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**ENVIRONMENTAL ACCOUNTING APPLICATIONS FOR
SUSTAINABLE CONSUMPTION AND PRODUCTION POLICIES**

Paper prepared by Department for Environment, Food and Rural Affairs,
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*Background document**

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**Environmental accounting applications for
Sustainable Consumption and Production policies**

Rocky Harris, Department for Environment, Food and Rural Affairs, UK

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Paper for discussion at the London Group meeting, Canberra, April 2009

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1. Introduction

This paper sets out some of the main strands of Sustainable Consumption and Production (SCP) policy, and shows how information from environmental-economic accounts is useful in identifying, targeting, monitoring and evaluating policy options. It is intended as a background paper to the development of Volume III on the applications of the SEEA.

The paper largely reflects the author's personal experience: it does not necessarily represent the views of the UK Government and it does not purport to be based on any comprehensive survey of SCP policies across developed and developing nations. There is some evidence that, as with the climate change policy landscape, SCP policies are rather varied, often very broadly based, and possibly lacking in structure. The UNEP report on guidelines for SCP policies¹, for example, concludes that "there is neither a standard strategic model for SCP nor are there definitive policies used generally or in specific sectors like water and energy". Similarly the UNEP report on SCP indicators for developing countries² shows that a diverse set of impacts are monitored under the SCP umbrella by different countries.

Nevertheless it is clear that there is a shared understanding of what the SCP approach is (the adoption of the "life-cycle perspective" in environmental policies), a consistent set of target audiences (consumers and producers), and a number of common policy workstreams (resource efficiency, product transformation, consumer behaviour change etc). To be effective, these workstreams need to have reliable evidence available on which to make decisions about the use of a range of policy instruments or levers. These levers can be categorised into several areas including economic instruments like taxes and subsidies, information and communication campaigns and regulatory interventions to support for example sustainable technologies and sustainable procurement.

The analysis which follows draws on this experience to show how environmental accounts are relevant to a range of SCP policies. In doing so it focuses solely on the link between economic activities and environmental impacts. In particular, the need to recognise social impacts within the environmental policy framework is hereby acknowledged but not further discussed.

¹ UNEP: <http://www.unep.fr/shared/publications/pdf/DTIx1028xPA-Planning4change.pdf>

² UNEP: <http://www.unep.fr/shared/publications/pdf/DTIx1085xPA-SCPindicatorsEN.pdf>

2. A framework of Sustainable Consumption and Production policies

The background to SCP started with the action plan from the Rio Earth Summit in 1992, Agenda 21, which included a chapter on changing consumption patterns, calling on developed countries to take the lead. In 2002 the Johannesburg Plan of Implementation (JPOI) from the World Summit on Sustainable Development (WSSD) singled out the importance of changing unsustainable consumption and production patterns alongside other issues like poverty eradication, protecting and managing natural resources, globalisation and health. Building on from this, according to the UNEP reports, a large number of countries have embarked upon the development of SCP strategies and an even larger number have introduced some form of SCP policy. At a regional level the EU has also launched an SCP Action Plan³.

Without reviewing them, it seems likely that these strategies and policy activities will have four common themes, namely:

- **Sustainable production**, particularly focusing on increasing resource efficiency
- **Sustainable consumption**, changing consumer behaviours
- Linking production and consumption through support for **sustainable products and materials**
- **Government showing leadership** in its operations and procurement activities

The following sections review each of these themes in turn, identify a number of associated specific policies, and explore how environmental accounts, linked where necessary with other information systems, can provide a reliable evidence base for the development, implementation and monitoring of policies. The final section draws some more general conclusions about the strengths and weaknesses of the evidence base, and areas for further development.

3. Sustainable production: improving the resource efficiency of businesses

3.1 Policy activities

Despite significant improvements over the last two decades, there is an ongoing need to promote sustainable production⁴. This includes providing the incentives to encourage technological innovation in

³ EU. http://ec.europa.eu/environment/eussd/escp_en.htm. (Better products, leaner production, smarter consumption)

⁴ In the UK a recent report showed large potential savings from resource efficiency, see <http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=0&ProjectID=14609#Description>

the design of products and production processes, as well as improving the resource efficiency of production and reducing environmental pressures from production processes, not only in manufacturing but also in the increasing service sectors. The policy landscape is wide and varied, but activities will include:

- Introducing regulatory and fiscal measures to reduce pollution and reduce consumption of natural resources
- Encouraging sector sustainable development strategies and commitments
- Providing advice to businesses about opportunities for resource efficiency, energy audits etc
- Developing markets for recycled materials
- Encouraging the use of environmental management systems, sponsoring and encouraging the take-up of measurement tools, and encouraging corporate responsibility through reporting
- Industrial symbiosis: improving cross-industry resource efficiency by identifying opportunities for exchanging materials, energy and water and saving natural resources, logistics and expertise
- Providing the right incentives for eco-innovation and the development of the environmental goods and services (EGS) sector

3.2 Key data sources

The first three of these policy activities focus on the relationship between different economic actors and their impact upon the environment. Environmental satellite accounts which link economic data about individual industrial sectors with environmental data in a consistent way, such as atmospheric emissions and energy use, water use and wastewater and solid waste accounts, provide a coherent framework in which to analyse alternative fiscal and regulatory options, monitor progress and set targets for particular sectors of the economy. There is scope to extend them further to provide information about the impacts of different types of businesses (e.g. by size of company and number of employees). For the purposes of policy development, these analyses will need to be supplemented with evidence from business surveys about the effectiveness of Government support and advice, attitudes and barriers to change, the take-up of environmental management systems etc.

The monetary satellite accounts described in the SEEA potentially provide a different perspective on the impact of regulatory and fiscal measures. The key accounts will be the environmental protection expenditure account and the environmental taxes account. A further important data source will be the information on the size and scope of the environmental goods and services sector. Again, these accounts will be most effective if they are supplemented by other information, for example at the micro level about the relationship between environmental protection expenditure and changes in environmental impact.

3.3 *Analyses and applications of environmental accounts*

It follows that accounts which monitor the physical flows of natural resources and residual materials between the environment and different sectors of the economy are highly relevant to SCP policies.

Examples of applications in the UK include:

- The basis of an overall indicator of the outcomes of the SCP programme, which monitors the overall environmental performance of the main manufacturing and service sectors compared with the GVA of those sectors⁵
- Monitoring and setting targets for the environmental performance of individual sectors such as the food and drink industry⁶ and the agriculture sector (including the establishment of environmental accounts for agriculture⁷, on which Government targets for improving the environmental benefits and reducing the environmental damages from agriculture are based)
- Providing briefing on the environmental performance of other sectors bidding for support for the development of sector sustainability strategies⁸
- Comparing the improvements in resource efficiency claimed by Government support agencies with actual changes in efficiency in different sectors
- Identifying the extent to which any reductions in emissions can be attributed to actions taken within the UK, as opposed to those resulting from the relocation of manufacturing to other countries (structural decomposition analysis)⁹
- Estimating the incidence on different economic sectors of proposed new taxes such as the Climate Change levy
- Informing the strategic targeting of the Environment Agency's monitoring of the environmental impacts of different industrial sectors

⁵ See indicator 3.3.1, Defra Autumn Performance Report. <http://www.defra.gov.uk/corporate/deprep/2008/2008-depreport.pdf>

⁶ Food Industry Sustainability Strategy. <http://www.defra.gov.uk/farm/policy/sustain/fiss/pdf/fiss2006.pdf>

⁷ See <https://statistics.defra.gov.uk/esg/reports/envacc/default.asp>

⁸ See for example the UK Strategy for Sustainable Construction <http://www.berr.gov.uk/whatwedo/sectors/construction/sustainability/sustainablestrategy/page48779.html>

⁹ Understanding the changes in the UK's carbon footprint 1992-2004: a structural decomposition analysis. <http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=0&ProjectID=16288#Description>

- The annual reporting of Sustainable Development Indicators¹⁰ including one on decoupling in the construction industry, based on the Material Flows Accounts, and one on the overall environmental impact of the public sector

Potential applications under consideration include the targeting of support for innovation and sustainable skills through the development of accounts covering the environmental goods and services sector, and the benchmarking of business impacts through the combination of process data and sectoral input-output tables.

4. Sustainable consumption: behaviour change

4.1 Policy activities

In developed countries, production process innovations have generally reduced industrial resource use and emissions of pollutants, and saved businesses money. However, the environmental gains realised through these improvements have been offset by trends on the demand side such as population growth and increasing standards of living. Hence attention has turned towards policies which reduce the environmental impacts of consumption, not only by households but also the public sector, the voluntary sector and businesses as consumers. The policies tend to fall into two main groups – encouraging the purchasing of more eco-friendly products, and encouraging use and disposal behaviours which have lower environmental impacts. Both strands of policy have strong links with products policy (discussed in the next section), the key point, however, being that products policy will not deliver sustainability on its own and significant changes in the way consumers behave will also be required.

In the developing world, as the UNEP report notes, at least two billion people need to be able to increase their consumption in a sustainable manner in order to escape poverty. There are also millions of new consumers in developing countries who, like their counterparts in the developed regions, need to reorient their consumption patterns toward sustainability. So for the developing world SCP can mean both more and less (but more sustainable) consumption.

Although it is widely accepted that behaviours need to change, it is difficult arena for Governments, as they risk unpopularity if the actions they take are perceived as being counter to the interests of their citizens. Hence in many countries Government action in encouraging behaviour change has been limited to attempts to raise awareness, which may range from the introduction of publicity campaigns and incorporation of discussions within the school curricula, through to the imposition of mandatory metering systems. These activities of course need to be supported by measures on the supply side, be they policies to restrict the availability of certain less sustainable products ('choice editing'), reducing price differentials between sustainable and less sustainable products (covered in the following section),

¹⁰ Sustainable Development Indicators in your Pocket.

<http://www.defra.gov.uk/sustainable/government/progress/data-resources/sdiyp.htm>

or actions taken to provide recycling facilities and support the market for recycled goods (as noted in the previous section).

Within the UK, whilst the number of policy initiatives is still few in number, the Government has established a framework which sets out the principles and approaches which the Government intends to adopt¹¹. The framework identifies 12 key behaviours that the Government wishes to promote, and describes seven population 'segments' which need to be separately targeted if behaviour change campaigns are to be most effective. The framework builds on experience from a number of campaigns such as 'Act on CO2'¹² and 'Love Food, Hate Waste'¹³ and from experience with eco-labelling and monitoring green claims standards, and it incorporates new initiatives to engage the voluntary sector (such as membership organisations and community groups) in building collective action.

4.2 Key data sources

The emphasis on the use of information as the main driver of behaviour change implies the need for a robust and wide-ranging evidence base. Much of the information used in publicity campaigns comes from one-off studies of particular issues, with the environmental accounts and other national statistical sources such as household surveys used to provide a broader contextual background. Key sources for the background position include:

- Physical flow accounts, particularly if linked with household spending through the COICOP classification, can help show the proportion of environmental impacts that result from different types of household activities
- Public attitudes surveys¹⁴, which identify changes in behaviour which can then be linked with information on impact of those behaviours
- Other household survey information for example on travel patterns and food consumption

¹¹ A Framework for Pro-environmental Behaviours
<http://www.defra.gov.uk/evidence/social/behaviour/pdf/behaviours-jan08-report.pdf>

¹² Act on CO2. <http://campaigns.direct.gov.uk/actonco2/home.html>

¹³ Love Food Hate Waste. <http://www.lovefoodhatewaste.com/>

¹⁴ For the UK survey, see Survey of Public Attitudes and Behaviours toward the Environment: 2007
<http://www.defra.gov.uk/environment/statistics/pubatt/index.htm>

4.3 *Analyses and applications of environmental accounts*

The physical flow accounts, linked with input-output models, are the main source of estimates of the overall environmental (principally carbon) impact of household consumption¹⁵. In the UK this measure has been included within the set of Sustainable Development indicators. The accounts are also used to monitor the direct impacts of households, both in the home (energy use including electricity use, water use and waste arisings are typical examples) and from household travel (both from private motoring and through the impacts of public transport use): in the UK these are key outcome measures which are reported to the SCP Programme Board as well as to the general public in the Department's annual performance report¹⁶.

At a more detailed level, the **12 key behaviours**¹⁷ set out in the UK framework for pro-environmental behaviours were derived from a series of discussions with stakeholder groups, combined with an analysis of the overall environmental impact of the behaviour, its current take-up and the likelihood and feasibility of further change. The analysis of the impact of a number of behaviours, in particular water use¹⁸, travel, and food consumption, were based in part upon the physical flow accounts which enabled, for example, the embedded emissions in water use to be calculated.

The environmental impact of **food consumption** in particular has been highlighted by a number of studies, including most notably the EU's EIPRO study¹⁹ (which is an application of environmental accounts in its own right). Within the UK the Government has adopted a target to reduce the global environmental impact of the UK's food chain: the current indicator covers greenhouse gas emissions from the whole food chain from fertiliser and machinery manufacture through to the disposal of food waste, and is based in part upon the physical flow accounts. The ability to disaggregate the indicator and monitor the changes in individual parts of the food chain is particularly important to policy development. The Government is also considering the extent to which information on virtual water would be relevant to policy development, while in the EEA²⁰ indicators relating to the food chain, using physical flow accounts amongst other sources, are seen as key components of any comprehensive system of SCP indicators.

¹⁵ Development of an Embedded Carbon Emissions Indicator – Producing a Time Series of Input-Output Tables and Embedded Carbon Dioxide Emissions for the UK by Using a MRIO Data Optimisation System.

http://randd.defra.gov.uk/Document.aspx?Document=EV02033_7331_FRP.pdf

¹⁶ See indicator 3.3.2, Defra Autumn Performance Report.

<http://www.defra.gov.uk/corporate/deprep/2008/2008-depreport.pdf>

¹⁷ See Annex A for a list of these behaviours

¹⁸ The embedded emissions in water use are set out in the Water Strategy for England, see Future Water

<http://www.defra.gov.uk/Environment/water/strategy/>

¹⁹ Environmental Impact of Products (EIPRO): Analysis of the lifecycle environmental impacts related to the final consumption of the EU. http://ec.europa.eu/environment/jpp/pdf/eipro_report.pdf

²⁰ ETC/RWM working paper 2008, unpublished

In addition to the established measures of overall outcomes, there is also a requirement to monitor how behaviours are changing and what the environmental impact of those changes is. An indicator based on data from household surveys combined with the impact data derived from physical flow accounts *inter alia* is under consideration as a means of evaluating the success of the policies.

5. Sustainable products and materials policy

5.1 Policy activities

Products policy is a vital link between sustainable production and sustainable consumption. The main objective is to minimise the environmental impacts of products and services across the life-time of the product, including the packaging of the product and including the distribution, use, disposal and recycling phases.

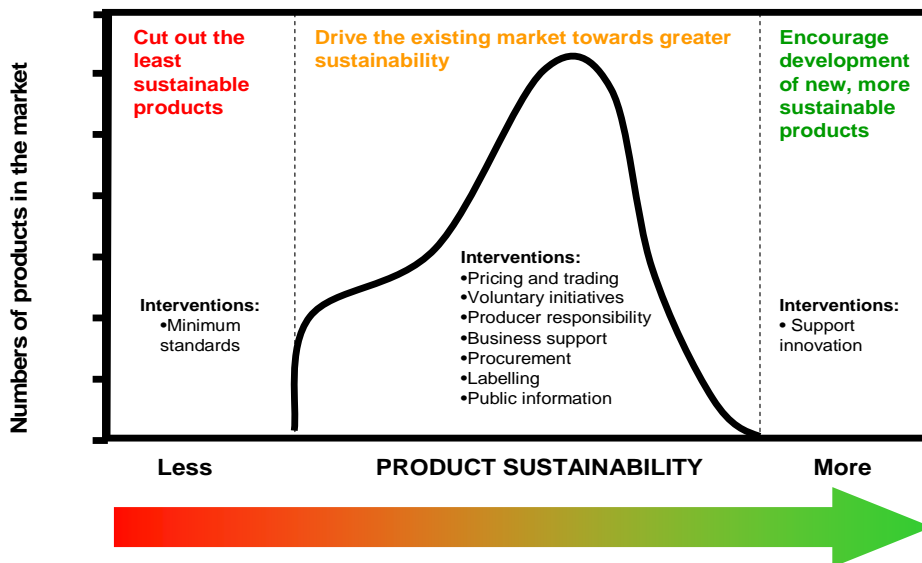
Although some of the improvements in products can be a result of responding to pressure from consumers, it is widely recognised that businesses and Governments also need to take action to ensure that the choices on offer to consumers are more sustainable, and where necessary Governments need to provide incentives to drive production improvements. These interventions can take different forms depending upon the range of products available in the market place, with the aim of:

- Encouraging the development of new products that are more sustainable than all of the current options
- Moving the market average towards the most sustainable of what is available and
- Cutting out the least sustainable products

The range of interventions available to Governments are set out in the chart below²¹.

²¹ Drawn from the Sustainable Products and Materials Progress Report
<http://www.defra.gov.uk/environment/business/pdf/prod-materials-report0708.pdf>

PRODUCT INTERVENTIONS – Overall approach



The aim of these product interventions is to encourage the whole market to become more sustainable over time – i.e. to drive innovation and move the product distribution curve towards the green end of the arrow.

Of this list, extended producer responsibility (whereby the producer becomes responsible for the impacts of the product over its lifetime, rather than just during production), the minimum standards determined by integrated product policy (IPP)²², and support for eco-labelling including recent developments in standards for measuring the carbon footprint of products²³, are perhaps the interventions most widely adopted.

Choice editing. Over the past twenty years manufacturers, retailers and regulators have been able to raise sustainability standards for certain products like fridges, paints and timber, helping to make sustainable options the norm rather than the exception. This process has become known as 'choice editing'. Editing out high-impact products and services, and replacing them with low-impact ones that consumers see as equally good or better is a process that can come about in a number of ways. The UK

²² In the UK IPP is supported by the Market Transformation Programme <http://www.mtprog.com/>

²³ The British standard for the carbon footprinting of products, known as PAS 2050, was published in 2008, see <http://www.bsi-global.com/en/Standards-and-Publications/How-we-can-help-you/Professional-Standards-Service/PAS-2050/>. See also the PAS 2050 methods review which reviewed the Input-output approach. <http://www.defra.gov.uk/environment/business/scp/research/themes/theme1/scale0708.htm>

Government, through its SCP programme, is trialling a new approach by developing **roadmaps**²⁴ in conjunction with key businesses with the aim of achieving a rapid market shift towards low-impact products by set deadlines. This can be achieved through:

- understanding the issues and range of possible solutions
- clear deadlines for achieving the desired level of transformation
- labelling products as a basis for incentives and standard-setting
- robust incentives tied to product sustainability
- supportive public procurement specifications
- raising the bar through progressive regulation.

A separate but related policy strand concerns **materials**. In the UK this has mainly been driven by waste policy, with the Waste Strategy for England²⁵ identifying seven materials which are priorities from that point of view. Although there are a number of other materials which are important from a socio-economic point of view²⁶, palm oil is the only material that has so far been identified as a separate priority from an SCP perspective.

5.2 Key data sources

Much of the information used for product policy relates not surprisingly to individual products. Occasionally the interest in a particular product is at a sufficiently broad level (such as cars) for National Accounts sources to be used, but often market sources and trade and production statistics are the only statistical sources to contain sufficient detail. These sources need to be supplemented by Life Cycle Analyses and specific research studies in order to provide the link between the economy and the environment. Once again the physical flows accounts (linked with supply-use tables) are more relevant as background information and overall monitoring, mainly because they are comprehensive both in coverage of products and in terms of covering the full supply chain.

²⁴ The UK pilot product roadmaps cover Milk; Fish and shellfish; Clothing; Plasterboard; Windows; WCs; Televisions; Commercial electrical motors; Domestic lighting; and Cars.

²⁵ Waste Strategy for England 2007
<http://www.defra.gov.uk/ENVIRONMENT/waste/strategy/strategy07/pdf/waste07-strategy.pdf>. The materials are textiles; plastics; paper/card; glass; wood; aluminium; food and garden waste.

²⁶ See A Strategy for Materials: Materials Innovation and Growth Team
<http://www.berr.gov.uk/files/file25250.pdf> for the UK policy on this issue.

5.3 Analyses and applications of environmental accounts

Evidence from a range of studies using physical flow accounts at least in part, including the EU's EIPRO study²⁷, shows that food and drink, transport and housing products together account for 70-80% of total environmental impacts. The accounts can be used to narrow the focus down slightly, but as noted above they do not generally provide sufficient detail for most applications which are often very specific (e.g. the impact of particular types of televisions).

Hence the environmental accounts are most relevant as sources of information about the overall context of products policy. In the UK they are used to relate the coverage of the domestic appliances covered by integrated products policy with changes in overall electricity consumption within the home – the former being the main indicator which is reported to the SCP Programme Board. The accounts have also been used to provide information for the individual product roadmaps where the level of detail is sufficient (as it is to some extent for cars, fish etc).

The strength of the comprehensive coverage of the accounts has also proved to be useful for the development of the carbon footprinting standards (PAS2050, discussed above), as it provided evidence of the importance of greenhouse gas emissions embedded within capital formation for particular product groups, and also demonstrated how the emissions relating to particular services are spread across a wide supply chain. A related application showed how much changes in the technical specification of products might be expected to contribute towards meeting climate change mitigation targets²⁸.

The Material Flows Accounts have not been widely used for materials policy in the UK, the exception being, as noted above, the inclusion of an indicator, within the Sustainable Development indicators set, of decoupling between construction output and the extraction of construction materials.

6. Government leadership

6.1 Policy activities

Policy activities within this theme relate both to the Government being seen to manage its own operations in a sustainable manner and meeting its own sustainability targets, and to the Government using its purchasing power to leverage change amongst its suppliers and ensuring the sustainability of its supply chains.

²⁷ EIPRO http://ec.europa.eu/environment/ipp/pdf/eipro_report.pdf

²⁸ Contribution of products to meeting climate change targets.
<http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=0&ProjectID=15404#Description>

It is a widely-held perception that the public sector in many countries lags behind best practice in the private sector in terms of reducing the environmental impact of its own operations. The reason often given refers to a relative lack of pressure to minimise resource use costs. Examples quoted include high office energy use per employee, and high water use per employee. Yet in order to obtain a mandate for encouraging improved resource efficiency in the wider economy, the public sector will need to demonstrate that it is meeting best practice standards itself if it wishes other sectors to adopt them.

As far as public procurement is concerned, the policy activity focuses more on using the specification of requirements set out in the Invitations to Tender as a means of securing improvements in the supply of goods and services more generally.

6.2 Key data sources

The performance of the public sector in reducing its environmental impacts can either be monitored from the top down, by reference to the data on the sector drawn from the physical flow accounts, or from the bottom up by reference to the data sets which public bodies are increasingly required to maintain and publish. In practice the latter are difficult to compile because of the sheer number of organisations involved and the difficulty of accounting for machinery of government changes. Once established, however, they do have the advantage of being externally verifiable and of identifying precisely the responsibility for the impacts.

A similar position exists in estimating the impact of procurement spending. The National Accounts can provide an overview of the areas of spending which, when linked with the physical flow accounts, enables estimates of the upstream impacts resulting from the supply of those goods and services to be made. However, an analysis of individual contracts and/or surveys of procurement specialists can provide more detailed data about the impact of introducing Green Public Procurement (GPP)²⁹.

6.3 Analyses and applications of environmental accounts

As noted above, the overall environmental performance of the public sector can be assessed by reference to the sectoral breakdown contained within the physical flow accounts. In the UK this analysis is published as part of the Sustainable Development Strategy indicators. The monitoring of individual parts of the public sector is however carried out at a disaggregated level by independent bodies³⁰, and this data forms the basis of the indicator reported to the SCP Programme Board.

²⁹ See, for example, Green Public Procurement: a study of the collection of statistical information on GPP http://ec.europa.eu/environment/gpp/study_en.htm

³⁰ See for example Sustainable Development in Government Report 2007 <http://www.sd-commission.org.uk/sdig2007/> for the report on Central Government performance.

As far as procurement policy is concerned, the physical flow accounts were also directly used in the development of the UK's Sustainable Procurement Action Plan³¹, which identified the priority areas to be targeted by the Action Plan. The priorities were based in part upon an analysis of Government spending on goods and services in terms of total value and share of the market, which were mapped against the emissions resulting from direct energy use by the supplying sector, as reported in the atmospheric emissions accounts.

In an attempt to limit the climate change impact of its activities, last year the Scottish Government committed to developing and implementing a framework and set of tools to assess the carbon impact of individual Scottish Government policies, programmes and projects, and the carbon impact of total Government spend. A carbon dioxide emissions account for Scotland is seen as an essential element of the project.

7. Conclusions and observations

7.1 *Strategies and programme management*

As a general rule, data from the environmental accounts has been used to determine the broad direction of SCP policy activities, because the information is both comprehensive in coverage and systematic in its organisation. The accounts have not been so useful for targeting and monitoring the effect of different SCP workstreams, partly because they are not sufficiently up-to-date, and partly because they often lack the detail required for policy applications. The exception is the resource efficiency workstream, where the detail of the impact of different industrial sectors available from the accounts can inform a wide-range of different policy initiatives.

7.2 *Aggregate indicators*

The environmental accounts are often seen as an essential element in the compilation of aggregate indicators such as ecological footprints (when they are based on environmental input-output tables), Environmentally-adjusted Material Consumption (EMC) and environmentally-adjusted National Accounts aggregates. This is not the place to enter into a discussion of their relative merits. To date none of the options has been adopted by the UK Government as a means of assessing progress towards SCP, although the debate is still on-going. It should be noted that the ecological footprint is the only measure which formally takes account of environmental limits, although other approaches warrant further study³².

³¹ Procuring the Future - Sustainable Procurement National Action Plan: Recommendations from the Sustainable Procurement Task Force <http://www.sustainable-development.gov.uk/government/task-forces/procurement/index.htm>

³² See for example 'The Application of the Environmental Limits Concept to Sustainable Consumption and Production'. <http://www.defra.gov.uk/environment/business/scp/research/themes/theme2/products0708.htm>

7.3 Data weaknesses

From this very brief overview of SCP policy information requirements, a few general observations can be made. The first is that the environmental accounts often (there are some exceptions) lack sufficient detail at product level to be useful for products policy. The alternative at present is to rely on one-off studies using Life Cycle Analysis, but at some point the integration of the two approaches, as with EXIOPOL³³ and a number of other applications including ecological footprints, may need to be formalised within the accounting structure.

The second observation is that the accounts need to be capable of delivering a more disaggregated analysis of the impact of the direct use of resources in the home. In the UK, for example, two thirds of public water supply is used by households, who also account for a third of electricity use and half of road transport fuel use. Without other sources of information, the accounts tell us very little about the drivers of this resource consumption.

A third area which may benefit from closer attention is the development of water footprinting or analyses of virtual water. To do this in a meaningful way will require the concepts of green water and blue water etc to be incorporated within the accounting structure.

Finally, it is clear that we will need to address the issue of timeliness, by developing 'now-casting' techniques for example, if the accounts are going to provide anything more than a slightly out-of-date report of past events.

7.4 Implications for SEEA Volume III

SCP is a relatively new policy area with an evidence base which is still under development: many of the data sources needed to develop and monitor the policy are yet to be established. This means that policy-makers are open to new approaches and are receptive to using the accounts to explore policy options. The fact that the accounts focus on the relationship between the economy and the environment means that they are ideally suited to many SCP applications. It should therefore be possible to use a section of Volume III of the SEEA to showcase the ways that environmental accounts can support SCP policy.

There are however challenges in this approach. Although the accounts can be used for all the four themes set out in this paper, the bulk of the applications relate to the resource efficiency theme and more work is needed to identify and 'prove' applications relating both to products policy and in particular to the sustainable consumption theme. To do this, the accounts need to be linked to other data sources, and further examples of how to disaggregate household or consumer impacts in a

³³ See <http://www.feem-project.net/exiopol/>

systematic way need to be compiled. The contributions of other London Group practitioners to meeting this challenge would be welcomed.

Rocky Harris

Department for Environment, Food and Rural Affairs, United Kingdom

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Annex A

List of priority pro-environmental behaviours established by the UK framework

BEHAVIOUR
Install insulation products
Better energy management and usage (including water metering and audit)
Install domestic micro-generation through renewables
Increase recycling and segregation
Waste less (food)
More responsible water usage (including water metering)
Buy/use more energy efficient (low carbon) vehicles
Use car less – seek alternatives for short trips (<3 miles)
Reduce non-essential flying (short haul)
Buy energy efficient products
Eat food locally in season
Adopt diet with lower greenhouse gas/environmental impacts