SANITATION COUNTRY PROFILE

SWEDEN

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Decision-Making: National environmental quality objectives: In 1999,The Parliament adopted 15 National Environmental Quality Objectives which set forth the state of Sweden's environment which is necessary for sustainable development. Also in this area, regional and local efforts are prominent. Many of the objectives concern sanitation: Zero Eutrophication, A Balanced Marine Environment and Flourishing Coastal Areas and Archipelagos, Flourishing Lakes and Streams, Good – Quality Groundwater, Thriving Wetlands, A Non – Toxic Environment and A Good Built Environment.

Environmental Code: Swedish environmental legislation has been reformed. The central environmental acts have been amalgamated into the Environmental Code, which came into force on 1 January 1999. The Environmental Code comprises coordinated, stringent and broad environmental legislation with a view to promote a sustainable development that ensures a healthy environmental impact on both the current and future generations. The Environmental Code contains a number of general rules of application that assert, for example, the precautionary principle, polluter pays principle, product choice principle and principles regarding resource management, the ecological cycle and suitable localisation of activities and measures.

Legislation acts as a preventive tool because it enforces binding demands on someone running a business or operation or is taking action to gain knowledge on the environmental effects of such activities and applies the principle that the risks of environmental impact should be borne by the polluter and not by the environment. All in all, this means in many cases that the regulations that were part of previous environmental legislation now have a new and broader application.

Action plan for recycling of phosphorus in wastewater: The Swedish Environmental Protection Agency has, at the request of the government, in 2002 presented an action plan for recycling of phosphorus in wastewater and steps to reduce the risk of infection and tighter limit values for metals when using sludge on arable land and other productive land.

The use of sludge on arable land and the potential for making use of the nutrients in wastewater have been discussed for several decades. In spring 2001 the government gave the Swedish Environmental Protection Agency the task of examining environmental and health protection standards for sewage sludge and its use and for recycling of phosphorus.

The Swedish EPA considers that recycling of phosphorus and other nutrients to arable land and other productive land is important in terms of sustainability. Nutrients that are not recycled and end up in the wrong place represent a waste of resources and may cause eutrophication, nutrient saturation and other environmental problems.

If the proposals in the action plan are implemented, the Swedish EPA considers the use of sewage fractions on arable land to be acceptable in terms of the input of metals and organic pollutants, and also infection risk. However, the quality of most sludge currently produced will have to be radically improved to meet long-term objectives for soil protection and maintenance of soil fertility. The proposals will help to accelerate the phase-out of unwanted chemicals in sewage and in the community.

The Swedish EPA has proposed a long-term objective – that nutrients in sewage should be recycled to land where they are needed and where there is no risk to health or the environment. There is also an interim target on the way to achieving the long-term objective – by 2015 at least 60 per cent of the phosphorus in sewage should be recycled to productive land, of which at least half should go to arable land.

The Swedish EPA considers that stricter limit values for certain metals (including cadmium, silver and mercury) should be introduced by way of legislation. Since even current levels of cadmium intake can affect the health of some sections of the population, it is proposed that the input of cadmium to arable

land be gradually reduced by 2020 – 2025, when equilibrium between input and output is to have been achieved. To obtain sufficient infection control tighter requirements on treatment, pathogen content and use on land are proposed. Current regulations only cover sludge and the spreading of sludge on arable land. The EPA proposes that all sewage fractions be covered by the regulations and that requirements to reduce the risk of infection apply to all use on land.

The cost of recycling nutrients from sewage will probably rise considerably, regardless of which system is used. But it is difficult to estimate the cost of phosphorus recycling using sorting systems or phosphorus extraction systems, since the technology has not been tried out. Further development work and testing of new recycling systems is needed before it could be used on a large scale and contribute to the fulfilment of the recycling objectives.

The government is going to decide on the action plan at latest in 2005 when the government bill to come about new national environmental quality objectives will be proposed.

Programmes and Projects: *Local Investment Programmes (LIP):* In 1998 the Swedish Government launched the Local Investment Programmes to accelerate progress towards a sustainable society. To enhance this effort, the Government in 1999 established the Swedish Institute for Ecological Sustainability with the mandate to support and stimulate local authorities in implementing the Local Investment Programmes. In addition to major environmental improvements, such as reduced emissions, lower energy consumption and better waste disposal, the Local Investment Programmes also provide other results. One example of the results is better cooperation between local authorities and local actors. The knowledge and experience which is gained provide vital tools in efforts to reach the environmental quality objectives.

Time-bound targets and commitment: The Swedish Government has resolved to earmark a total of MSEK 6,2 (approximately EURO 0.671bn.) in the period 1998-2002 for the support and encouragement of local investment programmes for sustainable development within Agenda 21. Almost 600 MSEK (nearly ten percent of the total foundations) have been used to measures to improve water and sewage systems.

Integrative perspective of the three dimensions of sustainable development: The aim here is both to accelerate the changeover to sustainable development and to contribute towards the growth of employment. The measures taken shall among other things reduce environmental impact, make the use of energy and other natural resources more efficient, promote the use of renewable resources and preserve biological diversity.

Means of implementation: Approximately one quarter of grants given to 241 projects in the field of water supply and sewage have been used to improve private sewer systems and local water supply and sewage treatment systems. Grants have been given to individual property owners so that they can change over to more sustainable sewage systems. Another example is the introduction of local sewer systems shared by several properties that have previously had private sewers or have not modified their systems to achieve more sustainable sewage treatment. Other projects have aimed at improving the quality or manageability of sewage sludge to increase the scope for recycling the nutrients it contains, eg, by drying and possibly also making pellets out of the sludge. Improving treatment processes at sewage treatment plants is another project area. It is possible to bind nutrients and reduce discharges by constructing biological filters, such as reed beds and wetland areas. Wetland areas are sometimes connected to sewage treatment plants to improve treatment, although storm water can also be treated in this way.

A report has been published, on behalf of the Government with funding of LIP. The aim of this report is to survey small-scale recycling solutions within the LIP framework in order to increase knowledge about the range and scope of such projects and disseminate best practices.

One of the conclusions in the report is that small-scale recycling projects can contribute to the enhancement of attractive environments for living. Recycling projects initiated by users themselves, and municipal projects where efforts were confined to a limited geographical area, have generally achieved better results than other projects.

Exchange of information and know-how about ”best practices” is encouraged in the European Commission action plan for environmental technology (ETAP). The plan identifies a social obstacle to sustainable production and consumption in that stakeholders are not always aware of promising alternative technical solutions. According to the Commission, it is therefore necessary to encourage the exchange of best practices. A report on environmental technology developed within the LIP, which is suitable for export to Eastern Europe and developing countries has just been finalised

Recommendations for the future is given in the report: “Local Investment Programmes are an exercise in democracy, in which initiative and responsibility are delegated to the structure of the local society. LIP have also fostered close cooperation between various local stakeholders. Hence, the LIP concept is in itself an interesting export product, which could help to communicate the idea of sustainability to countries where environmental issues currently play a subordinate role. If there is a desire to market LIP as a concept internationally, this should be coordinated and, as far as possible, integrated, with other relevant projects that Sweden is conducting in the environmental field. The work conducted jointly with Swedish International Development Cooperation Agency is of particular importance for projects in developing countries.”

A series of evaluation reports on the results and effects of LIP will be published within the years 2004-2005. One of these evaluations is about small sewage systems. (www.naturvardsverket.se/lip).

An example of good practice in sanitation: The City of Stockholm has since long time Environmental Programme and has already a Fifth Environmental Plan. This gives a greater focus on, as well as more resources for, the work with environmental improvements and a change for ecological sustainability. The basic point is that the Environmental Programme shall be an important guiding function for all the City’s activities and that every one in the municipal organization must be actively involved in the environmental programme. A part in this work is about sanitation, how to get cleaner sludge and reduce emissions of hazardous chemicals to water.

Research shows that a non negligible part of the Swedish population is exposed to Cadmium to an extent that may cause severe kidney diseases. Households are a very big source with 60-70% of the total Cadmium load. The household’s unknown sector includes the use of cadmium colours which is at least 5-10 % of all Cadmium to the wastewater plant. Car washes are also important. One of the solutions of the problem is addressed in the Environmental programme within the sub-goal “The City’s vehicles shall be cleaned in car washes with efficient cleaning processes”. This goal will induce entrepreneurs to invest and develop new technology for car washing facilities.

Cadmium content in sludge: In Stockholm there has been a dramatic decrease of Cadmium in the urban environment from 1973 to 2002 thanks to:
- Sweden has got a Cadmium ban since 1982 on all products with a few exceptions (artists’ paints and aerospace industry)
- Cadmium content in sludge decreased with roughly 50 % around the time of the ban.
- Compared to other cities in Sweden and Scandinavia where there is not very much of decrease in Cadmium the last 5-10 years the decrease is clearly seen for the Stockholm Waste water plants - thanks to all campaigns.

Cadmium Solutions could be to improve treatment of water from car washes, inform schools, artists on how to avoid cadmium from colours to *reach* the water environment and ban/phase out cadmium in all

consumer products. The campaign "When and how to use and not use cadmium colours" was aimed for public and artists schools, educational associations, painter organisations and artist paint shops.

Mercury content in goods: Another goal is "Safe goods - the Amalgam goal". The dentists' sector is a very big source of Mercury - approximately 90%. Mercury solutions are to ban the use of mercury in new thermometers. Mercury traps on all waste water discharges from dentist care. Change pipes in houses of old dentist care centres. Results: 200 kilos has been removed in four years. This can be compared to 23 kilos Hg annual influx to the wastewater treatment plant. The City of Stockholm has got an extremely cost-effective method to reduce flux of Hg in the environment. 200 kilos Hg was removed at a cost of 2 M Euro = 10 000 Euro/kg Hg. Price per removed kg Hg in other sectors is often more than 10-50 times higher than with this method.
Mercury content in sludge**:** In Stockholm there has been a dramatic decrease of Mercury in the urban environment from 1973 to 2002 thanks to:
- Installed mercury traps in all dental care centres.
- Voluntarily phase out (1990) old mercury thermometers and from the mid-90´s a ban on selling new mercury thermometers.
- Use of amalgam banned for children.
- Removal of mercury in old pipes and in contaminated parts of the sewer network.
- Compared to other cities in Sweden and Scandinavia where there is not very much of decrease in Hg the last 5-10 years, the decrease is clearly seen for the Stockholm Waste water plants – thanks to all campaigns!
- Is it possible to decrease the use in the urban environment even more?

Measures in Stockholm aiming at sorting at source:
- Campaigns in the Underground and on the radio (different campaigns twice a year)
- Water education at schools. The goal is that all pupils in Stockholm should, at least once during their years at school, (7-16 years) have been in contact with the "sort at source campaign".
- Improved strategy for storm water. A strategy is guiding the work on reducing the environmental impact of storm-water in Stockholm. According to the strategy, primary, the sources of pollution should be reduced. The main polluter is the traffic. Priority is given to measures to decrease the load of Copper, Zink, PCB, PAH and mineral oils.
- Inventory of industries, follow-up and discussion + legal instruments in contacts with industry
- Dialogue and lobbying with industrial organisations and central government.

Recommendations based on the work of the City of Stockholm:
- A clear structure makes it easier to identify key environmental issues that affect Stockholm, and make priorities. You could also see who the important actors are. Structural approaches lead to gradual improvements.
- The use of a system of key ratios or indicators makes it possible to monitor the progress of the program. It also makes a foundation for continuous improvement.
- Environmental issues are not a responsibility only for environmental administrations but also for administrations responsible for traffic, water, energy, construction, planning, agriculture and economic developments. All actors have to take their responsibility.
- The implementation of the environmental programme is a concern for all administrations. Thereby it is very important to adapt the communication to the target group.
    - The use of an interactive web-based follow-up tool both for citizens' participation and evaluation is important. The web application will also play an important role as a tool used in environmental education in schools and in local youth and children's NGO:s.

Status: *Development of sanitation in Sweden:* During a couple of decades before the 1960's many lakes and streams in urban areas got problems with emissions from wastewater treatment. Lakes were grown over, water became muddy and fishes died. Water was eutrophicated. Between 1971 and 1979 the Government founded 1,5 milliard SEK (approximately 10 milliard SEK of today's value) for construction of municipal wastewater treatment. Also certain industries got foundations which mostly were used to get better treatment of the wastewater. In a few years the lakes and streams got much cleaner and fishes returned.

In later years we have got a new problem with eutrophication. Water gets muddy, zones of seaweed shrimps and some years the algal bloom is abundant. The most important cause is the nitrogenous fertilizer. This is why we started to develop nitrogen treatment in the nineteen nineties. There are also other serious problems in some lakes, which are situated close to old factories. In these lakes there may be rests of heavy metals or other chemicals which were hidden in the bottom layer and as time went by started to liberate and make water unhealthy. In this case it is "old sins" which have to be treated by quite new methods. Because of this it is also very important that industrial drainage will be cleaned from heavy metals and chemicals before letting the industrial drainage out to lakes, streams or the sea – or maybe first to a municipal wastewater treatment.

Today almost all households in densely built-up areas (8 million people) are connected with municipal sewage treatment works and about 95 % of this wastewater are treated both with chemical and biological cleaning. In Sweden we have about 2000 municipal sewage treatment works, which primarily take care of the wastewater from densely built-up areas. People living in sparsely-populated areas (1 million people) mostly have their own works, known as private sewage, and these are not connected with municipal sewage water cleaning. The level of sewage cleaning in sparsely-populated areas vary a lot, but often the sewage treatment works are defective and the demands from Environmental Code neglected. The private sewages contribute with large nutritional outlet, especially phosphor. Today the outlet of phosphor from the private sewage outlet is bigger than the outlet from municipal sewage treatment works.

Through use washing detergent and cleaning agents which are free from phosphor it is possible to reduce the outlet of phosphor. Far-reaching measures are necessary to improve the private sewages. Today many of the municipals are working to make improvements and to develop strategies for measures.

Research and Technologies: *Sustainable Urban Water Management:* "Sustainable Urban Water Management" (Urban Water) is a six-years research programme intended to answer questions like whether, in order to attain sustainable development, we must replace the existing urban water systems, or whether it might suffice just to improve them? The Urban Water programme is financed by The Foundation for Strategic Environmental Research (MISTRA), total budget MSEK 100, and aims at developing support for strategic decisions on the future sustainable systems in Sweden.

The Programme has adopted the following general vision for sustainable urban water management:
"Every human has a right to clean water. For urban areas our vision is water management where water and its constituents can be safely used, reused and returned to nature."
These are examples of questions we can help to answer:

- Are open storm water solutions sustainable?
- Are food waste disposals environmentally sound?
- Should brown and green areas use local wastewater management systems?
- Wastewater systems – sorting or conventional?
- How should we treat sludge?
- How should we purify drinking water?

The Urban Water approach is to develop criteria for sustainable water and wastewater systems, reflecting the multi-disciplinarity needed for comprehensive understanding and analysis. Five groups of criteria are being used, focusing on health and hygiene, the environment, economy, socio-culture, and technical function. Models and assessment methods – the Urban Water toolbox - are being developed and tested for each criteria group. These criteria and methods are the fundamentals of the systems analysis used in the programme.

The systems analysis is applied to 'model cities'. Five such model cities, typical to Sweden, have been chosen: the newly built area, the city centre area, the suburban area, the country town, and the urban enclave. The model cities are central in the Urban Water systems analysis. They provide local technical and organisational contexts and they form natural meeting places where local actors meet the researchers. In the model cities the senior systems analysis researchers interact with the PhD students. The results from the model cities will form the basis for the Urban Water syntheses.

The Urban Water toolbox is a major component. The toolbox contains models and methods to enhance comparative sustainability assessment of different water and wastewater systems. It will be applied and developed in the model cities. The toolbox comprises both tools and methods related to the five groups of criteria. A method meant to support decision-makers, or supporting a stakeholder dialogue, is also a part of the toolbox. A multi-criteria decision aid (NAIADE) meant to support decision-makers, or supporting a stakeholder dialogue, is also a part of the toolbox. NAIADE helps them to synthesise and integrate results from the many subject areas within the programme. It is based on structured discussions and conflict management. Input data may be both quantitative and qualitative. For more information http://www.urbanwater.org/default_eng.htm

Financing: See programmes and projects

Cooperation: The Swedish policy for global development aims at contributing to a equitable and sustainable development on a global level. This aim applies to all policy areas of the Swedish Government. The policy focuses on poor people's need in poor countries. The policy shall contribute to the fulfilment of the Millennium Development Goals. The objective of Swedish development co-operation is to contribute to the eradication of poverty through enabling poor people to improve their livelihoods.

A. Basic sanitation: Swedish support to sanitation is intimately related to environmental protection and management - particularly integrated water resources management - and the improvement of health and livelihoods through integrated water supply and sanitation services. These areas have been, and continue to be, priority areas for Swedish development cooperation.

The Swedish support to integrated water resources management aims at achieving an efficient and effective management, and equitable use of water resources to directly benefit people, especially the poor, while safeguarding the environment and its ecosystems. The provision of appropriate and safe sanitation is essential in this regard.

Problem definition, challenges for the implementation: For human survival, health and dignity, safe drinking water and sanitation and good hygienic conditions are essential. Experience and research show that improving access and quality of water supply alone has limited effects on health status, and that this must necessarily be combined with improved sanitation and hygiene practices. Sida, therefore, places great emphasis on supporting activities that integrate water, sanitation and hygiene promotion.

The lack of access to and the poor delivery of services of water and sanitation in many developing countries is a major threat to poor peoples health. Sanitation is in practice often not seen as a responsibility for public bodies, although regulatory regimes suggests that it is the case. Run-down and inefficient public delivery monopoly utilities leaves many poor people to solve their sanitation problem by their own.

Today it is estimated that 2.3 billion people lack satisfactory sanitation facilities (WHO/UNICF/WSSCC 2000: Global Water Supply and Sanitation Assessment 2000 Report). In order to reach the MDG and the target on basic sanitation agreed on in the Johannesburg Plan of Implementation a substantial effort needs to be done to reform the water and sanitation sector in order to bring in new capital and competence.

Sida interventions and emerging issues from Johannesburg: In its work with sanitation Sida highlights the following areas:

- Scaling up of water supply and sanitation projects and programmes at national, regional or city-level.
- Methodology development in ecological sanitation, water demand management and other strategic areas as part of a system for sustainable sanitation.
- Global and regional policy development, focusing on creating an enabling environment for efficient water service delivery and restructuring of the water and sanitation sector to reach the development goals.
- Institutional reforms and improved water and wastewater services in cities, particularly focusing on public-private partnership for operation and financing of utility services.
- Strengthening of NGOs and CBOs for improved delivery of water and sanitation services to the poor.
- Integrated management of water resources to protect the water source from pollution.

Sweden is committed to support partner countries in their efforts to achieve the sanitation target agreed on in the Johannesburg Plan of Implementation (JPoI). The Swedish support is based on priorities made by a partner countries. The identification of water and sanitation as a priority in the Poverty Reduction Strategy or similar document is often a prerequisite for Swedish support to the sector. The sector also has to be given priority in the Country Strategy that provides guidance for the co-operation between Sweden and a particular partner country. Sweden supports a sector-wide approach and harmonisation between development partners to facilitate for the partner countries to coordinate and make efficient use of external and internal resources, particular linking up to domestic capital markets for funding of investments..

Sweden also supports the efforts related to relevant MDGs and targets in JPoI in its multilateral and global co-operation. Examples of such support is the general support to the Global Water Partnership which has developed modalities for integrated water resources management and efficiency plans, and support to a number of countries in their efforts to develop such plans. Support has also been provided to the EU Water Initiative and related funding mechanisms aiming at assisting partner countries in the achievement of the MDGs and targets in JPoI. Another example is the special support to the water policy function at UNDP, which plays an instrumental role in the UN system in relation to monitoring the achievement of the targets. The Swedish support to the India based Water and Sanitation Programme is also worth mentioning. This programme aims at introduce fundamental reforms on the municipal level to improve accountability, community participation, in the service delivery process of utilities. In all these efforts Sweden is particularly promoting sustainable sanitation.

The Swedish International Development Cooperation Agency (Sida) has recently published a new Strategy on Water Supply and Sanitation ("Pure Water", January 2004) which emphasises all the three dimensions of sustainable development. The Strategy will provide guidance in all activities related to water and sanitation funded by Sida and will be shared with partner countries and other partners.

The Strategy also emphasises the importance of proper institutional development and capacity building in all types of projects and programmes. An appropriate institutional framework, including clear delineation with regard to responsibility for water and sanitation and hygiene education respectively, is often a prerequisite for a successful intervention. The delineation between regulatory and implementation functions, especially in urban areas, is equally important. Education activities related to awareness of water, sanitation and hygiene issues should be part of the curriculum in primary and secondary schools. Proper sanitation facilities for girls and boys shall be provided in schools. Such facilities are often a prerequisite for girls to attend classes. Also in health clinics water and sanitation facilities are often lacking and should be given high priority. Sida also provides support to International Training Courses, and research and higher education related to water and sanitation.

Sanitation solutions that are financially, environmentally and socially sustainable in a larger scale have to be further developed. Especially in an urban context such systems have to be integrated into ordinary municipal services and systems. Sida supports methodology development, networking and piloting activities in ecological sanitation. Ecological sanitation, which is based on principles of no pollution, recycling of nutrients and water conservation, can contribute to improved food security and poverty reduction in rural and urban areas, especially if combined with rainwater harvesting. However, while the basic benefits of ecological sanitation are well established, there are still aspects that require further attention. Sweden also emphasises sustainable solutions to sanitation, and especially ecological sanitation, in its dialogue and cooperation with other development partners, UN organisations and development banks. It is an enormous challenge to provide sustainable basic sanitation to achieve the JPoI target – more than 400 000 additional people per day have to be served in order to meet the target.

Development countries often have a situation where the few existing water-borne sewage systems in cities release the sewage untreated directly into rivers and lakes. The pollution thus caused, affects especially the poor people who are often dependent on direct withdrawal of water from these rivers and lakes. In other cases pit latrines pollute the groundwater and thereby the water in shallow drinking water wells. The development of alternative sustainable sanitation systems shall therefore be given high priority. In relation to human settlement and the need for new housing for the additional hundreds of millions people that will be living in urban areas within a few decades, sustainable sanitation system forms a vital and integrated part .

In the design and development of support to partner countries it is important to consider that such support be based on a genuine national and local ownership. This implies that central and local government as well as the civil society is empowered, engaged and committed. At the local level, interventions should include an assessment of the consequences for men, women and children, and their respective roles and responsibility. This is particularly important in relation to sanitation and hygiene awareness, where local traditions and culture are determinant for success. Local mobilisation of resources, especially for operation and maintenance, is essential for the long-term sustainability of interventions. This implies that there will often be a gradual development of the level of services as the availability of locally available resources increase.

Channel: Sida works through different channels. Multilateral co-operation is well developed with institutions like UNDP, UNICEF, World Bank in multistakeholder initiative such as Water Supply and Sanitation Programme and others. Bilateral interventions are often designed to address sector-wide approaches and are sought to be implemented through co-ordination with other actors like bilateral donors, NGOs and the private sector. Smaller organisations are co-ordinated within an umbrella organisation called Forum Syd (Forum South). Although these organisations contribute 20% of their own collected funds, Sida normally bears 80 per cent of the cost. Sida also co-

operates with organisations like universities and research institutions.

Disbursements: Sweden is one of the few countries whose Official Development Assistance, ODA, exceeds the 0.7 per cent of Gross National Product, GNP, agreed on within the UN and confirmed at all the major world conferences, Rio and Johannesburg included. In addition, Sweden has resolved, when possible, to revert to the setting aside of one per cent of GNP for ODA. As an intermediate objective, the Government has resolved that ODA shall total 0.81 per cent of GNP in 2003.

During the period 1998 – 2003, Sweden has, through Sida, disbursed approximately a total of 2.9 billion SEK (approximately 315 million EURO) for bilateral development cooperation in water resources management and water supply and sanitation. A more comprehensive account of this support during the period 2000-2003 is provided below. In addition to this support, Sweden has provided support through the EU, the UN system and development banks with water and sanitation on their agenda.

TOTAL Sida DISBURSEMENT to water projects 1998-2003, SEK

TOTAL

Region	**2000**	**2001**	**2002**	**2003**
Africa	142 532 856	156 283 659	135 609 905	115 165 935
America	17 808 092	28 000 039	15 514 420	9 041 386
Asia	143 339 978	287 183 485	182 509 362	159 379 963
Central & Eastern Europe	49 654 391	34 553 899	59 026 033	66 987 510
Europe	20 017 275	878 536	1 680 000	1 800 000
Global	92 811 804	130 430 063	87 395 127	44 831 434
Grand Total	**466 164 397**	**637 329 681**	**481 734 848**	**397 206 228**

Water supply and sanitation

Region	**2000**	**2001**	**2002**	**2003**
Africa	103 966 936	115 431 983	63 129 092	40 873 212
America	5 480 491	22 190 503	13 067 419	5 032 416
Asia	99 854 184	252 962 674	143 912 745	127 895 482
Central & Eastern Europe	48 415 488	33 512 277	57 122 537	66 595 279
Europe	20 000 000	749 029	0	0
Global	3 205 473	15 764 712	13 986 370	10 244 532
Grand Total	**280 922 573**	**440 611 178**	**291 218 164**	**250 640 922**

Water resources management including marine issues

Region	**2000**	**2001**	**2002**	**2003**
Africa	38 565 920	40 851 676	72 480 813	74 292 723
America	12 327 601	5 809 536	2 447 001	4 008 970
Asia	43 485	34 220 811	38 596 617	31 484 481

	794			
Central & Eastern Europe	1 238 903	1 041 622	1 903 496	392 231
Europe	17 275	129 507	1 680 000	1 800 000
Global	89 606	114 665 352	73 408 757	34 586 902
	331			
Grand Total	**185 241**	**196 718 503**	**190 516 684**	**146 565 307**
	824			

Sanitation aspects on waste

Decision-Making: The Swedish Government has formulated general environmental guidelines for development in Sweden within the various areas and sectors of society, which have been endorsed by the Swedish Parliament, the Riksdag. The Government Bill "Environmental Quality Objectives", proposed in the spring of 1998 creates the framework in which the environmental policy should be conducted to achieve the overall objective to solve today's big environmental problems within one generation. More detailed targets have since been developed with the involvement of sector agencies. A new bill for the sub targets and actions to reach the objectives has been presented to Parliament in the spring of 2001. Other Government bills also constitute important components of the integrated efforts to achieve sustainable development, relating to issues such as energy, transport, regional transport, regional policy, employment, consumer policy, housing policy, agriculture and architecture and design.

Furthermore, a new Environmental Code has been decided by Parliament and has gone into force as of 1 January 1999. It comprises coordinated, stringent and broader environmental legislation with a view to promote a sustainable development. The Act concerning the Management of Natural Resources is incorporated into the Environmental Code, establishing a closer link between land-use and environmental issues and augmenting the possibilities of achieving coordinated and cross-sectoral assessments. The Eco-Management and Audit Scheme (EMAS) was introduced in Sweden, as in the rest of the EU, in 1995, to improve and evaluate environmental management in industry and to keep the general public informed of its progress. In addition, work is in progress to systematically include Environmental Impact Assessments (EIAs) not only for policies or programmes, but also at an early stage of the political process.

Sweden is considered a leading nation in the use of environmental taxes and charges, which on the whole have been positive. The ongoing work for a tax–shift has resulted in some changes in environmental taxes and in income taxes for 2000, 2001 and 2002. Work is also being undertaken to develop environmental management systems among central authorities. Almost all agencies now have EMS systems working. Several Central agencies also have been given a special responsibility for sustainable development.

Mechanisms exist to allow and promote NGOs to participate in the conception, establishment and evaluation of official mechanisms to review Agenda 21. The Swedish Society for Nature Conservation, the Swedish United Nations Association and representatives from trade unions, industry, the scientific community and local authorities are full members of the National Sustainable Development Coordination Mechanism. In addition, major groups participate in environmental impact assessments at the local and national levels, contributing to the design of sustainable development policies and programmes and participating in project implementation. Representatives of major groups have been included in the Swedish delegations to all sessions of the CSD. They participated in HABITAT II, and were represented on the Swedish delegation to the UN General Assembly.

Shortly after the UNCED in Rio de Janeiro 1992, the Swedish Government stressed the importance of the local, i.e. municipal communities for a successful implementation of Agenda 21. During the last decade all of the 289 Swedish municipalities have been working with local Agenda 21 in one way or another.

According to a University study carried out 1998/99, roughly 60 percent of the municipalities had adopted a local Agenda 21 strategy (a figure most likely to be higher today). The local Agenda 21 work has also generated momentum in a number of municipalities to discuss important issues for the local development, what kind of society would the inhabitants like to see, what role does the municipality have in a wider (national as well as global) context etc. Local Agenda 21 work has helped improve cooperation between departments within the municipality as well as with civil society and the private sector. This is naturally something positive that the municipality as a whole has gained from.

A. Solid Wastes: The Ministry of the Environment is the body mainly responsible for the issues related to waste management. The County Administrative Boards bear responsibility for coordination at the regional level. The following legislation covers the relevant issues: The Environmental Code.

Sweden has an ordinance, which implements the European Council directives on waste and hazardous waste. It divides waste into differing degrees of danger to supplement the EC Transport Regulation. The Environmental Protection Agency is charged with the control of permits for exports and imports.

The local authorities bear full responsibility for overall waste management of municipal solid waste (MSW), and it is their obligation to draft special waste management plans of all waste. In Sweden there is a divided responsibility for the waste management of MSW between the local municipalities and the producers. The municipalities are responsible for the handling of household waste, the collection and disposal of all batteries and refrigerators and they may take responsibility also for the non-MSW hazardous wastes. Before 1 January 2000 the municipalities had the possibility to be responsible of all non-MSW. The producers have the responsibility for some product groups but for all wastes; waste paper, packaging, tires, end-of life vehicles and electric and electronic waste. The municipalities have got their own right to decide how to manage their waste collection system of the MSW that are not the responsibility of the producers. The municipalities can also decide how to set the charges for the service to households and others at cost. That means that every municipality (totally 290) in practice can have different collection systems and different charges for waste management of MSW. The municipalities have to have a plan for the waste management of all waste containing information on type of waste that is present in the municipality and the amount of each type of waste. There is also an obligation to inform about how the waste is collected, transported, treated and finally taken care of. It's in the society's interest to minimize the amount of waste landfilled and thus passed on to future generations. The producers have got the knowledge and the ability to influence how the product is made ant that is significant for the waste issue. With that in mind Sweden introduced the Producer Responsibility for waste paper, packaging and tires in 1994. Since the 1 January 1998 Sweden also has got a producer responsibility for end-of-life vehicles. The 1 July 2001 a producer responsibility was introduced for electric and electronic waste.

The purpose with a producer responsibility is to force the producer to produce environmentally sound products, to increase material recovery and to minimize the amount of waste. It's necessary to be aware of the impact on the environment from the products through the whole life-cycle of the products and that the producer takes the responsibility for this.

B. Hazardous Wastes: The industrial sector is encouraged to bear greater responsibility for the management of hazardous waste. As much waste as possible has to be recovered and recycled. Waste is also to be classified, transported and managed safely in environmental terms.

The Government has decided a ban on the deposit of assorted combustible waste from the year 2002 and on organic waste in 2005. A tax on waste sent to landfill entered into force from the year 2000. Sweden is pressing the EU for the codification of the producer pays principle and for future EU law to be more encompassing.

In the relevant section of Agenda 21 it is said that Governments should ascertain that their military establishments conform to their nationally applicable norms in the treatment and disposal of hazardous waste. An environmental policy has been drawn up. The objectives in the policy state, among other things that the utilization of resources, environmental hazards and the possibilities of reuse are to be taken into account in conjunction with procurement or modification of the materials. Environmentally harmful substances and activities are successively replaced with less harmful ones.

See also under A. Solid Wastes.

Programmes and Projects:
A. Solid Wastes: Chapter 15 of the Environmental Code, which entered into force on 1 January 1999, sets the legislative framework for a number of ordinances targeted at industry to reduce, reuse and recycle waste materials. Industry has been legally responsible since 1994 for ensuring the reuse or recycling of materials in certain types of packaging.

B. Hazardous Wastes: See under Solid Wastes.

Status: *Socio-economic aspects*: The labor market programs are ongoing activities. The labor supply group is in its planning phase.

Geography: There are no deserts or areas in danger of becoming deserts in Sweden. The legally protected forests – mainly nature reserves and national parks - amounts to almost 4 % of productive forest land. Forest land affected by logging, thinning and final felling amounts to some 2-3 % per year. Acidification affects about ten thousand square kilometers. The afforestation rate in the 1980s was about 30 square kilometres per year, and is now approximately 100 square kilometres per year.

A. Solid and Hazardous Wastes: Total waste deposit in Sweden amounted to approximately 4,800,000 tons per year in 1997 compared with 6,000,000 tons in 1994. In addition, about 1,400,000 tons was deposited at industrial sites in 1998. Estimates made by the Swedish Environmental Protection Agency show that households are responsible for almost 50% of environmentally harmful emissions. Households generate about 3 million tons of municipal waste in Sweden. On a per capita basis, this amounts to 400 kg per person and year.

In 2002 about 20% of the waste from households was disposed of, 40% was incinerated with energy recovery, and approximately 40 % is recycled. Excluding mining and agriculture, the industrial sector generates a total of 19 million tons non hazardous waste 1998 compared with 15 million tons of waste 1993, 80% of which was incinerated or recycled. Around 1 million tons of hazardous waste was generated 1998.

The principal threats to human health of natural resource use associated with industrial activity in Sweden include among others hazardous waste (several sectors, including chemical plants) and waste (historically related to the construction sector, but new measures are being developed to minimize waste from construction in Sweden). Industries (excluding the mining sector) generate as much as 80% of the total wastes generated in Sweden. Of the industries, the mining sector generates the most waste. About 4,000 landfills have been shut down, with about 300 remaining, and industries have separate deposit sites of their own. About 50 landfills have equipment to recuperate methane gas formed as a result of anaerobic digestion. An on-going survey has identified about 800 industrially contaminated sites. Five hundred of these require further investigation n and action. Metals account for the most serious cause of contamination, followed by toxic chemicals.

Hazardous waste (several sectors, including chemical plants) and waste (historically related to the construction sector, but new measures are being developed to minimize waste from construction in Sweden) are among the principal threats to human health of natural resource use associated with industrial activity in Sweden.

*ZCapacity-Building, Education, Training and Awareness-Raising***:** A number of different associations and NGO's are also carrying out innovative education, public awareness or training activities related to sustainable development that is targeting young people. These organizations play an important role to increase the knowledge regarding these important issues. Many companies and private business in Sweden are adopting different environmental management standards. An important part in the process of receiving these certificates is education and awareness rising regarding relevant issues.

Several campaigns directed towards awareness-raising for sustainable consumption and production have been launched by Swedish NGOs, including the concept of "Environmental Space and Fair Shares", the "Lighter Packaging" project, the promotion of so-called "Eco-teams" and others. Perhaps one of the most important government initiatives in this regard is the reorientation of education towards sustainable development including, for example, Eco-labeling schools. At the local level, many local authorities have offered some or all of their employees various types of educational programmes on sustainable development, often as a part of the local Agenda 21 process. Most of them also provide information for local inhabitants on various forms of sustainable consumption and production, including the promotion of Eco-teams, distributing written information and facilitating building Agenda 21 networks. The reorientation of education towards sustainable development and increasing public awareness is treated in the section on Education. Since 1997 more than 135 public authorities are working with environmental management systems and since 2001 these systems are also incorporated within the Government Offices.

A. Solid Wastes: Measures to increase public awareness is also to spread through information nationwide via radio and television, and by information folders on practical issues in relation to every day life such as the sorting of household waste etc.

A wide range of voluntary initiatives to promote sustainable consumption and production patterns has been launched in recent years. The examples include the application of Environmental Management Systems, development of environmental product declarations based on life-cycle analysis and the recent agreement on criteria for sustainable forestry. A voluntary Nordic Eco-labeling scheme was introduced in 1989. The range of products is wide but fall into three main categories: everyday commodities; office supplies and commercial buildings; and housing construction and household products. Furthermore, a number of other organizations provide consumer information on the extent to which goods are environmentally friendly. Another environmental label is used on ecologically grown and manufactured products. The Committee for Ecologically Sustainable Procurement has developed a tool to actively promote public procurement as a means of achieving ecologically sustainable development and promoting sustainable consumption patterns of public authorities. The government has through the Environmental Advisory Council initiated a dialogue with two sectors of the business society with the purpose to raise environmental standards and ensure more efficient use of resources while taking into account the need for enterprises to improve their performance in increasingly environment-oriented markets. The sectors in focus have been Construction and management of building and Trade with everyday commodities.

B. Hazardous Wastes: See under Solid Wastes.

Information: A. Solid and Hazardous Wastes: The Environmental Protection Agency is charged with developing quantitative targets and actions for the improved management of wastes. This includes developing criteria for the types of waste to be received at landfills and incineration plants, among others.

Research and Technologies: In an international comparison, Sweden is considered to emphasize research on environment and sustainable development. The objective of this research is to contribute with new knowledge for national and international needs on environmental topics with relevance for sustainable development. Besides of national research financiers such as FORMAS (the Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning), Mistra (the Foundation for Strategic Environmental Research) and the Swedish Environmental Protection Agency, the EU-commission are an important actor. Information on research needs and objectives integrating EU-dimensions can be found in the report Research and Development for a Better Environment, produced jointly by a large number of Swedish sectoral authorities and organizations. In a near future, a new version will be elaborated.

Environmentally sound technologies are increasingly being applied, as a result of several different driving forces. First, environmental laws and regulations relating to the Polluter Pays Principle, as well as product testing with regard to environmental aspects, have had an important role in promoting new technologies. Second, consumers have requested better products and cleaner production technology. Third, a number of voluntary initiatives have resulted in application of new technologies, including e.g. eco-labeling (see above) codes of conduct, environmental policies and environmental management systems. Another important driving force is greater awareness of sustainable production at the work place.

A. Solid Wastes: First, environmental laws and regulations relating to the Polluter Pays Principle, as well as product testing with regard to environmental aspects, have had an important role in promoting new technologies. Second, consumers have requested better products and cleaner production technology.

There are governmental policies requiring increasing the efficiency of resource use. In 1993, an Ecocycle Commission was established in order to pursue and co-ordinate work on ecocyclic issues including implementation of the polluter pays principle.

B. Hazardous Wastes: The Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning (FORMAS) has recently (2001) announced its intent to support research on ecological effects of the use of transgenic and biotechnical organisms. The research should include assessment of potential environmental effects associated with the use of such organisms including probabilities for and consequences from spread of such organisms into natural habitats. It is estimated that research programmes can start during 2002 with financial resources of around 2-3 million SEK per project and year.

Financing: The Swedish Government has resolved to earmark a total of MSEK 6,200 (approximately EURO 0.671bn.) in the period 1998-2002 for the support and encouragement of local investment programmes for sustainable development. The aim here is both to accelerate the changeover to sustainable development and to contribute towards the growth of employment. The measures taken shall among other things reduce environmental impact, make the use of energy and other natural resources more efficient, promote the use of renewable resources and preserve biological diversity. Altogether 161 of Sweden's 290 municipalities have been awarded grants for a total of 211 programmes or 1814 projects. Together with the funding committed by municipalities, businesses and organisations this gives a total investment volume of MSEK 27,300, of which investments directly relating to the environment account for MSEK 20,700. One noticeable experience is that municipalities in the front line of local Agenda 21 activity have often presented interesting local investment programmes.

Measures related to waste include: contamination of polluted land or sediments, for example at refuse dumps, old industrial sites, wood impregnation plants and areas around industrial sewers. Sorting at source, composting, recycling of construction materials, selective demolition. Projects to increase recycling and to reduce waste from industrial processes.

According to local authority estimates, it is estimated, that grants awarded to local investment programmes for the period 1998-2002 will lead to annual reductions in energy use by 2.1 TWh while carbon dioxide emissions will be reduced by 1.57 million tonnes per year (equalling 2.8 per cent of Sweden's emissions) and landfill refuse deposits will be reduced by about 500,000 tonnes per year. A report on environmental technology developed within the LIP, which is suitable for export to Eastern Europe and developing countries has just been finalised. Exchange of information and know-how about "best practices" needs to be encouraged. The report will hopefully contribute to facilitate the communication of results of successful projects, which could be of interest to other countries. A series of evaluation reports on the results and effects of LIP will be published within year 2004-2005 (www.naturvardsverket.se/lip).

The Government also offers financial support – SEK 8 billion or USD 1 billion for a three-year period for energy efficiency and renewable energy programmes. Moreover, the so-called Eco-cycle billion (SEK 1 billion or USD 80 million) has been established to provide financial support for innovative environmentally sound technology.

In 1999 the Swedish Parliament adopted 15 environmental objectives and a new strategy to reaching these objectives. In April 2001 the Swedish Government presented a bill to the Parliament on Interim Targets and Action Strategies to reach the Swedish environmental objectives.

Environmental taxes are generally not earmarked for use for environmental purposes. Instead environment taxes as such may increase internalization of external effects and thus lead to changes that improve or hinder further deterioration of the environment. There are also a number of environmental charges that are specifically used for particular measures. Further the Government may set up an institutional and regulatory framework where the user pays the cost for environmental measures.

A. Solid and Hazardous Wastes: A system of waste deposit tax has recently been introduced. Starting in 2002 deposit of combustible waste will be prohibited and starting 2005 deposit of organic waste will be prohibited.

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