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Data Integration in Environment Statistics

Christian Heidorn

Eurostat

1. Background

The system of official statistics is producing financial and economic statistics, to a lesser extent social statistics, and to a small, but growing extent environment statistics to address the increasing demand for quality checked data on the environment.

Can statistics, originally not designed for environmental purposes, be used to provide valuable environmental information? The author believes that the statistical system has far more to offer for the improvement of environmental information.

2. Examples for use of 'other' data for environmental purposes

The impacts of human activities on the environment are driven by or linked to economic activities. So how can statistics produced to measure economic performance be used as input for the production of valuable environmental information?

2.1 Energy statistics – and greenhouse gases emissions

A prominent example is the use of energy statistics for the calculation of the annual greenhouse gas emissions under UNFCCC. The breakdown by sector or economic activity allows the identification of contributions to the greenhouse gas emissions and therefore provides valuable information for policymakers.

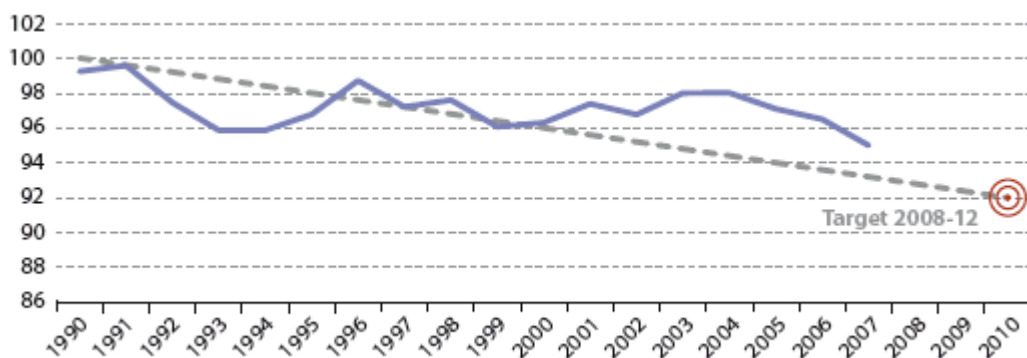


Figure 1 Greenhouse gas emissions, EU-15 (Index Kyoto base year=100) Source: EEA and Eurostat

Energy related emissions from energy production and transport represent approximately 80% of total greenhouse gas emissions in the European Union. The largest emitting sources are the energy industry (40%), followed by transport accounting for a further 24% of energy related emissions.

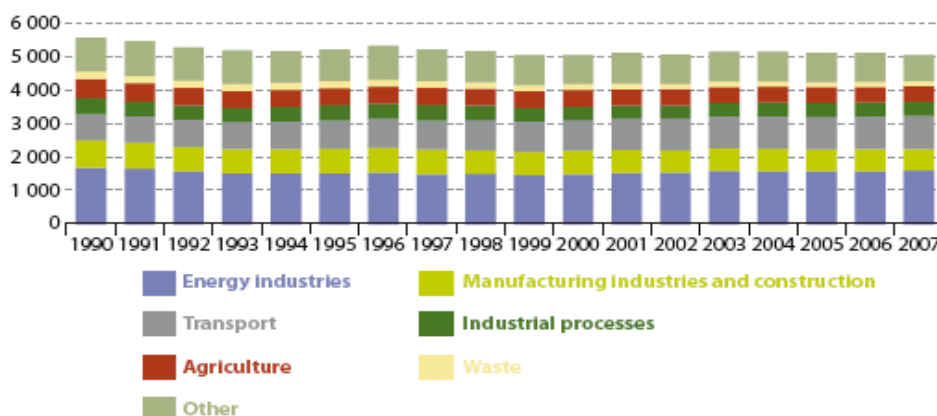


Figure 2 Greenhouse gas emissions, by sector, EU-27 (million tonnes CO2 equivalents) Source: EEA and Eurostat

2.2 Production statistics – and hazardous substances

Environmental government agencies have major difficulties to get detailed data on the production and consumption of e.g. toxic or environmentally harmful chemicals from the producers or importers of these chemicals. Data is declared as confidential business information.

Production and trade statistics however, in combination with scientific expertise on the environmental and toxicological properties of the substances covered, allow for the production of meaningful indicators on the potential risks to human health and the environment.

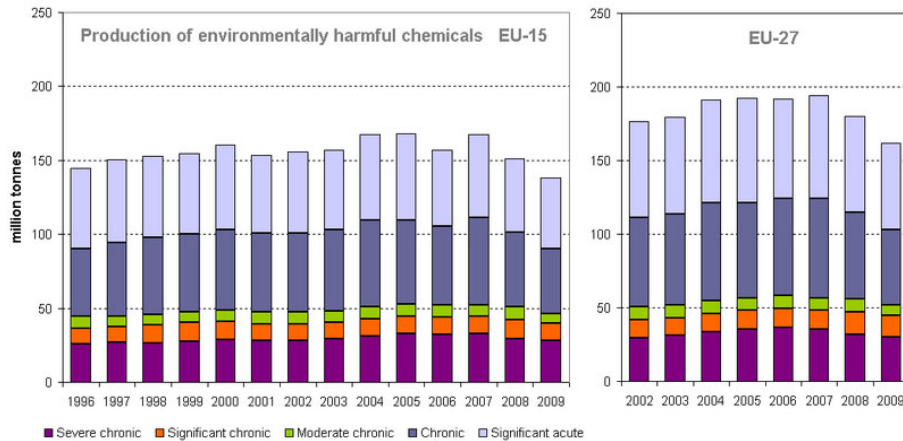


Figure 3 Production of environmentally harmful chemicals, EU-15 and EU-27 Source: Eurostat production statistics

2.3 Production and trade statistics – and material flows and waste

Production and trade statistics also provide insights into global flows of materials and their consumption.

Foreign trade statistics, linked with information from customs declarations, could allow for better tracing the transboundary movements of waste.

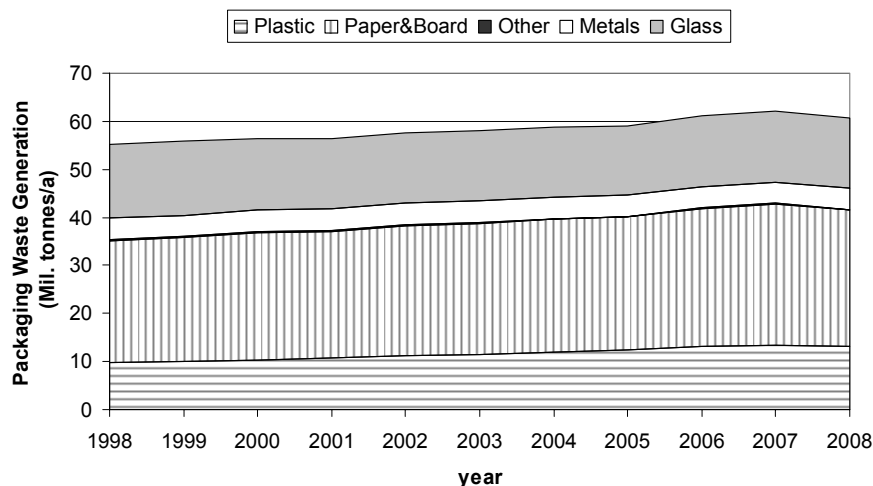
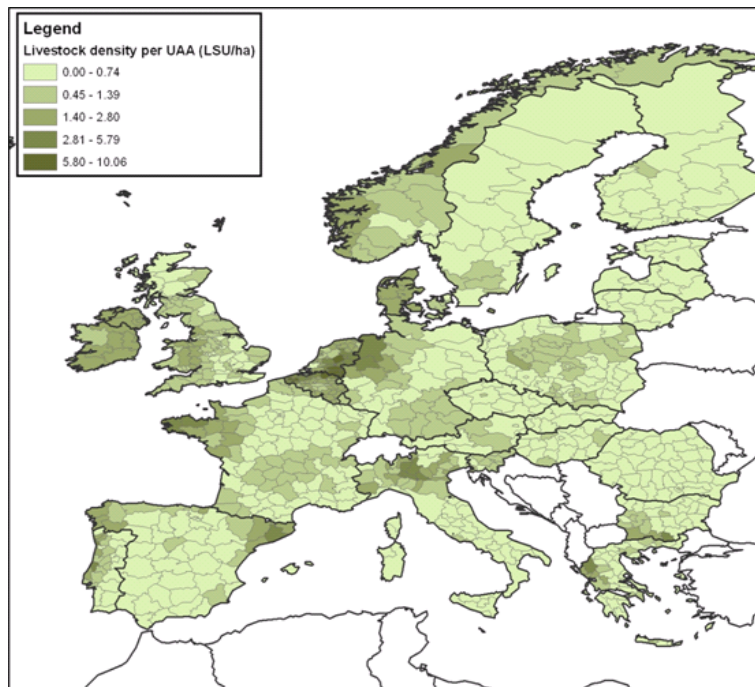


Figure 4 Generation of packaging waste, derived from production statistics, EU-15, million tonnes Source: Eurostat

For example, packaging material has a short service life. It becomes waste soon after its production. The generation of packaging waste can be calculated from statistics on the production of packaging material (glass, paper, plastics). Therefore statistics on the production of packaging material (glass, paper, plastics) can be used to calculate the expected amounts of packaging waste generated.

2.4 Agriculture, livestock statistics – and greenhouse gases

‘Classic’ agriculture statistics, e.g. on livestock production, can be used for the calculation of the share of agriculture in the total emissions of greenhouse gases.



Methane emissions mainly occur from enteric fermentation in ruminant animals (e.g. cattle and sheep) and some non-ruminant animals (e.g. pigs and horses, and from the decomposition of manure under anaerobic conditions.

The production of methane is therefore closely related to livestock production.

Enteric fermentation of feed in the stomachs of livestock (particularly cattle) is the largest single source of CH₄ in the European Union, and the sixth largest emitting source of all greenhouse gases.

3. Good communication is needed between statistical domains

Under the current pressure on the statistical system to reduce the ‘burden of statistics’ there is a risk that statistics from ‘other’ domains, that may be relevant for the generation of environmental information, will be discontinued or ‘simplified’. It is important that domain managers, before agreeing to simplifications e.g. in production or trade statistics, know about the use of ‘their’ statistics in the environmental domain.

Recent example for the impacts of such ‘simplification’ is the aggregation of materials in production statistics and trade statistics:

The chemicals ‘benzene’ (highly toxic – CMR) and ‘toluene and xylene’ (both harmful), two commodities, were aggregated into one position (20.14.73.20).

As a consequence of this ‘simplification’ the derived indicator ‘Production of toxic chemicals, by toxicity class’ is losing its robustness and resolution.

The ‘critical’ metal lithium, a main material in modern batteries for the upcoming electric automobiles, has been aggregated to position 20.12.19.50 with vanadium, germanium and nickel. The volume in the new aggregated position is clearly dominated by nickel. The information on the import and production of lithium is lost.

4. Conclusions / Questions

- The 'classic' statistical system may have a lot more to offer for environment statisticians than what we currently use. Domain managers of 'other' statistics often do not even know how their work contributes to the generation of environmental information.
- The statistical system is under increasing pressure to reduce the burden for respondents. As a consequence it is more and more difficult to establish new statistical activities. There is a certain risk that cutting down statistics in specific domains have a direct impact on the quality of the derived environmental statistics.
- Environment statisticians could be forerunners in getting away from the 'stovepipe' approach still used in the statistical system towards a more integrated production of official statistics.
- The new FDES could propose the development of guidance on the integration of 'other' statistical domains into environment statistics.
- Do the experts on the Revision of the Framework for the Development of Environment Statistics share this view?

5. Contact

European Commission – Eurostat – Directorate E (Sectoral and regional statistics)
Unit E.3 (Environment and forestry statistics)

Christian Heidorn

Tel: +352 4301 35271

Email: christian.heidorn@ec.europa.eu

Internet locations:

<http://ec.europa.eu/eurostat>

<http://epp.eurostat.ec.europa.eu/portal/page/portal/environment/introduction>