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## UNDERLAG TILL STOCKHOLMS ANSÖKAN TILL EUROPEAN GREEN CAPITAL

**Name of municipality:** Stockholm

**Country:** Sweden

**Size of municipality (km<sup>2</sup>):** 209 km<sup>2</sup> of which 21 km<sup>2</sup> consists of water area

**Name of mayor:** Sten Nordin

**Number of inhabitants in municipality:** 795 163 citizens

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## I. LOCAL CONTRIBUTION TO GLOBAL CLIMATE CHANGE

**Please describe the present situation and the development over the last five to ten years in relation to (max 1000 words):**

The City of Stockholm's "Action Programme on Climate Change" involves the participation of several groups: the City of Stockholm's own departments, local businesses and those who live and work in the city. The work has been successful so far and the emission of greenhouse gases has been reduced. In 1990, emissions of 5.3 tons of CO<sub>2</sub>e per person were registered compared with 4.0 tons CO<sub>2</sub>e per person in 2005.

The long-term target is for Stockholm to continue to reduce emissions of greenhouse gases at the same rate as between 1990 and 2005. In theory, this means that Stockholm will become a fossil fuel free city by 2050.

The climate policy of the City of Stockholm takes the approach that no one can do everything, but everyone can do something. This is expressed in the City's Climate Policy, and by this we mean that no individual municipality, nation or organisation can reverse the current development of climate change alone, but by working together it is possible to have a positive impact.

The City's strategy on climate change builds on the following elements:

- Make use of and invest in the City's economies of scale, for example district heating and public transport.
- Work actively within the areas of traffic, energy, urban planning, waste and consumption.
- Work actively to implement measures within technological advancement, infrastructure, change of fuel and energy efficiency.
- Use communication as a tool to achieve the targets in the Action Programme.
- Cooperate with climate-change bodies locally, nationally and globally.
- Coordinate with other programmes such as the City's Energy Plan and Environmental Programme.

### *ICLEI*

In 1995, Stockholm joined the ICLEI (International Council for Local Environmental Initiatives) campaign "Cities for Climate Protection" (CCP). Since then, the City of Stockholm has systematically worked to comply with the five



milestones of CCP. (1) Conduct a baseline emissions inventory and forecast, 2) Adopt an emissions reduction target for the forecast year, 3) Develop a local action plan, 4) Implement policies and measures, 5) Monitor and verify results.

#### **A.Total CO<sub>2</sub> equivalent per capita, including emissions from electricity use**

In 2005 emissions of CO<sub>2</sub>e per person were down to 4.0 tons, compared to 5.3 tons per person in 1990. The quantity relates to the energy used for heating of houses and premises, traffic works and all electricity used within the City.

#### **B.CO<sub>2</sub> per capita from use of natural gas**

0 (zero) – Natural gas is not used in Stockholm.

#### **C.CO<sub>2</sub> per capita from transport**

1,28 tonnes CO<sub>2</sub> per capita related to the total transport works within the City.

#### **D.Gram of CO<sub>2</sub> per kWh used**

166 grams CO<sub>2</sub> per kWh related to energy used for heating of houses and premises, traffic works and all electricity used within the City.

#### **Please describe the measures implemented in the last five to ten years in order to reduce greenhouse gas emissions, including resources allocated to implementing the measures (max 1000 words)**

##### *Action programme*

Stockholm's Action Programme against Greenhouse Gases and the Stockholm Environment Programme complement each other. The greenhouse gas targets make up a cross section of the six targets set out in the Environment Programme. Unlike the Environment Programme, in which the focus is entirely on targets, the Action programme Against Greenhouse Gases is also a strategy for climate activities and actions that together will realize the set targets.

Action Programme 1, 1995-2000, described measures which would all in all reduce the emissions of greenhouse gases down to a level equal to that of 1990, i.e. 5,3 tonnes CO<sub>2</sub>e per capita within Stockholm. The goal was achieved and by the end of 2000 the emissions were approx. 5,3 tonnes CO<sub>2</sub>e per capita within Stockholm.



Action Programme 2, 2000-2005, described measures which would all in all reduce the emissions of greenhouse gases down to 4,0 tonnes CO<sub>2</sub>e per capita within Stockholm. The goal was achieved and by the end of 2005 the emissions were approx. 4,0 tonnes CO<sub>2</sub>e per capita within Stockholm.

### ***Resources***

Stockholm Climate Investment Programme and Environmental Billion Fund  
Several of the measures in the action plan are financed through the Stockholm Climate Investment Programme (KLIMP) and funds from "The Environmental Billion Fund" (Miljömiljarden). In this way it has been possible to implement innovative solutions and a larger number of measures, compared to what would have been possible with funding from the City alone.

#### ***KLIMP***

The Swedish Parliament (Riksdagen) has allocated approximately 165 million Euros in Climate investment programmes for municipalities and other local actors. For the programme period 2005-2009, Stockholm received approx. 5.5 million Euros for the local climate investment programme.

#### ***The Environmental Billion Fund***

The Environmental Billion Fund is a commitment of many years through which the City of Stockholm puts a focus on the environment. Municipal administrations and companies have been able to apply for funding for a variety of projects. During 2004 and 2005 a total of 120 million Euro was allocated to 158 projects, of which 45 projects were climate related initiatives. The funding for the climate related projects amounted to approx. 42 million Euro. The projects are set to continue until 2009.

### ***Examples of climate measures are listed below:***

#### ***Expansion of district heating, wind power and district cooling***

One example, to illustrate a number of different measures, is the construction of a new production facility, in which cold seawater is used to produce district cooling. District cooling contributes to an annual environmental gain of approx. 60 000 tonnes in reduced emissions of CO<sub>2</sub>. The use of CFC is also reduced.

#### ***Blended petrol***

The City of Stockholm initiated a five percent blend of ethanol in petrol. The measure was first introduced in the region of Stockholm and has today spread to



the entire country. E5 petrol reduces emissions of greenhouse gases with approx. 4.6 percent compared to pure petrol.

#### *Energy centre*

The Energy Centre provides the City with effective and structured energy efficiency measures for all buildings used by the City. The Centre monitors the City's energy consumption, offers energy-efficiency advice and arranges seminars. A new type of tenancy agreement contract has also been developed. The Centre is active in networking with actors on the broad local and national scale, e.g. within the City of Stockholm, through the Climate Municipalities, the private sector and other major cities in Europe.

#### *Energy advice centre*

The Environment and Health Administration offers energy-efficiency advice to residents and companies in the municipality of Stockholm.

#### *The Climate Hunt*

The Climate Hunt is an educational team-quiz and assignment competition for companies and administrations in Stockholm. The aim is to bring about changes in patterns of behaviour through increased awareness and knowledge of the greenhouse effect. Competitors also perform special tasks which contribute to reduced greenhouse gas emissions.

#### *The Climate First Aid*

The "Climate First Aid" is a programme which is focused on climate issues within education. Schools and teachers are offered in-service training, such as teacher tutorials, classes for pupils, competitions and school visits. Pupils can also participate in the Climate Youth Parliament.

#### *The Tyre pressure campaign*

In 2004 a tyre pressure campaign was launched at 20 gas stations in Stockholm. The campaign was performed in collaboration with a number of administrations, agencies and NGOs and a number of young people were engaged and specifically trained to carry out the task. Car drivers in Stockholm were informed of best conduct to reduce emissions of CO<sub>2</sub>. The follow-up showed that nearly 25% of the citizens of Stockholm had noticed the tyre pressure campaign.



### *Smart Consumption*

Households contribute to more than half of all emissions of CO<sub>2</sub>. The Smart Consumption project is focused on the households' entire energy consumption, i.e. relative to the consumption of goods and services, such as food, consumption, energy, heating and transports. A number of households were selected in each of the 18 town districts of Stockholm and a greenhouse gas profile was established for each household. An appropriate level of ambition to reduce emissions based on voluntary actions was discussed. During one year, household members received personal advice regarding energy and economy, and information on how to reduce the consumption of direct and indirect energy. The Agenda 21 Office and environmental coordinators of the city districts participated in the project.

### *Green Fleet*

Traffic is the main source of health hazardous emissions and noise and a major source of climate gas emissions in Stockholm. To reduce emissions and noise, the City of Stockholm has initiated the project Clean Vehicles in Stockholm, with the objective to reach a market breakthrough for clean vehicles.

After 10 years, the results are astonishing: 20 % of the cars sold in Stockholm are clean vehicles; 44,000 cars (6 %) are ethanol, biogas, hybrid-electric or ultra-low emission vehicles. All inner city buses operate on biogas or ethanol, 50 % of the waste-lorries and 40 % of the taxis are biofuelled or HEV. More than 65 fuel stations (75 %) offer ethanol or biogas and all petrol sold in the region contains 5 % ethanol. The trend is still on the increase. The project "Environmental Cars" works to facilitate the transformation from traditional fuels to green vehicles and renewable fuels.

### *The Climate Pact*

The "Climate Pact" was signed in 2007, and is a collaboration between the City of Stockholm and a number of companies in the Stockholm region. The aim is to reduce negative climate impact from residents, businesses and administrations in the City of Stockholm.

**Please describe the short and long term objectives for reduction of GhG emissions, including measures adopted, but not yet implemented, and budgets for future measures already adopted (max 1000 words)**

The City of Stockholm is carrying out an ambitious initiative to limit climate change. The principal target is a city free of fossil fuels in 2050. With such an

aim, the emissions from energy use related to the heating of houses and premises, traffic works and total electricity use within the City, will be reduced to a level near zero by the year 2050. This means that petrol, oil, coal, gas and other fossil fuels will no longer be used. The target is to reduce emissions of greenhouse gases at the same rate as during the period 1995-2000. Greenhouse gas targets for the period of 2005-2050 compared with the base year of 1990.

### ***Long term objectives***

Furthermore, the Stockholm City Council has passed a resolution to reduce the emissions of greenhouse gases to a maximum level of 3,0 tonnes CO<sub>2</sub>e per capita within Stockholm by the end of 2015. The report "Reduction of greenhouse gas emissions in the City of Stockholm by 2015" outlines necessary action to reduce emissions of greenhouse gases to a level of 3,0 tonnes CO<sub>2</sub>e per capita within Stockholm by the end of 2015. The report forms the basis for the City's budget.

### ***Short term objectives***

Stockholm Environmental Programme 2008-2011 specifies six general environmental goals, each defined by a number of intermediate goals. The following intermediate goals pertain to climate targets:

- 1.2 All (100 %) of the City's total number of cars are clean vehicles. 85 % of these run on renewable fuel.
- 1.3 Traffic emissions are reduced
- 1.4 More people walk and/or travel by public transport and bicycle.
- 1.5 More clean vehicles and increased use of renewable fuel
- 3.1 The energy consumption related to the buildings and works owned by the City is reduced by 10 %.
- 3.2 Procurement of electricity for activities within the City should meet the requirements for eco-labelling.
- 3.3 The emissions of greenhouse gases from energy consumption are reduced by 10 % per capita within Stockholm.

### ***Resources***

The Swedish Parliament (Riksdagen) has allocated approximately 165 million Euros in Climate Investment Programmes for municipalities and other local actors. In May 2007, Stockholm was granted 4.1 million Euros for six measures during the programme period 2007.

### ***Adopted measures***



The following measures will be implemented in municipal entities 2005-2015:

- 100% green electricity
- Reduction of warm water consumption
- Optimization of building systems and utilization
- Expedite replacement of appliances
- Improvements of insulation in buildings
- More efficient implementation
- Increased use of renewable and solar energy
- Conversion of fossil fuel furnaces
- Savings from improved business travel
- All municipal vehicles are clean vehicles
- More efficient goods transport

An example is Stockholm Water Company's objective to be carbon dioxide neutral in 2015. To achieve this, the production of biogas will increase by 15 % compared to the production in 2006, and a minimum of 98% of the methane will be used.

The following measures will be implemented in the rest of Stockholm 2005-2015:

- Energy efficient new developments
- Improvements of existing buildings in Stockholm
- Reduction of warm water consumption in buildings
- More efficient use of electricity in office space, and in industry
- Increased use of renewable energy and solar energy
- More efficient transport of people
- More transports by way of walking and cycling
- More efficient goods transport
- More efficient construction machinery
- Renewable fuel in cars, vans, machines and buses
- Biogas from food waste
- 20 % renewable in diesel fuel

**Please describe how the above issues can be documented should your city be shortlisted for participation in the second phase of the evaluation (Documentation should not be forwarded in this phase) (max 600 words)**

*Documents and/or website(s)*

- Stockholm Action Programme against Greenhouse gases 1995-2000



- Stockholm Action Programme against Greenhouse gases 2000-2005
- The City of Stockholm Environmental Programme 2008-2011
- Reduced Emissions of Greenhouse Gases in the City of Stockholm by 2015
- Reference Scenario for Greenhouse Gas Emissions in the City of Stockholm until 2015 (KTH – Royal Institute of Technology)

## 2. LOCAL TRANSPORT

**Please describe the present situation and the development over the last five to ten years in relation to (max 1000 words):**

The local transport system in Stockholm has taken several steps towards sustainability the last ten years. There have been improvements made concerning cycle lanes, public transport, use of alternative fuels and road pricing. There is also an environmental zone for heavy vehicles since 1996.

But there are still several traffic related problems to be solved; the road transports are still heavily dependent of fossil fuels, the environmental quality standards of air quality are exceeded and many people are exposed to noise from road traffic.

The share of trips to Stockholm city centre taken by public transport increased from 57 to 64 percent during the last ten years. In the morning peak hour, the share increased from 72 to 77 percent. These are very high figures in an international perspective, maintaining and increasing this level is an important objective for Stockholm.

### **1. Length of designated cycle lanes in relation to total number of inhabitants in the city**

Stockholm has 795 163 inhabitants and a total of 760 km cycle lanes.

### **2. Share of population living within 300 metres from an hourly (or more frequent) public transport service**

The public transport system is well developed in Stockholm with commuter trains, subway, light rail and bus-traffic. Data from the consulting company WSP show that 99,9 per cent of the population in Stockholm live in a (statistical) zone within 300 meter from a public transport route. But within a zone some share of the population may have longer than 300 meters to public transport service, but there is no data about these shares. The Planning Administration (Stadsbyggnadskontoret) in Stockholm estimates that 90 percent of the population lives within 300 meters from public transport service with hourly or more frequent service.

### **3. Proportion of all journeys under 5 km by private car**



A substantial share of the car trips are short, and many of these trips could be replaced by bicycle trips or even walking. Around 50 per cent of all car journeys are 5 km or less.

#### **4. Proportion of public transport classed as low emissions**

Most buses use ethanol or biogas as fuel. The bus-depots in Stockholm have a total of 516 buses. 315 of these buses use ethanol-fuel, and 51 buses use biogas. It means that more than 70 percent, or 366 of 516 buses in Stockholm use renewable fuels. All rail transports run on green electricity.

**Please describe the measures implemented in the last five to ten years aimed at reducing the total transport volume and at changing the modal split in favour of alternatives to car transport (max 1000 words)**

*Examples of measures are listed below:*

##### *Congestion charge*

In 2006, the Stockholm trial with congestion charge took place. The test was successful. From August 2007 the congestion tax in Stockholm city centre is permanent. The tax is imposed on Swedish registered vehicles driving into and out of the Stockholm inner city zone on weekdays between 6.30 a.m. and 6.29 p.m. Vehicles are automatically registered at “control points”  
Traffic work and emissions in the city centre are down by 10-15 percent.

##### *Årstabron*

The new Årsta bridge with four tracks for trains has increased the number of commuter trains with four trains an hour. Commuter trains run on “green electricity”. The new Årsta bridge is a shortcut between the city areas Årsta and Södermalm and has new tracks for pedestrians and bikes.

[www.banverket.se/arstabron](http://www.banverket.se/arstabron)

##### *Tvärbanan (light railway tram) to Hammarby Sjöstad*

Once fully built in 2015, a total of 35 000 persons will live and work in Hammarby Sjöstad. Spårvägen (light railway tram) Tvärbanan to Hammarby Sjöstad run on “green electricity” and transport approx. 25 000 persons/day. Bus transportation has been reduced by 20 million man-kilometers due to the construction of Tvärbanan. [www.sl.se](http://www.sl.se)



### *Biking*

The City of Stockholm has a Bicycle program to promote cycling. The goal is to become one of the leading biking cities in Europe. The programme covers new biking lanes, better maintenance, safety measures etc. The biking traffic has increased with 50 per cent the last ten years. In 2007 Stockholm was honoured as “The Biking Promoting City of the Year”.

In cooperation with national and regional actors, several projects are run to increase cycling in Stockholm. Among these, the National Road Authorities run “cycle-to-work” campaigns, Bike-and-ride, Park-and-ride, construction of regional cycle routes and construction and exposure of cycle tracks in the City of Stockholm. Stockholm bike-day is arranged yearly on world environmental day the 5th of June, by the National Road Authorities, Road Administration, Sweden Cycling Promotion (Cykelfrämjandet), Swedish Environmental Protection Agency e.t.c.

The purpose of the EU-project “Trendsetter” was to promote travelling by bike in favour of cars. In Stockholm, the objective is to replace 30 million short journeys by private cars with cycling, and to reach a number of 2 000 travellers that everyday chose cycling in favour of private cars or local transport. To achieve this, the cycle lane net has increased from 675 to 760 km in ten years.

### *Logistic Centres – co-transportation of goods*

Stockholm has some positive experiences regarding the use of logistic centres to reduce number of trucks distributing goods. Hammarby Sjöstad Logistics Center was used during the years 2000 to 2005 with an aim to reduce the number of vehicles delivering building material to the large construction site, where offices as well as apartments were inhabited. The Logistics Centre operated during peak periods to reduce the number of heavy vehicle movements in the area. All deliveries with a volume equal to or less than four loading pallets had to go through the logistic centre. Special delivery trucks with high environmental performance then distributed the material locally with filled up vehicles within the construction site. The project was successful and managed to reduce the number of delivery vehicles so that six vehicles were replaced by one. For example the carbon dioxide emissions were reduced by 100 tonnes per year during the operating period which was a 90 % reduction.

In the old town of Stockholm approximately a third of the restaurants get their goods through the special logistic centre called O-centralen. The old town of Stockholm is a separate island which consists of medieval buildings, narrow and steep streets. The area is a very popular tourist attraction of Stockholm and alot of people live and work here. There are many restaurants and shops in the area. For

the restaurants the coordination of supplies now has reduced the number of vehicle movements on the island efficiently. O-centralen is located in a building on the neighbouring island and a biogas powered truck is delivering the good from the logistic centre to the restaurants involved. This means that each restaurant gets substantially fewer but larger deliveries. The work has been initiated and run by a small private owned company Home2You.

### *Fuel cells, biogas and ethanol buses*

CUTE - Clean Urban Transport for Europe was an EU-project in which three fuel cell buses were tested in Stockholm local transport. The fuel was produced by electrolysis using “green electricity” in production. CUTE was a global project together with nine cities in Europe, Perth in Australia and Reykjavik in Iceland. [www.branslecellsbus.se](http://www.branslecellsbus.se)

In 2004, biogas buses were introduced in Stockholm local transport. In 2010, the number of biogas buses in local transport is estimated to 200. In the beginning of 21st century, Scania stopped producing ethanol buses. In cooperation with several actors in local transport in Europe, Stockholm Local transport has influenced Scania to resume production of ethanol buses. [www.sl.se](http://www.sl.se), [www.miljobilar.stockholm.se](http://www.miljobilar.stockholm.se)

## **Please describe planned short and long term measures for (Max 1000 words):**

### **1. Reduction of overall demand for transport**

Stockholm use a principle in land use planning that the city should be built densely. This reduces the transport demand.

Another measure is the congestion charges that have reduced car traffic to and from the inner city with around 20 per cent.

### **2. Reduction of individual motorised transport**

The public transport share is already high, approximately 77 per cent to and from inner city in the hour with maximum load.

There are plans to build new infrastructure to the public transport system, for instance Citybanan (a new rail tunnel in the inner city for commuter trains), light rail between Alvik and Solna station, between Hammarby sjöstad and Slussen and between Kungsholmen and Norrmalmstorg.

The estimated cost only for Citybanan is €1,7 billion.



The cost for the Bicycle programme is estimated to approx. € 150 million in a 15 years period between 2005-2020.

### **3.Promotion of less environmentally damaging modes of transport**

Traffic is the main source of health-hazardous emissions and noise and a major source of climate gas emissions in Stockholm. To decrease emissions and noise, City of Stockholm has initiated the project Clean Vehicles in Stockholm, with the objective to reach a market breakthrough for clean vehicles. The total turnover for the project is approx. € 1,5 million per year.

Stockholm has worked with projects promoting environmentally adapted vehicles since 1994. The aim has been to overcome market obstacles and to build infrastructure for alternative fuels. The amount of environmental cars is increasing: at the moment around 9 per cent of the car park in Stockholm consists of environmental cars (fuelled with ethanol or biogas mainly). Of the new cars sold in 2008 around 41 per cent were environmental cars.

After 10 years, the results are astonishing: 30 % of the cars sold in Stockholm are clean vehicles; 70,000 cars (9 %) are ethanol, biogas, hybrid-electric or ultra-low emission vehicles. All inner-city buses operate on biogas or ethanol, 50 % of the waste-lorries and 40 % of the taxis are biofuelled or HEV. More than 65 fuelling stations (75 %) offer ethanol or biogas and all petrol sold in the region contains 5 % ethanol. The trend is still increasing. The work continues, and the objectives is as follows: Promote a breakthrough in the market

- Awake interest and supply information
- Supply facts and news
- Joint purchasing of green vehicles
- Act as intermediary of investment subsidies from the EU
- Work to improve conditions for a well functioning market
- Promote expansion of alternative fuel stations
- Create incentive for "green vehicles" in Stockholm, such as free parking, special car lanes, no congestion tax etc.
- Place environmental requirements on purchased transports i.e waste collection and taxi

**Please describe how the above issues can be documented should your city be shortlisted for participation in the second phase of the evaluation (Documentation should not be forwarded in this phase) (max 600 words)**

*Documentation and websites*



*More about road pricing in Stockholm is found on the web-page:*

<http://www.stockholmsforsoket.se/>

*Data on inhabitants and public transport*

The consulting company WSP provides data on inhabitants and public transport routes.

*Data on environmental vehicles*

Data on environmental vehicles is found on the web-page:

- <http://www.stockholm.se/miljobilar>

*More about Stockholm's Bicycle programme:*

- Stockholm Bicycle programme
- Cycle Route Scheme
- <http://www.stockholm.se/TrafikStadsplanering/Stockholmstrafiken/Cykla/Cykelplaner/>

*More about Citybanan:*

- <http://www.banverket.se/sv/Amnen/Aktuella-projekt/Projekt/1867/Citybanan-i-Stockholm.aspx>

*More about public transports in Stockholm:*

- <http://www.sl.se/templates/Page.aspx?id=1529>

### 3. PUBLIC GREEN AREAS

**1. Please describe the present situation and the development over the last five to ten years in relation to the percentage of citizens living within 300 m from public green areas and the total of square metres of public green areas (max 1000 words)**

The City of Stockholm is famous for a high level of environmental consciousness and for sound and healthy living conditions for its inhabitants. Many years of successful environmental work has made Stockholm one of the cleanest and most beautiful cities of the world.

One important factor contributing to the attraction of Stockholm is the abundance of parks and the proximity to other green areas, which provide the citizens with a profusion of recreational opportunities. The green retreats of Stockholm are utilized for recreation, sporting, social events and other open-air activities; the pure lakes and waterways provide unique opportunities for swimming, boating and fishing and the forests in the vicinity of the city and the exceptionally beautiful and unique Stockholm archipelago are all central for the citizens' outdoor life.

The green areas of Stockholm are all part of the innate beauty and identity of Stockholm - a statement made official through the Stockholm Planning and Building Act. Apart from their sheer aesthetic values, the green areas of Stockholm also mediate the citizens' health and wellbeing, help to reduce noise, filter the air, and purify the water running through its wetland areas.

*Public Green Areas Guidance Programmes and environmental data relative to social values*

The Stockholm Environmental Programme, states general objectives for a sustainable use of land and water, objectives for long-term management of significant natural values for fauna and flora and for the promotion of public health. Apart from this overall programme there are also more detailed guidance programmes and environmental data for the city's public green areas, related to their social values and accessibility.

The Stockholm Park Programme is an action programme for the development and management of Stockholm's parks and green areas. The Programme came into being after a decision taken by the Stockholm Municipal Council in 2006. The programme provides advice and guidance for the planning and management of the green areas of Stockholm.

The report "Sociotopic Map for parks and other open spaces in the city of Stockholm –method, dialogue and results" shows how "sociotopic" maps have

been developed in dialogue with citizens of the different city centre districts. A “sociotope” is a defined area or thoroughfare, which is considered to be an area of human habitation by planners and users alike. There are 23 sociotopic maps, which show social and cultural values within the city’s open spaces. These maps are used in the city planning process in order to identify the properties of a particular area.

#### *Natural and cultural reserves to secure accessibility and biodiversity*

Through a decision taken by the Stockholm Municipal Council a number of nature and open-air recreational areas in Stockholm are to be investigated for possible protection measures in the form of natural or cultural reserves. The Stockholm Comprehensive Land Use Plan 99 identifies areas of immediate interest for investigation.

With the nature reserves protection measures come a number of objectives for biological diversity and accessibility, i.e. people’s right of use and access to the areas. To date, eight areas are protected under the legislation of the Environmental Code, and proposals have been made for two additional areas. Furthermore, the Stockholm Comprehensive Land Use Plan pin-points four new areas, for which protection of natural or cultural values will be investigated in the near future.

#### **Citizens living within 300 meters from public green areas**

Although a capital city, Stockholm is comparatively rich in public green areas. This may explain why no official statistics of how many citizens live within 300 meters of public green areas have been produced. An informal estimate from the City Planning Administration (SBK), is that the number exceeds 90-95%. This estimate is based on the report ”Sociotopic Map for parks and other open spaces in the city of Stockholm –method, dialogue and results”, in which all “valuable open spaces” are classified as public green areas. Areas in which public green areas are scarce are typically sparsely built residential districts with detached houses.

A guideline principle of the Stockholm Park Programme states that park areas for “green retreats, playing, walking, resting in the sun” etc should be present within 200 meters from the citizens residents. A follow-up of this guideline principle, as well as of other qualities connected to the citizens’ proximity to public green areas, are considered worthy of investigation. There are however at present no means to carry out this type of work.

The report ”Children’s access to space for playing”, describes children’s opportunities and access to green areas for gaming and playing. The report contains addresses of properties, preschools, and compulsory school for children, and provides an analysis of children’s accessibility (actual walking distance) to play-grounds/-areas of different kinds the city districts built up-areas. The results

show that playgrounds and play areas are generally easily accessed for children living in Stockholm. However, to reach some of the areas for outdoor activities, especially those suitable for “nature play”, the company of an adult is required.

### **How large is the proportion of public green areas?**

There are several ways to measure the proportion of public green areas to the city area in total. The proportion depends on the definition of concepts, and of the input data. Data from the City of Stockholm Office of Research and Statistics (USK) show that the total area of the municipality is nearly 22 000 ha, out of which approx. 12 000 ha (55 %) is green land (including waterways). Of this area, waterways comprise approx. 2 800 ha (13 %). Close to half the municipal area is developed in some way. In 2003, streets and squares made up 9 % of the total municipal area. Approximations based on the Sociotopic Map indicate that the total figure is 6870 ha or 68 % of all land area.

### **2. Please describe the measures implemented during the last five to ten years aimed at increasing the size and quality of public green spaces (max 1000 words)**

There are significant natural values within the City of Stockholm. A good example is the great number of old oaks, which may provide habitats for more than 1500 species. The green areas of Stockholm are still of a coherent structure in many parts of the city, the so called *ecological infrastructure*.

Citizens rate the accessibility and diversity in nature as very appreciated and important environmental factors when interviewed on issues such as the city environment or ecological infrastructure. The greenery and vicinity to water are also rated as important factors for tourism.

The Stockholm Environmental Programme contains objectives for significant natural values and accessibility to land and waterways. The municipality works on the broad scale to preserve biological diversity and natural values for its citizens. A large part of the land area in the municipality of Stockholm is owned by the City, which means that the City has a right of disposition over a great part of the land and waterways within the municipality borders.

#### *Diversified measures for improved public green areas*

The project ”Ecological development of Stockholm” (BUS) was carried out during 2000-2003. It resulted in a document, describing the most urgent measures required to support biodiversity in the City. A number of practical measures were carried out within the project, and after completion of the BUS-project, several proposed measures were carried out, for example:

- *Construction of artificial rafts for sea-birds.*

- *Training of the City's park- and street maintenance engineers, as well as contractors engaged by the City:* The basic training has been followed by in-dept training sessions on the theme biotope-specific maintenance.
- *Teacher training in cooperation with Skansen open-air museum and zoological park.*
- *Guided tours in parks and nature for several target groups:* Training of guides in cooperation with the Swedish Society for Nature Conservation, and the County Administration of Stockholm.
- *Supportive breeding and information about endangered species or species of cultural interest (in cooperation with the Skansen museum).*
- *Conference on distribution and distribution barriers (in cooperation with the Swedish Museum of Natural History).*
- *Proposal regarding development of terminated refuse dump, into green area:* Discussions of development and objectives in close cooperation with nearby citizens and other active groups in the area.
- *Approximately 20 new small bodies of water for amphibians have been restored.* Several of the restored habitats are today inhabited by amphibians.
- *Five wetlands or watercourses have been restored.* The project has been of benefit for both flora and fauna inhabiting these environments, and also contributed to a more diversified nature in the public green areas. The Great Newt, *Triturus vulgaris*, a Natura 2000-species, has been seen in a newly restored wet-land.
- *Oaks have been cleared and new ones planted.* The implemented measures to improve the environment for the oaks in the city also proved beneficial to several red-listed species, for example the acutely endangered long-horned beetle, *Plagionotus detritus*.
- *The city has planted trees in and around streets and roads* to the benefit of environment and health.
- *Grazing areas have increased by 38 %, compared to 2007.* In total, 66 ha of the green area is pasture land, which contributes to a more open landscape and improved conditions for the species of this type of landscape.
- *Increased focus on information and marking of fields,* in order to further the accessibility of open-air areas and woodland paths for visually handicapped.

For nature reserves, the City has established objectives, regulations and management programmes. Since 2004, six new areas have been established. Overall aims for the nature reserves are conservation of biodiversity, cultural environments and their significance for outdoor life.

*Monitoring, survey and geografic information systems – a basis for green areas in city development planning.*

Prerequisite for enlarged and improved public green areas is sufficient knowledge about the properties of the areas in question. In section 1 of this chapter, the social values of green areas is dealt with. Below the focus is on biodiversity.

Green areas are monitored to obtain information regarding their condition and how they are affected by the surrounding environment and human action.

New knowledge about important ecological functions is obtained through the creation of a network of habitats for a selection of species. The habitat network is created by carrying out a landscape ecological analysis in geographical information system (GIS). This is a new way to compile base information which can be used for environmental planning, assessment, monitoring and measures. The networks can also be used to describe, track and predict the effects of landscape changes.

The City makes continuous updates of the species database ArtArken, which contains information about threatened species and other species under protection. The accessibility of the database for planners and others has been improved due to the upgrading of an interactive website.

The City's biotope map describes different land (nature) types. There has also been a survey made of regionally valuable oak biotopes.

It is not possible to monitor each individual plant and animal. For this reason we use certain biological indicators, such as amphibians, which are used as basis for decisions.

*Policy of compensation*

The City has decided to compensate any green areas lost through exploitation. The compensation has sometimes meant that additional, entirely new, green area has been added to the city or that an enhancement in the quality of the remaining land has been brought about. One type of compensatory step has been to develop management programmes, followed up by ecological management measures in order to strengthen the biodiversity of the area.

*Collaboration across administrative borders*

The biological diversity in the city of Stockholm is part of and dependent of the regional green structure. Regional collaboration around monitoring is carried out

through regional networking. One example is the monitoring of amphibians, which is carried out in collaboration with eight other municipalities. Internal networking with offices of different areas of responsibility is also important to be able to carry out effective measures.

### **3. Please describe planned short and long term measures for the establishment of green areas open to the public (max 1000 words)**

#### ***Short term measures***

Measures to be carried out in the near future, with a goal to administer the city's public green areas are:

- Vulnerability study of the ecological qualities of a number of watersides to be used as basis for decisions in connection with prospective measures of accessibility
- Pilot study – proposal for a lake management programme. There are today no detailed instructions for an ecologically and recreationally aimed management of the city's lakes, which the Stockholm Water Program calls to attention. A pilot study to be used as a base for management of the city's lakes will therefore be carried out.
- An inventory and survey of the city's watersides will be carried out during 2008, containing information of accessibility and particularly significant qualities.

#### ***Long term planning for improved accessibility to attractive parks and green areas.***

A measure which will be realised as a long term goal is that the Stockholm Comprehensive Land Use Plan offers guidance for the planning of improved accessibility to attractive parks and green areas. The revision of the land use plan, which is presently in progress, includes a draft proposal:

*To reach the goals of the Park Programme the City shall renew and create parks and other natural areas. These measures should contain a number of the qualities valued by different groups of society. An important area is the improvement of accessibility, such as "green connections" or attractive entrances to the green areas.*

### **4. Please describe how the above issues can be documented in case your city is shortlisted to participate in the second phase of the evaluation (Documentation should not be forwarded in this phase (max 600 words))**



### *Documentation and websites*

- The Urban Design Guidelines (or Stockholm Planning and Building Act) (In Swedish)
- The City of Stockholm Environmental Programme 2008-2011 (In English)
- Stockholm Park Programme (In Swedish)
- Sociotopic Map for parks and other open spaces in the city of Stockholm – method, dialogue and results (In Swedish)
- The Stockholm Comprehensive Land Use Plan 99 (In Swedish)
- Children's access to space for playing (In Swedish)
- Environment and health assessment (Miljö- och hälsoutredningen) (In Swedish)
- Ecological development of Stockholm – suggestions for measures, see <http://www.stockholm.se/KlimatMiljo/Natur/Biologisk-mangfald/> (In Swedish)
- Ponds for amphibians in the City of Stockholm, see <http://www.stockholm.se/> (In Swedish)
- Unique oak-habitats in the City of Stockholm, see <http://www.stockholm.se/TrafikStadsplanering/Parker-och-gronomraden/Biologisk-mangfald/Ekmiljoer/> (In Swedish)
- Arc of Species, for endangered species in Stockholm, see <http://artarken.stockholm.se/> (In Swedish)
- Database for the Biotope Map of Stockholm (In Swedish)
- Södertörnsekologerna, [www.sodertornsekologerna.org](http://www.sodertornsekologerna.org) (In Swedish)

## 4. QUALITY OF AMBIENT AIR

**Please describe the present situation and development over the last five to ten years (max 1000 words):**

Stockholm ambient air quality has improved substantially during the last decade. Downward trends are monitored for several substances and the concentrations are well below EC limit values in the whole city of Stockholm for benzene, carbon monoxide, nitrogen oxides, sulphur dioxide, lead and particulate matter PM<sub>2,5</sub>. The concentrations of arsenic, cadmium, nickel and benzo(a)pyrene are also well below EC target values.

The present situation and development of nitrogen dioxide (NO<sub>2</sub>), particulate matter PM<sub>10</sub> and ozone are described below according to specified questions.

### **1. Number of days per year EC limit values was exceeded for PM<sub>10</sub> (daily mean)**

In 2007 EC limit value was not exceeded in Stockholm urban background and along most streets. Along some 20 streets the limit value was exceeded 35-75 days compared with maximum permitted 35 days. The trend for PM<sub>10</sub> exceedings has been unchanged over the last five to ten years.

### **2. Number of days per year EC limit value/long term objective was exceeded for ozone (8h mean)**

In 2007 Stockholm did not exceed the EC target value for protection of human health (120 µg/m<sup>3</sup>) any day during the year. During some years over the last five to ten years the target value has been exceeded up to 10 days, which is well below the maximum permitted 25 days. The ozone concentrations in Stockholm are well below the EC target value 2010 for protection of vegetation (18000 µg/m<sup>3</sup> AOT40).

### **3. Annual mean concentration of NO<sub>2</sub> and PM<sub>10</sub>**

In 2007 annual mean values for NO<sub>2</sub> were 5–15 µg/m<sup>3</sup> in urban background. Along most streets the annual mean values were 20-40 µg/m<sup>3</sup>. Along a few streets with the highest concentrations the annual mean values were 40-45 µg/m<sup>3</sup>. There is a downward trend of 2-3 % reduction of NO<sub>2</sub> per year over the last five to ten years.

In 2007 annual mean values for PM10 were 10–20  $\mu\text{g}/\text{m}^3$  in urban background. Along most streets, the annual mean concentrations were 20–30  $\mu\text{g}/\text{m}^3$ . Along the streets with the highest concentrations, the annual mean values were 30–40  $\mu\text{g}/\text{m}^3$ . The trend for PM10 has been unchanged over the last five to ten years.

**Please describe the measures implemented in the last five to ten years in order to improve air quality (max 1000 words):**

Stockholm has a long tradition of monitoring air quality, setting emission goals, taking local and regional actions, evaluating action results, setting new goals etc. Concentrations of several air pollutants have been reduced by using this strategy. Actions taken at the European level, such as EC emission directives and air quality directives, are also important complementary steps for improving air quality.

*Energy*

Local and regional actions in the energy sector are good examples of a systematic and structured work to reduce emissions in Stockholm. Sulphur dioxide concentrations today are below 2  $\mu\text{g}/\text{m}^3$  today due to expansion of district heating systems, efficient cleaning equipment in the energy plants and continuous conversion to bio fuels. In this way also the emissions of carbon dioxide from the energy sector in Stockholm have decreased with more than 50 percent the last ten years.

*Public transport*

Several parts of the city centre in Stockholm are located on islands. By that reason, the transport systems are relying on a limited number of bridges and is therefore very sensitive to disturbances. The public transport system has always been a crucial system part, also the last ten years. Continuous investments in public transport are therefore very important. The share of trips to Stockholm city centre taken by public transport increased from 57 to 64 percent the last ten years. In the morning peak hour the share increased from 72 to 77 percent. These figures are very high in an international comparison and maintaining the figures is an important Stockholm objective.

*Congestion charge*

Another step towards better air quality was taken in 2006 when the Stockholm trial with congestion charge took place. The test was successful and in August 2007 a permanent congestion tax was introduced in Stockholm city centre. Due to the congestion tax traffic work and emissions in the city centre are reduced by 10–15 percent.

### *Road tunnels*

Another way of relieving the city centre and certain suburb areas from road traffic and consequently getting better air quality in the same areas is construction and use of road tunnels. In 2004 the Southern Link around the city centre was opened for traffic and relieved a lot of streets and roads in the southern part in the city from emissions. In 2008 the construction of the Northern Link has started.

### *Environment zone*

Ten years ago the environment zone for heavy duty vehicles was established. The zone was defined as the city centre where only vehicles with emissions according to Euroclass 1 and 2 were allowed. The zone regulations have been updated continuously. New regulations in 2007 allow only heavy vehicles with emissions of Euroclass 3 and 4 in the zone from 2009.

### *Clean vehicles*

Clean vehicles for better air quality and less emissions of greenhouse gases has been a head topic in Stockholm the last five to ten years. The city has been a pioneer especially for bio fuelled vehicles. The parc of bio fuelled cars has increased from near zero to around 50000 during the last five years. So far in 2008 more than 40 percent of new registered cars in Stockholm are environment cars according to national standard.

## **1 Existence and level of implementation of an air quality management plan**

Air quality management is performed continuously on the local and regional level to give good information for taking decisions about infrastructure, traffic and environment. Descriptions of environment consequences, e.g. checking limit values for air quality, are included in the normal process in all urban planning.

Monitoring and modelling air quality are tools used regularly in Stockholm both for planning and evaluation of actions taken. Long time series of air quality and meteorology data of high quality are used. Together with emissions from all sources the data are processed in different dispersion models. Model calculations are used as a regular planning and evaluation tool to sort out the contribution of air pollutants from different emission categories to the total concentration of air pollution. Scenario calculations are used in all urban planning to analyse air quality consequences of different plan alternatives.

On the national level the government regularly implements legislations and policies for air quality management based on EC directives. Licenses for emissions to air are also given on a national level by environment courts.

**2 Information to the public (both inhabitants and tourists) on air quality levels (e.g. web pages, information screens) in order to increase awareness and change behaviour.**

Information about local and regional air quality is updated on web pages every hour. Information including forecasts is also provided two times every day in Stockholm traffic radio and in daily papers. Special information activities are launched together with other organisations e.g. the County Administration and the National Road Administration.

**Please describe planned short and long term measures for improvement of air quality (max 1000 words):**

Both short and long term measures are ongoing and planned in Stockholm to continue the rapid move from fossil fuels to bio fuels in the energy and transport sectors. Energy saving programs are in pipe for both sectors. These actions will reduce the local and regional emissions of NO<sub>x</sub>, particles and greenhouse gases.

In the traffic sector the plans will have a focus on the conversion to bio fuels, electricity and combinations thereof. The expansion of the nets of bio gas stations and ethanol stations will be continued to meet the increasing demand of environment vehicles. Together with energy companies, Stockholm has started the testing and planning of infrastructure for plug-in hybrids. These vehicles are expected on the market in a few years and in the meantime it is important to get the infrastructure of parking and electricity working well.

Governmental policies for climate and air quality are expected in the end of 2008 and beginning of 2009. The policies will include a focus on national objectives for fresh air and reduced emissions of greenhouse gases. Implementation of common national strategies for efficient energy use and emission reduction of greenhouse gases and air pollutants such as particles will be crucial. Some new legislation and policies for winter tyres and winter road maintenance will be important to manage the remaining exceedings of PM<sub>10</sub> limit values in Swedish cities.

***Resources***

Building transport infrastructure is an extreme long term measure. Infrastructure planning of investments has a focus on railways and by-pass roads. The demand for railway traffic to and from Stockholm is growing fast. Public and private partnerships for financing railways and roads will speed up these investments. For long term reduction of emissions of air pollutants in Stockholm city centre these investments have been and will be important.



**Please describe how the above issues can be documented in case your city is shortlisted to participate in the second phase of the evaluation (Documentation should not be forwarded in this phase) (max 600 words)**

*Documents and website(s)*

Information about Stockholm air quality, emissions, meteorology, concentrations, environment and health effects, actions taken and planned, system design etc. are regularly updated every hour on the website

[www.slb.nu](http://www.slb.nu)

Stockholm maps of different air pollutants are regularly updated on the website.  
[www.slb.nu/miljokvalitetsnormer](http://www.slb.nu/miljokvalitetsnormer)

Reports on the subjects above are regularly stored on the same website.  
[www.slb.nu/rapporter](http://www.slb.nu/rapporter)

*Examples of reports*

SLB 1:2008 Luften i Stockholm 2007

SLB 4:2006 The Stockholm trial, effects on air quality and health

LVF 2008:5 Utsläppsdata för år 2006

LVF 2007:36 Uppdatering av NO<sub>2</sub>-kartläggning I Stockholms och Uppsala län

LVF 2007:17 Exponering för partikelhalter (PM<sub>10</sub>) i Stockholms län

LVF 2007:14 Hälsoeffekter av partiklar

LVF 2007:2 Traffic Emissions, Socioeconomic valuation and Socioeconomic measures



## 5. NOISE POLLUTION

**Please describe the present situation and development over the last five to ten years in relation to (max 1000 words):**

The city of Stockholm has been surveying noise since the early 1970s. In the beginning the work was concentrated on noise maps from road and railway traffic. During the years that have followed, the field has broadened. Since 2002 we are working with a city map over the whole Stockholm area, to fulfil the European noise directive. However, the City of Stockholm took an early decision to make the map very detailed: For example we use 2 x 2 m grid (distance between calculation points). The reason is to make it possible to use the mapping for several purposes, since there are several different reasons for noise mapping. Basically it is for use in the campaign against noise pollution and in formulation of activities and measures. It is also important for information purposes, as a basis for physical planning, when handling complaints, to study changes over time or making comparisons and more.

When noise abatements are carried out, it's important to register the most exposed buildings. We have mapped out each of the 10 000 most exposed buildings. In connection with that work we have also calculated the number of windows, the maximum noise level and additional data. This gives us an idea of how many of the residents that are affected, and the cost for protective actions.

Not only is the living environment of interest when it comes to noise problems. The noise level in parks and open areas is of great importance from a recreational point of view. Until today more than 100 measurements have been done in parks and open areas in Stockholm.

Ten years ago we started up two continuous monitoring stations, where the noise level is measured on an ongoing basis 24 hours a day.

All information on noise is put into a computerized system. Information about the present situation, protective actions and data on where noise is reduced for other reasons. The information above is used as a basis for decisions on protective actions, in the planning process, and when studying noise exposure and health effects.

The City of Stockholm is a member of EUROCITIES Working group noise since 2007.



Stockholm is one of the partners in the EU-project Qcity (Quiet City Transport), which is an integrated project partly founded by the European Commission under the 6<sup>th</sup> Framework programme. The aim of the project is to develop an integrated technology infrastructure for the efficient control of road and rail ambient noise by considering the attenuation of noise generation at source at both vehicle/infrastructure levels. The activity will support European noise policy to eliminate harmful effects of noise exposure and decrease levels of transport noise creation, especially in urban areas, deriving solutions that will ensure compliance with the constraints of legislative limits. A major objective is to provide municipalities with tools to establish noise maps and action plans (Directive 2002/49/EC) and to provide them with a broad range of validated technical solutions for the specific hot-spot problems they encounter in their specific city.

### **1. Share of population exposed to noise values of L (day) above 55 dB(A)**

In total Lden >55 dBA = 271 000 people.

We have not calculated people exposed to Lday separately.

### **2. Share of population exposed to noise values of L(night) above 45 dB(A)**

In total Lnight >50 dBA = 158 000 people.

We have not calculated people exposed to values between Lnight 45-50.

### **Please describe the measures implemented during the last five to ten years in order to reduce noise (max 1000 words):**

#### *Examples of measures are listed below:*

When fighting noise pollution, it is important to work in several different ways. Precautions, like noise barriers and improved window insulation is an important part that should be taken together with actions directly at the source. Noise issues should be considered when the infrastructure is being planned and regulations can be used. Our work against traffic noise can be separated in 4 different ways:

- 1) *Protective actions*, for example noise barriers, improved window insulation. We have a drive spanning over several years, with the intention of decreasing noise for those most exposed. Since the beginning of 1970 until now about 50 km of noise barriers have been built and about 46 000 windows in more than 15 000 dwellings along 110 km roads has received reduced noise as a result of protective actions.
- 2) *Regulations*. Since several years we have restrictions against heavy goods traffic at night time on most of the streets in the city. Speed limits were

introduced in residential areas, from 50 to 30 km/h. Two years ago, environmental zones for heavy goods traffic was introduced. Vehicles older than 8 years are prohibited to go to the inner city of Stockholm. The trial with congestion charges were introduced in 2006 and have been studied with respect to noise.

- 3) *Planning process.* Noise issues are taken into account in discussions about design and location of housing, in traffic planning when transferring the traffic to other areas, and for example covering roads with buildings. Demand for housing is increasing in Stockholm, while land that is still available for development often is exposed to noise. In a project called Traffic noise and planning, the City of Stockholm cooperated with other actors to develop proposals for guidelines regarding design of buildings aiming to obtain a good acoustic environment. The result is that it is possible to build dwellings with a good acoustic standard even in large cities. This work serves as a basis for a proposal on a method of assessing the traffic noise situation in dwellings. The method is called "Sound Quality Score" and is today widespread in Sweden.
- 4) *Reduction of noise at source,* as for example low noise road surfaces. We are cooperating with other noise experts to develop low noise road surfaces, some of them containing rubber. This work is partly carried out within the above mentioned Qcity-project. Several test sites with different surfaces have been used. The results so far are promising but more work is needed to secure the durability of the surfaces. Periodically difficult conditions caused by a large number of vehicles and extensive use of studded tyres are still a challenge. Small environmental friendly vehicles for distribution of goods are used in The Old Town.

Results of the noise abatement work are significant. In 1970 220 000 people in Stockholm were exposed to levels above 35 dBA in their homes, and today this number is reduced to 20 000. 200 000 inhabitants has received reduced noise levels due to the noise abatement measures.

**Please describe planned short and long term measures aimed at reducing noise (max 1000 words):**

#### *Short term objectives*

The ongoing noise abatement program described above is still running. The budget for 2008 is approximately 15 MSEK. During 2008 one noise barrier is built in the southern part of the city, Örby. Some resources are allocated towards maintenance of old screens. An estimated number of 2000 people will receive improved façade insulation.



The budget for noise abatement is decided on a yearly basis by the Road Administration. Budget for 2009 will be decided in the end of year 2008.

### *Long term objectives*

The city has produced a new Strategic Action Plan according to European Noise Directive (Directive 2002/49/EC). The action plan will be decided upon by the City Council in 2008.

The strategic action plan has been prepared by the Road Administration in collaboration with the Environment and Health Administration, the Planning Administration, the National Road Administration, the National Railway Administration, the Stockholm Public Transport and the National Air Traffic Administration. Each administration also sets up their own, more detailed action plan.

Reduction of noise at source is prioritized. Examples of measures are “silent” trains, “silent” road pavements and an economic incentive program with the aim to help citizens choose silent and environmentally friendly means of transport. The process of building noise screens and improving façade insulations will be continued. Emphasis will still be focused on residential areas, but the situation at schools, kindergartens and hospitals etc. will also be revised. This will be followed by an evaluation where appropriate measures for further noise reduction are listed.

A strategy for the noise situation in parks and other recreational areas will be developed.

**Please describe how the above issues can be documented should your city be shortlisted for participation in the second phase of the evaluation (Documentation should not be forwarded in this phase) (max 600 words)**

### *Documents and websites*

- Stockholm Noise pollution Strategic Action Plan according to the Stockholm Regulation of Noise pollution (SFS 2004:675) (Stockholms stads åtgärdsprogram 2009 – 2013 enligt förordning om omgivningsbuller (SFS 2004:675))
- Report: Hvordan styrke nordiske kommuners arbejde med vejtrafikstøj? By Claus Hedegaard Sørensen og Tore Leite, Transportøkonomisk institutt, Oslo



*The Stockholm Noise pollution map is found on the web-page:*

- [http://www.map.stockholm.se/kartago/kartago\\_fr\\_buller.html](http://www.map.stockholm.se/kartago/kartago_fr_buller.html)

*More about the Transport Administration's work with noise reduction is found on the web-page:*

- <http://www.stockholm.se/KlimatMilijo/Trafik-luft-och-buller/Trafikbuller2/>

## 6. WASTE PRODUCTION AND MANAGEMENT

**Please describe the present situation and development over the last five to ten years in relation to (max 1000 words):**

The City of Stockholm has a 100 year long tradition on waste incineration and Waste-to-Energy management of the Municipal Solid Waste (Household Waste). The Year 1909 the first incinerator plant started operation in the city to reduce the household waste to landfill. The idea was “put as little waste as possible on landfill and use the waste”. The ideas to use household waste for production of heat and electricity, reduce waste to landfill and replace fossil fuel with combustible waste has continued and developed so that no household waste at all from the city is put on landfill.

As a complement to the above described Waste Management System under the municipal responsibility we today have a separate collection of packaging waste under the responsibility of the Producers of the packaging.

Before the introduction of Producers Responsibility on packaging material the City of Stockholm made the first test in the world on separate collection of recyclables from buildings with several flats in the densely populated centre of the city. All the recyclables were “sorted at source” that is “sorted inside the building”. This pilot-test showed that it is possible to arrange separate sorting and collection of recyclables also in densely populated areas, but it is expensive and require redesign of waste collection rooms in the buildings. Nevertheless, this system was not introduced as the legislation changed in the middle of the 90s, and the producers of packaging material received the responsibility for their material and the municipality was no longer responsible for the collection.

In Stockholm, the amount of waste produced and sent to the municipal collection and treatment system is slowly increasing. The increase during the 90's was 1% or less, but from around year 2000 and until today, the increase has been approximately 2%. Production of waste collected in the municipal waste management system (and under municipal responsibility) is highly connected to, and dependent on, the economic situation of the citizens. As a consequence of the slow down in the economy, the increase in the amount of waste seems to slow down somewhat in year 2008.

As waste management has developed towards less manual collection with safer workers environment and reduced environmental impact from waste collection and transportation, the City of Stockholm recommend mechanical systems for waste collection.

Mechanical waste collection system for solid waste and sorted waste fractions used and recommended are:

- Stationary and mobile vacuum suction systems
- Large compacting containers and large containers partly under ground.
- Waste collection systems with waste grinders for food waste.

The city district Hammarby Sjöstad has installed both systems. Vacuum suction systems, mobile and stationary been is in operation for some years.

### **1 Amount of waste per capita**

562 kg/person/year

### **2 Proportion of total/biodegradable waste sent to landfill**

None. All separate collected food-waste is recycled as biogas and fertiliser nothing is sent to landfill. The Swedish legislation do not allow any organic waste sent to landfill

The Waste Management Administration runs a pilottest, to install 15 food waste grinders from 5 different manufactures. The aim is to get experiences from installation and operation of different solutions. The city of Stockholm has partly financed the installation on schools and restaurants. The food waste grinder improves the working environment for both restaurant staff and the collecting staff. The advantages are that the food waste can be collected and transported directly to anaerobic digestion and production of biogas.

### **3 Percentage of recycled municipal waste**

100 % of the waste from “under your sink” is recycled as Waste-to-Energy (heating and electricity). Municipal responsibility.

Approx. 78 % of separate collected used packaging-materials are recycled in accordance to the Producers Responsibility organisation (FTI AB). Producers Responsibility.

Products put on the market and not collected separately and recycled trough “the Producers Responsibility System” normally are collected via the Municipal Waste Management System” and is used as Waste-to-energy this way.

The local targets are for 2012 a biological treatment of 35 % of the food waste from restaurants and groceries, and 10 % from the households. In year 2007 9,5 %

of the food waste from restaurants and groceries and 2 % of the food waste from the households was treated biologically

**Please describe the measures implemented the last five to ten years aimed at reducing the amount of waste produced and the amount of waste sent to landfill, especially biodegradable waste, including awareness programmes (Max 1000 words)**

*Examples of measures are listed below:*

*Information campaigns*

As the amount of waste is slowly increasing in the City of Stockholm the Waste Management Administration has since the 1970s had an organisation working with information on Waste Management for and in the City of Stockholm. During the 90s and until today this department has produced information to increase the awareness of waste, for the citizens of the city. The Waste Management Administration has also during the last 20-years participated in exhibitions, giving speeches at seminars and citizens meetings on waste management and the environmental impact from waste.

*Educational programmes*

The Waste Administration also had a program for education and increasing the awareness at schools. In this program the Administration had 1 person especially dedicated to give information and have meeting with teachers.

*Dissemination and promotion of best practices*

From the 90s and until today the Waste Administration also has been involved in International projects with the objective to communicate know-how on waste collection and treatment purchase, forming Strategic Waste Management Plans, communication of waste handling and awareness etc.

*Biofuels*

During the 90s the city started separate collection of food-waste from some restaurants. The idea was to collect this high-quality food-waste separately and treat it in an anaerobic digester plant for production of biogas and bio-fertiliser of quality to fulfil standards for ecological farming.

The collection has continuously increased on voluntarily assistance from restaurants. Also private household has been invited to voluntarily participate in the separate collection of food-waste and has done so. The Waste Administration had during the 90s and still has today, a small group of staff that carry out meetings with restaurants and households. This staff provides information on the collection and treatment of food-waste, technical description of the system, the



results of the collection and treatment and the impact on the environment and global warming etc.

During the 90s the Waste Administration also built a pilot-plant to anaerobic digest the separate collected food-waste. The plant demonstrated that it was possible to establish a collection and treatment system for food-waste that fulfilled the requirements for production of biogas to bio-fuel for cars and trucks and bio-fertiliser for ecological farming. These experiences have been used when the administration purchased separate collection and treatment of the food-waste. The experiences have also increased the interest from the waste-water treatment plants and other anaerobic digester plants to offer their capacity for treatment of the separate collected food-waste.

Also during the 90s the Waste Administration also had a research and developing program for production of Ethanol as bio-fuel from low-quality paper. The research showed that it was a feasible way to handle low-quality paper but at that time the Producers Responsibility for packages was introduced in Sweden and the Paper-industry was not interested to continue the development of this technology.

The administration has never regarded incineration with waste-to-energy recovery and anaerobic digestion as competitive treatment, but rather as complementary operations to increase the recovering of household waste.

All businesses or households that want to participate in the separate food-waste collection have a running-in period when the food-waste is sent to a composting plant. This gives the Waste Administration the possibility to follow-up the quality of the separate delivered food-waste and an opportunity to provide feed-back to the business or household on their performance on separating the food-waste. As soon as the quality is good the food-waste is delivered for anaerobic digestion. Composting will not be a big scale or long-term way of handling biodegradable waste from the Municipal Solid Waste as it needs an un-acceptable big area for the plant and the impact from green-house gases is not possible to secure.

**Please describe planned short and long term measures for the reduction of the amount of waste produced and waste sent to landfill, especially biodegradable waste. (Max 1000 words)**

**The short term measures should include description of measures adopted, but not yet implemented, and budgets for future measures already adopted. The long term measures should include description of planned measures as yet to be adopted by local politicians.**

*Action programme*



The city has in the Waste Management Plan for the city of Stockholm stated that the collection and treatment of food-waste shall increase from today's level of 4500 tonnes to 18 000 tonnes during the period 2008-2012.

### ***Short and long term measures***

#### *Producer responsibility*

To reduce the amount of waste sent to the municipal system for waste collection and treatment, the collection system by the producers of packages is one part. The producers have to find an agreement with each municipality in Sweden on the design of the system. The producers have described their system for the City of Stockholm and an agreement has been signed. In the agreement between the city and FTIAB (Producers representative) are stated that the city shall as far as possible help the producers to find space for collection-places for the separated sorted package materials. For the moment there are about 250 collection-places and this should increase up to about 350 places all over the city.

#### *Recycling Centres*

Another part of reducing waste to landfill and increasing recycling of material are the recycling-centres (in Swedish: "ÅVC", "Återvinningscentral") owned by the city. The recycling-centres are collection-places for bulky waste and recyclables from household. The waste handled at the recycling-centres are transported there and sorted by the citizen, who want to deliver their waste there. The City has the intention to increase the number of recycling-centres from 5 with 1 per year up to 7 or 8 centres.

#### *Collection of food waste*

To increase the collection and treatment of food waste, the Waste Administration will inform all restaurants in the city and invite them to rearrange their waste handling system towards separate collection of their high-quality food-waste. The information will be combined with a visit from our staff or external consults at restaurants that are interested to participate in the separate handling of food-waste.

The city will also continue the work on initiating more food-waste treatment facilities. This will be done both by purchasing treatment-capacity and establish new plants or increase capacity at e.g. waste-water treatment plants in the region or owned by the city. This work is both a short-term and a long-term. Short-term is preparing and sending out tenders for treatment of food-waste of different qualities and long-term is expanding permits for existing business or building new plants.

### ***Resources***

The EU-financed project “BIOGASmax” is financing part of the measures within the biogas field.

**Please describe how the above issues can be documented should your city be shortlisted for participation in the second phase of the evaluation (Documentation should not be forwarded in this phase) (max 600 words)**

*Documents and/or website(s)*

Documents to describe and evaluate the above mentioned waste management in the City of Stockholm are e.g.

- Strategic Waste Management Plan for the City of Stockholm during 2008-2012.

This document describes the waste management today, goals for the future waste management, planned activities and consequences. In the Strategic Waste Management Plan are also evaluated results from previous Strategic Waste Management Plan for the City.

- Hammarby Sjöstad – The best environmental solutions in Stockholm. Several new and environmental friendly technologies were tested in the new urban district, Hammarby Sjöstad. The brochure for the development and living in Hammarby Sjöstad gives a short description of the technologies and the Hammarby model.

- Environmental Plan for the City of Stockholm during 2008-2011.

The Plan points out the goals for the City of Stockholms own activities and also partly evaluate goals from previous Environmental Plans.

- Food waste grinders – experiences of installation of food waste grinders connected to tank.

The report describes experiences from different installations of grinders used for food waste. The project is still in operation.

- Report “Experience and comments on collection and treatment of food waste from restaurants and households in the City of Stockholm”

A report “Experience and comments on collection and treatment of food waste from restaurants and households in the City of Stockholm”, is under production and is a detailed report of our experiences on collection and treatment of food waste. The report is a part of the EU-financed project “BIOGASmax”.



The Waste Management is always evaluated through statistics from daily collection and treatment by the Waste Administration.



## 7. WATER CONSUMPTION

**Please describe the present situation and development over the last five to ten years in relation to (max 1000 words):**

The drinking water in Stockholm City is produced by Stockholm Water Company which is certified by ISO 9001 and ISO 14001.

The drinking water in Stockholm City is of a high and consistent quality, and is produced by treating water from the Lake Mälaren in our two water works, Lovö and Norsborg. Lake Mälaren is the drinking water reservoir for approximately 1 million people living in the Stockholm region.

The control of the production and distribution of drinking water is regulated by the Swedish National Food Administration (Statens Livsmedelsverk) and the national directive SLV 2001:30 (based on the European drinking water directive, 98/83/EG). The drinking water quality and the quality control performed by Stockholm Water, is in full compliance to existing regulations and guidelines.

Lake Mälaren is by any standard a pure lake and well suited for the production of drinking water. The drinking water can therefore be produced by simple and robust processes. The biggest process change which has been introduced in recent time is the introduction of UV-irradiation instead of using chlorine gas for disinfection. This process change, which is used for approx. 40 % of the produced volume, increases disinfection and prevents to a large extent the formation of disinfection by-products.

An issue very much related to the ongoing climate debate is to secure future water supply. To address this issue, Stockholm Water Company owns and manages a big and protected Lake, Bornsjön, which can supply Stockholm with water for many months, in case of sudden deterioration of water quality in the Lake Mälaren.

### **1 Proportion of urban water supply subject to individual water metering**

All sold water is metered but only detached houses (villas) have individual metering. For flats in apartment houses, there is generally a meter for each property i.e a multi storey house with many flats only has one meter and the residents pay a standard rate. We have 65 000 meters (customers) in Stockholm.

### **2 Water consumption per capita**

Approx 200 l/p/day



### **3 Water loss in pipelines**

19 million m<sup>3</sup> /year corresponding to 17 % or 16,4 l/min and km.

### **4 Compliance with the EU Drinking Water Directive**

The Drinking water control is quite comprehensive. It follows an examination program for chemical and microbiological analyses approved by the local Food Administration Authority.

Water samples are taken from all parts of the Drinking Water Supply two to three times a week, including raw water from Lake Mälaren, process water from the different drinking water processes and outgoing drinking water from the two water works Lovö and Norsborg. And in addition to this, more than one thousand samples of drinking water from the consumer's tap are investigated and analyzed every year. So called "normal" parameter choice is used for daily / weekly monitoring of produced and distributed drinking water quality and "extended" parameters are investigated to verify the absence of organic and inorganic toxic and pathogenic substances and organisms. If required, special samples are taken to investigate divergent results and complaints.

The compliance with the EU Drinking Water Directive is one hundred percent at the water work as well as at the consumer's tap.

According to the Swedish Drinking Water Directive, which is based on the European directive but more stringent, there is also full compliance.

In the Swedish Directive, a drinking water can have three different judgements. "Serviceable" is the best and means in full compliance with all esthetic, technical and hygienic parameters. "Serviceable with remarks" is the second best implying esthetic or technical problems may exist. "Unserviceable" means that serious hygienic problems are present that can course illness.

Looking at the last ten year period, all drinking water samples at the water works has been "Serviceable" and all samples coming from the consumer's tap were "Serviceable" except for approximately five once a year, which were "Serviceable with remarks" most often according to an increase of the iron content.

On the whole we are quite proud of the drinking water in Stockholm, which is very even in quality over time and has a wonderful taste when you are thirsty. But most of all it is safe water to all usages regarding the absence of toxic and pathogenic substances and organisms.



**Please describe the measures implemented in the last five to ten years to reduce water consumption and water loss in pipelines, including e.g (max 1000 words):**

- Proactive Leakage Management
- Network rehabilitation
- Domestic and non-domestic metering
- Byelaw implementation in relation to efficiency in water usage
- Awareness campaigns

Stockholm Water Co. has carefully reviewed if they should have a water saving campaign or not. Considering Stockholm have water in abundance and cheap production cost, Stockholm Water Co. have taken the decision not to campaign specifically on water saving. The focus of the Stockholm Water Co. information campaign is to encourage households and industries not to pollute waste water. These campaigns have been highly acclaimed and successful. Consequently the rehabilitation and leakage management is conservative i.e. to keep the present status and to secure the supply to customers with a low (and defined) number of interruptions.

The program for pipeline renewal on all dimensions has up to now focused on installing iron pipelines, treated on the inside with concrete to prevent corrosion, mainly in areas with high frequency of leakages and documented rust problems.

**Please describe planned short and long term measures on reducing water loss (max 1000 words):**

The strategy for the network renewal is to maintain a secure and uninterrupted supply to customers. Stockholm Water Co. keeps a record of customers' complaints and leakage, and takes this information as input in the renewal and maintenance planning. Stockholm Water Co. is presently making a special investigation of water losses (non billed volumes) which will be finished late 2008.

**Please describe how the above issues can be documented should your city be shortlisted for participation in the second phase of the evaluation (Documentation should not be forwarded in this phase) (max 600 words)**

*Documents and/or website(s)*

- Strategy for Network renewal
- Investment and Leakage detection Plan
- Water Quality Report



There is a yearly plan for leakage detection and investments in the network in accordance with the strategy above. We have constant monitoring of water quality and customer complaints. This customer related information is taken into account in our capital expenditure plans.

We also produce water quality reports on a yearly basis



## 8. WASTE WATER TREATMENT

**Please describe the present situation and development over the last five to ten years in relation to proportion of total waste water treated in accordance with the Urban Waste water Directive (max 1000 words)**

100 % of the inhabitants in the City of Stockholm are connected to a waste water treatment plant. The waste water from Stockholm and some neighbouring municipalities is treated in two waste water plants which altogether serve a population of about 1 million persons. The treated waste water is discharged in the inner part of the Stockholm archipelago, a unique and sensitive part of the Baltic Sea.

The waste water is treated with advanced technology for removing nitrogen and phosphorous, all in accordance with, and exceeding the ambitions of, the Urban Waste water Directive. The biogas produced is used to produce fuel for local transportation and the excess heat in the sewage water is recovered for domestic heating. 0 % of the wastewater is reused.

About 50% of the Storm water (Urban run-off) is transported along with the waste water to treatment plants. The rest is transported to minor lakes, Lake Mälaren or Saltsjön. Treatment of Storm water, which locally can have as big an impact as waste water, is a priority in Stockholm. Stockholm has many lakes and water sheds which are highly valued for recreational purposes, most of them are more or less affected by storm water. These lakes and water sheds have been classified with respect to recreational and environmental value and the impact of storm water has been taken into consideration on each one of them when formulating the City's Storm Water Management Strategy. The implementation of this strategy is governed by a multilateral group within the city in order to cover the interests from the various "water stakeholders".

**Please describe the measures implemented in the last five to ten years to improve waste water treatment (max 1000 words):**

The Swedish government has 16 environmental goals, out of which one deals with eutrophication. One of the targets is to reduce the discharge of phosphorous to receiving waters with 20 %, compared to the year 1995. Stockholm Water Company has made major investments into tertiary treatment and has reduced the discharge of Phosphorous from 34 000 kg to 17 000 kg and Nitrogen from 2 650 000 kg to 1 200 000 kg compared to year 1995. These investments have been fruitful and the water quality of the inner archipelago has improved.

*Examples of measures are listed below:*



Hammarby Sjöstad, originally intended to be the Olympic village in Stockholm's bid for the 2004 summer Olympics, environmental goals for the housing district were set high from the start. Regarding waste water management, several solutions using new technology were used:

#### *Waste water treatment plant*

Hammarby Sjöstad has its own waste water treatment plant that was built to test new technology. Four different and brand new processes for purifying water are currently being assessed here. Once the evaluation is completed, a new waste water treatment plant may be constructed for coping with waste water from the whole of Hammarby Sjöstad

#### *Rain and stormwater purification*

Rain water from the streets, or non-domestic storm water, is collected, purified in a sand filter and then released in purified form into the lake, instead of draining into the sewage system and causing further pressure on the waste water treatment plant. Rain water from surrounding houses and garden is led via open drains to the channel. The water runs in a series of basins, known as an equaliser, and then out into the lake. By disposing of as much storm water as possible locally, the pressure on the waste water treatment plant is decreased.

Roofs covered in stonecrop or sedum plants help absorb rain water that would otherwise drain into the sewers, adding to the pressure on the waste water treatment plant. Vegetation: The main footpath, the carefully preserve oak forest, the green surfaces and all the other trees that have been planted help to collect rain water locally instead of it draining into the sewage system.

#### *Production of biogas*

Biogas is produced in the waste water plant from digestion of organic waste sludge. The waste water from a single household produces sufficient biogas for the household's gas cooker. Most of the biogas is currently used as fuel in eco-friendly cars and busses.

**Please describe planned short and long term measures for reduction of water loss (max 1000 words):**

#### *Adopted measures*

Stockholm's major sewage treatment plant, Henriksdal is presently being upgraded in order to reduce unnecessary overflows of partially treated waste water. There also is consent for Stockholm Water Company to reduce the yearly volumes of combined sewer overflow.



**Please describe how the above issues can be documented should your city be shortlisted for participation in the second phase of the evaluation (Documentation should not be forwarded in this phase) (max 600 words)**

*Documents and/or website(s)*

*Environmental report*

The environmental impact of the waste water treatment and waste water network is declared on a yearly basis in an environmental report, where not only compliance is declared but also improvements and proactive work to minimize the inflow of toxic compounds in the city, and consequently to the sewage treatment works. An energy and green house gas declaration is made as well to show the progress of the energy strategy

*Storm water Management Strategy*

A strategic programme of the water management, including the City's Storm Water Management Strategy, was adopted by Stockholm City Council on 12 June 2006. The programme sets out the way in which the city will achieve a good water status by the year 2015 in accordance with the EU Water Framework Directive and the way in which the city will meet the reporting requirements in the Directive.

*Stockholm Water Scheme*

Current and planned measures for year 2009-2015

## 9. ENVIRONMENTAL MANAGEMENT OF THE MUNICIPALITY

**Please describe the present situation and development over the last five to ten years in relation to (max 1000 words):**

### **1 Number of municipal departments with certified environmental management systems (ISO 14001/EMAS)**

In the county of Stockholm, an Integrated Management System (IMS) is used by all departments and municipal companies. Environmental aspects are integrated into the Integrated Management System and all organisational decision-making. The Integrated Management System covers factors such as environment, quality, and public procurement. The environmental programme is tracked and monitored within the framework of the integrated management system and by regular audits.

- The municipal housing company Svenska Bostäder achieved their ISO 14001 certification in 1997.
- Stockholm Water Company is ISO 9001 and ISO 14001 certified.
- The Real Estate Administration has developed an Energy Management System, which will be launched in August 2008.
- Stockholm Environment and Health Administration has developed a simplified environmental management system "Stockholm Environment Diploma" which is based on the ISO 14001 system. Municipal administrations, -units and small and middle sized companies have been certified. Today, this environmental management system is run by a private company, a spring-off from the Environment and health administration.

### **2 Percentage consumption of eco-labelled, organic and energy-efficient products measured as share of the total consumption by municipalities of products in the same category/type**

As an important actor on the market, The City of Stockholm can and should contribute to the development of ecologically sustainable alternatives and the market thereof. The Purchasing and Procurement Policy of the City of Stockholm, states that each municipal administration and company are responsible to place environmental demands in each purchase. The Environmental Programme states the objectives and targets that each municipal administration and company should fulfil.

*Eco-labelled products:*

The objective for the city of Stockholm is to purchase eco-labelled electric power for the city's own use. The county uses approximately 350 GWh each year. 25 out of 33 administrations joined in an agreement to purchase approximately 155 GWh eco-labelled electric power. In consecutive purchases, the same agreement has been used. The city is estimated to use at least 400 GWh, thus this agreement will reduce carbon-dioxide emissions from yearly with approx. 17 000 tonnes.

Ecolabelled facilities are used for conferences and visits. Within the Environment and Health Protection Administration, the measured rate of eco-labelled facilities for national hotel-, meetings and conferences reached 65 % year 2007.

Dangerous substances in goods is another high prioritized target area in Stockholm. One of the city council's **20** environmental indicators concerns the rate of purchased goods and buildings free from prioritised, dangerous substances.

*Organic products:*

The objective for the city of Stockholm is to reach a rate of at least 15% organic products by 2011. The percentage consumption of organic products has been measured since year 2002, and the rate is steadily rising. Organic dairy products are usually purchased, and the rate of organic dairy products is currently 43 %.

N.B. The current statistics for organic consumption only covers 53% of all food purchases. Purchases of pre-cooked meals is yet to be included into current statistics.

Measured percentage consumption of organic products by the municipality:

- In 2002 - 2,5 %.
- In 2005 – 5 %
- In 2006 – 7 %
- In 2007 - 11 %.

Several municipal administrations, departments, units and companies within the city reach significantly higher rates of organic consumption. For example, the measured rate of organic consumption for The Environment and Health Protection Administration reached 23 % in 2007.

*Energy-efficient products:*

In the city council's Purchasing Policy and Guidelines, energy-efficiency of products stands out as one of the factors considered at purchases made by the city of Stockholm. The objective for the city of Stockholm is to apply the Purchasing

Policy and Guidelines at 100 per cent of the city's purchases. For this product category, the procedure is usually applied.

### **3 Energy consumption of municipal buildings per square meter**

Energy consumption of municipal buildings per square meter is: 195 kWh/m<sup>2</sup>.

A number of programmes have been directed towards municipal buildings, and several projects and pilot-test in which energy-efficient solutions are used are presently running. Actions have been taken to increase individual measurement of energy consumption, and charging of dwellings and offices. Other examples of measures during the last few years are; photovoltaic installations and the opening of the Energy Centre, situated at the Environment and Health Administration. The Energy Centre provides advice and support aiming to increase energy efficiency in municipal buildings. One of the Energy Centre's major tasks is to introduce "Energy Performance Contracting", which is a development of energy statistics.

**Please describe the measures implemented in the last five to ten years in relation to (max 1000 words):**

#### **1 Developing an overall policy for environmental management of municipal activities**

The City of Stockholm has successfully run environmental programmes since the mid-seventies. Environmental actions have been taken in a wide variety of fields, and the programmes have helped stimulate a widespread awareness of environmental issues, both among the city authorities, and among the members of the general public. The city's environmental work has been increasingly systematised and structured, and today, environmental aspects forms a natural part of the city's integrated management system, along with other factors, such as, quality, public procurement etc. thereby enabling environmental issues to be included in the city's budgeting, operational planning and monitoring. In earlier years, environmental issues were paralleled run in a separate environmental system.

Stockholm is known for its proactive environmental work. In the communication document for the Thematic Strategy on the Urban Environment, Stockholm's Environmental Programme is mentioned as an Example of Good Practise in Environmental Management Planning.

*Environmental Programme*



The sixth consecutive Environmental Programme (program period 2008-2011) lays a solid foundation for Stockholm's environmental work. As previously, the Environmental Programme also outlines measures that will be taken by the city of Stockholm in achieving Sweden's National Environmental Quality Objectives at the local level.

Six high-priority target areas are in focus in the Environmental Programme, these are:

1. Environmentally efficient transport
2. Goods and buildings free from dangerous substances
3. Sustainable energy use
4. Sustainable use of land and water
5. Waste treatment with minimal environmental impact
6. A healthy indoor environment

#### *Additional schemes and programmes*

In addition to the objectives in the Environmental Programme, the city council has adopted a number of schemes in order to put focus on specific issues, such as: the Greenhouse Gases Scheme, the Cycle route Scheme, the Mobility Scheme, the Water Scheme, the Energy Strategy, the Agenda 21 Scheme and the Waste Disposal Scheme etc.

The Environmental Programmes (2002-2006 and 2007-2008) have been set up using a wide participatory process in which administrations and bodies have been invited. The strength of the Environmental Programme is that all the city's bodies are involved and voluntarily work with concrete measures to reach the goals set up in the programme. Another important factor is that the city council sets up goals with a higher level of ambition than what is legislated.

#### *Structure and purpose*

The overall goal of the environmental programme is to ensure that the city of Stockholm can progress towards long-term environmental sustainability. The essential role of the environmental programme is to:

- provide an overall picture of the environmental situation in Stockholm today and identify the key environmental issues affecting Stockholm as a whole;
- indicate priorities for environmental action in Stockholm;
- establish targets for prioritised areas and specify follow-up measures to be used during implementation of the programme.
- present the results of continuous follow-ups on the web site of the city's environment administration, the environment barometer, which indicates the current environmental situation in Stockholm.

### *Environmental survey*

In 2000 the city undertook a regional environmental survey. Those environmental aspects identified by the survey as playing a significant role were grouped into the already mentioned six overall high-priority target areas. The overall targets were broken down into a set of subordinate targets indicating objectives to be achieved during the course of the programme period along with indicators to be used for follow-up purposes.

### *Environment and Health Assessment*

In 2005 and 2008, the Stockholm Environment and Health Assessment was performed. This is a strategic tool used for organisational decision-making by the City's Environment and Health Administration. The Environmental and Health Assessment is used in the planning process to prioritize future measures.

### *Environmental monitoring and reporting*

Municipal monitoring and reporting of status and progress towards the city council's objectives, includes the environmental indicators. It is conducted within the Integrated Management System and is subject to regular audits. An intra-city environmental audit with the city of Oslo, Norway, regarding program period 2002-2006, was also carried out in 2007.

The Environment and Health Administration actively evaluate and track progress of the environmental indicators for the city. All main objectives, the current status of corresponding sub-targets, indicators etc. is presented with informative texts, numbers, graphs and references to underlying reports and documentation on a user-friendly interface. The database is situated at the homepage of the City of Stockholm and is thus easily accessible for municipal administrations and citizens of Stockholm. [www.miljobarometern.stockholm.se](http://www.miljobarometern.stockholm.se)

The results of program period 2002- 2006 was reported in annual environmental reports and in a comprehensive final report. Results from the final report show that nearly 80 % of all objectives have been reached, or have a positive progress.

## **2 Increasing the share of the total consumption of eco-labelled, organic and energy-efficient products**

Between 2002 and 2006 a municipal project focussed on environmentally sound purchasing and procurement. The following areas were given particular attention:

- Total cost calculations
- Sustainable Transports
- Safe products



- Organic food
- Sustainable Energy Use

The results of the project were approving. New purchasing guidelines were developed, facilitating the placement of environmental requirements. In order to increase the supply of organic products, the City Council co-operated with the suppliers of food products.

The city works successfully to increase the rate of clean vehicles in the city, as described in section 2, *Local Transport*.

### **3 Increasing energy efficiency of municipal buildings**

The long term goal for Stockholm is to be fossil free by 2050. For municipal buildings, the objective for the city of Stockholm is to reduce the consumption of energy in the city's own buildings and plants by 10 per cent by 2010, compared to the level of 2006. A fund of one billion SEK has been set up for climate activities, and a number of programs have been directed towards municipal buildings.

Actions have been taken to increase individual measurement of energy consumption, and charging of dwellings and offices. Other examples of measures during the last few years are; photovoltaic installations and the opening of the Energy Centre, situated at the Environment and Health Administration. The Energy Centre provides advice and support aiming to increase energy efficiency in municipal buildings. One of the Energy Centre's major task is to introduce "Energy Performance Contracting", which is a development of energy statistics.

### **Please describe planned short and long term measures for improving environmental management of the municipality (max 1000 words):**

The budget for year 2008 states that the progression of Stockholm shall be characterize by economic, environmental and social sustainability. Sustainable living conditions shall be preserved and cultivated. Using this perspective health, environment, economy and social responsibility are all related. To succeed, the work must go on all the time, and prevention is always better than cure. Environmental work is a prioritized area in the municipality's budget and Stockholms Environmental Programme forms the solid foundation for our result-oriented environmental work.

Many of the objectives in the environmental programme can only be achieved if both the city administration and the citizens contribute. The city of Stockholm

will therefore put further focus on communication of climate issues towards citizens, companies and our own entities during the current program period.

### *Short and long term measures*

#### *Sustainable City Development*

An assessment of the environmental profile used in the planning of the city-district Hammarby Sjöstad, is undertaken and the results will be presented in 2009. Learnings and experiences will be considered in the planning process of the two new eco-profiled residential districts: Norra Djurgårdsstaden and Lövholmen. These new residential areas, will use the latest environmental technology and be new examples of the Sustainable City Concept. Developments in areas close to waterways will be risk-analyzed. In the planning of new preschools and schools, environmental climate-systems will be evaluated.

#### *Reinforcement of staff*

The Stockholm City Council has the responsibility to integrate actions and follow-up of the environmental objectives within the City's Integrated Management System. In 2009, this work will be intensified. For this reason, this staff is increased already in September 2008.

#### *Purchasing and procurement*

As an important actor on the market, The City of Stockholm can and should contribute to the development of ecologically sustainable alternatives and the market thereof. The City will use new technical innovations and developed products in its own bodies.

#### *Vision 2030*

The city council had adopted a document outlining the future, Vision 2030. According to the Vision, the Stockholm of 2030 is one of the most attractive cities of the world, and the cleanest and safest capital.

- There are clean lakes and waterways, providing unique opportunities for boating and bathing.
- New housing has been built using environmentally adapted and efficient materials and methods. Technological advances and economic growth have laid the ground for an ecologically sustainable society.
- Stockholm is an energy efficient city at the frontline of environmental technology, and on its way to becoming free of fossil fuels by 2050. The energy consumption has been reduced considerably.
- Stockholm is a world leader when it comes to developing, commercializing and applying new energy and environmental technology.



The improved energy efficiency and increased use of non-fossil energy sources have made the city's contribution to the greenhouse effect smaller.

- Stockholm and the Lake Malar region have a well established system of transport, with minimal climate impact. The cars in Stockholm are almost entirely green. In Stockholm, the inhabitants use public transport more than anywhere else in the world. The city has a large and safe network of bike routes, and ferry services.

**Please describe how the above issues can be documented should your city be shortlisted for participation in the second phase of the evaluation (Documentation should not be forwarded in this phase) (max 600 words):**

#### *Documents and websites*

- Vision 2030 (in Swedish)
- Stockholm Environmental Programme 2007-2011 (in swedish)
- Stockholm Environmental Programme 2002-2006 (in english)
- Stockholm Environmental Assessment (in swedish)
- Environment and Health Assessment 2005 (in Swedish)
- Environment and Health Assessment 2008 (in Swedish)
- A guide to non-toxic goods (in swedish)
- A guide to energy-efficient property administration (in swedish)
- A guide to environmentally sound transports (in swedish)
- Statistical information regarding organic consumption.  
<http://www.miljobarometern.stockholm.se/key.asp?mp=MP&mo=2&dm=3&nt=1>
- Report on action-plan for Non-toxic goods (in swedish)
- Stockholm Water Scheme (in english)
- <http://www.miljobarometern.stockholm.se>

## 10. SUSTAINABLE LAND USE

**Please describe the present situation and development over the last five to ten years in relation to (max 1000 words):**

To promote sustainable development, the planning strategy for the City of Stockholm is to build the city inwards. This is the over-all objective for the comprehensive plan for Stockholm, adopted by the City Council in 1999.

The planning strategy is being realized through:

- re-using already developed land
- locating new development areas in connection with good access to public transport
- respecting and enhancing the character of the City, e.g. the city-scape, the built environment and the green structure
- redeveloping semi-central areas, transforming industrial areas into urban areas of mixed uses and variation
- establishing focal point in the suburbs
- meeting local demands
- developing public spaces

***Share of built up area in relation to the total area in the municipality:***

The total area of the municipality of Stockholm is 209 km<sup>2</sup>. 21 km<sup>2</sup> of the total area consists of water area. Total land area in the municipality is 188 km<sup>2</sup>.

Approximately 50% of the total land area in Stockholm is built-up area. 40% of area are business- and residential areas, and 10% of the total area consists of roads.

***Share of population that commutes***

In the morning peak hour, 105 000 journey are taken to the Stockholm city centre. Out of these, 24% use individual transport and 77% use public transport.

### **1 Proportion of new developments on brownfield sites**

During the period 2000-2007, a total of 25,000 new apartments were built in the City of Stockholm. 9,000 of the apartments were built in larger brown-field areas, corresponding to more than 1/3 of the total amount.

The main part, e.g. 16,000 apartments, were built within existing built-up areas, but not on larger brown-field sites.



## **2 Population density for new developments**

With starting point from the answer below, population density for new developments is approximately 112 person per ha.

**Please describe the measures implemented in the last five to ten years in relation to (max 1000 words):**

### **1 Minimising the total area of derelict and contaminated land**

During the last ten years the old and partly abandoned industrial and harbour areas (brown-fields) just around the Inner City Area have been a focus for city planning for reusing and redevelopment. Many of these strategic development areas are directly linked to a new fast peripheral tram-system and also have direct access to other public transport means, such as the metro-line. The areas have major location qualities as being close to water areas. Some areas have been under construction during the last years, housing a large part of the city's housing programmes.

The effect of directing new city development to reuse former industrial areas, harbour etc, often contaminated, is that these land areas are reduced. Special environmental programmes certify the removing or reducing contaminates before construction.

### **2 Renovating urban land**

Renovating urban land is being undertaken on an on-going basis. Some examples are:

Power-lines are often natural parts of the urban matrix. By tunnelling power-lines during the year a larger project has started that will remove derelict areas in the urban neighbourhoods and at the same time eliminate safety-risks of magnetic fields. Land will also be available for new development.

Many of the quays of Lake Mälaren and the inner Baltic Sea were in earlier days used for goods and transport. During the last ten year many of the quays in the Inner City have been transformed into high-class promenade areas.

Rail-areas in the city, and the area in and around the Central Station in Stockholm have been developed with residential areas and hotels. New offices have been developed in an existing office building within the Central Station area. An old post terminal will be developed into a larger conference facilities and a hotel.

*Example(s) of measures listed below:*

### *Sustainable planning and architecture*

The Hammarby Sjöstad area previously housed craftsmen's workshops and small industries, which left behind a great deal of pollution. The City of Stockholm's Environment and Health Administration has thoroughly cleared and decontaminated the area to meet the requirements for not posing a health and environmental threat.

Environmental considerations apply to all materials used, both the visible materials in the facades and on the ground as well as the materials used inside – the building's shell, the installations and the equipment. Only sustainable, tried and tested, eco-friendly products are used.

Rain water from the streets, or non-domestic storm water, is collected, purified in a sand filter and then released in purified form into the lake, instead of draining into the sewage system and causing further pressure on the waste water treatment plant. Rain water from surrounding houses and garden is led via open drains to the attractive channel. The water runs in a series of basins, known as an equaliser, and then out into the lake. By disposing of as much storm water as possible locally, the pressure on the waste water treatment plant is decreased.

Hammarby Sjöstad has its own waste water treatment plant that was built to test new technology. Four different and brand new processes for purifying water are currently being assessed here. Once the evaluation is completed, a new waste water treatment plant may be constructed for coping with waste water from the whole of Hammarby Sjöstad

Roofs covered in stonecrop or sedum plants are not just an attractive detail. The plants also absorb rain water that would otherwise drain into the sewers, adding to the pressure on the waste water treatment plant. Vegetation: The main footpath, the carefully preserve oak forest, the green surfaces and all the other trees that have been planted help to collect rain water locally instead of it draining into the sewage system. The vegetation also ensures cleaner air and provides a counterbalance to the dense urban landscape.

Biogas is produced in the waste water plant from digestion of organic waste sludge. The waste water from a single household produces sufficient biogas for the household's gas cooker. Most of the biogas is currently used as fuel in eco-friendly cars and busses.

Vacuum system for solid waste and refuse sorting: Larger items of refuse are removed by vacuum suction from the waste disposal units through underground pipes to a huge central refuse deposit. Garbage trucks then pick up the containers

with their different contents, reducing car-borne transports and benefiting the environment.

The light energy of the sun is harnessed and transformed into electrical energy in solar cells. The energy from a single solar cell module covering one square metre provides around 100 kWh/year, which is equivalent to the household energy used for three square metres of housing. There are solar panels on many of the roofs to absorb the heat from the sun and use it to heat hot water. Solar panels on a residential building can often provide sufficient energy to meet half of the building's annual hot water requirements.

### **3 Increasing the number of inhabitants per ha of urbanized land area**

#### *Population density*

In year 2006, Stockholm had 776 962 inhabitants, an average of 42 persons per ha. The number of inhabitants per ha in the city center were: 82 persons per ha and the number of inhabitants per ha in the Suburbs were: 32 persons per ha

The new district Henriksdalshamnen with an area of 18 ha, comprise 880 apartments. An average of 2,3 persons live in each apartment.

#### **Please describe planned short and long term measures on sustainable land use (max 1000 words):**

#### *Short and long term objectives*

In July 2007, Stockholm City Council decided upon a vision for sustainable growth of the city until the year 2030. The goals set in the vision, forms the backbone for the recently started process of the next comprehensive plan for the City, City 2010, which will extend the sustainable approach for land-use and development in the future.

Old and partly abandoned industrial and harbour areas (brown-fields) just around the Inner City Area are in focus for city planning for reusing and redevelopment. Many of these strategic development areas are directly linked to a new fast peripheral tram-system and also have direct access to other public transport means, such as the metro-line. The areas have major location qualities as being close to water areas. Some areas have been under construction during the last years, housing a large part of the city's housing programmes. Other areas are at planning stage. The areas are being planned for mixed-uses with attractive housing and also consisting of business facilities, introducing a dense structure that will create the necessary conditions for a more urban atmosphere in earlier



suburban areas. All together the strategic development areas are calculated to house some 40,000 – 70,000 new apartments.

*Hammarby Sjöstad*, the strategic area that was first opened, has a successful and much appreciated environmental approach. For *Norra Djurgårdsstaden* and *Lövholmen in Liljeholmen*, the City will take the environmental issues further, focusing on climate change with a carbon dioxide neutral city area.

**Please describe how the above issues can be documented in case your city is shortlisted to participate in the second phase of the evaluation (Documentation should not be forwarded in this phase) (max 600 words)**

*Documents and/or website(s)*

- Comprehensive Plan for Stockholm 1999
- City 2010 (New Comprehensive Plan)
- Stockholm City, Vision for sustainable growth
- Regional Development Plan for the Stockholm Region
- Vision 2030



## II. OTHER MEASURES

**Please describe any effective and interesting measures taken to improve the urban environment of your city not covered by the above indicators (max 2000 words):**

### *NETWORKS*

The climate policy of the City of Stockholm takes the approach that no one can do everything, but everyone can do something. By joining forces it is possible to have a positive impact on climate change. Given that, the Action Programme Against Greenhouse Gases is primarily based on a group effort to reduce emissions; the City networks actively at a local, national and international level.

#### *International networking*

##### *Climate Alliance of Cities and Municipalities*

In 2004 the City of Stockholm joined the Climate Alliance of Cities and Municipalities. The members of the Climate Alliance commit themselves to a continual reduction of greenhouse gas emissions. The target is the reduction of CO<sub>2</sub> emissions by ten percent every five years. In the long term, Climate Alliance cities and municipalities aim to reduce their greenhouse gas emissions to a sustainable level of 2.5 tonnes CO<sub>2</sub> equivalent per inhabitant per year by implementing energy-saving and energy-efficiency measures and by using renewable energies. Climate Alliance members report back regularly on their efforts to implement climate protection measures.

##### *ICLEI – International Council for Local Environmental Initiatives*

The City of Stockholm is also a member of ICLEI – International Council for Local Environmental Initiatives – and participates in the campaign ‘Cities for Climate Protection’ (CCP). The campaign involves more than 700 cities around the world. The CCP membership gives the City of Stockholm opportunities to share experiences with other cities and identify partnerships. It also involves an opportunity to communicate the climate activities carried out in Stockholm at the same time as promoting the city itself.

Together with ICLEI, the City of Stockholm played host to international climate conferences in November 2001 and in May 2006. The latter conference – ‘A Future with Zero CO<sub>2</sub> Emissions’ - was filmed and can be viewed over the internet: [www.iclei.org/stockholm2006](http://www.iclei.org/stockholm2006)



### Major Nordic Cities Cooperation

Common environmental indicators is a joint environmental project run by seven Nordic cities. Participating cities are: Copenhagen, Oslo, Helsinki, Reykjavik, Stockholm, Gothenburg and Malmö. The seven cities work with 11 different headline indicators, each illustrating developments in relation to a number of aspects: global, regional and local aspects, consumption of resources, and environmental initiatives. Each headline indicator is monitored and followed up using more detailed indicators.

The objective of the Major Nordic Cities Cooperation's work on Environmental Indicators of Major Nordic Cities is to create a platform for the accumulation of experience and know-how in terms of the environmental status of each of the participating cities. A further goal is to develop a structure enabling the seven cities to compare urban environments, to analyse environmental trends and to share and learn from mutual experience.

The City of Stockholm also networks through:

- The EU Directorat-General for Energy and Transport; ManagEnergy and Intelligent Energy for Europe
- CEMR – the Council of European Municipalities, the largest European association of local and regional authorities.
- Metropolis – World Association of Major Metropolises
- BLICC – Business Leaders Initiative on Climate Change

### *National networking*

The City of Stockholm is a member of the Swedish Network of Municipalities on Climate Change. The main objective of the network is to support local efforts to reduce emissions of greenhouse gases. The network aspires to demonstrate the will and large potential to work with climate issues at a local level. A precondition for becoming a member is the political decision to be active locally by:

- Making inventories of greenhouse gas emissions regularly.
- Setting targets for emission reductions.
- Taking on an action plan and measures to reduce emissions.
- Reporting back to the network about the work on climate protection.

### *Local networking*

The City of Stockholm regularly invites businesses, organisations and individuals at the local and regional level to network meetings on climate protection.



## ***NOMINATIONS AND AWARDS IN YEAR 2008***

### *Nominee in the Energy Globe Award 2008 - Air.*

The project Clean vehicles in Stockholm has been nominated to the international environmental award: Energy Globe Award 2008 - Air. The motivation was: A decade of work on the part of the project Clean Vehicles in Stockholm has resulted in a market breakthrough for clean vehicles: 44.000 autos in Stockholm use biofuel or hybrid drive or boast very low-pollution emissions. In addition, 50% of the city fleet, 100% of downtown busses, 40% of the garbage collection fleet, and 20% of new auto sales are clean, and 60% of the gasoline stations sell ethanol and/or biogas. This has resulted from the excellent cooperation with all aspects of the fuel and vehicle chains: biogas production, cooperation with gasoline stations and service workshops, information for end users. This makes the city of Stockholm a good example. <http://www.energyglobe.com/en/energyglobe-award/laureates/international/nominations/air/> <http://www.stockholm.se/Fristaende-webbplatser/Fackforvaltnings sajter/Miljoforvaltningen/Miljobilar/Nyheter-och-press/Nyheter-och-press/Grona-bilar/Stockholms-Miljobilsarbete-Oscars-nominerat/>

### *Winner in the European GreenFleet Awards 2008*

The City of Stockholm received a prize in the European GreenFleet Awards- Public Sector Innovation Award. The motivation was: To decrease emissions and noise, the City of Stockholm initiated the Clean Vehicles project, with the objective of reaching a market breakthrough for cleaner vehicles. This encouraged involvement from the whole chain - fuel providers, vehicle manufacturers and end-users. After 10 years, the project has yielded impressive results. <http://www.greenfleetawards.co.uk/environment-news/greenfleet-awards-launches-in-europe.aspx>

## ***OTHER***

### *The Aalborg Declaration and Commitments*

Stockholm signed the Aalborg Commitments in 2005. For Stockholm, the Aalborg Declaration provide a platform for the long-term work to become a sustainable Stockholm, where economic, social and environmental aspects are fully integrated. The Aalborg Declaration, consists of ten target-areas for sustainable cities. [www.aalborgplus10.dk](http://www.aalborgplus10.dk).

### *Citizens poll*

Once every three years a Citizens poll, investigating environmental awareness, attitudes and the citizen's own environmental ambitions is conducted. More than 3000 citizens answer a comprehensive questionnaire on how they experience the environment in Stockholm, the importance of environmental issues are, and how they live to reduce their ecological footprint. The results from the citizens poll is presented in the earlier mentioned "Miljöbarometern".

### *Environmental Billion Fund*

The 'Environmental Billion Fund' is a commitment of many years through which the City of Stockholm focuses on the environment. Municipal administrations and companies have been able to apply for funding for a variety of projects. During 2004 and 2005 a total of 120 million euro was allocated to 158 projects, of which 45 projects were climate related initiatives. The funding for the climate related projects amounted to approx. 42 million euro. The projects are set to continue until 2009.

One example of projects financed by the Environmental Billion Fund is the "Tiomiljonerspotten". In this project, 60 projects were financed, sharing 8 million skr. All projects had aims and targets perfectly coherent with the Environmental Programme and the Stockholm Action Programme against Greenhouse gases 2000-2005 and were carried out by schools, preschools and NGO's in Stockholm. The "Tiomiljonerspotten" was highly appreciated. This kind of project-owners, seldom receives funding for environmental development, and opportunity meant that projects could take place that would otherwise not have been carried out. Participation by students/children, teachers, parents and other groups was engaged and common knowledge increased.

### *Glashuset - eco-technology*

A long list of eco-friendly adaptations was laid down during the planning of Glashuset in Hammarby Sjöstad. The aim throughout was to achieve a good indoor climate with low energy consumption. Double-glazed façades, linked to an advanced control system cuts the energy consumption to 50 % of that of an equivalent building with glass façades. The double-glazed façades reduce the need for artificial light and the energy requirement for heating, cooling and ventilation. Low-energy lighting has been installed in the entire building. An advanced control system adjusts lighting and ventilation in line with current activities, the amount of daylight, and air quality. Heating is primarily provided by a heat pump that takes energy from the pumping station's moist heat and the waste heat generated by the mains power installation. A fuel cell – an advanced energy converter – have been installed for the first time ever in a commercial building in Sweden. The fuel cell runs on biogas. A solar panel plant has been installed on the roof to supply the building with electricity. A biogas boiler, to meet peaks in heating requirements, and a biogas stove in the kitchenette have been installed. The biogas is produced in the area's own sewage plant and is part of the eco-cycle solution.

### *Miljögiftets väg*

Miljögiftets väg is an innovative web-presentation about environmentally hazardous substances: The web-presentation displays their origin, how they are spread, their impact on the environment, and actions you can take to reduce the diffusion of environmentally hazardous substances.

### *ScorePP - Source control options for reducing emissions of Priority Pollutants*

The ScorePP project is a European project proceeding from October 2006 to March 2010, with nine participating organisations in seven different countries. The overall aim of the project is to develop comprehensive and appropriate source control strategies that authorities, cities, water utilities and chemical industry can employ to reduce emissions of priority pollutants (PPs) from urban areas into the receiving water environment. The ScorePP project focuses on the priority substances identified in the Water Framework Directive. Specific objectives are to identify the sources of PPs in urban areas, to identify and assess appropriate strategies for limiting the release of PPs from urban sources and for treating PPs on a variety of spatial scales. Furthermore to develop GIS-based spatial decision support tools for identification of appropriate emission control measures, to develop integrated dynamic urban scale source-and-flux models that can be used to assess the effect of source control options on PP-emissions and to optimise monitoring programmes, and to assess the direct and indirect costs, the cost-effectiveness and the wider societal implications of source control strategies. The developed approaches, models and assessments will be used to formulate a set of appropriate PP-emission reducing strategies, and a multi-criteria approach will be used to compare and evaluate these strategies in relation to their economic, societal and environmental impacts. The ScorePP project will interact with the European chemical industry and water utility trade associations together with representatives from ministerial, regional, municipal and community organisations, to ensure that these key urban stakeholders to ensure useful outcomes of the project. Stockholm City is participating as partner and the city is one of the case cities in the project.

### *New pollutants – New tools*

The project New pollutants - new tools, Oct 2004 to June 2008, has aimed at suggest measures that can be taken by the City and by other actors to reduce the problems associated with chemical substances of highest concern. Major sources of these substances include textiles, building materials and household chemicals. Measures include dialogue with industry and trade organisations to promote voluntary phase-out, information to the public, supervision of demolition activities and green procurement.

### *Guide to local cooperation around waters*

One of the aims of the project, undertaken in 2005, “Local cooperation around Lake Trekanten2”, was to describe ways in which local stakeholders can work together to improve the conditions in a lake area. This resulted in the guide, which details the various phases of a cooperative process from a public perspective and gives examples from the project. The guide facilitates initiatives with processes



and participation in ongoing cooperative work in the field of water. This way of working can also be used for other cooperative processes which aim to contribute to a sustainable society.

*Healthy Sustainable House Study – 3H*

The city of Stockholm has developed a model for classifying healthy and unhealthy residential houses based on data from a standardized questionnaire (SIEQ). In the on-going Healthy Sustainable House Study (3H) more than 480 randomly selected multi-family buildings are being studied, including inspections and measurements in 50 different buildings. Decision makers, builders, building administrators and tenants need simple, scientifically based tools and indicators to discriminate between “healthy” and “unhealthy” buildings to enable mitigation and avoidance of unhealthy houses. The 3H project will suggest courses of action to minimize health risks also with regard to energy declarations and the necessary increase in the energy efficiency of buildings. Sustainability and healthy must go hand-in-hand.



## 12. PROGRAMME

The European Green Capital will act as a role model to inspire other cities and will therefore have to disseminate and promote its best practices and experiences in all other European cities.

Please describe the programme of events and activities that your city will commit to should it win the European Green Capital Award. For example:

A dedicated website

Opening conference (showing why the city was selected and sharing best practices)

Workshops/events/conferences (also, hosting of European events like Green Week and Mobility Week)

Closing ceremony

Travelling exhibition sharing best practice & experiences

Publications

Articles in international magazines

Dissemination of guidelines

Films

Guided tours in the city showing the innovative solutions

Co-operation and partnership among authorities, citizens, business communities, and other stakeholders aimed at sharing experiences and best practices



## **CITY OF STOCKHOLM, SWEDEN: PROPOSED PROGRAMME FOR DISSEMINATION OF EXPERIENCES AND BEST PRACTICES**

Stockholm is world-renowned for environmental awareness and healthy living conditions. Today, swimming and fishing in the heart of Stockholm has become a reality. As European Green Capital, Stockholm will demonstrate to other cities and capitals how a greener urban environment can enhance the quality of life in practical terms. Visitors experience a green and safe urban environment returning home with an understanding of how environmental concern can support a dynamic urban development.

Stockholm offers our citizens and visitors from all over the world, a range of conferences, events, guided tours, study- and technical visits within the sustainability area. The City of Stockholm will ensure that the experience gained during the municipality's ambitious environmental work will be shared as host for the *European Green Capital*.

In this proposed programme, we present examples of what Stockholm already offers within the sustainability area, in terms of environmental programmes, implemented measures, study-visits, conferences and community dialogue etc. Moreover, we describe a smorgasbord of what the City wish to develop further, should Stockholm win the European Green Capital Award. We aim not only to share our own experiences taking steps towards becoming a truly sustainable city, but also to act as dynamo and inspiration to speed up the pace in which Stockholm and many other cities in the world will move towards becoming economically, environmentally and socially sustainable.

Further, Stockholm wish to demonstrate to other cities and capitals how we use new tools, as how the City of Stockholm increasingly seek active input from the business sector, in order to speed up the change towards a sustainable Stockholm.

<b><i>PRESENT PROGRAM</i></b>	<b><i>PROPOSED DEVELOPMENT</i></b>
Examples from the current programme for proactive sustainability work and dissemination of experiences and best practices.	Examples of actions to disseminate experiences and best practices the City wish to develop, should Stockholm win the European Green Capital Award.
<b>Conferences and workshops</b>	
<i>Theme: Sustainable city development</i>	
The Sustainable City Concept – The integrated city planning and infrastructure for energy, waste and water management Hammarby Sjöstad, Best practices	Opening Conference
The Hammarby Sjöstad housing estate - Sustainable environmental solutions for city development.	Panel-discussion: Can big construction projects such as the Hammarby Sjöstad be truly sustainable
Successful Environmental Solutions in Stockholm Hammarby Sjöstad – s sustainable city district of 25 000 inhabitants	Sustainable land use – New developments on brownfields, contaminated or derelict land
The Sustainable Planning and Architecture in the Hammarby Sjöstad	Closing conference
Liberating the City of its waste problems – Underground waste transportation – a sustainable way of urban solid waste removal	
Sjöstadsverket – Hammarby Sjöstads water work – Experiences from new technology	
Applying the Sustainable City International experiences from China, Russia, Canada, and the Baltic Sea Region	
<i>Theme: Sustainable transport</i>	
Klimatpakten – Reduce climate load - The Stockholm industry dialogue	Panel-discussion: How can we promote a rapid transition to sustainable means of transport?
Clean Vehicles – experiences from award winning project Green Fleet	
<i>Theme: Fighting Climate Change</i>	

Green Consumerism – experiences from the project Smart Consumption	Panel-discussion: How can we promote a rapid transition to fossil free heat and power
Climate measures on a broad scale – examples from Stockholm	
<i>Theme: Fighting pollutants</i>	
Chemical substances in goods and services: New tools for new pollutants	
Cooperating with businesses to speed up the supply of environmentally adopted goods.	
<i>Theme: Modern environmental policy</i>	
Environmental policy in the 21 <sup>st</sup> century – The Stockholm Model	
Environmental policy in the 21 <sup>st</sup> century - dissemination of guidelines	
Integrated city planning – new developments	
<b>Events</b>	
Hosting World water week Workshops, field visits, social events, prizes and awards, exhibitions <a href="http://www.worldwaterweek.org/worldwaterweek/index.asp">http://www.worldwaterweek.org/worldwaterweek/index.asp</a>	Hosting Green Week Conference, presentation and speeches, exhibition. Hosted by: Swedish Environmental Managers Association
Hosting Globe Forum Conference, presentation and speeches, exhibition. <a href="http://www.gfbn.com/">http://www.gfbn.com/</a>	Participation in Mobility Week
Scientific conferences	Scientific Night Conference, presentation and speeches, scientist panel
	Environmental Fair at the Stockholm National Fairs <a href="http://www.stofair.se">www.stofair.se</a>
<b>Public Events</b>	
Sustainability day <a href="http://www.konferens.se/idg/sustainabilityday2008.asp">http://www.konferens.se/idg/sustainabilityday2008.asp</a>	
Water and boat festival <a href="http://www.tsr07.se/">http://www.tsr07.se/</a>	



<b>Social Events</b>	
The Mayor's reception	
Dinner and Dance at Junibacken	
City Aquatic Adventure	
<b>Guided tours</b>	
<i>Nature in the heart of the City - A range of guided tours to biodiversity in the city</i> Hosted by: Swedish Society for Nature Conservation	
<i>Guided tour at Hammarby Sjöstadsverk (Henriksdals reningsverk), core for the national wastewater purifying technique R&amp;D.</i> Hosted by: Stockholm Water Company	
<i>Green Fleet and Clean Vehicles</i> Hosted by: Environmental and Health Administration	
<i>Boat Tour of Lake Mälaren – Water supply for 2 Million People</i> Hosted by: Stockholm Water Company	
<i>Creating a Sustainable City – The Stockholm Experience Hammarby Sjöstad</i> Hosted by: Stockholm Business Region	
<b>Study visits</b>	
<i>Towards Sustainable Sanitation: Practical Applications from Toilet to Field,</i> Hosted by: Stockholm Environment Institute	
<b>Showrooms</b>	
GlashusEtt, Hammarby Sjöstad	Hammarby Sjöstad Showroom will be constructed in year 2009
Cleantech Showroom, Kista Science Cluster	Luma Center – Sweden Eco-Center Hammarby Sjöstad will be constructed in 2009)
	Sweden Greenhouse



	will be constructed in 2009
	Kulturhuset Stockholm – Exhibition: The Good Climate Choise, will be completed in 2009
<b>Technical visits</b>	
Listed below are examples of 40 demonstration sites/technical visits in the Stockholm region	
<i>Technical Visit Demo Center Scania Södertälje, Hosted by Scania</i>	
<i>Technical Visit SAAB Combitech CDC Järfälla, Hosted by SAAB Combitech</i>	
<i>Technical Visit Viking Line Kapellskär, Hosted by Swedish Maritime Organisation</i>	
<i>Technical Visit Kista Science City Hosted by Stockholm Initiative</i>	
<i>Pre/Post Technical Visit Lindholmen Göteborg, Hosted by Text Site Sweden Göteborg</i>	
<i>Pre/Post Technical Visit Gävle Hamn, Hosted by Green Cargo</i>	
<b>Prizes and awards</b>	
Stockholm Water Prize	
Stockholm Junior Water Prize	
Stockholm Industry Water Award	
Swedish Baltic Sea Water Award	
Wash Media Award	
<b>Publications</b>	
	Publications in international magazines

<b>Possible partners/resources</b>	
The Beijer Institute Globe Forum Invest in Sweden Agency IVL Swedish Environmental Research Institute Hammarby Sjöstad	Stockholm Environmental Technology Center Stockholm International Fairs Stockholm International Water Institute Stockholm Partnership for Sustainable Cities



<p>Karolinska Institutet, leading medical university The Natural Step International Royal Academy of Technology Stockholm Academic Forum Stockholm Business Region Stockholm Environment Institute</p>	<p>Stockholm Sustainable Region Stockholm University Swedish Environmental Managers Association Swedish Government, Environmental Department Swedish Trade Council</p>
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