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**COMMISSION STAFF WORKING DOCUMENT**

**Annexes to the**

**COMMUNICATION FROM THE COMMISSION TO THE COUNCIL, THE  
EUROPEAN PARLIAMENT, THE EUROPEAN ECONOMIC AND SOCIAL  
COMMITTEE AND THE COMMITTEE OF THE REGIONS**

**Thematic Strategy on the sustainable use of natural resources**

**{COM(2005 670 final)}**

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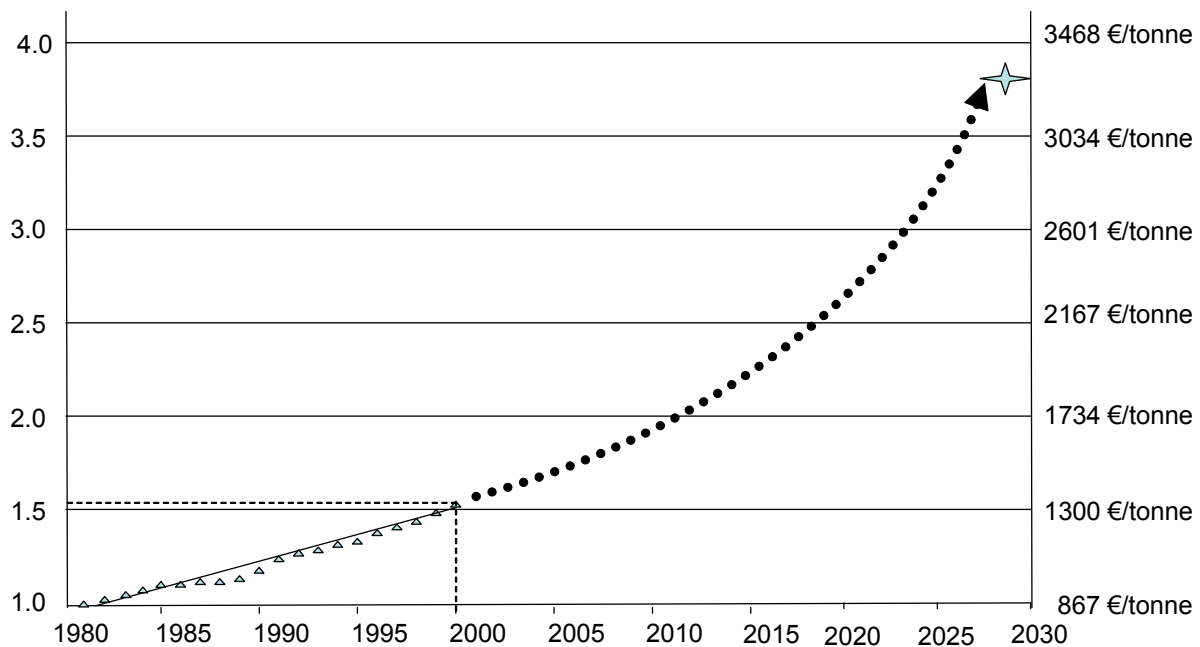
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## ANNEX 1 Resource productivity trends

The strategy aims at reducing the negative environmental impacts of resource use by decoupling economic growth and environment impacts. It is useful to try to illustrate the decoupling process in terms of resource productivity. As stated in section 3, this is however only one part of the overall decoupling objective (see Annex 3).

In the period 1980-2000 the resource productivity (€/kg) of the EU-15 economy increased by 52%, which is 2.2% per year (see the figure below)<sup>1</sup>. On the basis of this trend, and assuming that proper implementation of this strategy will lead to at least a modest increase in resource productivity, it is reasonable to expect a rate of 3% resource productivity improvements per year for the period 2000-2030. This would represent a slight acceleration compared to the previous 20 years. Taking the year 1980 as a baseline, it would result in an increase of resource productivity from EUR 867 per tonne to EUR 3,208 per tonne or Factor 3.7 in 50 years' time.



If an annual improvement in resource productivity of 3% is achieved, while the economy grows at 3% per year as well,<sup>2</sup> resource use will be more or less stable. It should be noted however, that, everything else being equal, stabilising material use will not be enough to reduce economy-wide environmental impacts and achieve decoupling. A reduction of environmental impacts therefore needs to complement productivity gains.

<sup>1</sup> Eurostat, "Material use in the European Union 1980-2000: indicators and analysis", Working papers and studies series, Office for Official Publications of the European Communities, 2002.

<sup>2</sup> An annual economic growth of 3% is the long term objective of the EU's Lisbon strategy.

The above increase in resource productivity at EU level would compare well with the target set by the government of Japan (an increase in resource productivity between 1990 and 2010 of almost 100%).<sup>3</sup>

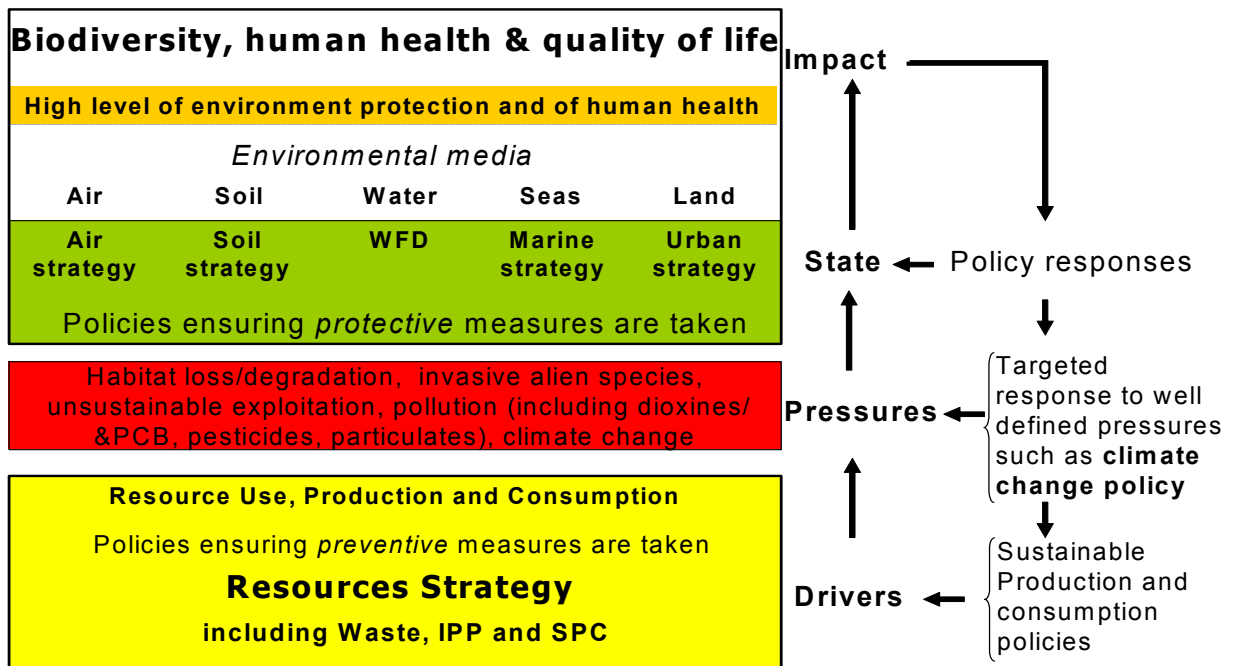
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<sup>3</sup> “Fundamental Plan for Establishing a Sound Material-Cycle Society”, p. 17 (<http://www.env.go.jp/en/pol/wemj/SMCSplan.pdf>).

**ANNEX 2**  
**The strategy in context**

Looking from the perspective of the drivers, pressures, state, impacts, response (DPSIR) model,<sup>4</sup> the strategy deals with the drivers of environmental pressures, i.e. its point of departure is the beginning of the life-cycle of resources (i.e. mining, harvesting, etc.). From there it tracks resources through the economy, identifies the most serious environmental threats related to their use and develops solutions.

**Environmental policy coherence**



As already indicated by the Commission in the ‘Towards Communication’<sup>5</sup>, the present strategy emphasises the importance of integration of environmental concerns into other policies that affect environmental impacts of natural resources use but does not attempt to implement specific initiatives in areas that are already covered by well-established policies.

The other Thematic Strategies called for in the Sixth EAP will implement the approach followed in the resources strategy. Both the pesticide and the waste prevention and recycling strategies, for example, incorporate the life-cycle thinking. In policy on waste, applying the life-cycle thinking has prompted a focus on waste prevention, while at the same time examining how existing waste can be used as a secondary resource. The application of the life-cycle thinking to pesticides has shown that insufficient attention is paid to the use phase, where negative impacts occur to the environment and health.

<sup>4</sup> [http://org.eea.eu.int/documents/brochure/brochure\\_reason.html](http://org.eea.eu.int/documents/brochure/brochure_reason.html).

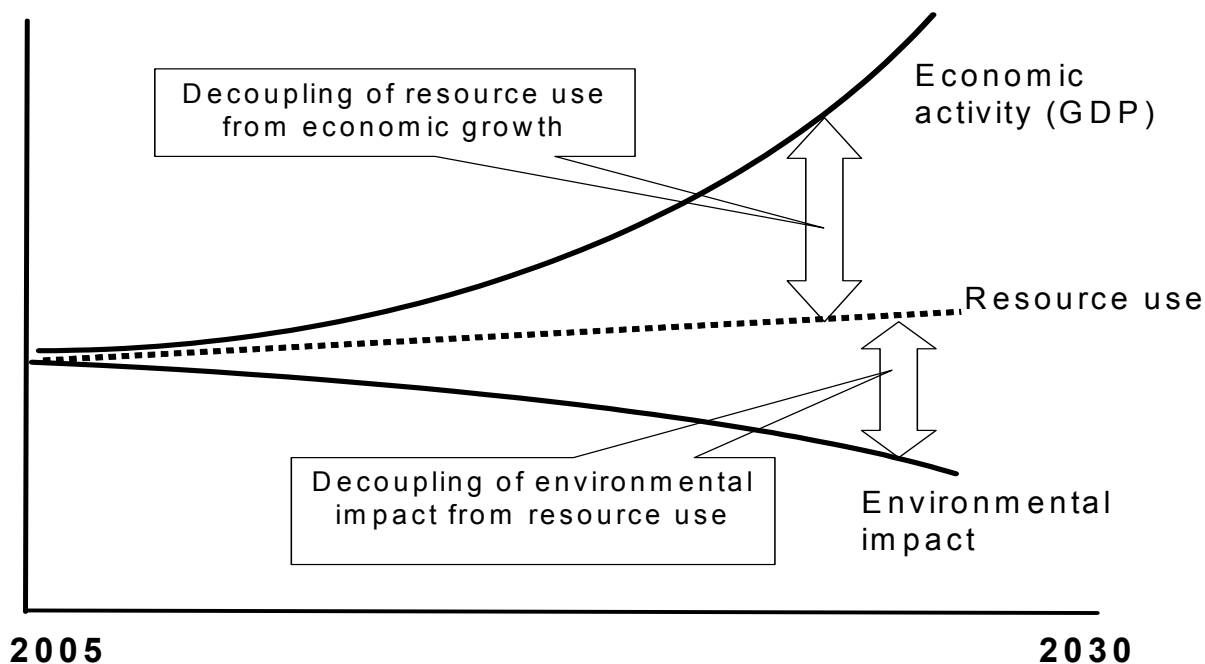
<sup>5</sup> COM(2003) 572.

The urban strategy will set out how the Commission can support more systematic application of better quality transport plans or management plans, while the marine strategy should lead to integrated management of the seas and ensure that relevant policies in the field of the environment, fisheries, transport and agriculture are mutually supportive.

The strategy's objective of reducing negative environmental impacts generated by the use of natural resources in a growing economy implies that biodiversity and human health are protected, while quality of life improves. It is to say that this strategy will contribute to the achievement of EU goals in these fields, in particular the Biodiversity Strategy and the Environment and Health Strategy.

### ANNEX 3 Indicators

In order to measure progress towards meeting the decoupling objective, one or more indicators are required to measure the change in environmental impacts over time. Considering that the driver of resource use is economic growth, while at the same time economic growth is a major EU policy objective, the only way to achieve a reduction of environmental impacts is to de-link or decouple resource use and associated environmental impacts from its driver, i.e. economic growth, as shown in Figure 1.



Two decoupling phenomena are shown in Figure 1:

- decoupling of resource use from growing economic activity, which implies a reduction of resource use *per unit of production* (e.g. GDP), and
- decoupling of environmental impacts from resource use, which implies a reduction of environmental impacts *per unit of resource use*.

The first mechanism is an on-going development in the EU since economies tend to shift from manufacturing to services.

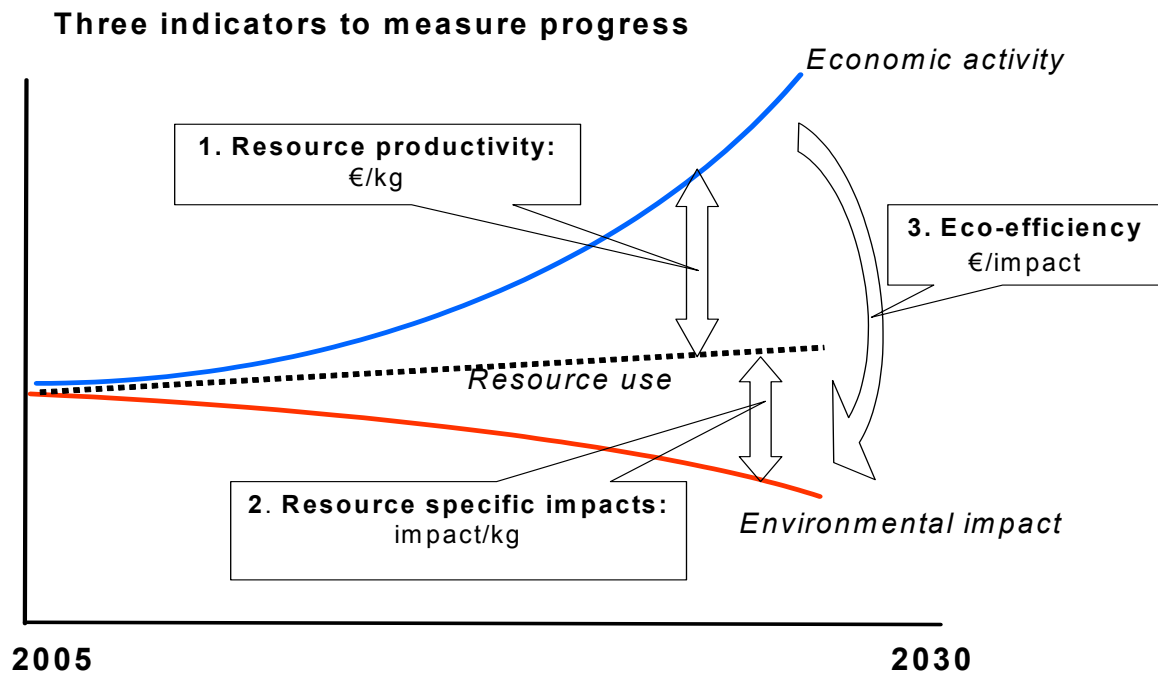
The second mechanism relates to the use of more eco-efficient practices and/or environmental technologies. In other words, resources are still used, but the environmental impacts of their use are reduced. End of pipe technologies can contribute but in some cases this leads to an increase of resource use (e.g. CO<sub>2</sub> sequestration requires more primary energy). Both mechanisms contribute to the aim of the strategy, i.e. reduction of environmental impacts in a growing economy.

Three indicators to measure decoupling (see Figure 2) can be derived from the conceptual scheme shown in Figure 1:

- (1) resource productivity,

- (2) resource specific impacts, and
- (3) eco-efficiency.

*Resource productivity*: this indicator measures the value added per unit of resource input (€/kg). An example of resource productivity calculation on a national level is dividing the total economic activity of a country (expressed in GDP) by its material use. The reverse of this quotient, i.e. material use divided by economic activity, is also used and is called the material intensity of the economy. If the material intensity of the economy decreases, dematerialisation is said to occur.



*Resource-specific impacts*: this indicator measures the environmental impacts per unit of resource use. These impacts should include the entire life cycle, i.e. including extraction or harvesting upstream of the economic activity, impacts during the use phase, and subsequent disposal to air, water and soil downstream of the economic activity.

*Eco-efficiency*: this third indicator measures the added value per unit of environmental impact and can be derived by dividing resource productivity by resource efficiency.

$$\text{Eco-efficiency} = \frac{\text{Resource Productivity (euro/kg)}}{\text{Resource Specific Impact (impact/kg)}} \quad (\text{euro/impact})$$

All three indicators measure progress on decoupling:

- resource productivity measures decoupling of resource use from economic growth,
- resource-specific impact measures decoupling of environmental impacts from resource use,
- eco-efficiency measures decoupling of environmental impacts from economic growth.



The challenge is to come up with reliable data for measuring resource-specific impacts. A large amount of work has already been done on this indicator.

At present, work on measuring resource productivity is the most advanced, largely through work on material flow accounting. Work on specific impacts on the environment and human health due to the use of resources will require much more effort, but can already build on information in life-cycle inventories and externalities<sup>6</sup>. It will involve making careful progress with stakeholder involvement. Initially this is likely to mean developing a “basket” of aggregated indicators – using existing ones where possible. This work should be completed by 2008. The ultimate aspiration is to have one or highly aggregated indicators that could be compared to the single economic indicator, GDP. This would, of necessity, build on the aggregated “basket” and may need long-term research for continuous improvement.

An alternative route that should be explored is how environment and economic satellite accounts could be developed further to generate such indicators. Work in this area is going on in many countries as a follow-up to the Rio Summit in 1992. The advantage of this type of system is that resource use could be linked to economic activities, production and consumption, as expressed in the national accounts from which GDP is constructed.

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<sup>6</sup> More information on projects on externalities funded by the Research Directorate-General of the Commission can be obtained on <http://www.externe.info/>.

## ANNEX 4

### Key elements of sectoral initiatives

The Commission intends to develop sectoral initiatives for specific economic sectors in the context, *inter alia*, of the EU Strategy for Growth and Jobs<sup>7</sup> as well as the initiatives announced by the Commission in its recent Communication on “Implementing the Community Lisbon Programme: A policy framework to strengthen EU manufacturing - towards amore integrated approach for industrial policy”<sup>8</sup>. These initiatives should address the impacts of resource use while ensuring the sectors’ competitiveness with a view to reducing the negative environmental impacts associated with resource use in a life-cycle perspective by the year 2030.

These initiatives should contain the following key elements:

- an overview of the sector’s (most significant) environmental impacts on the basis of a set of key indicators to be developed with the assistance of the European Environment Agency and taking into account the valuable information already produced in the context of the exchange of information on best available techniques under the IPPC Directive,
- the identification of opportunities for technical changes in production processes, including information on existing initiatives and good practice in individual companies, as well as technical/economic information on emerging technologies in the sector,
- an assessment of the extent to which good practice experience in *individual* companies can be translated into a critical mass of business action at the *sectoral* level and whether and how this can be used as a basis for sectoral initiatives; in such initiatives, specific emphasis should be given to eco-innovation and sustainable use of resources,
- concrete actions to be undertaken at sector level for reducing the environmental impacts of resource use while ensuring the sector’s competitiveness; attention should also be paid to creating long-term visions and a series of long-term priority targets to reduce the identified specific environmental impacts,
- user-friendly and efficient monitoring and reporting mechanisms.

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<sup>7</sup> COM(2005) 141.

<sup>8</sup> COM(2005) 474.

## ANNEX 5

### National measures and programmes

The purpose of the national measures and programmes to be developed by Member States, in compliance with all relevant EU legislation, is to develop a vision of how to ensure security of supply of natural resources while reducing associated environmental impacts and to do so in a growing economy. Measures to reach this purpose could include the following:

#### *Gathering data on stocks, reserves and land*

1. Map existing natural resources available within the Member State's territory, both biotic and abiotic, as well as land (which is needed to produce minerals, timber, food, etc).

#### *Developing forecasting on the use of natural resources*

2. Make a projection of future natural resource demand expressed in the relevant measurement unit (e.g. kilograms and hectares) and assess whether these resources are available (including imports and exports, and the land used to produce these resources inside the Member State and abroad).

#### *Economic instruments and related measures*

3. Consider the introduction of incentives, including capital investment rebates or favourable loan rates, for the development of products involving a reduction in environmental impacts over their life-cycle.
4. Consider the use of positive tax discrimination policies to change the behaviour of both producers and consumers. The level of such incentives should be based on their objectively assessed potential for environmental gains.
5. Measures for increasing "green procurement" in compliance with any relevant EU legislation and guidance<sup>9</sup>.
6. In keeping with IPP, consider increasing consumer awareness, in particular by introducing sustainable labelling schemes. These could be used to inform consumers, public authorities (for instance, in the context of green procurement) and businesses about the environmental impacts of resources to be bought.

#### *Measures for considering the global dimension of resource use*

7. Develop measures on imports of natural resources, including the identification of exporting countries and measures for reducing global environmental impacts in a life-cycle perspective and reducing the need for trade-offs.

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<sup>9</sup> COM(2001) 274, 4.7.2001.

*Monitoring the decoupling of environmental impacts from economic growth*

8. Regularly monitor the decoupling of environmental impacts from economic growth at Member State level by using the relevant indicators to be developed on a common basis across the EU.

*Timetable*

9. Set a concrete and realistic timetable for the implementation of the actions and measures drafted at the national level with a view to achieving the objective of decoupling environmental impacts from economic growth by the year 2030.

## **ANNEX 6**

### **The EU and global dimension – an International Panel on the sustainable use of natural resources**

#### **1. OBJECTIVE OF THE INTERNATIONAL PANEL**

The objective of the Panel will be to provide independent scientific advice to the EU, interested governments and international organisations on the key environmental impacts of the extraction and use of natural resources in a life-cycle perspective and on approaches to reducing these impacts, aimed at decoupling environmental impacts from economic growth. The Panel will also provide advice and support to capacity building in developing countries in relation to resource extraction and use in a life-cycle perspective.

In order to decouple environmental degradation from economic growth, changing unsustainable patterns of consumption and production is crucial. The Panel can help to encourage a shift towards sustainable consumption and production (SCP) and to contribute to the Marrakech process on the 10-year framework on SCP as well as to the relevant sessions of the UN Commission on Sustainable Development (CSD) and other international organisations. The Panel will work closely with the 3R Initiative, introduced by Japan, as starting point for pursuing globally a sound material-cycle society through the “3Rs” of reduce, reuse and recycle.

#### **2. TASKS**

The Panel will carry out the following tasks, in close co-operation with national centres of excellence and recognised international competence centres, as well as with the Data Centre:

- (1) Provide scientific assessment, guidance and policy advice to the EU, interested national governments and international organisations on natural resources in a global context. The Panel will work as an informal advisory body to the EU, governments and international organisations in matters related to natural resources and related impacts at local, regional and global level when they need independent advice on specific cases of resource use that raise controversy in international fora. It will do so by bringing in its scientific expertise and its ability to pull together relevant knowledge relative to the environmental impacts of resources in a life-cycle perspective.
- (2) Monitor and stimulate progress on decoupling on an international level. This includes the gathering of information on resource extraction and use at international level (baseline year to be established, e.g. the year 2005). Important issues are to identify the priority natural resources and key environmental impacts and the corresponding regions and to build consensus on a methodology that allows measuring and aggregating environmental impacts taking into account the international dimension. Particular attention should then be paid to the identified key environmental impacts associated with the materials flows of the priority resources across their full life-cycle, locally, regionally and globally.
- (3) Develop sustainability benchmarks for materials and products. This includes establishing minimum supply chain standards or guidelines for the extraction, harvesting and processing of natural resources in developing countries and

environmental life cycle impact reduction targets for priority resources and selected products. The Panel should start its work by reviewing existing benchmarks developed internationally by UN agencies, business associations, other international organisations and the scientific community, as well as ongoing related work under the Marrakech process for the 10-year framework on SCP, to avoid duplication of efforts. The benchmarks will not only include material quality standards but also production quality standards, taking account of social and environmental issues (including environmental impacts in the country of origin). The benchmarks will be publicly available and particularly useful to European companies for promoting the sustainability of their overseas operations. Benchmarks are also useful for setting up sustainability objectives for procurement, for companies in the supply chain as well as for developing efficient environmental management and corporate social responsibility schemes.

- (4) Build knowledge capacity on national resources in developing and transition countries. This task includes suggesting initiatives or co-operation projects with developing countries, for instance technical support capacity-building and institution-building, the acquisition of resource-related baseline information (geo-spatial and environmental data), and better access to training and best practices in EU and OECD countries for professionals and students from these countries. This implies using the same baseline year (e.g. the year 2005) as in the overall monitoring task against which to measure any developments in these countries.

### **3. STRUCTURE AND MEMBERSHIP**

The Commission, in cooperation with UNEP together with governments and international organisations that provide funding for this Panel in a trust fund, will specify the standard operating procedures and set up an inaugural Panel and provide a first work plan. Membership of the inaugural panel is for two years, but can be renewed.

The Panel would be composed of independent experts from Europe and elsewhere, selected on the basis of their personal technical and scientific qualifications. Experts from UNEP and other international organisations (e.g. UNCTAD and possibly UNECE, FAO, ILO, the International Energy Agency (IEA) and the OECD, relevant MEA secretariats,), as well as the EEA could also be invited to have a representative on the Panel, depending on the topics to be discussed.

Subject to the agreement of those providing funding to the trust fund, in particular the Commission, the Panel will decide on the work programme and supervise its implementation, appoint experts and revise and agree on final outputs (guidelines, policy advice, etc.) in line with the tasks described above. The role of the Panel will be to assess on a comprehensive, objective, open and transparent basis, the scientific, technical and socio-economic information relevant to understanding the scientific basis for decoupling economic growth from environmental impacts related to the extraction and use of natural resources. The Panel will not carry out research nor will it monitor decoupling-related data or other relevant parameters. It will base its assessment mainly on peer-reviewed and published scientific/technical literature and foster its dissemination for capacity-building in developing and transition countries.

The chair, to be provided by one of the organisations contributing to the trust fund, will chair the Panel meetings. The Panel and the chair will be supported by a secretariat, which in the initial phase will be limited to one person providing technical support (full-time) and one person as administrative support (part-time). UNEP could host the secretariat.

The secretariat will support the activities of the Panel, plan and manage all activities and review reports drafted by the working groups before passing them on to the panel for revision and agreement on final outputs. This includes, in particular during the initial phase of the Panel, the development of procedures for organisational issues like meetings and reports as well as financial issues like setting up the trust fund. The secretariat will function as a clearing house for all information related to decoupling at international level. Therefore, the secretariat will compile an inventory of existing information.

Two working groups are envisaged at an early stage, one on resources supply and a second on resource use (in line with the first consultation process on the Thematic Strategy on natural resources conducted by the Commission, in which the need for this Panel was originally highlighted). Issues such as knowledge gathering, identifying gaps and developing scenarios could cut across both groups. The working groups are requested to work in close co-operation with national centres of excellence and recognised international competence centres to reduce costs and avoid duplication. Synergies with the Data Centre would also be explored.

Working groups will be composed of scientists selected at international level (both developed and developing countries) on the basis of their expertise and according to a geographical distribution reflecting the problems at stake. Members will be appointed by the Panel in their personal capacity on an annual basis. The minimum size of each working group would be six experts. The working groups will be set up as permanent bodies supporting the Panel.

Working groups will address the tasks outlined above on which the Panel needs support. One or more task forces could be set up at a later stage. They would be established for a limited period and address specific issues and deliverables. They could have a multi-stakeholder membership, gathering representatives from business, NGOs and academia. Potential task forces could work on education and awareness raising issues, develop sector-specific initiatives or deliver concrete contributions to the Marrakech process.

In order to facilitate its work, the Panel will have full access to the information available in UN organisations, such as within UNEP on SCP, trade and environment issues and the Global Environmental Outlook (GEO) process and within UNCTAD on trade flows and related material accounting, and in the EU and national governments, for example through the Global Monitoring for Environment and Security (GMES) programme and the range of networks and experts of the EEA. In addition, the Panel will also benefit from international initiatives that aim to monitor natural resource location and conditions as part of the Global Earth Observation System of Systems (GEOSS).

#### **4. WORK SCHEDULE**

Each year the Panel will propose an Annual Work Programme and a rolling three-year work programme for confirmation or modification in light of the policy needs of the Commission, governments and international organisations that provide funding for the Panel via a trust fund. For the first year, the Panel will concentrate on reviewing progress on decoupling

economic growth from environmental impacts of resource use at international level and on the largest trade flows to test its capacity in an initially reduced field of activity.

The Panel should endeavour to work in the most cost-effective manner, making full use of modern electronic communication facilities. Meetings will be limited as far as possible, relying on e-mail and teleconferences where these are sufficient. It is planned that it will meet on average twice a year in plenary sessions. Members will be able to meet in sub-groups to discuss specific work items up to four times a year per expert.

After three years, the Commission will carry out an evaluation of the Panel's working practices and task assignments to ascertain whether any modifications are needed.