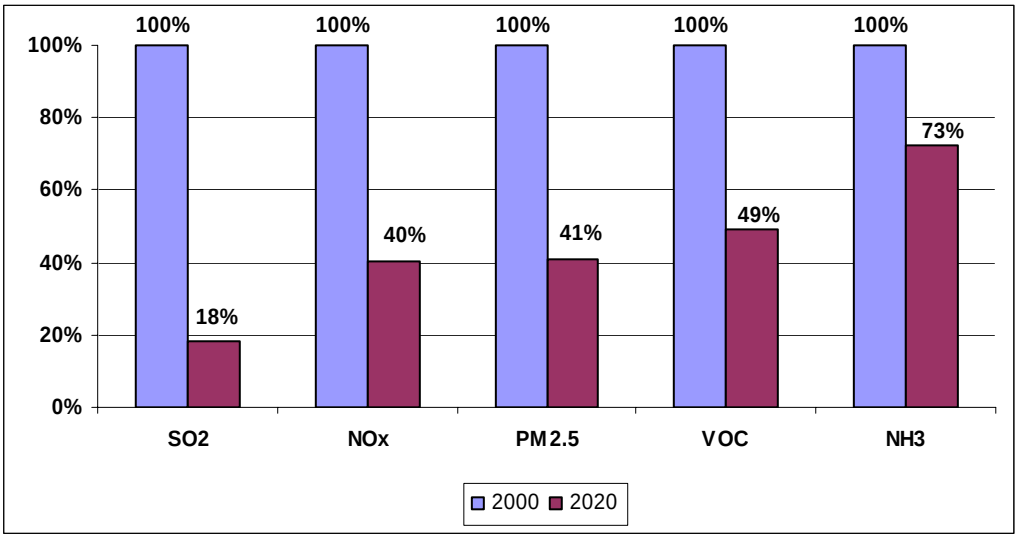
The ETS is expected to lead to higher production costs for products that are very energy intensive in their production because producers either have to abate emissions or acquire emission permits. It is likely that these additional production costs will be passed on to consumers which will lead to an internalisation of some of the negative externalities caused by consumption.

In term this will make investment in environmental technologies leading to lower emissions more cost effective. Besides, the possibility of using Carbon Capture and Storage technology in new power plants and creating conditions to foster public-private partnerships in particular through Member States actions will be envisaged.

Air pollution

The Community is acting at many levels to reduce air pollution: via EC legislation, work at the wider international level in order to reduce cross-border pollution, working with sectors responsible for air pollution and with national and regional authorities and NGOs, and finally by promoting research in the area. In September 2005, the Commission adopted the Thematic Strategy on Air Pollution (TSAP), projecting significant reductions of the major air pollutants.

EU-25 emissions in 2020 relative to 2000,
after the reductions projected by the Thematic Strategy on Air Pollution:



Source: SEC (2005) 1133

The Thematic Strategy has set the path and ambition to improve air quality by reducing environmental externalities with concrete measures. A major step for local air quality is the Directive on Ambient Air Quality and Cleaner Air for Europe proposed by the Commission as COM(2005)447. It develops a long-term, strategic and integrated policy advice to protect against significant negative effects of air pollution on human health and the environment by setting clear standards for local air quality. Concerning transboundary air pollution, 2020 emission ceilings for each Member State are under preparation by the Commission services.

Emission from industrial installations

Concerning emissions from industrial installations, the Directive on industrial emissions, proposed as COM(2007)843 in December 2007, is the major implementing instrument of the Thematic Strategy on Air Pollution. It includes a re-cast of the Directive on Industrial Pollution Prevention and Control (IPPC). The Directive aims at minimising pollution from various industrial sources throughout the European Union. Operators of IPPC installations covered by Annex I are required to obtain an authorisation (environmental permit) from the authorities in the EU. About 52.000 installations are covered. Several principles drive the implementation of the directive, namely:

(1) an integrated approach, taking into account the whole environmental performance of the plant, covering e.g. emissions to air, water and land, generation of waste, use of raw materials, energy efficiency, noise, prevention of accidents, and restoration of the site upon closure,

(2) best available techniques (BAT) as the basis for issuing the permit conditions including emission limit values (ELVs),

(3) the consideration of local conditions in the issuance of permits, specifically taking into account the technical characteristics of the installation concerned, its geographical location and the local environmental conditions, and

(4) public participation.

It is estimated that the calculated health and environmental benefits from enhanced take up of BAT, as proposed with the Directive on industrial emissions, would greatly exceed the costs for installations to comply with the Directive. The benefits depend on the current performance of BAT-based permitting for a region or sector; for example, for Large Combustion Plants the

EU-wide net benefits are estimated to be € 7 - 28 billion per year, including the reduction of premature deaths by 13,000 and 125,000 life years gained (excluding any additional environmental benefits such as reduced eutrophication and acidification) through preventing negative externalities. No significant long-term impacts on competitiveness, social impacts or detrimental long-term effects on economic growth have been identified given possible flexibility in well-founded and documented cases. Instead, the analysis shows that a more unified application of BAT would help reduce distortions of competition in the industry sectors covered by the Directive.

The Directive on industrial emission is the tool to internalise environmental externalities during the production stage by setting effective requirements based on best available techniques, complemented by strict minimum ambition levels.

WASTE

The Community legislation on waste includes horizontal legislation on waste management, e.g. the Waste Framework Directive, the Hazardous Waste Directive, as well as the Waste Shipment Regulation.

These are complemented by more detailed legislation concerning waste treatment and disposal operations, such as the Landfill and Incineration Directives, and legislation to regulate the management of specific waste streams (waste oils, PCBs/PCTs and batteries). Recycling and recovery targets have been set for some key waste flows, i.e. packaging, end-of-life vehicles (ELVs) and waste electrical and electronic equipment (WEEE).

Waste legislation underpinned substantial progress in waste management over the last 30 years. Heavily polluting landfills and incinerators are being cleaned up. New techniques have been developed for the treatment of hazardous waste. Hazardous substances are being removed from vehicles and electrical and electronic equipment. The levels of dioxins and other emissions from incineration are being reduced.

At present in the EU municipal waste is disposed of through landfill (49%), incineration (18%), recycling and composting (33%). The waste management and recycling sector has a high growth rate and has an estimated turnover of over €100 billion for EU-25. The recycling industry is providing increasing amounts of resources to manufacturing industry: at least 50% of the paper and steel, 43% of the glass and 40% of the non-ferrous metal produced in the EU are currently derived from recycled materials.

However, despite these successes, waste remains a problem. Waste volumes continue to grow.

Legislation is, in some cases, poorly implemented and there are significant differences between national approaches. The potential for waste prevention and recycling is not yet fully tapped. The emerging knowledge about the environmental impact of resource use is not yet fully reflected in waste policy. There is evidence that the complexity of EU and Member State legislation tends to discourage recycling and recovery activities.

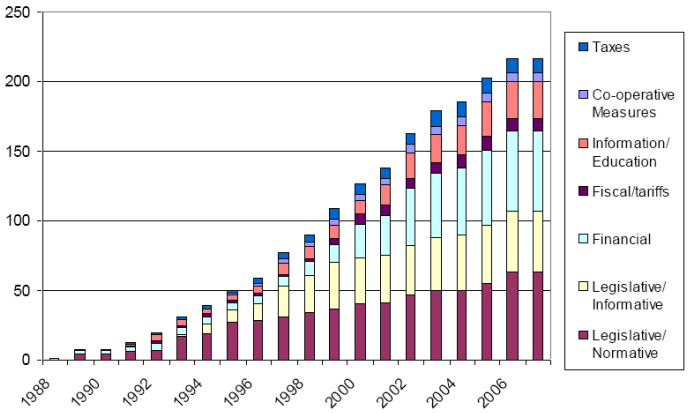
The waste legislation internalises environmental externalities occurring during the final life cycle stages.

National fiscal incentives in the EU 25:

Fiscal incentives vary among Member States while residential energy use in different EU-countries has many characteristics in common, such as the need to heat the dwelling in winter, the need for hot water, the use of a number of standard appliances and the saving measures available in the countries.

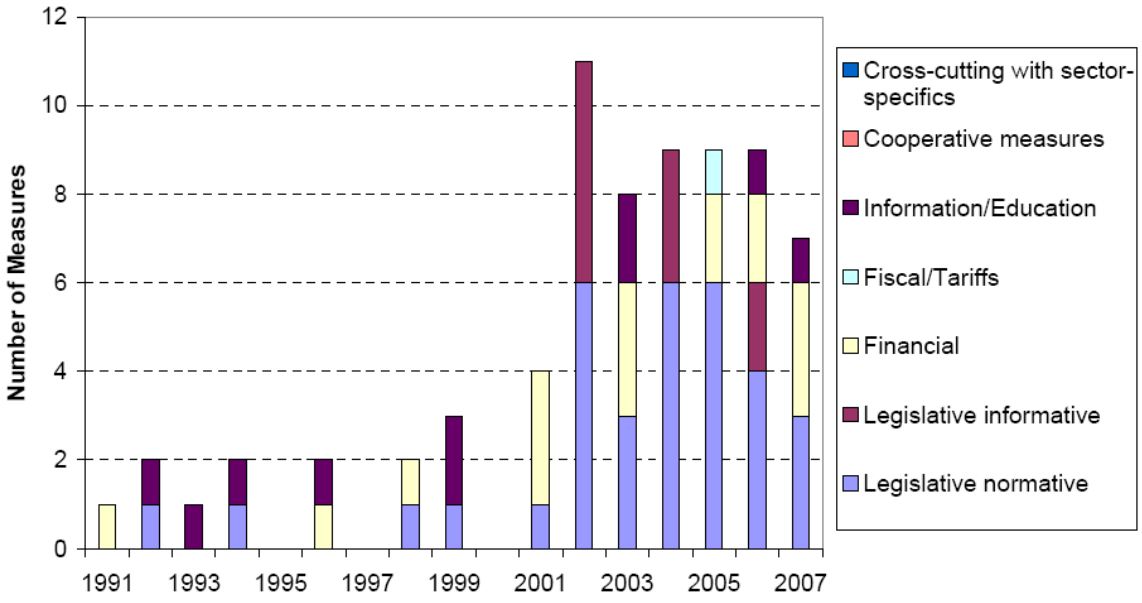
The following graphs illustrate the substantial increase in national policy measures relating to improving energy efficiency in Households in EU 15 and EU10.

Development of active policy measures by type in EU-15



Source: Ademe – Intelligent Energy Europe (2007) Evaluation of Energy Efficiency in the EU-15: Indicators and Measures)

Development of active policy measures by type in EU-10



Source: Ademe – Intelligent Energy Europe (2007) Evaluation and Monitoring of Energy Efficiency in the New EU Member Countries and the EU-25

In the new Members States measures are mainly of a legislative character, while in the old Members States financial incentives and taxes are used as well.

However, the increase in diverging national fiscal measures also leads to increased distortions of the internal market where criteria for eligibility are not the same between countries.

ANNEX IV

to the

Impact Assessment on the SCP and SIP Action Plan

Accompanying tables and figures

Table 1: degree of coverage of other environmental impacts by EUP

Significant environmental parameter	EuP impact as % of total impact
abiotic depletion	<20
Acidification	<20
Global warming	<20
Ecotoxicity	<10
Eutrophication	<5
human toxicity	<10
ozone layer depletion	<10
photochemical oxidation	<10

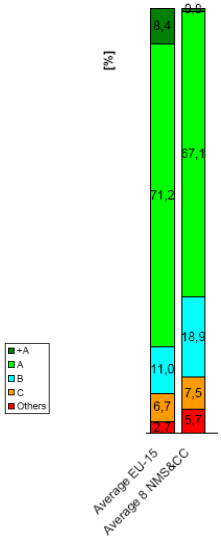
Source: JRC, ESTO, IPTS (2007) Environmental Impact of Products (EIPRO) Analysis of the life cycle environmental impacts related to the final consumption of the EU-25

Table 2: Energy rating of household appliance - percentage of sales – EU 15, 2004-05

	% A or above	% B	% C or below
Refrigerators	61	30	9
Freezers	47	26	27
Washing machines	79	11	10
Dishwashers	81	11	8
Electric ovens	47	37	16
Lighting (households)	54% households with some CFLs		

Source: EC Status Report 2006

Figure 1: Market share of washing machines according to label



Source: JRC (2007)

Table 3: Difference in energy efficiency by building segment in the Netherlands

TABLE 31

Energy measures already implemented in the residential sector

Penetration degree in 2000		Building segment			Insulation degree in 2004
Measure	Total	Privately owned	Social rental	Private rental	Total
Roof insulation	64%	70%	59%	40%	67%
Wall insulation	50%	52%	55%	29%	54%
Floor insulation	35%	39%	30%	21%	38%
Insulated glazing	66%	70%	67%	48%	73%
Boiler (improved yield)	49%	43%	60%	54%	n.a.
Condensing boiler (high yield)	38%	47%	26%	25%	n.a.

Source: KWR, 2000; Milieucentral, 2004.

Graph 2: percentage of GPP by some Member States in analysed tenders ('No criteria' means that no green specifications were found; 'grey' means that attempts for green specifications were found, but these would not lead to a green purchase; 'light green' means 1-3 clear specifications; 'solid green' means more than 3 specifications were found.)

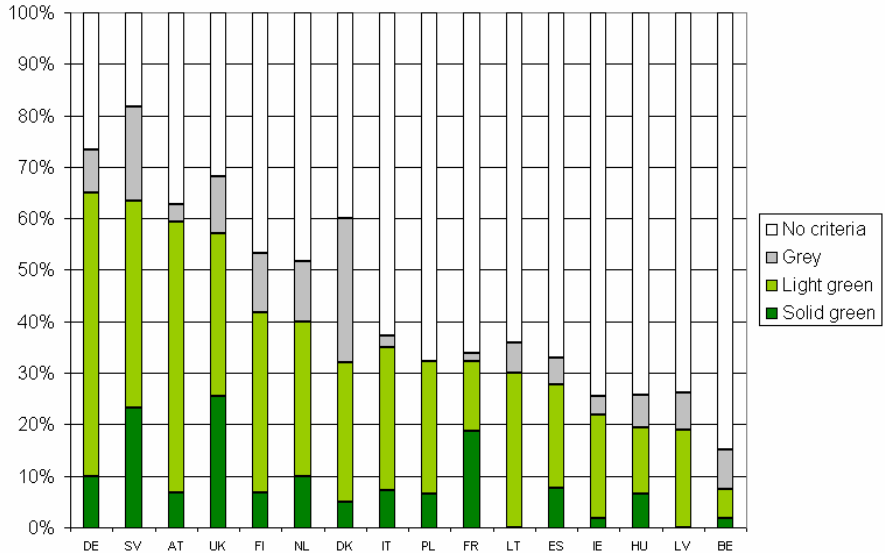


Table 4: minimum requirements and incentives for insulation in some Member States The case of Roof insulation

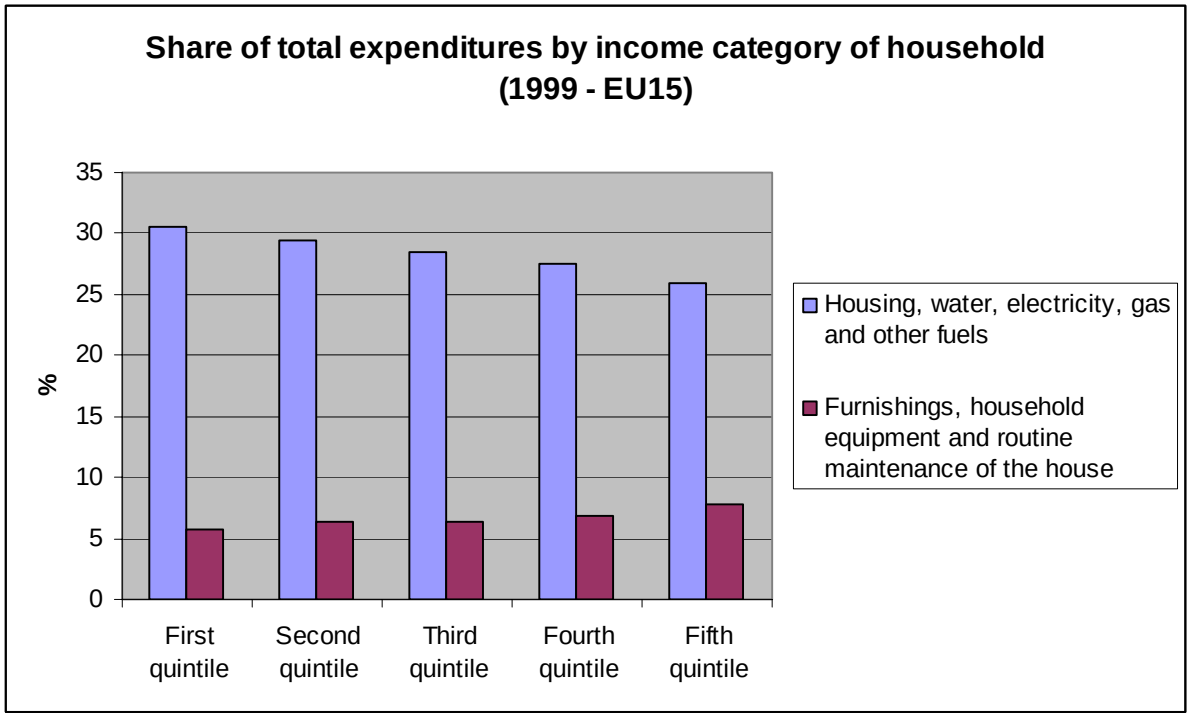
	Minimum R value	Amount	Cap
Belgium (Fed)	2.5	tax reduction: 40% of the price	2.60 €
Brussels	4	20€/ m²	50% of the price
Wallonia	3	4-8€/m²	10.00 €
France	3	Tax credit: 25 or 40% of the price	-

Luxembourg	4.34	13-15€/m²	-
Germany	4.5	100% interest rate paid by the Bund	-

Table 5: minimum requirements and incentives for insulation in some Member States The case of Windows

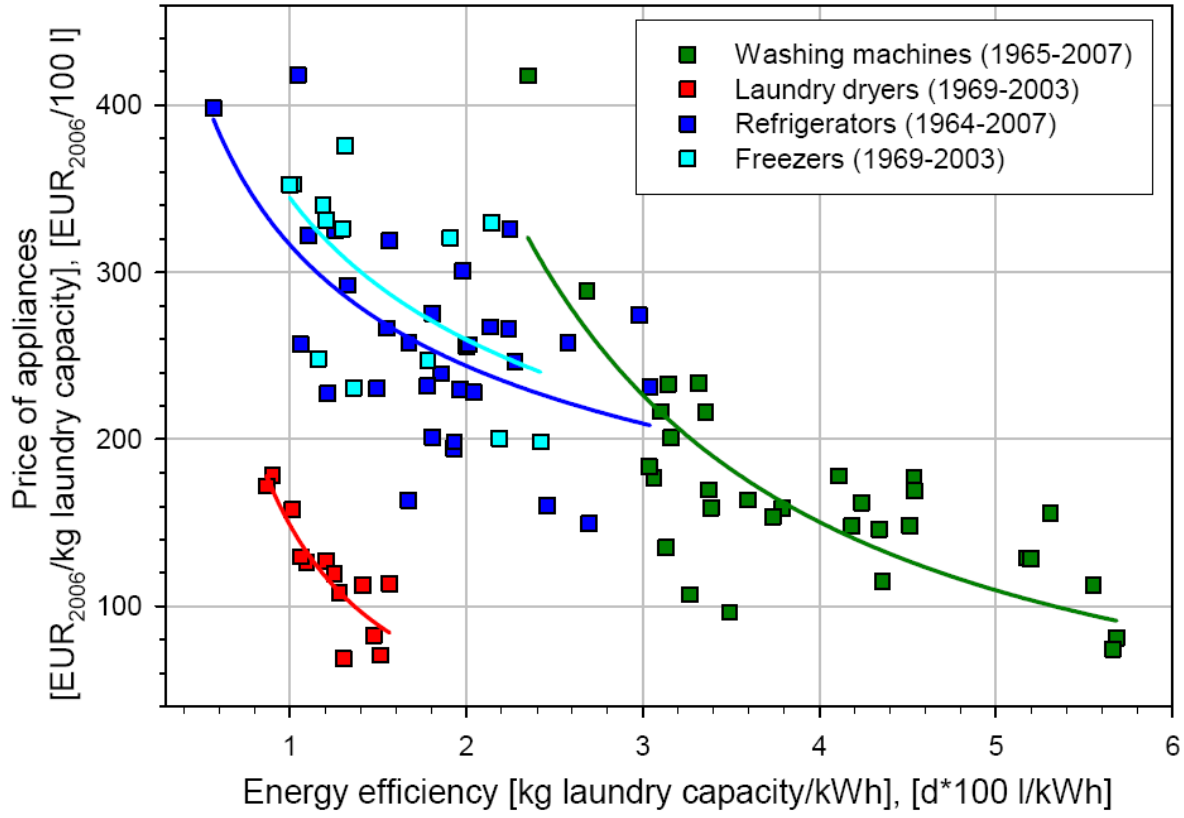
	Maximum U value	Amount	Cap
Belgium (Fed)	2	tax reduction: 40% of the price	2.60 €
Brussels	2	25€/m²	50% of the price
Wallonia	2	40€/m²	10.00 €
France	1.5 - 2	Tax credit: 25 or 40% of the price	-
Luxembourg	1-1.35	12-30€/m²	-
Germany	1.3	100% interest rate paid by the Bund	-
Austria (Vienna city)	1.9	2-3% of the annual loan cost	-

Graph 3: Share of total expenditures by household income category (1999 – EU 15)



Source Eurostat

Figure 2: evolution of prices and energy efficiency over time of several type of appliances.



Source: Weiss, Junginger and Patel (2008) unpublished

Annex V

to the

Impact Assessment on the SCP and SIP Action Plan

Economic Analysis

The Case of water heaters

The Preparatory study[119] for water heaters carried out within the framework of the Eco-design directive analyses in detail each type of appliance present in the market.

The study identifies three main categories of water heaters in the market: those linked to boilers and the direct water heaters, the later of two kinds, electric and gas-fired. (Table)

Table 1: market shares for the different type of boilers

	Millions
Total sales	17.2
linked to boilers	6.8
direct water heaters	10.4
electric	8.3
gas -fired	2.1

Source: VHK(2007). Task 5 p 27

The analysis concentrates on the direct water heaters of small size, which corresponds to the average residential water heater for a single person or very small family. The characteristics of this segment of the sector is presented in table

Table 2: market share, energy consumption and emission

in 2005	Small WH	Total
market share (*1000)	4105	17143
Total Energy consumption (PJ)	520	6169
Electricity consumption (PJ)	471	3725
Emissions (Mt CO2)	24	298

Source: VHK(2007). Task 6 p.8

For this type of water heater, 5 categories of appliances where identified in the study, mainly of two types: those using gas and electricity and those using only electricity. Current equipments show little efficiency and high life-cycle costs[120].

Table 3: performance and prices for small Water heaters

Table 2.8: Outcomes S

		ESWH 30	BC S	EIWH 18 H	EIWH 18 E	GIWH 18 E
MAIN ENERGY OUTPUTS (annual)						
WH sys. efficiency		21%	23%	30%	34%	36%
Primary energy consumption	kWh/a	2159	1997	1530	1350	1293
-of which fuel (primary kWh GCV)	kWh/a	0	338	0	0	1292
-of which electricity (primary kWh)	kWh/a	2.159	1.659	1.530	1.350	3
MAIN LCC OUTPUTS (over product life)						
Price		€ 123	€ 171	€ 245	€ 420	€ 450
Installation		€ 50	€ 74	€ 100	€ 100	€ 210
Fuel (gas)		€ 0	€ 322	€ 0	€ 0	€ 1.231
Electricity		€ 1.851	€ 1.422	€ 1.312	€ 1.158	€ 2
Maintenance & Repairs		€ 143	€ 271	€ 143	€ 143	€ 0
TOTAL Life Cycle Costs LCC		€ 2.167	€ 2.261	€ 1.800	€ 1.821	€ 1.893

119 VHK (2007) Preparatory study on ecodesign of water heaters. (http://www.ecohotwater.org)

120 The study estimated a product life of 17 years and used a discount rateo f 2%.

		ESWH 30	BC S	EIWH 18 H	EIWH 18 E	GIWH 18 E
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Maintenance & Repairs		€ 143	€ 271	€ 143	€ 143	€ 0
TOTAL Life Cycle Costs LCC		€ 2.167	€ 2.261	€ 1.800	€ 1.821	€ 1.893

Sources: same as above.

The ESWH 30 type, which delivers 16l of water at 40º during 3 to 5 minutes, is assimilated to the current situation before the implementation of the EUP. EIWJ 18H (electric instantaneous water heater with hydraulic control) is assimilated to the EUP given that it presents the lowest life-cycle. EIWH 18E (electric instantaneous water heater with electronic control that improves efficiency) is assimilated to Eco-label. This assumption is a simplification, because other environmental impacts should be taken into consideration for awarding the eco-label.

Table summarizes the finding by appliance in the case of electrical WH are considered.

Table 4: prices and performance of the different water heaters used in the different options

	Option 1	Option 2	Option 3
Purchase price (euro)	123	420	245
Energy use during lifespan (kwh)	21590	13500	15300
CO2 inpacts (t CO2e)	15	9	11
life cycle cost without externalities	2167	1821	1800

Source: own estimations based on VHK (2007)

Only electrical water heaters are considered because the proportion of electricity consumption over total energy consumption (table above) indicates that they are the predominant type in this category. The rest of the analysis considers the whole market segment as electrical appliances.

For the estimation of the aggregated impacts, the following assumptions were undertaken:

1. all small WH use only electricity
2. for option 2, a 20% market penetration of highest efficient WH, reflecting the voluntary approach, the higher prices and the higher full life cycle cost.
3. for option 3, full market penetration of the least life cycle cost type.
4. a retail energy price of 14 Euro cents per KWh.

The results are presented below.

Table 5: results of the simulations for the different options

	Option 1	Option 2 (20%)	Option 3
Number of WH	4,105,000	3284000 standard; 821000 High efficient	4,105,000
Total purchase price (€)	504,915,000	748,752,000	1,005,725,000
Total energy consumption in lifespan (KwH)	88,626,950,000	81,985,060,000	62,806,500,000
Total CO2 emissions in life span (Mt CO2)	62,038,865	57,389,542	43,964,550
Total Lifecycle cost €	8,895,535,000	8,611,469,000	7,389,000,000

Source: own estimations based on VHK (2007)

In comparative terms with the BAU before implementing EUP, the results are:

Table 6: Comparison to the business as usual of the options

	Option 2 (10%)	Option 2 (20%)	Option 3
Purchase costs (euro)	24.15%	48.29%	99.19%
Energy impacts (kwh)	-3.75%	-7.49%	-29.13%
CO2 inpacts (t CO2e)	-3.75%	-7.49%	-29.13%
Life cycle cost without externalities	-1.60%	-3.19%	-16.94%

Source: own estimations based on VHK (2007)

For the analysis of the impacts of procurement, no data could be found in terms of the market share of procurement for this category of WH.

Only for illustrative purposes, the following assumptions were undertaken:

The share of public procurement compared to the market is 5%.

There is currently no intermediate product for WH. Therefore the analysis only compare mandatory procurement for minimum requirements (after the implementation of EUP) and for the highest performing products.

Table 7: Impact of mandatory public procurement

	Option 2	Option 3
total purchase	241.46%	99.19%
Total emissions	-37.47%	-29.13%
Total energy use	-37.47%	-29.13%

Total lifecycle	-15.97%	-16.94%

Source: own estimations based on VHK (2007)

The impacts of the option of imposing performance criteria higher that the minimum requirements would be in the in-between of the results presented above, depending on the characteristics of the appliance.

It is expected that incentives would induce economies of scale in time due to faster learning curves. Lower prices combined with the dynamic approach for requirement setting in option 3, in which indicative advanced performance benchmarks become minimum requirements, could lead to significant beneficial effects.

Figure 2 in Annex IV presents price and energy efficiency for several appliances for a given period of time. It shows that as efficiency grows, prices have systematically decreased. For the case of water heaters, we assumed a conservative 3% price decrease yearly due to learning curves. This implies that in five years time, the price for the most performing water heater would evolve from 420€ down to 372€. Even if total initial costs would be quite important, the improvement in energy use, emissions and life cycle costs would be very significant.

Table 8: Impacts of the dynamic approach on Water Heaters

	Aggregate results	% compared to BAU
Total purchase price (€)	1,527,060,000	202.44%
Total energy consumption in lifespan (KwH)	11,083,500,000	-87.49%
Total CO2 emissions in life span (Mt CO2)	7,758,450	-87.49%
Total Lifecycle cost €	1,495,041,000	-83.19%

The case of windows

Most of the data for this estimation can be found in the "Study on fostering EU internal market for competitive technologies for a low carbon economy" carried out for DG Enterprise by Price Waterhouse Cooper in 2007.

This study identified the following products with different insulation performance.

Table 9: performance of the different type of windows

Typology of windows	Units	Single glazing	Double glazing	Low emissivity
U-value	W/(m2*K)	4.7	2.7	1.6
Power consumed for heating per m2	kWh/(m2*year)	270	216	189
Lifetime	Years	30	30	30
Purchase cost	Euro/m2	100	150	250
Installation costs	Euro/m2	23	23	23

annual CO2 emissions	kgCO2/(m2*yr)	208	166	146
Initial costs	Euro/m2	123	173	273
Discounted heating costs	Euro/m2	680	544	476
Total lifecycle costs	Euro/m2	803	717	749

* U-Value is the measure of the rate of heat loss through a material

Source: own estimations from PWC (2007), except for the purchase prices, which correspond to retailers prices in Poland and France

Single glazing makes reference to the standard window, with a relative high heat loss. Double glazing improves the avoidance of heat transmission, therefore reducing the energy required for heating. The literature indicates reduction in energy consumption of up to 35% (Eurima), however it was preferred to simulate the reduction by 20%. The Low emissivity windows are double glazing windows treated with a special coating or using alternative gas between the two layers, improving even more the performance. The literature indicates energy savings between 30 and 50% (www.nmhydro.ca) and even up to 65% (EURIMA), for the simulation only 30% savings were analysed. The rate of replacement for all type of windows in refurbishing is estimated to be around 4% annually, given the lifetime of 30 years.

For the analysis of the impacts associated with each type of windows, the life cycle takes into consideration the purchasing and installation costs and the discounted heating expenses throughout the lifetime of the window, using a 4% discount rate. The CO2 emissions reflect those associated with electricity generation using a factor of 0.7 tn CO2/kWh.

For the analysis the following assumptions were undertaken:

- In the case of option 1, all replacement is undertaken with single glazing windows
- In the case of option 2, only 0, 8% of the standards windows are replaced by low emissivity is considered. (20% of the 4% refurbishing rate annually), the remaining 3.2% respectively are replaced by single glazing windows.
- In the case of option 3, to simplify the analysis, all replacement is undertaken with double glazed windows. This overestimates the potential for this type of windows, because in certain climatic conditions they might not be required.

Table 10: Aggregate results of the simulations

	Option 1	Option 2	Option 3
Total purchase price (€)	5,214,160,000	6,778,408,000	7,821,240,000
Total energy consumption in lifespan (KwH)	422,346,960,000	397,006,142,400	337,877,568,000
Total CO2 emissions in life span (Mt CO2)	325,363,584,000	305,966,908,800	259,665,168,000
Total Lifecycle costs €	41,869,704,800	41,306,575,520	37,385,527,200

Source: own estimation based on PWC (2007)

Comparing the results with the Business as usual situation, the simulations show the advantages of option 3, even if the initial purchase costs are higher.

Table 11: Comparions of the options with the Business as usual

	Option 2 (20%)	Option 3
Total purchase price (€)	30.00%	50.00%
Total energy consumption in lifespan (KwH)	-6.50%	-22.86%
Total CO2 emissions in life span (Mt CO2)	-6.18%	-20.91%
Total Lifecycle costs €	-1.34%	-10.70%

Source: own estimation based on PWC (2007)

ANNEX VI

to the

Impact Assessment on the SCP and SIP Action Plan

GLOSSARY

Advanced performance benchmarks

High level of performance on energy consumption and other essential environmental impacts achieved by a given product category present in the market.

Best performing product

A good and/or service that provides the maximum performance on energy consumption and other essential environmental impacts across its life-cycle.

Eco-design

Eco-design means the integration of environmental aspects into product design with the aim of improving the overall environmental performance of the product throughout its whole life cycle.

Eco-design Framework

A framework containing environmental life-cycle oriented principles for the design of products in support of existing and future product policies in order to ensure coherence amongst them. Such a framework could define common principles, criteria and methodologies related to the environmental performance of products.

Eco-Management and Audit Scheme (EMAS)

EU voluntary instrument which acknowledges organisations that improve their environmental performance on a continuous basis. EMAS registered organisations are recognised by the EMAS logo, which guarantees the reliability of the information provided.

Emission Trading Scheme (ETS)

The EU Emission Trading Scheme is a cornerstone in the fight against climate change. It is the first international trading system for CO2 emissions in the world. It covers over 11.500 energy-intensive installations across the EU, which represent close to half of Europe's emissions of CO2. The aim of the EU ETS is to help EU Member States achieve compliance with their commitments under the Kyoto Protocol. Emissions trading does not imply new environmental targets, but allows for cheaper compliance with existing targets under the Kyoto Protocol. Letting participating companies buy or sell emission allowances means that the targets can be achieved at least cost.

Energy Labelling Directive (ELD)

The Energy Labelling Directive seeks to increase consumer's awareness on the real energy use of household appliances through a liable and clear labelling in their sales points. It currently covers household appliances such as washing machines, dishwasher, oven, air-conditioning systems, etc.

Energy-using Product (EuP)

A product which, once placed on the market and/or put into service, is dependent on energy input (electricity, fossil fuels, or renewable energy sources) to work as intended, or a product for the generation, transfer and measurement of such energy, including parts dependent on energy input and intended to be incorporated into an EuP covered by the EuP Directive (2005/32/EC) which are placed on the market and/or put into service as individual parts for end-users and of which the environmental performance can be assessed independently.

Energy-using Products Directive (EuP)

Directive 2005/32/EC on the eco-design of Energy-using Products (EuP). Products such as electrical and electronic devices or heating equipment are covered by the Directive that provides coherent EU-wide rules for eco-design and ensure that disparities among national regulations do not become obstacles to intra-EU and external trade. The Directive does not introduce directly binding requirements for specific products, but defines conditions and criteria for setting, through subsequent implementing measures, minimum requirements regarding environmentally relevant product characteristics (such as energy consumption) and allows them to be improved quickly and efficiently.

Energy performance in buildings Directive

The Directive 2002/91/EC seeks to improve the energy performance of new building and renovations above 1000 m2. The four key points of the Directive are:1. A common methodology for calculating the integrated energy performance of buildings; 2. Minimum standards on the energy performance of new buildings and existing buildings that are subject to major renovation; 3. Systems for the energy certification of new and existing buildings and, for public buildings, prominent display of this certification and other relevant information. Certificates must be less than five years old; and 4. Regular inspection of boilers and central air-conditioning systems in buildings and in addition an assessment of heating installations in which the boilers are more than 15 years old.

Environment Policy Review Group meeting (EPRG)

A regular meeting of Directors General for the Environment from Member States, chaired by the Commission, to discuss environmental issues at an early stage before formal policy proposals are made to the EU legislators.

Environmental external costs, negative externalities

Costs (usually falling on society), e.g. related to pollution or resource use, which are not included in the market price of the goods and services, thus leading to an inefficient allocation of resources, e.g. their overuse.

Environmental impact

Impact on the environment and those human health effects that occur via emissions and the consequent impact on the natural environment and on humans via the uptake of harmful substances.

Environmental Technology Action Plan (ETAP)

In 2004, based on the aims of the EU Lisbon Agenda, the European Commission launched ETAP with the view of stimulating the development and use of environmental technologies in Europe. ETAP is a life-cycle based European strategy for eco-innovation and environmental technologies. It is composed of actions around three main themes: Getting from Research to Markets; Improving Market Conditions; Acting globally. A key aspect is the setting of quantified and timed performance targets for products, that base upon the technical and economic feasibility of their implementation in relationship to the potential improvement for the environment.

Environmental Technology Verification (ETV)

Systems designed to offer credible verification of the performance and potential environmental impacts of new technologies. They are generally voluntary systems, based on qualified third parties and recognised procedures, ensuring the reliability of their assessment of technologies. They are flexible to meet the different requirements and market situations of the technologies addressed.

European Consumer Consultative Group (ECCG)

Created in 2003 (Commission Decision 2003/709/EC), this body replaces the Consumer Committee as the Commission's main forum for engaging with consumer organisations. It constitutes a forum for general discussions on problems relating to consumer interests; gives an opinion on Community matters affecting the protection of consumer interests; advises and guides the Commission when it outlines policies and activities having an effect on consumers; informs the Commission of developments in consumer policy in the Member States; acts as a source of information and soundboard on Community action for the other national organisations. The ECCG meets four times a year. It consists of one representative of national consumer organisations per country; one member from each European consumer organisation (BEUC and ANEC); two associate members (EUROCOOP and COFACE); and two EEA observers (Iceland and Norway).

EU Eco-Label

A label which identifies overall environmental preference of a product or service within a specific product/service category based on life cycle considerations. It is a voluntary scheme designed to encourage businesses to market products and services that are kinder to the environment and for European consumers - including public and private purchasers - to easily identify them. The European Eco-label is part of a broader strategy aimed at promoting sustainable consumption and production.

EU Sustainable Development Strategy (SDS)

The European Council of June 2006 adopted a renewed EU SDS for an enlarged EU, building on the Gothenburg strategy of 2001. It sets overall objectives, targets and concrete actions for seven key priority challenges for the coming period until 2010: Climate change and clean energy; Sustainable transport; Sustainable Consumption and Production; Public health threats; Better management of natural resources; Social inclusion, demography and migration; and Fighting global poverty. The EU SDS recognises the need to gradually change our current unsustainable consumption and production patterns and move towards a better integrated approach to policy-making. To improve synergies and reduce trade-offs a more integrated approach to policy making is proposed, based on better regulation and on the guiding principles for sustainable development (adopted by the European Council of June 2005). The external dimension of sustainable development (e.g. global resource use, international development concerns) is factored into EU internal policymaking and there is a commitment to integrate sustainable development considerations in all EU's external policies. It also proposes mechanisms for improving the coordination with other levels of governments and calls upon business, NGOs and citizens to become more involved in working for sustainable development. Education, research and public finance are stressed as important instruments in facilitating the transition to a more sustainable production and consumption patterns.

Green Public Procurement (GPP)

A process whereby public authorities seek to procure goods, services and works with a reduced environmental impact throughout their life cycle when compared to goods, services and works with the same primary function that would otherwise be procured. Contracting authorities and entities take environmental issues into account when tendering for goods or services. The goal is to reduce the impact of the procurement on human health and the environment.

High Level Group on Competitiveness, Energy and the Environment

In February 2006, the Commission set-up a High-Level Group specifically to examine the relationship between competitiveness, energy and the environment. The Group offered advice to policy-makers and ensure an integrated approach to the development of legislation and regulation.

Integrated Pollution Prevention and Control (IPPC)

Directive 96/61/EC to prevent or, where that is not possible, reduce pollution from a range of industrial and other installations by means of integrating permitting based on the application of best available techniques (BAT).

Integrated Product Policy (IPP)

An approach that begins by asking how the overall environmental performance of products (both goods and services) can be improved most cost-effectively. It is founded on the consideration of the impacts of products throughout their life-cycle, from the natural resources they come from, through their use and management, recycling to the disposal of any remaining waste.

Life-cycle

Consecutive and interlinked stages of a product system, from raw material extraction, through production of materials, intermediates, and parts to products, through product use or service operation to recycling and/or final disposal.

Life-cycle assessment (LCA)

A process of compilation and evaluation of the inputs, outputs and the potential environmental impacts of a product system throughout its life cycle. LCA is internationally standardized in the ISO 14040 ff, since 1997. It is widely used in industry and a number of public bodies in support of strategic and concrete decisions in product development and design, and in policy development and implementation.

Mid-term review of Industrial Policy

In the **mid-term review of industrial policy**, the European Commission identifies that globalization and technological change are likely to intensify in the coming years. Furthermore industry needs to adapt to the challenges posed by climate change and to grasp the opportunities of new low- energy and resource saving processes and products. Based on the assessment of the current situation, and building on the achievements since 2005, the Commission envisages **strengthening some of the ongoing initiatives and launching some new initiatives** in response to recent challenges. The Sustainable Industrial Policy Action Plan is one of the new initiatives called for.

Product design

Under the Eco-design Directive for Energy-using Products (EuP), it is a set of processes that transform legal, technical, safety, functional, market or other requirements to be met by a EuP into its technical specification. In general, the design of a product largely determines its overall life cycle environmental performance. The product design hence offers the largest leverage for improved consumption and production.

Product performance requirements

Under the Energy-using Products (EuP) Directive, *Eco-design requirement* is any requirement in relation to an EuP, or the design of an EuP, intended to improve its environmental performance, or any requirement for the supply of information with regard to the environmental aspects of an EuP; *Generic eco-design requirement* is any eco-design

requirement based on the ecological profile as a whole of an EuP without set limit values for particular environmental aspects; *Specific eco-design requirement* is a quantified and measurable eco-design requirement relating to a particular environmental aspect of an EuP, such as energy consumption during use, calculated for a given unit of output performance. (i.e. the product's functional unit).

SMEs

Small and Medium Entreprises

Subsidiarity

The principle of subsidiarity is defined in Article 5 of the Treaty establishing the European Community. It is intended to ensure that decisions are taken as closely as possible to the citizen and that constant checks are made as to whether action at Community level is justified in the light of the possibilities available at national, regional or local level. Specifically, it is the principle whereby the Union does not take action (except in the areas which fall within its exclusive competence) unless it is more effective than action taken at national, regional or local level. It is closely bound up with the principles of proportionality and necessity, which require that any action by the Union should not go beyond what is necessary to achieve the objectives of the Treaty.

Sustainable Consumption and Production (SCP)

Addressing social and economic development within the carrying capacity of ecosystems and decoupling economic growth from environmental degradation. In practice, SCP is about changing the ways we design, produce, distribute, use and dispose of goods and services, minimising the overall environmental impact taking a life cycle perspective.

Thematic Strategy on the prevention and recycling of waste

This long-term strategy (December 2005) aims to help Europe become an environmentally and economically efficient recycling and recovery society that seeks to avoid waste and uses waste as a resource. It draws on the knowledge that the Thematic Strategy on resources generates.

Thematic Strategy on the sustainable use of natural resources

The objective of this EU Strategy (December 2005) is to reduce the overall environmental impacts associated with resource use in a growing economy.