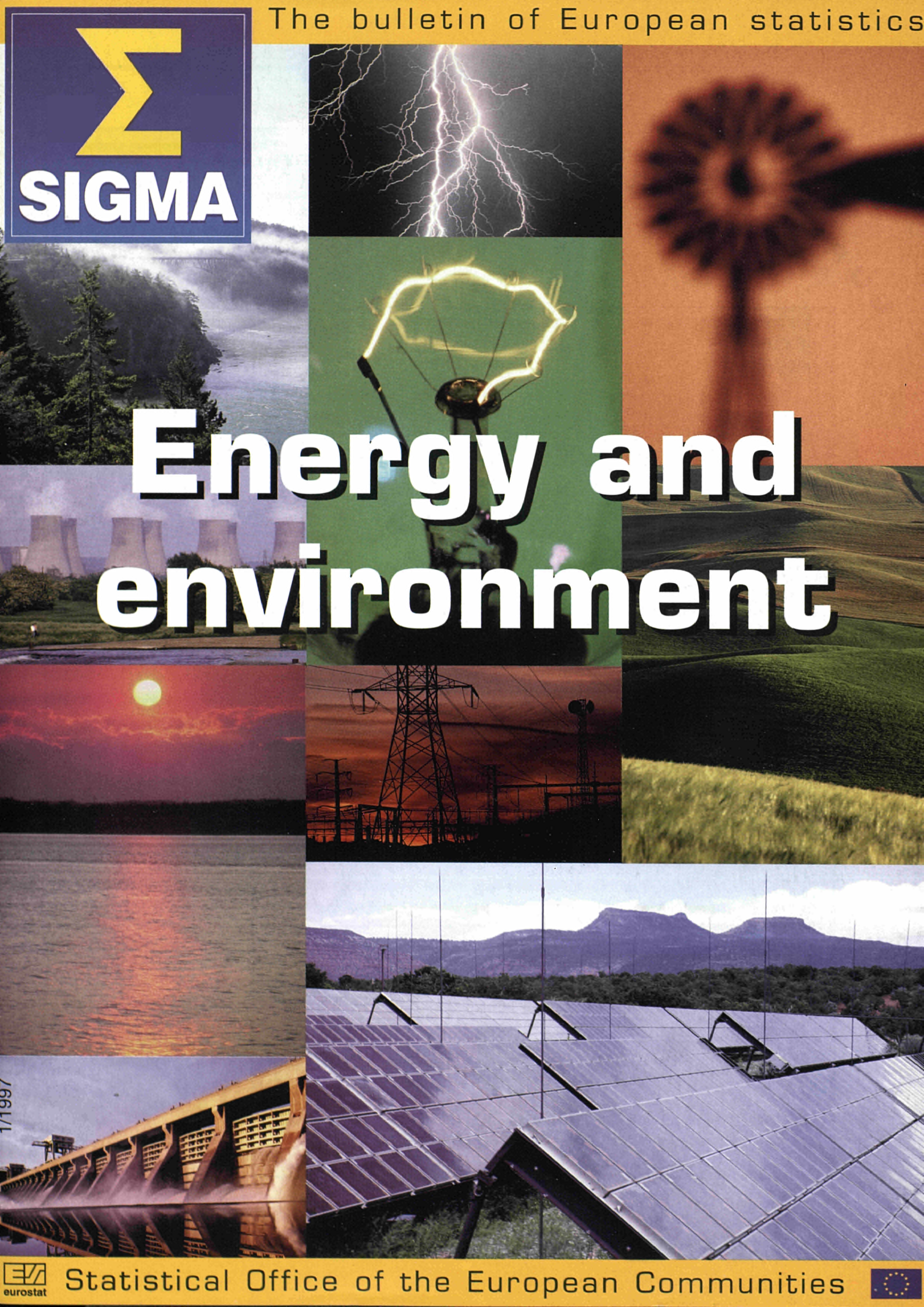




# Energy and environment



1/1997





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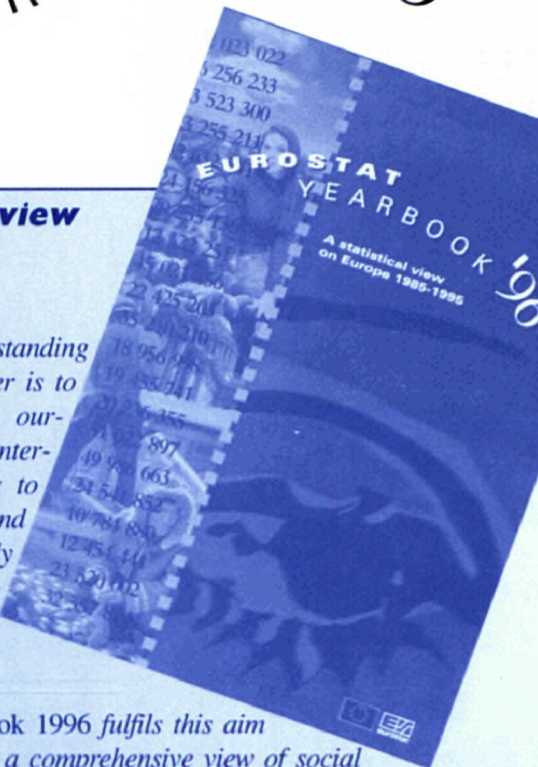
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# Environmental protection: a major factor in energy policy



**Photis Nanopoulos, a Director at Eurostat, was until recently responsible for energy statistics**

**F**or a long time environmental protection was regarded as a constraint on energy policy but it is now seen as a major factor in this policy. The complementary features of energy and the environment need to be examined with the sustainable development of the European economy in mind.

Environmental challenges call for a high degree of coordination. Throughout the world, rising emissions of CO<sub>2</sub> and other gases contributing to the greenhouse effect are giving cause for concern, since these emissions may well result in irreversible changes to the climate. Unless there is firm political action, rising energy consumption over the next 25 years will lead to a substantial increase in CO<sub>2</sub> emissions in the Community. Every economic sector will go on producing large amounts of CO<sub>2</sub>. The services and household sector accounts for 22% of such emissions, industry 18%, transport 28% and the electricity sector 32%. A radical shift towards production using non-fossil fuels is obviously needed to cut emissions of CO<sub>2</sub> in this last sector.

The Treaty on European Union gave the Community new powers

on environmental policy. It insisted on high-profile environmental considerations in connection with economic and social development. Many ecological problems stemming from the production and consumption of energy transcend national borders and can be effectively dealt with only at Community level. This is the best place to encourage the development of suitable technology, long-term R&D efforts and the construction of energy-efficient infrastructure which draws on the skills of the Member States and brings Europe-wide benefits.

## Synergy is the key

The European Commission's White Paper of January 1996 entitled *An energy policy for the European Union* highlighted the close link between energy and the environment, with any energy-related action having a knock-on effect on the environment, be it at local, European or world level.

The White Paper marked an important stage in the introduction of a Community energy policy. It put forward the idea of devising measures designed to



achieve synergy between the aims of competitiveness, security of energy supplies and protection of the environment. It set out guidelines that included these aspects – competitiveness, security of supply and environmental protection – together with the aspects of external relations and the promotion of energy efficiency and renewable sources. The Member States have regularly endorsed these ideas, most recently with the Council resolution on the Commission White Paper that was adopted at the meeting of the "Energy" Council on 7 May 1996.

The Union has reiterated its determination to comply with the series of international environmental agreements it has signed. For its part, the Energy Council of 7 May 1996 reiterated the need for Community and national energy policies to be compatible with the common objectives set out in the White Paper.

The Energy Council of 3 December 1996 dealt with the vital questions of the energy aspect of climate change and the charter on energy efficiency with related environmental aspects, as well as the creation of a framework for a Community energy policy. A proposal for a Council decision, which outlines the objectives of energy policy and sets out the main Community instruments which can help to achieve them, was presented, in written procedure, to the different General Directorates.

### Multi-faceted strategy

A strategy that takes simultaneous account of energy and environmental concerns will have to include a variety of features:

- fiscal harmonisation based on the internalisation of environmental costs
- strengthened role of the bodies for standards, codes of conduct and Community systems for environmental auditing and management, together with the establishment of cooperation agreements with industry
- support for new and renewable energy sources
- improvement of a comprehensive and reliable system of harmonised energy and environment statistics at Community level.

The White Paper entitled *Growth, competitiveness, employment* developed the idea of internalising external costs, especially with regard to shifting the emphasis from labour to natural and limited resources. The Member States could look at opportunities for re-introducing certain ideas for stimulating improved energy use and investment in cleaner technology. Environmental measures to induce enterprises to invest in new less energy-dependent technologies could, in the medium term, prove to be a benefit rather than a handicap for competitiveness. The fact is that energy efficiency is one of the most effective energy "resources" available in terms of costs and environmental protection. Earlier references to "inexhaustible reserves of energy savings" are still valid.

As part of the efforts towards energy efficiency, there will have to be more exchanges of information and experience among the major players, especially with regard to how energy has been saved and pollution reduced as a

result of an integrated set of measures, technologies and techniques.

New and renewable energy resources need public support to find a place on the market, with the aim of improving the Union's competitiveness in the medium term, developing advanced technologies, creating jobs, reducing dependence on external energy sources and improving the environment. The analysis outlined in the document entitled *European energy in 2020: A scenario approach* shows that, in comparison with the rest of the world, the European Union makes little current use of renewable sources of energy, with such sources accounting for only about 6% of overall primary energy consumption in the Union, according to a Eurostat survey. There is thus room for improvement. In the medium term, however, the problem will be how to exploit the potential of renewable sources in competition with cheap fossil fuels. The Madrid declaration on the promotion of renewable energy sources shows that such sources could account for 12% of primary energy consumption by 2010 if the proper policies were implemented. They could serve as a useful pointer. It would therefore seem appropriate, as far as renewable sources are concerned, to decide on an ambitious general objective for the Community.

Lastly, it is essential for the Member States to maintain and improve a comprehensive and reliable system of harmonised energy and environmental statistics at Community level. Such a system is vital if the objectives of the Union's energy and environment policies are to be measured and monitored.

**Photis Nanopoulos**



*Environment statistics, says Eurostat's DAVID HEATH are new and exciting – one of the most stimulating challenges for today's statistician. In this article he outlines the role and nature of this potentially huge area of work – the construction of...*

# A big frame for the green picture

When we talk of environment statistics we are not just talking about any old information on the environment: we are looking at data specifically related to fears of environmental degradation; data to inform environmental policies, both specific ones and environmental aspects of other policies. In particular, one needs to consider how what is happening to the environment is linked to economic and social activities.

There are some particular features of environmental issues and data I would like to stress. Firstly, of course, the local aspect is important – for example, noise pollution is essentially a local phenomenon. But we go from that, through country or continental phenomena like pollution of the Rhine, to global aspects. So you have a difference of geographical scale.

Then there are complicated scientific aspects. Very often one doesn't have complete unanimity among scientists about the causal chain of the environmental problems we face and the relative importance of different components.

And then there are very high expectations among those worrying about the environment, which create added pressure on policy-makers and statisticians.



*David Heath joined Eurostat in 1974 after working in London for the Ministry of Health, the supermarket chain Sainsbury's and the Home Grown Cereals Authority. At Eurostat he has worked in informatics, foreign trade, industry and services statistics, and is currently Director for agriculture, environment and energy statistics.*



## Unfamiliar territory

Many existing environment statistics have been developed outside the traditional official statistical system. Many of the underlying data involve scientific aspects with which the socio-economic statistician is not usually familiar.

Use of existing statistics on, for example, agriculture or energy to derive environmental information usually requires use of coefficients or models which have to be obtained from appropriate experts. There is a need for a generally agreed approach on how to pass from sporadic site measurements to meaningful summary measures.

The main development of environment statistics, and what many consider as the only "real" environment statistics, has been in measurements showing the unsatisfactory nature of some aspect of the environment. Much emphasis has been laid on physical measurement and relevant technical developments, for example, remote sensing and geographical information systems.

There is some uncertainty about what official environment statistics should be expected to cover.

.....  
**This article is based on a presentation to a UK Statistics Users' Council conference on environment statistics, held at the Royal Society in London on 19 November 1996. Summary by JOHN WRIGHT.**  
 .....

There are very high standards for the provision of environmental information. Those who have to provide the information – those who know about particular environmental problems – are very often people who risk suffering from measures taken to overcome those problems. They are people who benefit from the environment but at everybody else's cost, so



## Our love affair with the motor car – but at what cost?

sometimes you get some extra reluctance in our area from people who would normally provide data.

In many areas data are "soft" data. For example, if you want to talk about expenditure on protection against environmental problems, you may have difficulty in knowing whether or not measures have been taken for environmental reasons. A new process might be economically efficient and environmentally beneficial – how do you disentangle these? If you are interested in taxes, how do you say a tax is an environmental tax? Is it because the word environment is used in describing the tax or is it because the tax has some environmental consequences?

So, very often, environmental data only allow you to identify broad trends and very broad levels of comparisons between countries. The problems that are being dealt with are complex. One particular economic activity can contribute to many environmental problems, and a particular environmental problem can have several causes.

The timescale is not easy to work with either, because today's problems can be caused by our activities a long time ago, and what we are doing today will

have consequences in the future which are not pressing on us immediately.

## Respondent hang thyself?

Respondents may have special attitudes to giving figures which may be related to control measures – for example, there may be a tendency to give the label "secondary raw material" rather than "waste". More generally, environmental problems very often arise when the capacity of nature to provide free goods – for example, sinks for waste or for pollutants – is exceeded. Activities which had been almost harmless start to have negative consequences.

Following the "polluter pays" principle, dealing with such negative consequences falls back in some way on the very person who should provide information "to hang himself".

In many policy areas it is those who want something who provide the necessary data. For environmental data, however, the environmental pressure group or others who press for data, often do so to have it used against the information provider. This makes the typical approach of official statistics difficult to apply successfully.



**Who said it's simple?**

*Often environmental problems are the result of several different human activities. On the other hand, one human activity can contribute to several environmental problems. There are many different sources of atmospheric pollution. Traffic produces exhaust gases and can also make too much noise. Agriculture both pollutes, suffers from pollution, and can contribute positively to the environment by maintaining the countryside.*

*Measures to reduce pollution in one medium can increase pollution in another – for example, discarded chimney filters could transfer pollution from air to land and on to water. Some of the problems currently arising (eg nitrates in ground water) reflect events 20 years or more ago.*

*However, collecting data solely in relation to future problems, which will be inevitably considered by some as merely hypothetical, is difficult to justify when resources for official statistics are under pressure.*

**Shades of green**

An early framework for environmental statistics was the United Nations Statistical Office framework for the development of environment statistics. This combined a media approach – earth, air, water – with stress response: actions affecting the environment and actions taken when damage to the environment is noticed. This has developed into the driving force-pressure-state-response approach, the driving forces being economic and leisure activities. These create pressures – for example, waste – which damage the state of the environment, so you have, say, land-fill leaking and the response would be to clean up the land-fill.

Another way of structuring the data is linking them to environmental problems. The Dutch have carried out successful work on cross classification of economic activities with the contribution of each to different environmental problems (See article on page 27).

Then there is natural resource accounting or, as the French call it, patrimony accounts: these consider the use and regeneration of natural resources, for example, forests. Material flows analysis covers both mass flows of bulky material and more detailed analysis of commodities of particular environmental interest, such as dangerous chemicals.

Aim of such approaches is to use an accounting framework approach to ensure completeness and reliability as well as setting data in an understandable framework.

Then there is the main statisticians' structure, the national accounts: should one substitute for our national accounts something substantially different – green national accounts? Should one amplify national accounts with environmental satellite accounts? Does it make sense to go for a single "magic" figure, the ECO GDP?

Such a figure would give powerful signals to politicians and public and would also take correct account of environment aspects. This the traditional GDP manifestly fails to do.

**Green GDP doesn't make sense**

I have come to the conclusion, in discussion with our national accountants, that it doesn't make any sense to replace the national accounts with some greener version; that one should look towards amplifying national accounts with environmental satellite accounts; and that claims made by some envi-

ronmentalists about green accounts are simplistic – that such accounts would be counterproductive.

However, in my view, national accountants have not done a good job in explaining their difficulties with this approach in words that will carry conviction to other than other national accountants.

We have been working on this topic with the London Group, which involves Eurostat, the UK and the Canadians as organisers, and all the other main people concerned with green accounting. Satellite accounts can include both financial data and physical data. The financial data can be more detailed breakdowns of relevant amounts in the normal national accounts, or can be new topics. Eurostat has developed and tested a system (SERIEE) with a view to providing financial data for use in green national accounting. But there is a long way to go.

The need to make progress was recognised by the European Commission in its December 1994 communication to the European Parliament and Council entitled *Directions for the EU on environmental indicators and green national accounting*. This committed the Commission to a specific programme of early actions involving extensions to national accounts, developing a system of environmental pressure indices and



**European statisticians are determined that environmental issues will not be ignored**

cartoon by Mario Ramos



## Eurostat's statistical programme 1993/1997 Modules on environment statistics

- Publication of environment statistics
- Water statistics
- Atmosphere emissions statistics
- Waste statistics
- Collection of economic information on the environment series system
- Environmental expenditure statistics in industry and services
- Statistics on government expenditure
- Household expenditure statistics
- Statistics concerning economic and financial instruments of environmental policy
- Environment: transport, tourism
- Environment; business statistics, industries
- Environment: energy
- Environment: agriculture, forestry, fisheries
- Material flows
- Frameworks, accounts and indicators
- Green national accounts
- Environment: regional, urban and spatial statistics

researching certain evaluation problems. The system will be available to Member States and the Commission in two to three years' time. It will need permanent updating.

Green indicators are a field of activity which has come to the fore recently. It worries me that there is a tendency to use indicators as a substitute for collecting basic data – I think it would be regrettable if we stopped collecting basic data.

Our role at Eurostat is to try to introduce an environmental component into official statistics, but on the other hand we have the European Environment Agency (see *article on page 23*). However, the split of work is well defined: Eurostat working with official statistics and pressures on the environment, capitalising on our experience of collecting data from firms, farms and persons, and the Agency

concentrating on the state of the environment. I do see some discrepancy between the statisticians' deontology of objective neutrality at arm's length from policy and what people are trying to push the Environment Agency towards, which is more than just an information role – one that goes further into policy advocacy on environmental issues, and even some controlling role. Is that compatible with an information role?

United Nations Economic Commission for Europe did some good work in this area, particularly linked to Eastern Europe, but its resources are much reduced nowadays. OECD focuses on policy issues. The UN Statistics Office has produced work on frameworks and more recently on green national accounts and environmental satellite accounts. And, of course, there is a whole raft of information from the UN specialised agencies and UN

Environment Programme but this concentrating more on developing countries.

## A huge & stimulating challenge

Environment statistics is a new subject matter with a potentially huge work area. One of the issues is, in fact, the choice of which specific topics to tackle. There are numerous difficulties but outstanding work has already been done by certain countries and others are making excellent progress.

The level of environmental statistics depends largely on national sensitivity to environmental issues. As environmental policy and legislation are becoming more widespread the justification for environment statistics increases as does the supply of basic data. International cooperation is particularly strong, reflecting in part the trans-frontier or global nature of many environmental problems.

***Environment statistics are one of the most stimulating work areas of statistics today.***

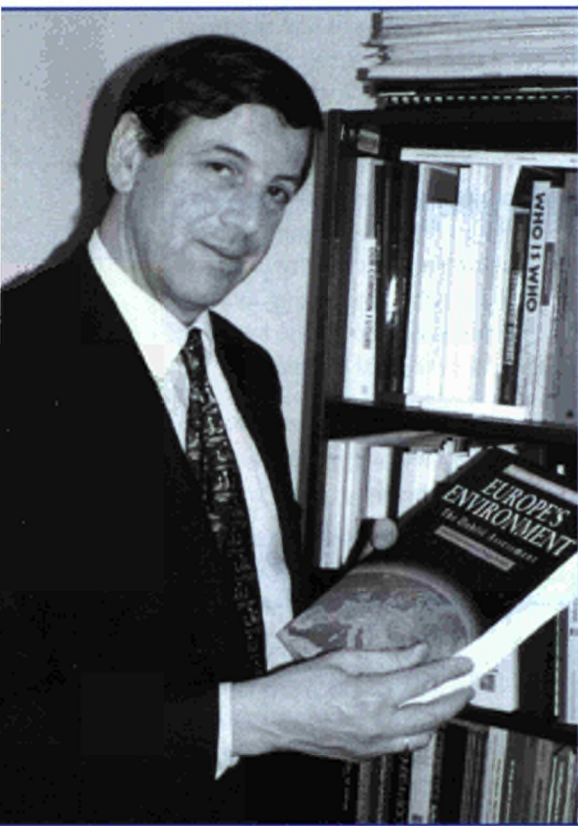
### DECLARATION OF THE HEADS OF STATE OR GOVERNMENT OF THE EUROPEAN COMMUNITY, DUBLIN, JUNE 1990.

**'We recognize our special responsibility for the environment, both to our own citizens and to the wider world. We undertake to intensify our efforts to protect and enhance the natural environment of the Community itself and the world of which it is part. We intend that action by the Community and its Member States will be developed on a coordinated basis and on the principles of sustainable development and preventive and precautionary action. ... The objective of such action must be to guarantee citizens the right to a clean and healthy environment. ... The full achievement of this objective must be a shared responsibility.'**



The "think tank" of EU environmental policy is in Avenue de Beaulieu, Brussels – seat of the Commission's DG XI (Environment, Nuclear Safety and Civil Protection). Sigma's BARBARA JAKOB went to see MARIUS ENTHOVEN, the Director-General, to ask about environmental policy, now and in the future, and the role statistics play.

# Step by step to sustainable development



*In September 1994 Marius Enthoven (56) joined the European Commission as Director-General of DG XI (Environment, Nuclear Safety and Civil Protection). He began his career as a research associate at the Aerospace and Mechanical Sciences Faculty of Princeton University Graduate School in the USA. After two years, in 1967, he returned to the Netherlands to work as a scientist at the National Aerospace Laboratories (NLR) and was then appointed Head of the Noise Abatement Office in the Dutch Ministry for Public Health and the Environment. He stayed there for more than 20 years in several posts, the last before detachment to the EC being Director-General for Environmental Protection.*

"Since the Rio Conference in 1992 we have entered a new phase of environmental policy", states Marius Enthoven. "Sustainable development is now the main issue. It means looking into the future."

In the past, environmental policy was more or less confined to reactive measures, he explains – to limit pressure on the environment and the damage we cause. This now goes beyond "cleaning up". It is long-term thinking that is not only aimed at reducing envi-

ronmental pressures to acceptable levels, but also at keeping the whole eco-system – with common resources, water, forests etc – alive and available for future generations.

A new dimension is that environmental issues should now be integrated into economic and social development. He goes on: "Integration of the environment into other areas means that, when there are policy developments in such areas, environmental issues will play an important role in making those

policies. It should be an interactive process, at the end of which we achieve the best results, in ecological, economic and social respects."

This sustainable development is to be achieved through a whole range of methods, apart from traditional legislation. "We have to broaden our approach, make use of more market-oriented instruments. To make the economy as a whole much more sustainable and to increase its eco-efficiency – the efficient use of our resources – we need voluntary approaches, economic instruments, good information and communication, in addition to more efficient and effective legislation", Enthoven says.

The Fifth Action Programme, also known as Action Programme "Towards Sustainability", which was recently reviewed, establishes the principles of current environmental policy. It also meets the objectives of the Treaty on European Union, signed at Maastricht in February 1992: the promotion of sustainable growth respecting the environment, the aim of a high level protection, the integration of environmental protection requirements into other Community policies and contribution to promoting measures at international and global level.

Areas in which the process towards sustainability has to be



intensified and accelerated, as identified in the Review of the Fifth Action Programme, are:

- integration of environmental aspects into the main policies of the EU
- better implementation
- a mix of instruments
- information and awareness-raising of the public and economic "actors"
- higher profile of the Community in international environmental issues.

### Intention not enough

In helping to meet these targets by supplying decision-makers with the necessary data, statistics have a key role to play, as Enthoven emphasises. "We need sufficient databases. Intention is not enough: it has to be made operational, and therefore we need good information and reliable statistical data to bring it forward. The aim is to facilitate the identification of priorities for the repair of existing environmental damage and the prevention of future problems; to provide a basis for the effective implementation of environmental

#### Definition of sustainable development

*"This ultimate objective, sustainable development, is a development pattern where environmental protection is a generator of employment, conveying competitive advantage to those companies who have the foresight to take the lead. It is a development pattern within which the economy and the environment are not competing issues, but are truly complementary."*

Ritt Bjerregaard in a speech to the European Parliament.

policies; and to inform the public and raise awareness.

"Before developing instruments it is absolutely essential that you know exactly the area where you intend to apply them. This is why our statistical information and the available databases need to be improved", he says, adding: "A good working relationship between the European Environment Agency, which supplies information on the state of the environment and on specific environmental problems, and Eurostat, which provides us with the statistical data, is very important."

"At the moment, we are still at the stage of developing environmental policy. Eurostat is an important partner in this process and, together with the EEA and the whole network of environmental agencies of Member States, it has a lot of work to do in this area."

### Internalising costs

He gives an example of the kind of data needed to apply the Fifth Environmental Programme: "If you talk about the integration of environment into transport, for instance, you need to know how mobility is developing according to the various modes of transportation; you need to know what the cost-effective instruments have done so far. One of the issues here is to make the external factor environment a part of the cost of the system, in other words to internalise. It means that you have to know a lot about the cost of transport. What should the real price be? This is an area where Eurostat already has done some good work."

"In other areas we have a lot of problems – waste, for example.

### FIFTH ACTION PROGRAMME "TOWARDS SUSTAINABILITY"

...is the central action basis which lays down the rules for EU environmental policy from 1992 to the year 2000.

It was launched in 1992 (adopted in February 1993) and represents a shift from a more reactive policy in the past to a proactive approach.

Key legislation before has been directed mainly to limiting the negative effects on environment. The action programme now addresses the form of future growth management. Its aim is to "manage" the environment and its resources with an eye on future generations.

It recognises the integration of economic and environmental policies as a key condition for sustainable development. This should be achieved by a strategy involving a mix of instruments such as environmental taxes, environmental levies, greening of markets, eco-audits, eco-labels, price setting and energy efficiency.

As concrete targets it promotes:

- more rational use of resources (fewer and more efficient)
- better energy efficiency through increasing use of renewable or non-polluting energy sources
- fiscal or economic incentives.

It recognises the principle that the polluter pays for the environmental degradation he or she causes, and the need to value the environmental resources we use.



It is not homogeneous – it consists of many different streams. Waste streams are well known at national level but Member States don't use the same definitions. So it's very difficult to get a reliable picture at Community level. But we need to know how much solid waste, electronic waste, waste from agriculture, is being generated and what happens to it: is it being incinerated, going to landfills, recycled? All these elements have to be measured to see how things are developing. To set a target, for recycling, for instance, we have to know what targets are achievable. Here is an area where a lot of development has still to take place, also in terms of methodology"

Enthoven expects an intensification of the need for statistical data both at Community level and in Member States. One important first step is to bring Member States up to the same level. Some countries have organised environmental statistics very well, others are still at an early stage of development. This is a task for Eurostat as it relies on the input of Member States. "By doing this, Eurostat can raise the level and the quality of the statistical function it performs for environmental policy", he explains.

### On the right track?

"The new dimension of sustainable development brings us into the important areas of energy, transport, industry, agriculture and business. We need indicators to help monitor progress. That's why, together with Eurostat, we are engaged in a very large project on the development of green accounting and sustainability indicators. We try to combine information from various areas, social, economic and environmental,

which, expressed as indicators, can then be used as instruments for policy development and monitoring. There is a great need not only in the EU but worldwide. As in the economic field, we need relatively simple indicators to tell us whether we are on the right track in sustainable development."

For DG XI it is important to obtain reliable data now and really integrate environmental issues into the economy. Enthoven explains the Commission's point-of-view on green accounting: "Working on separate satellite accounts with common methodology is an acceptable way to greener accounts. It is a complex issue. If it's not possible to integrate them into GDP as a correction at present, in a way shown by research to be convincing, we have to choose another option. This has been very much criticised. I think most of it comes from people who had hoped integration would be possible and are now disappointed it is not happening. Maybe they don't trust the scientists who work on this and think that not doing it this way is a matter of preserving certain interests. Of course, the development has to go on. Rather than wait another 25 years until, maybe, a magic formula has been devised which would give us unified green GDP, we are following a step-by-step approach to enable us increasingly to at least take green elements into account."

Some countries have already made progress. The Netherlands has formulated targets in a long-term plan, the National Environmental Plan. By developing indicators for major environmental problems like waste, acidification, climate change and some composite indicators, they are able to show progress being made and how they are reaching their target (see article on page 27). "This is much more helpful than lengthy discussions", Enthoven says.

### Green accounts

*The aim is to integrate environmental aspects into economic considerations. Two main options are possible:*

- *modifying national accounts to calculate a figure for GNP integrating environmental aspects*

- *creating a separate framework in the form of "satellite accounts" (a notion describing the relative autonomy of environmental accounting) and thus establishing an economic-environmental information system.*

### Development stage

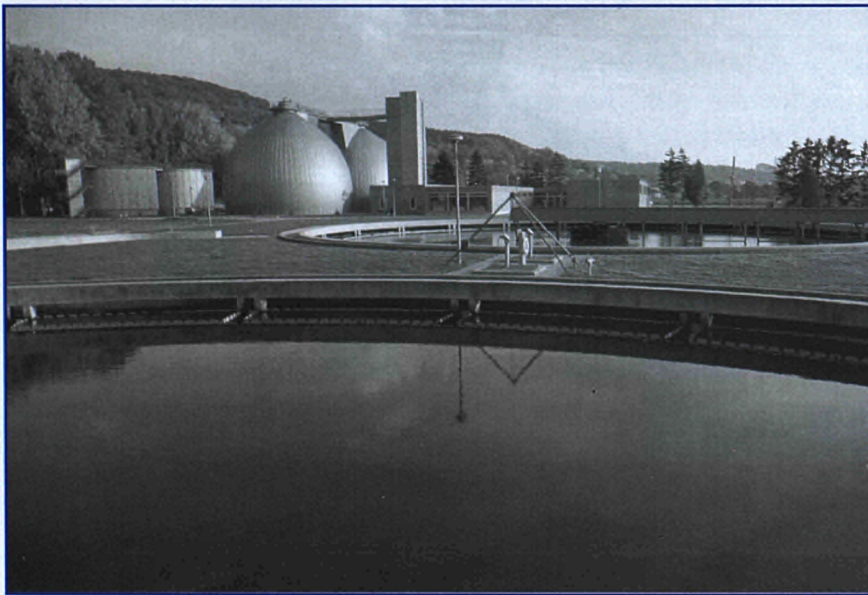
There is still a lot of work to be done. Enthoven sees us currently in the stage of redesigning and reviewing the main instruments in the areas of legislation, reformulation of framework directives, reviewing of waste strategy, and developing and negotiating agreements on environmental liability and setting up a framework for environmental taxes and levies. "The challenge is to have the best mix of instruments", he says. "Statistics are important in the ongoing process of policy development and improvement and Eurostat is an important partner for us. The monitoring of the efficiency of instruments is already taking place gradually but we still have to develop more statistical tools. There is still a long way before we can say: the environmental toolbox, even the statistical tools, are in principle OK. Greening statistics is an important ongoing operation in which we have a great interest. I wish Eurostat a lot of success in bringing it forward."



# Selected targets and directives

## Emissions into the air

- Reducing 1985 figures of sulphur dioxides ( $SO_2$ ) emissions by 35%.
- Reducing 1990 levels of nitrogen oxides ( $NO_x$ ) emissions by 30%.
- Freezing carbon dioxide ( $CO_2$ ) emissions at 1990 levels by the year 2000.
- Banning the production and consumption of Chlorofluorocarbons (CFCs) altogether by 1997.
- The auto oil programme contains new proposals for the tightening of emission standards for vehicles and for the quality of fuels. The objective is to reduce traffic emissions by 65-70% between now and the year 2000.

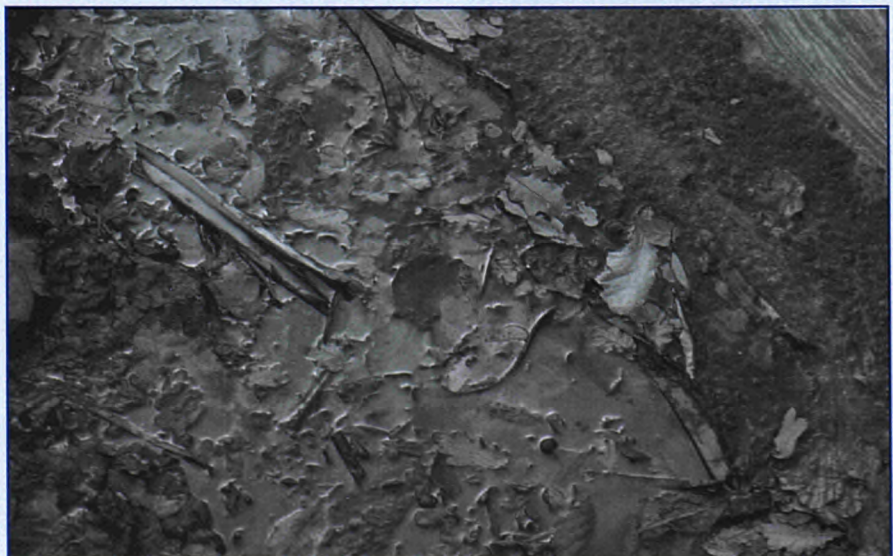


## Emissions into the water

- By the year 2005 waste water from towns and cities must be treated in treatment plants.
- EU directive that requires Member States to stop dumping of sludge discharged at sea by the end of 1998.
- EU directive on the bacteriological quality of bathing waters requires Member States to monitor concentrations of microbes and certain other parameters.
- Legislation containing provisions on water quality, in particular quality of potential drinking water, bathing water and water for fishing and fish-farming.
- Directives regulating the limits of substances in industrial waste water.

## Emissions into the soil

- Reducing the quantity of pesticides applied per unit of arable land by the year 2000 and promoting the control of crop parasites using biological methods rather than chemical pesticides and insecticides.
- EC law regulating the marketing of plant protection products via directives that will play an important role in the authorisation and use of new products.
- Directive on hazardous waste requires Member States to follow certain rules during its processing, transportation and final disposal, and to introduce a system for recording all hazardous waste.





# Green fields at Eurostat

by Annika Östergren

*"Everyone involved in environmental statistics thinks that the environment is an important issue", says Inger Öhman, "but we are certainly not environmental activists. As statisticians, our aim is not to support any particular side, but rather to provide those involved in environmental policy with solid information.*

*We take a balanced view, otherwise it would be impossible to work with and to provide objective data."*



**Inger Öhman – since April 1996 she has been head of Eurostat's unit F3 - Environment**

**W**hen we meet, Inger Öhman has been at Eurostat for eight months.

But she is no stranger to statistics – she worked almost 30 years at Statistics Sweden (SCB). And she is ideally suited to the work of Eurostat's environment unit. Before she came to Luxembourg she was head of SCB's environmental statistics department for ten years. Environmental statistics are what one would call Inger Öhman's cup of tea.

"The best thing about working at Eurostat is having the opportunity to develop statistics in a wider perspective, and working at the European level", Mrs Öhman says.

## Statistics in a wider perspective

Eurostat's environmental unit was set up in 1987 with the objective of developing the environmental component of Community statistics and to integrate it with other official statistics. The statistical set is being built up rapidly in cooperation with national statistical institutes in the Member States. Together with information from the European Environment Agency (see article on page 23), Eurostat's environmental statistics are designed to meet the needs of environmental policy makers, as well as the needs of other sectors that impinge on the environment.

## Driving forces and pressures

A model often used to describe environmental statistics, Mrs Öhman says, is the pressure-state-response model (see page 24). At Eurostat there are four corner stones to this model: driving forces, pressures, state and responses.

*Driving forces* are underlying factors: various sorts of human activity which lead to *pressures* on the environment. Examples of pressures are emissions, waste and extraction of natural resources. The pressures affect the quality or state of the environment, for instance the soil, water, air or the fauna and flora. *Responses* are measures taken by society to



counter the environmental problems that have arisen – for example, installing filters in chimneys, catalytic converters in cars, promoting recycling, or introducing various types of "eco-taxes".

Eurostat works mainly with statistics on driving forces, pressures and responses. This means gathering and disseminating data on topics such as emissions, abstraction and use of water, waste flows, pesticide use and environmental expenditure, and using sectoral statistics already available to describe the driving forces.

"Our job is not to collect data on the measurement of nature, to see how well or badly it is doing – that's something for the European Environment Agency. Nonetheless, we do have some data about its state, for instance on air quality in urban areas and volume of fish in the sea", Mrs Öhman adds.

### Best possible information

The environmental unit's work is guided by the priorities set out in the European Commission's Fifth Environment Action Programme, "Towards Sustainability".

Five target sectors have been selected for special attention under this programme: industry, energy, transport, agriculture and tourism. These sectors play a crucial role in the attempt to achieve sustainable development. At Eurostat there is already a substantial amount of data available on these sectors. For the environmental statisticians, it is essential to use these data to describe the driving forces for the policy-makers, and to add the environmental dimension to such statistics.

The Fifth Action Programme also addresses a number of environmental issues: climate change, acidification and air pollution; depletion of natural resources and biodiversi-

ty; depletion and pollution of water resources; deterioration of the urban environment; deterioration of coastal zones; and waste. In these areas, Eurostat needs to present base-line data and indicators for the implementation of the programme.

"Our job is to provide the best possible statistics for assessing and forming environmental policy as set out in the action programme", says Mrs Öhman.

### Data collection and dissemination

Eurostat collects environment statistics from Member States in cooperation with OECD. The data in the joint questionnaires cover all the essential areas of environment statistics. The data are stored at Eurostat in the ENVSTAT database together with other relevant sectoral statistics, and published in the compendium *Environment statistics*, as well as in various other specialised publications. In cooperation with the EEA, OECD etc, a statistical compendium, covering the whole of Europe, has been published to accompany the Dobbris Assessment, the European state-of-the-environment report.

"In addition to our compendium, we plan to publish a pocket book on environment statistics in 1997", Mrs Öhman continues. "Several Member States have published such small books and it is a good way of widening the use of environment statistics."

### Environment statistics are powerful

Environment statistics are often the subject of great attention in the media. The unit's latest publication, *Road transport and the environment - fiscal aspects*, was the subject of many articles in Europe's major newspapers.

"Environment statistics can be very powerful – when data are available", says Mrs Öhman. "But unfortunately the environmental debate sometimes is based on scare stories, rather than on systematic environmental statistics."

Statistics measure past events, and environmental statistics are often required only after a problem has arisen. Meteorological, hydrological and industrial conditions vary between the Member States and this has led to different approaches to environment statistics. Together with the fact that environmental statistics are a recent field of study, this means that a lot of data are missing in a number of fields. Moreover, the data have not been assembled systematically, and many variables are difficult to understand.

"It is difficult for the average person to appreciate the consequences of a five per cent increase in emissions of carbon dioxide or a ten per cent decrease in emissions of sulphur dioxide. Compare that with people's understanding of a few per cent rise or fall in unemployment", declares Mrs Öhman.

Therefore, if possible, emissions are compared with a target level. These levels are set for political reasons and are perhaps not always related to real needs – they are more likely to reflect what is politically and practically feasible.

Despite continuing debates on conceptual issues, a reasonable amount of data are already available and delivered routinely to users in the Commission, the European Environment Agency and Member States.

### Available statistics – main gaps

A characteristic of environmental statistics is that they often are derived from statistics in other fields. Data are combined with technical coefficients in order to cal-



culate the environmental pressure. This is, for example, how carbon dioxide emissions are calculated at Eurostat (see *article on page 16*). The Corinair system run by the European Environment Agency also uses such coefficients to calculate emissions of a number of other pollutants.

For other areas of environmental statistics, it is not possible to use calculation models. Environmental expenditure statistics must be collected from Member States and to a large extent based on statistical surveys. Most waste statistics are based on surveys or administrative data from Member States. There are big data gaps for environmental expenditure and waste statistics. In these areas Eurostat is working with Member States on harmonising data collection by developing legal instruments.

"We would like to use calculation models as much as possible", says

Mrs Öhman. "Good calculation models give information that is comparable between the Member States and reduces the response burden. Currently, we are working on calculation of nutrient balances and we also plan to develop models for discharges into water to fill the data gaps."

Much of the work of the unit is focused on integrating environmental statistics with sectoral and economic statistics. Environment statistics must use the same basic nomenclatures as other official statistics eg NACE. They do not always do so, but unless they do users cannot compare environmental and economic performance. At the same time, old nomenclatures need to be adapted to include new environmental aspects. For example, changes in waste and recycling policy mean that waste often will be traded and regarded as a resource to be used in

industry. In such cases waste needs to be properly included in commodity nomenclatures. Eco-industries such as waste and waste water treatment also need to be clearly identified in the NACE.

**Pressure indicators**

There is a lack of environmental indicators which can adequately be placed against the powerful economic and social ones. In response to the Communication on environmental indicators and green national accounting (COM (94) 670 final), Eurostat is involved in devising a number of pressure indicators and indices.

A complete description of the pressure put on the environment by human activities will require the establishment of some 50 to 100 indicators for ten policy fields (see *table below*) covering the five

<b>Policy field</b>	<b>Examples of possible indicators</b>	<b>Policy field</b>	<b>Examples of possible indicators</b>
<i>Climate change</i>	<i>Carbon dioxide emissions N2O emissions Deforestation rate Methane emissions</i>	<i>Waste</i>	<i>Municipal waste Industrial waste Hazardous waste Landfill area</i>
<i>Ozone layer depletion</i>	<i>Halon emissions Freon emissions NOx emissions</i>	<i>Air pollution</i>	<i>Sulphur dioxide emissions Particle emissions NOx emissions</i>
<i>Loss of biodiversity</i>	<i>Fertiliser use Pesticide use Crop variety Protected areas</i>	<i>Marine environment &amp; coastal zones</i>	<i>Oil transports Nutrient flows Toxic discharges Coastal tourism</i>
<i>Resource depletion</i>	<i>Fossil energy use Metal consumption Water extraction Loss of top soil</i>	<i>Water pollution &amp; water resources</i>	<i>Groundwater extraction Heavy metal discharges Fertiliser use</i>
<i>Dispersion of toxics</i>	<i>Chlorine production Heavy metal emissions Pesticide use Household chemical use</i>	<i>Urban problems &amp; noise &amp; odours</i>	<i>Local NOx emissions Noise level of vehicles Total urban traffic Local odours</i>



themes of the Fifth Action Programme on the Environment.

Pressure indicators describe human activities harmful to the environment, such as toxic emissions, pollution of rivers, over-fishing and traffic noise. One main goal is to improve the analytical power of such indicators, since many of the environmental indicators currently used are mere adaptations of production statistics. For example, pesticide use should be described in terms of human and/or eco-toxicity, not just by aggregating herbicides or insecticides on the basis of tonnes used per year; the indicator fertiliser consumption does not take into account differences in soil types, climate or other local conditions.

The development of a database requires major investment in methodology and data collection. In particular, the integration of economic and environmental policy demanded by the Fifth Environmental Action Programme requires a good sectoral breakdown of such indicators, and the possibility of relating them to standard socio-economic statistics.

"At the moment we have proposed lists with about 30 indicators for each field, which we have sent to panels of European environmental experts for them to indicate which are important enough to justify efforts in data collection and methodology. After that, we shall see to it that we have the data to develop the indicators", says Mrs Öhman.

In the long term, the environmental indicators may be combined into one index for each policy field. Aggregating indicators to indices requires a scientific consensus about the relative share of the components of a problem. Eurostat plans to develop the weighting factors through the scientific panels. At present, weighted



***In the future waste will become an important raw material which will save natural resources***

indicators exist only for climate change and ozone-layer depletion, based on the recommendations of the inter-governmental panel on climate change (IPCC).

For policy areas like air pollution and climate change, most of the basic statistics for calculating the indicators are available. For other policy areas like dispersal of toxic waste and the marine environment there are almost no basic statistics available. The idea is that Eurostat will draw up these indicators either with the help of calculation models or on the basis of data communicated by the Member States.

### **New challenges**

The idea that natural resources should be reused and not thrown away will have major repercussions for environmental and other statistics. Present-day statistics are built on a flow: extraction of natural resources, industrial processing in one, two or three stages, followed by consumption and then waste. In future, the materials used in the consumption of goods will be recuperated and regarded as a resource. Waste will become the most important raw material and natural resources will be saved.

"Material flow statistics will become more important", says Mrs Öhman, "and also statistics on consumer habits. We need to look at production statistics, consumption statistics and waste statistics as a whole. This will be a challenge for the whole statistical system."

### **Recent publications**

- Europe's environment: statistical compendium for the Dobris Assessment (joint publication with EEA, OECD, UNECE and WHO)
- Environment in the European Union (EEA publication in cooperation with Eurostat)
- Overview of pesticide data in the European Union (Statistics in focus, Environment, No 1/1996)
- Road transport and the environment – energy and fiscal aspects (Statistics in focus, Environment, No 2/1996)
- Carbon dioxide emission from fossil fuels 1985-1993 (Statistical document)
- EU 12 trade in commercially valuable waste materials 1988 - 1994 (Statistical document)



*Energy and environment – what is their special relationship and what is the implication for statistics? Sigma's BARBARA JAKOB sought the answers with the heads of Eurostat units F3 – Environment, INGER ÖHMAN, and F4 – Energy and raw materials, PIERLUIGI CANEGALLO, both supported by colleagues working in these fields.*

# Having the energy to watch the environment

**E**nergy policy (and with it energy statistics) is as old as the Community itself. The Paris Treaty, which gave birth to the European Coal and Steel Community (ECSC) on 18 April 1951 was, at the same time, the starting point of today's Community. It emphasised the significant role of energy in daily life and the economy and underlined its political importance.

Environmental policy is only about 20 years' old but due to its high profile it has begun to influence all other political spheres, especially energy policy and energy statistics. Many environmental problems are linked to society's use of energy. Hence, the White Book "An energy policy for the European Union", adopted in May 1996, identified better protection of the environment as one of the challenges the European Union must face.

## Basis of everything

Energy dominates our life, a fact especially obvious in periods of energy shortages, oil crises and price fluctuations. On the other hand, there is growing recognition of its environmental impact:

- Energy consumption is one of the main sources of atmospheric

pollution by sulphur dioxide SO<sub>2</sub>, nitrogen oxides NO<sub>x</sub>, and carbon dioxide CO<sub>2</sub>.

- Emissions from combustion of fossil fuels are causing serious environmental problems which become even more significant as the growth in fossil fuels consumption continues.

- Man-made emissions of greenhouse gases, in particular CO<sub>2</sub>, are already affecting the global climate.

"In fact, energy flows and transformations underlie the functioning of all eco-systems and are therefore linked to environmental pressures and impacts", says **Inger Öhman**.

## Energy for environment!

Within Eurostat a close relationship has developed between the units responsible for environment and energy statistics. In practice, the energy statistics unit supplies the environment unit with basic data used in further calculations for environmental purposes.

However, security of energy supply – the importance of which has been shown repeatedly – is still a major concern of modern energy policy and therefore energy statis-

tics. But back to Eurostat...

**Rosemary Montgomery**, who knows both fields very well (she used to work for the energy unit and now works for F3 - Environment) explains: "We use energy data to produce our own environmental statistics, whereas other statistical areas provide mainly supplementary information. The number of cars, for example, is supplementary; it isn't really environmental information. But from energy data we can for instance, calculate CO<sub>2</sub> emissions directly. In this case, the calculations are done automatically in the energy database. We also have energy prices and taxes so can look at how fiscal measures have helped for example to move consumption away from leaded to unleaded petrol."

"Energy statistics really can answer questions raised by new environmental policy. They are the most complete data we have for use in environmental policy", **Inger Öhman** confirms.

## Under-used 'treasure'

**John Allen** (F3) gives an example of the value of energy data: "Our point of view in environment has always been that Eurostat's energy balances are one of the best data sets we produce in terms of completeness, quality etc. And it's also





*The recent reorganisation of Eurostat took the close link between energy and environment into account and now gathers both units in the same directorate. From left-to-right: John Allen (F3-Environment), Pierluigi Canegallo (head of unit F4 Energy and raw materials), Inger Öhman (head of F3) and Rosemary Montgomery (F3) reflecting on the direction of energy and environment statistics*

our opinion that they are an under-used resource. I don't think people appreciate what can be done with energy balances in terms of analysis and scenarios etc. Eurostat should, in fact, give more priority to its energy balances. They are long-established and hence probably one thing that tends to be forgotten because they are part of regular production.

"But it has always seemed to me that there is a fairly clear need for a more detailed sectoral breakdown of energy consumption, particularly of industrial energy consumption. At the moment, the energy balance sheets are broken down into ten branches, whereas we are talking on the environmental national accounting side of about 60 or 70 branches. DG II (Economic and Financial Affairs) is also talking about a much more detailed breakdown."

"The energy balances are used by DG XVII for the 2020 energy and CO<sub>2</sub> forecast", Öhman adds.

"Energy data in general are very important for all sectors, and even without a direct coefficient to tell you the amount of NO<sub>x</sub> coming from energy use, you know the more energy consumed, the more

NO<sub>x</sub>, although the relationship is not as clear as it is for CO<sub>2</sub>. Therefore, from the point of view of environment statistics, energy data are a valuable and reliable tool."

"And it's one of the few sets of 'real' Community statistics", Pierluigi Canegallo points out.

### **Energy balances**

*An energy balance shows the flow of energy in the economy from production, imports and exports through the various conversions necessary to transform the energy into a more readily useable form, such as the conversion of coal to electricity, down to consumption by the final sectoral consumers, industry, transport, households, etc.*

"Another advantage is that energy statistics are widely harmonised", he adds. Which is not the case, at least not to this extent, for environment statistics.

"Our CO<sub>2</sub> figures are harmonised in the sense that we apply a single set of coefficients to the harmonised energy balances", Montgomery states.

"But these figures are often not accepted by Member States", Öhman objects. "Our calculations of CO<sub>2</sub> emissions are not the same as those of other countries.

"There are several reasons for this", Öhman explains. "One is that some countries adjust the figures to take temperature into account. If you have a particularly warm year, you are going to use much less energy than in a cold year. For CO<sub>2</sub> monitoring, 1990 was chosen as the base year and this happened to be a very warm year. So some countries have attempted some kind of temperature adjustment to the figures. We don't have a standardised methodology for temperature correction and don't do any adjustment."

"But we are working on the problem and are currently researching an appropriate methodology", Canegallo says.

John Allen explains the background: "As statisticians we would say that the decision to base the CO<sub>2</sub> stabilisation target on a single base year was not wise because emissions vary very much from year to year. We did suggest when this instrument was discussed that there should be an average, which to a statistician makes more sense. But it was decided that it was simpler to take a base year. So what we now see are countries, having adopted, against the advice of statisticians, a single base year, trying to apply statistical corrections to the base year data, which is not supported by the regulation."

### **Looking into a crystal ball**

Together the representatives from the energy and environment units reflect on the direction energy and environment statistics may take. In order to prepare statistics for future needs "we need to know exactly what the political priorities are in terms of instruments", Canegallo says.



"The further development of environmental and energy statistics depend on future political decisions and whether technological or fiscal measures are favoured to protect the environment", he adds. "If it is taxes, we have energy input/output tables giving, at the moment, the best picture of the impact of fiscal measures; but we would have to improve and develop them much more. If technology is to be the main instrument, we need special surveys giving us information about equipment etc."

Among the various possible future changes in the energy field, some keywords dominate the political discussion: renewable energy, cogeneration and fiscal measures. The statisticians from Eurostat give their point of view...

"At the moment renewable energy is about 5.3% of all energy", Canegallo explains. "And the major part is hydro-electricity. The potential for new hydro power-plants within the EU is very small. Almost all the sites that could be used have been used. And hydro is not without its own environmental problems. There is now a Community target aiming to double the percentage of energy consumption coming from renewable energy sources by the year 2020. It's a very ambitious target because energy consumption in general tends to rise. It's certainly not the instrument that will solve our environmental problems. The positive effect is very limited."

## Big potential

Cogeneration could, according to Canegallo, really be a solution. "Normally you have large power stations in a country producing simply electricity. Two-thirds of the energy disappears out of the chimney. In the Scandinavian countries in particular they use cogeneration – trying to capture some of the heat lost and

using it for district heating or whatever. That increases the energy efficiency from one third to something like 85%. It's a technology which exists, which works, something which is well proven. The potential here is much bigger."

John Allen points to fiscal measures. "The Commission has already adopted a proposal for a carbon energy tax which is the most obvious example of a fiscal instrument in energy-environment policy. But for this we need more detailed studies of the impact such a measure would have. It is certainly useful to have more detailed information, for instance energy input/output tables at EU level."

"Energy input/output tables are useful for a whole range of purposes and certainly not only for measuring the impact of taxation", Canegallo points out.

Finally, Rosemary Montgomery gives examples of the limits and restraints of all kinds of environmental protection measures. "With a view to securing supplies after the oil crisis, many countries built new coal-fired power stations. Even if these power stations are extremely polluting, countries will not remove them because they haven't yet paid for themselves. The investment, especially for small countries, in this kind of power station was far too great to scale them down after only a few years.

Öhman adds "After all, pollution is a global problem. The amount of money we need to invest to reduce CO<sub>2</sub> emissions in the Community is tremendous. The same amount invested in Eastern Europe could bring far larger benefits for the environment – for example closing down some of the extremely polluting brown coal-burning power stations in the black triangle of Poland, the Czech Republic and the New German Länder. Replacing them with

something cleaner such as gas would do much more for the environment, for the economy of these countries, and for the health of the people living there, than the same amount of money spent in attempting very small improvement in one of the advanced EU countries."

## Liberalisation of electricity markets

*An important decision in energy policy was the liberalisation of the electricity market. Will this affect the provision of energy data, I ask Pierluigi Canegallo.*

*"At present the enterprises provide us with data, even those enjoying a monopoly. Everybody knows they can profit from reliable information about the energy situation in Europe, which is not the case when enterprises refuse to give data.*

*"But it is true that problems could arise as soon as enterprises with a monopoly suddenly see a few competitors in the market. We hope they will behave rationally and realise that eventually they will profit from reliable European-wide statistical information.*

*"We need this information for so many purposes – not only environmental. Monitoring is still absolutely essential even if one of the prime aims of energy policy, security of supply, has been achieved."*

## KEY DATA

- In 1994, 681,941 hectares of forest were damaged by fire in the EU.
- The EU produces around 370 kg of municipal waste per person per year.
- The EU consumes the equivalent of 3,666,000 tonnes of oil per day to meet its energy needs, that is 3,600 kg of oil equivalent per person per year.
- This energy consumption results in 8,300 kg of CO<sub>2</sub> and 45 kg of SO<sub>2</sub> emitted per person per year.



How can statisticians measure sustainable development? In the United Kingdom last year they produced indicators that explicitly try to link economic and environmental sectors. In this article CHRIS MORREY of the UK Government's Department of the Environment explains the challenge of coming up with indicators that are...

# Green, relevant & easy to understand

**H**ow can we tell if our development is becoming more sustainable? What key indicators can we use to monitor our progress and check if important policies are achieving their objectives? This was the challenge statisticians of the UK Department of the Environment (DOE) were set recently when asked to develop a set of indicators of sustainable development.

In 1994 the UK Government published its *Strategy for sustainable development*. This followed the commitment at the Earth Summit in 1992 in Rio de Janeiro. In the strategy the Government promised to monitor its progress through a set of key indicators produced within two years.

Indicators of economic performance are understood and used by a wide audience – government and policy-makers, financial experts, business people and the public. Their movement may influence the way people behave – for example, in deciding whether to make a major purchase like a new house or risk moving jobs. Equally importantly, people use them to judge the Government's performance in running the economy.

There is no similar set of widely accepted key indicators to measure the state of the environment or

*Chris Morrey graduated from Leeds University in 1969 in economics with statistics. He worked first in private industry and then for the Greater London Council before joining the Department of the Environment in 1981, where he has held a variety of posts. Since 1989 he has worked on environmental statistics, particularly air quality and global issues and indicators of sustainable development.*



whether development is sustainable. The volume of primary environmental data collected each year is enormous but it is difficult even from these summaries to obtain an overview or how the environment as a whole is changing over time. What we need are more highly aggregated key series to convey the main messages to policy makers and public.

*This article is based on a presentation by Chris Morrey to a UK Statistics Users' Council conference on environment statistics, held at the Royal Society in London on 19 November 1996. Summary by JOHN WRIGHT.*

Statisticians in DOE were given the challenge of developing a set of indicators in conjunction with colleagues in other UK government

departments. The conclusions were published in March 1996 in a major report, *Indicators of sustainable development for the United Kingdom*.

The report was one of the first of its kind in the world. While other countries and OECD have published sets of environmental indicators, the UK is one of the first to produce a set of indicators that explicitly try to link economic and environmental factors.

## What is sustainable development?

To start with, defining what we mean by sustainable development, and what we have to do to achieve it, is no easy task. A considerable amount of work is going on, nationally and internationally,



to understand what makes development sustainable. Most commonly used definition was developed by the World Commission on Environment and Development (often referred to as the Brundtland Commission) in 1987: *development that meets the needs of the present without compromising the ability of future generations to meet their own needs.*

In the UK's own strategy, the Government said this meant reconciling two basic aspirations of society:

- *to achieve economic development to secure rising standards of living both now and for future generations*
- *to protect and enhance the environment now and for the future.*

To develop our indicators we expanded these rather broad statements into overriding aims:

- *a healthy economy should be maintained to promote quality of life while at the same time protecting human health and the environment*
- *non-renewable resources should be used optimally (inevitably they will run out so they should be used as efficiently as possible)*
- *renewable resources should be used sustainably (that is, over the long term they should not be used faster than they can be regenerated)*
- *damage to the carrying capacity of the environment and risk to human health and biodiversity should be minimised.*

Some people maintain "sustainability" is a state we can achieve. Others believe sustainable development is a path or process, and that we shall never achieve a sus-

tainable state because it will be always changing. We took the latter view. In most areas we do not know what level of activity is truly sustainable in the long term. However, we hope it will be possible to say if we are moving in a more sustainable direction. In developing the indicators therefore, we concentrated on showing trends rather than on absolute levels. But where targets or guidelines exist we relate the trends to those targets.

**Establishing a framework**

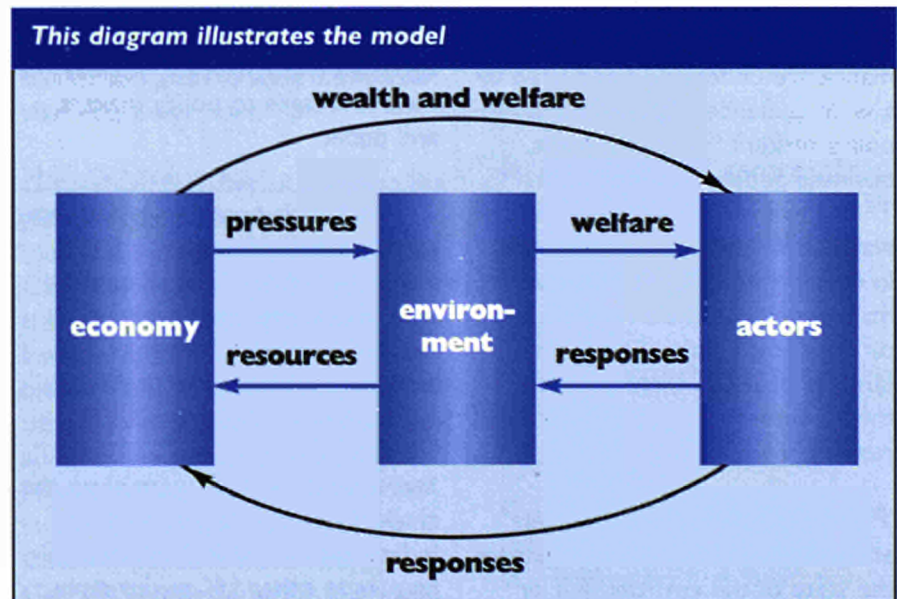
There is no shortage of ideas for selecting indicators. We came up with well over 300. To weed these to a more manageable number, we had to develop a systematic approach.

We went through the UK's strategy and identified within each aim the key issues and objectives. There were 21 "families" of issues, relating to the economy, transport use, leisure and tourism, overseas trade, energy use, land use, forestry, fish and water resources, climate change, ozone layer depletion, air, water and soil quality, landscape, wildlife

and habitats, waste, minerals extraction and radio-activity.

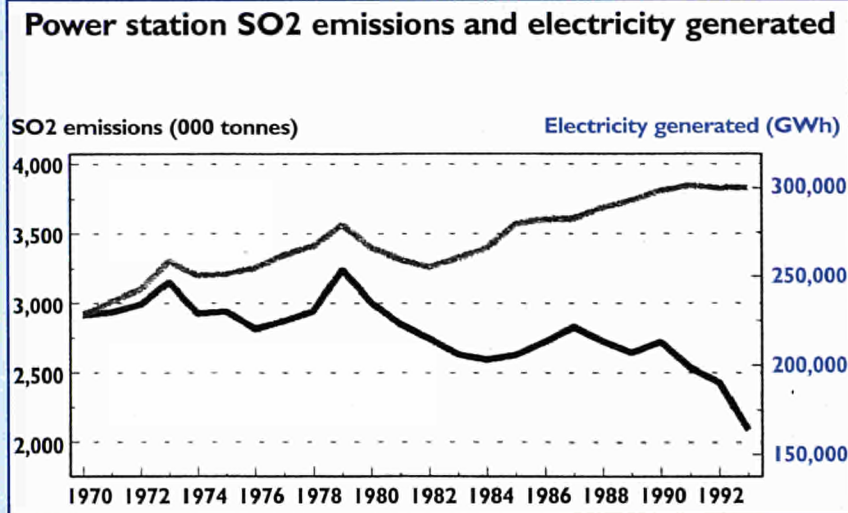
For each family, we identified the objectives we would have to meet to make our development sustainable. Relevant indicators to measure achievement of these objectives could then be selected. We used a version of the pressure-state-response model developed by OECD for considering environmental indicators, adapted, however, to reflect that we are trying to address sustainable development rather than just environmental issues.

Sectors of the economy generate wealth and welfare for all of us but economic activity can create pressures on the environment through consumption of natural resources and output of pollutants and waste. The quality of the environment in turn affects our welfare. Government, enterprises, individuals or international bodies (the "actors") respond to changes in the state of the economy and the environment through behavioural or policy changes which either directly affect the environment or alter the pressures on it from economic development.





*This graph shows trends since 1970 in electricity generation (the economic benefit) against emissions of sulphur dioxide from power generation (the environmental cost). Electricity generated has continued to rise to meet demand whereas sulphur dioxide emissions have declined rapidly since 1970. Taken together, the message is that the UK has become substantially more "sulphur efficient" in its power generating activities. Ratio of emissions to electricity generated is now nearly half that in 1970.*



We therefore considered indicators relating to the state of the environment (concentrations of pollutants or numbers of wildlife species, stocks of natural resources like fish or forests) and the state of economic development (for example, levels of unemployment and the rate of inflation). Where possible we showed trends back to around 1970. This was to emphasise the long-term nature of sustainable development and to help iron out distortions caused by short-term fluctuations.

We then considered the main activities or pressures that were causing the state to change through the impact of human activity – for example, emissions of pollutants to the atmosphere or consumption of fossil fuels. Where possible we tried to relate these pressure to the benefit or welfare generated by the activity. It is to a large extent through such pressure indicators that we are trying to tease out the relationship between the environment and development that lies at the heart of sustainable development.

As well as considering how the state of the environment and the pressures upon it are changing, we also considered indicators of society's responses – individual or collective actions to protect the environment – for example, recycling or reuse of materials. We found response indicators the

most difficult to quantify: often they relate to the regulatory or administrative process. There may be several responses to a particular issue and it is difficult to come up with a single sensible response indicator. In many cases we took the view that the effects of these diverse responses should materialise as an improvement in an associated pressure or state indicator, as in the example in the graph above.

### Too many indicators?

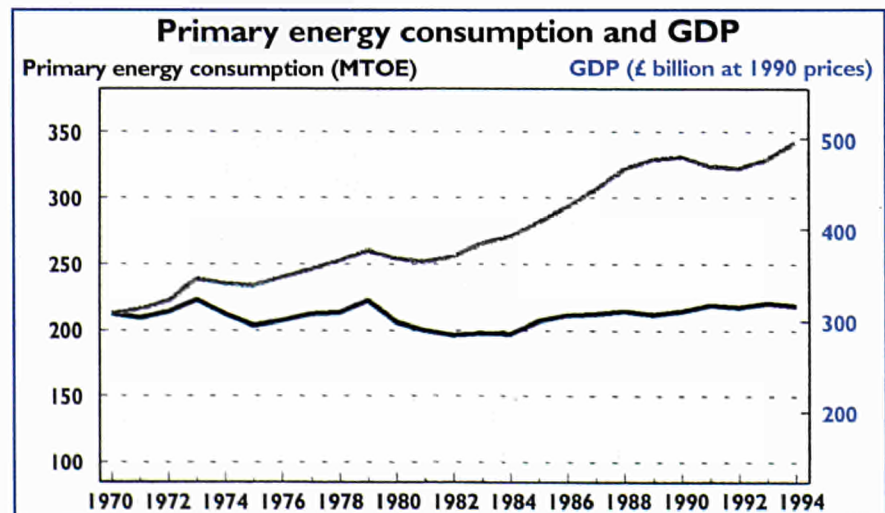
Despite our rational approach this is a very complex and wide ranging subject and not surprisingly we came up with quite a large number of indicators – about 120 overall – even after some fairly ruthless pruning of our original ideas. Yet, if we are to reduce the overall number of indicators, that

argues for some fairly high level aggregation in which important underlying trends may be masked. An obvious example is with energy consumption.

One of the most widely used high level indicators of energy use is the so called "energy ratio" the ratio of total energy consumed to GDP. This is illustrated below.

In real terms GDP has increased by over 60 per cent since 1970 while energy consumption has remained broadly constant. Thus the overall picture is fairly reassuring – the UK economy has become far more energy efficient over the last quarter century.

However, when we start to break this down by broad sector, we see some very different trends. The main ener-







*Water – we pollute it at our peril*

gy savings have been in manufacturing industry. Some of this is explained by structural changes in the economy from heavy to light industry but most is due to real efficiency gains from improved process design.

But in the domestic sector, which accounts for about a quarter of total UK energy consumption, energy efficiency improvements arising from better building design and home insulation have been countered by increasing use of central heating and electrical goods such as dishwashers and hi-fi systems. And, although energy consumption per household has not changed over the last 20 years, the number of households continues to rise as social factors lead to fewer average people per household.

### Who are they for?

One question people have asked is *who are the indicators for?* If for a wide audience and perhaps even to help influence people's behaviour, then they need not only to be understood but to have some relevance, so people feel they personally have a part to play in helping to change an unsustainable trend.

One way of increasing the impact of the indicators is not to present them at too aggregated a level, so that they relate to concepts people can more easily understand. Breaking down high-level indicators in this way may

also encourage individual companies and firms to compare their performance with the sectoral norm, and may encourage their environmental efficiency.

Closely linked with the work on indicators is a parallel effort in the UK Office for National Statistics on environmental accounting. Just as national accounts underpin many key economic indicators, we hope environmental accounts will help add rigour to the indicators exercise by underpinning the selection of key issues to highlight in the indicator set.

The accounts are being developed initially in physical terms (ie volumes of pollutants produced and stocks of natural resources consumed) rather than in monetary values. Generation of an adjusted or "green" GDP – that is, GDP adjusted for depletion of the stock of natural resources and change in environmental quality – is still a long way off.

### Where do we go from here?

The indicators we published last March are preliminary, designed to

provoke debate and discussion. In particular, we hope people will consider the following questions:

- Is the overall scope of the indicators package right – are there areas we have missed?
- Is the number of indicators too large? How might we reduce it? Aggregating the indicators in some way may mask important underlying trends and dilute key messages. Selecting some core indicators risks distorting priorities as people may concentrate only on areas for which there are indicators.
- How we can develop better measures in areas that are weak – for example, the impact of overseas trade, the impact on health, changes in development patterns, the non-economic benefits that people gain from economic development and a clean environment, such as beauty and tranquility of the countryside?
- What do the indicators tell us overall? In which direction should they be moving if our development is to be sustainable?



*Transport accounts for one third of total UK energy use. Road passenger transport accounts for around 20 per cent of energy used. Over the last 20 years we have become no more energy efficient in terms of passenger miles per unit of fuel used, despite considerable gains in fuel efficiency for individual vehicles. The increase in car ownership coupled with a fall in the average numbers of passengers per trip, the increasing dominance of private rather than public transport – all have played a part in this.*

*Each man, woman and child in the UK travels around 6,500 miles by car each year compared with 600 by bus or coach and 400 by rail.*



Over the past decades the environment has become an issue of growing importance on the political agenda. The need for effective cooperation on a global scale has been recognised and it is now a field where integration is a natural step. In this context the European Environment Agency was called into being by the Council on 30 October 1993.

# Europe's environmental watchdog

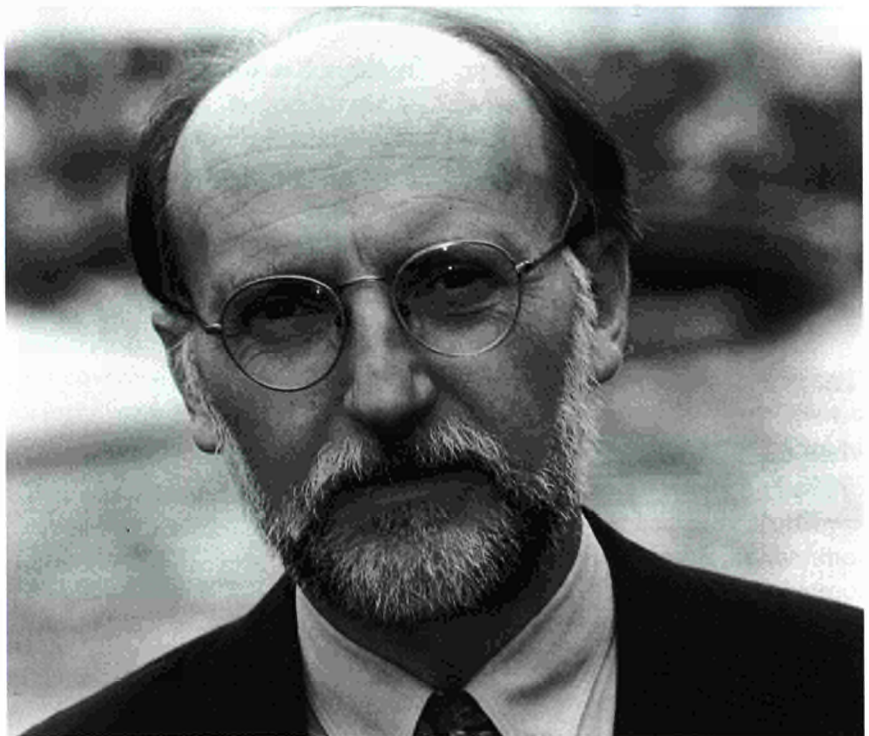
by Annika Östergren

In the heart of Copenhagen, at Kongens Nytorv, the European Environment Agency is situated in a beautiful 19th century building. EEA's mission is to deliver high-quality environmental information to the EU institutions and the Member States of the European Union, as well as to the general public.

"The main aims of the Agency are to describe the present and the foreseeable state of the environment as well as to provide relevant information for the implementation of the Community's environment policy", says Director General Domingo Jimenéz-Beltrán.

The EEA consists of the EU's 15 Member States plus Norway, Iceland and Liechtenstein and works closely with Central and Eastern European countries. The information it produces is used by EU institutions and Member States as well as non-governmental organisations and enterprises.

"There is a lot of information that gains more from being developed at European level than separately in different countries. However, this does not imply that all action should be taken at European level", says Mr Jimenéz-Beltrán.



EEA's Director-General, Domingo Jimenéz-Beltrán

## Right information at the right time

Main theme of EEA's work is "timely, targeted, relevant and reliable information". This means providing the right information at the right time. This in a society which is said to suffer from information overload. But, as Mr Beltrán puts it, Europe is rich in data but very poor in operational information.

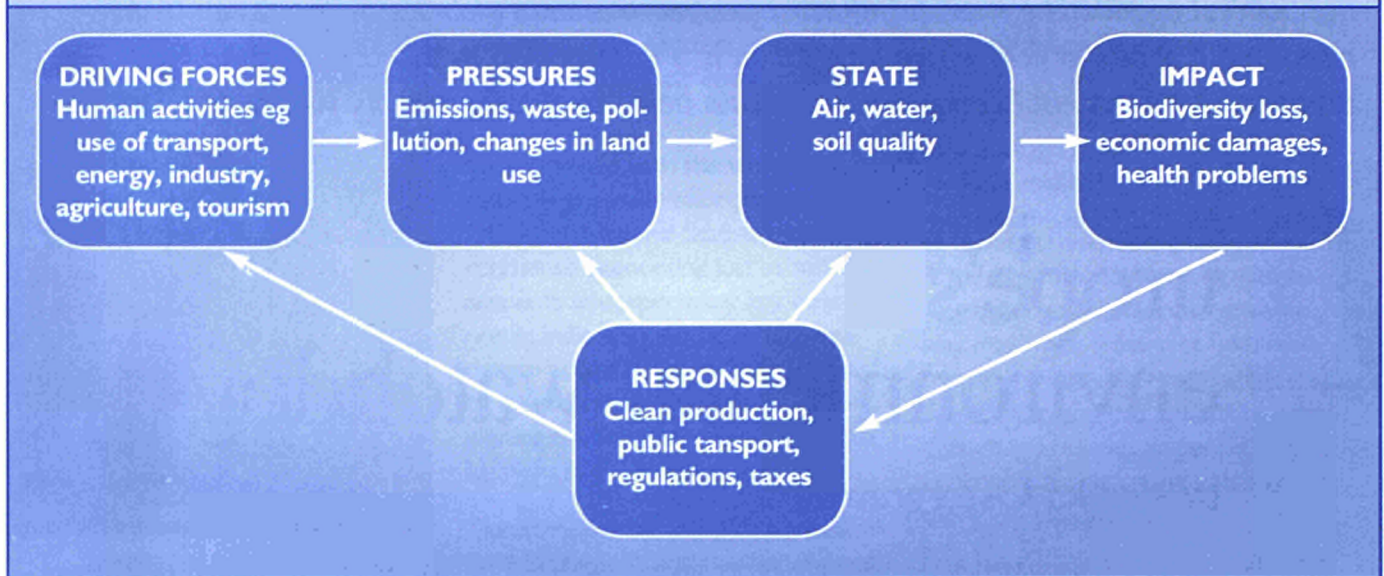
Data are a tool for implementing and developing policies and the

Agency must aggregate and present them in a way useful for policy-makers and those affected by the policy eg industry.

"I think we are moving from the concept of environment as a burden to environment as an opportunity. Most people want to behave properly in environmental terms. The same applies to businesses and governments, but there is very little understandable information."



## DPSIR model for environmental statistics



He gives the example of waste water management, where there is no comprehensive manual of improvement techniques available. In this area there is a clear lack of aggregated and developed information for policy-makers, industry and the public.

### The friendly watchdog

When the EEA was founded, some complained about its lack of power. It is separate from the Commission, although under the Community budget. But it does not control or propose legal actions to the Commission. Mr Beltrán thinks this is fortunate.

"Policy-makers can concentrate on policy-making. Our role is to provide information on situations and trends that cannot be argued against, that may go as far as evaluating the efficiency of ongoing measures, actions and policies. Being a separate body also means being remote from political pressures."

For some, this might make the Agency look like a watchdog without teeth, but Mr Beltrán says he will challenge anyone who argues against the power of information.

"Is there a more powerful tool?" he asks.

"Even a friendly watchdog can make a lot of noise and there is nothing like the bark of information", he adds.

### Sustainable development

Sustainable development means satisfying the need of present generations without affecting the ability of future generations to satisfy theirs. More sustainable production and consumption patterns mean using fewer resources per unit of GDP. The Agency's main test, according to Mr Beltrán, is to put forward information on situation and trends to indicate if economic development is going in the right direction – becoming more sustainable – or not.

For the EEA this means looking at the driving forces – transport, energy, industry, agriculture and tourism – that lie behind environmental pressures like pollution and emissions. Mr Beltrán says the road transport sector is non-sustainable, since it and related environmental pressures are currently developing faster than the economy. More road transport and consequently

more fuel in general is used per unit of GDP than before.

He identifies the essential role of environmental as well as socio-economic information. It should be used to show which trends are going in the wrong direction so something can be done to reverse them.

"It is necessary to replace the oversimplified method currently used to measure development with only economic indicators. Environmental indicators have to be presented to a greater extent, together with economic indicators", Mr Beltrán says.

### Snapshot of the environment

Indicators are playing an increasingly important role in monitoring and policy analysis, and providing early warning of environmental degradation or malfunction.

"A vast amount of data have to be translated into a small number of indicators to provide a snapshot of the state of the environment and the pressures and responses", Mr Beltrán said recently in a speech on environmental indicators (see [www.eea.dk](http://www.eea.dk)).



## EEA MILESTONES

1989

January

President Jacques Delors declares the need for a separate body dealing with environment information in a speech at the European Parliament.

\*

July

Commissioner Ripa di Meana proposes the creation of the EEA. "The main purpose of the Agency is to aid the Member States in meeting the environmental protection and restoration goals".

1990

Regulation to set up EEA and the European Environmental Information and Observation Network (EIONET) adopted by the Council.

1994

Executive Director Domingo Jiménez-Beltrán is appointed and the EEA moves into the premises on Kongens Nytorv in Copenhagen.

1995

Establishment of EIONET – European information and observation network. Launching of European Topic Centers in cooperation with EIONET. Establishing the basics. The Dobris Assessment and Environment in the European Union 1995, report for the review of the fifth environmental action programme are published.

1996

Building and consolidating the basis for proper monitoring (40 technical reports in the pipe-line), assessment and reporting.

A long list of products and services are developed. Two major reports are published: *Climate change in the European Union and Environmental taxes – implementation and environmental effectiveness.*

Environmental indicators steer action and check whether society is developing in a sustainable direction. There are many descriptive indicators of environmental quality, such as levels of pollutants, acid rain, and the number of extinct species. Normative indicators (air quality guidelines, water emission standards etc) have a long tradition and are very important since they measure the achievement of results, standards or goals. Ecological, effect-oriented indicators are rarer but there are some, and the most well known are probably effect indicators for the acidification problem.

The indicators the EEA is developing are close to policy-making and the environmental targets identified in the Fifth Action Programme will be the basis for the first ones.

"The most challenging indicators are those related to pressures and driving forces, such as statistics on road transport, waste production, land coverage of agriculture and forestry", says Mr Beltrán.

He gives a warning that road transport of goods will double within the next few years (2010) and air transport will triple.

Response indicators, such as reforestation, protected areas, legislation and investments are also common, but in this area Mr Beltrán points out that it is hard to find representative combinations close to reality. It is especially difficult to find indicators which are able to offset traditional economic indicators, such as GDP.

### "EMU slows progress to green GDP"

Most "actors" agree that today's GDP is not an adequate measurement of economic development. The main challenge is thus to find better indicators of progress. And,

as Mr Beltrán sees it, it will be difficult to have adequate policies and to address the right problems in an increasingly complex world, without better indicators of economic development. There is a clear need to establish a better reporting system on the real wealth of countries and the quality of life. It is therefore necessary to complement or substitute the traditional way of describing progress.

The review of the European Commission's Fifth Environmental Action Programme is one of the starting points for EEA's work on indicators. Progress on environmental quality is compared with targets within sectors.

The key to a greener GDP is internalisation of costs, and, according to Mr Beltrán, there are two phases: the widely-known "polluter pays" principle (PPP) and the less widespread "resource user pays" principle (RUPP). For example, today only 25 per cent of the real sustainable price of wood is paid; the price of reforestation and forest conservation is not included, otherwise it would be four times higher.

### **Dobris assessment**

Europe's Environment: The Dobris assessment is a report that covers the state of the environment in 46 European countries. It analyses different fields such as water, soil, air, nature, wildlife and urban environment. It looks at pressures which impact on them, the human activities giving rise to those pressures and the problems they can lead to. The Dobris assessment was prepared as a result of the first pan-European environmental conference held in Dobris Castle in the former Czechoslovakia in June 1991.





EEA's flag on top of the headquarters at Kongens Nytorv in Copenhagen

The EEA does not have a specific role in the "greening" of national accounts, but Mr Beltrán points out that if it develops a good analysis of the DPSIR model this will be a good basis for green accounting. However, he thinks the outlook for a greener GDP is quite pessimistic, since the internalisation of costs might go so far

as to lead to a negative GDP in some cases.

"I think the progress of green accounting will be difficult in the next few years with Economic and Monetary Union lying ahead. Many countries are transferring costs to the future to satisfy EMU criteria", he says.

## Putting information to work

On 30 October 1996 the European Environment Agency celebrated its third anniversary (second from its opening date). Mr Beltrán looks into what he sees as a promising future:

"The Agency is making a difference. It is present at all three levels of EC environmental policy-making. It works to support the development, implementation and, to a lesser extent, enforcement of EC environmental policies and legislation", he says.

"The greatest challenge it faces is the inequity of the information society. It is not evident that everyone will have access to good information.

"We have learnt one thing during these three years. If we want to change the production and consumption patterns of society today, we have to change the way we produce information. We have to produce information that is useful for Ministers but, at the same time, for people in general."

"Putting information to work" is thus the key phrase of the Agency's work. And over the next years Europe can be sure that it will hear the "bark" of EEA information. The Agency will in 1998, for example, once again take the pulse of the environment in Europe by publishing *Dobris 3* - the follow up of the *Dobris* assessment.

### Further reading:

- <http://www.eea.dk>
- *Europe's environment, the Dobris assessment.*
- *Environment in the European Union 1995, Report for the review of the Fifth Environmental Action Programme.*

### Facts from the Dobris assessment

- Since the 18th century 6 million sq km of the world's forest – an area larger than Europe – have been cleared.
- Although 50% of household waste could be recycled, less than 10% is actually collected for recycling.
- Two-thirds of Europeans live in urban areas covering 1% of total land area.
- A city of 1 million inhabitants daily consumes an average of 11,500 tonnes of fossil fuels, 320,000 tonnes of water, 2,000 tonnes of food, and produces 25,000 tonnes of CO<sub>2</sub>, 1,600 tonnes of solid waste and 300,000 tonnes of waste water.
- Europe accounts for between 20% and 30% of global human-induced emissions of CO<sub>2</sub>, SO<sub>2</sub>, VOCs and nitrogen oxides.
- Industry uses 41% of total energy in Europe, 22% is used for transport and 37% for the domestic and commercial sectors.
- Private car ownership doubled between 1970 and 1990.
- Agriculture accounts for 42% of Europe's total land area and forests cover 33%.



The Dutch are pathfinders in the "greening" of national accounts. Since 1994, Statistics Netherlands (CBS) have published an integrated system of environmental and economic accounts. Other countries and organisations are following their lead. A key figure in this development has been DR STEVEN J KEUNING of CBS. In this article he describes their pioneering work.

# Dutch statisticians turn green



Steven Keuning with a bust of Copernicus at the Royal Society in London. The latter's concern was the place of the world in the universe. The former's work is aimed at keeping it "green" for future generations

Steven Keuning is currently Director of the National Accounts Department at Statistics Netherlands. He holds a Ph.D in economics from Erasmus University, Rotterdam, and has published various books and articles on economic, environmental and social accounting issues. His most recent book (1996) is *Accounting for economic development and social change* (IOS Press, Amsterdam). He drafted the chapter on *Social Accounting Matrices (SAMs)* in the 1993 *System of National Accounts* and the 1995 *European System of National Accounts*. He is on the council of the *International Association for Research in Income and Wealth*.

A key objective of national statistical offices is to provide a coherent summary of changes in national welfare. Such changes cannot be judged from GDP volume movement alone as environmental and social developments are insufficiently captured by this indicator.

But the solution is not to distort GDP by an essentially arbitrary addition and subtraction of artificially-priced social and environmental changes, but to expand the economic accounts by including non-monetary social and environmental accounts, yielding a limited number of supplementary core indicators.

The regular national accounts in the Netherlands now contain not only the conventional economic

accounts and indicators but also a Social Accounting Matrix (SAM) and an integrated system of environmental accounts, the NAMEA (National Accounting Matrix including Environmental Accounts). This NAMEA system extends the set of core economic aggregates

with five summary environmental indicators. Moreover, the NAMEA is an analytical framework used increasingly for all kinds of analyses and policy simulations on the interactions between the monetary economy and the environment.

*Recently the Dutch Minister of Economic Affairs reported to Parliament: "Green national income does not exist in reality and therefore requires model calculation. As the results of such calculations are quite sensitive to the assumptions made, the model specification and the norms for environmental protection, many variants of green national income can be computed."*

*"It is not expected that such computations would yield a single, indisputable figure. On present showing, it is unclear whether the large research efforts needed for a recalculation of the past are outweighed by the practical benefits. In our view, it is more interesting and more workable to provide a more prospective and policy-relevant answer to the demand for a green national income. This can be done by investigating which level of national income can be attained in the medium or long term if expected environmental pressure drops as a consequence of politically-determined environmental norms."*



**In Germany the Federal Government has officially declared that "...the original goal of developing a single highly-aggregated indicator to represent economic and ecological development cannot be achieved". A similar conclusion will be drawn in a forthcoming final report of an EU-commissioned study on this subject by a broadly-based international research group.**

NAMEA enables a comparison of the contribution of all economic activities towards conventional policy goals (GDP, exports, employment etc) with their contribution to major environmental problems.

*This article is based on a presentation by Dr Keuning to a UK Statistics Users' Council conference on environment statistics, held at the Royal Society in London on 19 November 1996. Summary by JOHN WRIGHT.*

We measure the relative damage caused to the environment by the three main sectors of the economy. We look at it in terms of the five main environmental problems in the Netherlands: the greenhouse effect, ozone layer depletion, acidification, eutrophication and waste. For example, regarding the greenhouse effect, we have found that, per unit of final demand, agriculture pollutes three times more than the national average; manufacturing is 1.7 times more; and services 0.45. The problem with agriculture is that the Netherlands is such a small country with very intensive farms – we are the second biggest exporter of agricultural products in the world.

By now we have something of a time series. Pollution per unit of final demand has been reduced across the board – for all industries, in all problem areas. However, because final demand has increased and the economy has grown, pollu-

tion may still have risen. But the environmental efficiency of all production has increased.

So what is the essence of NAMEA?

When you want to convince Ministers or anyone else of a particular point of view you really have to give them concise and simple summary figures. The NAMEA framework allows this. For each key environmental problem we give one figure, a summary indicator. But, at the same time, we have an analytical framework so analysts, researchers and modellers can carry out simulations.

### Women pollute less

*One thing to emerge from studies related to NAMEA is that women pollute far less than men because they tend to work in the services industries – and this sector pollutes at only a half or less of the Dutch national average per unit of final demand.*

The "unique selling point" of conventional national accounts – and why they have become so powerful – is that they yield summary indicators – GDP, inflation, unemployment etc – that people can understand, but underlying these you have a framework for analysis, research, simulations, predictions and projections. We are trying to copy that success in our environmental accounts.

### Sowing the seeds of SESAME

Many national statistical systems already collect and publish information on virtually all aspects of welfare. The problem is not so much a lack of information but a lack of integration of these data within a comprehensive but flexible statistical information system. This need is met by our System of Economic and Social Accounting Matrices and Extensions (SESAME).

In essence, a SESAME integrates economic, social and environmental accounts and indicators through conceptual and numerical linkage of related monetary (economic) and non-monetary (environmental and social) data. An essentially arbitrary imputation of a hypothetical price to an unpriced flow is avoided. Therefore a SESAME remains a *statistic* and not the outcome of an (implicit) model.

In the Netherlands, SESAME is gradually being developed. It started with compilation of a SAM and a NAMEA. Both are now an integral part of our national accounts and have been combined into a single framework.

We compiled the first pilot NAMEA in 1993. At present it is available about two-and-a-half years after the reference year. Each NAMEA is fully consistent with the national

### NAMEA WORKS

*When the first NAMEA was issued the leading Dutch morning paper carried the headline Importance of agriculture outweighed by environmental damage. Although this did not do full justice to the nuances of our press release, it gives an indication of the kind of messages that can be conveyed by NAMEA.*

*Partly as a result of this type of information, stringent measures to reduce the phosphorus and nitrogen emissions by factory farms have recently been approved by the Dutch Parliament. And a recent report by the World Resources Institute signals that summary environmental indicators, combined with information on the relative contribution of each industry, have played a key role in reaching voluntary agreements between the Dutch Government and industry representatives on a significant reduction of toxic emissions.*



accounts for the same year. We are now extrapolating the NAMEA framework to obtain better and more timely summary environmental indicators than we had in the past.

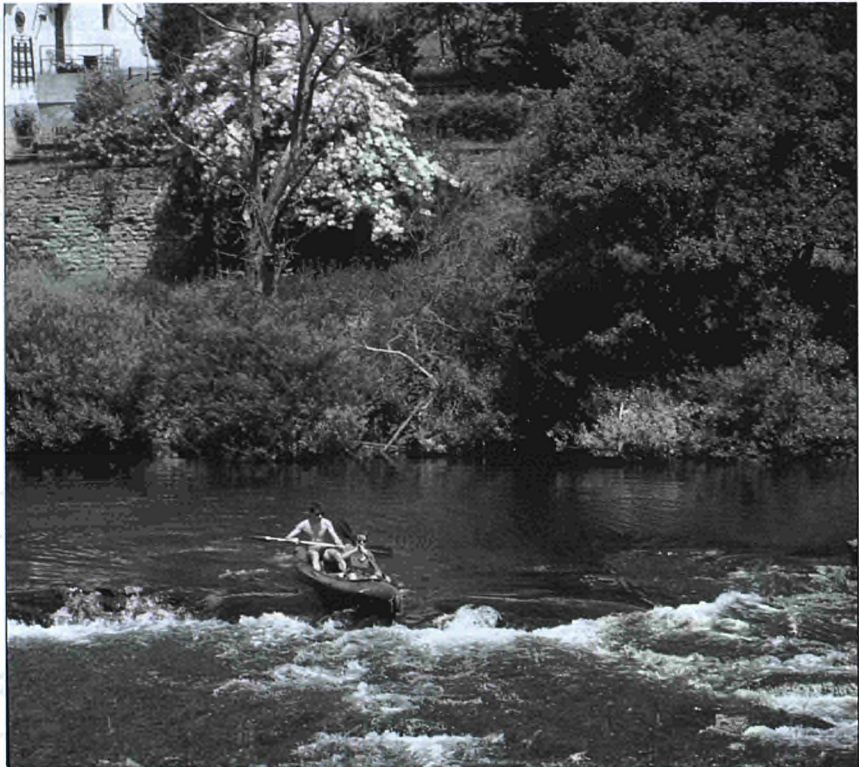
The NAMEA is acting as a catalyst in the process of incorporating environmental concerns in standard government macro-economic models.

Eurostat has announced that in around 12-18 months it aims to publish NAMEA-type information systems for all or most Member States. It has already proposed various standard classifications. The EC's Statistical Work Programme for 1997 explicitly mentions the establishment of pilot NAMEAs.

### GDP can't stand alone

NAMEA is a multi purpose information system. First, it serves to generate joint accounts and summary indicators for the environment and the economy. The simultaneous release of economic and environmental aggregate figures has already increased public awareness that economic development cannot be judged from GDP volume change alone. A recent newspaper article reviewed the pilot version of the new CBS publication *The Dutch economy* and stated:

*This study auspiciously starts with a series of core indicators which include, apart from the well-known macro-economic figures, statistics that co-determine the measurement of welfare: income inequality, education level of the population, criminality, life expectancy and environmental pressure. CBS makes an important contribution with series of data on emissions that can contribute to the greenhouse effect, ozone layer depletion, acidification, eutrophication and the increase of waste dumps.*



*The development of environmental statistics has a vital role to play in ensuring that future generations can still enjoy nature...*

A next step will be development of a fully-fledged NAMEA-based policy model. Such models must take into account that, from an environmental point of view, it is counterproductive to chase away polluting industries from your own backyard

if this results in a corresponding increase of imports produced by even more polluting production processes elsewhere. This points to the importance of compiling NAMEAs across a range of countries.



*...rather than see nature as a museum piece*

cartoon by Mario Ramos



In this article ANNE HARRISON of OECD discusses the debate on green accounting and says why, in her view, combining economic and environmental data in one single "magic" figure – green GDP – makes little sense.

# You can't do it all in one number



*Anne Harrison is Head of the Transition Economies Division, Statistics Directorate, at OECD in Paris. She began her career with the UK Government Statistical Service. This was followed by a posting to the World Bank and several years as an independent consultant. She has published many papers and articles on the environment and national accounting.*

There has been a lot of work done on the environment and environmental accounting for many years but it was perhaps the state of the economy in Indonesia that put it all into sharper focus.

Specifically it was a paper in 1989 called *Wasting assets* by Robert Repetto and colleagues from the World Resources Institute in Washington DC. Basically, this said Indonesia was not such a big success story after all. The only reason the economy was growing was that they were using up their oil reserves and tropical forests. Therefore national accounts were wrong and needed to be changed. This was a clarion call many people took up with great enthusiasm, and

the ideas were rapidly extended.

The thinking was that not only do we need to worry about the sort of natural resources just mentioned, but also about land – overgrazing, desertification and deforestation. Then beyond worrying about depletion of these assets, there was also concern about pollution and how we cope with it.

At about this stage we could see broadly three sorts of people putting forward arguments:

- environmentalists who wanted to worry about depletion and degradation but who were also concerned about biodiversity and risk to species

- economist very concerned about welfare, and then

- the poor old statisticians who said "What about my accounting rules, and how am I going to do it anyway?"

It is clear that trying to harmonise all three sets of needs within a single system is not the easiest thing in the world!

One thing that became clear early on was that we needed to think about physical and monetary data. There had been a lot of physical data already prepared, and to begin with there was a thought that it was going to be terribly simple to express it all in monetary terms and then adjust GDP. This was enhanced by the fact that, in the new System of National Accounts being developed at the time, there was more discussion of stocks and flows. So this fitted naturally with the physical data that was also in stocks and flows; and if we were revising the SNA why didn't we do so to take the environment into account as well?

*This article is based on a presentation by Anne Harrison to a UK Statistics Users' Council conference on environment statistics, held at the Royal Society in London on 19 November 1996. The view expressed are those of the author and should not be attributed to the secretariat or member countries of OECD. Summary by JOHN WRIGHT.*

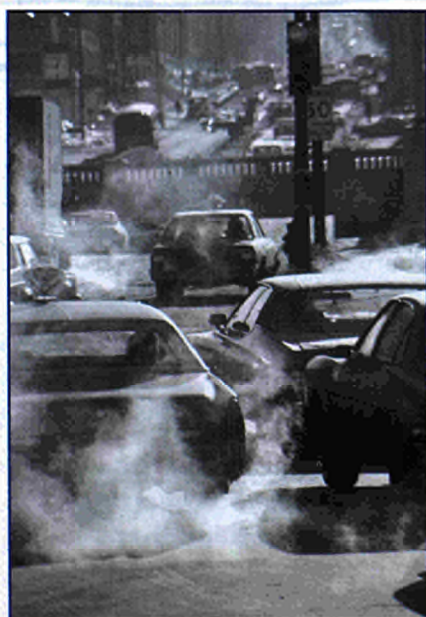


## SNA already partly green

There is an accusation sometimes that the SNA says nothing about environmental assets. This is not quite true. We have two sorts of assets that are dealt with in the accounts, both of which contribute to production. There is one set we call produced assets under human control – cultivated livestock, orchards, plantations, and so on – and there are also non-produced assets like land, sub-soil deposits, sometimes wild animals, and natural forests, which also contribute to production.

When they have monetary values put on them – they are incorporated in the national accounts. So this information is in the system. We can then build up monetary accounts. We can think about depletion and worry about how much of the natural resource we are using up in the course of economic activity.

When we come to talk about degradation and look at damage done to natural assets we can break this down into three classifi-



What price pollution?



cartoon by Mario Ramos

**The environment is now firmly on the statistician's desk. It will not go away**

cations. We can talk about degradation that is avoided either by not using fertiliser or by putting scrubbers at the end of exhaust systems, and so on. We can talk about degradation that happens but is put right. And then there is some that just happens and we don't do anything about it.

So the question is: how do we value these sorts of degradation?

And we come up with different sorts of options. One is to say: we can look at avoidance costs. If we do this we get into a rather hypothetical situation – we say *what would have happened to the economy if we hadn't undertaken something that led to such and such a conclusion?* I think a number of us are very strongly of the opinion that this sort of valuation is to do with modelling and not straight accounting.

There's the question of restoration costs, which sounds easy. You say *how much would it have cost to put something right?* But of course, it may not be possible to do so – you may do damage which is simply irreversible; and to put an infinite value on it, although interesting and

informative, doesn't really help the accounts very much.

And then people say *let's ignore both of these; let's talk about contingent valuation and willingness to pay.* This has run into a number of problems. More often than not, it tends to be advocated as a theoretical solution rather than a practical one; and there is the problem that, if you apply this sort of valuation to the environment, why not apply it to other things in the accounts as well? You could end up with complete discontinuity between that part of the accounts to do with the environment and the rest of them.

## Moving to a consensus

So where do we end up?

This has been a long and on-going discussion and it will continue. But I think there are some moves towards a consensus. A number of people – not everybody – think we should perhaps put a depletion allowance into the national accounts. We should be able to identify actual costs that are undertaken, including restoration costs,



and pinpoint what we do spend on the environment. But probably the degradation we do not restore we probably deal with by modelling rather than by pure accounting.

What does that mean?

It means we can mark up some successes: that, as far as environmentally unfriendly activities are concerned, we can identify some of the costs of avoiding or cleaning up the pollution, and we can set these against the other costs and benefits of the activity.

We can make a link between physical and monetary data. I think initially it was supposed that doing monetary accounts would leave the physical data behind – you would use the latter as a stepping stone to your monetary accounts, but that would be all. I think that has changed – I think people realise increasingly how important the physical data are – and that, for

some purposes, they are all you need, in fact.

After our successes, what do we think we have by way of failures?

Well, at the moment, the work being done on environmental accounting says nothing about sustainability – partly because nobody can quite agree what sustainability means in accounting terms. What exactly is sustainable GDP? Do you mean the same level? The same rate of growth? How exactly do you want to characterise it? It doesn't say very much about welfare – but then GDP doesn't say very much about welfare anyway, quite apart from environmental considerations. It doesn't say anything about biodiversity or the sort of crisis you may have at a single point – traffic congestion and other problems in a large urban agglomeration which are not the same for the country as a whole. And it

doesn't say anything very much about a catastrophe.

### What should GDP do?

Then we come back to the question: what should GDP do? Initially there was a lot of concern that GDP was sufficiently misleading that people were making bad policy decisions. This was the argument put forward in the Indonesian case. But the question really is: should GDP really try to tell us everything?

There is a sense in which some people want one magic figure, GDP, that is going to tell you everything about everything – about the environment, species, welfare...

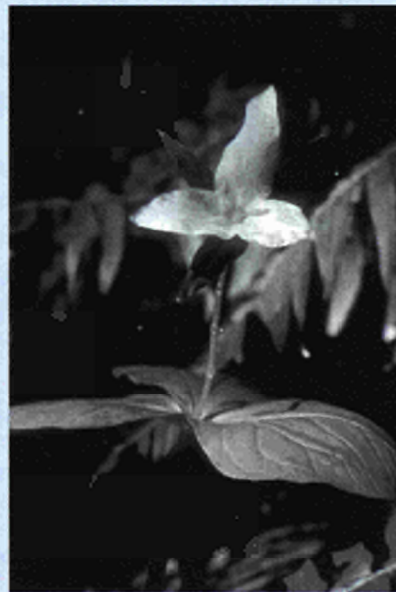
It isn't going to happen. You can't do it all in one number

It is not going to tell you anything about global warming. But should it? You can find out about this without necessarily looking at GDP. It tells us nothing about the Chernobyl-type disaster. But, as someone who has spent some time looking at the economic consequences of Chernobyl in the Ukraine and Belarus, I don't actually need environmental accounts to see what a disaster this was.

So, at the end of the day, there is probably an increasing view, certainly among national accountants, that there are some things that national accounts can do to help in looking at the environment. There are parts of the accounts that we can identify as relating to the environment. There are perhaps some other issues we can put in.

**But national accounts aren't going to tell you everything, and we don't think they should. We think a lot of the other information comes from the physical indicators and other sort of data.**

*Those that are opposed to a single index, such as green GDP, fear economists are going too far in trying to combine environmental apples and pears. A single index is incapable of saying anything useful about the numerous inter related and simultaneously binding environmental and social constraints. Economics relies on trade-offs between goods and services. The theory is not good at handling goods which are of uncertain value to people (such as endangered species), or which are essential and have no practical substitutes (such as the ozone layer).*



**How can you put a monetary value on a single wild flower or a flock of wild geese? Tough question for today's economists and statisticians**



# National accounting and the environment – What is Eurostat doing?

by Brian Newson

**E**urostat is acutely aware of the considerable political pressure to take more account of the use of and damage to the environment in our macro-economic statistics of national output, income and wealth. At the same time we are confronted with very real problems in defining a "green GDP" and assessing what it would mean if we had one, as explained in the article by Anne Harrison (see article on page 30).

The Commission responded to the challenge in a Communication to the European Parliament and the Council at the end of 1994 entitled *Directions for the EU on environmental indicators and green national accounting: The integration of environmental and economic information systems*.

That Communication proposes three main axes for development:

- a European system of integrated economic and environmental indices, focusing largely on the pressures human and economic activity impose on the environment
- a more fundamental – and probably lengthier – process of enlarging the national accounts to better reflect environmental aspects
- research into monetary evaluation of environmental damage.

This article focuses mainly on the second aspect – the "greening" of the national accounts. Rather than focusing at this stage on a "green GDP" it has been felt more useful to develop coordinated datasets, satellites to the conventional national accounts, that quan-

tify various aspects of the interaction between the economy and the environment.

Economic impacts on the environment can be broadly categorised as of three types:

- using up natural resources faster than nature can replenish them
- degradation of the environment, frequently by using these same natural resources, (burning oil, dumping toxic wastes etc)
- environmental protection activities and other economic measures to prevent or clean up pollution.

*Brian Newson is head of the newly-created unit for environmental accounting within the macro-economic statistics directorate of Eurostat.*

Much of the original concern related to the excessively rapid depletion of natural resources and their likely exhaustion within a rather short period, for example in the *Club of Rome report* in 1972. We measure both stocks and depletion of all economic natural assets (sub-soil assets, forests etc) in our *balance sheets* of the national accounts; they are part of national wealth, along with man-made assets. In Europe, depletion is a less crucial problem than environmental degradation.

The natural resources we extract (or in the case of Europe import) are then used. Eurostat is developing and building on earlier work on *flows of materials* through the economy which, by

showing systematically where materials go, will help us reduce our needs by using them more efficiently – recycling and so on. A particularly important resource is water, constantly replenished but suffering scarcity in some areas and pollution in others.

## 'Bads' as well as 'goods'

Using raw materials results in emissions of pollutants. Emissions to the air, frequently the result of burning fossil fuels, will be presented in a matrix showing these "bads" produced by the economy in just the same way as conventional national accounts show the "goods" produced.

Activities to prevent or to clean up pollution are measured through a system of *environmental protection statistics*. Statistics of *eco-taxes* to discourage pollution and *eco-industries* to reduce it have been developed with interested Commission services.

Of course, environmental accounting is a new, emerging field and much of the work in the period from 1994 to 1996 was concerned with developing and clarifying the methodologies. We do this with the environmental and national accounts statisticians of the Member States but also those of the USA, Canada, Australia, Japan, in order to draw on the maximum of experience. During 1997 most Member States will carry out pilot studies in most of the areas outlined above with a view to having fully operational satellite systems around the year 2000.



# The proof is in the process

Environmental statistics from a non-government perspective

by Alex MacGillivray

Statistics have been in and out of fashion since the watch, thermometer and gold coin first assumed central roles in our lives. George Bernard Shaw noted that "The sign of a truly educated man is to be deeply moved by statistics". Disraeli disagreed: "lies, damn lies and statistics". Albert Speer allegedly claimed that with a tool like Gross National Product (GNP), he could have won the war. Simon Kuznets won the Nobel Prize for inventing this handy indicator. Darrell Huff immortalised "gee-wizz graphs" in the 1970s with his *How to lie with statistics*. Statisticians are typecast as boring number-crunchers, yet they clearly wield enormous power: a clever adjustment to unemployment figures can make a political friend for life. No wonder then that environmentalists are both enthusiastic and deeply cynical about the explosion of environmental indicators in the 1990s.

## Numbers speak for themselves

Indicators are tools which simplify, measure and communicate complex trends. To be effective, indicators should provoke interest and debate, as well as command technical respect. They sit at the top of an information pyramid which becomes increasingly useful for busy decision-makers of all complexions. The imperative to communicate widely is what distinguishes indicators from other types of information product as well as

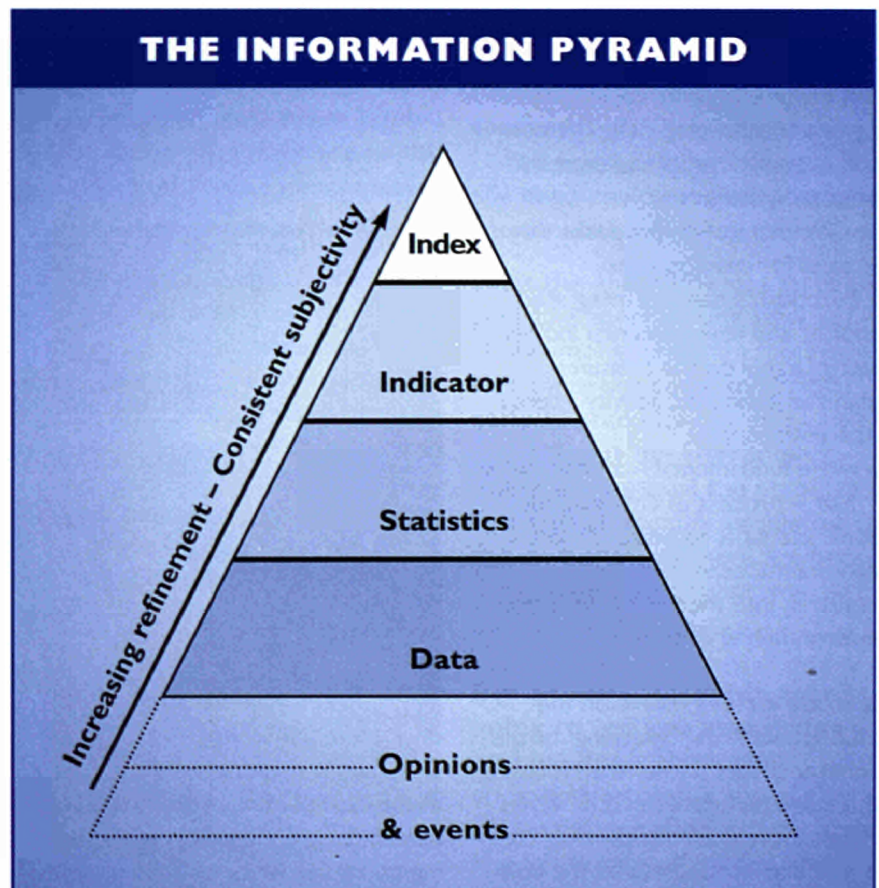
from information management systems such as economic models and systems analysis. The whole pyramid sits on opinions and events. Value judgments permeate the whole edifice, no matter how 'objectively' the data is treated. The first question any recipient of information should ask is: *who got to decide?*

## Green with envy

Economic and social indicators have a relatively long and illustrious history. As far as we know, the first international workshop on eco-

nomics indicators was in 1928. The US National Aeronautics and Space Administration (NASA) gave birth to the 'social indicators movement' back in the 1960s. By comparison, environmental decision-makers have not had indicators around until recently. Indeed, NASA itself incompetently failed to discover the growing ozone hole in Antarctica because they would not believe what their instruments were telling them.

Across a whole range of important issues, from deforestation and fish stocks to water and air quality,





environmentalists have been hampered by the poverty of reliable and resonant indicators. Decision-makers and the public remained in the dark as the academic and scientific experts battled it out with environmentalists trying to press the alarm bells.

### Information overload

The 1990s have changed all that. Individual countries led the way: Canada's *State of the environment report* and the Dutch system of environmental pressure indices arguably led the way.

Internationally comparable data lagged behind, but from relatively modest offerings like the EU's first *State of the environment* report, we now have the *Dobris assessment*. Internationally, the early *State of the world* and *World resources reports* have become sophisticated references full of environmental statistics. Part of this progress was just a matter of time; part is due to the valiant efforts of national statistical offices, as well as the harmonising work of Eurostat and the United Nations. The major part of the credit, the non-governmental organisations would like to think, belongs to persistent calls by environmental groups for better information. A whole chapter of *Agenda 21* is devoted to just this need.

Now, suddenly, we are awash with green information. OECD has its pressure-state-response framework as a way of hanging detailed sets of environmental indicators for country reports. The United Nations Commission on Sustainable Development has gone one better: it has devised a framework of 130 environmental, social, institutional and economic indicators (indicators of sustainable development) and a methodology for testing by 10-20 countries. Individual countries such as the UK have also come out with

detailed sustainability indicators, and Eurostat is hard at work on an ambitious and complex system of European environmental pressure indices. The trouble is, there is now so much undigested information around that NGOs and the public are having trouble seeing the wood for the trees.

Simultaneously, and for different reasons, the public in many countries has come to mistrust central government and the scientific community.

### Taking the indicators into their own hands

Not content with the official offerings, environmental NGOs have begun to develop their own indicators, which tend to be much more compelling. Friends of the Earth has taken up the Dutch concept of *environmental space* to look in detail at the availability of a range of environmental resources (wood, water, raw materials energy, land) in 30 countries in Europe and further afield. The country studies are beginning to come out, and show that European countries will have to cut their *per capita* consumption of these resources dramatically if the rest of the world is to get its fair share.

In the UK, a coalition of environmental NGOs called *Green Gauge* decided to produce their own concise set of resonant environmental indicators. The coalition, with a combined membership of over two million people, looks for the key trends of concern to the public, and attempts to fill official data gaps with information gathered from a wide variety of sources. The World Wide Fund for Nature is currently working on a *Living planet index* which will aggregate a limited number of key variables for the countries of the world. And academic William Rees in Canada has come up with the Ecological

Footprint, a graphic way of calculating and illustrating the amount of land that is effectively expropriated by rich consuming centres of population on what he calls 'distant elsewhere's'. For the Lower Fraser Valley in British Columbia, the figure is 40 times the land area. For London, the figure is 120 times the surface area of the capital.

### Taking nature into account

Environmental groups have also got involved in the debate about reforming the system of national accounts to take account of well-advertised environmental externalities like natural resource depletion, pollution and long-term damage (ozone depletion, climate change). The World Wide Fund for Nature formed a powerful alliance with the Club of Rome and European Parliament last year to lobby the European Commission to adopt a Green GNP. Despite some encouragement in the Fifth Environmental Action Programme that the EU would move in this direction, EU Directorates have more recently become squeamish about trying to find monetary values for such externalities. Is this well-founded technical and statistical caution, or is it a convenient smokescreen? Certainly, a large number of developing countries such as Costa Rica, Papua New Guinea and the Philippines have managed to move towards monetised resource accounting with modest statistical resources.

Actually, improving GDP is not such a Herculean task – just a lack of political will. Tiny research institutes in 7 OECD countries have each produced an Index of Sustainable Economic Welfare (ISEW), which adjusts GDP for both environmental and social externalities, for the period 1950-1990s. While there are certainly technical wrinkles in the



ISEW, the problem is not fitting a price to externalities, but in deciding which price an intensely political process. Official statisticians say "that's not our job". Environmentalists retort that transport statisticians have been quite happy to assign monetary values to transport fatalities at politicians' behest. A third camp of 'deep' ecologists are opposed to environmental valuation for a different reason. A fourth group of pragmatists can see a short-term advantage in using environmental valuation to campaign against undesirable projects such as road schemes. However, they worry that this may establish the precedent which will backfire on them for other projects in the future. No wonder the NGOs have not yet convinced the Commission to adopt a Green GDP, let alone a quality-of-life index.

The experience in the UK is typical. For some years lagging behind other European countries such as Norway, the Netherlands and France in environmental accounting, the Office for National Statistics (ONS) has recently produced its first pilot accounts. The ONS has been criticised for backing away from attributing financial costs to the environmental problems it itemises. Admitting that "it would, in some ways, make analysis easier", authors Vaze & Balchin state that "it is not possible to find widely agreed prices for environmental damage. Because environmental accounts cover non-market transactions it is often difficult to put them in monetary terms.". 'Yes, it is difficult', environmental groups agreed, 'but it is certainly not impossible'. In some quarters, the ONS was seen as simply abstaining from this important debate.

Until environmental accounts across Europe use euros (or national currencies if that appeals more) on equal footing with GDP,

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they are too easily ignored by decision-makers. The name "satellite accounts" is telling. If, ultimately, it proves impossible to gain official sanction for pricing environmental externalities, then NGOs will call for the physical accounts to form the keystone of the SNA, with GDP relegated to the inglorious position of 'satellite'! The debate could go round and round indefinitely, a familiar experience for feminist economists who have for decades now been arguing for the valuation of unpaid work in the SNA. Eurostat's new time use survey will, they hope, provide such compelling results that their case will finally be won. Environmentalists, unfortunately, may have to wait for tangible evidence of the economic costs of climate change, ozone hole induced skin cancers and poor air quality before government accepts the need to put these costs up front in the headline indicator.

### **We're all in this together !**

'Participation' is the recurrent theme of *Agenda 21*, and even in the most extremely technocratic corners of Europe, the need to solicit public involvement in the

selection and communication of indicators is now accepted. A recent UN workshop in Ghent on sustainability indicators had a special session with sceptical Belgian NGOs. In the UK, the Department of Environment and the Office for National Statistics both have consultative processes within their indicators work, ranging from workshops and conferences to advisory groups. Eurostat's environmental pressure indices project is using a sophisticated methodology to garner the views of experts and NGOs alike to assign weightings to the indices. And local *Agenda 21* projects are springing up all across Europe which make a virtue of the wide public participation involved in indicators. At its extreme, this has even led to schoolchildren gathering data on water quality – by counting the frogs in local ponds.

Increasingly, quality control will require us to check that the indicators do measure, simplify and communicate. Since communication is a two-way process, any indicators should show clearly who got to choose. Evidence of narrow involvement will attract NGO disapproval and public disinterest. Certainly, the new participation imperative will be messy, and disrupt business as usual for statisticians and policy-makers. When the number of salmon in local streams becomes a more resonant indicator than *per capita* income or local business start-ups, as it has in Seattle, then something profound is happening. Perhaps the final word should go to Donella Meadows, the famous *Limits to growth* modeller:

*"The idea of citizens choosing their own indicators is something new under the sun – something intensely democratic. The indicators a society chooses to report to itself about itself are surprisingly powerful. They reflect collective values and inform collective decisions."*



How are energy and environment data finally used? Sigma's BARBARA JAKOB talked one key user – PROFESSOR PANTELIS CAPROS of the National Technical University of Athens.

# "Environment is triggering everything"

*Professor Pantelis Capros leads the research team of the National Technical University of Athens. He deals with the construction of applied economic and engineering models mainly used by the European Commission in the fields of energy, environment and macro-economics. One model he is working on, the MIDAS energy model, is the principal forecasting source for EC energy results and was used recently in the Scenario 2020 Study of DG XVII - Energy<sup>1</sup>.*

*Such applied models are important tools for energy analysis, study of environmental aspects of energy, and macro-economics policy. As they are quite complicated a large amount of statistical data are required.*

"At present we are maintaining **three models**", Prof Capros explains. These are:

- MIDAS – mentioned above
- PRIMES – an energy model used by the department responsible for research and analysis of strategy of DG XII (Dir. Environment) in a large study<sup>2</sup> of the greenhouse effect and climate change, and
- GEM E3 – a general equilibrium



**Prof Capros and his team are heavy users of Eurostat data**

macro-economic model used by several DGs, which has also been used in the evaluation of the implications of the single market.

Professor Capros explains: "We try to minimise the requirements from external sources and use as much Eurostat data as possible. But we do not cover our data needs 100% from Eurostat because sometimes data do not exist and, in some cases, they are not satisfactory."

*So what is the spectrum of statistical needs? I want to know.*

"We use whatever we can get. The first package of data are the energy balance sheets which are well covered by Eurostat. We also need time series on energy prices, details of

prices by type of use (domestic, industry) and producer prices, VAT etc. For gas and electricity prices, we have access to the survey carried out by Eurostat, and for other prices we use other sources.

"Another domain are the statistics on energy use in technical detail – by industrial process and domestic energy use." Prof Capros regrets that the link between engineering and energy statistics is completely missing. There are no statistics on stock and characteristics of appliances and equipment in order to understand the way energy is used, effectively or ineffectively, and the loss of energy etc. "There are projects financed by the EC to cover this but they haven't materialised yet in a database that is available. It's still experimental."

Finally, in the energy field a lot of data about energy production are required – for instance, in the electricity sector, statistics on production capacities by plant type, characteristics of production, production of electricity and steam by cogeneration units. "This domain is partially covered by Eurostat", Capros explains. "Statistics on renewables and other energy forms have recently started to be covered in the energy balance sheets."

<sup>1</sup> DG XVII – Energy:

*Energy in Europe – European energy to 2020, a scenario approach, Luxembourg 1996 (CM-BR-95-002-EN-C, 25 ECU excluding VAT)*

<sup>2</sup> A DG XII study "Climate technology strategy within competitive energy markets: towards new and sustainable growth."



### Three pillars of energy

*Is the link between energy and environment evident in his work? I ask him.*

"This link is very important. Practically all the work we are doing with the models is on environmental implications and policy. There is little room for 'pure' energy policy these days – environment is triggering the whole thing.

"There have always been three pillars of energy policy:

- security of supply
- economic competitiveness, because energy is a derived demand of economic activity and its cost has great economic impact, and finally
- the environment.

"These three pillars govern energy policy and energy analysis. Now, it is true that a large majority of studies from international organisations, and also at country level, are driven by environmental questions: the greenhouse effect, climate change, acidification, problems of cities, local pollution by electricity plants and electricity transmission lines etc.

### Trade-off between the economy and environment

"Therefore, to evaluate energy policy or environmental policy you must be able to assess the economic implications. There will always be, at the end of the day, a trade-off between economic and environmental implications.

"So, it is very important to understand the links between energy and environment. Regarding the statistical data, the situation is different according to type of pollutant. Regarding CO<sub>2</sub> (carbon dioxide), which is responsible for the greenhouse effect and climate change, it is very simple – as soon as we know how much energy we consume, we can simply deduce the emissions of CO<sub>2</sub>.

### A missing link

"We have a problem for the acidification pollutants. In order to decide about acidification abatement policy, we need to know the emissions of SO<sub>2</sub> (sulphur oxide) and NO<sub>x</sub> (nitrogen oxide), but the Commission just has data on the concentration of those pollutants in the air.

"So, we are missing one thing in order to have a fully-integrated assessment, which might be badly needed for the revision of the combustion plant directive or a change of taxation – we need the link between energy consumption and emissions of acidification pollutants. And we need statistics – for example, on which large combustion plants already have abatement equipment, the actual emission factor by type of fuel or by type of plant or by country etc.

"Without exact emissions data and statistics on whether or not plants have invested in abatement technology, we won't be able to evaluate the impact of certain policy measures, or even decide on a certain policy. Here is a definite gap.

### A need for essential information

"All our models on economic implications need detailed industrial statistics. Our major need is for input/output tables. Unfortunately Eurostat is very weak in this area. The latest consistent set for all countries is for 1985. Since then there have been the internal market, technological advances etc, and we don't know how the commodities are produced in concrete terms – which production factors are used to produce them and the intermediate consumption of industries, services, agriculture, and all the other sectors.

"Only France and some other countries are producing good quality standard input/output tables. But most countries are not very far advanced in this field, which is extremely

important to understand technological progress, macro-economic implications and industrial policy. Whatever data you want in the field of energy and environment must pass through an input/output table. This is a domain where we need progress."

### More work to be done

*So a big demand for more data but what about the quality of the available information?*

"The quality is good in the sense that we have transparency, we can understand the way the data have been produced, and they are well documented. Energy balance sheets are better than other sources. There are problems in the domain of useful energy statistics and cogeneration of power and heat. Both domains are new in terms of statistics; this explains why. A lot of experimentation is required before deciding on standard definition and classification – there is work to be done on this.

"We must understand better the way energy is used, the relation between equipment and energy, and on the supply side there are, in fact, two issues – one is the ongoing decentralisation of energy production. Here we shall have a new situation. But the first priority definitely is improvement in input/output tables.

"The US are further advanced. Just look at what they have in the Energy Information Administration of the US DOE and you see the gaps we have. And US statistics are free of charge. We shouldn't have to pay for statistical information, especially when it is used for public or research purposes. The different universities and institutes all over Europe working together in the modelling projects all have the same problem: to meet the cost of the large amount of information we need for modelling. Statistical information is one element of democracy – it should be transparent. US statistics are not only free of charge, they are accessible to everybody at any time."



*In the latest of our profiles of national statistical offices, Sigma's JOHN WRIGHT visits the Instituto Nacional de Estadística (INE) in Madrid. Here is able to catch the new President, Mrs PILAR MARTÍN-GUZMÁN, with her feet barely under the table, three months after her appointment, and finds...*

# A n independent woman at the helm of Spanish statistics

Outside statistics, which are clearly a passion as well as a profession, one of Pilar Martín-Guzmán's main interests is 19th century Spanish novelist Galdos.

"He was a very good portrayer of middle and lower class society in Madrid – on the same level as Balzac and Dickens", she explains. "He was a very realistic novelist: he highlighted ordinary life, ordinary people in a very, very accurate way."

Later, walking the streets of modern Madrid after my interview with Mrs Martín-Guzmán, I am struck by a parallel between her and Galdos. Like him, she is attempting to paint an accurate picture of contemporary Spain, albeit in figures more than in words, and the ordinary life of ordinary people is also her meat and drink.

But, of course, Pilar Martín-Guzmán's picture of Spain, apart from being a hugely broader canvas than Galdos ever could have envisaged, is not for entertainment or even solely for enlightenment. It is a vital statistical map to be used by Spain to steer its course through yet another exciting and rapidly-changing period of its eventful history.



For the Spanish Government, the new Presidenta of the Instituto Nacional de Estadística (INE) was clearly an important appointment. At the end of the day it went to someone who describes herself as "aggressively independent".

We begin the interview by discussing how and perhaps why she comes to be sitting in the rather

grand office of the Presidenta in Madrid's Paseo de la Castellana dressed in a striking cream suit and a black silk shirt.

One day last summer there she was, Professor of Statistics in the Department of Economics of the University of Madrid, aged 54, 25 years an academic, when she was invited for a one-to-one interview



with the Secretary of State for Economics. *Was it a surprise?*

"My name had been around the newspapers for a while in connection with the job. So it was only partly a surprise."

*Were other people interviewed?*

"I don't know. Let us say these interviews are not public."

*Would she say it was a political appointment? After all, there had just been a change of Government.*

"No, definitely not – it's a technical appointment. I don't belong to any political party. I have no connections with the party in power. I think the Government appointed me because I have such a reputation of being independent. I have the impression that the present Government wants to promote the image of an independent statistical institute."

*Why?*

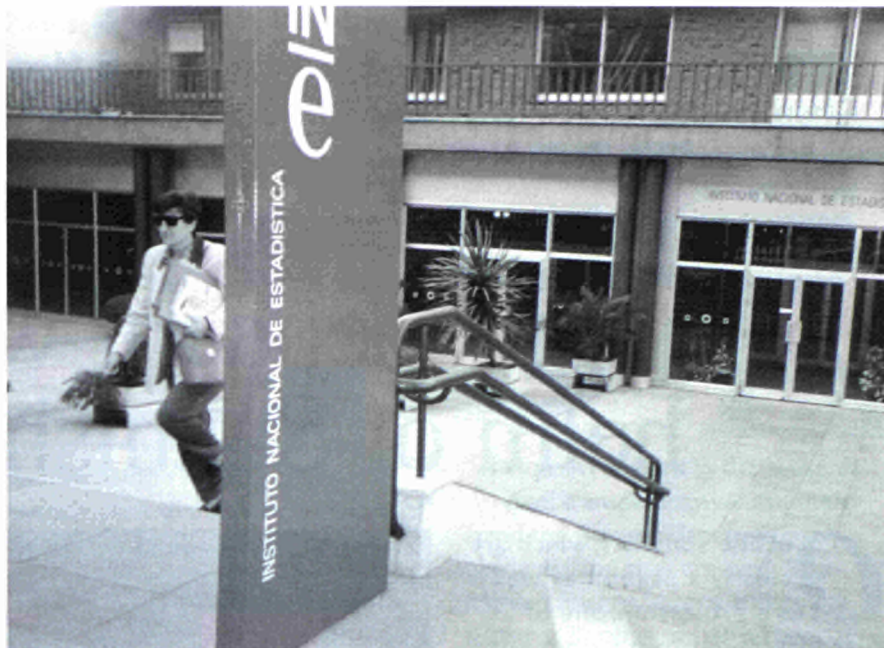
"I think they want to give an image of a modern democratic Government in line with other European governments. The independence of statistical offices is held in high regard by most governments. So I suppose this Government understood that this is an important asset."

*Is this just what you think, I ask, or were you given to believe it might be the case?*

"I was given to believe that this was the case, yes."

She is encouraged and feels comfortable with this position.

"I have been independent all my life at university. You know, when you are at university you don't have a boss. So you usually



*Entrance to INE's main office in Madrid*

become fiercely independent – even aggressively independent sometimes."

She makes it clear that if she hadn't been happy with the conditions of the job she wouldn't have taken it. "I wouldn't have put at stake my personal reputation of being independent."

Mrs Martín-Guzmán's first job after graduation in 1966 was at INE – in theoretical statistics in the methodology section. She left in 1970 to pursue a highly-successful academic career.

In the intervening 25 years, we agree, there have been a lot of changes in Spain and in INE. But she has kept in touch with the institute. "I was very junior when I left INE, so I didn't have the perspective that I have now. As a professor I worked in data analysis and I used INE data in research, sometimes in co-operation with them. I organised meetings in the university for the dissemination of statistics. I also introduced a special subject – statistical information – for my students. So I have had close links and have followed

INE's evolution. I think INE has improved enormously during that time: much, much more information and much better information."

### **No big deal**

*Now she is in the driving seat of Spanish statistics, how long does she expect to remain?*

"Since I left in 1970 I think they have had at least seven or eight Heads of INE." We agree that's a lot.

She says that José Quevedo, whose retirement after seven years paved the way for her appointment, was the longest serving President of INE in the last 30 years. She doesn't care to speculate about how long she might stay. "This is not fixed; it depends on circumstances – my performance, partly at least. My job at the university is being kept for me – I am on leave of absence."

*Next a question I am bound to ask: Pilar Martín-Guzmán is Spain's first woman Presidenta of statistics and in the "club" of 15 heads of NSIs only one other is female, Greece's*



*Theophani Zervou; one still thinks of Spain as a very masculine country; how did people react to her appointment?*

Mrs Martín-Guzmán makes it clear that this is no big deal. "The press registered it but as I was appointed on 20 July when everyone was leaving for holidays there was not much reaction. In any case, Spanish women are now incorporated thoroughly into the workplace. In the last 10 or 15 years there has been a dramatic change. I don't think it is especially newsworthy that a woman would take the job.

"Spain was a very masculine country but no longer. We have four lady Ministers, for example, and at my level there are a lot of women. Spanish women now go out to work as a matter of course. In the universities we have half and half and all my girl students plan to work. The idea of remaining at home and having a large family is absolutely out of fashion now."



**Images of modern Spain: women no longer see marriage and a large family as the only goal; one of the two leaning skyscrapers that dramatically frame Madrid's Paseo de la Castellana, where INE is based**



**The family is still the firm foundation of Spanish life: woman and children at a pavement fairground in central Madrid**

*We agree that this goes hand in hand with Spain's dramatically lower birthrate (1.18 at latest count, the EU's second lowest after Italy). And with a high divorce rate, too?*

"One of the lowest in Europe", says Mrs Martín-Guzmán. "There is a strong feeling of family life in Spain, even among young people. They see their parents more often than in the average European country. They are very strongly supported by their families if they are unemployed or things like that.

"Things have changed a lot since I was a child – incredibly – but, even if we are less family oriented, we are still more so than the average European."

I remark that unemployment among young people is the EU's highest (around 40%). "It's getting a little better now. The fact that

families have rallied round has been a great help from the point-of-view of social stability. No other country would have been able to deal with this level of unemployment if it were not for the particular circumstances of the Spanish family. I am very much for family links."

*What, I inquire, about her own family circumstances? She has been married for 30 years and her husband is a Professor of Mathematics in the Technical University of Madrid. Children?*

"Unfortunately not."

**Then and now**

In 1970, when Mrs Martín-Guzmán left the world of government statistics for academia, Spain, of course, was a long way from EU membership and its political system was very different.



*In General Franco's time was it more difficult to be a civil servant and a statistician, especially for someone who pursued her brand of independence?*

My question is answered diplomatically. "That I cannot tell you. I was too junior at that time, so I don't have an opinion. I guess that independence has naturally changed with democracy but I don't know to what extent there was pressure in those days.

"But now our connection with the other European countries is helping a lot in every way. I feel that now we are a country open to Europe and this is the main difference for us as a statistical institute.

"In 1970 there was less opportunity for contacts. Most civil servants here – at least at the top level – now go to Luxembourg very often and meet people from other countries and comment on the difficulties of statistics; and that makes a difference, of course.

"An important change has been that we are now an autonomous organisation. Although we depend on the Ministry of Economics for our budget, we are by law functionally independent of the Government, and that is very important for the statistical work, of course – the credibility. The law was passed in 1989. In fact, we were completely independent before but not by law. INE has always been a very respected institution in Spain."

*How, I ask, does INE see itself in relation to the rest of the European statistical system?*

Mrs Martín-Guzmán clearly feels the institute is at ease within the "club". "I think we have a very interesting and important role



**Pilar Martín-Guzmán and her secretary, Manuela Alcade**

because we are the co-ordinators of the Spanish statistical system. We are responsible for macro-economic and short-term indicators but sectoral statistics are usually compiled in the individual Ministries. We are in charge of harmonisation and are the link between the Spanish producers of official statistics and Eurostat.

"Most of the statistical agencies within the different Ministries in Spain are staffed by people who started their careers in INE. And this is a very good thing because we have common understanding – we are the 'same' people.

"I think INE is very well regarded. I think we are doing well. We have considerable prestige. In some things I think we are as good as the best – for example, our consumer price index is one of the best in Europe. We have a very good collection of short-term indicators – also one of the best. In some other aspects I feel we need some improvement: for example, in using administrative registers, which, in a country with a lot of inhabitants (almost 40 million) and at the same time as complicated as Spain, is not as easy as in Scandinavian countries. This is our biggest challenge.

*(Cont. on page 44)*



## Registering a passion

After Galdos and classical music and opera – not to mention her professional independence – Mrs Martín-Guzmán introduces another of her passions into our conversation – administrative registers. The subject arises after I say it is likely that she will now take INE into the next millennium. When she finally leaves, what epitaph would she like on her statistical "tombstone" as her biggest achievement? Administrative registers, she says. Not very exciting, I say. So she explains why I am wrong...

"This is one of our biggest challenges in INE. You can get a lot of information from administrative records. And it is very exciting because it is new. Theoretical statisticians tend to think the exciting thing is a survey. Well, a survey is very exciting but we have done thousands of surveys already. The new problems that are going to face us through the exploitation of administrative records are also fascinating. Think of all the problems of missing data, of matching data from different sources, and so on."

Does she also see this as a way of reducing the size of the organisation? "The size and the cost – and this is another important challenge. We have to deal with a very constrained budget – it has been reduced this year. We also have to deal with the scarcity of qualified workers. I think use of administrative records is the only way out."

Given the recent history of Spain aren't the Spanish nervous about registers and getting their names on computers?

"No more than in any other countries, I would say. It doesn't seem to worry them in Scandinavia and they have a very strong feeling of privacy and interference by government. I admire the way they deal with registers. They are doing a splendid statistical job."

What, I say, if she had to explain her passion for registers to the man or woman in the street?

"Firstly, I would say that we make sure that confidentiality is properly kept. Secondly, I would tell them how cheap the exploitation of the register is compared with surveys. And then I would

tell them that with registers you don't have to bother people by asking for information. This is another important point, especially for businesses. They resent their employees' time being taken for filling forms."

She goes on: "We are now starting a population register that will give us population in real time. What we have now is population forecasts from the last census up to the next census. What we need to know are the main characteristics of our population at any one time."

"The census is every 10 years with a midway updating. The last census was in 1991 and we hope this year's updating will be the last. We'll probably have a census in 2001 for wider information but we hope to have the population register established by then. It will work through the town halls which register people when they come into the area and when they leave."

"Then there are trade registers, ownership registers, registers of tax data – all to be explored..."

## From Latin America to the Mediterranean rim

A new venture for INE is their leading role in Medstat, the Euro-Mediterranean statistical co-operation programme launched in Valencia in December 1995. Medstat is part of the EU's Euro-Med initiative launched at the Essen European summit in December 1994 and endorsed at the Barcelona Conference the following November. The idea is to create an area of peace, prosperity and free trade in the Mediterranean and the programme involves Algeria, Cyprus, Egypt, Israel, Jordan, Lebanon, Malta, Morocco, Palestine, Syria, Tunisia and Turkey.

Eurostat was quick to use the opportunity to incorporate statistical aspects in this vast programme. And the Barcelona Declaration resolved "to promote co-operation on statistics in order to harmonise methods and exchange data".

The first statistical seminar resulting from this, in Valencia, laid down guidelines and decided to work in five areas:

- training of statisticians
- environment
- external trade
- tourism
- migration.

The project has a budget of 20 million ECU over four years and work is now underway to establish this new community of statisticians, with the first meeting of the Medstat steering committee next June in Tunisia.

Because of its historical and cultural connections with the Mediterranean rim, INE will be in the forefront of this work. Says Pilar Martín-Guzmán: "This will follow the same line as our programme with Latin America. I think Eurostat appreciates how successful we have been in our co-operation with Latin America so they trust us now and they want us to do something similar."



We also have to improve information about household consumption and expenditure and services.

"We have a very interesting role in relation to Latin America because of our cultural and linguistic links: we have 500 years of shared history with a lot of immigration and emigration. We have an important technical assistance programme to these countries through the CESD organisation in Luxembourg. And now we are taking on a new role among Mediterranean countries.

"Our staff go regularly to Latin America to organise courses or to give technical assistance and very often we subsidise South American people to come here for courses in Madrid."

*Which particular countries do they focus on?*

"It depends on their needs. We treat them all as equal.

"Some of the countries are very advanced – for example, Mexico. Some are not so advanced but have improved enormously during the last two or three years. We are really happy with our co-operation because we think it really shows. I was in Chile two weeks ago for a meeting of the Latin American directors of statistics. I saw how much they appreciate our co-operation.

"The statistical institutes are getting more and more independent from their governments. They are very quickly becoming modern-style statistical institutes as found in the EU, Australia, Canada etc.

"This is a very welcome development. These are countries with huge potential economic growth. Having a good statistical system is very important.

## 'No possible Government interference'

"I have nearly 4,000 staff – some 400 are temporary workers who work in surveys. There are three buildings in Madrid and 52 provincial offices – in each data are collected and sent to Madrid. There's one for each of the 50 provinces – plus two in the Spanish enclaves of Ceuta and Melilla in North Africa."

*I say a question I always ask heads of NSIs is how they would react if, when a particularly sensitive set of figures was due to come out, the Government tried to exert pressure on their content or timing for political reasons? In other words, how independent is INE?*

The answer, not unexpectedly, is robust. "It's impossible! We have a calendar and we make this public at the beginning of the year for the whole year. So there is no possibility for the Government to interfere with the dates, let alone the figures, of course. I don't think such a thing has ever happened in the past. We have had this calendar for the last eight or nine years and it has always worked. I don't see it as a problem – I am completely comfortable with it."

*Do the press in Spain take an interest in statistics?*

"Yes – particularly now. We provide them with all the information we have in the institute. We have a way of issuing data – for example, short-term indicators – by megafax at the same time to all the press agencies so there are no preferences. I think they appreciate this a lot. Also we are always very open to interviews, to make things clear to them, to accompany figures with a short explanation; and also now we have a

school of statistics for public administration and we are trying to organise a course on statistics for press people. I think this is going to improve still more our co-operation with them.

"Press releases are normally at ten o'clock in the morning. But now we have moved the CPI to nine o'clock."

*Which create the most interest?*

"The CPI, the Labour Force Survey, of course, and then maybe industrial production and quarterly national accounts.

"Journalists are very interested in how Spain compares with the rest of the EU, particularly now when we are trying to get into the core of EMU and hope to be the very first.

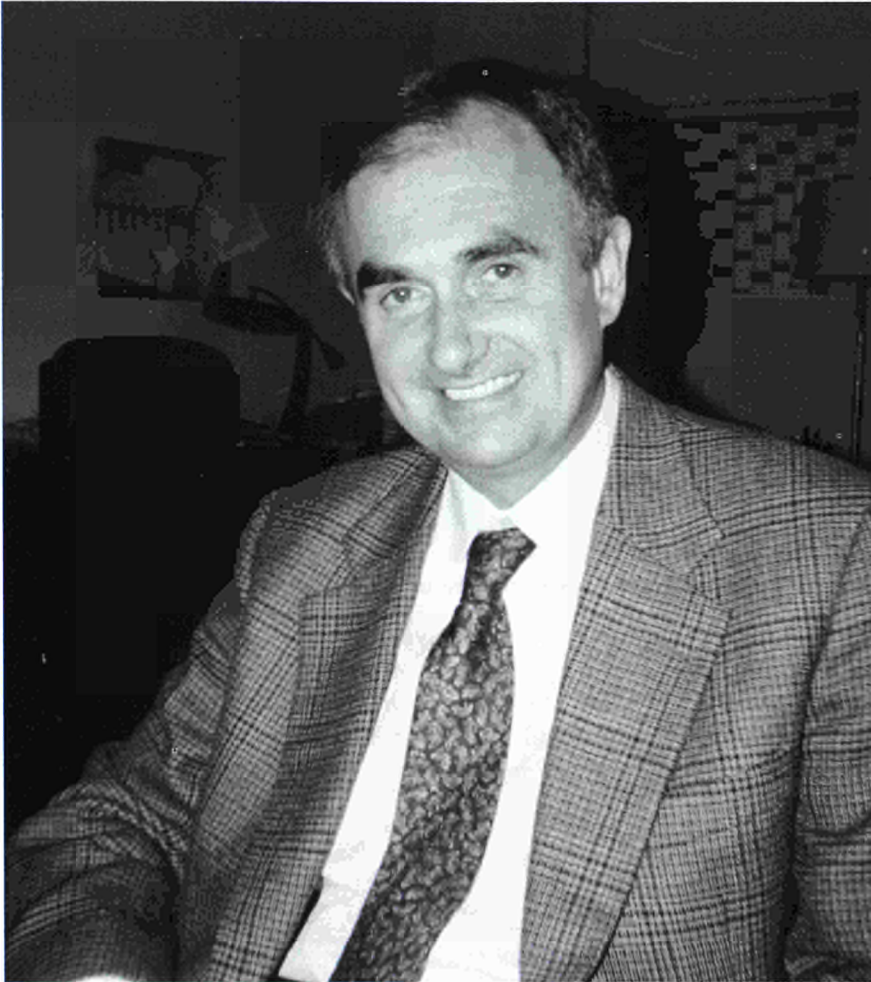
"I think the Spanish generally are becoming more and more aware of statistics, especially now everybody is worried about the consumer price index, which is 3.6% at present. More and more Spanish people read the economic pages of the newspapers, so they are more and more aware of us. INE also has a history of being very interested in sociological issues – equality, poverty, nutrition etc – and this also interests people."

## 'Quality must come first'

Our discussion goes back to painting a portrait of society and the danger that events change so rapidly nowadays that a national statistical office does not always manage to keep up.

Mrs Martín-Guzmán: "The national statistical office should be a prestige organisation and should not take too many risks or be too





*A familiar face for many years at Eurostat meetings in Luxembourg – Pedro Diaz, head of INE's dissemination effort*

adventurous in giving information that is not solidly based. If you want to give really reliable data you have to rely on good, big samples and edit the results carefully, and that, of course, means that developing the results takes time.

"I don't think we should lower the quality of statistics to provide them more quickly. We have to maintain the quality and try to take advantage of new technical developments to make them quicker. The private sector may be very quick with their data but there are statistics that an NSI maybe should not provide. We have to provide very stable and accurate data. We are a point of national reference so we cannot risk the quality of our statistics just because we are in a hurry.

"I think we must be very quick in short-term indicators – everybody understands they are just to give a rapid portrait of the evolution of the economy. But when you go deeper you have to provide a sample good enough to allow the study not only of the whole population but also of parts of the population – to study things at regional level, maybe at provincial level. And that, of course, takes time."

### **Statistics as a 'public good'**

Our talk turns to the extent to which an NSI should adopt a commercial approach to its activities. The interview almost turns around, Mrs Martín-Guzmán wanting to know what I think. I

say that, while I subscribe to a large degree to the undoubted benefits of "selling" statistics as a product, I have always been slightly nervous about the effect of this on them as a "public good", which I believe they should be first and foremost. It is clear that this is also Mrs Martín-Guzmán's philosophy.

"We have some commercial activities but we put our role as a social service above commercial considerations. We sell our books but at a very low price. We sell tailor-made information to corporations but we tend to give it for free to those that cooperate with our surveys; and also we have very low prices to researchers and universities. We have commercial activity but we don't have what you might call a commercial mind.

"There will always be some data of concern or interest to society but that nobody wants to pay for. To operate solely on the basis of monetary efficiency could leave important gaps in society's knowledge. An NSI can't set its priorities in this way – they should be set by looking at society and seeing what is really important.

"Maybe we would have gone further down the commercial route if our budgetary rules were not so restricted. There is not much advantage for us in going for commercial activities because our budget remains the same. There is no real incentive. I am trying to change this – I don't know if I will be successful.

"My idea is that we are primarily a public service but, as things are at present in Spain, we should go a little farther in commerciality – not too far. For that we need a little more freedom within the budget."



**A voice that will be heard**

*Finally, I asked Mrs Martín-Guzmán for her thoughts on the future of the European statistical system.*

"I am a new member of the 'club' but my impression is that the tendency is more and more to giving a prominent role to the national institutes. Eurostat is taking our opinions, our points-of-view, our needs, more and more seriously each time. Our relative weight – that of the NSI directors – is becoming stronger. This is good and I see a great future in that. I think we are facing the problems more closely, so we have a better view of them."

I left INE with the distinct impression that the strongly-independent



**Pilar Martín-Guzmán with a picture of the present King Juan Carlos**

voice of this new member of the "club" will be heard loud and clear throughout the European statistical system in the months and

years ahead – that she will be among the leaders in establishing a prominent role for the national institutes.

**More English**

Spain in figures  
1995



"One of my intentions is to promote publications in English because I think this is one of our weak points. Spanish is a widely-used language in the world so we feel confident that a lot of people will read us in Spanish, but now I understand that being so involved in European issues we should make an effort and publish more in English. It's a fact that all of us have to accept."

**A proud history**

*"We have a very old tradition of statistics", Pilar Martín-Guzmán declares. "For example, in the 18th century we had some of the better censuses in Europe. We used to be an Institute of Geography and Statistics. Then 50 years ago – last year we celebrated the 50th anniversary of INE – statistics became independent of the Institute of Geography, which still exists.*

*"We have had a fascinating history in many ways because the political changes that have taken place in Spain have been different from any other country in the European Union, and you know that political changes always means statistical challenges.*

*"For example, in the time of General Franco we had what was called vertical trade unions – a special kind of corporate trade unions in which workers and producers were in the same trade union. That allowed a way of collecting industrial statistics that was very, very safe because our information was 100 per cent. Then when the political system changed these trade unions disappeared and were substituted by our present trade unions, which are no longer compulsory, so INE had to start a new way of collecting these data through a survey. This has been a challenge for us.*

*"We also have now a decentralised statistical system – it was very centralised in Franco's time – which also makes things more complicated but also more interesting."*

1945-1995

*Of course, the Spaniards who went out to colonise the New World were great collectors of data. And King Philip II, during whose reign (1527-1598) Spain entered her golden age as the greatest power in Europe and a centre of high artistic and literary achievement, made a splendid collection of statistics, much of it on the American provinces. One can imagine him pouring over columns of figures. From his predecessors he inherited the most advanced bureaucratic machinery in the world at that time. One account describes him as "a truly working monarch, spending long hours at his desk, red-eyed from reading and annotating a relentless deluge of documents".*



In a challenging paper to the American Statistical Association last August, Eurostat Director ALBERTO DE MICHELIS (in charge of economic statistics and economic and monetary convergence), focused in particular on the statistical implications of globalisation of the economy. In this article we give key extracts of his presentation in Chicago.

# How European statisticians are rising to the challenge of economic globalisation

## THE CHALLENGES OF THE 21ST CENTURY

*It is true that as the 21st century approaches the developed societies in which we live, which are characterised by an open and competitive economy and by a technological revolution, especially in the information field, and by the globalisation of the world economy, are demanding swift adjustments in the ways of thinking, assessing and making decisions on the part of all those involved in the political, economic and social spheres.*

*Official statistics have to anticipate such demand, be available promptly and lay the groundwork for the decisions that are made by providing reliable, comparable and suitable information in response to the circumstances and changes of the various sectors of the economy. This is no easy job, and it also means that Europe's statisticians have to react to various problems and challenges in order to be able to provide users with the statistics they need.*

*The difficulties are related to the natural disinclination of people to answer surveys, to the increasingly difficult access to certain types of information needed for statistics but shielded by data protection, to the reluctance of firms faced by a growing mass of questionnaires to be filled in for various departments, and to the budget cuts imposed by governments.*

*The challenges relate to the complexity of the mechanisms at play in a context of economic internationalisation and globalisation, to increasing significance in the economy of the invisible services – the intangibles – which are very poorly known in quantitative terms, to the gap between the statistical concepts devised half a century ago and today's rapidly changing economic and social circumstances, and to the new technologies for the compilation and dissemination of information.*

**T**he major change in the world economy at the end of this century is the globalisation of markets driven by the progress in transportation and communication technology, the liberalisation of trade, investments and financial markets, and a change in enterprise organisation and strategy.

The result is a growing interdependence of national economies, with some national instruments (eg fiscal and monetary policies) becoming less effective and some domestic policies (industrial, social and environmental standards) increasingly taking on an international dimension because of their impact on the conditions of international competition.

Another consequence is the growing interaction between policy areas at international level, with policy decisions in one area having increasing effects in other areas (eg trade, environment and development).

When the European statisticians developed their European Statistical System their main



emphasis was on statistical comparability. They achieved this outlined before through the harmonisation of statistical methods, adoption of joint classifications or through common norms and definitions. They were able to reduce any comparison impairing national bias, the most important being the fact that their statistics were produced by national statistical services firmly entrenched in national administrative structures and practices.

However, in doing this they did not touch – more than that, they did not even dare to touch, they simply could not touch – the profoundly national concepts behind almost all statistics that were compiled when they started to build their European Statistical System and that are still compiled even nowadays through their system.

When European statisticians are required to maintain national concepts, they have to stem the tide generated by ever more integrated markets at European level or beyond and ever more Europeanised if not globalised businesses. Efforts to maintain national concepts are not only expensive, but will also be largely in vain. And this applies not only to trade statistics, where this is all too obvious, it applies to all sorts of economic statistics, and particularly to the conceptually most national of all statistics, namely national accounts. Statisticians will simply have to cope with a situation, where the link between the policy which is clearly determined by the national territory and the national citizenry and its economy gets ever more loose, where distinctly national economies even disappear.

It needs to be remembered that markets were national markets



**Alberto De Michelis, Director at Eurostat (Economic statistics, economic and monetary convergence)**

clearly separated by a political border from other equally national markets. People who met in the market place were mainly nationals, those who brought something to the market place were nationals and those who carried something away were nationals, too. The market place was a network mainly among nationals shaped by nationals for nationals. Due to common habits, shaped by experience and history, and shared rules, the preference for interaction among nationals was fairly strong. In consequence both competition and cooperation took place mainly in a national

context whereby market borders coincided largely with social and above all political borders.

National markets were undoubtedly already somewhat inter-linked in the old days. International trade took place with importers and exporters on either side of the border. However, importers and exporters were both still firmly rooted in their national economy, their interests were largely shaped by and closely linked to the interests of their compatriots. The fact that inter-industry trade dominated intra-industry



trade and intra-firm trade was virtually non-existent underlines this.

It needs equally to be remembered that businesses have mainly been national businesses. Their managers were nationals, their employees were nationals, their owners or shareholders were nationals as were their financiers. Business activities took place mainly within national borders making to a large extent use of nationally available resources. They simply created their wealth together and shared it out among themselves.

No doubt foreigners participated also in the old days in the national economies. But in doing so they became not only residents but quite often even nationals as proven by the massive wave of migration towards the end of the last and the beginning of this century. This is why all businesses could be attributed clearly to a nation state, not only economically (based on property rights), but also politically (expressed by political allegiance, the respect of national law...) and even socially (solidarity...).

All this made it easy for statisticians. They had to observe a truly national economy and thereby serve their equally truly national policy. They could cast general economic concepts into national statistical concepts: methods, norms, definitions... These national statistical concepts could be handled technically without difficulties through a national statistical administration through exploiting administrative records and conducting all sorts of surveys. Those who had to be contacted could be contacted and were ready, be it with or without a legal obligation, to respond to the requests of statisticians and provide the necessary information.

### AN ALREADY COMPLEX SYSTEM

*From the very start of the European Union's history, the politicians and decision-makers responsible for the conception, management and assessment of the common policies which were gradually introduced, expressed a need for comparable and reliable statistics on which to base their decisions. The fact is that the statistics which were available in the 1950s and 1960s were based on typically national methods of collection and compilation, which were hardly or not at all comparable, prompting errors in assessing the economic and social circumstances of the countries which had given birth to the European Community: Belgium, France, Germany, Italy, Luxembourg and the Netherlands.*

*It was then that the idea emerged of having a European Statistical System designed to provide the Member States with harmonised statistical operations, consistent compilation methods, common classifications and definitions and the application of comparable concepts.*

*Given that the sectors of common responsibility – the common policies – were very limited at the outset, these harmonised statistical operations did not extend beyond a certain area, with the result that the national statistical institutes showed little inclination to give up methods and practices which were tried and tested in the national sphere, except in sectors where there was a definite need for harmonisation.*

*This was when Eurostat, the European Community's statistical service, was set up. Its job was to promote the harmonisation of statistics in those sectors in which the six Member States shared responsibility for common policies.*

*As the European Community expanded – Denmark, Ireland and*

*the United Kingdom in 1973; Greece in 1981; Portugal and Spain in 1986; Austria, Finland and Sweden in 1995 – and as the number of common policies grew, the scope of Community statistics continually widened, so that it now covers virtually every sector of economic, social and environmental affairs in Europe.*

#### Leading player

*In the last ten years the European Statistical System has emerged as one of the leading players in official statistics in the world.*

*A few facts and figures will illustrate how complex the system is*

- 15 countries with 11 official working languages
- 15 national statistical institutes, 15 central banks and roughly 100 ministries or government bodies producing official statistics
- Eurostat, and from three years ago the European Monetary Institute
- about 100,000 officials, including 20,000 university graduates
- 200 meetings of working parties every year, attended by between 10 and 60 people (30 on average)
- all 200 meetings with interpretation to and from the various official languages (sometimes three, sometimes five and sometimes even 11!)
- working documents that have to be provided in three working languages (English, French and German), with official documents translated into 11 languages
- in any one sector, various levels of responsibility from country to country.



European statisticians were the first ones that had to cope with a much more complicated situation as the European economies were the first ones to be gradually de-nationalised in the course of the European integration process. Their answer was as simple as effective: increasing comparability. They could not prevent, however, a loss of policy relevance of their economic statistics because this was not preventable. Statisticians elsewhere in the world will soon have to cope as well with this situation, as market integration and business globalisation will be felt everywhere. They will probably best react to it through joining the efforts of their European colleagues devoted to increasing comparability. None of them, however, will be able to prevent the further erosion of the policy relevance of economic statistics.

**The statistical problems of globalisation<sup>1</sup>**

Globalisation affects many sectors of the economy. I will attempt here to outline the problems which Eurostat, within the framework of worldwide co-operation (OECD, IMF, UN), has addressed and will make every effort to help solve in coming years.

First, in the area of international trade statistics: intra-firm trade, sub-contracting and capital movements between subsidiaries.

As regards intra-firm trade, the percentage of intermediate products in world trade has been rising constantly in line with the development of multinational corporations. Subsidiaries produce special components for their parent company that are incorporated into the final product. In view of their special nature, there is a captive market for such products,



**Issued at irregular intervals, this periodical summarises the economic information available on the globalisation of businesses and markets**

which are difficult to value, especially when for tax and other reasons a transfer price is declared to the customs authorities. How do we distinguish intra-firm from other trade?

Sub-contracting is another growth area, used either to reduce overheads or to take advantage of the special capacities of certain countries. Customs systems succeed in identifying certain forms of sub-contracting, particularly when the goods cross the border twice, before and after processing. However, the goods employed in making the product in question may also be acquired locally or in a third country and it is thus very difficult to identify such sub-contracting, which in trade terms has similar features to trade between subsidiaries.

IMF studies have raised the question of information on capital flows between the various branches of multinational corporations: foreign investment income is rather poorly recorded in existing data collection systems, often because such systems are unable to record movements

that do not give rise to inter-bank transactions between the two countries.

Examples of transactions that fall through the net are legion: profits reinvested directly in the host country, payments made through a bank account in a third country, netting of transactions between subsidiaries etc. In some cases, the distinction between income and payment for services is hazy: patent royalties, franchises etc.

The work will also cover business statistics. The internationalisation of production and various related functions gives rise to problems even in national statistics.

For example, in the definition of national output:

While individuals generally have a nationality, does the same apply to enterprises? Or products? Should we include the output of foreign branches of domestic enterprises in national output or, conversely, deduct the output of branches of foreign firms from national output?

We now come to the economic activity of enterprises: when production is organised on a world scale, how meaningful are the national economic activity codes allocated to enterprises? The subsidiary responsible for worldwide procurement for a multinational chemical firm will be recorded as a commercial firm. Can we really consider it in isolation from its parent company? If the latter were located in the same country, it would be recorded as a chemical firm.

<sup>1</sup> Most of this section is taken from the Eurostat publication The Globalisation newsletter, N°1, April 95



We must also address the question of double counting: the national collection of certain information is more or less inappropriate for enterprise groups whose production is spread over several economic territories. Some groups find it difficult to provide consistent quantitative information on their activities in a given economic territory eg to link their turnover to their actual output in a given country. Double counting has been detected in car production between some EU countries but it probably occurs for many types of product, as product classifications are not always detailed enough to differentiate between very similar stages of processing.

These few examples demonstrate the importance of defining statistical units. When the various functions corresponding to the same activity are spread throughout the world, can we keep a national view of statistical units? How do we achieve a meaningful analysis of national business statistics without placing them in the context of their relations with foreign enterprises? How do we make national economic forecasts without information on possible economic developments affecting foreign firms that are more or less closely linked to domestic ones?

In order to equip ourselves with the means to carry out more detailed analysis, it is necessary to move over to the enterprise group as the statistical unit, while bearing in mind the inherent conceptual difficulties of this approach. What is more, as units are defined by geographical criteria, it is necessary to move to a unit identified at Community or world level.

All these shortcomings have remained negligible until recent years. With the development of globalisation they have become far more significant.

### European Statistical System: achievements

In spite of the cumbersome nature of the system, there has been a lot of joint work in recent years.

In view of the past achievements which are now part of the European Statistical System, what does the future hold? Three factors which will have an increasing impact in the European economic context in the coming years are also going to have a considerable effect on the European Statistical System:

- the enlargement of the European Union to take in the countries of Central and Eastern Europe
- the deregulation of administrative procedures
- the globalisation of economic and financial markets.

With 15 Member States, progress at the same rate as before has become fanciful. Imagine what things will be like with a European Union consisting of 25 or 30 countries. It is therefore likely that there will be more and more talk of "variable geometry", or of "concentric circles", with some statistical systems moving ahead at a faster rate than others. The technology gap between countries may well widen unless the institutes that are lagging behind make up their minds to make every effort to stay in touch with the more advanced statistical systems and unless those that are ahead are willing to help the weaker links in the statistical chain to catch up. I have no ready answer, but the primary challenge we shall have to meet in the next few years will be how to work together

effectively as a group of 25 countries.

Deregulation means having to do without a whole series of administrative information which the national statistical systems relied on for data compilation, often at very little cost. We had an example a few years ago with the elimination of intra-Community borders and the introduction of the Intrastat system. It is highly likely that other forms of administrative supervision, not only between Member States but also within individual countries, will go the same way in the next few years, posing a challenge for statisticians in Europe, who will have to find alternative ways of collecting information in other countries as well.

As for the internationalisation of the world economy, official statisticians have embarked on a lot of work to assess its economic and social repercussions. Two organisations are particularly active in this area: the OECD and Eurostat. It is clear that as internationalisation increases, more and more decisions are taken far from where the effects are felt, responsibility becomes vaguer, there is a greater sense of a loss of political power, and decision-makers have an ever greater need for rapid and reliable information to tackle the economic, social and environmental issues which are inclined to escape any control.

For the statistical system in Europe – and everywhere in the world – this is a major challenge which has to be tackled together with its partners, in the spirit of the "global village", where the basic information can also come, and perhaps predominantly, from other countries.



Founded in Luxembourg

# Institute for the continuing training of statisticians

Most of the statistical institutes of the Member States of the European Union and the European Free Trade Association, together with the Centre Universitaire de Luxembourg, recently set up the TES Institute (Training of European Statisticians) as a non-profit-making body under Luxembourg law located in the capital of the Grand-Duchy. Other national statistical institutes will be involved in the future. Eurostat joined after the general meeting.

The aim of the institute is to encourage and coordinate the continuing professional training of statisticians in conjunction with national statistical institutes, universities, research centres and statistical institutes in the private sector. It will provide short training courses and seminars at postgraduate level. It will offer the national institutes of the Member States a forum for consultation on continuing training schemes. With a view to boosting the EU's European Statistical System, it will provide training help in connection with new European statistical projects by disseminating European standards, methods and classifications, and also by helping applicants for EU membership to prepare for entry into the statistical system. Lastly, it will foster exchanges of experience between institutes and with Eurostat.

Some of the courses will be given at the Centre Universitaire in Luxembourg, while others will be arranged with the statistical institutes in the Member States. In past years about 25-30 seminars and courses were offered each year

under different administrative arrangements. Between 700 and 800 statisticians were thus able to develop their knowledge as part of a continuing training programme.

The management board of the new institute comprises Mrs Pilar Martín-Guzmán (Director-General of the Spanish NSI as Chairman), Mr Carlo Malaguerra (Director-General of the Swiss Federal Statistical Office), Mr Jan Plovsing (Director-General of Statistics Denmark), Mr Robert Weides (Director-General of Statec Luxembourg) as Vice-Chairmen, with Mr Willem de Vries as Treasurer.

In the general assembly Eurostat is represented by Mr Yves Franchet (Director-General) and Mr Alberto De Michelis and Mr Photis Nanopoulos (Directors).



**Pilar Martín-Guzmán, Chairman and Professor Rudolf Teekens, head of the TES Institute**

Professor Rudolf Teekens has been appointed to head the TES Institute.

*The origin of the project "Training of European Statisticians" (TES) traces back to 1990. Its real roots can be found in a declaration of the European Parliament, which stressed at the end of the eighties the need to develop the European dimension in the training of public administration managers in the Member States. In the light of the growing importance of training as a catalyst of European integration, Eurostat decided to develop in 1990 a project aimed at creating truly European vocational training and staff development opportunities at post-graduate level through annual training programmes. The national statistical institutes supported strongly this project through the Statistical Programme Committee.<sup>1</sup>*

*In the early nineties a small organisation, the TES Secretariat was set up in Luxembourg with the task of designing and organising annual vocational training programmes. At the time it was decided that TES programmes would benefit from the support of an international training team, consisting of highly-qualified practitioners and university professors.*

*From a modest start in 1990 with about 300 participants the programme rapidly gained popularity among professional statisticians and enrolled more than 900 candidates from 34 countries in its 1994-1995 programme.*

<sup>1</sup> Set up by the Council Decision of 19 June 1989, composed by representatives of the NSIs, usually the Directors-General



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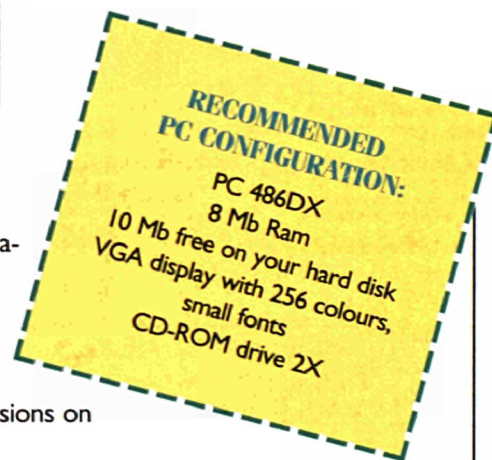
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