



Green IT

Green IT strategy for the City of Stockholm



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A vision of a green Stockholm

The City Council of Stockholm has adopted Vision 2030. Vision 2030 is a vision for the development of the city from now to year 2030. The goal is to become one of the world's cleanest, safest and most beautiful cities where Stockholm is a world leader in information technology and in the development, commercialisation and application of new environmental and energy related technologies. But Vision 2030 is also envisioning Stockholm as an energy efficient city where the use of non-fossil fuel reduces the city's total emissions of green house gases.

Stockholm has every chance of achieving these goals. The city and the Mälardalen region already have an efficient public transport system whose environmental impact is minimal. New bypass routes will further reduce the environmental impact while simultaneously enhancing accessibility. Stockholm aims to be a world leader when it comes to public transport usage by its inhabitants, to establish a safe cycle route network, and to offer convenient water-based transport options.

The City Council has also approved Stockholm's environmental programme, 2008-2011. The programme's goals steer the environmental work of the city as a whole and act as guidelines for individual committees and administrations. The environmental programme is based on the city's previous environmental programmes and surveys, which have highlighted the city's most important environmental issues and health risks.



A green IT strategy

Stockholm has a worldwide reputation for environmental awareness and a good living environment. In many respects, therefore, the city can already be regarded as a groundbreaker in the field of environmental issues. Maintaining this position does, however, demand an ongoing effort.

If the City's environmental goals are to be achieved, it must work in partnership with its inhabitants, private industry, and other players. The employees of the City have an important part to play, both in terms of the internal environmental work and in the context of their roles and dealings with the city's inhabitants and private industry. In many cases, people must change the way they live and work and adopt a new attitude towards environmental issues. Environmental technology and information technology are two particularly important areas when it comes to realising a sustainable society.

Green IT is a collective name for the measures designed to reduce our environmental impact with the aid of IT. It involves both using information technology to reduce our environmental impact, and reducing the energy consumption and environmental impact of the IT sector as a whole.

Green IT is a strategic and management issue, which is why it is important that environmental issues are considered from an operational viewpoint. Doing so clarifies the ways in which the municipality can reduce its environmental impact across the board.

"Green IT – a strategy for the City of Stockholm" applies to the City's administrations and Stockholms Stadshus AB, including its subsidiary companies. The strategy has been adopted by the City Council and is administered by the Executive Office.

Strategic starting points

The City of Stockholm's Green IT strategy is based on the overall goals of the City's environmental programme and a realisation of the City's e-strategy. The starting point is to create an IT environment that is accessible and reliable and meets the operational requirements for functionality and cost effectiveness. A citywide, standardised and modern IT infrastructure is fundamental to Green IT.

The IT programme and the e-strategy

Realising the City's IT programme and e-strategy has a direct impact on the environment, thereby creating synergies for Green IT and enabling the municipal operations' and IT sector's negative environmental impact to be minimised.

The City of Stockholm's e-strategy takes a combined approach to a number of key IT issues that affect every aspect of the municipal operations. It describes the most important goals for change, the actions required, and the effects that the City expects to achieve.

The environmental programme

The City of Stockholm's environmental programme sets six overall goals for the City's environmental work between 2008 and 2011.



1. Environmentally efficient transport

The City's goal is to create a long-term sustainable transport system, based on new technology, non-fossil fuels, and more information.

2. Non-toxic products and buildings

The City shall minimise the dispersal of harmful substances by choosing eco-friendly products and services. Environmentally sustainable methods and materials shall be used during development and construction work.

3. Sustainable energy usage

If the greenhouse effect is to be reduced, energy must be used more efficiently and the energy used must come from renewable sources. The use of energy efficient technology will enable the city to be a major player in environmentally driven growth and development, and to reduce its operating costs.

4. Sustainable use of land and water

Long-term sustainable usage of land promotes economic development without jeopardising important environmental values.

5. Environmentally efficient waste management

Efficient and eco-friendly waste management is an important part of society's infrastructure. The City's goal is to minimise the amount of waste produced and to increase the percentage utilised through re-usage and recycling.

6. A healthy indoor environment

The City's goal is to reduce the number of people who suffer from problems due to their indoor environment, particularly in preschools, schools and housing for the elderly.

Reduced greenhouse gas emissions

The City's Environment Administration has explored the actions necessary to reduce greenhouse gas emissions to 3.5 or 3.0 tonnes of carbon dioxide equivalents per Stockholmer by 2015. The cost effectiveness of the two alternatives is being examined with regard to investment costs, operating costs and interest expenses.

In 2005, emissions totalled appr. 4 tonnes of carbon dioxide equivalents per person. The City intends, in cooperation with all of its administrations and companies, to generate proposals for measures and investments that will increase energy efficiency within the individual operating spheres.

Increased energy efficiency in the City's administrations and companies

There is considerable potential for increasing energy efficiency and reducing greenhouse gas emissions in the City of Stockholm. The biggest potential for increased energy efficiency lies with the City's property-owning companies and administrations, through the implementation of new technical solutions within the property holding.

The sectors predominantly responsible for carbon dioxide emissions are:

- Property heating (45%)



- Transport (31%)
- Electricity usage (24%).

The IT sector currently accounts for appr. 2% of emissions. On a global level, this is comparable with the emissions from air traffic.

IT as eco-technology – actions areas

Green IT is, to a large extent, about using information technology to reduce individual organisations' environmental impact. In which way can IT help reduce environmental burdens elsewhere in society? This is the main question to be answered in order to create substantial environmental benefits.

Action area: energy-efficient buildings

New solutions that offer better control over energy consumption in buildings result in reduced energy consumption and a minimizing of the buildings' environmental impact. The City's goal is to reduce its operating costs with the aid of energy-efficient technology, and thereby helping to promote environmentally driven growth and development. The goal is to reduce energy usage in the City's own buildings and facilities by 10 per cent based on the levels of year 2006.

Actions required:

- Create routines in which the tenant informs the building manager at what times the building is in use. The building manager adjusts the run times for heating, ventilation and lighting.
- Encourage the development of new technology designed to reduce energy-related emissions from buildings.
- Control heating, ventilation, cooling and lighting using specially adapted IT-based control systems.
- Create routines that ensure lighting is turned off in empty buildings and install presence control in premises that are occupied at certain times only.

Action area: illustrate and visualise energy and electricity usage

Increasing energy efficiency involves, amongst other things, illustrating and visualising electricity and energy usage. Technical solutions offer considerable potential for increasing energy efficiency of the property holding.

Actions required:

- Clarify principles and rules determining how much hot water (and heating) is included in the rent and generate incentives for both parties to save energy.
- Introduce individual metering and charging for consumption (electricity, water, heating, cooling and lighting) in residential buildings and business premises.

Action area: environmentally efficient transport

The need for transport will continue to increase. Personal transport and freight transport have increased by 14 per cent and 26 per cent, respectively over the last ten years. Considerable potential exists, both for increasing the efficiency of existing



methods of transportation and for changing the need for transportation and travel. Information technology and reliable access to geographic information are some of the most important tools in changing and revitalising the transport sector.

The City's goal is a long-term sustainable transport system, based on new technology, non-fossil fuels, and expanded information. Accessibility and availability must be increased for various different types of traffic, with the support of new technology and IT. Traffic disruptions in conjunction with a range of emergencies must be reduced. The City's goal is also, with regard to its own operations, to reduce the environmental burden generated by its own and externally procured transportation.

Actions required:

- Develop traffic management support and provide advanced IT solutions for the gathering and presentation of information on the latest traffic situation.
- Develop intelligent transport solutions (ITS) and IT support for navigation.
- Introduce travel planners and navigation support for different types of vehicles and road-user groups.
- Route-optimize and coordinate planning of a larger percentage of internal and procured transportation through more efficient IT support.
- Establish reliable access to geographic information and exploit the information with the aid of modern information technology.

Action area: eco-friendly travel

Alternatives to travel are being increasingly widely discussed. Promoting a developmental trend whereby mobility is replaced with accessibility requires active efforts to reduce the need for physical travel. Information technology can generate new opportunities for reducing the environmental impact of personal transportation. Creating alternatives to travel also offers the potential for more flexible working.

Actions required:

- Enable environmentally efficient travel choices for business travel.
- Measure and visualise vehicle usage more clearly.
- Promote cycling by providing access to navigation support.
- Generate the preconditions for changing the way we work (mobile working, electronic locks, e-commerce, internal/external e-services).
- Visualise the environmental effects of travel to and from work and what this means in terms of reduced carbon dioxide emissions.

Action area: digital meetings

Current technology enables traditional meetings to be replaced by digital ones, leading to a direct reduction in carbon dioxide emissions. The City's goal is to replace physical meetings wherever appropriate.

Actions required:

- Enable digital meetings by instituting standard functionality in the workplace or by procuring web services.
- Generate incentives for employees to choose digital meetings.



Action area: development of e-services

We can minimise our environmental impact by continuing to invest in e-services that replace paper forms and reduce travel.

Actions required:

- Prioritise the development of e-services that reduce environmental impact and increase operational efficiency.

Action area: digital case and document processing

Digital mailshots of committee documents will enable committee members to retrieve case-related material digitally. The City must implement efficient storage measures to make document searching and retrieval simple and easy, and must enable digital signatures for meetings' minutes and resolutions.

Actions required:

- Generate the preconditions that will enable the committee members to retrieve documents digitally before committee meetings are held.
- Enable documents to be signed digitally.
- Continue to invest in the development of e-archives and the connection of operating systems and services to the e-archive.
- Develop IT support for workflows.
- Supply digital project support (project portals).

Greener IT – action areas

Green IT is also about reducing the energy consumption and environmental impact of the IT sector itself. An investment in Green IT can make it easier for the municipality to work with IT in a more eco-friendly way and, at the same time, to save money. It's a question of, amongst other things, how best to use the existing IT environment, the right mindset when purchasing new IT services, and the proper approach to developing the IT environment in the longer term.

Action area: eco-friendly IT procurement

Eco-friendly public sector procurement is not just a means of reducing emissions of carbon dioxide and other environmentally destructive substances: it is also a means of cutting public sector costs by an average of 1 per cent.

Actions required:

- Impose standardised requirements on hardware, software and service providers. The activities primarily involve imposing requirements with regard to energy consumption and operating emissions, material choices and chemical content, production processes, recycling, transportation, packaging, environmental management and quality systems, etc.
- Communicate future requirements to suppliers. The City is a major customer that can exert an influence by demonstrating that sustainable IT usage is important.
- Improve environmental impact and energy consumption calculations.



- Reduce environmental impact by instituting standardised routines for recycling and reuse of paper, batteries, mobile phones, computers, monitors, printers and other peripherals.

Green data centres and Green data communications

If the City consistently imposes demands on the services its suppliers provide, we can increase the efficiency of the operating environment and minimise its environmental impact. The environmental impact in the data communications sphere can be reduced by setting environmental criteria for the acquisition and operation of network equipment. In the IT infrastructure and operations spheres, Green IT is primarily about reducing energy consumption by making optimum use of networks and other infrastructural resources.

Actions required:

- Demand sustainability reports from existing suppliers.
- Formulate requirements before impending procurements and contract revisions
- Require external suppliers to buy eco-friendly electricity.
- Impose requirements on external suppliers with regard to eco-certified hardware.
- Implement server consolidation.
- Implement application consolidation.
- Replace old equipment with new.
- Consider internet-based services.
- Generate the preconditions for wireless communication.
- Integrate telephony with data communications.

Action area: green workplaces

There are a number of ways to reduce energy consumption from workplaces and peripheral equipment. The basis of this work is a standardised workplace.

Actions required:

- Equip all computerised workplaces with multiway sockets so that monitors, loudspeakers, mobile phone chargers, transformers with site lighting, etc., are turned off when the computer is inactive.
- Activate energy saving settings on all computers, printers/photocopiers, etc., and connect them to timer controls that turn the equipment off at the end of the working day.
- Require eco-certified hardware.
- Configure software for energy saving settings when the equipment is inactive.
- Consider using laptops and thin clients.

Action area: more efficient printouts

The City's goal is to minimise the environmental impact of printouts.

Actions required:

- Reduce printout volumes by using printout confirm functions.
- Consolidate printout functions and wind up the use of local printers.
- Implement double-sided printouts as standard.



- Only permit colour printouts when specifically required.
- Use eco-labelled paper and toner.

Implementation, training and follow-up

Responsibility for implementation and follow-up

The Executive Office is responsible for the planning and implementation aspects of the establishment and launch of the City's steering documents in the IT sector. This will initially involve providing information on the Green IT strategy and clarifying the need for this strategy. The implementation of the Green IT strategy is not a project: it is a process that requires ongoing evaluation. It is estimated that realising the strategy will require a 3-5 year implementation period.

The responsibility in the City for ensuring compliance with and monitoring of the Green IT strategy is at the executive level of administrations and companies. The Executive Office is responsible for ensuring that directives and regulations are issued, describing how the follow-up and monitoring work is to be carried out.

The process shall track the City's operational planning and budget process, in order to ensure that IT and Green IT development are steered not only by operational goals and requirements, but by the City's overall goals.

For the City's committees and company boards, this means that a range of indicators must be established before work begins on the budget. The City's integrated management system (ILS) allows committees and boards to plan and follow up on goals and to determine the results achieved by the operations in connection with the implementation of Green IT.

Visualising Green IT

Illustrating and visualising energy usage generates incentives to reduce energy consumption and electricity usage. The City's employees and students should be trained and involved by means of a general orientation in the City's environmental work. Administrations and companies are responsible for ensuring that they have the requisite in-house competence to achieve the operational goals.

To this end, a website should be developed with the aim of evaluating environmental investments from both an economic and an environmental viewpoint. The City's Environmental Barometer should be further developed to enable the effects of the measures implemented to be visualised. The City of Stockholm's systems for operational and budgetary follow-up work, and for administering buildings and premises, should be complemented with functions for following up on environmental impact.

An e-learning training package should be produced to provide training on environmental issues and Green IT for the City's employees and students, and be made available to the City's administrations and companies.



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