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**SUSTAINABLE DEVELOPMENT INDICATORS FOR SWEDEN –
A FIRST SET 2001**

Paper submitted by Statistics Sweden

Abstract: This is the first time a set of Swedish Sustainable Development Indicators has been compiled. The publication was made by Statistics Sweden in co-operation with the Swedish Environmental Protection Agency for the Ministry of the Environment. We have chosen to structure our 30 indicators under four themes that we have named *Efficiency*, *Equality/Participation*, *Adaptability* and *Values and resources for coming generations*. Within the four themes, the indicators encompass economic, environmental and social dimensions of sustainability. We hope this approach will bring a focus to the different facets of the transition toward sustainability rather than serving as an assessment of the present state of sustainability. The Sustainable Development Indicators for Sweden show improving performance in many areas, but also that much remains to do. There is a cautious optimism regarding efficiency, increased purchases of ecolabelled goods and services, strengthening of the preconditions for sustainable growth in research, education and energy but also, a shrinking inheritance for coming generations.

Introduction

This is the first time a set of Swedish Sustainable Development Indicators has been compiled. The project group was directed by a steering committee composed of representatives from the Ministries of the Environment, Health and Social Affairs, Industry and Trade and Finance as well as Statistics Sweden and the National Environmental Protection Agency. An open seminar was held in December 2000 with some 50 participants from government, industry, universities and NGOs, who discussed a first draft of the report and provided valuable input. The purpose of the report is to give input to discussions on and the ongoing work with a Swedish strategy for sustainable development.

Sustainable development

The Brundtland Commission defines Sustainable development as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” Sustainable development according to this definition involves three dimensions: ecological, economical and social, which includes cultural aspects.

Our approach

The development toward sustainability in Sweden is reflected by a set of 30 indicators structured along four themes. This is a somewhat different approach than others have taken, both according to number of indicators and the way of structuring them. However, most of the finally selected indicators as well as the indicators discussed during our work are commonly used in other SDI-reports. This makes the Swedish indicators fairly comparable with others. There is also a strong connection between the environmental indicators chosen and the Swedish “Gröna Nyckeltal” (Key indicators in Swedish only) provided by the Swedish Environmental Advisory Council. The social and economic indicators chosen should also be familiar to readers from these disciplines.

The present set of Swedish indicators are mainly presented in the form of time series. The criteria used for selecting indicators are fairly pragmatic. An indicator should be informative and relevant in terms of sustainability. The data should be readily available in official statistical datasets and, if possible and appropriate, be annual data covering a long time period. A reasonable balance between social, economic and environmental indicators was also desired. As requested by the steering committee, the total number of indicators should be kept as low as possible, preferably around 30. The main target groups of the book are politicians and civil servants who need brief and focused reports rather than probing in depth studies. This, however, is a dilemma, because the more in depth studies and analyses have to be made, in order to compile the most essential parts into a more digestible report. The work with the indicator report thus generates a lot of interesting data and analysis that never makes it into the final report.

The work process is similar to what is usually done in forecasting. The work has to begin with examining which parts of the development that has the largest influence on sustainability. To do this, it is necessary to develop a very broad mapping or conceptual model of all the parts influencing future sustainability, for example transport, manufacturing and heating that all influencing the total carbon dioxide emissions.

The choices involved in minimising the number of indicators are hard. It is necessary to determine what measures are most important as well as cater for indicators that relates to choices and concerns in everyday life. An example of this type of indicator is prevalence of asthmatic symptoms among school children. We choose to include this indicator because it is an often debated issue which concerns many people. Arguments against this indicator is that there is no clear evidence of what causes these problems (we do not know exactly how and what kind of emissions to air worsens the symptoms). It is also, at least so far, a minor problem in proportion to the total health situation among the population. However, it is an increasing problem, and including this indicator could serve as a warning bell.

Many indicators were discussed but not included in this report despite the fact that they added valuable information about the transition towards sustainability. We hope to be able to present these on our website, thereby making it possible for those who wish to find additional and updated data and comments . Since sustainable development often is about studying long term changes, a dynamic website set of indicators could hold a constantly updated basic set of indicators as well as indicators of today's burning issues.

Some of the desired indicators were excluded because of lack of data. Other indicators need to be further developed and relationships between indicators should be worked out.. As the environmental accounts are developed with the linkages between the economy and the environment/natural resources in focus it would have been desirable to use these to build several of the indicators. So far, the time series are too short. However, we hope to be able to include data from the environmental accounts in coming editions of the report.

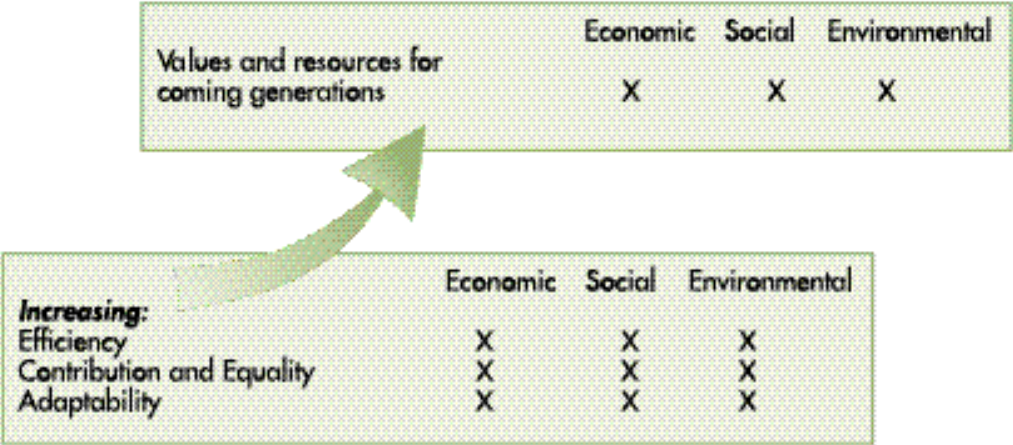
The work of the Brundtland Commission and others provides the background for the approach we have chosen to structure the indicators. Sustainability indicators are generally designed to illustrate the economic, environmental and social dimensions of sustainable development. There is a danger in categorising a set of indicators with these dimensions since the same phenomena can often be viewed from several perspectives. We have chosen to structure our indicators under themes that we have named **Efficiency**, **Equality/Participation**, **Adaptability** and **Values and resources for coming generations** . Within these themes, the indicators encompass economic, environmental and social dimensions. We hope this approach will serve interdisciplinary and help avoid categorisation. The aim is to bring a focus to the different facets of the transition towards sustainability, rather than serving as a judgement on the present state of sustainability.

- Indicators on **Efficiency** focus on resource use from different perspectives. Resource productivity is undoubtedly one of the key issues in a transition to a sustainable society.
- Indicators on **Equality and participation** encompass the distributional aspects of development, in terms of sharing both the burdens and benefits in different areas. Many of these indicators deal with traditional economic and social welfare issues; additional data reflect the interest in promoting changes in production and consumption patterns in a more sustainable direction.
- Indicators on **Adaptability** illustrate actions today that will influence the situation in coming years. These indicators represent different views of the current composition of investments in relation to achieving greater flexibility and efficiency tomorrow.
- The last set of indicators focus on **Values and resources for coming generations** , or what might be termed manoeuvrability. These indicators emphasise the economic, ecological and human resources we pass on to future generations. Another way of viewing this theme is to say that it concerns the avoidance of debts that tie up (or deplete) resources that could be put to better use tomorrow.

We present and discuss these indicators separately, knowing full well that in terms of sustainability, few if any of them make sense on their own. The reader is left to make his/her own weighting of, for example growth in GDP versus changes in levels of emissions or changes in resources spent on education or health care. Obviously, there are trade-offs as well as synergy effects, within and among the variables composing the different indicators – especially over longer time periods.

We do not provide a weighting scheme or specific dependencies among the variables presented in the indicators. We do, however, illustrate some of the linkages among the different indicators by cross-referencing where possible. Future reports on sustainability might proceed in a different, more analytical, direction if there is a demand for it. This would involve a more explicit analysis of dependencies among indicators as well as different schemes for weighting them as components of a type of metaindicator. It is possible that a Green GDP would be included among indicators.

Indicators of sustainable development



Results

The Sustainable Development Indicators for Sweden show that we are improving our performance in a lot of areas, but still, we are not yet so good at making sustainable choices. We make better cars with less fuel consumption and less emissions. The environmental gain however diminishes because we tend to choose cars with higher performance and travel more by car. Improvements are made in education because of new pedagogical methods and the use of computers. However, fewer pupils are qualifying for upper secondary school. Decreasing expenditures in education resulting among other things in more pupils per teacher could be one explanation.

Efficiency can pave the way for development towards sustainability. Much progress up to now has relied on technological achievements or changes in our ways of doing things that have led to a more rational use of resources. We can now produce more goods and services with less input of energy and labour. The increase in production has resulted in more waste, which we are, however, able to better manage. Measurements of efficiency in social developments pose problems of interpretation because qualitative effects are difficult to

measure. Students' results in the school system have deteriorated with an increase in the share of students who are not qualified for upper secondary school.

Contribution and Equality An equal distribution of prosperity enables a broader-based contribution and can also influence the development of both the economy and the environment. The contributions from all sections of the population are important because many of the changes that need to be made affect people's everyday lives and because broad understanding and responsibility are keys to changing consumption patterns and behaviour. The economic recession in the early 1990s and a growing market orientation in Sweden have led to negative development in some of the traditional welfare indicators. However, in Sweden there is great involvement in the ongoing local process with Agenda 21, which has also led to increased responsibility and actions for sustainable development among NGOs, enterprises, municipalities and consumers. This has also led to an increase in the number of environmentally certified enterprises and in the sale of ecolabelled products. The increase in trade has resulted in increased transport. The share of those means of transport that have a negative effect on the environment has increased.

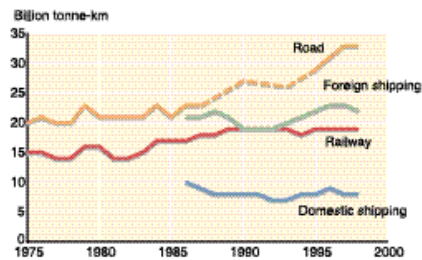
Adaptability Society as a whole has the potential to develop and adapt new technologies and to make adjustments in how things are done in response to new conditions. Individuals, enterprises and organisations in particular have a vast potential in this area and have vital roles to play in maintaining sustainability in the economic, ecological and social fields. The way this is done is reflected by the theme Adaptability. This theme interacts with the themes of Efficiency and Contribution and Equality. For example, a high educational level among the population is considered to be one of the key factors for a country's economic development. It is important not only when it comes to developing new technology designed to promote greater efficiency, but also in enabling people to comprehend and adjust to new technology. An equal distribution of education can provide the knowledge needed to help us choose approaches that are consistent with sustainability and thus contribute to the community. At the individual level, many things that are important for our well being, such as health and income, vary with the level of education. Sweden has a high and slowly increasing level of education in the population and a large and increasing share of GDP is invested in research. This characterizes a dynamic economy. A rising interest for entrepreneurship contributes to increased potential for economic diversity. Adaptation to the use of renewable resources proceeds slowly. Nevertheless, there has been an adaptation in energy usage. For example, the housing sector today is much more energy efficient than previously. Sweden has the highest proportion of renewable energy/total energy among the member states of the EU. A considerable quantity of energy is used for heating purposes, although great progress has been made in efficiency in recent decades. We also note a significant increase in the area under cultivation for organic farming.

Values and resources for coming generations The predominant impression is that Sweden is not passing on to coming generations a similarly large or greater set of values and resources than that inherited by the previous generation. For example, the use of non-renewable resources declined for a period, but it is now increasing again. Asthma allergies are increasing among children, the Baltic Sea is polluted and overfished, the number of endangered species is increasing. However, there are some positive developments. The central government deficit has fallen and there has been an increase in land and water areas reserved for conservation of wildlife. The total emissions of carbon dioxide show no clear trend. This indicator illustrates one of the most burning issues today that will influence prosperity for coming generations. Adaptation toward sustainability is under way, but much work remains.

Increasing goods and passenger transport

Freight transport by road has increased sharply since the mid-1990s.

8a. Freight transport by rail, road and water



Source: Statistics Sweden, Swedish Institute for Transport and Communication Analysis

Relevance

The population density in Sweden is low and the population is concentrated in urban areas. The low population density causes long transport distances and consequently the infrastructure and the transport sector are important in Sweden. Traffic represents approximately 40 per cent of carbon dioxide emissions and 80 per cent of nitrogen oxides in Sweden. Choosing low-emission vehicles for goods and passenger transport is important for sustainable development. Electrified rail traffic causes less exhaust emissions to air than road traffic and shipping. Comparison between exhaust emissions from cars and shipping is more complex. Exhaust fumes from aircrafts are emitted high in the atmosphere and contribute to the greenhouse effect.

Motor vehicle traffic causes hazardous air emissions, noise problems and traffic accidents. Conversion to cycling, walking and public transport will lead to a reduction of emissions and other harmful effects. This indicator thus helps to show the contribution to improved sustainability made by those

responsible for travel, whether individuals or enterprises. It also gives a picture of the willingness of society to bring the transport system in line with sustainability. This indicator is connected to the Swedish environmental objectives: Clean air, Limited influence on climate, A good urban environment, Natural acidification only, No eutrophication, Sustainable lakes and watercourses.

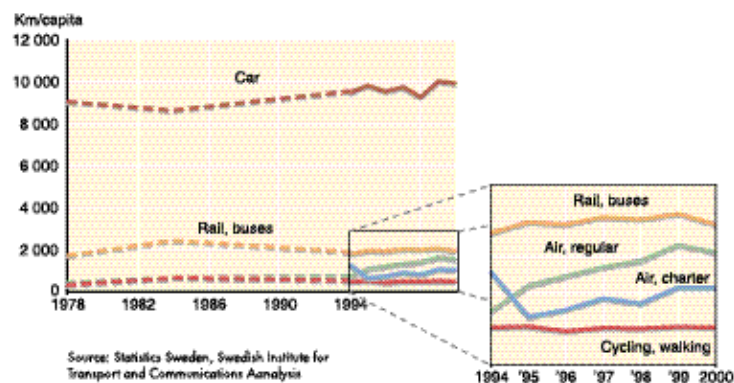
Trends

Goods freight by road has increased sharply since the mid-1990s. About 80 per cent of goods are transported by road. Almost all of this transport is for distances shorter than 300 km. Rail transport dominates over longer distances.

Domestic passenger transport has grown by 40 per cent over the last 20 years. People travel by bicycle, on foot and by public transport on average as much as they did twenty years ago, while car and air traffic has increased. Obviously travel by car is dominant and still growing.

In recent decades passenger transport, especially by air and car, has been growing.

8b. Passenger transport



Influence

Rising fuel prices combined with an internalising of environmental costs can change the present balance in the transport mix. However, a substantial part of the fuel prices are taxes in Sweden.

Higher fuel prices may result in less passenger car travel, possibly leading to less traffic accidents. Important factors here include the availability of a choice of modes of transport. In many parts of Sweden there is only one alternative – the car. There are almost five times as many buses in Stockholm County as in Norrbotten County, for example, while passenger car density is almost 1.5 times as high in Norrbotten County. Therefore, higher fuel prices would affect people in rural areas harder. The growth in goods production, and in exports and imports, influences total goods freight. There have also been changes in the infrastructure, with increasing concentration of larger industrial plants and shopping centres and closure of local establishments.

Future

No changes are expected in the mix in freight or passenger transport systems in the immediate future. Transport volumes are more likely to show an increasing trend than the opposite. The forecast is that passenger transport by car will increase. However, cars will emit less air pollution as the proportion with catalytic converters grows and new technology is implemented. Better cycle paths and better public transport, etc., will lead to more people choosing alternatives to car transport for shorter distances.

See also indicators: 4, 7, 15, 16, 24, 25, 26, 30.