

HUMAN SETTLEMENT COUNTRY PROFILE

FINLAND 2004

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Introduction: Urbanisation can be seen as a process through which irreversible changes are taking place that will have a decisive effect on our cities and other human settlements. The key challenge linked to the process of urbanisation lies in being able to implement more precise actions for the development of sustainable human settlements, taking into account ecological, social and economic dimensions.

Urbanisation sets challenges for human settlements development in all countries and, especially, those in which urbanisation is taking place at a rapid pace. These challenges, for example, urban sprawl, increasing energy consumption, congestion in transportation, and the social division of cities, need to be met by well designed policies. This does not, however, necessarily imply that large amounts of funding are needed to deal with the negative impacts of urbanisation. On the contrary, policy tools, such as demand management in transportation planning, are relatively cheap to implement and can be used to bring in revenue.

Finland, and the Member States of the European Union in general, prioritises a holistic and strategic approach in human settlements development, which includes

- better urban management, holistic strategic land use planning for sustainable development, and transparent and efficient land administration, including security of land tenure and local credit;
- sustainable housing reform and social equity, particularly through the regeneration of deprived communities;
- effective decentralisation and resourcing of local authorities together with promoting good land administration for social equity by emphasising transparency and efficiency to ensure fair competition and security of tenure;
- access to basic services in both urban and rural areas;
- compact city approach and sustainable transport.

Finland's programmes and projects related to human settlements are to a large extent drawn up in line with the aforementioned priorities. For example, Finland is developing public participation in land use planning and taking a holistic approach to land use planning by taking into account cultural and social aspects, as well as ecological aspects. In the housing sector the government has taken measures to promote a balanced regional and community structure by promoting housing production in densely populated areas and, on the other hand, launching special instruments to be used in depopulated areas.

With regard to social equity, the new housing programme of the government is paving the way for the reduction of homelessness. A central component in the access to basic services in Finland has to do with the development of the transportation system, in which public transport and non-motorised transport are being promoted in order to increase ecological sustainability and equity in mobility. All of these components, and many more, are presented in this country profile, and seen as necessary when striving for sustainable human settlements development.

Institutional capacities: On the national level, the Land Use Department of the Ministry of the Environment (MoE) is responsible for the legislation and guidelines for an integrated approach to spatial planning and the management of land resources. The Ministry of the Interior is in charge of urban and regional policies. The Ministry of Transport and Communications bears the main responsibility for transport policy. The Ministry of Finance bears the main responsibility for economic management.

Land-use planning and management: Finnish municipalities have the right to decide to quite a large extent their matters related to the planning and implementation of land use and street networks as well as public and non-motorized transport. Regarding promoting sustainable land-use planning and management, the new Land Use and Building Act came into force in 2000. The aim of the Act is to

ensure that land use as well as all building activities are geared towards creating good urban and rural environments and promoting sustainable development in general. Additionally, a more systematic assessment of environmental impacts is stipulated in the Act. The Act sets out requirements for regional and municipal land use plans and also includes national land use guidelines. National guidelines concern matters which have national or supra-regional impacts on land use such as transport or energy networks, nature protection, the cultural heritage, the economy of the spatial structure and avoidance of environmental hazards. The act is also the most important means to integrate transport planning and urban structure. Concerning building, environmental aspects of building materials, quality and the life-cycle approach are central targets of the Act. In construction activities the quality of buildings, the consideration of environmental aspects and the life-cycle approach are key targets.

There are three levels in the land use planning system: the regional land use plan, the local master plan and the local detailed plan. Municipalities can prepare joint master plans. The Government can decide on national planning policy guidelines. The 488 Finnish municipalities, both rural and urban, have extensive rights to decide on the control and guidance of their own spatial planning and development. However, even if local conditions are prime determinants of local plans, municipalities have to follow regulations which, for example, aim at controlling urban sprawl, such as limitations on building mega-sized shopping centers outside the urban structure. Regional land use plans transfer national and regional land use guidelines into the local level plans.

The most important acts impacting on transport are the Land Use and Building Act (2000), Environmental Protection Act (2000) and Act on Environmental Impact Assessment Procedure (1994/1999).

Means of implementation: Sustainable human settlements development has been included in a number of policy papers, including the following:

- The Action Programme on Reducing the Adverse Effects of Transport to the Environment by the Ministry of Transport and Communications (1994);
- “A Look at the Cities”, the recommendations of the MoE Urban Policy Task Force (1995);
- “Sustainability as a Challenge”, “Cities as Engines of Growth”, report of the Government Task Force set up to prepare proposals for the development of urban areas (June 1996);
- National Plan of Action on Environmental Health (1997);
- Government Programme of Action for Sustainable Development (1998).

A. Providing Adequate Shelter for All and Improving Human Settlement Management: The promotion of sustainable development is a central target in the new Housing Programme of the government, which was approved in January 2004. The programme includes special actions to reduce homelessness in Finland and, especially, in the Helsinki Metropolitan Region.

In order to alleviate problems caused by internal migration and to promote a balanced regional and community structure, the government has taken the following measures in the housing sector:

- The state and the municipalities of the Helsinki Metropolitan Region promote housing production and related investments, especially in transport (rail transport is planned to have a greater role than presently).
- Special instruments have been launched in depopulated areas to adapt the housing stock, the community and its service structure to the declining and ageing population in these areas.

The state and municipalities are fighting against segregation in Finland through land use and city planning policies; for example, by mixing publicly owned rental houses and apartments with privately owned houses and apartments in new living areas. One measure has been the active promotion of the renewal and

development of suburbs. Also projects aimed at integrated improvement of neighbourhood units have been started.

On the national level, according to the Regional Development Act (2002), the Government decides on regional development targets for a fixed period. The Government Decision will guide and harmonize regional strategic programmes and development targets and measures in various administrative sectors. State authorities must take account of national regional development targets, promote their achievement and evaluate the effects of the action they take in terms of regional development.

On the regional level, regional development is managed by Regional Councils. Co-operation between central and local government will be developed to improve conditions for a good living environment, for instance, by improving the ability of municipalities to cope with planning, land use policy, housing and building supervision. Regional co-operation will be increased and its effectiveness improved in housing production, planning and land use policy.

The Regional Centre Programme will be used to reinforce competitiveness, viability and socially balanced development of urban areas of varying sizes on the basis of their own strengths and specializations. The Programme will continue throughout the current programme period, i.e. until the end of 2006.

In major urban areas, particularly in the Helsinki region, the low level of housing construction and the high cost of living are a hindrance to labour availability, while also causing dispersion of the community structure and making it difficult to retain social integrity. Because of a shortage of reasonably priced plots, housing production is in danger of becoming distributed in a way that is unfeasible for the existing community structure, public transport system and service provision. State-supported housing loans will be concentrated particularly in the Helsinki region, major growth centres and other high-demand areas.

B. Promoting Sustainable Land-Use Planning and Management: The Ministry of the Environment has prepared non-binding national strategies such as the Finland 2017 Vision of the Spatial Structure and Land Use. Likewise, the National Environmental Policy Programme 2005 (MoE, 1995) includes measures aimed at ensuring environmentally sound land use, such as pilot projects, information dissemination, financial instruments and new forms of partnerships in planning and decision-making. Improved means to evaluate the cultural and social aspects of the environment on the local level have been promoted through the Programmes for the Cultural Environment and Landscape (implemented in about 100 municipalities) as well as through the local Agenda 21 processes.

The problems caused by urban sprawl have not been sufficiently addressed by planners and political decision-makers. The Ministry of the Environment and the Finnish Environmental Institute have worked together from the beginning of the 1990s to develop statistics, indicators and geographical information systems that give appropriate information on urban sprawl. In order to prevent urban sprawl, an intensive information campaign targeted at local administrations and urban planners is being planned.

A proposal on instruments to guide the location of large commercial services is under preparation.

There are also projects aimed at promoting development of urban centers implemented by MoE, local authorities and the private sector.

The needs of agriculture will be taken into account in land use planning in the immediate neighbourhood of densely populated areas. Increase in leisure housing will be taken into account in land use planning and in the dimensioning of services and infrastructure. In November 2000, the Government issued a Decision on national land use targets under the Land Use and Building Act. Rural housing must be guided to

support rural communities and village networks as far as possible. It was further observed that in land use planning, leisure housing on shorelines should be scaled so as to ensure the preservation of waterfront land rich in natural values and an enjoyable environment for leisure housing.

C. Promoting Integrated Provision of Environmental Infrastructure: water, sanitation, drainage and solid waste management: In the World Summit on Sustainable Development in 2002, it was agreed that each country will develop Integrated Water Resources Management and Water Efficiency Plans by 2005.

In the European Union (EU) the legislative base to reach this goal is provided in the Water Framework Directive (WFD) adopted in 2000. It provides a setting within which the European Community shall develop integrated, sustainable and coherent water policies based on the ecosystem approach. The Directive ensures protection of all waters, i.e. ground waters, rivers, lakes, and coastal waters preserving high status of water quality where it still exists and achieving good status by 2015. It is based on the river basin approach and provides mandatory participation by citizens and stakeholders and NGOs.

The implementation of the ambitious legislative framework, its objectives and targets, is now an important challenge. In 2001, the Member States agreed on a Common Implementation Strategy for the WFD to harmonise and facilitate the implementation process. The Directive is to be implemented by the Member States within a specific timeframe, step by step, including completion of guidance documents by 2006. River Basin Management Plans for each river basin district should be completed by December 2009.

The Pollution Control Legislation was revised in Finland in 2000 by passing the Environmental Protection Act, updating and harmonizing existing legislation and permitting procedures. The use of water resources and areas is regulated in Finland by the Water Act from 1961. Measures and structures that have an effect on water systems or groundwater resources are usually subject to permit according to the Act. The Water Act is now being revised (2004).

Specific legislation on water management has been adopted by the EU in the form of different Directives. The Urban Waste Water Treatment Directive from year 1991 protects the environment from the adverse effects of discharges of urban waste water, including industrial discharges. The Nitrates Directive from year 1998 aims at protecting water against pollution by nitrates from agricultural sources. The Directive on the Protection of Groundwater Against Pollution Caused by Certain Dangerous Substances was revised in 1980. A number of Directives set emission controls and quality standards for the most hazardous substances discharged to water. The Bathing Water Quality Directive from year 1976 sets binding standards for bathing waters to protect the bathers from health risks and to preserve the environment from pollution. Proposals for its revision are currently under consideration by the Member States.

The Water Services Act came into force in 2001. It superseded the Act on Public Water and Sewerage Plants and the Act on Sewage Charge. In the new act there are i.a. legal provisions of general development and arrangements of water services. Rights and obligations of municipalities, water supply and sewerage plants and their customers are described in the Act. Also charges and agreements in water supply and sewerage are addressed. Regulations on joining water and sewer systems of water utilities are included. In the Water Services Act water services are seen more as basic services that need to be made available for everyone, than just municipal engineering. The act aims at guaranteeing the availability of water supply services in both urban and rural areas. The municipal water services are being incorporated, and in this connection it is important to secure the consumer interests, reasonable payments, equality and compatibility of payments with the real costs of water services. The Ministry of Agriculture and Forestry has published guidelines for implementation of the Water Services Act.

Waste Water Decree for Sparsely Populated Areas came into force in January 2004. It sets now stronger requirements for waste water treatment in properties outside water and sewer systems. According to the new decree the equipment used has to be adequate in the refinement efficacy. In addition the property owner has to be aware of the waste water treatment system; its' use and maintenance in his/her own property.

The third National Water Protection Programme, approved by the Government in 1988, sets targets for the year 2005. The long-term goal of the programme is to avert the adverse effects of the human activities on the Baltic Sea and the inland surface waters. The main objective of the programme is to reduce the eutrophication of the waters. A special target is to reduce nutrient discharges by about 50 percent from the level of the early 1990's. As a result of these reductions in pollution, the water quality will be improved in many lakes and coastal areas. Moreover, the ecological diversity of shore habitats and aquatic environments in sea areas, lakes and rivers will be safeguarded.

The protection of waters is based on the Polluter-Pays Principle (PPP). Economic instruments are used to promote technological innovation, for example user charges for sewage treatment and charges on pesticides.

The revised national Waste Plan was approved by the Finnish Government in august 2002. The Plan came into effect in September 2002, and will remain effective until the end of 2005, or whenever the next national waste plan is adopted. The revised plan replaces the earlier national waste plan for 1998-2005, although some parts of the original plan will remain in effect.

Finland's national waste plan is based on the Waste Act and the European Union waste directives. The plan describes the current state of the waste management field in Finland, and sets quantitative and qualitative targets to be achieved by 2005.

Quantitative targets have been set for the prevention of wastes, and to improve waste recovery rates. The targets for reductions and recovery rates vary for different types of waste. With regard to municipal waste, housing construction and industrial wastes, 15 percent less waste should be generated annually by 2005 compared to 1994, accounting for real growth in GNP. For hazardous wastes the target is for a 15 percent reduction in comparison to the benchmark year 1992. By 2005, at least 70 percent of all municipal, construction and industrial waste should be recovered, while average recovery rates for hazardous wastes should be at least 30 percent. There is no quantitative target for reducing the numbers of contaminated sites, and the main goal in this area is to prevent the contamination of more sites. Qualitative targets have been set to reduce the hazards associated with wastes, and to prevent any risks to the environment or public health from wastes or waste management.

The goals set in the Waste Plan are mainly guidelines, rather than legally binding limits, but they are expressed in such concrete terms that they should give strong signals to all sectors of society about how the activities should be planned to prevent and reduce waste. Reaching the targets set in the waste plan can be economically beneficial to everyone concerned, since this will lead to considerable savings in terms of reduced use of primary raw materials and reduced energy consumption. These measures will also help to cut emissions.

D. Promoting Sustainable Energy and Transport Systems in Human Settlements: Since the 1992 Rio Conference, Finland's Ministry of Trade and Industry (MTI) has promoted sustainable development in the area of energy production and consumption in the following strategies and programmes:

- Finnish Energy Strategy (1997)
- National Climate Strategy, NCS (2001, replacing the 1997 Strategy);

- Energy Conservation Programmes (1992, 1995 and 2000) (integrated into the NCS and updated in 2002);
- Wind Power Programme (1993)
- Programme for the Promotion of Bio-energy (1994), and
- Action Plan for Renewable Energy Sources (1999) (integrated into the NCS and updated in 2002).

The Ministry of Trade and Industry has published recommendations for energy efficiency in public procurements.

Since 1997, several extensive voluntary energy conservation agreements have been signed between the responsible Ministry and trade associations. At the moment, these agreements cover nearly 60 percent of Finland's energy consumption. Of the contractual sectors, the Ministry of Trade and Industry has the main responsibility for energy, real estate and construction sectors, municipalities and joint municipal authorities, and industry. The Ministry of the Environment bears the main responsibility for an agreement on the residential building sector concluded in the autumn of 2002. The Ministry of Transport and Communications has overall responsibility for the conservation agreements of the transport sector.

The resulting annual savings in energy consumption have been estimated to be 80 ktoe in 2000. The Finnish Ministry of Transport and Communications has had an environmental management programme of transport policy already since 1994. The new programme was adopted in July 1999 when publishing "Environmental Guidelines for the Transport Sector". The programme covers years 1999-2004 and it is currently being evaluated. On the basis of this evaluation a new programme should be adopted by early year 2004.

The Ministry of Transport and Communications has also published a long-term strategic programme called "Towards sustainable and intelligent transport sector" the aim of which is to provide a vision of transport system that is targeted to be reached by year 2025. Such a transport system should take into account economic, ecological, social and cultural viewpoints. In the report it has been set the targets and strategies to reach such a transport system. More specific sector programmes are:

1. Transport Sector Programme for the Reduction of Greenhouse Gas Emissions (that has been included in the National Climate Change Strategy),
2. National Traffic Safety Plan 2001-2005,
3. Public transport strategy,
4. Accessibility strategy for transport services and infrastructure,
5. National programme for promoting cycling,
6. National programme for promoting walking, and
7. Research programme supporting the promotion of non-motorised transport.

On the basis of the public transport strategy, accessibility strategy and programmes for promoting cycling and walking, the Ministry of Transport and Communications in co-operation with municipalities, transport operators and other partners has launched several pilot projects to promote sustainable modes of transport.

In urban areas, harmonizing traffic with land use is a key issue. In order to respond to the needs of growing regions while observing the requirements of sustainable development and to produce a balanced transport system, there must be close cooperation between land use planning and transport system

planning. Innovative traffic solutions, some new investments and decisive action in the management of public transport and non-vehicular traffic are also needed.

E. Promoting Sustainable Construction Industry Activities: The Finnish Government Programme for Ecologically Sustainable Construction (1998) was aimed at promoting ecological sustainability in construction, repair and property maintenance. Additionally, the economic, social and cultural aspects of sustainable development and the problems of community land use are addressed in the Programme. The Programme had been prepared in co-operation with the key representatives from the construction and real estate sectors. A follow-up of the implementation of the Programme was made in 2001-02.

In state-subsidised housing good quality and cost-effectiveness have traditionally been a guiding rule. However, life-cycle thinking as a self-evident part of the quality and cost control of state-subsidised housing projects has been launched in the construction of new state-subsidised housing.

A number of pilot projects and architectural competitions on ecologically sound planning and construction have been conducted. For example, the Viikki housing area in Helsinki came about because of the need for setting models for ecologically sustainable housing. Special ecological criteria were set for determining the minimum level of environmental quality. More efficient ways of using energy and natural resources, as well as ways of eliminating noxious waste and emissions, have been tested in the construction. For example, in regard to heating energy generated from fossil fuels, an average saving of almost 50 percent will be achieved compared to heating costs in regular housing.

In the Finnish National Building Policy Programme (2003) several new targets were set to promote sustainable construction, including better know-how pertaining to lifecycles of building materials and energy consumption. Other major activities include development of sustainability assessment methods, above all environmental classification of buildings, and the implementation of the EU Energy Efficiency Directive of Buildings.

Status: Nearly 300 out of Finland's 488 municipalities in 2003 have drawn up their own programmes for sustainable development or Local Agenda 21 programmes. Of Finland's inhabitants, over 80 percent live in municipalities that have their own or a joint Local Agenda 21.

Improving Human Settlement Management: An important challenge is preventing segregation within and between housing estates. Although studies show that social segregation is not a major problem in Finnish communities, there are signs of increasing inequalities between housing areas in bigger communities, especially in the Helsinki region.

Land-use planning and management: In the field of sustainable land use planning and management, due to long distances, a scattered population and a cold climate, the pattern of settlements in Finland has led to more roads, pipelines and other infrastructure per capita than in other West European countries. This type of dispersed settlement pattern consumes natural areas and leads to unfinished environments, expensive yet ineffectively used infrastructure, unprofitable commercial services and difficulties in maintaining public ones. Additionally, it results in increased traffic emissions and costs. All the above-mentioned features are reinforced by the present trend of urbanisation: new housing areas are being built in rural municipalities surrounding the cities. Traveling long distances between work and home is increasing in almost every urbanising region.

The main trends in the urban and regional structure in Finland are, on the one hand, increasing urban sprawl, and on the other hand, concentration of population in few urban regions. The share of people living in urban agglomerations is already more than 90 percent of total population when in 1960 it was around 55 percent. As the migrating population to the 5-6 growth centres consists mostly of young and

well-educated people, the result will most likely be a rapidly ageing population structure in the depopulating areas, which will cause extensive economic and organisational problems in the long run.

Urban sprawl increases when new dwellings are built mainly in new areas outside the city centers. According to some studies it is urban sprawl in the local level that actually increases transport even more than long distances. For example, the longest home-to-work journeys in Finland are in the most densely populated area, Southern Finland. Therefore, changes in this issue could be achieved through urban planning.

In land use planning, the general trend in public participation during the 1990s has been to disseminate information more effectively and increase public participation. The present Land Use and Building Act (2000) ensures that there is open information during all stages of the planning process. Participation and assessment schemes are required in every planning project. Local authorities arrange public hearings and provide planning reviews for the residents of a particular area. Methods of strengthening the participation of stakeholders in planning processes have been actively developed on both the municipal and national level.

In recent years many local authorities have adopted more advanced forms of co-operative consultation based on genuine interaction between the authorities and the people, instead of the traditional 'public announcements'. Participation and openness is increased by public meetings and "planning stations" where alternative solutions are on display for discussion and comment. There are also experimental projects to integrate sectoral policies and to bring physical, social and economical planning closer to each other. In several experiments weaker groups such as children, disabled and elderly people are actively encouraged to participate in the planning and making of their environments. The Ministry of the Environment has published guidebooks on participation and interaction in planning for the general public as well as for experts.

Participation is also crucial in assessing the environmental impacts of land use planning. Assessment is not a separate task, but an integral part of the whole planning process. The necessity for and extent of analysis is decided by different interest groups in co-operation and impacts are assessed at all stages of land use planning work. Preparing and comparing alternatives is an essential part of the assessment. Systematic assessment of environmental impacts has significantly altered the land use planning process and shifted the viewpoint from one centralised planning structure of expert planning towards empowering the actual user of the environment.

Energy: Between 1990 and 2000, total energy consumption in Finland increased by 15 percent to 31.2 Mtoe. The growth was led by wood-based fuels, natural gas and nuclear energy. The use of renewable energy sources increased both in absolute and relative terms. Biomass utilization, constituting 21 percent of the energy balance, is the highest among the OECD countries.

Energy efficient technologies are applied not only in industry but also in district heating, which accounts for 49 percent of the energy for space heating, and combined heat and power (CHP), which currently supplies 32 percent of the electricity.

MOTIVA Oy, the Information Centre for Energy Efficiency and Renewable Energy Sources, is an impartial state-owned company mainly funded by the Ministry of Trade and Industry. Its principal objective is the implementation of the National Climate Strategy, the Energy Conservation Programme and the Action Plan for Renewable Energy. In practice, MOTIVA disseminates information (e.g. through fairs, exhibitions, seminars, publications, the MOTIVA Express newsletter, web-site www.motiva.fi and the National Energy Awareness Week), develops and markets energy audits as well as other energy management procedures, and promotes energy efficient technologies.

The Ministry of Transport and Communications also co-operates with several parties in order to increase environmental awareness. Co-operators include MOTIVA, Helsinki Metropolitan Area Council, the Finnish Meteorological Institute and the Association of the Pulmonary Disabled. The usual forms of cooperation are various campaigns, research and publishing. NGOs also take part in the work. Guides and brochures published for bringing forward environmental connections have included e.g. choosing environmentally-friendly transport modes, idling of vehicles, energy saving and eco-driving as well as promotion of cycling. In Finland, public information and education activities are an important part of traffic safety programmes. The Ministry of Transport and Communications (as well as other ministries in certain cases) participates in some important nation-wide campaigns. The textbooks of environmental studies for the lower stage of primary school deal with transport and environment, for instance, from the viewpoint of congestion: Moving in cities is healthier and pleasanter if everyone does not drive there in his own car. "A child in traffic" is a special exercise material prepared for the lower stage of primary school through which children consider their own moving routes, habits and wishes concerning traffic environment.

Transportation: In spite of the increase in traffic volumes, all transport-related gas exhaust emissions have significantly been reduced on account of vehicle technology and fuel specifications since early 1990's (NO_x and PM by more than 50 percent and CO and HC about 40 percent). Air quality is monitored at some 40 urban sites and it is predominantly good or satisfactory in all urban areas. It is only around March and April when there are high concentrations of particles (PM₁₀ and TSP) originating from the winter sanding of roads. High pollution levels in Finland are rare occurring in winter time when the atmospheric pressure is high and there is long-distance pollution from Central and Western Europe.

The main transport-related environmental problems are carbon dioxide emissions and noise emissions. In the environmental management programme of transport policy "Environmental Guidelines for Transport Sector" it has been set as a target to maintain the transport-related carbon dioxide emissions at the level of year 1990. So far the transport-related greenhouse gas emissions have been maintained at that level, but there is a danger that they might start growing because the vehicle size is about to grow.

With regard to noise emissions, traffic noise is the main source of environmental noise. About 19 percent of population live in areas where traffic noise exceeds level 55 dB. However, a National Noise Policy Strategy to tackle with the environmental noise problem has been prepared. The aim of the strategy is to reduce the amount of people living in noise zones above 55 dB from the existing level of about 1 million people to level of 0,8 million by year 2020.

Finland is characterized by long distances and a sparse population. The sparseness of the population impacts on the operational prerequisites of public transport, especially in rural areas. However, according to some studies, it is urban sprawl in the local level that actually increases transport even more than long distances.

The main problems for the implementation of sustainability in the transport sector are: 1) co-ordination between different policies that have an effect on transport demand. In addition to transport policy there are various other policies such as e.g. fiscal, energy, land use, regional, R&D policies, that have an effect on transport demand and better co-ordination is needed between the policy targets; 2) due to autonomy of municipalities it is sometimes difficult to integrate governmental and municipal targets when developing transport systems; and 3) difficulty in changing the awareness of individual consumers to sustainable transport behaviour.

In Finland, public participation in transport policy is primarily organised by Environmental Impact Assessment (EIA) legislation. The rights of citizens to get information of pending matters are also prescribed by the Act on the Openness of Government Activities and Administrative Procedure Act.

Sustainable construction: A lot of research has been conducted in recent years on assessment procedures, planning instructions and other tools for planning, building design, the construction process and maintenance. This indicates general interest in environmental matters in the construction and property sector. The construction and property sector is proceeding from observing construction costs to considering comprehensive life-cycle costs of buildings. Maintenance manuals for new buildings have become almost a standard. Most of the progress has been the result of voluntary commitment of the construction and property sector.

The adoption of sustainable development as a common practice has been slowed down at the construction sector because of lack of knowledge, and the lack of clear guidelines, methods and products on a functional level. Because ecological systems are complex, it is not always possible to determine the impacts of building practices beforehand. For this reason, it is difficult to give objective guidelines on sustainable development. Also, deep-rooted attitudes and protectionism are hindering the way to sustainability.

Reduction of greenhouse gases is considered the primary goal in the near future in the construction and property sector. An important step is setting targets for the energy use of buildings. At the same time, local renewable energy sources should gain more users.

Information: *Human settlement indicators:* Indicators related to human settlement are included in the ongoing project of sustainable development indicators (SDIs).

A special Finnish set of sustainable development indicators (SDIs) was published in 2000, but work on developing these indicators began already in 1996, and is still continuing. Wide-ranging participatory processes and consultations have resulted in a set of indicators that are widely appreciated and have been used as a model for similar initiatives around the world.

During the international process Finland took actively part in the testing of 134 UN developed SDIs and reported on 58. Testing involved collecting data and compiling expert comments on the suitability of the indicators. Besides involving a number of Finnish stakeholders in the process, Finland also worked closely with its nominated twinning partner, South Africa. The experiences gained from the international exercise were extremely useful in developing Finland's national SDIs. Many of the participants in the UN process also contributed to the national process, so Finland was able to take good advantage of their previous experience. The core task force working on the indicators, the indicator network, involved several ministries and research institutes.

The national indicator development process involved over a hundred stakeholders during the period 1998-2000, resulting in the publication of "Signs of Sustainability", which portray a total of 83 indicators of sustainable development. This book was published in three languages, both in print and on the Internet.

Efforts to further improve the national set of SDIs were launched in 2001. An extensive study to compile comments from the main users of the indicators took place over the following two years, involving interviews with 40 high-level politicians and civil servants. Responses to the indicators have generally been positive. The main conclusion was that decision-makers themselves do not generally use indicators, but rather they wish to use the indicators to convey information to others.

The importance of easy access, timeliness of data, policy relevance and wide distribution was recognised. The national indicator list has been modified to contain fewer indicators, with more focus on the interlinkages between the different dimensions of sustainable development.

Currently the SDIs are produced for three different audiences. The first one is the Finnish National Commission on Sustainable Development (FNCSD). According to its working programme 2003-2007, each of its meeting will have a specific theme and indicators relevant to those themes are produced in small leaflets. The method enables timely and policy relevant indicators to be distributed at the meetings.

Land information systems, including GIS applications, are well developed in Finland. The Environment Data System of Finland (EDS) is the basic tool for environmental control, monitoring and assessment. It is used by environmental authorities at all levels of organization through the Finnish Environment Network. EDS is also open to other users outside the environmental government. The Environmental Data System is a GIS-based information system. All data is bound up to co-ordinates. This enables map presentations and combinations of data from different databases.

The Ministry of the Environment has developed an information system to obtain an overall picture of the state of the living environment and its various components in Finland. The information system will contain data on 12 monitoring themes, which are broken down into more precise monitoring indicators. The monitoring areas cover both administrative and functional areas. The first phase of the system was operationalised in 2003 comprising indicators on population, housing, buildings and services. The contents and functionality of the information system will be completed in 2004-2005.

The biggest gaps in the land information systems consist of the incomplete information on the recreational areas and number of summerhouses in some parts of the country. Access to information is in general on a good basis. In some data sources, however, digitalising is still in process or, due to cost or copyright reasons, combining different data has not been possible. Statistical information on the information relevant to land use (e.g. vegetation cover, land capability and suitability at a nation-wide scale, land area covered by human settlements and other physical infrastructures) is sufficient in order to make sound decisions on a sustainable use of land resources. Information is widely accessible to the public and can be obtained from the internet as well as/or in the form of paper publications.

Transportation: The Finnish Road Administration has the basic data on Finnish roads, the Rail Administration has the data on railways etc. Statistics Finland maintains Traffic Statistics including general data of traffic volumes, vehicles etc. A Finnish calculation system "LIPASTO" covers emissions and energy consumption of all *traffic* modes in Finland and it is managed by VTT, the Technical Research Centre of Finland. The system comprises sub models "LIISA" for road traffic, "RAILI" for railway traffic, "MEERI" for waterborne traffic and "ILMI" for air traffic. By means of these models traffic exhaust gas emissions in Finland can be calculated from the following compounds in the base year: carbon monoxide (CO), hydrocarbons (HC), nitrogen oxides (NO_x), particles (PM), sulphur dioxide (SO₂) and carbon dioxide (CO₂). In addition to this, the models calculate energy consumption of different traffic modes. A rough estimation of emission amounts and energy consumption has been given for the years 1980-2019. The "LIPASTO" system is updated every year. (<http://lipasto.vtt.fi/indexe.htm>)

The Finnish Environment Institute and the Finnish Road Administration together have compiled a register of those ground water areas where roads are treated with de-icing salt, thus posing a risk of pollution to ground water. In 1999, the Ministry of the Environment prepared a system, which helps to follow the developments of the urban structure. The system that is now being tested provides information on the number, availability and quality of various functions in the society, efficiency of land-use, availability of traffic arrangements, etc. At the beginning, the urban structure of 30 largest areas of employment is monitored. (www.mintc.fi/environment.)

The Ministry of Transport and Communications has started in co-operation with the agencies and offices of the administrative sector a project to establish a data bank on transport noise. Such data bank should provide accurate information on the noise problem and on the effectiveness of various noise mitigation methods. The bank should be finalised by the end of year 2005 and it should be extended to cover also other sources of environmental noise, such as industrial noise etc. Moreover, the Ministry and the administrative sector works on defining unit values for transport noise in order to internalise transport noise into costs and transport prices.

Sustainable Development in the Internet: The website of Finland's environmental administration has recently been revised (<http://www.ymparisto.fi>). The extensive home page for sustainable development can be found from the front page of the revised website in Finnish, Swedish and English. The SD pages include general information, recent news and major events on sustainable development in Finland, detailed information on the Finnish National Commission on Sustainable Development as well as on the Finnish Government's programme for Sustainable Development and its evaluation report. In addition, information on regional and international processes and sustainable development follow-up mechanisms, including indicators, are available to all website visitors.

Research and Technologies: Since 1992, great efforts have been made in Finland to promote sustainable human settlements development and to develop tools for attaining this goal. A number of research activities have taken place in this field. The Technical Research Centre of Finland (VTT) has carried out, both "basic" research and practice-oriented applied research such as studies on the environmental and economic implications of various land use patterns. Studies on the impact of the location of commercial services (large shopping centres, hypermarkets, etc.) have been a specific area of interest.

Transportation: The Ministry of Transport and Communications has aimed at supporting logistic efficiency by means of various research programmes. Such programmes have been e.g. Cities and local logistics -programme and Programme to promote transport chains and technology, "KETJU". The Ministry of Transport and Communications is also in the process of launching a new programme on transport logistics and telematics, called "AINO" -programme.

The Finnish Ministry of Transport and Communications, the Ministry of the Environment, the Ministry of Social Affairs and Health, the Ministry of Trade and Industry, the Association of Finnish Local Authorities, the National Technology Agency, the Finnish Road Administration and the Finnish Rail Administration conducted in 1997-2001 a research and development programme called "LYYLI" (Environmentally Friendly Urban Form and Transport System), which primarily concerned the largest built-up areas. The purpose was to provide communities with solutions, by means of which necessary transport and travel can be operated with a minimum amount of traffic and by the environmentally friendliest transport modes available. This meant solutions, which conserve energy, secure a healthy living and recreation environment for different population groups and avoid splitting natural regions. The research and development programme was primarily aimed at target city areas where measures are sought to consolidate community structure, decrease the amount of passenger car traffic, foster public transport, cycling and walking, secure the viability of city centres, as well as foster such production and service structures that take the environment and different population groups into account and promote operational prerequisites of green logistics.

During the years 1997-2002 altogether 50 "LYYLI" projects were implemented. The programme was closed in autumn 2002. The results of the programme were compiled as guidelines for national, regional and local level decision-makers, authorities and planners how to achieve integrated and environmentally friendly communities.

Water and sanitation: The Finnish Environment Institute (FEI) operates research programmes on environmental technology, on integrated river basin management and on the protection of the Baltic Sea. The 22 projects of the technology programme include i.a. projects on eco-efficiency and treatment of waste water and drinking water. The integrated river basin management programme includes 23 projects dealing with assessing the state of catchments and water bodies, the effects of loading and the methods of reducing the load. The results will be used e.g. in the practical implementation of the EU Water Framework Directive.

The main research area in Finland in the field of water supply and sewerage has been the problems of water services in sparsely populated areas. There have been a few significant research programmes in recent years e.g. the Water Services 2001 Technology Programme (1997-2001) completed by National Technology Agency (TEKES) and the research programme of environmental health by the Academy of Finland. The implementation of EU Water Framework Directive is supported by several research projects. Water protection in agriculture is supported within the framework of the Governments' Decision-in-Principal for the goals of water protection until 2005.

The Water Services 2001 Technology Programme (1997-2001) completed by TEKES was targeted at development of the Finnish water services sector. The main aims of the programme were to improve the technological competitiveness of water services businesses, to increase readiness to introduce new technologies at water and sewage works, to bring onto the market new products designed to satisfy water service needs in rural areas, and to promote research and development in the field of Finnish water services. The programme comprised 39 different projects of which approximately 50 percent were industrial research and development projects and the remainder applied research projects.

Financing: In 2003, the Finnish government targeted 874 million euros for the environmental expenditures. The budget proposal for 2004 is 925 million euros. Within the allocated fees and taxes in 2003, water protection was given 8 million euros, which is also a proposal for year 2004. In addition to government financing, the Finnish municipalities target financial resources for the environment. In 2002 the total cost of environmental protection in municipalities was 608 million euros, of which 164 million covered investments and 444 million operating costs. The biggest environmental expense items for municipalities are sewerage and wastewater treatment.

Housing: Housing finance systems and other instruments have been developed with a view of creating an enabling policy environment for systematic maintenance and renovation of the housing stock. Financial subsidies for renovation have been increased and the system has been extended to promote savings in energy consumption.

Land Use Planning and Management: Financing instruments are being developed as incentives to prevent further urban sprawl and to create an accessible living environment for an ageing population.

Energy and Transport: Finland uses a number of economic instruments that may have an effect on GHG emissions. First of all, fuels, electricity and heat are subject to the full 22 percent value added tax (VAT). VAT is also levied on the part of the commodity's price that consists of excise duty on fuels and energy sources. Second, the Finnish energy taxation system consists of taxes levied on transport and heating fuels and electricity. The basic duty on liquid fuels used in transportation is differentiated to promote environmental protection. An additional duty is levied on fossil fuels in heat generation and transportation again differentiated according to the carbon content of the fuel. Finland was the first country in the world to introduce a CO₂ tax in 1990. Reduced rates are applied for natural gas and peat. Third, to cover the costs of waste management the local authorities apply waste charges. There is also a national waste tax.

The fuel tax on road traffic is partly based on the emissions from vehicles. The basic tax on sulphur-free, unleaded gasoline is lower and the additional tax is based on carbon content (EUR 18 / 1000 kg CO₂).

Most of the railways, waterways (excluding harbours) and national roads are funded through the national budget. Harbours are operated mainly by municipal enterprises. With regard to aviation, the Civic Aviation Administration (CAA) of Finland operates as government enterprise and is thus based on full cost recovery.

Water and sanitation: Government subsidies for water supply and sewerage investments are given for community water supply measures including measures for preparedness in emergency situations, incentives for regional co-operation and water supply and sewerage development in rural areas. In 2003 the amount of subsidies was 5,7 million euros.

The aim of financial government support in rural areas is to encourage investments to public water supply in order to reduce load (improvement of sewage treatment is required), reach the EU-directive quality standards of drinking water and support the growth of economic life and employment.

The "water user pays" principle is implemented in Finland. Water utilities collect a fee from water consumption [approx. 0,90€/m³ (2002)] and from waste water treatment [approx. 1,40€/m³ (2002)]. The fee from waste water treatment used to be under public law, but now in the new Water Services Act (2001) it is under private law as the fee from water consumption has been. Fees should correspond to the real costs of water services and they may provide only fair return on capital. Water utilities have to announce the fees.

The municipal investments on water supply and sewerage were about 0.24 billion euros in 1999. The investments in waterworks were about 0,11 billion euros, and in sewerage 0,13 billion euros.

Cooperation: *Promoting Sustainable Land Use Planning and Management:* Finland is active in international spatial planning co-operation. Land use planning and protection of land resources are taken into account in all relevant co-operation projects. In the nearby areas, i.e. North-western Russia, Estonia, Latvia and Lithuania, Finland supports training and finances projects mainly in regional planning, land and water resources management and environmental impact assessment (EIA). The adoption of the Action Plan of the European Spatial Development Perspective (ESDP) took place during the Finnish Presidency of the EU in autumn 1999. Other fora of co-operation are the Vision and Strategies around the Baltic Sea 2010 (VASAB), the Sustainable Spatial Development Project of the Council of Europe, UN/ECE and the Baltic Marine Environment Protection Commission (HELCOM). The meeting of foreign ministers of the Council of Baltic States adopted the Baltic 21 agenda for sustainable development in the Baltic Sea Region in 1998. One of the sectoral issues in the Baltic 21 programme is regional planning. Within the framework of bilateral development cooperation, Finland supports various programmes and projects related to the management and protection of land resources. There are also various projects to develop mapping and cartography.

Energy and Transport: The most important agreements related to transport are the following: United Nations Framework Convention on Climate Change/Kyoto Protocol, Convention on Long-Range Transboundary Air Pollution with its protocols and Convention on Biological Diversity. Besides acting within the EU, Finland participates in transport co-operation through international organizations (ICAO, IMO) and OECD, CEMT and ECE. Nordic co-operation is carried out through the Nordic Council of Ministers, and co-operation with neighbouring areas through various projects as well as through the activities carried out by HELCOM.

Regional cooperation: In the Baltic Sea region, Finland participates actively in co-operation related to human settlements, which takes place at all government levels and involves all sectors of the society. Municipalities support, e.g. through twinning or other arrangements, their counterparts in Russia and Baltic countries in municipal management and improvement of environmental infrastructure. MoE, together with other agencies, provides funding for similar activities, which usually include capacity-building measures. Finland has contributed to various international R&D projects on sustainable human settlements development executed by organizations, such as the EU and the OECD or by networks of municipalities.

Development cooperation: The Ministry for Foreign Affairs is in charge of channelling the official development assistance from Finland to developing countries and regions as well as through multilateral partners. With regard to aid policy, work at the Ministry for Foreign Affairs has been organised on regional basis, and Africa is the major recipient region of the Finnish aid. In order to achieve the objectives of the United Nations' Millennium Declaration and the Millennium Development Goals, especially in southern Africa and in Southeast and South Asia, a strong commitment, additional resources and expertise in different levels are needed.

The main emphasis in the Finnish development cooperation in water sector has been on the improvement of the availability of clean water, e.g. construction of the latrines and education of hygiene. In Vietnam, Finland has supported in cooperation with the World Bank the development of the water and sewerage system in the city of Haiphong.

The amount of assistance has been decreasing accounting at the moment to approximately six percent of the total bilateral aid. Commitments to carry on the assistance in immediate future have done or will be done with the Governments of Egypt, Ethiopia, the Kuvelai river commission established between the Governments of Namibia and Angola, the Mekong river commission in the Region of East-Asia , Nepal, the Palestine area and Vietnam.

On human settlements sector Finland has been many years a keen supporter of UN HABITAT providing funds for the HABITAT-fund and some contributions to special programmes carried out by HABITAT or supported by HABITAT: The current programme on upgrading the slums in Nairobi is one of the test-programmes where Finland is aiming at supporting the normative work of HABITAT.

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