ICT for a greener administration

– ICT agenda for the environment 2010–2015

REGERINGSKANSLIET

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The Ministry of Enterprise, Energy and Communications

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Table of contents

FOREWORD

The environment and the climate are everyone's responsibility. Many intensive discussions and measures are being implemented in many places and at different levels. But we must force the pace and we must all contribute.

The EU has established a demanding climate target - to cut EU greenhouse gas emissions by 20 percent by 2020. Sweden's climate target is even more ambitious. We will reduce our emissions from the non-trading sector by 40 percent by 2020.

All policy areas must contribute to enable us to achieve these tough climate targets. Information and communication technologies (ICT) have the potential to help us achieve environmental improvements in many areas, especially energy, construction and transport.

This winter and spring have been immensely challenging for the communications sector. Heavy snowfall and the ash cloud from Iceland have shown just how vulnerable we are to the vagaries of nature and the climate. Here, ICT has demonstrated its potential as the fifth mode of transport beside road traffic, rail, shipping and aviation.

The ash cloud led to the majority of EU meetings being held by video link, proving that it is actually possible for 27 ministers to meet via travel-free technology. These kinds of situations, however, do require the technology to be in place and to be accessible in a user-friendly way.

The Swedish Government wants the public sector to set a good example. We can make a difference. We can achieve good results. As a result of our introduction of the "Green Vehicle" Ordinance[1], green vehicles are now a matter of course in the public sector. We may need to take this step within the ICT area.

With this agenda, the Government wishes to urge the public sector to use green ICT as an effective tool in our joint environmental efforts. We can use ICT for alternative meetings. Through public procurement, we can push the market towards greener products and services in the ICT area. Using quite simple means, we can also reduce energy consumption in our own ICT activities. This will benefit both the public purse and the environment.

Let's all contribute to our common climate targets. Let's use ICT for a greener administration.

Åsa Torstensson
Ministry for Communications

[1] Government Ordinance (2004:1364) on local authority purchases and leasing of environmentally sound vehicles.

SUMMARY

This ICT agenda for a greener administration is primarily aimed at government agencies that come under the Environmental Management Ordinance[2] although other public and private organisations are also urged to follow the Government's recommendations. The overarching objective of the agenda is:
To use green ICT to reduce the state's environmental footprint.

The agenda contains three action areas in which government administration is deemed to hold substantial sway. These areas are:

1. Acquisition, which includes public procurement, call-off orders and, to a certain extent, other purchases of ICT products and services.
2. Operation and use of ICT in government agencies.
3. ICT as an effective tool for travel-free meetings.

The Government expects all agencies that come under the Environmental Management Ordinance to follow the recommendations as far as is possible and financially justified. The Government intends to track developments at a number of agencies, many of which have relatively major ICT activities, by giving them specific tasks in their appropriation directions for 2011-2015. The Government also intends to give a number of assignments and challenges to agencies with special responsibility for the agenda's action areas, including The Legal, Financial and Administrative Services Agency, the Swedish Energy Agency, the Swedish Transport Administration and the Swedish Environmental Protection Agency.

Action area 1: Acquisition
Objective: *To increase the number of acquisitions with environmental requirements in the ICT area.*

Green public procurement is a powerful tool for more sustainable production and consumption. Far-reaching environmental requirements are already laid down in framework agreements in the ICT area, but demand for the greenest products is still low. There is a potential energy saving of about 16 000 MWh per year if all government agencies were to order the greenest alternatives in their ICT agreements.

The agencies should:
- develop a ICT purchasing policy,
- train staff in green public procurement of ICT,
- acquire the greenest ICT alternatives, and
- monitor their ICT acquisitions from an environmental perspective.

[2] Government Ordinance (2009:907) on environmental management in government authorities

Action area 2: Operation and use
Objective: *To reduce energy consumption in ICT activities.*

On the one hand, ICT has the potential to streamline activities leading to less resource consumption and environmental impact, but on the other, the actual operation and use of ICT products and systems causes negative environmental impact in the form of energy consumption, chemical use, transport, waste generation, etc. There is scope for saving energy by optimising design and equipment and by achieving more efficient ICT operation and use.

The agencies should:

- analyse their ICT activities from an environmental perspective,
- develop guidelines and objectives for ICT from an environmental perspective,
- train staff in ICT and the environment, and
- monitor ICT operation and use from an environmental perspective.

Action area 3: Travel and meetings
Objective: *To increase the number of travel-free meetings.*

Business trips account for about 10 percent of all travel in Sweden. Physical, face-to-face meetings are important for building up good business relations both internally and externally. But travel is very resource-demanding and has a negative impact on the environment. Different travel-free meeting alternatives can offer new, improved forms of meetings and greater accessibility in both time and space.

The agencies should:

- develop a meetings and travel policy,
- make travel-free meeting alternatives more available,
- facilitate use of travel-free meeting alternatives, and
- monitor the use of travel-free meeting alternatives.

Compliance with the Government's recommendations should be monitored in connection with the environmental reports agencies are obliged to submit every year in accordance with the Environmental Management Ordinance. The Government intends to monitor developments in the ICT for the environment area.

INTRODUCTION

The climate issue

The Government attaches high priority to the climate issue. Great efforts were made during Sweden's EU Presidency to achieve a climate agreement in Copenhagen. An agreement on the target to limit the temperature increase to 2 degrees Celsius was reached.

The EU's commitment in the Copenhagen Agreement is to reduce greenhouse gas emissions by 20 percent by 2020, or by 30 percent provided other industrial countries make similar commitments.

The Swedish Government has higher ambitions. The Swedish climate targets for 2020 are to: reduce greenhouse gas emissions by 40 percent compared to 1990 levels in the non-trading sector; ensure that 50 percent of the energy we use comes from renewable sources; be 20 percent more energy-efficient than we were in 2008; and have a vehicle fleet no longer dependent on fossil fuels by 2030.

ICT has a role in the fight against climate change and environmental pollution. It is a question of reducing ICT's own negative environmental impact, estimated at two percent of global carbon emissions. It is above all a question of ICT's potential for environmental improvements in other areas. This potential has been estimated at 15 percent by 2020 and primarily covers energy efficiencies in the transport, construction and energy sectors.

International work

The EU is making intensive efforts in the area of ICT and energy efficiency. The Commission has presented two communications on the subject, one in May 2008 and another in March 2009. In October 2009, a recommendation on utilising ICT for an energy-efficient, low-carbon economy was presented.[3]

According to the communications, ICT solutions for monitoring and directly managing energy use can reduce energy consumption of buildings in the EU by up to 17 percent and to reduce carbon emissions in transport logistics by up to 27 percent. The introduction of smart metering can reduce energy consumption by up to 10 percent by

[3] Communications from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: addressing the challenge of energy efficiency through Information and Communication Technologies (COM (2008) 241), on mobilising Information and Communication Technologies to facilitate the transition to an energy-efficient, low-carbon economy (COM (2009) 111), Commission Recommendation of 9 October 2009 on mobilising Information and Communication Technologies to facilitate the transition to an energy-efficient, low-carbon economy (C(2009) 7604)

providing information to consumers on their actual energy consumption and enabling them to do something about it.

The OECD has been studying and discussing ICT and climate change for several years. In April 2010, it published a recommendation on ICT and the environment[4].

Other international organisations, such as the Worldwide Fund for Nature (WWF) and the International Telecommunication Union (ITU), are also driving the issue forward.

Work on the national level

The issue of ICT and the environment has received considerable attention over the last few years. During the autumn of 2007, the Government commissioned a feasibility study[5] to summarise national initiatives and propose future initiatives on the governmental level. The Government then commissioned an analysis[6] of the Government Offices' ICT activities from an environmental perspective. In the autumn of 2009, the Government tasked the Swedish Environmental Protection Agency (Swedish EPA) to develop a proposal for a public sector action plan for ICT for the environment, which was reported at the end of April 2010. It is the Swedish EPA's proposal[7] that forms the basis of this government agenda.

The business sector is very active in the ICT for the environment area. The industrial organisation, Swedish IT & Telecom Industries, has been running its Green ICT project, which includes a tool to measure an organisation's green ICT maturity against a green ICT index. The project has now spread to other Nordic countries and a Nordic portal featuring best practice examples from different sectors has been established.[8]

According to Statistics Sweden[9], four out of ten enterprises have an environmental policy or equivalent thereof stating that the enterprise aims to reduce energy consumption when using ICT; one in four include the requirement that potential suppliers are environmentally certified when procuring ICT products; one in three consider energy consumption when choosing which systems or hardware to procure; and one in four use telephone, web or video conferencing instead of travelling to meetings. The figures show that although enterprises are

[4] Recommendation of the Council on Information and Communication Technologies and the Environment, April 2010

[5] Från idé till handling (From idea to action), Thorslund 2008 (In Swedish)

[6] Green ICT Scorecard for the Swedish Government Offices, Gartner 2009 (In Swedish – a Summary in English is available at http://www.sweden.gov.se/sb/d/12103/a/131594)

[7] IT för miljön - Förslag till handlingsplan (ICT for the environment. – A draft action plan), Swedish EPA, 2010 (In Swedish)

[8] www.nordicenergysolutions.org/solutions/green-ict

[9] Företagens användning av IT 2009 (Use of ICT in Swedish enterprises 2009), Statistics Sweden (the figures concern enterprises with 10 or more employees) (In Swedish with a summary in English)

aware of the ICT and environment area, there is vast potential for improvements.

eGovernment

Electronic government (eGovernment) relates to improving productivity and performance in public administration by drawing benefit from ICT combined with organisational changes and new skills. The aim of eGovernment is to make it as easy as possible for as many people as possible to exercise their rights, fulfil their obligations and make use of public administration services.

Not a great deal of focus has been put on the environmental aspect until now, but the development of eGovernment also leads to environmental benefits. An increasing number of services are becoming available electronically, enabling citizens to gather information and in some cases fill out and send in forms electronically. This electronic method not only saves paper but also reduces carbon emissions in the form of less postal transport. The option of submitting one's tax return online is a good example, an option utilised by 57 percent of the Swedish population in 2009.

The Government's eGovernment efforts are presented in the action plan[10] adopted in 2008. Since 2009 the eGovernment Delegation has been working to reinforce the development of eGovernment and to create better scope for inter-agency coordination. During the autumn of 2009, the eGovernment Delegation submitted a proposal for an eGovernment strategy for Sweden's government agencies. On 17 June 2010, the Government decided to appoint a special investigator to prepare and implement the establishment of an agency to coordinate how the Swedish state and Swedish municipalities manage electronic identification and digital signature (eIdentity) methodologies and services. The investigator shall submit a final report on 31 December 2010 and the agency is expected to be up and running on 1 January 2011.

During the Swedish EU Presidency in the autumn of 2009, Sweden arranged a ministerial conference on eGovernment in Malmö. The conference resulted in a ministerial declaration stating that eGovernment shall be used to promote a sustainable, low-carbon economy.[11].

Government agencies' environmental management systems

The Environmental Management Ordinance (2009:907) has applied to almost 180 government agencies since 1 January 2010. Environmental management work was previously governed by special tasks given to each separate agency.

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[10] Handlingsplan för eFörvaltning - Nya grunder för IT-baserad verksamhetsutveckling i offentlig förvaltning, 2008 (Swedish eGovernment Action Plan - New grounds for ICT-based organisational development in public administration, 2008) (In Swedish)

[11] Ministerial Declaration on eGovernment, 2009

Under the Ordinance, an environmental management system shall integrate concern for the environment into the agency's activities and systematically consider their direct and indirect environmental impact. Concerning ICT, the Ordinance states that the agencies shall, as far as possible, use energy-efficient information and communication technologies as a tool to green their activities and, to the same end, develop a meetings and travel policy.

The agencies shall report their environmental management work each year by filling in and submitting a special form provided as an annex to the Environmental Management Ordinance. With regard to ICT, the agencies shall report how they have used it to help reduce their energy consumption (e.g. ICT-controlled lighting, heating and ventilation, energy-efficiency improvements in equipment, etc.) and how they have used ICT to reduce their business travel (e.g. telephone, web and video conferencing).

Energy efficiency improvements in the agencies

ICT for the environment is very much a question of improving the energy efficiency of ICT in itself and of ICT as a tool for improving energy efficiency in other areas, by e.g. solutions for the monitoring and remote-control of various processes. This is why the Energy Efficiency Ordinance[12] is important in this context. This ordinance is based on an EU directive and covers courts and administrative agencies directly under the Government[13]. The Ordinance states inter alia that each agency shall implement at least two of six specified measures, including purchasing energy-efficient equipment.

Implementation and monitoring of the agenda

The agencies should report their compliance with this agenda in connection with the annual environmental management reports they send in via the form provided in one of the annexes to the Environmental Management Ordinance. The Government intends to review the form and make the necessary additions so that the agencies can submit a more detailed account of the environmental impact of their ICT activities.

Since the agencies' annual accounts in accordance with the Environmental Management Ordinance are dealt with by the Swedish EPA, it will also be the Swedish EPA's role to monitor the agenda. A special analysis of the ICT-specific components of the Ordinance is desirable.

[12] Government Ordinance (2009:893) on energy efficiency measures for government agencies

[13] Certain exceptions are given in Section 1 of the Ordinance

The Government expects all the agencies covered by the Environmental Management Ordinance to follow the recommendations presented in this agenda as far as is possible and financially justified.

The Government intends to track developments at a number of agencies, many of which have relatively major ICT activities, by giving them specific tasks in their appropriation directions for 2011-2015. These agencies include The Swedish Companies Registration Office, CSN (Swedish National Board of Student Aid), Försäkringskassan (National Social Insurance Office), Swedish Civil Contingencies Agency, Swedish Environmental Protection Agency (Swedish EPA), Swedish Pensions Agency, National Police Board, National Post and Telecom Agency, National Archives, Swedish Transport Administration and Swedish Transport Agency.

As a result of their sector responsibility, the Legal, Financial and Administrative Services Agency, Swedish Energy Agency and Swedish Transport Administration have especially important roles in the action areas dealt with in this agenda. The Government therefore intends to give assignments and challenges to intensify work in these areas. See under each action area respectively for more details.

Economic aspects

No overarching quantitative targets have been set in the environmental management system. It is up to each agency to set their own targets and guidelines for environmental management work based on their own prerequisites. The same also applies to their efforts regarding ICT for the environment.

Any extra work and investment that the agenda involves must be done within the agencies' current budget frameworks. In many cases, environmental improvement measures can also lead to cost-savings, especially when it comes to reducing energy consumption, and investments can be recouped within a relatively short period. The general principles that apply to government agencies shall naturally apply here as well, including those of high efficiency targets and good financial management.[14]

Objective-setting

The overarching aim of ICT for a greener administration is to:
Use green ICT to reduce the state's environmental footprint.

The objectives for the three action areas are:
1. To increase the number of acquisitions with environmental requirements in the ICT area.
2. To reduce energy consumption in ICT activities.

[14] The State Budget Act (1996:1059)

3. To increase the number of travel-free meetings.

The aim of this agenda is to increase use of green ICT as an effective tool in the environmental work of Sweden's government agencies.

Focus on the European level

In the follow-up to the Lisbon Strategy[15], one of the three priorities is sustainable growth - to promote a resource-efficient, greener and more competitive economy. The strategy states that ICT shall be utilised to the full, which is demonstrated by the inclusion of "A digital agenda for Europe, the follow-up to the ICT strategy i2010" as one of seven main initiatives.

The overarching aim of the digital agenda for Europe is to achieve lasting economic and social benefits from a digital internal market based on fast Internet with high transfer capacity and technically coordinated applications. The focus area, which includes ICT for the environment, centres on the smart use of technology and information, which will help us to tackle major social challenges such as climate change and an ageing population.

As far as ICT for the environment is concerned, it is necessary for the ICT industry, other sectors and public bodies to cooperate in order to speed up the development and deployment of ICT-based solutions for smart electricity grids and metering, buildings with virtually zero energy consumption and intelligent transport systems. It is also important to provide citizens and organizations with information that can help them to reduce their own climate footprint. The spotlight is on smart electricity grids and lighting in particular.

The focus of Swedish information society policy is, among other things, to use ICT to promote sustainable growth, which is very much in line with European efforts.

Definitions

The concept of information and communication technologies (ICT) also includes telephony and other solutions that use electronic communication networks, i.e. Internet-based solutions.

[15] Europe 2020 – a strategy for smart and sustainable growth for all (COM(2010) 2020)

ACTION AREA 1: ACQUISITION

Objective

To increase the number of acquisitions with environmental requirements in the ICT area.

Action

Government initiatives

In its appropriation directions for 2011, the Government intends to instruct the Legal, Financial and Administrative Services Agency to investigate how to make the greenest ICT alternatives more visible.

Recommendations to government agencies

Develop an ICT purchasing policy

In order to improve and accelerate environmental work in government agencies, it is of vital importance to engage the agency management and to make the objectives of the work clear to all. A clear policy with a commitment to consider environmental impact and costs in a lifecycle perspective when the agency purchases or rents ICT equipment, if the type of procurement justifies such consideration, is a good tool with which to steer the organisation in the preferred direction. When acquiring ICT as part of framework agreements or with the help of the Swedish Environmental Management Council's criteria, the consideration of lifecycle costs and energy consumption is included.

Train staff in green ICT procurement

Knowledge and skills are crucial regarding how and on what level agencies should stipulate environmental requirements. According to Swedish EPA studies, organisations that possess environmental knowledge stipulate more environmental requirements than others. Government agencies should therefore train the relevant staff in green ICT procurement. The Swedish Environmental Management Council (SEMCo) offers training programmes and advice in the area of green public procurement. See under Background for more information.

Acquire the greenest ICT alternatives

Government agencies shall in certain cases coordinate their purchases through framework agreements. In framework agreements, it is often possible to choose products and services with better or worse environmental performance. Agencies that enter into framework agreements should consider the environment in their procurements assuming the type of procurement and other economic aspects justify it.

SEMCo's criteria can be used when acquiring ICT outside framework agreements. A routine for green acquisition should include the following.

- Order the greenest alternative in relation to the need in accordance with the criteria/environmental type-configurations laid down in the framework agreements.
- When procuring outside framework agreements, acquire products in accordance with SEMCo's advanced environmental criteria.
- When there are no framework agreements or environmental criteria, consider the costs during the product's/service's entire lifecycle as much as possible.

Attention shall be paid to the extent to which small and medium-sized enterprises (SMEs) can fulfil these requirements and criteria.

Monitor ICT acquisitions from an environmental perspective

Monitoring and reporting are effective ways of highlighting how the agencies are progressing with green procurement. Under the Environmental Management Ordinance, the agencies shall monitor and report the number of acquisitions with environmental requirements they make each year. It is desirable for the agencies to specify their acquisitions with environmental requirements in the ICT area. Furthermore, requirements that are not monitored and checked by the procuring agency or unit are not compatible with the practice of the Court of Justice of the European Union.

Background

Green public procurement is a powerful tool for more sustainable production and consumption. By stipulating environmental requirements on procured products and services, the public sector can have a direct impact on the range of green products on the market and reduce its own environmental impact.

The Legal, Financial and Administrative Services Agency supplies central ICT framework agreements[16]. One of several benefits of using framework agreements is that they generally stipulate tough environmental requirements, which guarantees the purchasing organisations products/services of a good environmental standard. For certain product groups, such as personal computers, there are also specially procured green alternatives to choose from (see Key facts 1.1).

Much of the ICT equipment acquired by the state is purchased through the central framework agreements supplied by the Legal, Financial and

[16] Eleven agencies are currently allowed to conclude framework agreements within certain allocated areas. This involves a certain division in the area of state procurement and the Legal, Financial and Administrative Services Agency will therefore be taking over the main responsibility for coordinating state procurement as from 1 January 2011. The Swedish National Debt Office and the Swedish National Financial Management Authority will be exempted from this merger.

Administrative Services Agency. It is therefore important that these framework agreements and subsequent purchases result in ICT procurement that is as green as possible, in accordance with public procurement legislation. These framework agreements are collectively worth SEK 7.5 billion (EUR 793 million), including call-off purchases from a number of municipalities and county councils. The state agreement for the supply of personal computers is the single largest framework agreement in the Swedish public sector, worth about SEK 1.3 billion (EUR 138 million) a year.

The Swedish EPA analysis shows that despite far-reaching environmental requirements being stipulated in the most recent personal computer procurement, demand for the greenest products is still low.[17] This is in part due to the information on these choices being unclear. There is therefore considerable untapped potential in improving the information to purchasers so that they can identify the greenest products more easily and monitor the environmental requirements during the agreement period. The effects of current environmental requirements could save the state an estimated 3 750 MWh of energy per year. There is potential for a further saving of 16 000 MWh per year if all government agencies were to purchase the greenest alternatives in their computer agreements. This is the equivalent of heating about 800 houses.

Key facts 1.1: The Legal, Financial and Administrative Services Agency's ICT framework agreements

Summary of the areas in which the Legal, Financial and Administrative Services Agency's has concluded framework agreements. Environmental requirements have been stipulated in the areas marked in italics.

Electronic identification (eID) 2008
Fixed and mobile operator and transmission services 2008
ICT Operation services 2010, entire operation
IT-consultancy services 2008, Resource consultancy services
Communication as a service 2008
Communication equipment 2008
Computer monitors 2008 (incl. green alternatives)
Laptop computers 2008 (incl. green alternatives)
Desktop computers 2008 (incl. green alternatives)
Software and services 2007, system integrators
Software and services 2007, training in office and administration software
Software and services 2007, training in software for system developers and engineers
Software and services 2007, Internet and volume suppliers
Software and services 2007, open software and services
Service, maintenance, expansions and upgrades of subscriber exchanges
Servers, storage and product-related services 2007
Printers, copiers and services 2009 (Swedish Agency for Higher Education Services and the Legal, Financial and Administrative Services Agency)
Telephones, communication equipment and accessories 2008
Volume-based software agreement 2005
(More information on state framework agreement can be found at www.avropa.se *(mostly in Swedish))*

[17] Miljökrav i statliga ramavtal – miljöpåverkan och potential, Rapport 5951, Naturvårdsverket 2009 (Environmental requirements in state framework agreements - environmental impact and potential, Report 5951, Swedish EPA, 2009 (In Swedish))

In order for the agencies to be able to make green acquisitions, state framework agreements must themselves be environmentally sound. This is a question of both stipulating far-reaching environmental requirements when procuring framework agreements and of highlighting the availability of green alternatives for agencies covered by such agreements.

When may environmental requirements be stipulated?

Environmental concern can be considered in different phases of the procurement process. European public procurement directives contain provisions that clarify how this concern can be integrated into the different stages of procurement. These provisions have been transposed into Swedish law via the Swedish Public Procurement Act (2007:1091) and the Act (2007:1092) on public procurement of water, energy, transport and postal services. Such concern can for example be stipulated in the technical specifications. A purchasing agency or unit can also stipulate certain manufacturing requirements or special environmental conditions covering how a contract may be implemented. Any stipulated environmental requirements must be compatible with the EU's fundamental principles, i.e. they must be objective, be proportionate with the product or service being procured and must not be discriminatory. Environmental requirements must be explicitly stated in the procurement advertisement and bid documentation. The procuring agency must have the possibility and the intention to check that stipulated requirements have actually been fulfilled.

The needs analysis is very important for all types of procurement and is also a key factor as regards environmental issues so that the right requirements can be formulated. The market analysis, which is part of the preparatory phase, is also very important in order to examine what the market can offer. It is also imperative to safeguard the participation of SMEs in procurements, an issue that is highlighted in the Government Procurement Ordinance [18].

There is currently a gradual transition to what is known as "functional sales", i.e. agencies pay per workplace for which a supplier is responsible for equipment, service and maintenance and for replacing the equipment every third year, for example. The supplier retains ownership of the equipment. The agency or organisation has no control over which brand of equipment the supplier purchases, the only requirement being that it fulfils existing functional specifications. In such cases, it is of course important that these specifications include environmental performance. The same principle applies to server functions, where the purchaser buys the function rather than the server itself, known also as "cloud services"[19], that are available externally. In such cases, the agency has no

[18] Swedish Ordinance (2005:864) amending Ordinance (1998:796) on coordinated government procurement.

[19] Cloud services involve storage, software and processing power being made available online, Grön IT – från problem till lösning (Green ICT - from problem to solution), Nordin 2009 (In Swedish)

control over operation. Environmental performance must be guaranteed by stipulating requirements during the procurement process.

The Swedish Environmental Management Council (SEMCo)

The Swedish Environmental Management Council (SEMCo), jointly owned by the Swedish state, the business sector and the Swedish Association of Local Authorities and Regions (SALAR), plays a central role in stimulating green procurement. It does this not only by developing ready-made environmental criteria for a large number of products and services but also by offering training programmes and information.

The Council's procurement criteria comprise proposals for environmental requirements that can be used when procuring products, services and works contracts. For each criteria area, the Council also produces related information and guidance. The procurement criteria have been developed in a comprehensive quality assurance process, in which important stakeholders from both the private and public sector have participated. Environmental requirements are currently set within ten different criteria areas, which in turn cover a number of product categories (see Key facts 1.2).

Key facts 1.2: SEMCo's procurement criteria

Environmental requirements are currently set within ten different criteria areas, which in turn cover a number of product categories.

IT and telecom	Office
Vehicles and transport	Food
Energy	Interior fittings and textiles
Cleaning and laundry services	Nursing and care
Streets and property	Services

More information on the environmental criteria and SEMCo's other support activities can be found at www.msr.se/en.

In May 2010, the Swedish Agency for Public Management was tasked with examining and submitting proposals on how to coordinate state-run procurement support services, including SEMCo. The aim is to improve the consistency of state-run procurement support services. The Agency shall report its findings by 15 October 2010.

Laws and regulations

Public procurement is regulated in the Swedish Public Procurement Act and the Act on public procurement of water, energy, transport and postal services, which provide scope for stipulating environmental requirements. The latest amendment of these two acts (SFS 2010:571 and SFS 2010:572) contains a new general clause stating that procuring agencies and units should consider environmental and social concern in their procurements as long as the type of procurement justifies it.

Other laws and regulations promoting green procurement include the Environmental Management Ordinance, which contains a requirement for government agencies to green their procurements. The Energy Efficiency Ordinance, which includes measures to procure energy-efficient equipment, also has a conducive effect. The same incentive to procure energy-efficient equipment is given to Swedish municipalities and county councils in the Ordinance (2009:1533) on state aid to energy efficiency improvements in municipalities and county councils. The EU Regulation (EC) No 106/2008 on a Community energy-efficiency labelling programme for office equipment, Energy Star, regulates the minimum requirement for equipment procured by central government authorities. (For further information on laws and regulations, please see Appendix 1. Laws and regulations related to ICT and the environment.)

The Government's Green Public Procurement Action Plan (Government Communication 2006/07:54) stipulated targets and measures to increase environmental requirements in public procurement. The Action Plan includes the following targets:

- To increase the number of public procurements containing well-formulated environmental requirements.
- To increase the number of state framework agreements containing well-formulated environmental requirements.
- To increase the number of central government, municipal and county council authorities that regularly stipulate well-formulated environmental requirements.

The European Commission presented a communication on Public procurement for a better environment on 16 July 2008, aimed at increasing environmental requirements in public procurement in order to reduce the environmental impact of public consumption and stimulate innovation in environmental technologies products and services within the EU. The Commission proposes an overall political target of 50 percent of procurements per Member State shall be green by 2010. The conclusions from the Competitiveness Council meeting on 25-26 September 2008 welcome the Commission's communication.

ACTION AREA 2: OPERATION AND USE

Objective

To reduce energy consumption in ICT activities.

Action

Government initiatives

The Swedish Energy Agency has the overall responsibility for increasing the awareness and knowledge of organisations, enterprises and households by means of customised measures and tools to streamline energy use, including ICT operation and use. Under the Energy Efficiency Ordinance, the Energy Agency has a special responsibility to inform and guide government agencies and courts.

This makes further assignments or measures in this area currently unnecessary. The Government encourages the Swedish Energy Agency to continue its efforts in the area of energy efficiency and ICT.

Recommendations to government agencies

Analyse ICT activities from an environmental perspective

To be able to optimise its ICT use from an environmental perspective, an organisation must have a clear picture of the current situation and the potential for improvements. A survey of ICT activities from an environmental perspective should therefore be part of the environmental analysis carried out by the agencies in accordance with the Environmental Management Ordinance. This analysis should form the basis of any targets and measures adopted by an agency to optimise its ICT activities.

Develop ICT targets and guidelines

Based on the environmental report and analysis, agencies should establish targets and guidelines for their ICT activities. The aim of an environmental policy for ICT is to establish guidelines for ICT activities and provide support for the measures that must be taken to reduce environmental impact. Set targets should be time-framed and measurable and be annually monitored and reported as part of the yearly environmental management report. It is beneficial for an agency's environmental policy for ICT to be incorporated into its overall environmental policy.

Inform and train staff in ICT and the environment

Green ICT operation and use is mostly a question of changing behaviours. To achieve this, the staff must be committed and motivated. Knowledge of and skills in sustainable use are therefore a crucial factor. This is a question of not only the IT department's skills in how different decisions impact the environment but also user awareness of energy-efficient behaviour.

Monitor ICT operation and use from an environmental perspective

Monitoring and reporting can highlight green ICT use as an important issue. Being able to measure electricity consumption from ICT is essential in order to optimise its operation. Under the Environmental Management Ordinance, government agencies with environmental management systems should already be monitoring their energy consumption, but their monitoring needs to be more specific. It is of crucial importance to monitor ICT energy consumption separately, within the framework of the annual environmental report.

Background

ICT offers the potential to streamline public sector activities, which means there is also potential to achieve reductions in resource consumption and environmental impact. At the same time, the operation and use of ICT products and systems causes negative environmental impact in the form of energy consumption, chemical use, transport, waste generation, etc. Studies show that the emissions caused by the manufacture and use of ICT constitute about two percent of all carbon emissions.[20] According to a European study, 84 percent of all environmental impact from ICT products comes from the in-use phase. The same study also indicates that up to 30 percent of an average desktop computer's energy consumption occurs when the computer is not in use.[21] In addition, the Danish Energy Saving Trust estimates that 30-50 percent of a server's energy consumption can be saved by designing the server-room in the right way.[22] It seems therefore that there is scope for saving energy by optimising design and equipment and by achieving more efficient ICT operation and use.

The figure below shows carbon emissions from the operation and use phase of ICT divided up as follows:

- Communication (fixed and mobile telephony and LAN) 32%
- Personal computers and printers 45%
- Servers (including cooling) 23%

[20] High Tech, Low Carbon. Intellect 2008

[21] Global Action Plan 2007: An Inefficient Truth

[22] www.savingtrust.dk

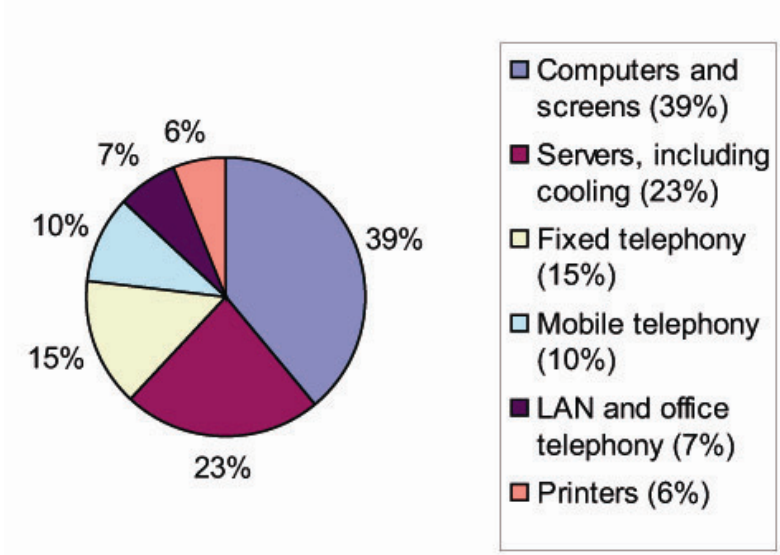

Figure 2.1. Percentage of carbon emissions for different parts of ICT during the user phase
Source: Gartner

Use

Most of the environmental impact from ICT occurs during its operation or use and this is something that end-users can to a certain extent influence themselves. It can be a question of turning off computers and screens at the end of the working day and of reading documents on the screen instead of printing them out. A reduction in the number of computers and printers is also an issue that directly influences the end-user. Having just a laptop computer (and not both a desktop and a laptop) and having a longer distance to walk to the nearest printer, due to fewer printers, require understanding and acceptance of the environmental aspects of ICT on the part of the user. This in turn requires encouragement and feedback by e.g. regularly measuring and highlighting the effects of implemented changes.

Operation

There are many different measures and solutions that can be implemented to bring about environmental improvements in ICT operation. Some examples are:

- virtualisation of servers - technologies for the distribution and more efficient utilisation of server power in a physical server.
- consolidation of data centres - fewer servers, i.e. the result of effectively implemented virtualisation,
- re-use of heat from server halls,
- thin clients – simple terminals with no hard disk of their own connected to a central server,
- blade servers - more compact and more flexible than normal servers, and
- de-duplication - a way of saving information, space and thereby energy.

Environmental policy for ICT

A policy for greener ICT activities is required to achieve more efficient operation and use of ICT. It is beneficial to incorporate this policy into the organisation's overall environmental policy. Since ICT is responsible for a certain share of an organisation's environmental impact, but at the same time has potential for environmental improvement in other areas, ICT should be seen as a general tool in environmental work.

Key facts 2.1: Examples of activities that can help achieve greener ICT activities

- Analyse how to reduce environmental impact from ICT equipment, including telephones, computers and printers
- Publish an environmental policy on ICT use
- Produce information material on how end-users can affect the environment through their choices and day-to-day activities
- Introduce environmental training programmes to teach selected staff how to be "Green ambassadors"
- Have a replacement policy for computers, servers and other ICT equipment
- Have a recycling and waste management policy

Source: Gartner

Experiences from agencies

The Swedish Energy Agency has initiated an "agency network" called HyLok with the aim of supporting agencies in the network in their efforts to make their premises more energy efficient. In particular, the network has looked at the agencies' experiences of energy efficiency measures in server halls. A few best practice examples[23] from the HyLok report are worth mentioning, see below.

Swedish Energy Agency:

- replacing conventional servers with blade servers has reduced electricity consumption by 20-30 percent
- virtualisation of servers has led to a reduction in electricity consumption of 100 000 kWh/year
- plans to start running servers on direct current (DC) will reduce electricity consumption by an estimated 10 percent

The Swedish Police:

- virtualisation of servers (less than 3 years) has reduced electricity consumption to 1/20 and the cooling requirement to 1/10
- optimisation of the electricity consumption and cooling systems in computer halls has reduced cooling by 35-40 percent or approximately 500 000 kWh. Positive side-effects include less water consumption and less maintenance due to a reduction in the number of fans.

[23] Project 3: Serverhallar – erfarenheter av energieffektivisering hos medlemmarna i HyLok (Server halls - HyLok members' experiences of energy efficiency measures), 2010 (In Swedish)

The measures mentioned here involve different levels of investment. A case in point is the Swedish Chemicals Agency's virtualisation project, which required start-up capital of about SEK 1 million (EUR 106 000). This investment in virtualisation and central storage is expected to pay for itself within a year or so.

ICT waste

An important issue as regards ICT equipment is how to deal with the waste. The equipment contains many different substances, which, if disposed of carelessly and released into the natural environment, are harmful to both humans and ecosystems. ICT equipment is covered by producer responsibility legislation and must be disposed of by the supplier (in accordance with the WEEE Directive - Waste Electrical and Electronic Equipment. See Appendix 1 for more details). It is important for each individual agency to have an agreement with an enterprise that is responsible for safe disposal of the equipment. The Government assumes that agencies already dispose of end-of-life equipment in an environmentally sound way and comply fully with existing regulations in this area. The agenda does not therefore contain any further proposals in this area.

Laws and regulations

Under the Environmental Management Ordinance, government agencies shall use energy-efficient ICT as a tool to green their activities. They shall also report in what way they have used ICT to reduce energy consumption. (For further information on laws and regulations in the area of ICT and the environment, please see Appendix 1.)

ACTION AREA 3: MEETINGS AND TRAVEL

Objective

To increase the number of travel-free meetings.

Action

Government initiatives

The Government intends to give the Swedish Transport Administration an assignment in the area of travel-free meetings, as part of the Administration's appropriation directions for 2011-2015, aimed at facilitating travel-free meetings both within and between agencies.

Recommendations to government agencies

Develop a meetings and travel policy

Agency managements have a responsibility to create the conditions for more resource-efficient meetings and to set a good example themselves. A meetings and travel policy is the management's tool to steer their organisations towards more resource-efficient meetings. Meeting plans can be developed as an aid to staff in order to facilitate the introduction of and compliance with the meetings policy. These plans can outline the significance and aim of the meetings and their participants. They can also provide examples of meetings that would benefit from being travel-free. These meetings plans can also make it easier for the agency to adapt and design technical systems for travel-free meeting alternatives. A needs analysis of solutions suitable for each individual agency should be performed within the framework of the meetings and travel policy.

Make travel-free meeting alternatives more available

Efficient technology that is readily available and user-friendly is essential if staff are to be able to use the travel-free meeting alternative. Many agencies already have video conferencing systems, but these are not always designed and connected in a way that enables meetings to be held with other people outside the agency. It is vitally important for agencies to ensure that the prerequisites are in place for staff to be able to hold travel-free meetings with other agencies and organisations, using either telephone, video or web conferencing, irrespective of geographically location.

It is also important for agencies to, as far as possible, offer other agencies, municipalities and organisations outside the agency's main location to participate remotely when the agency arranges seminars and

meetings and/or the possibility of viewing them afterwards. The cost efficiency aspect must be taken into account when considering any investment in travel-free meeting equipment.

Facilitate use of travel-free meeting alternatives

It is of vital importance for the agency to actively endeavour to facilitate the use of its existing travel-free meetings technology. For example, by:

- ensuring the video conference address is known and available in the same way as other contact details within the organisation,
- ensuring the necessary support and help is on hand to cater for all knowledge levels and needs in the organisation,
- introducing meetings technologies and forms of meetings in a way that optimises their use.

Monitor the use of travel-free meeting alternatives

The use of travel-free meeting alternatives should be monitored and reported in connection with the annual environmental report submitted in accordance with the Environmental Management Ordinance.

Background

Business trips account for about 10 percent of all travel in Sweden.[24] Physical meetings are important for building up good relations internally within the organisation and between various stakeholders both nationally and internationally. But travel is very resource-demanding and has a negative impact on the environment.

Travel-free[25] meetings can replace some business trips. Different travel-free meeting alternatives can offer new, improved forms of meetings and greater accessibility in both time and space. Travel-free meetings in enterprises, authorities and other organisations are becoming increasingly common. The main driving-forces are of course the time and money they save[26]. The time saved can reduce stress both at work and in private life. The environment is an important factor but has so far not been the main argument for travel-free meetings. Business travel is however responsible for a large proportion of an organisation's environmental impact and is often a service organisation's biggest ecological burden.

Travel-free technology is of course responsible for some environmental impact, but in comparisons between teleconferences and physical travel, the latter consumes significantly more energy than the former. According to TeliaSonera[27], an hour's air travel is comparable to seven

[24] Source: Swedish Transport Administration

[25] Distance meetings in real time using suitable technologies, such as telephone, video and online conferencing (web-based meetings via a computer or other Internet-based user interface)

[26] *Can virtual meetings replace business travel?* In Dennis Pamlin ed. Sustainability at the speed of light. pp76-95, WWF Sweden. Peter Arnfalk 2002

[27] Corporate Responsibility Report 2008, TeliaSonera 2009 (with updated figures for 2009)

years of phone calls in carbon emissions terms and one hour's car journey is the equivalent of 12 months of phone calls.

The results of a lifecycle analysis performed by Chalmers Industriteknik[28], an industrial technology foundation attached to Chalmers University of Technology, show that a journey by air between Stockholm and Göteborg has five times the environmental impact of a video conference. The majority of travel-free meetings are therefore an effective way of reduce the organisation's environmental impact.

A good example of an organisation that has increased the amount of travel-free meetings it holds is the Swedish arm of TeliaSonera, which between 2001 and 2009 reduced its physical travelling by 60 percent. Coupled with other measures, such as less need for premises, thanks to more flexible ways of working, they have managed to reduce they total carbon emissions by 76 percent.

Success factors

To gain the full benefit of travel-free meetings, it is important to be aware of the obstacles or challenges in the area. Some examples of success factors when introducing or increasing travel-free meetings are presented below.

Organisation and management

The implementation or increased use of travel-free meeting solutions requires a decision or directive from top management and the incorporation of such an endeavour into the organisation's policy documentation, e.g. its environmental policy. When such a decision is taken, the framework for how the organisation shall achieve resource-efficient meetings should be established by considering and balancing the benefits and drawbacks of business trips against travel-free meetings. Identifying which types of meeting are best suited to the travel-free alternative is an important step along the way. It is very important for the management itself to set a good example and use travel-free meetings as much as possible.

Individual attitudes and behaviours

Attitudes, ignorance and a lack of incentive for the individual can lead to unwillingness to change his or her behaviour.[29] Clear objectives, information and training are therefore important in order to encourage the staff to use travel-free meetings. Other forms of encouragement, feedback of results and incentives, such as internal competitions, can also help to increase the use of travel-free meeting alternatives.

[28] "Service transformation - managing a shift from business travel to virtual meetings." Journal of Cleaner Production **11**(8): 859-873, Arnfalk, P. and B. Kogg 2003

[29] Ibid

Technologies

For telephone, video and web conferencing to be a viable alternative, efficient technologies must be available to all meeting participants in different geographical locations. In public administration, it is important to use technologies that are compatible across agency boundaries. The various solutions for travel-free meetings must be easy to use. Help and support must also be available.

Video conferencing is a good solution, but simply sharing documents and having a telephone conference will often suffice. Combining an advanced solution with a simpler one provides flexibility.

An important lesson to be learned is that the development of a new meetings culture is not primarily a technical issue but mostly a social and organisational challenge. Simply acquiring the technology won't do the trick. Changes must always be well advocated by the management, who must also demonstrate both drive and will to implement them.

The use of travel-free meetings by government agencies

According to a survey[30] conducted in the spring of 2009, nearly two-thirds of agencies had access to meeting-rooms equipped with video conferencing technology. Computers with web cameras, loudspeakers and microphones were quite common. In other words, nearly 70 percent of agencies have access to telephone-based technical solutions for travel-free meetings. The survey also shows that a third of the agencies believe that travel-free meeting solutions are well known and frequently used. The majority of the agencies believe that up to 25 percent of business travel by their staff could be replaced by travel-free meetings. This illustrates the need to increase information about and training in the use of travel-free meeting alternatives. At the same time, however, there is plenty of potential for increasing the use of travel-free meetings in the agencies, resulting in less environmental impact, assuming the number of business trips also decreases as a result.

[30] Habits and attitudes toward travel-free meetings in Swedish government agencies, a project by Nina Karmelitov at CEMUS, Uppsala University, 2009

Key facts 3.1: Attitudes among government agencies to travel-free meetings

- Almost two-thirds of agencies have access to meeting-rooms equipped with video conferencing technology.
- Computers with web cameras, loudspeakers and microphones were quite common.
- Nearly 70 percent of agencies have access to telephone-based technical solutions for travel-free meetings.
- A third of agencies believe that travel-free meeting solutions are well known and frequently used.
- The majority of the agencies believe that up to 25 percent of business travel by their staff could be replaced by travel-free meetings.

Source: Karmelitov, 2009

A good example among Sweden's government agencies is the Swedish Transport Administration (previously the Swedish Road Administration), which ran a three-year project entitled "Resfri" ("Travel-free") between 2006 and 2008[31]. The objective was to design and develop online manuals for organisations wishing to increase their use of travel-free meetings. As part of the project, the Administration has pointed out a number of factors that are important to deal with during the introductory phase. No two agencies are alike and the solutions must therefore be adapted to suit each individual agency.

Key facts 3.1: The 10 steps of the Resfri project

1. Analyse the current situation.
2. Gain advocacy for the initiative and set aside resources.
3. Establish a working group.
4. Identify the communication needs and the interest in travel-free meetings.
5. Analyse the technical prerequisites.
6. Select and purchase suitable equipment/services.
7. Establish routines for travel-free meetings.
8. Appoint responsible coordinators.
9. Inform and "sell" the concept.
10. Monitor and emphasise.

Source: Swedish Transport Administration, www.trafikverket.se/resfri (in Swedish)

Laws and regulations

Under the Environmental Management Ordinance, agencies shall use energy-efficient ICT as a tool to green their activities and, to the same end, develop a meetings and travel policy. Agencies shall also monitor the environmental impact from their business travel.

[31] www.trafikverket.se/resfri (in Swedish)

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