Nr 32

Mauritz Glaumann, Marita Wallhagen

Study of International Policies

SWEDEN

National initiatives for reducing the environmental impact of the building sector
Study of International Policies
SWEDEN
National initiatives for reducing the environmental impact of the building sector

Mauritz Glaumann. Prof, Architect SAR/MSA
Marita Wallhagen, Architect SAR/MSA
University of Gävle
2006-11-22
Content

SWEDEN – CLIMATIC AND SOCIOECONOMIC DATA ..................................................... 3
GOVERNMENT INITIATIVES ........................................................................................... 4
  NATIONAL ENVIRONMENTAL GOALS .................................................................... 4
  Responsibilities ........................................................................................................... 4
  Authorities ..................................................................................................................... 5
  Responsibility ................................................................................................................. 5
  Environmental indicators ............................................................................................ 6
REGULATIONS .................................................................................................................. 7
  Responsibility ................................................................................................................. 7
  Energy use regulations ................................................................................................. 8
  Subsidies ....................................................................................................................... 8
  Energy declaration ........................................................................................................ 9
CHEMICALS .................................................................................................................... 9
TAXES ............................................................................................................................. 12
  Green Taxation ............................................................................................................. 13
KLIMP ............................................................................................................................ 13
OFFICIAL REPORTS ...................................................................................................... 14
SECTOR INITIATIVES .................................................................................................... 15
  THE ECOCYCLE COUNCIL – A UNIQUE FORM OF COOPERATION ......................... 15
  BUILDING, LIVING AND PROPERTY – A DIALOGUE PROJECT ............................... 17
    What is to be done? ...................................................................................................... 18
    The commitments ....................................................................................................... 18
    Aims for the Building/Living project ........................................................................ 18
BASTA ............................................................................................................................ 19
OTHER NON-GOVERNMENTAL INITIATIVES .......................................................... 20
  THE SWEDISH ENVIRONMENTAL MANAGEMENT COUNCIL ............................ 20
  ENVIRONMENTAL ASSESSMENT METHODS FOR BUILDINGS ......................... 21
  ISO 14000 AND EMAS ............................................................................................... 21
  ENVIRONMENTAL LABELLING OF BUILDING PRODUCTS .............................. 22
  SWEDISH SOCIETY FOR NATURE CONSERVATION ............................................. 22
  O2 NORDIC .................................................................................................................. 23
SWEDISH ASSOCIATION OF ARCHITECTS ENVIRONMENTAL GROUP ............ 23
RESEARCH ..................................................................................................................... 24
SUSTAINABLE BUILDING PROJECTS ................................................................. 24
APPENDIX 1 .................................................................................................................. 25
  Indicator ....................................................................................................................... 25
  Objectives monitored ................................................................................................. 25
Swedish climatic and socioeconomic data

Latitudes: 56-68°N
Yearly average temperature: South: 7°C, North: 0°C
Yearly average precipitation: South: 600 mm, North: 500 mm
Solar insolation: South: 1000 kWh/m², North: 850 kWh/m²

BNP: 677917 million SEK
Inhabitants: 9,103,551
Number of residential buildings:
  Detached houses: 2,007,097
  Apartments: 2,396,962

1 www.scb.se, 2006-11-22
Government initiatives

National environmental goals

In 1999, 15 environmental quality objectives were adopted by Parliament. A 16th objective, on biodiversity, was adopted in November 2005. They define the state of environment which environmental policy aims to achieve and provide a coherent framework for environmental programmes and initiatives at national, regional and local level. The objectives, which are aimed to be reached within a generation, are formulated positively in terms that easily could be understood and communicated to the public.

The environmental quality objectives are:

1. Reduced Climate Impact
2. Clean Air
3. Natural Acidification Only
4. A Non-Toxic Environment
5. A Protective Ozone Layer
6. A Safe Radiation ...
7. Zero Eutrophication
8. Flourishing Lakes and ...
9. Good-Quality Groundwater
10. A Balanced Marine ...
11. Thriving Wetlands
12. Sustainable Forests
13. A Varied Agricultural ...
14. A Magnificent Mountain ...
15. A Good Built Environment
16. A Rich Diversity

For each objective an authority is appointed to formulate measurable indicators and regularly report the progress.

Responsibilities

Environmental Objectives Council

In January 2002 the Swedish Government established the Environmental Objectives Council to promote consultation and cooperation in implementing the environmental quality objectives adopted by Parliament. The Council consists of representatives of central government agencies, county administrative boards, local authorities, non-governmental organizations and the business sector. The Council is served by a Secretariat based at the Swedish Environmental Protection Agency.

---

2 http://www.miljomal.nu/english/english.php
The principal functions of the Council are:

- to monitor and evaluate progress towards the environmental objectives
- to report to the Government on how efforts to achieve the objectives are advancing and what further action is required
- to coordinate the information efforts of responsible authorities
- to ensure coordination of the regional application of the objectives, and
- to allocate funding for monitoring of progress towards the objectives, environmental monitoring, and reporting at international level.

**County administrative boards and municipal authorities**

Sweden's 21 **county administrative boards** have overall responsibility for defining and monitoring regional goals relating to the environmental quality objectives. The county administrative boards support the **municipalities** which have overall responsibility for local adaptation of the national objectives.

**Authorities responsible for the environmental objectives**

A number of national authorities have been given overall responsibility for the environmental quality objectives. This includes proposing and implementing measures as well as monitoring, evaluating and reporting progress.

<table>
<thead>
<tr>
<th>Authorities</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Swedish Environmental Protection Agency</strong></td>
<td><em>Environmental objectives:</em></td>
</tr>
<tr>
<td></td>
<td>Reduced Climate Impact</td>
</tr>
<tr>
<td></td>
<td>Clean Air</td>
</tr>
<tr>
<td></td>
<td>Natural Acidification Only</td>
</tr>
<tr>
<td></td>
<td>A Protective Ozone Layer</td>
</tr>
<tr>
<td></td>
<td>Zero Eutrophication</td>
</tr>
<tr>
<td></td>
<td>Flourishing Lakes and Streams</td>
</tr>
<tr>
<td></td>
<td>A Balanced Marine Environment, Flourishing</td>
</tr>
<tr>
<td></td>
<td>Coastal Areas and Archipelagos</td>
</tr>
<tr>
<td></td>
<td>Thriving Wetlands</td>
</tr>
<tr>
<td></td>
<td>A Magnificent Mountain Landscape</td>
</tr>
<tr>
<td></td>
<td>A Rich Diversity of Plant and Animal Life</td>
</tr>
<tr>
<td></td>
<td><em>Broader issue related to the objectives:</em></td>
</tr>
<tr>
<td></td>
<td>The Natural Environment</td>
</tr>
<tr>
<td><strong>Swedish Radiation Protection Authority</strong></td>
<td><em>Environmental objective:</em></td>
</tr>
<tr>
<td></td>
<td>A Safe Radiation Environment</td>
</tr>
<tr>
<td><strong>National Chemicals Inspectorate</strong></td>
<td><em>Environmental objective:</em></td>
</tr>
<tr>
<td></td>
<td>A Non-Toxic Environment</td>
</tr>
<tr>
<td><strong>Geological Survey of Sweden</strong></td>
<td><em>Environmental objective:</em></td>
</tr>
<tr>
<td></td>
<td>Good-Quality Groundwater</td>
</tr>
<tr>
<td><strong>National Board of Forestry</strong></td>
<td><em>Environmental objective:</em></td>
</tr>
<tr>
<td></td>
<td>Sustainable Forests</td>
</tr>
<tr>
<td><strong>Swedish Board of Agriculture</strong></td>
<td><em>Environmental objective:</em></td>
</tr>
<tr>
<td></td>
<td>A Varied Agricultural Landscape</td>
</tr>
<tr>
<td><strong>National Board of Housing</strong></td>
<td><em>Environmental objective:</em></td>
</tr>
</tbody>
</table>
Building and Planning  

A Good Built Environment

**Broader issue related to the objectives:**
Land Use Planning and Wise Management of Land, Water and Buildings

National Heritage Board  

Broader issue related to the objectives:  
The Cultural Environment

National Board of Health and Welfare  

Broader issue related to the objectives:  
Human Health

The other authorities responsible for the work in a specific sector also have a responsibility to work with the environmental issues. Banverket\(^3\) and the Swedish Road Administration\(^4\) are two of these which are involved in the built environment and urban planning. The Swedish Work Environment Authority\(^5\) and Swedish Energy Agency\(^6\) are also involved in the work with a sustainable development in many ways.

**Environmental indicators**

The Environmental Objectives Portal currently presents more than 80 national indicators tracking progress towards the environmental quality objectives and interim targets.

Each agency is responsible for coordinating, developing and assuring the quality and operational reliability of indicators relating to its own particular environmental quality objective(s), and deciding how these indicators are to be used. Overall coordination is the task of the Environmental Objectives Council. The county administrative boards have worked together to develop joint indicators at the regional level. Much remains to be done to delimit a core set of carefully selected indicators, which will then guide decisions on what more detailed data needed to be collected and evaluated.

When choosing indicators, it is essential to coordinate as far as possible the data required for monitoring of progress towards the objectives with those needed by other users, especially for purposes of international reporting. This will lay a better foundation for long-term funding. In the short term, the authorities' efforts to develop indicators have focused on securing the necessary supply of data in the most cost-effective way possible. In the subsequent development of these indicators, there should be a greater focus on customizing them to different target groups, so as to facilitate communication of the results of monitoring.

The indicators that are of importance for the building sector are shown in Appendix 1.

---

\(^3\) [http://www.banverket.se/](http://www.banverket.se/)
\(^4\) [http://www.vagverket.se/](http://www.vagverket.se/)
\(^5\) [http://www.arbetsmiljoverket.se/](http://www.arbetsmiljoverket.se/)
\(^6\) [http://www.energimyndigheten.se/](http://www.energimyndigheten.se/)
Regulations

Responsibility

Based on laws The National Board of Housing Building and Planning (Boverket) is empowered to issue mandatory provisions and general recommendations, such as Building Regulations, BBR and Design Regulations, BKR. The provisions are in the form of functional requirements, referring to standards when applicable.

Boverket is responsible for the Environmental Quality Objective "A Good Built Environment":

"Cities, towns and other built-up areas must provide a good, healthy living environment and contribute to a good regional and global environment. Natural and cultural assets must be protected and developed. Buildings and amenities must be located and designed in accordance with sound environmental principles and in such a way as to promote sustainable management of land, water and other resources."

In more detail the objective outlines a long list of qualities to be reached, ranging from architectural qualities and cultural heritage preservation to a sustainable urban structure in terms of resource conservation, freedom from noise, healthy local climate, good quality public transport, waste recycling and unspoiled countryside.

Interim targets

Interim targets have also been set by the Swedish Parliament, so that by 2010, inter alia,

- land use and community planning will be based on programs and strategies for a varied supply of housing, workplaces, services and cultural activities, in order to reduce transport demand; preservation and enhancement of cultural and aesthetic assets, green spaces and water bodies; promotion of the use of renewable energy resources and development of production plants for district heating, solar energy, biofuels and wind power.
- The number of people who are exposed to traffic noise will have been reduced by 5% compared with 1998.
- Extraction of natural gravel in the country will not exceed 12 million tonnes per year.
- The quantity of waste disposed of to landfill, excluding mining waste, will be reduced by at least 50% by 2005 compared with 1994.
- At least 50% of all household waste will be recycled through materials recovery, including biological treatment.

The environmental impact of energy use in residential and commercial buildings will decrease and will be lower than in 1995.

Radon levels in all schools and pre-schools are below 200 Bq/m³ air

The new building code was launched in 1st of July 2006 apart from the chapter 9 about buildings which use electricity for heating. This chapter is still on hearing.

**Energy use regulations**

From the 1st July 2006 the demands on maximum energy use in new buildings are:

**Residential buildings:**
- 110 kWh/m², yr for zone south (appr <62°N)
- 130 kWh/m², yr for zone north (appr >62°N)
- 75 kWh/m², yr for buildings with direct electrical heating - zone south
- 95 kWh/m², yr for buildings with direct electrical heating - zone north

In addition the highest U-value for single parts of the building envelop should not exceed 0,5 W/m²,K.

**Localities:**
- 100 kWh/m², yr for zone south (appr <62°N)
- 120 kWh/m², yr for zone north (appr >62°N)

In addition the highest U-value for single parts of the building envelop should not exceed 0,7 W/m²,K.

**Download**


**Subsidies**

The building stock is divided in dwellings and localities. The National Board of Housing Building and Planning (Boverket) is responsible for subsidies to the building sector.

**Dwellings**
- Support for adaptation to disabled people
- Support for building dwellings in areas with shortage or lack of dwellings for students
- Klimp grants – support to municipalities for investments for CO2 reductions (see below)
- Support for conversion from direct electrical heating to heat pumps or bio fuels in residential buildings

---

• Support for conversion from fossil fuel heating to heat pumps or biofuels in single family buildings
• Support for actions to eliminate high radon levels
• Support for erection of multi family houses (will be phased out with the new government)\(^9\)
• Support for installation of solar panels in residential buildings
• Support for arranging source separation in multi family houses

Localities
• Support for common meeting rooms in residential buildings
• Support for building cultural localities as theatres and museums that are not owned by the state.
• Klimp grants – support to municipalities for investments for CO2 reductions (see below)
• Support for installation of solar panels in some localities
• Support for installation of solar panels in commercial buildings
• Support for investments meant for increased energy efficiency or for conversion to renewable energy in public buildings

Energy declaration

Because the directive (2002/91/EG) from the European Parliament Sweden like other EU countries is forced to introduce Energy Declaration for Buildings. The aim is to support energy efficiency while considering a healthy indoor environment and cost efficiency.

The energy performance of a building is the metered energy use for areas heated to at least 10°C. In principle should buildings be declared regarding energy performance along with suggestions for improved efficiency. The regulations are not fully implemented in Sweden yet.

Chemicals

The Swedish Chemicals Inspectorate\(^10\) is responsible for the efforts to attain a non-toxic environment in Sweden. The Inspectorate has launched a risk reduction tool called PRIO. This tool is aimed at all companies with an intent to improve their environmental work. PRIO consists of a guide and a database containing about 4,000 dangerous chemical substances. It is a web-based tool intended to be used to preventively reduce risks to human health and the environment from chemicals. The aim of PRIO is to facilitate in the assessment of health and environmental risks of chemicals so that people who work as environmental managers, purchasers and product developers can identify the need for risk reduction. To achieve this, PRIO provides a guide for decision-making that can be used in setting risk reduction priorities.

\(^9\) The guaranteed interest rate is about 3-4% at the moment.
\(^10\) http://www.kemi.se/default.aspx
The recommendations on which chemicals are prioritised for risk reduction measures are based on the environmental quality objective “A non-toxic environment” adopted by the Swedish parliament and the current proposal for the new EU chemical legislation. Although PRIO is based on Swedish legislation and Swedish considerations, PRIO can be used by companies or organisations in other countries as a source of knowledge or inspiration. PRIO can provide help in preparing for the EU’s new chemicals legislation and in the work towards sustainable development.

Substances in PRIO are divided into two levels of prioritisation: phase-out substances and priority risk-reduction substances. The level a substance belongs to depends on the hazardous properties of the substance.

**Phase-out substances:**
- CMR (carcinogenic, mutagenic or toxic to reproduction, categories 1 and 2)
- PBT/vPvB (persistent, bioaccumulating and toxic/very persistent and very bioaccumulating)
- Particularly hazardous metals (mercury, cadmium, lead and their compounds)
- Endocrine disruptive
- Ozone-depleting

**Priority risk-reduction substances**
- Very high acute toxicity (health)
- Allergenic
- Mutagenic Category 3
- High chronic toxicity (health)
- Environmentally hazardous, long term effects
- Potential PBT/vPvB

The efforts to avoid and reduce toxic substances in the building sector relates to the PRIO work as far as possible. One example of this is the BASTA project described below under “Building sector initiatives”.

**Chemicals - Databases**

The Swedish Chemical inspectorate also administer a number of databases with information, data and statistics to help the work towards a non-toxic environment.
<table>
<thead>
<tr>
<th>Database</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classification List</td>
<td>The Classification List contains binding health and/or environmental classifications of 3,300 substances, isomers, closely related substances and other groups of substances, often representing the same “substance”. Guide to Swedish search site.</td>
</tr>
<tr>
<td>Company register</td>
<td>The Company Register contains the names of companies having filed a product report to the Swedish Chemicals Inspectorate. Commercial agents and reported enterprises appear on separate lists.</td>
</tr>
<tr>
<td>Flow analyses</td>
<td>Flow analyses contain facts on substances and group of substances, for example manufacturing methods, use patterns and physical data. The flow analyses are part of Sweden’s official statistics.</td>
</tr>
<tr>
<td>KemI-stat</td>
<td>KemI-stat is a tool for compiling statistical information based on the data in the Swedish Chemicals Inspectorate’s (KemI) products register and pesticides register.</td>
</tr>
<tr>
<td>List of substances</td>
<td>The List of Substances contains over 130,000 chemical substances with CAS numbers. Approximately 100,000 of these also have an EINECS number. The register of the list contains 170,000 synonyms. Guide to Swedish search site.</td>
</tr>
<tr>
<td>N-Class</td>
<td>The N-Class Database contains information on the classifications of more than 7,000 substances. The data primarily concern environmental effects constituting the basis for classifications and classification proposals. Classifications of fire and health hazards are also included. Read more about N-Class.</td>
</tr>
<tr>
<td>Pesticides register</td>
<td>The Pesticides Register contains information on more than 2,000 approved (and previously approved) pesticide preparations in Sweden. Guide to Swedish search site.</td>
</tr>
<tr>
<td>PRIO</td>
<td>A web-based tool intended to be used to preventively reduce risks to human health and the environment from chemicals. PRIO replaces the Swedish Chemicals Inspectorate’s Observation (OBS) list.</td>
</tr>
<tr>
<td>Restricted Substances Database</td>
<td>The contains information whether a substance or group of substances is restricted according to provisions laid down in regulations issued by the Swedish government or the Swedish Chemicals Inspectorate. Guide to Swedish search site.</td>
</tr>
<tr>
<td>Riskline</td>
<td>Riskline contains over 7,000 bibliographical references to peer-reviewed information on 3,000 chemical substances. Search by CAS no. to obtain best results.</td>
</tr>
<tr>
<td>The SPIN database</td>
<td>The SPIN database contains information on products on the market reported to each of the Nordic products registers. SPIN also contains data on amounts of substances and in what products and sectors the substances are used.</td>
</tr>
</tbody>
</table>

The following energy taxes are applied in Sweden:

Table 1. Summary of current taxes and charges applied on energy in Sweden.

<table>
<thead>
<tr>
<th>Type of tax</th>
<th>Tax level</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy tax and CO$_2$ tax</td>
<td>Differs among the fossil fuels</td>
<td>Applied on all fossil fuels.</td>
</tr>
<tr>
<td>Sulphur tax</td>
<td>SEK 30 /kg S</td>
<td>Applied on heavy fuel oils, coal and peat. If sulphur is removed from the exhaust gases the tax could be refunded in accordance with that</td>
</tr>
<tr>
<td>Tax on nuclear electricity production</td>
<td>SEK 10200/(MWh month)</td>
<td>Applied on nuclear power</td>
</tr>
<tr>
<td>Electricity consumer tax</td>
<td>SEK 0,201-0,261/kWh</td>
<td>Tax on electric power</td>
</tr>
<tr>
<td>Electricity consumer tax</td>
<td>SEK 0,005/kWh</td>
<td>Tax on electric power used in manufacturing industry and agriculture</td>
</tr>
<tr>
<td>Value added tax</td>
<td></td>
<td>Applied on all energy consumed</td>
</tr>
<tr>
<td>Natural Gravel Tax</td>
<td>SEK 13/tonne gravel</td>
<td>On quarried natural gravel</td>
</tr>
<tr>
<td>Waste tax on landfills</td>
<td>SEK 435 /tonne of waste</td>
<td>For waste brought into a landfill or at a facility where hazardous waste or other waste exceeding 50 tonnes per year, are deposited or stored for a longer time than tree years.</td>
</tr>
<tr>
<td>Pesticide tax</td>
<td>SEK 30/kg(active constituent in the pesticide)</td>
<td>Applied on sale or use of pesticides within the country. Wood preservatives are exempt from the tax.</td>
</tr>
<tr>
<td>Property tax</td>
<td>1% of the assessed value</td>
<td>Tax on dwellings and property designated for dwellings</td>
</tr>
<tr>
<td>Road user charges (tolls) for foreign and national heavy goods vehicles</td>
<td>Differs</td>
<td>For trucks heavier with a total weight exceeding 12 ton.</td>
</tr>
</tbody>
</table>

12 [www.skatteverket.se](http://www.skatteverket.se), 2006-11-22
Green Taxation

The Swedish Environmental protection Agency has been instructed by the Government to analyse various alternative environmental taxes as a basis for Government green taxation proposals for the period 2005-2010 and submit proposed improvements to the effectiveness of green taxes.

Developing a Green tax reform has been under in Developing a Green tax reform is another environmental economic instrument. Taxes on environmentally harmful activities are increased in exchange for tax reductions on individual earnings. Shifting the tax burden usually means that higher revenues from environmental taxes are used to offset a reduction in taxes on labour (or other distorting taxes). The effect of a green tax reform is not to increase taxes overall, but to redistribute tax revenues within a given framework, and to use taxation more specifically as an instrument of environmental control. The purpose of redistributing money is to promote environmentally sound activities and choices. Higher environmental taxes will result in a better environment (environmental benefit). In addition, they may benefit society by reducing unemployment (efficiency benefit).

Klimp

*The Swedish EPA is granting SEK 317 million to 25 local climate investment programmes (Klimp), and three special projects known as Guldklimpar (“gold nuggets”). The total investment amounts to SEK 1.2 billion. The programmes are taking place throughout Sweden, and are estimated to cut Swedish greenhouse gas emissions by 203,000 tonnes per year, which corresponds to emissions from about 70,000 cars.*

“The local climate investments are an important part of work to limit the greenhouse effect and to help us achieve the Swedish climate objective”. More than 40 per cent of the approved funding is earmarked for biogas projects, while about 20 per cent is for investments in district heating. The remaining projects include measures to boost energy efficiency in buildings and industry, improved conditions for cycling and public transport and local information about the climate issue. The players include municipalities, companies, county councils and regional cooperation bodies.

The approved programmes are estimated to cut Swedish greenhouse gas emissions by 203,000 tonnes per year, of which carbon dioxide makes up about 184,000 tonnes and other greenhouse gases roughly 19,000 (calculated as carbon dioxide equivalents). Nearly half the reduction in emissions will occur in the transport sector. Total energy consumption will fall by about 215,000 MWh, of which about 97,000 MWh is electricity.

The climate investment programme, Klimp, is a type of government funding to municipalities and other local players who make long-term investments to reduce the greenhouse effect. The EPA takes care of the administration of
Klimp, while the Council for Investment Support (RIS), with members appointed by the government, decides on the grants. Besides the Swedish EPA, the applications have been assessed by the National Board of Housing, Building and Planning, the Swedish Energy Agency, the National Road Administration and the National Rail Administration. The climate investment programme was introduced in 2003, and this is the third round of grants to be awarded. The closing date for applications for the next round is 1 November 2006.

In 2005, 51 applications were submitted for funding amounting to SEK 1.3 billion. 25 programmes, as well as three independent ones called Guldklippar (gold nuggets), are now being granted a total of SEK 317 million in funding. The programmes are in: Borås, Gothenburg, Helsingborg, Hässleholm, Katrineholm, Knivsta, Kristianstad, Landskrona, Leksand, Lidköping, Lilla Edet, Luleå, Malmö, Olofström, Region Skåne, the Regional Council in Kalmar County, the Östsam Regional Development Council, Stockholm, Svedala, Söderhamn, Tranemo, Trollhättan, Ulricehamn, Varberg and Östersund. The three Guldklippar are in Svedala, Söderhamn and Örnsköldsvik.

Read more at: http://www.naturvardsverket.se/klimp

Official reports\textsuperscript{13}

A number of Governmental reports about the subject have been published. Unfortunately we couldn’t find them in English.

Energy declarations


Building declarations

\textit{Byggnadsdeklarationer - Inomhusmiljö och energianvändning}\textsuperscript{15} Miljö- och samhällsbyggnadsdepartementet, Byggnadsdeklarationsutredningen, Statens offentliga utredningar (SOU) SOU 2004:78 1 juli 2004

Better indoor environment

\textit{Bättre inomhusmiljö}\textsuperscript{16} Miljö- och samhällsbyggnadsdep., Statens offentliga utredningar (SOU) SOU 2005:55 2 juni 2005

\textsuperscript{13} http://www.sweden.gov.se/sb/d/574
\textsuperscript{14} http://www.utrikes.regeringen.se/sb/d/108/a/48012
\textsuperscript{15} http://www.utrikes.regeringen.se/sb/d/108/a/26994
\textsuperscript{16} http://www.utrikes.regeringen.se/sb/d/108/a/45734
The Ecocycle Council is an association of around 30 organizations within the Swedish building and real estate sector. The aim of the organization is “that the building sector, through voluntary efforts, on market grounds and in close cooperation with authorities and legislation, succeeds in conducting credible, effective, co-ordinated and systematic environmental work that results in permanent environmental improvements”.

The history goes back to 1994 when the Swedish government through its "Ecocycle Commission" established informal contacts with a number of representatives of the building and property sector. To facilitate contacts with the Ecocycle Commission the representatives of the sector took the initiative to set up a network - the Ecocycle Council for the Building Sector. Now a more formal association just called “The Ecocycle Council”. The idea was to enable the sector's many different interested parties to get together to discuss and elaborate on this single issue: How should we formulate producer responsibility in the building and property sector? Today the aim is broader – that the building sector, through voluntary efforts, should reduce the environmental impact of the building sector.

The building and real estate sector is of significant importance to society. In Sweden the building sector occupies around 440 000 people and has a turn around about 40-50 billion Euros. But the sector also stands for a big part, around 40 %, of the use of energy and materials in society but also a considerable part of the production of waste. This means that the sector has a great environmental impact. But the Swedish building and real estate sector has conducted a unique project – The Environmental program 2003-2010 – trying, on a voluntary basis, to reduce this environmental impact.

The Environmental Program is based on an environmental review which has identified the significant environmental aspects of the building sector. From these significant environmental aspects – The use of energy, The use of materials, The use of hazardous substances and The impact on indoor air quality in buildings – the Ecocycle Council has formulated a number of environmental objectives and a plan of action.

The Environmental Program 2003-2010 was approved by The Ecocycle Council in October 2003.

The Environmental Review 2000

The building sector has on it’s own initiative conducted an environmental review to identify the significant environmental impact of the sector. The study was carried out in accordance with the environmental management principles
of ISO 14000. The idea was that the environmental review should create a basis for the voluntary undertaking of the sector to ensure “that the building sector, through voluntary efforts, on market grounds and in close co-operation with authorities and legislation, succeeds in conducting credible, effective, co-ordinated and systematic environmental work that results in permanent environmental improvements”. The environmental review is the first study that in a systematic way, and on the basis of environmental management principles, compiles a number of reports and studies into one common environmental review for the entire building sector.

**Environmental objectives**

**1. Energy Conservation**

1. Buildings:
   - The use of purchased energy per square meter should be reduced by 10% between the years 2000 and 2010.
   - The use of fossil fuels for heating purposes should be reduced by 20% between the years 2000 and 2010.

2. Civil Engineering Works
   - The use of fossil fuels for transports, construction machines and industries within civil engineering works should be reduced by 10% between the years 2004 and 2010.

**2. Economizing with building materials**

- To halve the volumes of landfill waste from construction works between 2004 and 2010.

**3. Fading out hazardous substances**

- The use of hazardous substances within the Building Sector should be reduced to a minimum by the year 2010.
- Latest by the year 2006 the main part (> 3/4) of the relevant building products on the Swedish market should have building product declarations.

**4. Secure and sound Indoor Environment**

- New buildings should be designed, built and maintained in a way that secures a sound indoor environment.
- Existing buildings that causes health problems should be identified and remedies should be carried out latest by 2010.

The Environmental Program 2003-2010 was approved by The Ecocycle Council in October 2003. Now it’s the mission of all the organizations within
the Council to inform their members and help them to implement the goals and actions in their businesses.

**Plan of action 2003-2010**

The Ecocycle Council has formulated more than 20 different projects to support the implementation of the Environmental program. Most of these activities aim to a self-regulation of the processes of the building sector.

**Building product declarations**

The Ecocycle council is also working with the development of building product declarations and draw up a proposal for common principles about how information about the building products should be organised and presented. Building product declarations are meant to gather information about the products use of materials, energy use and lifecycle.

This work has also continued in the building sector. Principles for building product declarations have been developed by SKASKA Sverige partly with grants from Svenska Byggbranschens Utvecklingsfond (SBUF). They have constructed an open database called “Byggarnas BVD-plats”\(^{17}\) with building product declarations. It is voluntary for companies to make declarations. Today there are 1500 registered building product declarations in the system.

For chemical products there is also a database for the compulsory declarations with safety-data-instructions (säkerhetsdatablad), “Byggarnas VIB-plats”. Today there are approximately 7000 registered declarations.

**Building, Living and Property - a dialogue project**\(^{18}\)

The dialogue project Building, Living and Property Management for the Future is a unique cooperation between companies, municipalities and the Government with the purpose to achieve a development of a sustainable building and property sector in Sweden. By the means of this dialogue, the parties have reached a voluntary agreement to take concrete measures for a sustainable development.

The dialogue project Building/Living has three prioritised areas:

- Healthy indoor environment
- Efficient use of energy
- Efficient resource management

\(^{17}\) http://www.byggarnas-bvdplats.com
We would like our website visitors to understand what the dialogue project Building/Living implies in order for us to achieve a sustainable building and property sector, with an emphasis on the three prioritised areas. The website will also provide the visitor with news on how the sector deals with management issues and the sustainable development of the building and property sector.

**What is to be done?**

In the “Building/Living Project”, the Government, together with companies and municipalities, have expressed a number of aims that they wish to achieve. The actors have signed an agreement on concrete efforts that are now being implemented

**The commitments**

Concrete efforts – the 7 areas The commitments that the actors sign are divided into seven areas that are concluded in the following recommendations:

- Plan for sustainable community planning!
- Adopt a holistic view for the entire life-cycle of the building structure!
- Establish quality and efficiency in the construction and property management processes and furnish new warranties for sustainable development!
- Property management with consideration to energy and environment!
- Classify buildings!
- Invest in research, development and training for sustainable building and property sector!
- Do follow-up and evaluation work!

**Aims for the Building/Living project**

The aims encompass anything from the amount of disposed waste, tapped pit run, substances dangerous to the environment, health issues related to buildings, the use of chemicals - to the strain on the environment from energy application. Therefore, there are obvious connections to the national environmental quality aims that the Swedish Parliament and Government have developed.

The “Building/Living” goals – goals that have been formulated within “the Project for Building, Living for a Sustainable Building and Property Sector in Trust for the Future”.

1. The environmental stress from the energy application in homes and premises is decreasing and no later than 2025, heating and water heating will be made using only limited elements of fossil fuels. No later than 2015 more than half of the annual energy need will come from renewable energy sources.

2. The use of purchased energy in the sector will decrease with at least 30% until the year of 2025 compared to 2000. The energy application is lower in 2010 than it was in 1995.
3. No later than 2005 there will be information adapted for the sector that will make it feasible not to choose construction material/constructional design which contain or are the cause of known substances which are health-impairing or dangerous to the environment.

4. No later than 2009, all newly built houses and 30% of the existing ones will be declared and classified as to the effect on health and environmental issues related to buildings.

5. The building and property sector is phasing out the use of substances and metals that are included in the Government’s guidelines for chemical application at least at the rate as is stated in the Government proposal 2000/01:65 Chemical strategy for a non-poisonous environment.

6. The quantity of disposed waste, mine waste not included, will decrease with at least 50% to 2005 counting from the levels of 1994, while the total quantity of generated waste will not increase. No later than the year of 2010, disposed waste from new constructions and reconstructions, property maintenance and demolished houses will amount to no more than 25% measured in tons from the levels of 1994. In 2025 no more than 10% will be disposed.

7. In 2010 the tapped pit run in the country will not be more than 12 million tons per year and the share of recycled materials will amount to at least 15% of the ballast application.

The goals for the “Building/Living” project refer to the companies and municipalities that participate in the “Building/Living” project. Comments to goals number 1, 2, 5, 6 and 7 can be found in the memorandum of “‘Building/Living’ goals – Goals for Building, living and sustaining estates for the future – the use of energy, controlled tipping, and tapped pit run”, which can be received from the Ministry of the Environment. It can also be found as Annex 1 to the final report of “Building, living and sustaining estates for the future”. It should be noted that the goals and subdivided goals regarding environmental quality that are valid today, 2003 can be subject to completion by the Parliament.

2 Includes all waste, also domestic wastes

Basta

There is a great need to reduce the use of hazardous substances in construction products and chemical products. In the BASTA system, the Swedish construction sector has agreed on a common definition of the substance properties for the decision as to whether a product is to be accepted or not. These substance properties are based on the plans in the forthcoming REACH regulation. The burden of proof in the BASTA system is put on the supplier, who has to confirm whether the product meets the criteria or not. A system of self-declaration of this kind needs to be supplemented by a quality assuring

19 http://www.bastaonline.se/2.4788e15710c6d12e91380002305.html
auditing, and the BASTA project has drawn up the procedures to ensure that such validation can be carried out in a credible and cost-effective way.

For the dissemination of the suppliers' assessed products the BASTA project has developed a web-based database.

The industry standard for properties criteria has been developed with broad endorsement by large parts of the Swedish construction sector, which is crucial to the future success of the system. It has been possible for this to be done through great openness in the drafting of these criteria.

The validation method that is to assure the system of credibility consists principally of two parts: firstly requirements relating to the supplier’s expertise, documentation and organisation, which are collated in a contractual document which each participating supplier signs, and secondly random-sample audits of the suppliers’ data.

Other Non-Governmental initiatives

The Swedish Environmental Management Council

The Swedish Environmental Management Council (SEMC) is a company owned jointly by the Swedish Government, the Confederation of Swedish Enterprises and the Swedish Association of Local Authorities and Regions. The overall aim of the activities of the Council is to help and support private and public organisations to implement and carry out a systematic and progressive environmental work towards a sustainable development.

The Swedish Environmental Management Council administrates three tools – EMAS and EPD for improving and communication about the environmental performance of organisations and products/services and EKU for product-related guidance about ecologically conscious procurement.

The rationale of the Swedish Environmental Management Council is to provide a neutral platform stimulating a dialogue between all actors in society – from authorities, the business sector, non-governmental organisations as well as environmental organisations. The activities of the Council are carried out based on a broad consensus among different stakeholders in the field of environmental management both nationally and internationally.

---

20 http://www.miljostyrning.se/eng/
Environmental assessment methods for buildings

A number of methods for environmental assessment of buildings and/or building materials have been developed mostly by different companies active in the sector. They vary from simple checklists to sophisticated LCA tools and cover things like investigation of existing buildings. Year 2005 35 such Swedish methods were identified of which 27 were more actively used mainly by different enterprises. The only one with a more holistic and scientific approach is the EcoEffect method developed by KTH and the University of Gävle. This area is still under development and very slowly penetrating the market. The more sophisticated tools can more be looked upon as learning instruments about the relation between buildings and environmental impacts while the simpler are practicable but often trustworthy.

A broad new cooperation between the building sector and the academic world started a year ago aiming at developing a compromise between sophistication and simplicity regarding environmental assessment of buildings. This new method, “Environmental classification of buildings” is planned to be launched in the end of 2007. Since many representatives from the sector are involved in the development work it is expected to that this method, which is linked to the “Building, Living, Property” project mentioned above, will be widely used in the future.

ISO 14000 and EMAS

There are environmental management systems which are used in the building sector and by other companies. The most common are ISO 14001 and EMAS. Many companies that are not certified have their own system built on the same principles. A lot of companies in Sweden are ISO 14001 certified. Sweden has the highest amount of certified companies in relation to the number of inhabitants. It’s more common with ISO 14001 certification than EMAS-certification.

22 http://www.ecoeffect.org
23 http://www.sis.se/DesktopDefault.aspx?tabname=%40iso14000
24 http://www.emas.se/
Environmental labelling of building products

There are three environmental labels available in Sweden. “Good Environmental Choice” is launched by the Swedish Society for Nature Conservation. They have almost no labels for building products apart from electricity and an impregnation for concrete. The Swan is a Nordic Ecolabel. They have labels for a few building products as fibre board, gypsum board, chipboard, biofuel, boilers, fireplaces, white wares, impregnated wood, kitchen appliances and windows. The Flower is the European Ecolabel. They have labels for household appliances like dishwashers, refrigerators, vacuum cleaners and washing machines. They also have labels for indoor paints and varnishes.

Environmental Product Declarations (EPD) administered by the The Swedish Environmental Management Council mentioned above are not environmental labels but can serve a similar purpose since all emissions and use of energy and materials should be declared. EPDs exist for particle boards, cement, concrete, glass, clay bricks, pellets, washing machines, fridge/freezers, district heat, electricity and solid waste treatment.

For wood products the labelling The Forest Stewardship Council (FSC) is used. The Forest Stewardship Council (FSC) promote environmentally appropriate, socially beneficial, and economically viable management of the world's forests. FSC in Sweden, called Svenska FSC, is a national based, not for profit organization and one of FSCs national initiatives, often referred to as NIs.

Swedish Society for Nature Conservation

Today the Swedish Society for Nature Conservation (SSNC) is the biggest nature conservation and environmental organisation in Sweden with 170 000 members and 274 local branches across the whole country.

The SSNC was established in 1909. At that time an elite group was concerned about the increasing degradation of Sweden's nature and wildlife due to rapid industrialisation. Until a few decades ago, the activities of the SSNC were primarily focused on national, i.e. Swedish, environmental issues and traditional conservationist concerns. In 1990 funds from the Swedish International Development Co-operation Agency (Sida) made it possible for the SSNC to cross borders and begin collaboration with environmental organisations in Europe and in the South.

The organisation works with building related issues when they interfere with environmental conservationist concerns. For example are they involved in

25 http://www.snf.se/english.cfm
26 http://www.svanen.nu/Eng/default.asp
27 http://www.eco-label.com/default.htm
28 http://www.environdec.com/page.asp?id=105&menu=3,9,0
29 http://www.fsc-sweden.org/
promoting Forest certification according to FSC, Forest Stewardship Council. Sweden has by now the world's largest area of FSC-certified forest.

**O2 Nordic**

O2 Nordic is a network of people working active with design for a sustainable development. The network is organised as an economic organisation/förening with the headquarter in Gothenburg. O2 Nordic is part of the international O2 network. ([www.o2.org](http://www.o2.org))

**O2 Nordic Mission Statement:**

We believe that the development of a sustainable future is the greatest and most inspiring design challenge of our time.

O2 Nordic aims to influence and inspire industry to look at sustainability as a business opportunity, and authorities to formulate a clear and attractive sustainability vision.

O2 Nordic connects people in Sweden as well as between the Nordic countries as a permanent meeting place and a place for action.

**Swedish Association of Architects Environmental group**

The Environmental group in the Swedish Association of Architects are working with ecological, environmental and sustainable issues in the building and planning processes.

---

30 [www.o2nordic.org](http://www.o2nordic.org)
31 [http://www.arkitekt.se/miljo](http://www.arkitekt.se/miljo)
Research

There is a lot of research being done in the field of sustainable building and planning in Sweden. The main researchfounds supporting and giving grants to researchprojects in the field of sustainable building and planning are FORMAS\(^{32}\), VINNOVA\(^{33}\), NUTEK\(^{34}\), Energiomyndigheten\(^{35}\), Mistra\(^{36}\), ARKUS\(^{37}\).

Sustainable building projects

Designing houses and planning to build a more sustainable society have been on the agenda in many projects in Sweden the last 30 years, but still there is more to be done. In the book “SAR:s Ekoguide”\(^{38}\) you can read about 150 of these projects. Larger developments with sustainable ideas that have been most recognised are Bo 01\(^{39}\), Lindås\(^{40}\), Hammarby Sjöstad\(^{41}\).

\(^{32}\) [http://www.formas.se/]
\(^{33}\) [http://www.vinnova.se/]
\(^{34}\) [http://www.nutek.se/]
\(^{35}\) [http://www.energimyndigheten.se/]
\(^{36}\) [http://www.mistra.org/]
\(^{37}\) [http://www.arkus.se/]
\(^{39}\) [http://www.malmo.se/miljohalsa/projektnatverk/projekt/vastrahamnenbo01/faktabladbo01.4.314d1c9210a454075d480001445.html, 2006.11.22]
\(^{40}\) [http://www.miljoportalen.se/bo-leva/boende/varma-hus-utan-uppvärmning, 2006.11.22]
# Appendix 1

Environmental indicators for the Swedish environmental quality objectives that are related to the building sector

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Objectives monitored</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allergenic chemical products</td>
<td>A Non-Toxic Environment</td>
</tr>
<tr>
<td>People with allergy or asthma who report nuisance due to air pollutants</td>
<td>Clean Air</td>
</tr>
<tr>
<td>Benzene in air</td>
<td>Clean Air</td>
</tr>
<tr>
<td>Nuisance from vehicle exhaust gases</td>
<td>A Good Built Environment</td>
</tr>
<tr>
<td>Symptoms attributed to indoor environments</td>
<td>A Good Built Environment</td>
</tr>
<tr>
<td>Nuisance from transport noise</td>
<td>A Good Built Environment</td>
</tr>
<tr>
<td>Nuisance from wood smoke</td>
<td>Clean Air</td>
</tr>
<tr>
<td>Homes with damp and mould</td>
<td>A Good Built Environment</td>
</tr>
<tr>
<td>Historic buildings</td>
<td>A Good Built Environment</td>
</tr>
<tr>
<td>CMR substances in products</td>
<td>A Non-Toxic Environment</td>
</tr>
<tr>
<td>Energy use</td>
<td>Reduced Climate Impact</td>
</tr>
<tr>
<td></td>
<td>Clean Air</td>
</tr>
<tr>
<td></td>
<td>Natural Acidification Only</td>
</tr>
<tr>
<td></td>
<td>Sustainable Forests</td>
</tr>
<tr>
<td>Exposure to environmental tobacco smoke</td>
<td>A Good Built Environment</td>
</tr>
<tr>
<td>Contaminated sites</td>
<td>A Non-Toxic Environment</td>
</tr>
<tr>
<td>Acidified forest soils</td>
<td>Natural Acidification Only</td>
</tr>
<tr>
<td></td>
<td>Sustainable Forests</td>
</tr>
<tr>
<td>Acidified lakes</td>
<td>Natural Acidification Only</td>
</tr>
<tr>
<td>Old forests</td>
<td>Sustainable Forests</td>
</tr>
<tr>
<td>Gravel use</td>
<td>A Good Built Environment</td>
</tr>
<tr>
<td>Gravel extraction in important groundwater areas</td>
<td>Good-Quality Groundwater</td>
</tr>
<tr>
<td></td>
<td>A Good Built Environment</td>
</tr>
<tr>
<td>Household waste</td>
<td>A Good Built Environment</td>
</tr>
<tr>
<td>Hard dead wood</td>
<td>Sustainable Forests</td>
</tr>
<tr>
<td>Chemical products hazardous to health</td>
<td>A Non-Toxic Environment</td>
</tr>
<tr>
<td>Greenhouse gas emissions</td>
<td>Reduced Climate Impact</td>
</tr>
<tr>
<td>Chlorine and bromine emissions</td>
<td>A Protective Ozone Layer</td>
</tr>
<tr>
<td>Hydrocarbon emissions</td>
<td>Clean Air</td>
</tr>
<tr>
<td>Municipal cultural environment programmes</td>
<td>A Good Built Environment</td>
</tr>
<tr>
<td>Municipal programmes for green areas and aquatic areas</td>
<td>A Good Built Environment</td>
</tr>
<tr>
<td>Municipal transport programmes</td>
<td>A Good Built Environment</td>
</tr>
</tbody>
</table>
Nitrogen dioxide in air

NO₂ emissions

Environmental management systems

Nitrogen deposition

Sulphur deposition

Nickel allergy

Ozone in air

PM₁₀ particles in air

Radon in drinking water

Radon in apartment buildings

Radon in schools

Radon in houses

Prohibitions on demolition of buildings

New buildings near the sea shore

New buildings near lake shores and river banks

Sulphur dioxide in air

Sulphur dioxide emissions

Sleep disturbance from transport noise

Nitrogen entering coastal areas

UV radiation

Groundwater protection areas

Plant protection products

Recycling of glass

Recycling of metal

Recycling of paper/cardboard

Recycling of plastic

Recycling of corrugated cardboard
Tidigare FoU-rapporter:


