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Analysis of the ‘open list’ of environment-related headline indicators

C O N T E N T S

1.	The history of this report	5
2.	The analysis of the indicators	6
3.	Group 1: Indicators which are feasible in 2002.....	8
3.1.	Combating climate change	8
3.2.	Ensuring sustainable transport/mobility	9
3.3.	Addressing threats to public health.....	10
3.4.	Managing natural resources more responsibly	11
4.	Group 2: Indicators feasible in 2002, but incomplete	14
4.1.	No. 2: Transport intensity of GDP	14
4.2.	No. 3: Modal split of transport.....	15
4.3.	No. 14/15: Municipal waste collected, landfilled, incinerated.....	16
4.4.	No. 17: Recycling rate of selected materials (paper/cardboard and glass).....	16
4.5.	No. 22: Nitrate and Phosphorus concentrations in rivers	17
4.6.	No. 29: Protected areas for biodiversity	18
4.7.	No. 32: Nitrogen balance	19
5.	Group 3: Indicators for which the available data are inadequate, and which are unlikely to be feasible in the near future.....	20
5.1.	No. 6: Investment in transport infrastructure by mode (passengers and freight)	20
5.2.	No. 18: Recycling rate of selected materials (extended to other materials).....	20
5.3.	No. 20: Hazardous waste generated	21
5.4.	No. 23: Discharges of pollutants (nutrients, organics, chemicals) into water	21
5.5.	No. 24: Quality of drinking water.....	23
5.6.	No. 25: Water use by sectors	23
5.7.	No. 26: Resource Productivity	24
5.8.	No. 30: Pesticide consumption.....	25
5.9.	No. 33: Evolution of land use by main categories (proxy: evolution of built-up areas)	26
6.	Group 4: Indicators which are unclear and/or need major methodological or other development work	27
6.1.	No. 4: Exposure of the population to high levels of transport noise	27

6.2.	No. 5: Average journey length and time per person, by mode and purpose	27
6.3.	No. 7: Internalisation of the external costs in the transport sector.....	28
6.4.	No. 11/12: Exposure to and consumption of toxic chemicals.....	28
6.5.	No. 16: Waste prevention	29
6.6.	No. 19: Valorisation rate of selected materials	29
6.7.	No. 27: Intensity of material use (GNP/Total Material Requirement).....	29
6.8.	No. 28: Biodiversity index	30
6.9.	No. 34: Contaminated and eroded soils.....	30
7.	No. 13: Discussion on ‘Indicators for SDS related to public health’.....	31
7.1.	Proposed indicator: Number of persons killed in road traffic accidents	32
7.2.	Data availability	32
7.3.	Proposal for further development	32
8.	CONCLUSION and FURTHER WORK.....	33
8.1.	Production of Group 1-3 indicators.....	33
8.2.	Further work on Group 4 indicators.....	34

ANNEX

Analysis of the ‘open list’ of environment-related headline indicators

Summary

In December 2001 the Council adopted its conclusions on environment-related headline indicators for sustainable development, part of the structural indicators to be included in the 2002 Spring Report. These conclusions acknowledged the inadequacy of the current set of seven environment-related indicators, and asked the Commission, including Eurostat, the EEA and Member States, to produce “*an analysis of the existing methodology and of the availability of the data needed for the calculation of the indicators listed in Annex II, as well as a proposal for a detailed working plan for developing them.*” This so-called ‘open list’ contains 34 indicators, and is the result of the reflections of the Environment Working Party of the Council. The intention is to create a pool of indicators from which the seven environment-related indicators to be included in the annual Spring Reports can be drawn.

The present document has been prepared in response to that request. The analysis has looked at existing known international data sources, at the data available from those sources, and at the definitions and methodologies applied, where these were accessible. Indicators have been considered feasible if they are based on sound science and up to date data is available from reliable sources, with a sufficient number of observations to identify trends. A further condition has been comparability across Member States and, as far as possible, other countries. Where the indicators or data are not particularly responsive, i.e. not able to change quickly in response to action and thus serve to monitor the effects of any policy measure or other change in circumstances, this has been pointed out. No explicit analysis of the policy relevance of the proposed indicators has been made.

The analysis resulted in a classification of the indicators into four groups, ranging from feasible immediately to unlikely ever to be feasible at a reasonable cost. The fourth group includes indicators for which the definition is unclear and where it is difficult to identify which data would be needed. In some cases, where the indicator on the list was considered to be unfeasible, at least in the near future, an alternative has been proposed.

This report is a synthesis of a more technical analysis and focuses on the indicators in the first three groups, i.e. those which are immediately feasible or likely to be feasible in future. A brief overview of the indicators in the fourth group is also given. A detailed work programme for the production of the indicators will be developed in the next stage, following guidance from the Council on priorities. This may include reviewing data collection and evaluation systems and current reporting mechanisms and will be done in close co-operation between Eurostat and its partners in the ESS particularly in view of the enlargement of the Union.

It should be stressed that further work on these indicators cannot be confined to the Commission. Successful implementation will also require the full participation and commitment of national administrations and other agencies. The timetable and even the feasibility of the work identified will depend critically on the resources allocated to these tasks by all participants.

1. THE HISTORY OF THIS REPORT

In the conclusions of the Gothenburg summit in June 2001, the European Council agreed ‘a strategy for sustainable development which completes the Union’s political commitment to economic and social renewal, adds a third, environmental dimension to the Lisbon strategy and establishes a new approach to policy making.’

This strategy focuses on four main areas: combating climate change, ensuring sustainable transport, addressing threats to public health, and managing natural resources more responsibly.

The Commission will evaluate implementation of the Sustainable Development Strategy in its annual Spring report, on the basis of indicators to be agreed with the Council. The annual Spring Report was originally designed to report to the Council on progress towards the Lisbon goals¹, based on a set of ‘structural indicators’. Following the agreement on the sustainable development strategy, an environment section with seven indicators covering aspects of the four priority areas, was added, giving a total of forty-two structural indicators on which to base the evaluation of progress towards the Lisbon goals and progress in implementing the sustainable development strategy.

It should be noted that the structural indicators form part of a wider system of indicators, often referred to as a pyramid, where each level plays a specific and well-defined role. The structural indicators represent the top of the pyramid, supporting discussion at the level of Heads of State and Government, and are limited in number. Indicators at the lower levels are more specific and rather serve the discussion of sectoral Councils or even specific experts.

In December 2001 the Council and the Commission agreed on the list of structural indicators for the 2002 Spring Report². At the same time, it was acknowledged that the (environmental) sustainability indicators selected for the Report do not give an adequate picture of the environmental issues affecting sustainability, and should be improved. The overall number, however, cannot be increased, given that the number of structural indicators is already considered to be excessive. The same Council drew up an open list of potential environmental indicators and requested the Commission and the EEA, in co-operation with the Member States to:

“further finalise and develop the indicators (...) and others to come and to improve their data bases and time series with a view to subsequent synthesis reports”

and to:

“produce (...) an analysis of the existing methodology and of the availability of the data needed for the calculation of the indicators (.....) as well as a proposal for a detailed working plan for developing them”.

The ‘open list’ of environment-related headline indicators to be analysed is given in Annex. The indicators have been numbered for ease of reference, and assigned to feasibility groups (see below).

¹ “to become the most competitive and dynamic knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion”

² Council conclusions on environment-related headline indicators for sustainable development with a view to monitoring progress in the implementation of the EU Sustainable Development Strategy, No 14589/01.

The intention is to have at the disposal of the Council a ‘pool’ of environment-related sustainable development indicators, from which to select the seven most appropriate indicators for inclusion in the annual Spring Reports. The Statistical Programming Committee³ gave a mandate to Eurostat to set up a Task Force to work on sustainable development indicators and to look at the implications for statistics and statistical services. One of the first tasks of this Task Force was to assist in the feasibility analysis of the indicators on this open list.

Due to the amount of work involved, and in particular the consultation process, it was not possible to deliver the report for the Environment Council in March as requested. This report is now addressed to the Environment Council in October 2002.

2. THE ANALYSIS OF THE INDICATORS

This report is largely restricted to an analysis of the availability of data and methodologies for the indicators on the list provided by the Council. Analysis of the policy relevance of the indicators is outside the scope of this report, but could form part of the work in the next stage.

The analysis of the open list resulted in the classification of the indicators into four groups, ranging from feasible immediately to unclear or unlikely ever to be feasible at a reasonable cost.

Group 1 A first group contains six indicators for which it is immediately clear what statistical data are needed and where the available data are reliable, fairly complete, and reasonably up to date. These indicators meet most of the quality criteria set down for the Structural Indicators and can be produced more or less immediately.

Group 2 For the second group of seven indicators it is also clear what statistical data are needed, but the data which are currently available are incomplete, or not sufficiently up to date. The on-going data collection exercise, together with some estimation by Eurostat/EEA, may produce adequate data from which to construct some of these indicators. Only when data collection is finalised will it be possible to judge whether these indicators can be compiled in 2002.

Group 3 In the third group of nine indicators, it is again fairly clear which data are needed, but the available data sources are inadequate, i.e. either unharmonised⁴ or incomplete in coverage, or the data are rather old and unlikely to be updated in time to allow the indicators to be compiled in 2002. This group also includes indicators for which data are available, but not annually, and cannot be collected annually at reasonable cost.

Group 4 The nine indicators in the fourth group are not yet mature and require more precise definition or methodological work in order to clarify the data requirements. This includes indicators for which the available data will not give a meaningful message and where models may have to be developed to estimate the data needed or produce the indicator required. These indicators are not feasible in the near future, and in some cases a cost-benefit analysis would be required to assess the long-term feasibility and relevance of the indicator.

³ The SPC assists the Commission in the general co-ordination of the Multi-annual Statistical Programmes, in order to ensure that the actions to be undertaken are consistent with those decided upon in the national statistical programmes

⁴ Unharmonised means that the definitions or methodologies used, or the coverage of the data, differs from one country to another or even one year to another, rendering the data incomparable.

The analysis below looks at the existing methodology and data availability for the indicators in the first three groups. This analysis consists of:

- a description of the indicator. In some cases the analysis resulted in changes to clarify the name of the indicator. In other cases, proxy indicators have been proposed, to better reflect the data available while still reflecting some aspect of the issue the original indicator was intended to address;
- the assessment of availability of data and the methodologies to calculate the indicator;
- suggestions for improving the indicators. Most of these refer to activities required from Member States.

A brief overview of the indicators in Group four is also given.

A detailed work programme for the production of the indicators will be developed in the next stage after a clearer picture emerges from the Council's discussions on what to do with the proposals presented here.

3. GROUP 1: INDICATORS WHICH ARE FEASIBLE IN 2002

This chapter presents the first “pool” of six indicators, which are considered to be feasible immediately. It should be possible to compile these indicators in time for inclusion in the 2003 Spring Report, if the Council so wishes.

3.1. Combating climate change

3.1.1. No. 1: Total greenhouse gas emissions, emissions per capita, by sectors and in relation to GDP

3.1.1.1. The indicator

Under the Kyoto Protocol the EU set itself a target of an 8% reduction⁵ in emissions of greenhouse gases (GHG) by 2008-2012, with individual country targets set under a burden-sharing agreement⁶. Therefore the main indicator for Climate Change should show trends in total GHG emissions in Member States and in the EU as a whole (as in the 2002 Spring report), complemented by an indication of how far each Member State still has to go to meet its burden-sharing targets.

A sub-indicator, presenting the sectoral breakdown of greenhouse gas emissions, would add some insight into the trends for the main sources of emissions. Another possible sub-indicator could compare GHG emissions per capita or emissions per unit of GDP for the EU as a whole, the USA and Japan.

An indicator presenting emissions per capita or per unit of GDP for each Member State would add little to the understanding of the situation, as the burden-sharing targets were set taking GDP and population into account. Therefore it is not proposed to present emissions per capita or per unit of GDP for individual countries in the Structural Indicator set. However, if the Council decides otherwise, such an indicator can be readily produced.

3.1.1.2. Data availability

Greenhouse gas emissions are estimated annually by all Parties and reported to the European Commission and to the UNFCCC⁷, applying standard guidelines and reporting format⁸. Data collection is well in place, and is managed by the EEA⁹. For the main indicators, six greenhouse gases are aggregated using their global warming potentials (GWP) as weighting factors. Data are available from 1990, and are generally available in April of year T for the year T-2. This means that for the 2003 Spring Report, the most recent data will be for 2000. Efforts are being made to improve the timeliness of this reporting but the scope for doing so is extremely limited and constrained by the timeliness and availability of socio-economic statistics such as those on energy, and other information.

⁵ Reference year 1990

⁶ reaffirmed in Council Decision (2002)/358/EC

⁷ United Nations Framework Convention on Climate Change.

⁸ EU Member States apply the 1996 IPCC guidelines and use the Common Reporting Format to submit their GHG inventories to the UNFCCC, and to the EU, under Council Decision 99/296/EC (EU Greenhouse Gas Monitoring Mechanism).

⁹ The latest data (1990-2000) and reports are available at the EEA Web site at http://reports.eea.eu.int/technical_report_2002_75/en

3.1.1.3. Proposal for further development

Some effort is still needed in some Member States to complete the time series of their estimates for all main greenhouse gases (CO₂, CH₄ and N₂O), to reduce the uncertainty in the emissions estimates of N₂O and CH₄ from agriculture and to report HFC, PFC and SF₆ for each year. Member States should in future report emissions and removals from land use change and forestry using the IPCC¹⁰ Good Practice Guidance currently being developed and expected to be available in 2003/2004 EC research projects such as CARBOEUROPE could also result in improved methods for estimating emissions, particularly from agriculture and forestry.

3.2. Ensuring sustainable transport/mobility

3.2.1. No. 8: *Energy consumption by mode of transport*

3.2.1.1. The indicator

This indicator is considered a useful supplement to the other indicators No. 2 and No. 3 on sustainable transport/mobility that fall into Group 2. *Energy*¹¹ *consumption by mode of transport* is the most feasible of the proposed transport indicators but not a direct indicator of sustainable transport or mobility. It can be seen as an effective proxy for trends in transport and associated sustainability problems:

- increased energy consumption is a good proxy for increased volume of traffic, and of its associated problems, increased congestion of the roads and the skies;
- fuel consumption by road vehicles is directly linked to poor urban air quality and associated respiratory problems;
- fuel consumption is a direct cause of CO₂ emissions;
- energy consumption by transport is a major factor in the depletion of oil reserves, as this is the sector in which energy consumption is rising fastest, increasing by 51% between 1985 and 1999, whilst in industry energy consumption has remained almost unchanged since 1985, and in the households and services sector energy consumption has risen by only 8% in the same period.

This indicator would show, for the EU as a whole, the trend since 1990 in energy consumption by transport, broken down into petrol and diesel fuel for road vehicles, aviation fuel, and fuel used for maritime transport and inland navigation, either in absolute terms or as indices. If the indices presentation is chosen, then energy consumption by railways could also be included (the quantities of energy consumed by railways are so small compared to road transport that the line would not be visible on a graph presented in absolute terms).

3.2.1.2. Data availability

Data are available as standard EU energy statistics, reported annually by all Member States and candidate countries, according to a well-established methodology and reporting system. Data are available from 1985, and are generally available in May of year T for the year T-2.

¹⁰ Intergovernmental Panel on Climate Change

¹¹ The indicator is renamed '*energy consumption*' instead of '*fuel consumption*', as electricity used by railways should be included.

3.2.1.3. Proposal for further development

This indicator is readily available and needs no further development. Some effort may be needed to close data gaps for some candidate countries for the earlier years.

3.3. Addressing threats to public health

3.3.1. No. 9: Urban population exposure to air pollution (by ozone and particulate matter)

3.3.1.1. The indicator

The EU has established a framework¹² under which limit values for specific air pollutants have been set. The indicator builds on these limit values and uses an average of exceedance days, which is the number of days on which the population is exposed to air concentrations of ozone and particulate matter (PM) which are above limit values. It is calculated as the number of exceedances (maximum one per day) divided by the number of monitoring stations. These numbers are then averaged over all cities, weighted by city population.

3.3.1.2. Data availability

Data on ground level ozone have been collected since the early 1990s under the EU Ozone Directive, while routine monitoring of PM₁₀ was introduced in Member States after 1996. These data are managed by the EEA within the AIRBASE database. Urban population data are obtained from the STEU (Settlements in Europe) from the Eurostat database GISCO.

3.3.1.3. Proposal for further development

Further analysis is needed of AIRBASE by the EEA to verify whether sufficient data are available to produce this indicator for rural areas.

To extend the coverage of the link between human health problems and air pollution, indicators on more substances, and in particular benzene (which is the most important from a health impact viewpoint) for which data are poorest, could be developed. The Member States have not delivered enough data to AIRBASE on benzene to allow for indicator production at the moment.

3.3.2. No. 10: Emissions of air pollutants (ozone precursors, particulate matter and SO₂)

3.3.2.1. The indicator

The main indicator describes trends in emissions of air pollutants, including fine particulates (PM₁₀). The focus is on precursors of ground level ozone and aerosols. As these are independent issues, the indicator is divided into two sub-elements as follows:

- (1) Emissions of ozone precursors (CO, CH₄, NO_x and NMVOC)
- (2) Emissions of primary PM₁₀ and secondary PM₁₀ precursors (NO_x, SO₂ and NH₃)

The EU Directive on National Emission Ceilings¹³ sets targets for reductions in emissions of SO₂, NO_x, VOCs and NH₃, for each of the EU Member States, to be achieved by 2010. Ideally the

¹² Air Quality Framework Directive 96/62/EC

¹³ Directive 2001/81/EC

indicator would show progress towards these targets. For primary PM₁₀ emissions no EU emissions targets exist, although limit values for ambient air quality have been set.

3.3.2.2. *Data availability*

Member States report emissions data annually to the UNECE (CLRTAP¹⁴), to UNFCCC and, partially, under the EU GHG Monitoring Mechanism. Data collection is in place, although less complete than for greenhouse gases; the annual CLRTAP inventory data collection and dissemination is managed by the EEA.¹⁵ Data are generally available from 1990 onwards.

Estimates of primary PM₁₀ emissions have until now been taken from the Auto Oil 2 studies (data for 1990, 1995 and 2000, based on various non-official sources). However, from 2000 onwards (reporting by 31 January 2002) national reporting of particulate matter¹⁶ emissions is required under the CLRTAP.

3.3.2.3. *Proposal for further development*

The indicator can be presented as a graph with seven lines for the emissions of each of the different substances. It may also be possible to create two aggregates: one for ozone precursors, calculated using Tropospheric Ozone Forming Potentials (in NMVOC equivalents), and one for primary PM₁₀ plus PM₁₀ precursors, calculated using aerosol formation factors (in PM₁₀ equivalents). This would contribute to the simplification asked for by high-level policy makers. However, the aggregation factors are not widely accepted and some work would be needed in this area.

3.4. **Managing natural resources more responsibly**

3.4.1. *No. 21: Sustainability of fishing for selected species (proposed alternative: Fish stocks in European marine waters)*

3.4.1.1. *The indicator*

For monitoring purposes, fisheries can be taken as sustainable if the status of fish stocks is within safe biological limits¹⁷. The proposed indicator presents the ratio of the number of stocks outside safe biological limits to the number of commercial stocks per fishing area. Commercial stocks are defined as management units for which regular assessments are carried out. An ideal indicator should cover all fish stocks, not only the commercially important ones, but information at this level of detail is not available.

One drawback to this indicator is that it would probably not show much change from one year to the next, as fish stocks can take years to respond to management actions.. Therefore timely assessment of real improvement would be difficult.

¹⁴ UNECE Convention on Long Range Transboundary Air Pollution

¹⁵ The latest, incomplete, data (1990-1999) are available at the EEA web site at http://reports.eea.eu.int/technical_report_2002_73/en

¹⁶ Particulate matter refers to particulates of 3 size classes: PM_{2.2} (diameter < 2.5µm), PM₁₀ and TSP (total suspended particulate matter)

¹⁷ A given stock is considered to be outside Safe Biological Limits when the spawning stock mass is below the biomass precautionary approach reference point (Bpa) or when fishing mortality exceeds a fishing mortality precautionary approach reference point (Fpa). Within the EU, reference points have been established for about 10 stocks in the NE Atlantic and Baltic Sea, but to date no such points have been defined for the Mediterranean stocks. Further information from: <http://www.ices.dk>

Another drawback is that this indicator does not take into account the heterogeneity of stocks; there are big differences among stocks in size and commercial importance; if only the number of stocks is considered, the outcome may be not representative.

3.4.1.2. Data availability

For the North-East Atlantic detailed stock assessments are obtained through ICES (International Council for the Exploration of the Sea). These assessments are carried out annually. Information is available by fishing area and by commercial stock, and not by country.

As for the Mediterranean, the Scientific Advisory Committee of the GFCM (General Fisheries Commission for the Mediterranean) has been carrying out annual stock assessments for many stocks since 2001. However, their criteria for the setting of management reference points, which would allow determination of when stocks are outside safe biological limits, are not always the same as ICES's.

3.4.1.3. Proposal for further development

Closer co-operation between ICES and GFCM will be needed in order to harmonise procedures and to have common, or at least comparable, criteria for reference points.

3.4.2. No. 31: Area devoted to organic farming

3.4.2.1. The indicator

The criteria to be met before a farm can be certified as 'organic' and the whole certification process are regulated by Council Regulation 2092/91 and its revision 1804/99. The proposed indicator shows the evolution in the uptake of organic farming, based on the definition in these regulations. It presents the area devoted to organic farming as a percentage of the total utilised agricultural area. This allows a comparison between countries, as well as an evaluation of the trend in organic farming.

An alternative, or supplementary, indicator would show the trend in the number of farmers converting to organic production methods.

3.4.2.2. Data availability

Data on organic farming, including numbers of organic farms and area devoted to organic farming, are collected annually by the Commission via a questionnaire developed as part of the monitoring of the implementation of the two Organic Farming Regulations. Data reporting is voluntary, and not all countries complete all tables, but all Member States submit data on area and number of farms. Data are generally available in July of the year T for the year T-2.. This means that for the 2003 Spring Report, data will be available for 2000.

3.4.2.3. Proposal for further development

This indicator is readily available and needs no further development. However, efforts should be made to speed up data delivery, so as to be able to report more recent data in the annual Spring Report.

Because the available data are based on an EU Regulation, no official statistics are available for candidate countries. Data gathered by the organic farming organisations in these countries should be collected but will not necessarily be harmonised with EU definitions.

4. GROUP 2: INDICATORS FEASIBLE IN 2002, BUT INCOMPLETE

4.1. No. 2: Transport intensity of GDP

The conclusions of the European Council meeting held in Gothenburg on 15 and 16 June 2001 stated that "Action is needed to bring about a significant decoupling of transport growth and GDP growth, in particular by a shift from road to rail, water and public passenger transport". This should be achieved by "giving priority, where appropriate, to infrastructure investment for public transport and for railways, inland waterways, short sea shipping, inter-modal operations and effective interconnection".

Referring to this statement, the Commission White Paper, 'European transport policy for 2010: time to decide' COM(2001) 370, concluded that "the thrust of Community action should therefore be gradually to replace existing transport system taxes with more effective instruments for integrating infrastructure costs and external costs. These instruments are, firstly, charging for infrastructure use, which is a particularly effective means of managing congestion and reducing other environmental impacts, and, secondly, fuel tax, which lends itself well to controlling carbon dioxide emissions".

4.1.1. *The indicator*

The initial version will comprise two separate indicators based on movements of goods and passengers by inland transport. The indicators are calculated by taking the ratio between transport performance (in tonne-kilometres for goods, and passenger-kilometres for passengers) and GDP (in constant 1995 Euro), and indexing on a single reference year. It will be presented as an aggregate of all modes.

In the longer term the indicators will integrate air and sea transport and will be completed by aggregate indicators based on vehicle movements (see below under "Proposal for further development").

4.1.2. *Data availability*

Data on goods transport performance are collected through the following legal acts:

- **Road:** Regulation (EC) No 1172/98 on statistical returns in respect of the carriage of goods by road;
- **Rail:** Directive 80/1177/EEC on statistical returns in respect of carriage of goods by rail, as part of regional statistics (to be replaced by a new Regulation on rail transport statistics);
- **Inland waterways:** Directive 80/1119/EEC on statistical returns in respect of carriage of goods by inland waterways;
- **Aviation:** New Regulation on statistical returns in respect of carriage of passengers, freight and mail by air;
- **Maritime:** Directive 95/64/EC on statistical returns in respect of carriage of goods and passengers by sea.

Data on passenger transport performance are collected through the Eurostat/ECMT/UNECE Common Questionnaire on Transport Statistics, and in future will also be collected through the Regulation on rail statistics.

4.1.3. *Proposal for further development*

Although statistics on air and sea transport are currently well developed, the predominantly international nature of these modes means that there are conceptual difficulties in dealing with them in a manner consistent with the inland modes (road, rail and inland waterways). The initial version of this indicator will therefore refer only to inland transport. In addition, given that the policy measures are targeted at use of vehicles rather than volumes transported, the indicator needs to take account of movements of vehicles (vehicle-kilometres). However, since transport statistics have been more concerned with following the movement of goods and passengers than the movement of vehicles, the indicator will initially be based on transport performance (tonne-kilometres and passenger-kilometres). When comprehensive data on vehicle movements for all modes of transport become available the indicator will be modified.

It should be noted that the most recent legal acts for road and rail statistics do provide for the collection of data on vehicle-kilometres. For air and sea transport, tonne-kilometres, passenger-kilometres and vehicle-kilometres will be calculated by Eurostat from the data collected under the legal acts.

4.2. No. 3: Modal split of transport

4.2.1. *The indicator*

This indicator is linked to the previous indicator on transport intensity of GDP. It is aimed at monitoring the dependence of goods transport on road transport and of passenger transport on the car.

The initial version will distinguish two sub-elements for the indicator:

- (1) percentage of road transport in total inland goods transport, indexed on a single year;
- (2) percentage of passenger transport by car in total inland passenger transport, indexed on a single year.

Supplementary sub-elements for the other modes can be provided. In the longer term the indicators will incorporate air and sea transport and will be completed by aggregate indicators based on vehicle movements (see below under "Proposal for further development").

4.2.2. *Data availability*

As for the previous indicator (No.2: Transport intensity of GDP).

4.2.3. *Proposal for further development*

As for the previous indicator (No.2: Transport intensity of GDP).

4.3. No. 14/15: Municipal waste collected, landfilled, incinerated

4.3.1. *The indicator*

The purpose of this indicator is to track trends in municipal waste generation and disposal. The waste indicator in the 2002 Spring Report presented the amount of municipal waste collected, landfilled and incinerated. It was presented as waste per capita, which gives a picture of trends from one year to the next, and allows a straightforward comparison between countries. For those countries where data are available, the waste incinerated can be broken down into incineration with energy recovery and without energy recovery.

The same basic waste data may also be presented in relation to GDP, though it is not clear what advantage this presentation has over the per capita presentation.

4.3.2. *Data availability*

Municipal waste data are reported by Member States and Candidate Countries every two years through the Joint OECD/Eurostat questionnaire on the State of the Environment. Data on the amount of waste that is landfilled or incinerated are supplied regularly by only 73% of the EU countries, and timeliness is a problem.

In order to compile this indicator annually, countries will be asked to complete the relevant part of the Waste questionnaire every year.

The forthcoming European Regulation on Waste Statistics establishes a framework for more complete and harmonised statistics.

4.3.3. *Proposal for further development*

With the implementation of the Waste Statistics Regulation Member States are expected to produce data in 2005 — provided the Regulation is adopted in 2002.

4.4. No. 17: Recycling rate of selected materials (paper/cardboard and glass)

4.4.1. *The indicator*

The purpose of this indicator is to show trends in the rate of recycling¹⁸ of waste materials. The recycling rate is the ratio of the quantity of waste material collected for recycling to the apparent consumption of the material. The proposed indicator is divided into two sub-elements:

- (1) Recycling rate of glass
- (2) Recycling rate of paper/cardboard

An alternative indicator for recycling rate is the ratio of the quantity of waste material collected for recycling to the total amount of waste material generated. This would be available for municipal waste only.

¹⁸ Recycling means any re-use of material in a process (production or consumption) that diverts it from the waste stream

4.4.2. Data availability

Data are reported every two years via the Joint OECD/Eurostat questionnaire on the State of the Environment, though not all countries provide data and timeliness is a problem. Replies to the 2002 questionnaire are expected to provide data up to 1999, which could be used to generate the indicator for the 2003 Spring Report.

4.4.3. Proposal for further development

The definition of recycling rate still varies between countries. In order to compile this indicator annually, countries would have to complete the relevant part of the Waste questionnaire every year. Once adopted and fully implemented, the forthcoming European Regulation on Waste Statistics is expected to provide advanced and harmonised statistics. In the meantime the work of the EEA-ETC¹⁹ Waste and Material Flows on waste collection/waste recovery by operations could help improve data quality.

4.5. No. 22: Nitrate and Phosphorus concentrations in rivers

4.5.1. The indicator

The proposed indicator presents the current situation and trends in nitrate and phosphorus concentrations in selected rivers, and is based on measurements of Nitrate and Phosphorus concentration levels at a number of representative monitoring stations. The indicator is illustrated best by two sub-elements:

- (1) Trends in nitrate and phosphorus concentrations
- (2) Nitrate and phosphorus country comparison.

The main drawback with this indicator is that Nitrate loadings to water are very susceptible to weather conditions, so that a year with exceptionally heavy summer rainfall will result in much more Nitrate being washed out of the soil than would normally be the case. This can result in increases in concentrations, which do not consistently reflect human activities in the river drainage basins, thus to some extent sending a distorted message. This is particularly the case when data for only two years are presented, as has been the case for the Structural Indicators in the past.

4.5.2. Data availability

Member States report regularly to the EEA, based on data from their water monitoring programmes. The source data are annual averages of Total Oxidised Nitrogen, Nitrate, Orthophosphate, Total Phosphorus and Total Ammonium. Data are from 'representative' monitoring stations (more than 3000 river stations in 29 countries).

Data are available from 1975 onwards. The period from 1990 to 2000 has the most consistent data set in terms of years, numbers of stations and countries covered. As reporting is voluntary and not all countries report river information, the current indicators do not give the full overview of the development in all countries. In particular, data are missing from southern Europe.

Improved reporting from Member States is being achieved through annual data flows updates using the Eurowatnet process and guidelines developed and co-ordinated by the EEA. The next update, covering data up to 2001 will be available in March 2003

¹⁹ European Topic Centre, set up by the European Environment Agency

4.5.3. *Proposal for further development*

The EEA is co-ordinating the Eurowaternet process, data flows and development of guidelines in order to improve reporting from member countries.

Trends in nutrient concentrations in rivers is not the optimal indicator to illustrate river water quality. The reporting under the Water Framework Directive (WFD) on the ecological quality of water bodies will give a more complete picture of changes in the environmental state of water bodies. However, it will take 5-10 years before the monitoring and reporting activities in relation to WFD are fully operational.

4.6. No. 29: Protected areas for biodiversity

4.6.1. *The indicator*

This indicator shows trends in areas (in hectares) as well as the number of sites designated for nature protection. Because an area may be designated for several purposes and belong to several designation types, but not necessarily with the same spatial extension, the indicator needs subdivision according to the origin of the designation. Ongoing rapid digitalisation efforts will solve some of these problems in a few years.

This is a 'response' indicator, showing how Member States are responding to the problem of loss of biodiversity. It is however, a measure of only one type of response, indicating only "some protection effort", and therefore does not give a full picture. The level of protection and management of the designated sites differ considerably from one country and type of site to another, but this cannot be shown from the data available. It should be noted that after the initial designation phase, the data are unlikely to show much change from one year to the next, and therefore the usefulness of this indicator is limited.

4.6.2. *Data availability*

Data are available from the Natura 2000 Barometer on the number and area (in km²) designated under the EU Habitats Directive²⁰ and Birds Directive²¹. Some areas will be designated under both Directives, leading to some double counting. The designated areas of the Habitats Directive include large areas of marine nature reserves, which need to be identified separately, if a true picture of the extent of nature protection is to be drawn.

4.6.3. *Proposal for further development*

A major effort is ongoing to co-ordinate information on nationally protected areas across Europe under the CDDA (Common Database on Designated Areas) between UNEP-WCMC (World Conservation Monitoring Centre), Council of Europe, the EEA and the MCPFE (Ministerial Conference on Protection of Forests in Europe).

Other possible developments include using GIS tools to relate designated areas to other spatial information such as land use, infrastructure, settlements and tourism, which may help to reveal opportunities for properly-targeted policy measures towards conservation and sustainable use of biological and landscape diversity.

²⁰ Council Directive 92/43/EEC, amended by Directive 97/62/EC

²¹ Directive 79/409/EEC

4.7. No. 32: Nitrogen balance

4.7.1. *The indicator*

A nitrogen (N) balance calculates the balance between nitrogen added to the soil (e.g. mineral fertiliser, livestock manure, etc.), and nitrogen removed from the soil in crops or through livestock grazing. A deficit over a number of years indicates that the soil is losing its fertility, while a large surplus of N puts ground and surface water at risk of pollution (though this will depend also on other factors, such as agricultural practices, weather conditions and soil type).

N surpluses are a regional problem and, in large countries, the nitrogen surpluses per hectare (national averages) can be small while some of their regions are severely affected by the problem of excess nitrogen. National N balances therefore can give a false picture. An ideal indicator would show surpluses at river basin level. However this is not readily available; for this reason NUTS 2 regional balances are proposed for this indicator, which would be shown as a map²²

4.7.2. *Data availability*

The methodology and models needed to produce regional N balances are well developed, and the relevant data are available. However, the key data are taken from the Farm Structure Survey (FSS), which is carried out only every 2-3 years. Because data for the 2000 FSS are not yet available, the most recent N balance calculations cover the year 1997. The balances for 2000 are expected to be calculated during 2003. The FSS is not yet carried out in all candidate countries; therefore it is not yet possible to compile regional N balances for all countries.

4.7.3. *Proposal for further development*

Because the FSS is quite a heavy survey in terms of resources, it is not feasible to carry it out more frequently, nor to speed up significantly the delivery of data. Therefore methods to estimate balances for more recent years could be investigated. One **alternative** could be to focus on the input of livestock manure, as this is a key component of the balance, and policy-relevant, since the measures and limits set out in the EU's Nitrates Directive²³ target inputs of livestock manure only.

²² see 'Environmental Pressure Indicators for the EU', Eurostat 2001

²³ Council Directive 91/676/EEC

5. GROUP 3: INDICATORS FOR WHICH THE AVAILABLE DATA ARE INADEQUATE, AND WHICH ARE UNLIKELY TO BE FEASIBLE IN THE NEAR FUTURE

5.1. No. 6: Investment in transport infrastructure by mode (passengers and freight)

5.1.1. *The indicator*

The indicator should measure investment in different transport infrastructures, e.g. airports, railways, ports, roads. Investments in traffic management, ensuring mobility and access by improving the quality of the infrastructure and reducing threats to public health (noise, air emissions and accidents) would be key elements to consider. This includes intelligent traffic management that aims to better utilise the available transport network, thus reducing the need to invest in increasing capacity. Infrastructure building does not necessarily trigger socio-economic growth (c.f. TERM2001).

5.1.2. *Data availability*

Information on investments is not yet systematically available, although a limited amount of data is available on the investments allowed for development of the Trans-European transport network (TEN)²⁴. In principle Council Regulation 1108/70 provides for the collection of these data. However, this Regulation has not been implemented for the past few years, and no recent reports are available. Member States have failed to supply much data voluntarily to Eurostat, although this information is requested; some data are supplied to ECMT in a special survey every five years.

As far as rail infrastructure is concerned, information will be collected within the framework of the railway market monitoring scheme, which is currently being developed further to the requirements of Directive 2001/12.

5.1.3. *Proposal for further development*

The on-going review of the existing reporting systems should clarify data needs and identify the most appropriate method of collecting the data, including, if necessary, revision of the reporting requirements of Council Regulation 1108/70.

5.2. No. 18: Recycling rate of selected materials (extended to other materials)

5.2.1. *The indicator*

For this indicator materials and specific waste streams will have to be selected and data availability analysed before feasibility can be evaluated. Plastics, metals (steel and aluminium) and composting of biodegradable waste would be the first priority.

²⁴ in the annual reports published by the Commission in the context of Decision No 1692/96/EC of the European Parliament and of the Council of 23 July 1996 'Community guidelines for the development of the Trans-European transport network (TEN)'

5.2.2. Data availability

Coverage of recycling other than paper and glass is generally poor, though corresponding trade associations have made significant efforts to provide data.

5.2.3. Proposal for further development

The forthcoming European Regulation on Waste Statistics should improve the availability of data.

5.3. No. 20: Hazardous waste generated

5.3.1. The indicator

This indicator should show trends in the generation and disposal of hazardous wastes, based on the harmonised definitions of the European Waste Catalogue.

5.3.2. Data availability

Although data are requested by the Joint Eurostat/OECD questionnaire, only a limited number of countries provide data and these are generally based on national definitions of hazardous waste. Data are reported by some countries to the Basel Convention and under the EU Directive on Hazardous Wastes. The EEA-ETC on Waste and Material Flows has started to investigate these sources as part of the development of a more complete dataset on this issue.

5.3.3. Proposal for further development

The forthcoming Waste Statistics Regulation should help to improve data availability and quality.

5.4. No. 23: Discharges of pollutants (nutrients, organics, chemicals) into water

5.4.1. The indicator

This indicator should show trends in the discharges of pollutants from human activities. Discharges in this case are taken to mean deliberate discharges from point sources (e.g. urban wastewater treatment plants, industries). Pollution from diffuse sources²⁵ would be excluded. Many different pollutants are discharged into surface waters, and in the first instance, the indicator should be restricted to a limited number of pollutants, such as nutrients (N and P) and organic matter. Aggregation of the different pollutants is difficult, so a number of sub-indicators are suggested:

- (1) N emissions from point sources (after treatment in wastewater treatment plants), per capita
- (2) P emissions from point sources (after treatment in wastewater treatment plants), per capita
- (3) Emissions of organic matter (expressed in terms of BOD²⁶) from point sources (after treatment in wastewater treatment plants), per capita

²⁵ For nitrogen and partly for phosphorus diffuse sources (agriculture) are the main source

²⁶ Biological Oxygen Demand

If data become available, this list could be extended to cover other pollutants, such as heavy metals.

An **alternative** indicator would be the index of household wastewater treatment, similar to that presented in the indicator UP-3 in the Environmental Pressure Indicators publication 2001²⁷. This index is based on the theoretical efficiency of the different types of treatment plant and the population connected to each type (and the population not connected to any treatment plant at all). This rough aggregate indicator presents the reverse of the emissions, i.e. the theoretical efficiency with which N, P and BOD is removed before the water is discharged into the water bodies, including coastal waters. It is useful only to shown trends, but nevertheless reflects the measures taken within countries to reduce emissions to water. Some work is needed to refine this indicator but a rough indicator would be available in 2003.

5.4.2. Data availability

Data on emissions of N, P BOD, COD, and heavy metals are requested in the Joint OECD/Eurostat Questionnaire on Water, but most Member States have not been able to complete this part of the questionnaire satisfactorily. Discussions with Member States have suggested that it is unlikely that the current data collection will see an improvement in this situation. However, on-going standardisation activities, such as the development of the harmonised reporting guidelines for international marine conventions such as OSPAR²⁸ and HELCOM²⁹ may lead to relevant information.

For the alternative indicator, data is available from the Joint Eurostat/OECD questionnaire, though there are gaps for some countries.

5.4.3. Proposal for further development

As a first step, it is proposed to estimate the emissions from households only, based on the theoretical efficiency of the different types of wastewater treatment plants. Information on the population connected to the different types of wastewater treatment plant is available from the Joint Questionnaire. A first attempt at this was made for the Environmental Pressure Indicators project at Eurostat, with standard coefficients used for all countries. In the medium term this could be improved by research on national coefficients for the different types of waste water treatment plants and on other changes such as change in annual average P emissions per capita due to introduction of phosphate-free detergents, as well as research into improved models for estimating emissions.

In parallel, a deeper exploration of existing unharmonised sources is needed; sources such as national inventories and the international marine conventions, and the Water Framework Directive.

²⁷ Environmental Pressure Indicators for the EU, Eurostat 2001 (ISBN 92-894-0955-X)

²⁸ Oslo-Paris Commission for the protection of the marine envt. of the N-E Atlantic

²⁹ Helsinki Commission: Baltic Marine Environment Protection Commission

5.5. No. 24: Quality of drinking water

5.5.1. *The indicator*

The proposed indicator is the percentage of tested drinking water samples that meet the quality standards set out in the Drinking Water Directive³⁰.

5.5.2. *Data availability*

Member States report the results of their monitoring in relation to the Drinking Water Directive, but so far it has not been possible to use this to compile indicators of drinking water quality. Most recent country returns are for 1996-1998. The EEA has good and up to date coverage for Candidate countries.

5.5.3. *Proposal for further development*

Consultants working for the Commission are currently evaluating the latest round (1996-1998) of country returns. This evaluation should result in indicators providing an overview of drinking water quality.

5.6. No. 25: Water use by sectors

5.6.1. *The indicator*

The proposed indicator presents total gross annual abstractions of fresh water by sector (public water supply, manufacturing industry, agriculture, production of electricity). It covers both surface water and ground water.

Water use depends very much on climate, the type of agriculture in the country and the structure of industry. This, together with problems of different definitions used in different countries, makes comparison between countries more difficult. Therefore the indicator can be used to assess changes over time for a given country, but its use to compare countries is limited.

5.6.2. *Data availability*

Although a system to collect the data from Member States and candidate countries has been in place for many years (data are collected every two years through the Joint OECD/Eurostat Questionnaire), data reporting is voluntary and there are currently many data gaps, although there has been a marked improvement in recent years. While the data on abstraction by sector from the candidate countries are generally up to date, the same cannot be said for the EU Member States: for one country, 1994 is the most recent year currently available, for two countries it is 1995, and only two countries have provided data for 1999. This makes it difficult to show trends over time or to produce an EU average for a recent year. A clearer picture will emerge once the 2002 Joint Questionnaire data collection has been completed.

However, in countries where water availability is not a problem, there is no pressure to produce these figures annually.

³⁰ Directive 80/778/EEC

5.6.3. *Proposal for further development*

Eurostat and the EEA are working together on improving data collection methodologies and data coverage. Major efforts would be needed within most Member States in order to collect and supply these data annually, using harmonised definitions of water use and sectors. For countries where water availability is not a problem, it should be possible to develop adequate estimation methods.

The Water Framework Directive provides for a review of the impact of human activity on the status of surface waters and on groundwater. This would involve the identification of significant water abstraction for urban, industrial, agricultural and other uses, including seasonal variations, and estimation of total annual water demand and of loss of water in distribution systems. Therefore full implementation of the WFD should lead to better data availability. However, it will take 5-10 years before the reporting activities in relation to WFD are fully operational.

5.7. No. 26: Resource Productivity

5.7.1. *The indicator*

The EU economy relies on the use of a large number of natural resources, though the quantity and type of resources used will depend on the specialisation of the different EU economies. This indicator is intended to show how efficiently those resources are being used. Resource productivity can be defined as output per unit of resource input. Output is generally given in terms of value added of industry or GDP, and this is most appropriate for high level indicators.

The feasibility of this indicator will depend on the choice of resources to be monitored. It is clear that energy is an important resource, and this is reflected by the inclusion of an energy intensity (the inverse of productivity) indicator in the current set of structural indicators. The efficient use of mineral ores is also important, not only from the point of view of resource depletion, but also because of the collateral environmental damage caused by mining and related transport activities.

5.7.2. *Data availability*

Data on production, plus imports minus exports, of some basic resources would be available and could be used as a proxy for inputs of those resources to the economy as a whole.

The PRODCOM statistical survey of industrial production should provide detailed and comparable data on the production of almost 4400 industrial products in the European Union, from 1993 onwards. In reality there are still many data gaps which would need to be filled in order to be able to use this source.

Information on imports and exports of industrial products are available in the standard external trade statistics. A better evaluation of the data available will only be possible once the resources of interest have been identified.

5.7.3. *Proposals for further work*

A Thematic Strategy on resources is currently being prepared and a debate on appropriate targets and priority resources will take place within the framework of the strategy. A central

issue for discussion will be to what extent targets should focus on absolute amounts or on environmental impacts. Once targets have been set, indicators to monitor progress towards those targets will have to be identified.

A major effort in Member States would be needed to improve PRODCOM and foreign trade statistics. Not only would the gaps in PRODCOM need to be filled, but the quality and timeliness would have to be improved considerably.

5.8. No. 30: Pesticide consumption

5.8.1. *The indicator*

The risks associated with pesticide use vary considerably from one pesticide to another, depending on specific characteristics (i.e. toxicity, persistence) of their active ingredients and use patterns (i.e. volumes applied, application period and method, type of crop treated, type of soil). Two complementary indicators can be envisaged:

- (1) *Index of pesticide risk*, weighted to take into account different types of toxicity and use patterns, etc.
- (2) *Pesticide use* classified according to intrinsic characteristics e.g. toxicity to non-target species, long term effects, persistence in the environment, etc.

5.8.2. *Data availability*

Data currently available cover sales of pesticides, broken down by the classes insecticides, herbicides, fungicides and others. This however gives no indication of the risk associated with the use of these products, and a fall in the total number of tonnes sold is not automatically a reduction in risk.

Currently only three EU countries carry out regular surveys of pesticide use in agriculture. Under the TAPAS³¹ programme, a number of Member States have carried out pilot surveys for one year, or region, or a limited number of crops. TAPAS is intended as ‘seed’ funding to enable the start up of regular data collection, but it is too early to say if countries will be able to continue these surveys at regular intervals. TAPAS funding is not available for candidate countries.

Under an agreement with the main pesticide manufacturers, data on the use of individual active ingredients in herbicides, fungicides and insecticides on the main crops grown in the EU are provided on an irregular basis. The most recent data available are for 1999.

5.8.3. *Proposal for further development*

Work is going on in the OECD Working Group on Pesticides to develop a set of risk indicators for pesticides, which require data on use of individual active ingredients. A small research project would be necessary to develop pesticide classes, based on the intrinsic properties of the ingredients.

³¹ Technical Action Plan for improving Agriculture Statistics

5.9. No. 33: Evolution of land use by main categories (proxy: evolution of built-up areas)

5.9.1. *The indicator*

This indicator should show the growth in built-up area³², over a given period. Presenting the data per capita does not give comparable figures, as the definitions used vary considerably from one country to another. An indicator showing built-up land as a percentage of total land area is highly dependent on the geography of a country. It is not considered a suitable indicator as the percentage of the total may change only slowly, even though the total built-up area is growing at a significant rate.

The indicator therefore should be growth in built-up area, as a percentage of the built-up area of a base year. This will also be less influenced by the differences in definition.

5.9.2. *Data availability*

The two-yearly Joint OECD/Eurostat Questionnaire on Land Use is only partially completed by Member States, and data are often only available at five-yearly intervals. Also the definitions used vary considerably from one country to another, and even from one region to another, as land use management is often a local government issue.

The recently launched LUCAS point survey project will result in data on land use, including built-up area, for the EU as a whole, but the sample size is too small to be representative for individual countries. LUCAS data are so far available for 2001 only, though it is hoped that the survey can be repeated at least every two years.

5.9.3. *Proposal for further development*

It is hoped that as LUCAS becomes established, it will spawn more detailed surveys in the Member States based on the same definitions and methodology, thus providing a solid regular flow of land use data.

³² Ideally, Built-up land is defined as land used for residential purposes, roads, technical infrastructure, industrial and commercial areas and recreational sites.

6. GROUP 4: INDICATORS WHICH ARE UNCLEAR AND/OR NEED MAJOR METHODOLOGICAL OR OTHER DEVELOPMENT WORK

6.1. No. 4: Exposure of the population to high levels of transport noise

In theory this indicator would measure populations living, working and studying close to major transport networks, including airports, and exposed to high levels of noise. However, this is fraught with difficulties, as the noise levels will vary considerably from one location to another, and from one time of day to another; so some sort of weighting would be needed. Also it would be necessary to take noise reduction measures into account, e.g. noise barriers along motorways. Moreover, noise is not measured consistently throughout the EU, with no standardised methods nor sound and consistent sampling procedures.

Implementation of the Noise Directive³³ and the development of an indicator that shows trend over time and differences between countries and the number of people affected by high noise levels can only be expected in the medium term (>5 years). First reporting under the Directive is expected three years after coming into force.

In the meantime, TRENDS³⁴, managed by the Commission, may provide information on noise levels with mapping of line sources (roads, railways) and point sources (airports).

A new Commission Working Group on Health and Socio-economics aspects of noise will assist the Commission in the establishment of dose-effect relations to be used to assess the effects of noise on populations. This WG should propose the format in which Member States provide data to the Commission and how the public is to be informed, in conformity with Article 9 of the proposed Directive.

Finally, noise caused by transport can be considered a threat to public health rather than a “sustainable” transport issue.

6.2. No. 5: Average journey length and time per person, by mode and purpose

The indicator would have to cover four modes by approximately four main purposes, and would be a matrix, rather than an indicator. It is not considered feasible, as little relevant data are available and current findings are based on information from only a few countries.

If we select from the matrix one indicator, for example, journey length by car, interpretation problems can occur: about half of all car trips are 6 km or shorter. If this share were to increase, would this be good for environmental pressure (shorter trips means less pollution etc.) or bad (people should have used other modes instead)?

An ongoing project DATELINE³⁵, financed under the Fifth Framework Programme, is expected to deliver a first set of harmonised statistics on long-distance mobility (>100 km) in mid-2003. A harmonised data collection on short-distance mobility, which would require large-scale EU funding (> 4 million Euro), is under discussion with Member States. However, no funds will be committed to this until the experience of the DATELINE project has been

³³ Directive 2002/49/EC relating to the assessment and management of environmental noise

³⁴ Transport and Environment Database System

³⁵ managed by the Commission's Transport and Energy DG

evaluated.. In 2003-2004, Eurostat will also extend its so-called non-harmonised database covering long and short-distance mobility, so that by 2004 Eurostat will be able to deliver indicators based on data from existing mobility surveys in Member States.

6.3. No. 7: Internalisation of the external costs in the transport sector

In line with the Commission's stated policy proposals, the three issues of marginal environmental costs, marginal congestion costs and marginal safety costs should be covered. For a complete evaluation of external costs, data on at least emissions, noise, accident and congestion for all modes would be needed. This is not all yet available, but TRENDS should produce the emissions and noise. However, there is as yet no common agreement on the approach and methodology for determining marginal external costs, and the issue would need to be studied further.

Charges and taxes are a fundamental (though not the only) policy tool for internalising external costs in the transport sector. However, it is still difficult to identify the most appropriate tax framework and to decide which of the many taxes and charges should be taken into account.

Since one aim must be to make comparisons between modes, information would be needed for all modes of transport.

Generally, the current data situation is poor, and the proposed indicators are not considered feasible this year. One possibility for a provisional indicator would be to cover only the marginal environmental costs. The next phase of TRENDS could produce these, but not in 2002. But there is also the issue of whether Member States would accept TRENDS figures, as they are not official estimates. The priorities for developing the indicator would be to collect the missing data on:

- congestion and delays (extremely difficult)
- transport taxes in more detail
- transport charges

This is a complex issue and a development time of five to ten years may be needed.

6.4. No. 11/12: Exposure to and consumption of toxic chemicals

An ideal, but in practice unfeasible, indicator would present in a single index the total amount of chemicals used, weighted by their toxicological effects on both man and the ecosystem, and taking into account the likely exposure of the general public and of the environment to these chemicals. Such an indicator would enable an assessment of whether the risk posed to society by the widespread use of chemicals is increasing or decreasing.

The Commission White Paper, 'Strategy for a Future Chemicals Policy'³⁶, identified the urgent need for increased knowledge of the properties and use of chemical substances and on exposure to them. There are some 30 000 man-made chemicals currently in use in the EU, which are produced or imported in quantities of more than 1 tonne per year and much basic information on production and consumption is simply not available at the moment.³⁷ Moreover,

³⁶ COM(2001) 88

³⁷ A further complication is that some toxic chemicals are by-products of the use of other products, e.g. benzene in petrol, dioxins produced in incinerators, to name but two. Information on production or consumption of chemicals does not cover these by-products.

production and consumption are not synonymous with exposure, as some chemicals are handled only in closed systems, or as intermediates in controlled supply chains. So further very detailed information on use patterns of the different chemicals would be needed.

For most chemicals a full evaluation of the toxicological effects on humans or on the ecosystem has not yet been carried out. The White Paper highlighted the great efforts needed to compile this information and the Commission proposed to have the evaluation of existing substances completed by 2012. Unfortunately even when this information becomes available, it will prove difficult to find a common denominator to aggregate different types of toxicity.

In the meantime, in response to the request in the White Paper to establish indicators on the risk of chemical use, Eurostat has launched a pilot project to develop a set of partial indicators that takes account of the most common toxicological effects on humans, (carcinogenic, mutagenic, etc.) and the effects on the many facets of the ecosystem. This work will be closely co-ordinated with the current revision of EU Chemicals policy.

6.5. No. 16: Waste prevention

This indicator lacks clear definition and there is no common methodological approach on what should be measured or how to do it. According to the Waste Framework Directive, waste prevention is given the highest priority. The 6th EAP proposes a thematic strategy on resource management and integrated product policy (IPP) covering resource productivity, cleaner production processes and the use of 'cleaner' raw material (ores, crude oil etc.) and longer product lifetime. Moreover, in response to Article 8 (2) of the 6th EAP, the Commission is currently developing a set of quantitative and qualitative reduction targets for 2010 concerning all relevant waste. Such targets will have to be linked to indicators with which to assess progress towards the targets. The forthcoming Waste Statistics Regulation (WSR) provides for new data collection, but until the waste reduction targets are set, it is not clear whether the WSR will provide adequate data for such indicators.

The OECD is also looking at potential waste prevention indicators and it is proposed to follow and build on their work.

6.6. No. 19: Valorisation rate of selected materials

It is not clear what issue this proposed indicator should measure. Further clarification and investigation would be needed before an appropriate indicator could be assessed.

6.7. No. 27: Intensity of material use (GNP/Total Material Requirement)

This indicator has been in discussion for a number of years and some progress has been made, though important problems remain. On the aggregated level the Total Material Requirement (TMR) of an economy, as defined by the EUROSTAT methodological guide indicates the total use of primary materials by an economy. It includes domestic extraction and harvest of resources, as well as the foreign extraction and harvest of resources required to produce the imported goods and services used as inputs to industry the EU. This foreign component is the major obstacle to the compilation of this indicator, as adequate data is not generally available. First estimates of TMR and partial indicators like DMI (which includes the domestic part of material inputs only) have been reported by the EEA in the Environmental Signals 2000 and

2002, but these are still incomplete. EUROSTAT had commissioned a first study on TMR by the Wuppertal Institute and is now co-ordinating to up-date the EU TMR data. However, only some Member States (Finland, Denmark, Portugal, UK) and Candidate countries (Poland) have officially started to provide TMR data.

6.8. No. 28: Biodiversity index

In its 2001 Communication on a European Strategy for Sustainable Development (COM 2001/264), the Commission indicated its intention to establish a set of biodiversity indicators for the EU by 2003. Related work is underway to establish biodiversity indicators for the EC Biodiversity Action Plans adopted in 2001.

A biodiversity index is one of the indicators under discussion, though it will take some time before an accepted concept is developed. The final indicator will have to be based on a representative selection of species and habitats, as a full inventory would have to cover more than 400 000 different species. By its nature, the responsiveness of such an indicator to policy actions would be slow. For more responsive signals indicators related to the pressures on biodiversity (fragmentation of habitats) would be more useful. In the short term partial indicators on species/habitat groups will need to fill the gap.

6.9. No. 34: Contaminated and eroded soils

Although contaminated and eroded soils are recognised as a problem, it is mainly of a local or regional nature, and it is difficult to define an appropriate indicator which would adequately cover the problem.

No adequate sources are currently available to construct a soil contamination indicator at EU level. Maps of soil erosion risk have been compiled, but these are largely subject to natural conditions such as slope, weather and soil type, and therefore trends are not evident.

Further analysis to identify adequate indicators and development work is needed. The IRENA project, managed by the EEA, is looking at the possibility of developing an indicator on soil erosion. It is also hoped that LUCAS can provide some information on erosion of soils.

7. NO. 13: DISCUSSION ON ‘INDICATORS FOR SDS RELATED TO PUBLIC HEALTH’

No. 13 on the ‘open list’ is not an indicator, but rather a request to discuss potential relevant indicators with health experts. Identifying appropriate headline indicators related to public health is clearly a long-term exercise, with the initial discussions, presented below, as the first step.

The EU Sustainable Development Strategy and the 6th Environmental Action Programme use the theme ‘Environment and Public health’ as a main entry to tackle a number of problems related to air quality, water quality, chemicals and noise. These are in more detail as follows:

- Quality of air (main problem substances: ground level ozone and particulate matter; reductions in concentrations of nitrogen dioxide and sulphur dioxide in recent years means that these are becoming less important);
- Bathing water quality (with occasional outbreaks of intestinal infections due to water infected by pathogenic viruses, bacteria or protozoa).
- Drinking water quality (with outbreaks of intestinal infections due to bacteriological contamination, effects of nitrates and pesticide residues)
- Chemical substances in foodstuffs and products (includes pesticide residues),
- Physical disturbances (noise and radiation, including increased skin cancer due to exposure to UV radiation)

In some countries and organisations the environment at the working place and in homes is also considered.

The WHO is currently carrying out a project to define environment and health indicators for the European WHO region. Tests are under way in a number of EU and Candidate countries. Indicators are also being selected within the health-monitoring programme of the EU. These sets generally consist of about 30+ individual indicators, aimed at following progress in specific aspects of the environment and health problems.

It is possible to create an aggregate indicator showing the impact of mortality and morbidity on the whole population. For example in the DALY concept (Disability Adjusted Life Years) are years of life lost plus years of life lived with a disability. In DALY calculations the various causes for death or disability are discerned, showing the relative influence on the burden of disease of, for instance, unsafe sex, tobacco smoking, and outdoor air pollution. The indicator is more important for prioritising than it is for progress monitoring, although it can be used for the latter. Only a very limited number of countries have undertaken DALY calculations so far. The calculations are rather complex as they take into account about 20 different causes that influence life expectancy. These are as follows: domestic accidents, particulates long-term, traffic accidents, noise pollution, lead (drinking water), food-borne, ETS (passive smoking), particulates short-term, indoor radon, damp houses, ozone air pollution, UV-A/UV-B (ozone-layer), PAH, benzene, large accidents and carcinogenic air pollution.

At EU level the Health Monitoring project “Design for a set of European Community health indicators” (ECHI) phase two is being carried out. ECHI proposes a list of generic health indicators covering three categories: health status, determinants of health and health systems.

A rather promising aggregate indicator in this list, similar to DALYs, is “Disability free-life expectancy” (DFLE). It is calculated on the basis of mortality data (by Eurostat) and disability data using the Sullivan method.

The EC Household Panel is currently the data source for the disability data needed for this indicator. It took place between 1994 and 2001 (8 waves), but at the moment data are available for the years 1994-1998. Updating and evaluation of the DFLE calculations are expected in 2002/2003. From 2003/4 onwards Statistics on Income and Living Conditions (SILC) will contain questions on disability and could be the data source for this indicator. However, an aggregate indicator for the EU will not be available in the short term.

Road traffic accidents are the cause of more deaths (over 40 000 deaths and 1.7 million injured) each year than air pollution. And so, it may be considered a major public health issue which needs to be addressed, both from the point of view of human life and of the economy (indirect costs estimated at 2% of GDP). Article 75 of the Maastricht Treaty provides a legal basis for EU measures to improve transport safety, though there is no EU-wide acceptance of the need for common action, and responsibilities are spread widely. In the recent White Paper on a European Transport Policy³⁸, the Commission has suggested that the EU should adopt a target of reducing annual road deaths by half by the year 2010. It is therefore proposed to add an indicator on traffic accidents to the ‘open list’.

7.1. Proposed indicator: Number of persons killed in road traffic accidents

The main indicator would presents the absolute number of persons killed in road traffic accidents in the EU. Supplementary information is provided through two sub-elements of the indicator:

- (1) Road deaths per 1000 inhabitants, allowing comparisons to be made between countries.
- (2) Road deaths in the 15-24 year old age group as a percentage of all causes of death. Road traffic accidents are the major cause (more than 35%) of deaths in this age group. This indicator provides information for monitoring progress for this vulnerable age group.

7.2. Data availability

Data are collected annually through the Eurostat/ECMT/UNECE Common Questionnaire on Transport Statistics³⁹. Not all countries adhere to the UN definition of death within 30 days of the accident, but in these cases data can be adjusted. Data by age group are also collected, but not provided by all countries every year.

7.3. Proposal for further development

Comparability of data across the Member States would be improved if the 30-day definition were universally adopted. Annual reporting of deaths by age group should be a priority.

³⁸ COM(2001)370 of 12/09/2001

³⁹ This data is stored in the CARE database managed by the Commission’s Transport and Energy DG

8. CONCLUSION AND FURTHER WORK

The previous sections set out our analysis of each of the indicators proposed in the Council Conclusion, document 14589/01 of 28 November 2001. This includes identification of a number of requirements to be met for their definition or calculation. Indicators have been classified into four groups distinguishing qualitative and quantitative criteria.

A detailed work programme for the production of the indicators will be developed in the next stage once a clearer picture emerges from the Council's discussions on what to do with the proposals presented here. The first step should be an assessment of policy relevance of the proposed indicators, which is not an explicit part of this analysis, as some of the indicators are more relevant than others. This will enable priorities for future work to be identified.

It should be stressed that further work on these indicators cannot be confined to the Commission. In many cases the major problem is not methodological but a lack of adequate data and long delays in the supply of the data which is available. Also a major task for Member States will be co-ordination of their own services, Ministries, environmental agencies, statistical offices, and specialist institutes. This is needed to ensure that all current and relevant indicator work is taken into account, to avoid duplication of effort, so that user needs are met in the most efficient way.

Successful implementation will therefore require the full participation and commitment of national administrations and other agencies. The timetable and even the feasibility of the work will depend critically on the resources allocated to these tasks by all participants.

In this regard, it would be useful to consider possible EU funding mechanisms to support work done by countries on the most relevant indicator issues for which capacities are currently scarce. At the EU level, it will also be important to consider capacities and expertise within Eurostat, EEA and JRC programmes and how these may be underpinned to ensure speedier development of the more interesting and relevant indicators currently assigned to Groups 3 and 4. Examples include those on chemicals, health and biodiversity.

Making use of mechanisms and funding under the EU framework research programme may also offer possibilities. In the Community Sixth Framework Programme (2002-2006) for research, under the priority area 1.1.6.3 "global change and ecosystems" support for research on the development of integrated risk assessment and development of reliable indicators of population health and environmental conditions have been identified as priorities.

An input from the Council on these capacity-building issues will be indispensable if this endeavour is to make satisfactory progress. The future enlargement is an additional factor that needs to be considered. Following their accession, the new Member States will need time to gradually work their way up to full participation in the work which has to be done.

8.1. Production of Group 1-3 indicators

Priority is to be given to the production of Group 1 and 2 indicators, which is already under way. Effort is needed to obtain timely, up-to-date data to improve the Group 2 indicators. This will include evaluating data arriving through the 2002 joint Eurostat/OECD questionnaire, updating time-series where possible, and making the presentation of the indicators consistent.

Good examples of presentation exist in Member States' own indicator publications. Several Member States have used their work on sustainable development indicators to test different presentation formats with a range of users, and have identified the best methods of getting their message across. Additional work may be needed to extend the coverage of these indicators to candidate countries.

The production of Group 3 indicators will depend on the priority setting which results from the assessment of policy relevance, but is also dependent on resources made available both to the Commission Services and in the Member States. An important source of information for this work will be from data collection at EU level under new or amended legislation such as the Air Quality Daughter Directives, the Water Framework Directive and the Waste Statistics Regulation. Research and development projects may also release new data that will be taken into consideration. The indicators in Group 3 will continue to be discussed within the relevant statistical and other Working Groups, in order to establish a programme for their further development.

8.2. Further work on Group 4 indicators

Indicators in this group obviously require more in-depth analysis, as well as further methodological and other developmental work. They are also arguably some of the more interesting for policy purposes (eg chemicals exposure, resource productivity). But there is also a risk that some of the more relevant and interesting indicators for policy purposes are rejected, or overlooked, because they do not meet strict quality requirements. The Council may therefore wish to consider a more flexible approach to the production and use of these indicators. Further work on these indicators may also lead to creating additional layers of indicators that help to tell the full story whilst avoiding the sending out of potentially misleading signals.

Due to the high importance and complexity of developing some of the indicators included in Group 4, additional resources will be necessary. Further analysis of resource needs and policy relevance could be undertaken by Eurostat and the EEA if this is specifically requested by the Council.

Overview of changes in numbering, naming and grouping of indicators

ANNEX II to Council doc. 14589/01 of 28/11/01		Commission proposal	
OL I	Open list of environment-related headline Indicators to be further finalised and developed	Group	<i>proposed changes to name of indicator</i>
Combating climate change			
1	Greenhouse gases emissions (6 gases); sectoral breakdown and related to GDP (= carbon intensity of the economy)	1	Greenhouse gases emissions (6 gases); distance-to-target and sectoral breakdown
Ensuring sustainable transport/mobility			
2	Volume of transport and GDP (vehicles x km)	2	Transport intensity of GDP
3	Modal split of transport (vehicles x km)	2	Modal split of transport
4	Exposure of the population to high levels of transport noise	4	no change
5	Average journey length and time per person, by mode and purpose	4	no change
6	Investment in transport infrastructure by mode (passengers and freight)	3	no change
7	Internalisation of the external costs	4	Internalisation of the external costs in the transport sector
8	Fuel consumption for transport	1	Energy consumption by mode of transport
Addressing threats to public health			
9	Urban and rural population exposure to air pollution	1	Urban population exposure to air pollution (by ozone and particulate matter)
10	Emissions of ozone precursors (NO _x and NMVOC), particulate matters and SO _x	1	Emissions of air pollutants (ozone precursors, particulate matter and SO ₂)
11	Exposure to toxic chemicals, including pesticides	4	Exposure to and consumption of toxic chemicals
12	Consumption of toxic chemicals, including pesticides		
13	NOTE: Indicators for SDS related to public health, to be discussed with health experts	see section 7 of the report	

Managing natural resources more responsibly			
14	Municipal waste collected and landfilled, related to GDP	2	Municipal waste collected, landfilled and incinerated
15	Municipal waste collected, incinerated and landfilled (including breakdown of energy recovery)		
16	Waste prevention	4	no change
17	Recycling rate of selected materials (glass and paper/cardboard)	2	no change
18	Recycling rate of selected materials (extended to other materials)	3	no change
19	Valorisation rate of selected materials	4	no change
20	Hazardous waste generated	3	no change
21	Sustainability of fishing for selected species in EU marine waters	1	(proposed alternative: Fish stocks in European marine waters)
22	N and P concentrations in rivers	2	Nitrate and Phosphorus concentrations in rivers
23	Discharges of pollutants (nutrients, organics, chemicals) in water	3	no change
24	Quality of drinking water	3	no change
25	Water use by sector	3	no change
26	Resources productivity indicators or Material intensity (GNP/Total Material Requirement) (by type of resource)	3	Resources productivity
27	Intensity of material use (economy-wide)	4	Intensity of material use (GNP/Total Material Requirement)
28	Biodiversity index	4	no change
29	Protected areas (for biodiversity)	2	no change
30	Pesticides consumption	3	no change
31	Organic farming	1	Area devoted to organic farming
32	Nitrogen balance	2	no change
33	Evolution of land use by main categories (proxy : Evolution of built up areas)	3	no change
34	Contaminated and eroded soils	4	no change