

– Environmental indicators and SOE reporting



Integrated assessment

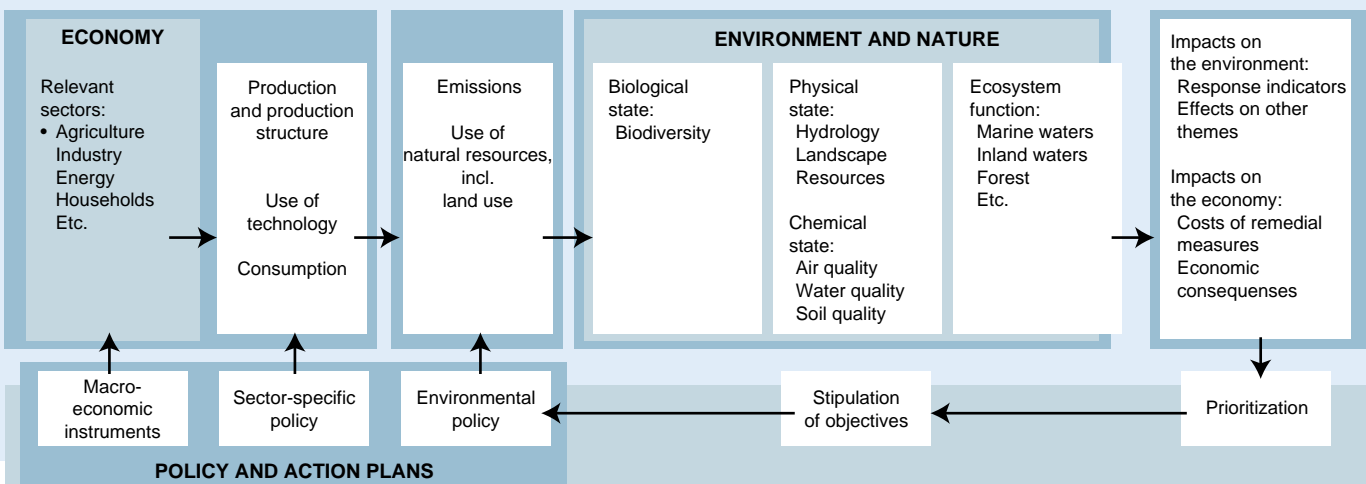
Environmental problems are in the essence results of human activities. Development of lasting solutions to the encountered problems requires knowledge about the interactions between the activities of the society and the environmental impacts. This includes assessment of potential measures reducing the damaging effects.

Analysis of the interaction between society and the environment is based on a perception of the relationship between societal activities and environmental pressures as illustrated in the so-called DPSIR model. This model illustrates both that societal activities affect the state of the environment, and that there is a feedback from the state of the environment to society in the form of environmental policy initiatives for the individual sectors (agriculture, transport, energy, industry, etc.). These feedbacks consist of the objectives and measures that society decides to set and initiate in order to counteract the unwanted changes in the state of the environment and the negative impacts these have on the ecosystems and on conditions for human life.

The expertise on integrated assessment and environmental policy analysis comprises:

- SOE reporting
- development of indicators and indicator systems,
- projections of the state of the environment as well as the development trends
- development of models for comparison and analysis of environmental data at a high aggregation level
- sector analyses
- environmental economics and sociology
- development of integrated environmental information systems

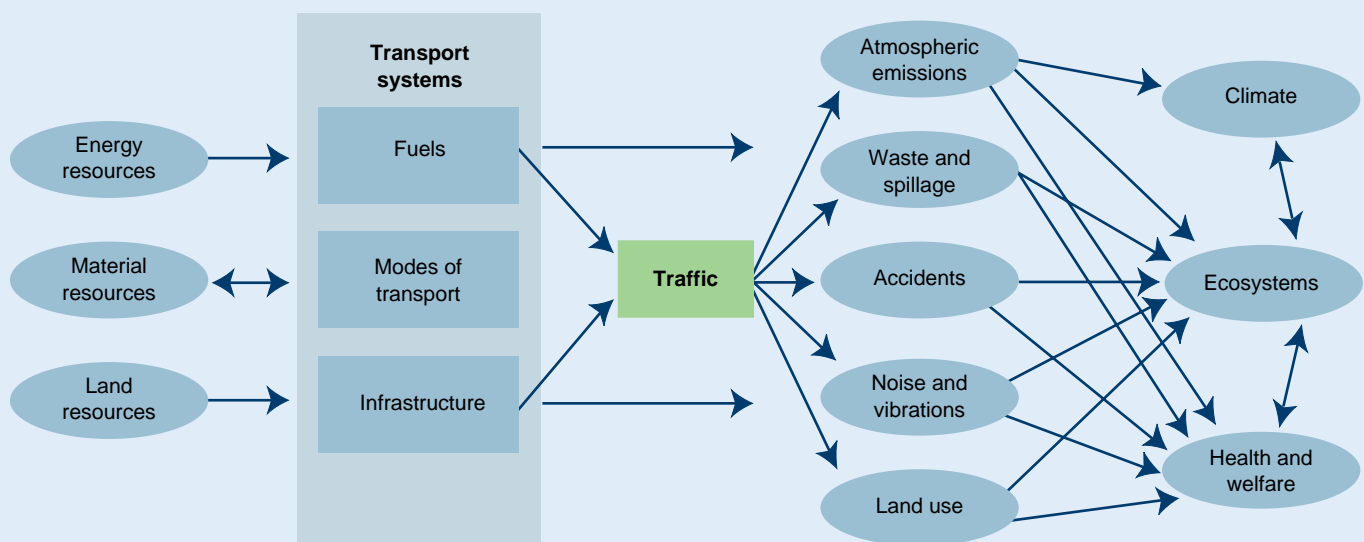
Schematic diagram of the so-called DPSIR model describing the interaction between environmental state (S), anthropogenic pressures (P) and the underlying direct and indirect driving force (D). Coupling between environmental state and society can be described through the environmental objectives and measures (R) implemented to counteract the unwanted impact (I). (Source: National Environmental Research Institute).



Environmental indicators and indicator systems

Environmental indicators aggregate environmental data stemming from the current monitoring and surveillance efforts directed towards the state of the environment, the pressures on the environment and also on the human/economic activities impacting the environment. Indicators and indicator systems are constructed in a way that makes them an important tool for monitoring and communicating developments and results regarding the environmental policies and goals and for political decision making in the field of environment in general. Every new policy or action plan within the environmental sector can have its own set of indicators in order to follow the implementation as well as the effects and efficiency of that particular policy or plan.

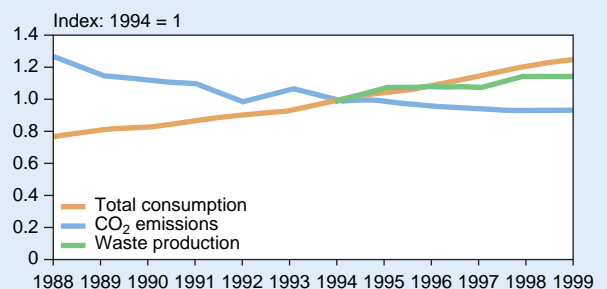
One example of how environmental indicators are used is the indicators demonstrating the so-called de-coupling of economic or activity development and environmental pressure. These indicators show the relationship between for instance the passenger and freight transport and the emission of CO₂ and air pollutants. With a number of pollutants, growth in transport and emissions has been de-coupled. Examples are nitrogen oxides and total particulate. In contrast, CO₂ emissions continue to increase in step with transport, and, in the case of freight transport, even more steeply. If CO₂ emissions from transport are to be reduced, energy efficiency will have to be increased or more transport will have to be switched to public transport, bicycle and pedestrian transport.



Indexed trends in passenger transport and freight transport and selected emissions over the period 1988-99. Left: Passenger transports. Right: Freight transport. Passenger and freight transports are measured in passenger-km and tonne-km, respectively.

Another example is the relation between the consumption by the consumers and the waste production and CO₂ emission. Despite the increasing consumption it has been possible to reduce emissions of CO₂ through energy effectivization, afforestation and the use of cleaner fuels. Waste production, which is more directly correlated with the level of consumption, has not decreased. It is increasing less rapidly than consumption, however.

Indicators constitute the quantitative backbone of the Danish SoE-reporting.



Development in consumption and two indicators of pollution: Waste production and CO₂ emission. Waste production data are not assessed in the same way for the years prior to 1994.

SOE reporting

Every 4th year NERI issues a comprehensive SOE report which serve as the technical background for the strategic environmental planning of the Danish government.

The State of the Environment Report is a scientific report on the current and long-term state of the Danish environment. The fundamental idea behind the report is to describe the interaction between society and the environment. The report provides an overview of the current state of the environment and nature, and contains descriptions of past and future trends. In addition, emphasis is placed on how to explain the trend patterns and assess the effect of environmental policy initiatives. Upon ratification of the Aarhus Convention, publication of the State of the Environment Report became legally mandatory. At the same time, the decision was made to include the public in the preparation of the report through a hearing process. Apart from meeting the requirements of the Aarhus Convention concerning openness, the hearing process has been beneficial for the final result. From the comments it became clear that important topics had been omitted or, due to the report structure, were described too dispersed to provide the intended overview.

In an international context – especially in relation to the EU – the Danish State of the Environment Report serves as the basis for inter-country comparisons or for the preparation of a larger combined report on the state of the environment. For example, the report is part of the material used by the European Environment Agency when preparing the European State of the Environment Reports.



The report is divided into five chapters. The first deals with societal pressures, especially the trend patterns for those societal sectors that have the greatest impact on nature and the environment. The description of society in this report is based on the division of society into a number of economic sectors. The next three chapters concern the three media: Air, water and the terrestrial environment/nature. The chapter on the terrestrial environment and nature contains a section on biodiversity that encompasses both the terrestrial and aquatic environments. The last chapter concerns the urban environment and man. The effects on human beings and conditions for human life are discussed in this chapter since 85% of the Danish population live in the towns.

The Danish SOE report is found here: www.neri.dk.



International activities and capacity development

NERI provides assistance to the European Environment Agency and the EU Commission on these matters. NERI is the Danish focal point of EEA on issues like SOE reporting, indicator development, scenario analysis and integrated assessment.

NERI provides assistance to European and developing countries as part of the Danish and European environmental assistance and environmental development aid. As an example NERI assists the Peoples Republic of Vietnam in development of an Environmental Information and Reporting System.



The approach to capacity development is highly participatory. Capacity development is ensured by applying a learning-by-doing approach where at all possible and by workshopping. This approach is supplemented by tailor-made training courses where relevant. Training need assessments are conducted with an open mind on further needs that may occur as the capacity development progresses. Training of trainers is considered and all project outputs and processes are fully documented in order to facilitate the dissemination of the outcomes to relevant staff and organisations, which has not been directly involved. During the course of the implementation, it is important to be aware of the need for developing other capacities than the human ones, such as e.g. the systems applied and other organisational and institutional barriers that might restrain the fulfilment of the objectives of the capacity development.

Further Information

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