

Sustainable development in the Mid Nordic regional capitals – reporting and measuring the state of the environment

Introduction

The Mid-Nordic Region reaches from the west Atlantic over the Norwegian mountains to Sweden, across the Bothnian Sea and the Finnish coast towards the eastern interior of Finland. The region encompasses a number of neighbouring provinces in the mid-regions of Norway, Sweden and Finland. An aim of this report was to collect information on recent environmental programs, environmental strategies, local agenda 21 processes and environmental monitoring in the main cities of Mid Nordic region. The cities that are included in the study are Mikkeli, Jyväskylä, Seinäjoki ja Vaasa from Finland; Härnösand, Sundsvall and Östersund from Sweden; and Trondheim and Steinkjer from Norway.

In addition, an aim was to find examples of best practices in municipal environmental reporting. The environmental performance of cities was compared with the help of a set of indicators. An aim was also to produce preliminary information for MidNordic Strategy and for the network of Mid Nordic capital cities (URBNET).

Practices in environmental reporting and monitoring

Reporting practices and monitoring the state of the environment differ greatly in the cities of Mid Nordic area, both between the three countries and within the countries. Every country has a set of national sustainable development indicators, but mainly the Swedish municipalities like Östersund, Härnösand and Sundsvall, follow systematically the national uniform way of reporting and setting up goals. The Swedish system is based on 16 environmental goals. The cities are reporting on environmental issues against the background of national goals but also against goals that the city has chosen to emphasise.

Environmental statistics and other information are easily available at the web pages of municipalities. The Norwegian city Steinkjer follows the national environmental goals of Norway when setting up goals. In its environmental monitoring, Trondheim uses indicators developed in the indicator project of the ten biggest cities in Norway. In Norway, environmental statistics of each municipality can also be found at miljøstatus web pages. In Finland, there are no common reporting initiatives considering the sustainable development reporting. Some cities do share the same practices; for example the six biggest cities have developed indicators, also used by the Jyväskylä city.

Many cities began their work for sustainable development in the 1990's by developing Local Agenda 21 -processes, including action plans and reports. Nowadays these action plans are in many cities out of date and other kind of reporting, if any, have replaced them. Of the nine cities studied, Sundsvall and Östersund have updated reports named Local Agendas – mainly to describe long-term aims of sustainability. In addition, some cities like Jyväskylä use the term Local Agenda to describe peoples or communities' action plans for sustainable development.

The state of environment is been monitored regularly in most of the studied cities: Mikkeli, Jyväskylä, Härnösand, Sundsvall, Östersund, Steinkjer and Trondheim. However, in part of the cities, the monitoring is not on the responsibility of any particular department and the monitoring is not very broad, e.g. in Steinkjer. Seinäjoki and Vaasa have no centralised reporting at all, even though Vaasa is planning and preparing an environmental accounting to be published in the near future.

Environmental goals have been set up in Mikkeli city environmental strategy, Sundsvall local agenda and environmental accounting, Östersund Local

Agenda 21 and environmental reporting, Steinkjer municipal plan and Trondheim municipal plan. In Härnösand, the goals are defined in the environmental program to be published in 2006. In Seinäjoki, sustainable development program is under preparation, and in Vaasa environmental reporting is under development. In Jyväskylä, there is no environmental program or reporting and the goals will be presented in the environmental policy under preparation.

A certified ISO14001 environmental management system is applied in two of the nine cities, Trondheim in Norway and Östersund in Sweden. In addition, in Steinkjer Norway, the ISO14001 certificate has been assigned for the waste management and water management units. In Jyväskylä, there are so

far uncertified environmental management systems at every departments of the city organisation. In Mikkeli, the energy company has an ISO14001-certificate.

The practices of setting up environmental goals as well as monitoring and reporting the changes in the environment, are at the moment going through many changes in most of the cities. In addition, the goals and indicators to be followed are constantly changing within the practices. In Mikkeli, environmental strategy, part of the city strategy, has replaced its predecessor, a sustainable development program. In addition, environmental accounting is under preparation. In Jyväskylä, there are newly built environmental management systems for every department in the city organisation. Moreover, the

Table 1. Environmental reporting of the Mid Nordic county capitals

City	Environmental program/strategy	Environmental accounting/follow-up of indicators	Environmental management system
Mikkeli	Mikkeli city environmental strategy 2005-2014	Environmental strategy 2005→ Environmental accounting 2006→ With an environmental economic indicator project of The Association of Finnish Local and Regional Authorities	ISO14001 for Energy company
Jyväskylä	Environmental policy, no environmental program (Peoples agenda 21)	Environmental accounting from 2005	ISO14001 at every department, not certified
Seinäjoki	Program of sustainable development under preparation	No, possibly in the future	-
Vaasa	Environmental reporting forthcoming	Environmental accounting forthcoming With an environmental economic indicator project of The Association of Finnish Local and Regional Authorities	At few departments
Härnösand	Program of environmental objectives 2006→	Eco-communities indicators, included in Environmental analysis (2005) Annual accounting forthcoming	-
Sundsvall	Local agenda 21, incl. long-term goals for 2020	Environmental accounting, annually With communities local indicator development work	Most of the municipal organisations have environmental management system
Östersund	Local agenda includes goals for 2025 Environmental reporting includes constantly updated goals	Environmental reporting including environmental accounting, annual	ISO14001/EMAS
Steinkjer	Environmental goals 2001-2007 in municipal plan	Environmental administration collects information: www.miljostatus.no	ISO14001 for waste management (2005) and water management (2006)
Trondheim	At web pages www.miljostatus.no/trondheim Environmental goals 2001-2012 in municipal plan, (Local agenda)	At web pages www.miljostatus.no/trondheim Indicators of ten biggest municipalities in Norway	ISO14001 (2006)

environmental accounting has been available from 2005. In Seinäjoki, the program of sustainable development is under preparation; in the future also environmental accounting and program might be available. In Vaasa, environmental reporting and accounting is developed. In Härnösand, new program of environmental objectives will be in use during year 2006. Also, an annual environmental accounting is

been prepared. Sundsvall has joined 14 other municipalities to develop local indicators. Östersund has no big changes in reporting at the moment. In Steinkjer, ISO14001 environmental management systems are planned for new departments besides waste (2005) and water (2006) management units. In Trondheim, the municipal environmental management system will be certified during 2006.

Comparing environmental indicators in Mid Nordic cities

Five indicators were used in comparing the Mid Nordic cities. Indicators were chosen based on the availability of data and according to the compatibility with the set of indicators developed earlier in different international and national projects. Indicators were: emissions of greenhouse gases, particle emissions of PM₁₀, household wastes to landfill, nature protection areas and length of cycling routes.

The greenhouse gas emissions varied between 3,1 and 7,8 tn/CO₂-ekv. in the cities where data was available. In Trondheim, the emissions were the lowest. The city uses a lot of electricity produced with hydro power. Wood is widely used in Finnish cities as well as in Östersund and Härnösand, but the use of peat e.g. Mikkelä, increases the emissions. For example, in Härnösand and Östersund ground heating and heating pumps are used as one solution to household heating. District heating is commonly used in all the Mid Nordic cities.

The air quality is in generally good or very good in the Mid Nordic cities. However, in Trondheim and Sundsvall the air quality can be occasionally bad and the limit of allowed overflows (35 times/year) of 50 µg PM₁₀ particles/m³/day is exceeded. The total threshold value was exceeded in Trondheim 48 and in Sundsvall 38 times.

The amount of household wastes to landfill varied between 17–317 kg/capita, being lowest in Sundsvall. Also in Östersund, Steinkjer and Trondheim the waste ending up to the landfills is fairly low, less than 100kg/capita/yr. In Sweden, as well as in Norway household wastes are mainly used as energy. In Trondheim and Steinkjer, however, the material recycling shares are also significant, 48% and 38% respectively.

Table 2. Comparing sustainable development in Mid Nordic cities with five indicators

Indicator	Mikkeli	Jyväskylä	Seinäjoki	Vaasa	Härnösand	Sundsvall	Östersund	Trondheim	Steinkjer
CO ₂ -ekv. tn/capita/yr	7,8	-	-	3,9	4,9	5,5	4,5	3,1	7,5
PM ₁₀ 50 µg/m ³ /day overflows, amounts/yr	7	9	10	9	-	38	(2 ^a)	48	-
Household wastes to landfills kg/capita/yr	317	260	(376 ^b)	129	144	17	56	89	72
Officially founded Natural reserves, % of surface area	0,7	0,3	0,9	19 ^c	0,3	0,8	0,9	2,0	1,1
Cycle tracks, m/capita	2,4	2,7	3,2	2,8	-	2,5	1,4	1,1	-

a) Only measurements of winter season

b) All wastes to landfill

c) 92% of the area is water

The officially founded nature reserves cover 19% of surface area in Vaasa. In other cities, the number varies between 0,3-2%. In Vaasa, most of the area is water. Anyhow, the protected land area compared to the total surface area is fairly big (1,4%) compared to the other Mid Nordic cities.

The length of cycling tracks varies between 1,1–3,2 m/inhabitant. Of the Mid Nordic cities, Seinäjoki has most tracks per capita.

Concluding remarks

One aim and one part of the ProMidNord project is to set up a new development strategy for Mid Nordic area and to build up a network of Mid Nordic capital cities (URBNET). One aim of this report was to help in the work of monitoring the sustainable development goals and their realisation in the Mid Nordic area. In promoting the sustainable development, the regional capitals should lead the way. This is why it would be feasible to monitor the development of cities with a few essential indicators.

The practices of environmental measuring and reporting seem to be very diverse in the Mid Nordic county capitals. The national practices are homogenous only in Sweden. To support the cooperation of cities, reporting and monitoring practices should be made more uniform. Environmental goals and environmental indicators should be clearly available and comparable.

For the URBNET-network, a few indicators should be chosen at first to monitor and compare the state of the environment in different cities. These indicators would be followed regularly and the statistics and information accordingly would be easily available in the cities. In this report, emissions of greenhouse gases, particle emissions of PM₁₀, household wastes to landfill, nature protection areas and length of cycling tracks were chosen as indicators. The selection was greatly influenced by the availability of data and even so, there was not full availability on all the nine cities considering all the five indicators and some data was difficult to attain. It is suggested, that in those cities, where there are no monitoring, the environmental office or other municipal institution should start to collect the environmental data together. Also, a few more indicators would be suggested based on other sets of indicators to get

more versatile representation of the state of the environment and environmental work in Mid Nordic cities. These indicators could be biological oxygen demand of waste water emissions, traffic amounts by vehicles, share of population living near the green spaces (nearer than 300/500m), the number of environmental management systems in companies and population exposed to noise.

Based on comparison of indicators, it is not possible to draw conclusions on the superiority of one city over another considering environmental protection. The greenhouse gas emissions are influenced by e.g. the accessibility to hydroelectric power; the lowest emissions are in Trondheim (3,1 tn CO₂-ekv. per inhabitant) where the share of electricity produced by hydropower is significant in the energy mix. On the other hand, the emissions are relatively low also in Vaasa, even though the energy is produced mainly with coal. Air quality measures are affected by the placement of the measurement equipment. The measurement stations are beside main roads in Trondheim and Sundsvall and they register higher concentrations of particle emissions compared to stations in other cities. However, the air quality of Trondheim and Sundsvall is reported occasionally to be poor in general. The cities are the biggest ones. The household wastes ending up at landfill site are affected by the waste treatment practices. In Sweden and Norway, unlike in Finland, the combustion of wastes is common. In Sundsvall, the amount of household wastes to landfill is only 17 kg / person. Also in Östersund, Sundsvall and Trondheim, the household waste deposited to landfills is less than 100 kg/ person per year. In the Norwegian cities, wastes are also reused as materials in significant amounts. Regarding nature reserves, the share of water areas can quite easily increase the total area of nature reserves. In Vaasa, the nature reserves cover 19% of the total city area. The share is ten times bigger than the share in the other cities and this can be explained by the large share (90%) of water in the nature reserves. However, even the share of protected land area (1,4% of the total surface area) is bigger than the total protected area in other cities besides Trondheim (2%). The length of cycling tracks per inhabitant is always influenced by urban structure, surface area and population.

As reporting practices are in a constant change in many cities, attention should be paid on environmental reporting and use of indicators within the cities. Environmental indicators should more or less

stay the same during several years to attain reliable information of changes in the state of the environment; this information forms a basis for environmental work in a city. The amount of indicators should also be considered. Sometimes a few clear indicators is enough to report on the changes in the environment; it reduces the need for resources in monitoring and reporting, also it may clarify the reports. This was noticed for instance by Mikkeli environmental unit when environmental strategy replaced the old sustainable development program.

Clear reporting practices and good availability of reports, statistics and other relevant information would not only clarify the comparability of different cities but would also provide valuable information for different stakeholders. Besides information on state of the environment, also information about goals should be comprehensible and easily available in the reports/internet. The information on state of the environment is gathered together and easily available in three cities of Mid Nordic regions: Mikkeli, Härnösand and Östersund. In other six towns, the availability of information should be paid attention to.

There are also differences in the placement of overall environmental information in the cities' web sites. Only in Sundsvall and Östersund, there is a link to environmental matters in the city front page. In Mikkeli, Jyväskylä and Härnösand, the environmental information is also clearly gathered and easily available at the web pages. In Norway, the environmental administration maintains the "environmental status" database, with basic information on every municipality. In addition to this, Trondheim has its own "environmental status" web pages. At Steinkjer municipality, the environmental information is not gathered up in one place in the web sites.

Environmental goals and strategies should be able to have an effect on the practices of the city and so, on the state of the environment. This is most likely when the environmental matters are linked to the city strategies in one way or another. The environmental goals are included in the municipal plans in Trondheim and Steinkjer in Norway. In the Swedish towns at least in Östersund and Härnösand, the environmental reporting and environmental accounting are part of the annual reports and accounts of the city organisation. The environmental reporting is included in the reporting of Jyväskylä as well. Of

the other Finnish towns, Mikkeli has included the environmental matters to other city activities as the new environmental strategy is integrated in the city strategy.

Environmental management systems are a means of support environmental responsibility of organisations, in greater amounts also in municipalities. In Jyväskylä, an environmental management system was build up in order to take care of environmental matters in every units, not just in the environmental office. Motivation for Östersund municipality to implement an environmental management system was to attain a framework for the environmental work, to reduce the environmental load of the municipal organisation and to attract new companies and inhabitants to the municipality with the help of better image. Environmental management systems can, however, turn out to be too heavy for organisations to carry out. For instance, in Vaasa the purpose was to implement environmental management systems for every department in the municipal organisation, however, the project was never fully accomplished as it acquired too much work and other resources.

A lack of unified national practices related to municipal environmental goals and indicators is emphasized especially in the Finnish cities. Some of the cities do not even have any environmental monitoring or reporting at all. The Agenda 21 processes and environmental programs prepared in the 1990's are out-of-date and the new programs are in still planning processes. Basically only Mikkeli of the four cities has long term environmental monitoring and reporting, today as a form of an environmental strategy. The need for general guidelines for unifying the reporting practices in municipalities appeared to be obvious also through interviews carried out in municipal environmental offices.

Östersund in Sweden could be considered as a best practice example of environmental reporting based on this study. In Östersund, the environmental state is reported annually to follow the national environmental goals and to follow the prioritised goals of the municipality. The goals are set both in short and long term. Short term goals are updated regularly. In addition, Östersund city has ISO14001 environmental management system to develop the environmental responsibility of the city organisation. The environmental information is also easily available at the city websites. Moreover, comparing different

indicators between cities, Östersund does well: the greenhouse gas emissions are below average, air quality is good, the amount of waste to landfill is the second lowest per inhabitant and the share of nature reserve areas is average. Only the length of cycling tracks is below average in the city comparison, yet the city is known for its positive approach towards cycling.

Measuring the sustainable development in the regional capitals should be clearly connected to the goals set in the Mid Nordic strategy and those of URBNET-network. In case the cities are not building up any real network, there is no need for unified reporting and monitoring of environment.



THE MID NORDIC COMMITTEE

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