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# The Stockholm Environment Programme 2008–2011

Overarching goals and priorities

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## Our city – our environment

A good environment means different things to different people, depending on where they choose to live and work. The conditions in a big city are not the same as those in the countryside: the challenges and opportunities are different. What cities and rural areas share in common, however, is the need for everyone to work together to safeguard and promote sustainable

development. The chief aim of the City of Stockholm's new Environmental Programme is, of course, to coordinate the 'greening' of municipal activities across the board. It is also designed to function as a basis for urgent and essential cooperation with Stockholm residents and the city's business community, two key groups in the work to create a sustainable Stockholm. There is no conflict between sustainable growth and modern environmental thinking. Environmental work must take place throughout the entire community, bringing together businesses, individuals, organizations and public agencies.

The programme runs from 2007 until the end of 2010, and comprises six overarching goals that summarize the city's environmental ambitions. The actual work that is to be done by the City of Stockholm's administrative units, municipal companies and other areas of municipal activity is shaped by a number of guidelines that are related to the various goals and which set out in greater detail how the City can work with these goals. Compared to previous environmental programmes, this one focuses more clearly on the city authorities' own capacity to bring about change. The interim targets are therefore separated into two types of goal: those where municipal administrations can exert a direct influence and those where the City of Stockholm can act solely in a supportive capacity. The programme also links in to Sweden's national Environmental Quality Objectives (EQOs) and its public health objectives, as well as regional environmental objectives.

The Environmental Programme is based on the City of Stockholm's earlier environmental programmes and on studies that pointed to the key environmental issues and health risks. The environmental status quo and factors impacting on the environment and on health have been thoroughly analysed, after which the key environmental issues and goal areas for the city as a whole have been identified. The key players and the resources they have at their disposal have been defined, and work has been undertaken in the relevant municipal committees and boards to gain support for and adapt the goals to the City's operations. The Environmental Programme does not simply comply with current legislative requirements; as an expression of the City of Stockholm's ambitions, it exceeds these requirements. As such, the programme will be adapted to any changes in these requirements that may take place during the programme period.

## **Implementation**

The Environmental Programme is a city-wide policy document. This means that the goals of the programme apply to all aspects of Stockholm's municipal activities and act as guidelines for the individual committees and boards of the city administration. The schematic diagram below shows the revised management model for the City of Stockholm and how it relates to the overarching goals of the Environmental Programme. In this model, the overarching goals of the Environmental Programme become those of the City Council, together with the goals relating to other spheres of municipal activity, such as schools or elderly care. Programmes that focus more on implementation, such as the Water Programme and the Action Programme on Greenhouse Gases, serve as guidelines.

### **//nyckel till diagram sidan 4//**

<i>Vision 2030</i>	<i>= Vision 2030</i>
<i>KF:s inriktningsmål</i>	<i>= City Council's general objectives</i>
<i>KF:s övergripande mål</i>	<i>= City Council's overarching goals</i>
<i>Riktlinjer</i>	<i>= Guidelines</i>
<i>KF:s mål för verksamhetsområdet</i>	<i>= City Council's objectives for the field of operations</i>
<i>KF uppdrag</i>	<i>= City Council's tasks and duties</i>
<i>KF:s indikatorer /aktiviteter</i>	<i>= City Council indicators/activities</i>
<i>Bolags- och nämndspecifika mål</i>	<i>= Specific targets for municipal companies and committees</i>
<i>Bolags- och nämndsindikatorer/aktiviteter</i>	<i>= Indicators/activities for municipal companies and committees</i>
<i>Enhetens åtagande</i>	<i>= Undertaking by Division</i>
<i>Enhetens indikatorer /aktiviteter</i>	<i>= Division's indicators/activities</i>

***Stockholm's revised management model.***

The Environmental Programme describes which specialist committees and boards are primarily involved in each target, although there may be others that can help to meet the targets. All spheres of activity are to take action consistent with their type of assignment to help meet the targets. Based on their own analyses and environmental studies, the various municipal committees and boards will account for their own environmental impact and resources, before adopting their own targets as a means of achieving the city-wide goals. This work is to be integrated into the normal operational planning and follow-up work undertaken by municipal committees and boards according to the city's integrated management and follow-up system for financial and operational activities. No separate process will be developed for the planning, implementation or follow-up of environmental work. Since January 2008 all follow-up and planning has taken place in a new online activity support tool. In carrying out their 2008 planning using the new tool, committees and boards are able to take the overarching goals of the Environmental Programme into account.

As a rule, the Environmental Programme does not explicitly state what actual measures are to be implemented. Nor does it predict the wider social impact of the measures. This means that neither the costs for achieving the goals nor the macroeconomic consequences of the Environmental Programme can be calculated or estimated in any detail. The various spheres of activity must themselves choose the most cost-effective measures to move them towards the goals within the framework of their assigned duties and obligations and their budget. The Environment & Health Committee also has the task of assisting committees and boards in their work of achieving the goals of the Environmental Programme.

### **Follow-up**

Follow-up of the city's six overarching environmental goals will take place through indicators or other established follow-up methods linked to the goals and targets involved. The programme states which committee or board is responsible for following up each target. An appendix to the programme proposes a number of follow-up indicators that could be used to measure performance. Responsibility for follow-up includes developing the most relevant indicators. The choice of indicator is to be made in consultation with the City Executive Board. Follow-up will take place using the new online activity support tool that is currently in the process of being introduced.

Where necessary, the Environment & Health Committee will assist the City Executive Board in compiling and analysing indicator data.

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# 1 Environmentally Efficient Transport

Transport plays an important role in modern society. We are all dependent on transport and on the opportunities that mobility affords. Efficient, smooth-running transport systems are essential for competitiveness in a global economy. Transport systems and infrastructure are therefore crucial to development and growth. Our region's transport system currently has capacity deficits in key areas of the major road network as well as in the inner city and in rail traffic. At the same time, modern transport has a negative impact on the environment and our health in the form of noise, polluted inner city air and the exacerbation of the greenhouse effect. Environmental work carried out in recent years has taught us that there is good long-term potential to reduce the environmental impact of traffic. Some problems are well on the way to a solution, others still require much effort. The work must go on to find alternatives and modes of transport that are more efficient in terms of resources and energy consumption. We need to find solutions that avoid putting people's health at risk or harming the environment.

## Goals for the City of Stockholm

**The following interim targets will be met during the programme period**

- 1.1 The City will work systematically to reduce the environmental impact of its own and contracted transport
- 1.2 The City's fleet of vehicles will consist entirely of 'green' cars, and 85% of the fuel used to power these vehicles will come from renewable resources

**The City of Stockholm will work towards achieving the following targets during the programme period**

- 1.3 Reduced emissions from traffic
- 1.4 Increase in numbers of people who travel by public transport, cycle or walk
- 1.5 Growth in the proportion of 'green' vehicles and the proportion of renewable fuel used
- 1.6 Reduction in outdoor traffic noise

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## **More about environmentally efficient transport**

The challenge here is to create a transport system which incorporates the parameters for long-term sustainability. There are positive trends, partly thanks to more stringent requirements for better exhaust emission control. These help reduce emissions of many substances that are hazardous to health, and they improve the air in our cities. New trains and road vehicles are quieter than their predecessors. Alternative fuels and vehicles have begun to gain a foothold on the market. It is possible to reduce the negative environmental impact of traffic by technological development, better logistics, more information, etc. As a city, Stockholm has the advantage of being able to steer developments in the direction of a dense settlement structure, improved public transport and a better road network for cars, cycles and pedestrians.

Carbon dioxide from exhaust fumes contributes to the greenhouse effect, and steep reductions in carbon dioxide emissions are necessary for long-term sustainable development. Forecasts, however, point to a slight increase in carbon dioxide emissions from traffic over the next few years.

Transport and industrial machinery are responsible for three-quarters of all carbon dioxide emissions in the city. Nitrogen oxides also affect human health and the environment and, together with hydrocarbons, nitrogen oxides are also the culprits behind the production of ozone at lower atmospheric levels. Emissions are expected to fall, but further work is required to meet the Environmental Quality Standards (EQS) laid down in Sweden's Environmental Code. Shipping contributes a small share of air pollution, accounting for 6% of the city's nitrogen oxide emissions and 2% of sulphur oxide emissions.

Road traffic also leads to a high level of airborne particles that constitute a hazard to health. We need decisive action if we are to meet the national air quality standard for particles. Road traffic is also the biggest source of airborne carcinogenic hydrocarbons. The forecast here, however, suggests that levels are falling.

Traffic is the biggest source of noise pollution in Stockholm. Not only road traffic, but also rail and air traffic generate significant amounts of noise, indoors as well as outdoors.

Traffic is also responsible for the release of a number of pollutants to ground and water. The toxic products of combustion, the results of wear and tear and of corrosion, road salt, fuel spills and car care products all end up in the natural environment. They pollute surface water and wastewater, impacting on our lakes and waterways and making wastewater treatment more difficult.

Municipal authorities wield great influence over traffic planning, settlement structure, the localization of various activities and the expansion of the road network. They can also influence transport, promoting certain types of transport over others through active parking policies, financial incentives and local traffic regulations, and through their responsibilities for road maintenance. As an employer of large numbers of people, the City of Stockholm can also have a positive effect on the traffic environment by choosing green vehicles and green equipment during procurements.

## **OBJECTIVES AND REGULATIONS: AN OVERVIEW**

### **International**

The EU is making great efforts to produce common standards for air pollution levels.

The framework directive on air quality (96/62/EC) contains a number of daughter directives specifying limit values for the highest permitted levels of various substances.

In 2003, the European Commission issued a directive to promote biofuels in transport. The target is that 2% of the total volume of fuel sold is to be biofuel by 2005, with this figure rising to 5.75% by the year 2010 and 20% in the year 2020.

### **National**

The Environmental Quality Standards in the Environmental Code set requirements for specific levels of substances such as sulphur dioxide and airborne particles.

On 1 April 2006, the Swedish government introduced legislation to oblige major fuel retailers to sell renewable fuels. This will extend to small retailers in 2010.

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Stockholm's environmental goal for Environmentally Efficient Transport links into the national EQOs on 'Clean Air', 'Limited Climate Impact', 'A Good Built Environment', 'Flourishing Lakes and Streams', 'A Balanced Marine Environment, Flourishing Coastal Areas and Archipelagos', and 'A Non-Toxic Environment'.

### **More on the City of Stockholm's targets**

#### **1.1 The City will work systematically to reduce the environmental impact of its own and contracted transport**

According to this target, the various municipal committees and boards must work systematically to reduce environmental impact from their own and contracted transports, for example by choosing environmentally-efficient means of transport whenever possible, and by making clear demands with regard to green vehicles and consolidated goods shipments.

This target involves all the City of Stockholm's committees and boards that use their own or contracted transport. The City Executive Board is responsible for following up the target.

#### **1.2 The City's fleet of vehicles will consist entirely of 'green' cars, and 85% of the fuel used to power these vehicles will come from renewable resources**

This target refers to motor vehicles owned or leased by the City of Stockholm. The City Council has decided that the City is to prioritize green vehicles when buying or leasing new cars. The City's work has helped boost the development of an infrastructure for biofuels and a range of green cars. In practice, the target means that all vehicles bought or leased by municipal committees and boards must – whenever this is technically feasible – fulfil green criteria, according to the definition adopted by the City Council.

According to this target:

- the fleet of municipal vehicles will consist entirely of green cars, with the exception of emergency vehicles and special-purpose vehicles.
- 85% of the fuel used to power municipal hybrid ethanol or biogas vehicles will be E85 or biogas, respectively.

This applies to all committees and boards that purchase, own or lease vehicles during the programme period. The Environment & Health Committee is responsible for following up this target.

In 2006, the City of Stockholm owned and leased 626 green cars. This corresponds to 54% of the municipal fleet. The same year, municipal vehicles ran 26% on renewable fuel, based on the energy content. In 2003, green cars made up 47% of the total municipal fleet; 17% of the fuel was renewable.

### **1.3 The city will promote reduced emissions from traffic**

This target refers to environmentally hazardous emissions to air, ground and water from traffic, locally inside the Stockholm city limits. Particular focus is placed on emissions to air of fossil carbon dioxide, sulphur dioxide, nitrogen oxides and particles (PM10). The target applies to emissions both from municipal transports and from other traffic.

The committees most closely involved in this target are the Development Committee, the Environment & Health Committee, the City Planning Committee, the Traffic & Waste Management Committee, Stockholms Hamnar AB (the ports of Stockholm) and other committees and boards with extensive transport needs. The Environment & Health Committee is responsible for following up the target.

According to this target:

- carbon dioxide emissions from traffic will fall.
- levels of air pollutants that are hazardous to health will fall.

#### **Traffic emissions of carbon dioxide from fossil fuels**

In 2003 emissions of carbon dioxide from road traffic totalled 823,000 tonnes, which represented 38% of total carbon dioxide emissions in Stockholm. For more information on the city's carbon dioxide emissions, see Goal 3, Sustainable Use of Energy.

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### **Nitrogen dioxide**

The national Environmental Quality Objective (EQO) is 20 µg/m<sup>3</sup> (annual average concentration) by 2010. The Environmental Quality Standard in the Environmental Code is 40 µg/m<sup>3</sup> as an annual average, 60 µg/m<sup>3</sup> as a daily average (< 8 days, i.e. the level may be exceeded on no more than 8 days a year) and 90 µg/m<sup>3</sup> as an hourly average (< 175 hours, i.e. the level may be exceeded for no more than 175 hours a year).

The city authorities continually measure levels of air pollutants at three monitoring sites: Hornsgatan, Sveavägen and Norrlandsgatan. Airborne nitrogen dioxide levels trended downwards throughout the 1990s, but this positive development has more or less stagnated in recent years. In 2005, the average of the three monitoring sites was 43 µg/m<sup>3</sup>.<sup>1</sup> Like many other cities, Stockholm finds it most difficult to meet the daily standards.

### **Sulphur dioxide**

As far as sulphur dioxide is concerned, emissions from the city's energy sector dominate. The national EQS in the Environmental Code is 5 µg/m<sup>3</sup> as an annual average. In 1995, Stockholm had an annual average of 4.8 µg/m<sup>3</sup>, which has fallen steadily to the 2005 level of 1.3 µg/m<sup>3</sup>.

### **Particulate matter: PM10**

The Environmental Code's EQS for particulate matter is 40 µg/m<sup>3</sup> as an annual average and 50 µg/m<sup>3</sup> as a daily average (< 37 days). The 2004 Government Bill 'Sweden's Environmental Quality Objectives – a Shared Responsibility'<sup>2</sup> established that the level of particulate matter (PM10) should be 20 µg/m<sup>3</sup> as an annual average and 35 µg/m<sup>3</sup> as a daily average (< 37 days) by 2010. Of particulate matter in Stockholm, 67% comes from transport, primarily from light vehicles. Levels in Stockholm in 2006 varied between 13 and 38 µg/m<sup>3</sup> as an annual average at the five monitoring sites in Stockholm. The annual averages of the four monitoring points between 1994 and 2006 are shown below. Like other cities, Stockholm finds it hard to meet the daily standards.

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Hornsgatan, gatunivå = Hornsgatan, street level

Sveavägen, gatunivå	= Sveavägen, street level
Norrlandsgatan, gatunivå	= Norrlandsgatan, street level
Torkel Knutssonsgatan, takhöjdsnivå	
<i>Miljö kvalitetsnorm</i>	= EQS
<i>Delmål *frisk luft*</i>	= Target 'healthy air'

Figure 1. Annual average, Particles (PM10) 1994 – 2006<sup>3</sup>

#### 1.4 The City of Stockholm will work to increase the numbers of people who travel by public transport, cycle or walk

From an environmental viewpoint, it is beneficial when people use public transport, cycle or walk. A person who cycles 5 km to work instead of driving in a conventional, petrol-driven car reduces carbon dioxide emissions by about 500 kg a year. For someone who drives 15,000 km in a car that consumes one litre of petrol per 10 km, the saving is more than 3.5 tonnes of carbon dioxide. Using a motorcycle or a moped equipped with a catalytic converter is also more advantageous from an environmental viewpoint.

According to this target:

- accessibility for cyclists and pedestrians is to be taken into account in planning.
- municipal authorities will take the expansion of public transport services into account in their planning.

<sup>1</sup> Environmental Health Study 2006, Environment and Health Administration, [www.stockholm.se/miljobarometern](http://www.stockholm.se/miljobarometern)

<sup>2</sup> Govt. Bill 2004/05:150

<sup>3</sup> *Luften i Stockholm* (The Air in Stockholm) – 2006 Annual Report, SLB-analys, Stockholm Environment and Health Administration, March 2007

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This target involves all municipal committees and boards that in their activities can help increase the range of environmentally efficient transport alternatives available to the residents and business community of Stockholm. The Environment & Health Committee is responsible for following up the target.

The proportion of people walking or cycling to school or work in 2004 was 30%. The proportion of public transport users passing the congestion

charging cordon compared to all traffic users passing the cordon rose from 58% in 1999 to 61% in 2005.

In a comparison with other Nordic cities, Stockholm leads the field in this area: 65% of Stockholm residents use public transport to go to work, followed by Helsinki (43%), Oslo (38%) and Copenhagen (33%). The figures for Gothenburg and Malmö are 31% and 9%, respectively.<sup>4</sup>

### **1.5 The city will promote an increase in the proportion of green vehicles and renewable fuels**

A functioning market for green cars requires more than simply an attractive range of vehicle models to choose from. It is also important that the cars can be refuelled without much extra effort or extra cost. More refuelling stations with alternative fuels are therefore a priority. The introduction of refuelling stations for ethanol-driven vehicles is progressing rapidly through established commercial fuel retailers, but the situation for biogas is less satisfactory. One important way of stimulating the market for green cars is to demand that transport companies and taxi companies that have contracts with the city authorities must use a certain proportion of renewable fuel. Measures such as these are coordinated by the City of Stockholm's Green Car Project, whose reference group has set the following targets for 2010:

- the proportion of green vehicles in relation to new car sales as a whole will grow to 35%; and
- the proportion of renewable fuels used will grow to 8 per cent of total fuel consumption in Stockholm County.

This target applies to all committees and boards whose activities can help to encourage individuals and businesses in Stockholm to use green vehicles in preference to conventional vehicles. The Environment & Health Committee is responsible for following up the target.

2006 was a record year for green vehicles, particularly in Stockholm. Sales of green vehicles more than doubled. In Sweden, green vehicles accounted for 13 per cent of total car sales; in Stockholm this rose to 17%. This means that some 25,000 green vehicles are currently on the roads in Stockholm. This is equivalent to approximately 3% of all vehicles in the county. Fuel sales also grew exponentially and studies show that petrol/ethanol hybrids are run to 75% on E75 ethanol.<sup>5</sup>

### **1.6 The city will promote a reduction in outdoor traffic noise**

Outdoor traffic noise means noise from all types of traffic, including road, rail, air and boat traffic. This target focuses on measures to minimize noise. These include traffic guidance and traffic calming measures, information measures and resurfaced roads. Traffic noise can impact on health in a number of ways; one of the most serious of these is sleep disorders. Other effects include stress reactions, fatigue, irritation and fluctuations in blood pressure.

According to this target:

- traffic noise, measured as an annual average at the monitoring sites, will be reduced.

The Development Committee, the City Planning Committee, the Traffic & Waste Management Committee and the Environment & Health Committee are particularly involved in this process. The Environment & Health Committee is responsible for following up the target.

<sup>4</sup>Data from 2003

<sup>5</sup> [www.stockholm.se/miljobilar](http://www.stockholm.se/miljobilar)

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The national EQO<sup>6</sup> is that 'the number of people who are exposed to traffic noise in excess of the guideline values<sup>7</sup> adopted by the Swedish parliament (*Riksdag*) for noise in dwellings will have been reduced by five per cent by 2010 compared to 1998'. Traffic is the major source of noise in Stockholm. In the late 1990s the city's Environment and Health Administration calculated that about 3,500 people in Stockholm were exposed to noise from rail traffic at levels above 45 dBA indoors.

An action programme for the municipal rail network and for all traffic types covered by the EC directive on environmental noise (2002/49/EC) is currently being produced in Stockholm.

The proportion of Stockholm residents who are disturbed by traffic noise has remained largely unchanged over the past ten years at 13–15 per cent. This is equivalent to about 100,000 inhabitants. Part of the explanation may be that both the city's population and its traffic levels are increasing, and that housing construction is becoming more dense, at the same time as noise control measures are being implemented in the city.

The proportion of residents who are disturbed by traffic noise is greatest in the suburbs of Rinkeby and Spånga-Tensta (approx. 25 per cent).

Noise measurements in the Observatorielunden park indicate how the city's noise has changed over time. Background equivalent noise levels have remained largely unchanged throughout the period 1999–2005.<sup>8</sup>

<sup>6</sup> Swedish Environmental Quality Objectives – a Shared Task. Government Bill 2004/05:150

<sup>7</sup> Guide value 45 dB, indoors, adopted by the Swedish parliament in the 1997 Infrastructure Bill (1996/97:53)

<sup>8</sup> [www.stockholm.se/miljobarometern](http://www.stockholm.se/miljobarometern)

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## **2 Goods and Buildings Free of Dangerous Substances**

There are enormous amounts of chemicals on the market: nobody knows exactly how many substances there are in the global marketplace, but they probably number between 20,000 and 70,000. In Sweden, about 12,000 substances are present in the roughly 64,000 chemical products manufactured in or imported into the country, and more enter Sweden through imported finished goods. Chemicals play an important role in modern society: we use them in numerous ways, as drugs, pesticides, washing and cleaning agents, and paints. Chemicals are also present in goods such as clothes, furniture, computers and construction material. While chemicals have helped to raise our standard of living, they have in a number of cases caused health and environmental problems. It is important that we do not burden our environment with synthetic substances or chemical extracts at levels that might threaten our health or the environment.

### **Goals for the City of Stockholm**

**The following interim targets will be met during the programme period**

- 2.1 Emissions of dangerous substances from goods and buildings will be reduced.
- 2.2 At least 15 per cent of food purchases made by the City of Stockholm will be organic.
- 2.3 Two housing projects will have an environmental profile.

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## **About dangerous substances in goods and buildings**

Chemicals are extensively used in modern society and they play an important role in our everyday lives. At the same time, we do not always know enough about the substances that are spread from chemical products, goods and buildings when they are produced and used, and when they are finally discarded. The environment in Stockholm is subjected to impact from many substances that have been or still are being used. However, in only a few cases have the use, emissions and environmental status of these substances been systematically monitored. Some substances impact directly on health: these may be carcinogens, disrupt endocrine functions, cause allergies or have adverse effects on fertility. Some substances can have a negative effect on wastewater treatment or pass unaffected through treatment plants. The challenge lies in avoiding the use of clearly dangerous substances and, generally, in managing different types of chemicals and goods in a way that minimizes risk.

These substances and other types of chemicals are mostly disseminated through the use of chemical products and goods. Industrial emissions are often insignificant in these terms in Stockholm. Ninety per cent of the mercury in wastewater sludge originates from the use of amalgam. A short-term reduction in the amount of amalgam will only marginally affect levels: the most important sources are the amalgam that is already in teeth and old wastewater pipes. Cadmium is a heavy metal that is highly toxic and damages the kidneys and skeleton. Because the use of cadmium is specially regulated in law, all the municipal authorities can really do is to provide information about how important it is to reduce the spread of cadmium.

PCBs (polychlorinated biphenyls) were previously widely used in Sweden, in part in the huge housing expansion of the 1960s, as softeners in sealants. Widespread decontamination work is currently taking place to replace and deal with these sealants. PCBs are a group of substances that are hazardous to health and the environment. They affect fertility, the endocrine system and the body's immune defence system. PCBs degrade slowly and accumulate in the food chain.

One way in which the city authorities can exert a positive influence in combating the spread of dangerous substances is by choosing eco-friendly goods and services. The City of Stockholm can also impose environmental standards when zoning land for infrastructure and buildings. Tools that are currently available and that can be used for this purpose include *BASTA* (Phasing out Very Dangerous Substances from the Construction Industry), the system for construction material evaluation and the city's own procurement guide. Municipal authorities can also help to increase public awareness of these toxins and reduce their spread by establishing a dialogue with and

initiating a process of collaboration with the public, the business community and higher education institutions.

## **OBJECTIVES AND REGULATIONS: AN OVERVIEW**

### **International**

The European Parliament has adopted community legislation to ensure that chemical manufacturers take due responsibility for improving knowledge of their products. The new system for registration, evaluation, authorization and restriction of chemicals is known by its acronym, REACH.<sup>9</sup>

The EU has also adopted a Water Framework Directive that identifies 33 substances and groups of substances as priorities in the work.

In 2008, the European Commission adopted an action plan for sustainable consumption and production, with the aim of identifying and overcoming local barriers to sustainable consumption and production, boosting public awareness and moving towards more sustainable consumption patterns.

### **National**

Stockholm's environmental goal of Goods and Buildings Free of Dangerous Substances links into the national EQOs of 'A Non-Toxic Environment' and 'A Protective Ozone Layer'. It also has links to a number of the national EQS set out in the Environmental Code.

<sup>9</sup>REACH (Registration, Evaluation, Authorization and Restriction of Chemicals)

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## **More on the City of Stockholm's targets**

### **2.1 Emissions of dangerous substances from goods and buildings will be reduced**

The City of Stockholm will purchase goods and use materials that are environmentally sustainable and that do not pollute ground and water. Goods procured will not contain any of the environmentally-hazardous substances listed in the City of Stockholm's procurement guide for non-toxic goods. These lists are based on the documented environmental hazards of substances and their prevalence in the environment. They

include CMR-classed substances (carcinogenic, mutagenic and reprotoxic) and PBT-classed substances (persistent bioaccumulative toxins).

According to this target:

- products containing substances that are hazardous to the environment and health – cadmium, triclosan, DEHP, flame-retardants, lead, etc. – are replaced by options that are better from an environmental viewpoint. Committees and boards that procure goods and services will make demands on suppliers to ensure that none of the environmentally-hazardous substances listed in the city's procurement guide for non-toxic substances are present. The guide describes the product groups in which the substances are found. If the substances cannot be avoided, the supplier must explain why, and state how the substances are to be managed to minimize their environmental impact.
- the City of Stockholm's committees and companies will gradually replace hazardous substances (such as PCBs) in municipal buildings with substances that are documented as better environmental alternatives.
- the City of Stockholm will use phosphate-free washing and dishwashing agents.

This target involves all committees and boards. The Environment & Health Committee and the water utility, Stockholm Vatten, are responsible for following up the target.

The product register of the Swedish Chemicals Agency contains just over 12,000 chemicals. These substances are included in about 64,000 chemical products that are in turn found in cars, plastic goods, clothes and construction materials.

Lead, cadmium, brominated flame retardants, DEHP, triclosan, perfluorinated and PCBs are just a few examples of substances that must be avoided if we are to prevent them from leaching into the environment. Such substances may be embedded in electronic products, textiles, construction materials, toothpaste, fishing sinkers and artists' paints.

### **Lead**

Nowadays lead is primarily found in ammunition and in fishing sinkers. Each year, several tonnes of lead are released into the Strömmen bay area and the surrounding waters as a result of fishing activities.

### **Cadmium**

One of the less well known sources of cadmium is artists' paints. Some watercolour paints can contain up to 45 per cent cadmium: when brushes are washed, there is a great risk that significant amounts of cadmium will

find their way into the wastewater system. Sales of artists' paints containing cadmium fell from 52 kg to 41 kg between 2001 and 2003.

### **Brominated flame retardants**

This is a collective name for about 70 chemical compounds that all contain the element bromine. They are primarily used as additives to inhibit the spread of fire on plastics and textiles. These substances are released into the environment through leaching and diffuse spread from goods and waste, and are found worldwide in soils, sediments, wastewater sludge, air, fish and human breast milk.

### **DEHP**

DEHP belongs to a group of substances known as phthalates. DEHP is used primarily as a softener in plastics, primarily PVC. The EU has classed DEHP as hazardous to human reproduction and has recently introduced a ban on the use of DEHP in various products, for example cosmetics and hygiene products. DEHP has also been banned in toys and children's articles since January 2007. However, DEHP is still present in many different types of goods, such as office materials, electric goods, mobile phones, furniture and construction materials.

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### **Triclosan**

Triclosan is an antibacterial substance that is primarily toxic to aquatic organisms, but can also produce allergies. Two tonnes of triclosan a year are discharged into wastewater in Sweden from toothpaste alone. Treatment plants are unable to completely neutralize the substance, so large amounts pass directly into the sea along with the purified water. Triclosan is found in deodorants, soaps and toothpaste and other products.

### **Perfluorinates**

This group of substances is primarily used to help various materials repel dirt and water. It is used on floors, shoes, furniture and paper that is used to package food. As the substances in this group have low degradability, they tend to spread far and wide. They have been found in such diverse animals as polar bears and white-tailed eagles.

## **PCBs**

At a rough estimate, 23 tonnes of PCBs have been built into Stockholm's property stocks. Just over half is present in sealants, but they also occur in condensers, insulating glass and flooring. The relevant municipal authorities are working to build up a comprehensive picture of the presence of PCB and to decontaminate the buildings concerned. Twenty-nine per cent of buildings with PCB-sealants have been decontaminated.

## **Mercury**

Comparisons with regional background levels in soil show higher levels of mercury in central areas of the city. On average, levels are 21 times higher than regional background levels in agricultural land. The biggest source of dissemination in modern society is amalgam fillings in teeth. Polluted areas can be decontaminated through the removal or dredging of soil and sediment. Often, a combination of many different pollutants is involved, and since large amounts of sediment can be churned up in the water during dredging, there is a risk that sediment-bound pollutants will be re-deposited and re-released.

For more information see <http://www.stockholm.se/miljobarometern>

## **2.2 At least 15 per cent of the food purchases made by the City of Stockholm will be organic**

Organic food is defined in this context as food labelled with the Swedish KRAV mark, the EU's organic logo, MSC or Demeter, or food which meets equivalent requirements.

According to this target:

- the City of Stockholm will increase to 15% the amount of food it purchases that meets the EU standards for organic produce.
- when negotiating subcontracted ready meals for schools, preschools, homes for the elderly, etc., the city will set requirements that at least 15% of the food must be organic.

All municipal operations that purchase food are involved in this. The City Executive Board is responsible for following up the target.

A national objective is that 20% of Sweden's agricultural land will be growing organic crops by the year 2005. In March 2007, 6.8% of the food

purchased by the City of Stockholm was organic. The figure for Copenhagen and Malmö is 10% and for Gothenburg 2.4%.<sup>10</sup>

### **2.3 Two housing projects will be have an environmental profile**

The housing environment is key to people's well-being. If the City of Stockholm is to provide healthy homes, it must aim for high quality when building new housing. Tried-and-tested methods as well as new methods will be used during planning and development.

According to this target:

- experience gained from the Hammarby Sjöstad housing development will be applied to all local planning in the city.
- two housing projects with a clear environmental profile will be planned.

<sup>10</sup> Major Nordic cities <http://www.stockholm.se/miljobarometern>

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- environmentally efficient solutions will be initiated for key factors such as waste management, energy efficiency, building processes and the choice of materials.

Responsibility for this target is primarily shared by the Development Committee, the Environment & Health Committee, the City Planning Committee and the Traffic & Waste Management Committee. The Development Committee and the Environment & Health Committee are responsible for following up the target.

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## **3 Sustainable Use of Energy**

Access to energy is essential to maintain our standard of living. Heated homes, lighting, hygienic food storage and transportation are all examples of energy services that we use every day. Businesses are, of course, also dependent on various types of energy at affordable prices in order to produce the goods and services that they sell. At the same time, energy use is one of the underlying causes of a number of major environmental problems. This applies particularly to emissions of various types of air pollutants that impact on the local, regional and global environment, as well as to climate gases. The

production of energy from renewable and non-renewable sources also leads to significant environmental impact.

## Goals for the City of Stockholm

**The following interim targets will be met during the programme period**

- 3.1 Energy use in municipal buildings and facilities will be reduced by 10 per cent.
- 3.2 Electricity procured for municipal activities should meet the requirements for eco-labelling.

**The City of Stockholm will work towards achieving the following targets during the programme period**

- 3.3 Average per capita emissions of greenhouse gases from energy use will be reduced by 10 per cent.

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GlasHusEtt, Hammarby Sjöstad

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## More about sustainable energy

The biggest energy-related issue is the impact that the use of fossil fuels has on the climate. The greenhouse effect, which is a global issue, is accelerating. Its origins lie in the combustion of fossil fuels. Burning fossil coal leads to emissions of the greenhouse gas, carbon dioxide. Higher electricity consumption also leads, in the short term, to greater carbon dioxide emissions, since not all electricity is generated from renewable energy sources.

What follows is a brief description of the greenhouse effect:

Solar energy is the basis of all life on earth. Much of the sun's energy is reflected back into space after striking the surface of the earth, and the balance between energy input and reflected energy is largely controlled by the amount of carbon dioxide in the atmosphere. The carbon dioxide in the air allows energy to radiate down to the earth's surface while at the same time preventing long-wave energy from the surface from being reflected back into space. In this sense, carbon dioxide works much like the glass in a greenhouse. The balance between incoming and reflected energy is very sensitive. If this balance changes, the conditions that shape our climate change along with it – and this has clear repercussions for life on earth.

Another energy-related environmental issue is acidification. Precipitation in Stockholm today is much more acid than in pre-industrialized times. The land areas are ten times more acid than unaffected regions, and they are often more acid than soil and water organisms can tolerate. Acidification is due to the emission of sulphur and nitrogen from the burning of oil and other fuels.

Air quality in Stockholm has been improving for a number of years, not least because of the widespread transition to biofuel-based energy production in the district heating system. This has led to significant falls in emissions of carbon dioxide, sulphur and other substances.

Emissions of some substances, however, are still sufficiently great to cause health problems. Air pollution in the shape of nitrogen dioxide and various hydrocarbons increases the risk of cancer, asthma and cardiovascular disease. Small-scale burning of wood in fireplaces that are not environmentally approved can also lead to significant local emissions of hazardous hydrocarbons.

The City of Stockholm and its property-owning companies play an important role in this respect: they can reduce their impact by reducing emissions from electricity production and heating by making buildings and activities more efficient and by switching to renewable energy sources. The City of Stockholm can exercise influence over its own energy use and energy production, not least in its capacity of partner in and client of AB Fortum Värme, of which it is also co-owner. The city authorities can also wield influence through their cooperation with developers when making land available, and can use long-term planning to influence energy efficiency and biofuel supply to electricity and heating production.

Energy efficiency is as much an economic issue as an environmental one. By investing in energy-efficient technology, the city can also reduce its operating costs and stimulate demand for new technology, thus taking on the role of a promoter of environmentally-driven growth and development.

## **OBJECTIVES AND REGULATIONS: AN OVERVIEW**

### **International**

The Kyoto Protocol is an international agreement concluded in Kyoto in Japan in December 1997. Under the terms of the Kyoto Protocol, by the period 2008–2012 annual global greenhouse gas emissions are to be 5.0% below 1990 levels. The EU is to reduce its emissions by 8%, and Japan by 6%. EU member states, after negotiations among themselves,

have been allocated individual quotas. Sweden has undertaken to reduce its greenhouse gas emissions by 4% from 1990 levels.

In December 2002 the European Parliament and the Council of the European Union adopted Directive 2002/91/EC on the energy performance of buildings. Its aim is to promote more efficient energy use in buildings to reduce emissions of climate gases, and, ultimately, to reduce the EU's dependency on imported energy.

In December 2003 the Commission submitted a proposal for a directive on energy end-use efficiency and energy services. The proposed directive contains a binding target for each member state of improved energy end-use efficiency of 1% per year. For the public sector, each member state is to establish and meet an energy saving target of 1.5% annually.

On 1 January 2005 an emissions trading system was introduced in the EU. The system covers all 25 member states and was developed according to the principles of the Kyoto Protocol. In the spring of 2005 the Commission adopted a framework directive (2005/32/EC) on the ecodesign of energy-consuming products.

EU leaders agreed on new climate targets at the 2007 meeting of the European Council in Brussels. Under this agreement, the EU will reduce its greenhouse gas emissions by 30% by the year 2020, on condition that other industrialized nations commit to comparable reductions. Pending a global agreement, the Council resolved that greenhouse gas emissions must fall by at least 20 per cent by 2020 (compared to 1990 levels). A far-reaching energy action plan was adopted for 2007–2009 with two binding commitments: 20% of the EU's energy consumption in 2020 must come from renewable sources, and in the same year the proportion of biofuels used must be 10%. A target of a 20% improvement in energy efficiency by 2020 was also adopted.<sup>11</sup>

## **National**

In the spring of 2002, the Swedish Parliament (*Riksdag*) adopted Sweden's national climate strategy.<sup>12</sup>

Stockholm's environmental goal of Sustainable Use of Energy links into the national EQOs of 'Reduced Climate Impact', 'Clean Air', 'A Good Built Environment', 'A Protective Ozone Layer' and 'Natural Acidification Only'.

## **More on the City of Stockholm's targets**

### **3.1 Energy use in municipal buildings and facilities will be reduced by 10 per cent**

The percentage in this particular target does not apply to properties, plants and activities separately, but is calculated for the municipal property portfolio as a whole. The ten per cent reduction is compared to 2006 levels.

According to this target:

- municipal administrations and municipal companies will make their energy use more efficient
- municipal companies will introduce individual metering and charging for hot water
- energy-use requirements will be set for new builds.

This target involves all committees and boards. The Environment & Health Committee is responsible for follow-up, while each committee and board is responsible for furnishing data about its own energy use.

Total energy consumption in Sweden has grown by just under 40% since the 1970s. Sweden currently consumes 405 TWh a day, of which 149 TWh are consumed by the housing and service sector, 157 TWh by industry and 99 TWh by transport.<sup>13</sup>

Per capita energy consumption in Stockholm has fallen from 31,500 kWh in 2000 to 27,900 kWh in 2003. This equates to a reduction of 7%. The reduction has taken place in the household and service sectors. Industry and the transport sector have increased their consumption.

<sup>11</sup> www.regeringen.se

<sup>12</sup> Govt. Bill 2001/02:55, Report 2001/02: MJU10, Parliamentary Communication 2001/02:163

<sup>13</sup> Environmental Health Study 2006, Environment and Health Administration, www.stockholm.se/miljobarometern

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Stockholm  
Oslo  
Malmö  
Helsinki  
Gothenburg

Figure 2. Total per capita energy consumption in 2003 (kWh/inh)<sup>14</sup>

### **3.2 Electricity procured for municipal activities should meet the requirements for eco-labelling**

This target means that eco-labelling, or equivalent requirements, will apply to all municipal procurements of electricity during the programme period, provided that the requirement does not lead to unreasonable extra cost.

Using eco-labelled electricity has the long-term effect of driving the environmental adaptation of electricity production, and is thought to eliminate carbon dioxide emissions. Each gigawatt hour (GWh) of eco-labelled electricity purchased for the city will translate into a reduction in global emissions of fossil carbon dioxide of about 110 tonnes a year. Municipal consumption is estimated to be about 315 GWh/year. Assuming that half of this consumption is already eco-labelled electricity, this means that procuring eco-labelled electricity for the remainder will lead to an estimated reduction of about 17,000 tonnes of carbon dioxide, or 23 kg per Stockholm resident per year.

This target involves all administrations that procure electricity. The City Executive Board is responsible for following up the target.

In 2003, the City Council decided to carry out one central negotiation process for the procurement of electricity for all the city's municipal administrations. All administrations, in principle, now have eco-labelled electricity. The procurement extends to 370 GWh, of which 250 GWh is labelled with the Swedish *Bra Miljöval* ecolabel.

### **3.3 Average per capita emissions of greenhouse gases from energy use will be reduced by 10 per cent**

The target means a reduction in Stockholm residents' annual greenhouse gas emissions from energy use (including traffic) by at least 10% from today's level of about 4 tonnes down to 3.6 tonnes of carbon dioxide equivalents, calculated per Stockholm resident per year. This ambition is adapted to the City Council's goal of making Stockholm fossil fuel-free by the year 2050. New guidelines governing the work to reduce greenhouse gases will be produced in 2007 and 2008. The guidelines will provide the administrations with approaches and tools with which to achieve the related targets in the Environmental Programme. During this process, a study will be carried out of the potential to achieve greater greenhouse gas reductions. Target 3.3 may be revised subsequent to this.

According to this target:

- rents exclusive heating and lighting, together with charges for heating and hot water consumption will be introduced in all newly built residential properties and commercial premises that are owned by the City of Stockholm.
- the City of Stockholm will work to introduce individual metering and charging for heating and hot water to existing residential properties and commercial premises.
- households and businesses will improve their energy use efficiency.
- the proportion of eco-labelled electricity in households and businesses will increase.

<sup>14</sup> Major Nordic cities 2003

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- there will be a reduction in the use of electricity and non-renewable fuels (primarily oil and gas) to heat properties in the Municipality of Stockholm.
- the district heating supplier will reduce electricity use and increase the proportion of renewable fuel in its production.
- use of fossil fuels in traffic will fall.

This target involves all committees and boards whose activities might help citizens and businesses in Stockholm to reduce their climate impact. The Environment & Health Committee is responsible for following up the target.

Sweden has undertaken to reduce its greenhouse gas emissions by 4% from 1990 levels. Stockholm reached this target in 2000.<sup>15</sup>

Stockholm's target in its 2002–2005 Action Programme Against Greenhouse Gases was to reduce emissions to 4.0 tonnes of carbon dioxide equivalents

(CO<sub>2</sub>eq) per resident by 2005. Total emissions fell by 466,000 tonnes of CO<sub>2</sub>eq during the 2000–2005 programme period. The population grew during this period by just under 3%, to a total of approximately 771,000. This means that the average Stockholm resident is responsible for the total emission of about 4.03 tonnes of greenhouse gases a year. Emissions have fallen primarily because multifamily dwellings have switched from oil-fired boilers to district heating. Greenhouse gas emissions from district heating production have been kept in check thanks to the use of a greater proportion of renewable fuel. The increasing market share of public transport compared to private cars on the road and the large proportion of renewable fuels in public transport have been important in meeting this target.

The new long-term target is for Stockholm to continue to reduce its greenhouse gas emissions at the same rate as between 1990 and 2005. If the target is achieved, Stockholm will be fossil fuel-free in 2050.

*Figure 3. Climate targets 2005-2050 compared to the baseline year 1990<sup>16</sup>*

Total greenhouse gas emissions in Stockholm in 2005 are estimated to be 3,013,000 tonnes CO<sub>2</sub>eq, a reduction of 13% since 2000 and by just over 17% compared to 1990. These values are corrected for a normal year.

Traffic  
Household electricity/gas  
Heating

*Figure 4. Total greenhouse gas emissions, thousand tonnes CO<sub>2</sub> equivalents, in Stockholm 1990–2005. Corrected for a normal year. 1990 and 2005 were unusually warm years.<sup>17</sup>*

<sup>15</sup> Environmental Health Study 2006, Environment and Health Administration, [www.stockholm.se/miljobarometern](http://www.stockholm.se/miljobarometern)

<sup>16</sup> Stockholm's Action Programme Against Greenhouse Gas Emissions 2000–2005 – Follow-up, Environment and Health Administration, March 2007

<sup>17</sup> Environmental Health Study 2006, Environment and Health Administration, [www.stockholm.se/miljobarometern](http://www.stockholm.se/miljobarometern)

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Stockholm  
Sweden  
Africa  
Finland  
EU  
Norway  
USA

Figure 5. Carbon dioxide emissions per capita and year (1999/2000)<sup>18</sup>

<sup>18</sup> www.naturvardsverket.se

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# 4 Sustainable Use of Land and Water

Stockholm is widely perceived as an attractive place in which to live and work. Among the reasons for this are its proximity to the countryside and the fact that Stockholm is a city built on the water. The most important function of parks, water and the countryside is to meet Stockholmers' need of recreation and outdoor pursuits. These areas are also educational, particularly for children. Natural areas like parks and green areas also help muffle noise from traffic and other activities, and the plants act as a filter for some air pollution. Water that runs slowly through ponds and wetlands is cleansed of nutrients and some pollutants. The extensive tracts of unspoiled countryside on the outskirts of Stockholm and in its neighbouring municipalities are important for the outdoor pursuits of Stockholm residents, as is access to the scenic areas of Lake Mälaren and the archipelago. At the same time as we make it possible for more people to live and work in the city, we must preserve the qualities that make it an attractive place to live.

## Goals for the City of Stockholm

**The following interim targets will be met during the programme period**

- 4.1 Land and water areas with particularly high natural values will be preserved
- 4.2 Development of land and water areas with high natural values will be compensated
- 4.3 Stockholm residents will have good access to a variety of types of countryside, parks and water areas
- 4.4 City planning will be sustainable in the long term

**The City of Stockholm will work towards achieving the following targets during the programme period**

4.5 Biodiversity in parks and natural areas will be safeguarded

4.6 The ecological status of Stockholm's lakes and waterways will be improved.

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### **More about sustainable land and water use**

The city's parks, natural areas and stretches of water constitute a valuable resource for recreation and the outdoor pursuits of its inhabitants. They are aesthetically appealing environments in the urban landscape and also important for biodiversity. Time spent in nature is very important for people's health and well-being. Accessibility and proximity to natural areas are key factors in how often they are visited. The construction of housing, workplaces and infrastructure can encroach upon natural areas in a way that increasingly fragments these areas. In addition to making it harder for Stockholm residents to access and experience the pleasures of nature, this can also impact on the habitats and dispersal routes of plants and animals. Urban planning should take into account not only the need for parks and periurban natural areas, but also the ecological structure.

The challenge lies in creating the right conditions for a pleasant life in the city while promoting long-term sustainable land use that contributes to economic growth without the loss of important environmental assets. There are over 200 protected natural areas in the Stockholm region. Well-chosen action to compensate for land development can help restore and rehabilitate recreational and ecological assets, or, where undeveloped land is used for building, replace them. The quality of natural areas can be boosted by providing better information about lakes and scenic areas and how to get to them.

As Stockholm has grown, lakes and waterways have become increasingly important as features of the urban landscape and for recreation and outdoor pursuits. Thanks to years of systematic work, it is now possible to bathe in central parts of the city. Nevertheless, Stockholm's lakes and waterways are more or less affected by activities that operate, or used to operate, in their catchment areas. Traffic, buildings and industry all lead to the nutrient enrichment of water from the catchment areas, compared to water coming from unspoiled and unmanaged land. Some activities can also result in higher levels of metals and hazardous organic substances. Bottom sediments contain pollutants stored as nutrients and environmental toxins that can have a negative effect on plant and animal life. According to the EU's Water Directive, the necessary steps must be taken to prevent deterioration of the ecological status of surface water (i.e. lakes

and waterways). The Swedish Environmental Protection Agency has been tasked with producing national assessment criteria that define the term 'good ecological status'. Groundwater levels and groundwater quality are also affected by what happens in the catchment area. Guidelines for municipal endeavours to improve the ecological status of Stockholm's lakes and waterways are set out in the Water Programme for Stockholm.

Within this field the City Planning Committee shoulders responsibility for overall planning and for local planning of the city's land and water. The Development Committee, through its responsibility for land, is responsible for improving green areas and for developing land owned by the City of Stockholm. The Traffic & Waste Management Committee and the water utility, Stockholm Vatten AB, contribute to sustainable development through their respective sector responsibilities, while the district councils are responsible for the management and day-to-day care of the city's parks and natural areas. The Environment & Health Committee is responsible for supervision of protected areas (reserves) and environmental monitoring.

## **OBJECTIVES AND REGULATIONS: AN OVERVIEW**

### **International**

The EU's strategy for sustainable use of natural resources

The Directive on Conservation of Wild Birds (79/09/EEC) covers all naturally occurring bird species in the member states, and aims to preserve sustainable populations of them. The Wild Birds Directive is the oldest piece of Community legislation, and directs the member states to take steps and create special protection areas for threatened bird species.

The Habitats Directive (92/43/EEC) aims to protect habitats and threatened animal and plant species.

The EU Water Framework Directive (2000/60/EC) requires that member states organize national water management bodies. The management bodies are to take the route of water as their point of departure, and to be organized into River Basin Districts, divided into river basins and sub-basins.

The directive affects the City of Stockholm, which is responsible for physical planning under the Swedish Planning and Building Act, as the supervisory authority for local environmental work and as the body responsible for drinking water production and wastewater treatment. The directive also

states that each EU member state is to strive to involve the public in the work on water issues.

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The EU Drinking Water Directive (98/83/EC) aims to safeguard the quality of drinking water to ensure that it is free from microorganisms, parasites and substances that may be hazardous to human health. The directive establishes minimum requirements for certain parameters, which are to be met within a given period of time.

The EU Bathing Water Quality Directive (76/160/EEC)<sup>19</sup> introduced four different categories for the classification of bathing water. It will probably be difficult for Swedish beaches to achieve the highest ranking (i.e. 'excellent'), because it rains more in northern Europe than in southern Europe, and because Sweden has many shallow bays with relatively still water. The directive imposes more stringent requirements regarding information to be supplied to bathers about the results of testing, provided at the beach itself and via the internet. The Bathing Water Directive also sets requirements for bathing water profiles, the purpose of which is preventative. Consideration is to be made of whether or not the bathing area is correctly located.<sup>20</sup>

### **National**

The EU Directives will be transposed into Swedish legislation through new ordinances. One result of this will be the establishment of Environmental Quality Standards for the ecological status of surface water in 2009. Stricter limit values for good bathing water quality will also be introduced.

Stockholm's environmental goal of Sustainable Use of Land and Water links in to the national EQOs on 'Rich Diversity of Plant and Animal Life', 'A Good Built Environment', 'Flourishing Lakes and Streams', 'Thriving Wetlands', 'Sustainable Forests', 'A Varied Agricultural Landscape', 'A Balanced Marine Environment, Flourishing Coastal Areas and Archipelagos'.

From 1 January 2008, the Government has introduced a ban on phosphates in washing agents.

## More on the City of Stockholm's targets

### 4.1 Land and water areas with particularly high natural values will be preserved

This target does not cover all of the city's natural areas and waters; it concerns the preservation of 'green' areas that have such key roles for biodiversity that they cannot be replaced. Particularly valuable areas include those that have been protected or which are being studied with a view to protection, valuable dispersal routes and buffer zones, and habitats for species requiring protection according to the species archive *ArtArken*. Particularly valuable areas are mainly those that are home to protected species and biotopes that chiefly occur in Stockholm. This target links in to the City Council's decision on the protection of natural areas under the Environmental Code.

The target particularly involves the Development Committee, the Real Estate Committee, the Environment & Health Committee, the City Planning Committee and district councils with land and water areas within their districts that have particularly high natural values. The City Planning Committee is responsible for following up the target.

Stockholm extends over a total area of just under 22,000 hectares, more than half of which (12,000 hectares) consists of green areas. There are 2,800 hectares of water.

In 2005, Stockholm had 1,510 hectares of protected land under the Environmental Code. In December 2006 the city had seven nature reserves and today there are over 200 nature reserves in Stockholm County. With the county's two national parks, the reserves cover a total land area of about 35,000 hectares, which is just over 5 per cent of the county's total land area.<sup>21</sup>

<sup>19</sup> [www.europa.eu.int/water/water-bathing/rep\\_downl.html](http://www.europa.eu.int/water/water-bathing/rep_downl.html), [www.europa.eu.int/water/cgi-bin/search.pl](http://www.europa.eu.int/water/cgi-bin/search.pl).

<sup>20</sup> [www.skl.se](http://www.skl.se)

<sup>21</sup> [www.lst.se](http://www.lst.se)

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Vattenområde	= Water areas 13%
Bebyggd och hårdgjord mark	= Built and surfaced land 45%
Skog	= Forest 20%
Öppen mark	= Open land 10%
Halvöppen mark	= Half-open land 11%
Våtmark	= Wetlands 1%

*Figure 6. Distribution of different types of land including water in Stockholm city in 2005.<sup>22</sup>*

#### **4.2 Development of land and water areas with high natural values will be compensated**

Under this target, compensatory measures are carried out at local level, with the scale of compensation being determined by the type of function involved. Measures might include re-creating the corresponding biotope, or restoring an environment that has undergone a decline in its natural values.

The target particularly involves the Development Committee, the Real Estate Committee, the Environment & Health Committee, the City Planning Committee, the Traffic & Waste Management Committee, the housing companies and the district councils. The Development Committee is responsible for following up the target.

One of the interim targets of the national EQO relating to 'Rich Diversity of Plant and Animal Life' is to halt the loss of biological diversity in Sweden by 2010. Another interim target is that the conservation status of threatened species around the country is to improve by 2015 so that the proportion of evaluated species classified as threatened has fallen by 30% compared to 2000, with no increase in the percentage of species that have become regionally extinct.<sup>23</sup>

There is a lack of good statistics about the implementation of compensatory measures, but an overall assessment of the information provided by the Development Office and by the Environment and Health Administration is that compensation has taken place in 90% of current development projects.

On average each year approximately 18 species worthy of preservation risk being affected by development in Stockholm. The total number of species worthy of preservation is 52. Most local plans adopted during the 2002–2004 period are not judged to have impacted on any of these species, since they mainly applied to areas of land already developed.<sup>24</sup>

#### **4.3 Stockholm residents will have good access to a variety of types of countryside, parks and water areas**

This target means that Stockholmers' access to parks and natural areas will improve in accordance with the guidelines for good access to parks and natural areas in the city's parks programme.

The target particularly involves the Development Committee, the Environment & Health Committee, the City Planning Committee, the district councils, the Traffic & Waste Management Committee and Stockholm Vatten AB. The Environment & Health Committee and the City Planning Committee are responsible for following up the target.

Stockholmers are very keen on spending time outdoors, in parks and natural areas. During summer, almost 60 per cent visit the city's parks and natural areas daily or several times a week.

<sup>22</sup> Environmental Health Study 2006, Environment and Health Administration, [www.stockholm.se/miljobarometern](http://www.stockholm.se/miljobarometern)

<sup>23</sup> Swedish Environmental Quality Objectives – a Shared Task. Government Bill 2004/05:150

<sup>24</sup> [www.stockholm.se/miljobarometern](http://www.stockholm.se/miljobarometern)

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The vast majority of Stockholmers – roughly 90 per cent – say that they are happy with access to parks and nature in their own part of the city. This is true of both suburban and inner-city residents.<sup>25</sup>

### **4.4 City planning will be sustainable in the long term**

In a major city, planning presents challenges and opportunities in the work to create sustainable development. The advantages of a major city include the opportunity of building the city inwards to optimize use of public transport, the district heating network and land that has already been developed. The great challenge lies in simultaneously preserving Stockholmers' access to green areas in their local vicinity.

According to this target:

- already developed land is to be re-used before new land is developed
- green areas with high natural values are to be preserved
- good public transport potential is to be utilized

The guidelines are set out in the City Planning Strategy, which is described in more detail in the structural planning document *Översiktsplan 99*.

Responsibility for this target is primarily shared by the Development Committee, the Environment & Health Committee, the City Planning Committee and the Traffic &

Waste Management Committee. The City Planning Committee and the Environment & Health Committee are responsible for following up the target.

#### **4.5 The City of Stockholm will work to conserve biodiversity in parks and natural areas**

How parks and natural areas are managed is crucial to biodiversity; unsuitable management methods have probably contributed, in part at least, to the disappearance of about 80% of Sweden's red-listed (endangered) species from the municipality. For many species that are still present in Stockholm there has been a dramatic fall in numbers, and these species are now found in only a limited number of locations.

The target will be achieved if:

- the City of Stockholm conducts ecologically-focused management and restoration programmes through physical measures that favour naturally occurring species in parks and natural areas, including aquatic environments.
- biodiversity is maintained or improved, by measures that include preserving forest areas and parks with trees of different ages and dead wood that is allowed to lie.

The target particularly involves the Development Committee, the Real Estate Committee, the Environment & Health Committee, the City Planning Committee and the district councils. The district councils, led by the Environment & Health Committee, are responsible for following up the target in their own districts.

In places where the effects of grazing and haymaking have been evaluated, positive changes in the flora have been observed. A large number of conservation bodies have been provided with training to teach them about ecologically focused management, and a number of biotopes have been restored or created. A total of 42% of these bodies have undergone training. Some examples of restored, rehabilitated and newly created environments are the artificial pond at Årstafältet and the new water and wetland environments in Sättra and Skärholmen.<sup>26</sup>

#### **4.6 The City will act to promote an improvement in the ecological status of Stockholm's lakes and waterways**

Like green areas, the ecosystems of lakes, waterways and shorelines have been affected, and many species have disappeared. Stockholm's lakes and waterways are all affected by human activity in their catchment areas, through development, the rerouting and removal of water and lack of care. Guidelines for how to work with water are set out in the Stockholm Water Programme, which has been adopted by the City Council.

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According to this target:

- run-off water from the most heavily used roads (over 30,000 vehicles a day) is purified.
- overflow from the wastewater network will fall from today's average of 500,000 m<sup>3</sup> to a maximum of 325,000 m<sup>3</sup> per year.
- the total phosphorous level in the city's lakes will fall.
- environmentally sustainable procedures for the management of snow will be achieved before the end of the programme period.

The target particularly involves the Development Committee, the Real Estate Committee, the Environment & Health Committee, the City Planning Committee, the district councils, the Traffic & Waste Management Committee and Stockholm Vatten AB.

Trends are good as far as nitrogen and bacteria in Stockholm's lakes and waterways are concerned. With respect to the total phosphorous content of surface water, trends are good in 73% of the lakes and waterways inspected on an ongoing basis by Stockholm Vatten AB.

Stockholm's emissions of phosphorous and nitrogen to the sea and coastal waters have fallen significantly. Emissions peaked during the 1960s, when 600 tonnes of phosphorous were transported out every year via the wastewater network. The purification rate has climbed since then, and in 2003 the water from the same network contained just 23 tonnes of phosphorous.<sup>27</sup>

Many of the hazardous substances that are spread in the urban environment exist in high levels at sampling sites close to the inner city and in freshwater lakes near the city, but levels are not as high in coastal waters. Polluted land and polluted bottom sediment have been and are being rehabilitated to reduce the spread of for example, PAH (polyaromatic hydrocarbons). Examples of rehabilitated areas include the waters of Klara Sjö and the gasworks premises at Lilla Värtan.<sup>28</sup>

- 27 *Vi samlar krafterna för bättre kustvatten (Working Together for Better Coastal Waters)* – report from Svealand Coastal Water Management Association
- 28 *Vi samlar krafterna för bättre kustvatten (Working Together for Better Coastal Waters)* – report from Svealand Coastal Water Management Association

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## 5 Environmentally Efficient Waste Management

As consumption increases, so too does the amount of waste society produces. There tends to be a link between the amount of waste produced in society and the economic cycle, with waste increasing during good times. All waste fractions need to be treated in a fashion appropriate to their properties to prevent harm to people or the environment.

At the same time, different types of waste are also an important factor in the material flows of society and industry, and part of the cycle of nutrients and energy that society needs for heating and electricity. Efficient and environmentally-adapted waste management is thus part of the infrastructure of society. In international terms, Sweden has come a long way in minimizing and treating waste. Ninety-five per cent of household waste is recycled, thanks to a huge commitment from individuals, property owners, producers, entrepreneurs and local authorities.

### Goals for the City of Stockholm

**The following interim targets will be met during the programme period**

- 5.1 The amount of waste generated by municipal activities will fall.
- 5.2 Greater amounts of the waste generated by municipal activities will be put to good use, including through biological treatment.

**The City of Stockholm will work towards achieving the following targets during the programme period**

- 5.3 There will be an increase in the proportion of hazardous waste collected.
- 5.4 The amount of per capita waste will fall and the amount of waste that is utilized in some way will increase.

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Photograph: Sorting at source

## **More about waste treatment and the environment**

Municipalities are responsible for collecting and treating household waste and other similar waste, while businesses themselves must shoulder the burden of responsibility for dealing with the waste that is generated by their operations. Certain products are also covered by producer responsibility, which means that the companies that manufacture or import the goods are responsible for collecting and recycling any waste that derives from these products. This applies to items such as packaging materials made of glass, metal, paper and plastic, as well as newspapers, electrical goods and batteries.

The City of Stockholm's targets with regard to waste build on the EU's waste hierarchy, according to which waste is managed in the following order of priority.

1. Reduction
2. Re-use
3. Recycling and composting
4. Energy recovery
5. Disposal

Adherence to the hierarchy is not always the best course in macroeconomic or environmental terms. When all considerations have been factored into the equation, the objective must be the best environmental and socioeconomic benefit. This means that, in some instances, incineration and energy recovery may be as good an option as recycling. Most household waste in Stockholm, for example, is sent for energy recovery at the Högdalenverket combined heating and power plant.

In order to treat waste according to the above principles, it is necessary that those types of waste that are hazardous to human health or harmful to the environment are managed in special ways. Many products that are used in households and businesses are therefore classed as hazardous waste because of their physical properties. Examples include solvents, mercury thermometers, pesticides, liquid paint leftovers and fluorescent strip lights. If hazardous waste is included in waste that is sent for incineration, there is a higher risk of emissions via flue gases and the residual waste products of combustion may leach out from landfill sites. As far as biological treatment is concerned, it is particularly important that the infeed waste is free from all hazardous constituents, as these will pollute the products of digestion or composting and render them useless as fertilizer. The law requires that all hazardous waste from all businesses

and households must be kept separate from other waste and treated separately. Despite these legislative requirements, analyses of random sorting checks indicate that 1% of the contents of the average bin bag is made up of hazardous waste. Of this, half is hazardous waste for which the local authorities have responsibility, while the other half is electrical waste for which producers are responsible.

The City of Stockholm can control the waste produced as a result of its own activities, and it also wields great influence over household waste, for example through the actions taken by the Traffic & Waste Management Committee, Stockholm Vatten AB, the City Planning Committee, the Environment & Health Committee, the housing companies and district councils, the Education Committee and the Elderly Services Committee. All hazardous waste that is generated by municipal activities must, by law, be collected and treated separately. The City is also responsible for informing households of their obligation to sort packaging and newspapers, and of the available collection systems. Producers, on the other hand, are responsible for providing the same type of information to other waste producers. The Traffic & Waste Management Committee is responsible for collecting hazardous waste from households, while companies and other activities (including the City of Stockholm's own committees and boards) are responsible for the collection of their own hazardous waste. Local municipal ambitions, responsibility and organization in the field of waste management are described in the City of Stockholm's Waste Management Ordinance with its Waste Plan. The central goals of these are reflected in the Environment Programme.

## **OBJECTIVES AND REGULATIONS: AN OVERVIEW**

### **International**

The EU's Framework Directive on Waste (75/442/EEC) is very important for Sweden's framework of waste regulations. It constitutes the basis for large sections of Chapter 15 of Sweden's Environmental Code and the Swedish Waste Ordinance. The EU is currently revising the Framework Directive on Waste with a view to making the regulations clearer and simpler.

The EU Directive on Waste Electrical and Electronic Equipment (2002/96/EC) establishes that separate collection of electronic waste is to take place at rates of at least 4 kg per inhabitant per year.

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Article 1.4 of the EC Directive (91/689/EEC) on Hazardous Waste establishes a common definition of hazardous waste for the whole of the EU. The

objective is to use a common definition of hazardous waste to create the right conditions throughout the EU for similar methods of the safe treatment of hazardous waste and the safe recycling of other waste. The EU rules on hazardous waste have been incorporated into Swedish legislation, through the Waste Ordinance and by other means.

### **National**

Waste treatment in Sweden is governed primarily by Chapter 15 of the Environmental Code and the Swedish Waste Ordinance. A municipality is obliged to adopt a Waste Management Ordinance with a Waste Plan that governs the municipality's treatment of waste.

Stockholm's environmental goal of Environmentally Efficient Waste Management links into the national EQO on 'A Good Built Environment'.

## **More on the City of Stockholm's targets**

### **5.1 The amount of waste generated by municipal activities will fall**

This target involves more efficient use of resources, changing consumption patterns, extending product lifetimes and reducing waste from products throughout their lifecycle. The target is thus based on the EU's waste hierarchy, which makes the reduction of waste the number one priority. Reducing the amount of waste generated often yields environmental benefits; at the same time, however, it is a tough challenge. In order to achieve the target, we need, for example, to change production methods and increase awareness among those involved in municipal activities of how to manage products and goods carefully and in a resource-efficient way. Greater re-use of products as well as fixtures and fittings within the city administrations can also help save money.

According to this target:

- municipal committees and boards will exercise their influence in their procurement activities to minimize the amount of waste generated by services and products. One example of this could be a requirement to package goods in a way that produces as little waste as possible.
- products, fixtures and fittings that are no longer used in one sphere of municipal operations will be re-used in another sphere of municipal operations whenever this is possible. To promote re-use, a platform will be created in which information is registered about surplus fixtures and products.

This target involves all committees and boards. The Traffic & Waste Management Committee is responsible for following up the target.

There is currently no overall data on the amount of waste generated by the city's own activities. For Stockholm as a whole, the amount of household waste has grown by about 6% per person since 2000.

## **5.2 Greater amounts of the waste generated by municipal activities will be put to good use, including through biological treatment**

Production of goods and products made from recycled material, and of electricity and district heating from sorted combustible waste saves large amounts of energy and natural resources.

The aim of this target is to reduce the consumption of resources through the recovery of material and energy from waste that is currently sent untreated to landfill (and thus passed on for future generations to deal with). Our available landfill capacity needs to be reserved for waste that cannot be treated in other ways. One of the aims behind the expansion in the biological treatment of waste from the City's own activities is to increase the production of biogas in Stockholm. A significant proportion of resources can be better utilized than is the case today. In school kitchens, for example, food is thought to comprise up to 70% of bin-bag contents. Random inspections conducted by the Traffic & Waste Management Committee show that about 30% of household bin-bag contents (excluding food waste) consists of recyclable material.

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According to this target:

- the EU's waste hierarchy is applied when choosing recycling methods.
- waste from municipal activities is free from pollutants and sorted so that it can be treated according to its properties.
- at least 35 per cent of food waste from municipal activities is sorted for biological treatment.

The target particularly involves committees and boards with large amounts of food waste and other waste fractions. The Traffic & Waste Management Committee is responsible for following up the target.

In 2006 a total of 184 institutional kitchens sorted their organic waste into vessels or waste grinders. Of these, 39 were activities run by the City of Stockholm. A total of 350 tonnes of waste was sent from municipal

operations to biological treatment through digestion, which in turn produced biogas for district heating.<sup>29</sup>

### **5.3 There will be an increase in the proportion of hazardous waste collected**

The city currently provides a combination of fixed and mobile collection systems for hazardous waste from households. Households are able to deposit hazardous waste at one of the city's fixed collection points, recycling centres, contracted paint retailers or the mobile environmental station.

According to this target:

- the Traffic & Waste Management Committee and other committees involved will provide information about what is classified as hazardous waste, how it is to be sorted and where it is to be handed in.
- municipal operations are to maintain awareness of what hazardous waste is generated by their own activities and where it goes.
- the collection system will be extended; the collection system should comprise a combination of different solutions to suit different conditions.
- new collection systems will be developed and established.

The target particularly involves the Traffic & Waste Management Committee, but it also involves other committees and boards which, in their operations, can help make the collection of hazardous waste easier. The Traffic & Waste Management Committee is responsible for following up the target in cooperation with the Environment & Health Committee.

#### **Hazardous waste**

The amount of hazardous waste collected from households in 2005 totalled 1,030 tonnes, an increase of 85% since 2001. The amount of hazardous waste collected is equivalent to 1.3 kg per capita: this compares with a per capita average for Sweden of 2.9 kg in the same year.

#### **Electrical waste**

In 2005 9.9 kg of electrical waste per capita was collected in Stockholm.

### **5.4 The amount of per capita waste will fall and the amount of waste that is utilized in some way will increase**

This target involves working to reduce the amounts of waste generated and to increase re-use and recycling. Through information measures and action within their own spheres of activity, municipal committees and boards can influence the amount of waste

that is generated and utilized. The City of Stockholm can, for example, further develop its differentiated waste management charges to steer individuals towards a reduction in their amounts of household waste.

<sup>29</sup> Traffic Administration, food waste collection project

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According to this target:

- the proportion of recyclable material in bin bags will fall.
- 35 per cent of food waste from restaurants and shops will be treated biologically.
- the proportion of phosphorous compounds in wastewater that is returned to productive land/cultivated land will increase at the rate required in order to achieve the target of the waste plan.

The target particularly involves the Traffic & Waste Management Committee, but also involves other committees and boards which, in their activities, can contribute to greater re-use and recycling. The Traffic & Waste Management Committee is responsible for following up the target in cooperation with the Environment & Health Committee and Stockholm Water AB.

### **Total amount of collected waste**

The total amount of waste collected in 2005 averaged 574 kg per person in Stockholm. This compares with an average for Sweden and the EU, which were both 530 kg per person in the same year.

### **Energy recovery and landfill disposal**

The amount of household waste recovered for energy/sent for landfill disposal in 2005 was 297 kg per person. The corresponding amount for Sweden as a whole was 264.4 kg per person.

### **Biological treatment**

A national objective for waste is that 35% of organic waste is to be treated biologically.

In Stockholm 3.5 kg per person and year were collected for biological treatment in 2005. This compares with the Swedish average of 50.2 kg per person the same year. In 2006, this amount grew to 5.4 kg per person in Stockholm, which corresponds to 4% of the total amount of organic waste

produced in the city. Collection takes place from institutional kitchens, food retailers and households.

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## **6 A Healthy Indoor Environment**

The standard of housing in Stockholm ranks as very high in international comparisons, and the city's residential areas are generally perceived as pleasant. Those living there usually cite security and safety as key to how happy they are to live there. Although there are seldom complaints about the indoor environment in terms of noise levels or air quality, Stockholm will face a number of challenges over the next few years. The main environmental health aspects in focus in housing and public premises are noise levels, air quality and the indoor climate. These three areas all contain physical risk factors for an unhealthy indoor environment.

### **Goals for the City of Stockholm**

**The following interim targets will be met during the programme period**

- 6.1 The proportion of people troubled by health problems caused by the indoor environment in municipal buildings will fall.
- 6.2 Radon levels will be checked in 70% of municipally-owned multifamily housing developments.

**The City will work towards achieving the following interim targets during the programme period**

- 6.3 There will be a drop in the number of complaints to the Environment & Health Committee about the indoor environment that require action by the property owner.
- 6.4 The number of people experiencing noise disturbance indoors will fall.
- 6.5 The City will act to ensure that children and young people are not exposed to harmfully high levels of noise at concerts, discos and other events.

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### **More about the indoor environment**

Housing in Stockholm is dominated by small apartments. Despite this, residents have relatively roomy homes: on average, 43 square metres per person. The high spatial

standard is mainly due to the fact that there are many small households: over 80% of Stockholm households consist of 1–2 people.

People spend about 85% of their lives indoors, of which 65% in the home. The environment in homes, schools and workplaces is therefore important to our health and well-being. Despite improved standards and good levels of comfort in our homes, health problems arising from the indoor environment are still a problem in some buildings. If we are to guarantee a good indoor environment and prevent negative trends, the construction, management and use of the buildings must all be quality-assured.

Research points to clear links between different risk factors and health effects. Risk factors include air pollution, poor air exchange/ventilation, the presence of particles and allergens, and damp and mould. One risk factor can be the inappropriate use of the home or premises. A number of factors can also combine to cause cumulative effects. Health problems related to shortcomings in the indoor environment include asthma, allergies, symptoms affecting the eyes, nose and skin, respiratory symptoms, fatigue or headache. Improving people's health involves preventing risks and taking measures to remedy existing problems.

'Community noise' (i.e. the general hubbub of the city) and high noise levels are the environmental problems that affect the greatest number of people, children as well as adults. Life in a noisy environment can lead to fatigue, concentration problems and headaches. Some studies also show effects on the cardiovascular system and hearing impairments. Children are extra-sensitive to loud noise levels. There are many sources of disturbing noise – traffic, ventilation systems and various types of activity. Different preventive measures may be useful, depending on the source of the noise.

Long-term exposure to electromagnetic fields above limit levels can affect health. If measures that generally reduce exposure can be taken at reasonable cost and with reasonable consequences in other respects, we should do all we can to reduce electromagnetic fields that deviate significantly from what is judged normal in the environment in question. When planning new electrical installations and buildings, efforts should be made to find a design and location that limit exposure.

All municipal committees and boards that own, build, manage and use premises are directly responsible for ensuring that the indoor environment in their own premises is healthy, as it is here that they can have the most significant effect on the environment. The City of Stockholm can also exercise a certain degree of influence on non-municipal players, among other things during new construction, through development

agreements and in city planning activities. When steps are taken to improve the indoor environment, solutions should be sought that contribute to a better indoor environment and reduced or unchanged energy consumption.

## **OBJECTIVES AND REGULATIONS: AN OVERVIEW**

### **International**

The EU's Public Health Programme 2003–2008 provides the guidelines for Sweden's public health work.

An EC Directive on Environmental Noise came into effect in 2002. An ordinance has been produced, based on the directive, stating that the most populous municipalities are to draw up noise surveys and action plans and provide the public with information about noise.

### **National**

The Environmental Code contains provisions that regulate the self-inspection of operators to ensure a healthy indoor environment.

Sweden's national environmental health reports aim to describe the effects of the environment on health in the country.

Stockholm's goal of a Healthy Indoor Environment links in to the national EQOs of 'A Good Built Environment', 'A Non-Toxic Environment' and 'A Safe Radiation Environment'.

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## **More on the City of Stockholm's targets**

### **6.1 The proportion of people troubled by health problems caused by the indoor environment in municipal buildings will fall**

Health problems in the indoor environment may be the result of damp, or of the use of the wrong type of materials or of damaged materials during construction. Another reason may be faults in the technical installations.

Health problems may also be due to poor property management, or because the tenants/users themselves mismanage their homes or the buildings in which they spend time. A common problem experienced in the indoor environment is noise caused by people's own activities: noise in classrooms is an example of this.

According to this target:

- Stockholm's preschools, schools and homes for the elderly are to have ventilation that has been documented as efficient.
- Stockholm's preschools, schools and after-school recreation centres must work actively to achieve a good noise environment indoors.
- Property owners in Stockholm, and those with activities in the properties, must work actively to improve the noise environment, air quality and indoor climate.

Responsibility for this target is primarily shared by committees and boards that own properties. The Environment & Health Committee is responsible for following up the target in cooperation with the Skolfastigheter i Stockholm AB (the company that owns school properties), Micasa (which owns assisted-living facilities) and the Real Estate Committee.

There is currently no overall data regarding the number of people who experience health problems that can be traced to the effect of the indoor environment in municipal buildings. Tools for ensuring a good indoor environment include obligatory ventilation inspections (OVK) and self-inspection under the Environmental Code. There are clear regulations about ventilation inspections, but in view of the fact that a large proportion of municipal properties have not yet been approved as complying with these regulations, priority will be given to this issue in the city's Environment Programme.

In 2005 29% of the city's schools and preschools had not carried out OVKs, or had non-approved OVKs.

## **6.2 Radon levels will be checked in 70% of municipally-owned multifamily housing developments**

The City of Stockholm has, in principle, already met the national EQO for radon in preschools and schools. However, the level of ambition needs to be raised with regard to other properties.

Responsibility for this target is primarily shared by the Environment & Health Committee, the Real Estate Committee and the City of Stockholm's own property companies. The Environment & Health Committee is responsible for following up the target.

In June 2002 the Swedish parliament (*Riksdag*) adopted a Bill supplementing the national EQO 'A Good Built Environment' with a special interim target for the indoor environment. The interim target has been defined in two areas: radon in indoor air, and ventilation. Radon is in turn divided into two sub-targets: radon levels in dwellings are to be lower than 200 Bq/m<sup>3</sup> by 2020 and radon levels in schools and preschools are to be lower than 200 Bq/m<sup>3</sup> by 2010.

### **6.3 There will be a drop in the number of complaints to the Environment & Health Committee about the indoor environment that require action by the property owners**

This target has the same points of departure as target 6.1 above, but refers to properties that are not municipally owned and/or municipally run. The target means that the committees and boards involved are to take initiatives to ensure that non-municipal property owners in Stockholm will prevent and take measures to remedy factors that risk leading to problems linked to the indoor environment of their properties.

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The target involves all committees and boards that in their activities can help shape developments and create the right conditions for a better indoor environment in Stockholm's properties. The Environment & Health Committee is responsible for following up the target.

Twenty-six per cent of Stockholmers suffer from allergies or asthma.<sup>30</sup>

### **6.4 The number of people experiencing noise disturbance indoors will fall**

Noise pollution and high noise levels are a significant problem in Stockholm. This target means that noisy activities are to be identified, that the city takes noise problems into account in its work of integrating activities and traffic into areas of dense residential populations, and that further steps are taken to reduce indoor noise.

Responsibility for this target is primarily shared by the Environment & Health Committee, the City Planning Committee, the Traffic & Waste Management Committee, and municipal real estate companies. The Environment & Health Committee is responsible for following up the target.

In 2005, 57% of Stockholmers were disturbed at least once a week by noise in their homes. This compares favourably with the figure of 61% in 2004.

The number of noise-related complaints made to the Environment and Health Administration in 2005 was 166. This compares with the baseline value of 252 in 2001.

### **6.5 The city will act to ensure that children and young people are not exposed to harmfully high levels of noise at concerts, discos and other events**

Exposure to loud noise can lead to temporary or permanent hearing impairment. Children and adolescents are particularly at risk of hearing injuries, because the auditory organ in adolescents has not fully developed and because this group is less aware of the risks of loud noise. As the owner of a number of facilities where events such as concerts take place, the City of Stockholm is in a good position to ensure that noise levels do not exceed guideline values and that they are checked at events and concerts.

Responsibility for this target is primarily shared by the Environment & Health Committee and municipal property companies. The Environment & Health Committee is responsible for following up the target.

Maximum permitted noise levels are determined by the Environmental Code and the National Board of Health and Welfare's general advice on high noise levels at concerts, discotheques and other events. The National Board of Health and Welfare's guideline values for equivalent noise levels are 100 dB (average) and 115 dB maximum. However, these values are more stringent for children under 13 years of age; 97 db for equivalent level (average) and 110 db for maximum level. People conducting an activity that gives rise to high levels of noise are responsible for ensuring that these levels comply with the guideline values. The Environment & Health Committee is responsible for inspections of high noise levels, and carries out random testing at activities and events.

<sup>30</sup> City of Stockholm's Residents' Questionnaire 2004, Environment and Health Administration

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## **Glossary**

Many of the specialist terms and abbreviations in the Environment Programme are explained in the text. However, the explanation is generally only given once for each term. A number of expressions and abbreviations that are not explained in the text have been collected in this glossary in alphabetical order.

- 1-1-1-trichlorethane: a chlorinated hydrocarbon that attacks the ozone layer. Present in a number of products including degreasers, paints, cleaning agents, correction fluid, paint stripper and waterproofing agents. Banned with effect from 1 January 1995.
- Acidification: reduction of pH in lakes, waterways, groundwater and land.
- ANL: Aircraft Noise Level (equivalent level). Measured as the noise level from air traffic, weighted for different times over 24 hours. Measured in dB(A).
- AOT40: EU standard for ozone in surrounding air to protect vegetation. The standard gives a limit for the exposure of vegetation to high levels ( $>80 \mu\text{g}/\text{m}^3$ ) between the hours of 8am and 8pm (08.00–20.00) during the growing season May–July, and is expressed as  $\mu\text{g}/\text{m}^3 \times \text{hours}$  (average value of the level times number of hours). The standard is  $18,000 \mu\text{g}/\text{m}^3 \times \text{hours}$  and is a five-year average. A limit of  $6,000 \mu\text{g}/\text{m}^3 \times \text{hours}$  will apply in the longer term.
- ArtArken: the species data archive of Stockholm. All observations of a number of mammals, amphibians, reptiles, plants, fungi, breeding birds and all sorts of insects listed in the 'red list' of threatened and endangered species in Sweden are registered in a database.
- Barrier effects: from an ecological viewpoint, usually a physical obstacle that means that plants and/or animals are prevented from seeking shelter, food, and locations in which to reproduce and survive in sustainable populations.
- Benzene: an aromatic hydrocarbon, regarded as the most health-hazardous hydrocarbon in petrol and exhaust fumes. Bioaccumulates in aquatic organisms. Leads to severe damage to the nervous system and is carcinogenic. Benzene also contributes to the formation of ground-level ozone.
- Benzo(a)pyrene: see PAH, polycyclic aromatic hydrocarbons.
- Bioaccumulation: some chemical substances are stored in fatty tissue in animals and people, which means that levels of a substance increase the higher up the food chain you go.
- Biocides: agents used against various types of pest. Divided into the following groups: herbicides (against plants), insecticides (against insects) fungicides (against fungi/moulds) and rodenticides (against rodents). The three last categories are termed 'pesticides'.
- BOA: residential floor area, i.e. the habitable/main usable area of apartments wholly or partly above ground.

- Brominated flame retardants: chemical compounds containing bromine. Used as flame retardants, primarily in electronic equipment, construction equipment and textiles. These are persistent environmental toxins that are absorbed by and stored in living tissue.
- Buffering: reaction that gradually stabilizes a given pH (acidity level) in an aqueous solution.
- Carbon dioxide (not to be confused with carbon monoxide): a gas that in pre-industrial times was present in the air at levels around 280ppm. Levels today are around 370ppm, and carbon dioxide is a major factor in the greenhouse effect.
- Carbon monoxide: odourless and colourless gas, formed during combustion when there is insufficient air supply. Carbon monoxide binds to haemoglobin in blood, reducing the blood's ability to transport oxygen.
- Carbon tetrachloride: compound consisting of carbon and chlorine. Hazardous to health and the environment.
- Carcinogenic: causes cancer.
- Catalyst: a substance that affects the speed of a chemical reaction, without being consumed itself.
- CFCs: see Freons.
- Chemicals: the term is usually applied to chemical elements such as sodium (Na) and chemical compounds such as sodium chloride (NaCl).
- CMR: abbreviation for carcinogenic, mutagenic and reprotoxic substances.
- dB (decibel): unit of sound level. Human sensitivity to sound varies with audio frequency, and standardized methods of measuring sound have been produced that take this into account.
- DEHP: one of a group of substances known as phthalates. Phthalates can cause endocrine disruption and allergies. They are present as softeners in plastics and as scent carriers in cosmetics.
- Demeter: the Swedish Demeter Association is an inspection organization for biodynamic cultivation in Sweden. It monitors and authorizes cultivation, animal husbandry, abattoirs, shops, food processing facilities, wholesalers and importers.
- Deposition: in the context of air pollution, this means precipitation of air pollution onto ground and vegetation.
- Digestion: degradation of organic material in an oxygen-free environment. Biogas is formed in the process.
- Dioxins: Dioxins is the collective name for PCDDs (polychlorinated dibenzo-para-dioxins) and PCDFs (polychlorinated dibenzofurans). These two groups of compounds have similar chemical and toxic properties. There are 75 PCDDs and 135 PCDFs. Dioxins form in trace quantities during the manufacture of chlorides such as chlorophenols, phenoxy acids and polychlorinated biphenyls (PCB). Dioxins also form during combustion processes in which substances that contain chlorine are present, for

example during waste combustion and the production of iron and steel. Car exhaust fumes and chlorine bleaching of paper were previously significant sources of dioxins.

- Disposal (i.e. waste disposal): deposit, storage, landfill, etc.
- District cooling: a central plant supplies the cooling needs of several properties. District cooling can often replace the need to use freons in a number of small cooling plants.
- District heating: heating supplied as hot water, used for heating and hot water in multiple properties. District heating is produced in district heating plants.
- DM: dry matter. What is left after dehydration.
- Dose: the product of level and duration of exposure.
- Dose-effect relationship: The link between the size of the dose and the degree of effect in individuals.
- Eco-fuels: renewable fuels.
- Ecology: the science of the link between organisms and their surroundings.
- EEA: European Environment Agency. Established in 1994 and located in Copenhagen. The task of the EEA is to provide political decision-makers and the public with information about the environment. The aim of the information is to provide support in the work of designing and implementing environmental policy measures in the EU and its member states.
- Emission: discharge of pollutants as substances or noise.
- Enrichment: addition of nutrients to a body of water, increasing the potential for growth of algae and aquatic plants.
- Environmental Quality Standards: national Swedish standards reflecting the lowest acceptable environmental quality that is tolerable to humans and the environment according to existing scientific evidence. An EQS is to be met as soon as possible, and no later than by the time limit given for each substance.
- Equivalent sound level/Equivalent level (Leq): one way of stating the average level of varying noise.
- EU organic logo: the European Commission logotype that may be used on a voluntary basis by producers whose systems and products are regarded as meeting the requirements of the EU regulations.
- EU waste hierarchy: waste is treated according to the following order of priority. 1. Reduction of amount and hazard. 2. Re-use. 3. Recycling. 4. Energy recovery. 5. Disposal.
- Exploitation: the development and utilization of a natural resource.
- Formaldehyde: The simplest of the aldehydes (chemical formula HCHO). The aqueous solution of formaldehyde is called formalin. The substance is toxic, allergenic and carcinogenic.
- Fossil fuels: coal, oil and natural gas (i.e. fuels made of organic materials during earlier geological ages). Peat also counts as a fossil fuel. When fossil fuels are burned,

carbon dioxide that is not part of the natural ecocycle is released into the atmosphere. This increases carbon dioxide levels in the atmosphere and drives the greenhouse effect.

- Freons: Generally accepted collective name for some hydrocarbons that contain chlorine and/or fluorine (including dichlorodifluoromethane and dichlorotetrafluorethane), either separately or in different combinations with each other. Also known as CFCs, HCFCs or HFCs.
- FSC: the Forest Stewardship Council, which encourages ecological, socially responsible and economically sustainable management of the world's forests. The FSC provides regulations for the certification and labelling of responsible forest management and forest products.
- Green cars: defined differently in different cities. A national Swedish definition has been adopted.
- Greenhouse gases: gases that affect the Earth's thermal balance and give rise to the greenhouse effect. They include carbon dioxide, methane, nitrous oxide, ozone and CFCs.
- Guide value: level that should not be exceeded.
- HA oils: highly aromatic oils that may compose up to 20% of the rubber mixture in tyres. They contain, among other things, high levels of polycyclic aromatic compounds. The oils are carcinogenic and bioaccumulating.
- Habitat: biotope and/or living environment of various species.
- Halogenated: means that a chemical compound contains halogens such as fluorine, chlorine, bromine or iodine.
- Halogens: collective name primarily used for the elements fluorine, chlorine, bromine and iodine.
- Halons: brominated chlorine-fluorine compounds used as fire extinguishing agents.
- Hazardous waste: waste that damages the environment and must be treated in a particular way. Includes oil spills, solvents, photographic chemicals, paint leftovers, batteries, fluorescent strip lights, unused drugs, household equipment and treated wood.
- HCFCs: see Freons.
- Heavy metal: metallic elements with high atomic numbers, such as cadmium, vanadium, mercury and lead. The heavy metals include elements essential for life, as well as elements that can have toxic effects in very small concentrations. To delimit the concept, heavy metals are usually defined as having a density over 3.5g/cm<sup>3</sup>.
- HFCs: see Freons.
- Household waste
- Hydrocarbons: chemical compounds consisting of the elements carbon and hydrogen. Divided into aliphatic and cyclic (closed rings). The latter include aromatic hydrocarbons such as benzene, toluene, xylene and styrene. Polycyclic aromatic hydrocarbons (see PAH) include benz(a)pyrene.

- ICLEI: the International Council for Local Environmental Initiatives is an international organization that promotes cooperation in environmental issues between different cities.
- IMM: the Institute of Environmental Medicine in Sweden.
- IPP: Integrated Product Policy, a strategy that aims to reduce the environmental impact of goods and services throughout their lifecycle, from the extraction of raw materials to waste treatment. Environmental aspects are to be integrated into each stage of a product's lifecycle.
- KRAV: Swedish label for organic foods and other agricultural products. Covers the entire chain from farm to fork.
- Laughing gas (nitrous oxide): formed during all types of combustion. Important sources are energy production and road traffic, particularly from cars with catalytic converters. Laughing gas contributes to the greenhouse effect and to some extent to the depletion of the ozone layer.
- Leq: Loudness Equivalent Measurement. Equivalent continuous noise level. A measure of the average noise level over a given period of time.
- Liberation cutting (forestry): removal of competing vegetation around a valuable tree.
- Limit value: value that may not be exceeded.
- LOA: non-residential floor area, in other words a usable area created for other purposes than as a living area or as an area that provides support functions to living areas, or for the operation of the building or for communication.
- Low-risk level: Medically-based guide values developed by the Institute of Environmental Medicine (IMM). The substances covered include benzene, xylenes, toluene and benz(a)pyrene. The low-risk level for benzene and benz(a)pyrene is the level that might theoretically give rise to one cancer case per 100,000 inhabitants over a lifespan.
- Methane: a greenhouse gas.
- Micro: 1) small; 2) compound prefix in measuring units, meaning 'one millionth', e.g. one micrometer = one millionth of a metre.
- MSC: Marine Stewardship Council. An independent, global, non-profit organization established to resolve the problem of overfishing. The MSC has developed an environmental standard for sustainable and well-managed fishing.
- Nitrogen oxides: formed during combustion, with the help of atmospheric oxygen and nitrogen. Active in the genesis of photochemical smog. A collective name for nitric oxide and nitrous oxide. Formed during all types of combustion. Nitrogen oxides come primarily from traffic and energy production. Nitrous oxide can affect lung function in sensitive people. Nitrogen oxides contribute to acidification and eutrophication of land and water.
- Nitrous oxide: See laughing gas.

- Noise level: measured through a hearing-adapted meter which is adapted to the human ear's reduced sensitivity to low and very high frequencies. The most used weighting filters are A and C filters.
- Noise: unwanted sound. Community noise can be divided into commercial noise (such as music noise from restaurants) installations (such as ventilation systems, cooling plants and lifts), traffic noise (from road, rail, boat and air traffic), noise from neighbours (as the result of either inadequate noise insulation between residential units, or simply because of the way in which a dwelling is used) and high noise levels in public premises and outdoors (for example, at cinemas and concerts).
- Organic foods: food labelled with the KRAV mark (Swedish label), the EU's organic logo, MSC (Marine Stewardship Council) or Demeter, or some other label that meets corresponding requirements.
- Organic material: material that is part of, or used to be part of, living organisms. Organic materials always contain carbon.
- OVK: in Sweden, obligatory ventilation inspection. According to the Ordinance on Performance Control of Ventilation Systems, these systems are to be checked by an 'OVK inspector' before a building is made operational, and at certain given intervals.
- Oxide: chemical compound containing oxygen.
- Ozone: gas that can form from atmospheric oxygen when air is exposed to ultraviolet light or electrical discharges (chemical formula: O<sub>3</sub>).
- PAHs: polycyclic aromatic hydrocarbons. A group of chemical substances. One of the more closely studied of these is benz(a)pyrene (3,4-benzapyrene), which occurs in soot, tar, pitch, creosote and oil and is formed during incomplete combustion.
- PBDE: polybrominated diphenyl ethers are a group of substances used as flame retardants. They are stable and long-lived and accumulate in the natural environment instead of being degraded. They can cause liver tumours and reproductive disorders and can also disrupt thyroid hormones.
- PBT: Persistence, Bioaccumulation, Toxicity. Substances that exhibit these three qualities are classified as PBT.
- PCBs: polychlorinated biphenyls, a group of chlorinated aromatic hydrocarbons.
- Percentile: shows how many per cent of the number of values measured are under a given level. For example, the 98th percentile means that 98 per cent of the values measured are lower than that level.
- Perfluorinated substances: substances that are hard to degrade that occur in a large number of products and goods (e.g. waterproofing in clothes, fire extinguisher foam, lubricants, insecticides, paint, cleaning agents).
- Persistence: the resistance of a substance to degradation. Persistence is accorded great significance, not least with respect to chemical pesticides, when their effects on the surrounding environment and their ability to remain in the environment are being assessed.

- pH: shows the degree of acidity on a scale of 0–14. See also Acidification.
- Phosphate: phosphorous compounds (nutrient salts) that contribute to the eutrophication of lakes. A component of commercial fertilizers.
- Phosphorous: element that is vital for all organisms.
- PM10: particles with an aerodynamic diameter under 10 micrometres.
- PPM: parts per million.
- Producer responsibility: according to the 1993 Swedish Ecocycle Bill, it is the responsibility of the producer to take care of packaging and certain products that have worn out or been discarded.
- Radon daughter level: amount of radon daughters per unit of volume of air, measured in the unit Bq/m<sup>3</sup> (previously used as a limit value).
- Radon daughters: radon decays into radioactive radon daughters. These are short-lived and have a half-life of up to 27 minutes.
- Radon gas level: amount of radon gas per unit of volume of air, measured in the unit Bq/m<sup>3</sup>.
- Radon: radioactive noble gas that is formed when radium decays. Occurs naturally in rock. Its half-life is just over 3.8 days.
- Rejuvenation: making room for a new generation of hardwood trees, usually by removing fir trees.
- Replacement principle (substitution principle): regulated in the Swedish Chemical Products Act. The substitution principle means that harmful chemical products are to be exchanged for less harmful ones where they exist. The least harmful chemical product for a given area of use should be chosen.
- SCB: Statistics Sweden
- Sediment: deposit of soil or sludge.
- SISAB: Skolfastigheter i Stockholm AB. A municipal company that owns and administers 175 of Stockholm's comprehensive and upper secondary schools and 380 of the city's preschools.
- Sociotope map: shows where there are social and cultural values in the city's squares and green areas. The sociotope map is a planning tool used in the city's physical planning (general synoptic planning, area development planning and the programme phase of detailed development plan or local plan).
- Softener: added to plastics such as PVC to make them softer and more flexible. Softeners are also added to paints, varnishes, floor wax, etc.
- Solvents: collective name for substances in which other substances can be dissolved. Organic solvents can dissolve oil, fat and other non-water-soluble substances.
- Soot: blackening particles. The most important sources are road traffic and energy production. See also Particulate matter.
- Structural noise: vibrations spread via the building's structure, causing audible noise indoors.

- Substitution principle: see Replacement principle.
- Sulphur dioxide: chemical compound consisting of sulphur and oxygen. Formed and emitted to the atmosphere on the combustion of sulphurous fossil fuels.
- Surface water: precipitation (rainwater and melt water) that drains away at surface level from courtyards, gardens, streets, roads, roofed surfaces and suchlike. Drawn off in ditches, separate drains or together with wastewater in a combined system.
- TCO labelling: an independent environmental and quality label for office equipment in Sweden.
- Toluene: (methyl benzene) a colourless fluid with a smell reminiscent of that of benzene. Used, among other things, as a solvent in varnishes, paints and plaster. Toluene is also present in petrol.
- Toxicology: the study of poisons. Other terms in this context are toxicity (degree of poison) toxic (poisonous) and toxin (a naturally-produced poison).
- Triclosan: a bactericide. Bioaccumulating and toxic to aquatic organisms. Can produce allergies in people. Present in toothpaste, deodorants, soaps, foot spray, mouthwash and other hygiene articles. Also added to some plastic chopping boards, cleaning sponges and sportswear.
- TVOC: Total Volatile Organic Compounds.
- Ultraviolet radiation/light: UV radiation is short-wave, high-energy radiation with a wavelength of  $10\text{-}400 \times 10^9 \text{ m}$ . Present in sunlight, but the atmosphere absorbs most of it. It is more chemically and photoelectrically active than visible light.
- Vegetation: plants, plantlife.
- VOC (Volatile Organic Compounds): gaseous substances which, in addition to carbon and hydrogen, can contain oxygen, sulphur and nitrogen.
- Waste: under the Environmental Code, waste is material which its holder (individual or company) intends to dispose of or is obliged to dispose of, regardless of whether or not the material has any economic value.
- $\mu\text{g}$  (microgram) =  $1 \times 10^{-6} \text{ g}$  = 1 millionth of a gram.
- $\mu\text{g}/\text{m}^3 \times \text{hours}$ : the average value of a level times the number of hours. See also AOT40.
- $\mu\text{m}$  (micrometre) =  $1 \times 10^{-6} \text{ m}$  = 1 millionth of a metre.
- $\mu\text{T}$  (microtesla): unit of magnetic flux density.
- Particulate matter: particles present in air, mostly formed through mechanical and combustion processes. Particles can be carriers of hazardous substances, such as polycyclic aromatic hydrocarbons.
- Volatile hydrocarbons: gaseous substances, combinations of carbon and hydrogen. Volatile hydrocarbons include benzene and toluene.

# Appendix 1

## Proposed indicators

Follow-up of the city's six overarching environmental goals will take place through indicators or other established follow-up methods linked to the overarching goals and interim targets involved. The programme states which committee or board is responsible for following up each respective target. This appendix provides proposals for a number of follow-up indicators. However, responsibility for follow-up includes developing the most relevant indicator in each individual case. The choice of indicator is to take place in consultation with the City Executive Board.

### //nyckel till översättning av spaltrubriker//

<i>Delmål Nr</i>	= <i>Target no.</i>
<i>Förslag på indikatorer</i>	= <i>Proposed indicators for goal area 1, Environmentally Efficient Transport</i>
<i>Kommentar</i>	= <i>Remarks</i>

#### **1.1 Proportion of activities which are working systematically towards more environmentally efficient travel and transport**

Committees and boards report annually to the City Executive Board on whether systematic work for more environmentally efficient travel has been conducted.

#### **1.2 Green vehicles as a proportion of the total of the municipal fleet of vehicles, incl. leased vehicles**

Information about the number of green vehicles and total number of vehicles is submitted on a six-monthly basis by all vehicle owning/leasing committees and boards to the Environment & Health Committee, which will compile the data.

#### **1.2 Proportion of renewable fuel in municipal green vehicles**

All committees and boards that own green vehicles report the proportion of renewable fuel used in their vehicles to the Environment & Health Committee each year.

### **1.3 Sulphur dioxide emissions from traffic**

Emissions of sulphur dioxide (SO<sub>2</sub>) are measured by Stockholm-Uppsala Air Quality Management Association.

### **1.3 Nitrous oxide emissions from traffic**

Emissions of nitrous dioxide (NO<sub>2</sub>) are measured by the Stockholm-Uppsala Air Quality Management Association. The calculations are based on information about the composition of the traffic and on data about traffic flows and speeds at different roads and streets in the city.

### **1.3 Particulate matter (PM10)**

PM10 is the particulate mass of particles with a diameter of less than 10 µm (known as inhalable particles) per m<sup>3</sup> of air.

### **1.4 Proportion of Stockholm residents who use public transport to and from work**

Key ratios are measured via a citizen questionnaire or Stockholm Transport's (SL's) travel surveys.

### **1.4 Proportion of Stockholm residents who cycle to and from work**

Key ratios are measured via a citizen questionnaire or Stockholm Transport's (SL's) travel surveys.

### **1.5 Proportion of new car sales in Stockholm County that are green cars**

The Environment & Health Committee collects sector statistics.

### **1.5 Renewable fuels as a proportion of total amount of fuel in Stockholm County**

The Environment & Health Committee collects sector statistics.

### **1.6 Annual average noise levels at a number of monitoring sites in the city**

The Environment & Health Committee carries out measurements. The purpose of the key ratio is to register any changes in road traffic noise. This provides an indication of how the total noise pollution situation in Stockholm is developing.

### **1.6 Area with noise disturbances**

The Environmental Health Committee monitors noise from road, rail and air traffic. At present there is no fixed definition of an area with noise disturbances. Estimated noise levels are reported on maps at 5dBA intervals between <40 dBA and >70 dBA. The level is expressed as equivalent noise level/24 h, Leq

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**//nyckel till översättning av spaltrubriker//**

*Delmål Nr* = *Target no.*

*Förslag på indikatorer* = *Proposed indicators for goal area 2, Goods and Buildings Free of Dangerous Substances*

*Kommentar* = *Remarks*

**2.1 Average concentration of mercury, cadmium, triclosan, DEHP, flame-retardants and PCB in digested sludge per year.**

The amount of a substance contained in wastewater sludge may be a good indicator of the prevalence of the substance in society.

**2.1 Proportion of procurements of computers and other electronic equipment, office furniture, textiles, tyres, cleaning chemicals and cleaning services in which there are requirements banning the use of prioritized environmentally-hazardous substances.**

The key ratio measures the invitations to tender in the City's framework procurements which require that certain blacklisted and environmentally hazardous substances are avoided. These are defined in a procurement guide for non-toxic substances.

**2.1 Proportion of municipal construction, plant, operation and maintenance contracts in which environmental demands were set during procurement by each respective activity.**

The key ratio is followed up through reports from committees and boards detailing the proportion of contracted procurements in construction, plant, operation and maintenance, in which environmental requirements are set.

## **2.2 Purchased organic foods in Swedish kronor (SEK) as a proportion of the total value of purchased foods**

Data is gathered from major suppliers.

## **2.2 Purchase value of ready-made meals stipulating 15% organic food/total value**

Data is supplied to the City Executive Board from the committees and boards involved.

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### **//nyckel till översättning av spaltrubriker//**

*Delmål Nr* = *Target no.*

*Förslag på indikatorer* = *Proposed indicators for goal area 3, Sustainable Use of Energy*

*Kommentar* = *Remarks*

## **3.1 Energy use for heating and hot water in municipally-owned buildings and facilities owned by the City of Stockholm**

The key ratio refers to purchased energy, kWh/m<sup>2</sup> BOA and kWh/m<sup>2</sup> LOA, corrected for a normal year. Each committee and board that owns buildings and facilities reports its energy consumption on an annual basis to the Environment & Health Committee, which will compile the data. The information ought to be available from the energy supplier.

## **3.1 Electricity use: activity-related electricity, property-related electricity and non-premises-related electricity, linked to parameters that reflect the extent of the activity, such as number of employees**

Committees and boards report their electricity use on an annual basis to the Environment & Health Committee. Non-premises-related electricity means, for example, electricity for street lighting and other installations. The information ought to be available from the energy supplier.

## **3.1 Proportion of saved kWh per energy efficiency measure.**

Must be corrected for a normal year.

### **3.2 Proportion of eco-labelled (or equivalent) electricity purchased during the programme period**

All committees and boards that have procured electricity report the proportion of eco-labelled (or equivalent) electricity.

### **3.3 Greenhouse gas emissions from fossil energy use (excluding traffic) calculated per Stockholm resident**

Data are collected from Statistics Sweden.

### **3.3 Traffic emissions of fossil carbon dioxide**

Traffic carbon dioxide emissions are calculated on the basis of consumption of fossil fuels by traffic. The calculations are based on data from the fuel sector combined with information on the composition of the fleet of vehicles and data about traffic flows and speeds on different roads and streets in the city.

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### **//nyckel till översättning av spaltrubriker//**

*Delmål Nr* = *Target no.*

*Förslag på indikatorer* = *Proposed indicators for goal area 4, Sustainable Use of Land and Water*

*Kommentar* = *Remarks*

### **4.2 Proportion of developments in which natural and/or recreational values have been lost, and where ecological functions have not been restored or re-introduced**

Follow-up can be carried out on an annual basis after completion of development. Data is available from the Development Committee.

### **4.3 Proportion of Stockholm residents who regularly spend time in parks or natural areas near their homes**

The key ratio is measured through citizen questionnaires and follows up the extent of visits to and time spent in parks and natural areas near the home during the summer months.

#### **4.5 Open grasslands and wetlands that are grazed as a proportion of the total area of grassland and wetland**

The key ratio provides a basis for indirect follow-up of trends for many species and ecosystems. Annual information from the district councils and the Development Committee is compared with baseline data for the Stockholm biotope map database.

#### **4.5 Land area per year where the restoration and creation of meadows, pastures, wetlands and other cultural biotopes is carried out**

The key ratio follows up measures that in themselves promote greater biodiversity. Annual information from the Development Committee and the district councils is compared with baseline data from the Stockholm biotope map database.

#### **4.5 Land area per year in which liberation cutting and rejuvenation measures are carried out for broadleaved trees**

The key ratio measures steps that provide a good partial description of the city's work towards this target. A 'step' in this context means work carried out in a broadleaf forest.

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#### **//nyckel till översättning av spaltrubriker//**

*Delmål Nr* = *Target no.*

*Förslag på indikatorer* = *Proposed indicators for goal area 5,  
Environmentally Efficient Waste Management*

*Kommentar* = *Remarks*

#### **5.1 The amount of waste per employee generated by municipal activities**

The key ratio follows up the total amount of waste generated by the City of Stockholm's activities. Should be corrected for a normal year.

#### **5.2 Proportion of food waste that municipal activities sort for biological treatment**

The municipal committees and boards report the proportion of food waste that is sorted at source. Data is reported to the Traffic & Waste Management Committee.

## **5.2 Proportion of municipal activities that sort packaging/paper/food waste**

Data is reported to the Traffic & Waste Management Committee.

## **5.3 Proportion of hazardous waste in bins and among bulky waste**

The key ratio indirectly measures the target: how accessible the collection system for hazardous waste is for households. Data is obtained from random sorting analyses.

## **5.3 Proportion of households in Stockholm that sort hazardous waste**

The key ratio indirectly measures the target: how accessible the collection system for hazardous waste is for households. The City of Stockholm conducts an annual survey in the form of a questionnaire that asks residents whether they sort hazardous waste in their household. Data is obtained from this questionnaire.

## **5.4 Amount of household waste per Stockholm resident**

Statistics are obtained from collection subcontractors, producers, and treatment plants.

## **5.4 Proportion of recyclable material in bin bags**

The key ratio is measured through random sorting analyses of the waste to show how much recyclable waste is disposed of in the bin.

## **5.4 Proportion of food waste treated biologically**

Statistics are obtained from collection subcontractors, producers, and treatment plants.

## **5.4 Proportion of phosphorous in digested sludge that is returned to land**

Data is collected annually by the water utility, Stockholm Vatten.

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**//nyckel till översättning av spaltrubriker//**

*Delmål Nr* = *Target no.*

*Förslag på indikatorer* = *Proposed indicators for goal area 6, A Healthy Indoor Environment*  
*Kommentar* = *Remarks*

### **6.1 Proportion of schools and preschools with an approved OVK**

In 2005 SISAB took over responsibility for a large number of the city's preschools.

### **6.1 Proportion of people with health-related problems caused by the indoor environment in municipal buildings**

#### **6.1 Proportion of children and adolescents who experience problems with indoor noise levels**

To be developed in collaboration with the Education Administration.

#### **6.2 Proportion of complaints submitted to the Environment and Health Administration regarding the indoor environment that require action**

Should be corrected for a normal year.

#### **6.3 Number of people exposed to traffic noise indoors in municipal properties at levels that exceed current guide values, i.e. 30 dBA eq and 45 dBA max.**

Data on numbers of people exposed to noise are collected from a database that contains detailed information about exposure, frontage insulation, etc. for a large number of properties.

#### **6.3 Proportion of people in municipally-owned properties who are disturbed by noise indoors**

The key ratio is followed up, for example by questionnaires that are coordinated with the City of Stockholm's other committees and boards.