OECD REVIEWS OF REGULATORY REFORM

REGULATORY REFORM IN SWEDEN

REGULATORY REFORM AND THE ENVIRONMENT

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

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AND DEVELOPMENT

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FOREWORD

Regulatory reform has emerged as an important policy area in OECD and non-OECD countries. For regulatory reforms to be beneficial, the regulatory regimes need to be transparent, coherent, and comprehensive, spanning from establishing the appropriate institutional framework to liberalising network industries, advocating and enforcing competition policy and law and opening external and internal markets to trade and investment.

This report on Regulatory Reform and the Environment analyses the institutional set-up and use of policy instruments in Sweden. It also includes the country-specific policy recommendations developed by the OECD during the review process.

The report was prepared for *The OECD Review of Regulatory Reform in Sweden* published in 2007. The Review is one of a series of country reports carried out under the OECD's Regulatory Reform Programme, in response to the 1997 mandate by OECD Ministers.

Since then, the OECD has assessed regulatory policies in 23 member countries as part of its Regulatory Reform programme. The programme aims at assisting governments to improve regulatory quality — that is, to reform regulations to foster competition, innovation, economic growth and important social objectives. It assesses country's progresses, drawing on the 2005 *Guiding Principles for Regulatory Quality and Performance,* which brings the recommendations in the 1997 *OECD Report on Regulatory Reform* up to date, and also builds on the 1995 *Recommendation of the Council of the OECD on Improving the Quality of Government Regulation.*

The country reviews follow a multi-disciplinary approach and focus on the government's capacity to manage regulatory reform, on competition policy and enforcement, on market openness and on specific issues, such as multi-level regulatory governance and environmental policy for Sweden. These are presented in the light of the domestic macro-economic context.

This report was drafted by Prof. Thomas Sterner (School of Business, Economics and Law, Göteborg University), Nick Johnstone (OECD Environment Directorate), and Caroline Varley (Consultant). It benefited from close consultations with a wide range of government officials, parliamentarians, business and trade union representatives, consumer groups, and academic experts in Sweden. An earlier version was reviewed by delegates to the OECD Working Party on National Environmental Policies (Rome, Oct. 3rd-4th), and this version reflects comments received at that meeting, as well as from colleagues throughout the OECD Secretariat. The report is published under the authority of the OECD Secretary-General.

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1. Introduction: Regulatory Reform and the Environment[1]

This report is part of a wider review of regulatory reform in Sweden, which also involves reviews of other areas of public policy such as trade policy, labour policy and competition policy. In addition to drawing upon secondary literature and government documents, valuable material for this report was made available in the form of written answers from Swedish Government officials to specific questions posed by the OECD Secretariat. Further inputs were received through a series of interviews with representatives from government ministries and agencies, industry associations, NGOs, academics and others was conducted in Sweden in the summer of 2006.

Environmental regulation is addressed in this paper from a multidisciplinary regulatory reform and regulatory quality perspective. The OECD has recently published an overall *review of environmental performance* in Sweden, OECD (2004a). This report does not summarize or duplicate that publication but highlights a number of issues that are particularly important from a regulatory viewpoint. This introduction presents an overview of these issues and highlights some particularly relevant and prominent features of the regulatory situation in Sweden with respect to the environment.

The OECD project on regulatory reform has focussed on measures and systems which can improve the efficiency of regulatory systems (OECD 2004 & OECD 2005a&b). This paper examines these issues through the specific angle of environmental policy (in Sweden). Many of the same issues which are central to the general discussions on regulatory reform are also central to the discussion of environmental policy, and these are explored in further detail in a report prepared on 'Environmental Policy from a Regulatory Quality Perspective' [ENV/EPOC/WPNEP(2006)11/REV1]. As set out in that report, relevant issues include:

- ***Market Competition and the Environment***. Many environmentally-significant economic activities exhibit significant economies of scale and/or natural monopoly conditions (waste collection/management, water supply/sanitation). In addition, the introduction of many environmental policies can have significant implications for the degree of competition in a market, whether because the instrument itself involves market creation (*e.g.* ITQs, tradable permits, etc.) or because the policy affects the degree of competition in a product market (*e.g.* producer responsibility schemes) [see, for example, DAF/COMP(2006)15].

- ***Whole-of-Government Approach and Common Agency***. Environmental concerns (and their regulation) touch upon a number of different areas of direct responsibility of Ministries (*e.g.* transport, health, industry, finance, agriculture, etc), other than those strictly responsible for environmental concerns. In addition, the involvement of different layers of government in environmental policy is also necessary. Policy co-ordination is, therefore, key and a 'whole-of-government approach' should be adopted, a principle emphasised in the *Guiding Principles for Regulatory Performance and Quality* (OECD 2005a).

- ***Policy Evaluation (ex ante and ex post).*** One of the keys to regulatory efficiency is consistent ex ante and ex post evaluation of regulation. With respect to environmental concerns, this can involve cost-benefit analyses as part of Regulatory Impact Analysis (RIA), as well as environmental impact assessments. These can be more or less formal and more or less comprehensive, as part of a process for scrutinising new regulations that is specific to the institutional setting of each country. Interestingly, the environmental sphere is almost certainly the area where the largest number of CBAs have been undertaken, see Pearce *et al*. (2006), due in large part to the importance of non-market benefits in the environmental sphere, and thus the greater need for formal evaluations.[2] Another perspective is the assessment of regulations ex post,

and the fact that any given regulation could be subject to review and assessment after a period of time. Environmental and safety standards are evolving fast and technological change may also render a number of aspects obsolete, or offer different technical options.

- ***Alternatives to 'Direct' Regulation***. The project on regulatory reform has attached considerable importance to the need to identify innovative market-based policy instruments to meet public policy objectives. Once again, the environmental sphere has been at the forefront of efforts to do so – a point made in OECD *Taking Stock of Regulatory Reform* (2005) and also in more recent OECD work.[3] If well-designed, market-based instruments such as tradable permits, environmental taxes, and deposit-refund systems have proven to be at least as environmentally effective as direct regulation, and often much more economically efficient (*i.e.* meeting given environmental objectives at lower cost). Even when direct regulations have remained in place, they have increasingly taken the form of more efficient performance standards rather than technology-based standards.

- ***Transparency, Consultation and Accountability in Rule-Making***. A wide variety of 'stakeholders' are affected by the introduction of environmental policies. As such, it is important to ensure that the views of all key agents are taken into account, through hearings, focus groups or other avenues. In addition to resulting in 'better' environmental policy (assuming that problems of 'capture' are avoided), this can ease implementation and enforcement downstream, reducing administrative burdens. In addition, access to courts for environment-related issues is key to ensure the accountability of those who transgress regulations, and governments which fail to enforce them.

- ***Communication and Information in Policy Implementation***. Efficient markets depend upon full information. Thus, in addition to the use of market-based instruments in environmental policy, much use has been made of information-based measures, whether targeted at households (*e.g.* eco-labels) or firms (*e.g.* pollution release registries). This allows consumers to better express their underlying environmental preferences, and encourages markets to factor in risk.

- ***Non-Discriminatory Policy Frameworks***. While a key underlying principle of environmental policy is the application of the Polluter Pays Principle (OECD 1992), in practice for political (and in some cases, efficiency) reasons, this can be difficult to apply. The OECD 'Principles for Regulatory Quality and Performance' also call for a non-discriminatory approach to regulation. In particular, distributional and competitiveness concerns are frequently seen as barriers to its application – and in many cases tax exemptions are provided, differential standards are applied, or gratis permits are allocated. The case for such preferential treatment needs to be examined closely. In particular, it is frequently argued that SMEs, foreign firms, and new entrants are discriminated against when new regulations are applied.

- ***Monitoring, Compliance and Enforcement***. Effective regulation is, of course, dependent upon effective monitoring, compliance and enforcement. The budgets of environmental agencies are often considerable, but the regulatory framework which they oversee is also large and complex. Indeed, the mandate of environment inspectorates is arguably more complex than that of most other inspectorates. Ensuring that resources (personnel, institutional, financial) are sufficient is a precondition for effective regulation. Other issue may include the relationships between nation-wide agencies in charge of enforcement and local offices with overlapping responsibilities, or co-ordinated by various national agencies.

- ***Administrative Burdens and Policy Choice***. A key guiding principle in regulatory reform is to reduce (public and private) administrative burdens to the extent possible, and ensure that they are proportionate with the chosen policy target. However, in the environmental sphere, environmental externalities are rarely targeted directly since the administrative costs in doing so can be overwhelming. Indeed, relative administrative burdens are frequently the most important factors determining instrument choice and point of incidence. There are, therefore, important trade-offs to be made.

1.1 Environmental Policy and Regulatory Reform: Special characteristics of Sweden

The previous section discussed environmental policy issues from a regulatory reform perspective. Their specific implications in the context of Sweden will be discussed below with reference to a number of recent policy developments. There are five main points which emerge:

1. Decentralisation of power and responsibilities to the local level.

2. Delegated responsibility to agencies for implementation.

3. Increasing role of courts at the expense of civil servants.

4. Co-operative (rather than adversarial) relationship between regulator and regulate.

5. Importance of consultation and stakeholder participation.

Sweden has several special characteristics that are important when it comes to environmental management. First, decision-making is highly decentralised along two distinct dimensions. Municipalities have a very strong degree of autonomy in Sweden. They have the power of taxation and are in fact the public bodies that collect the largest amount of tax revenue – particularly from people with low and average levels of income and wealth. This gives local politicians in the 290 municipalities considerable autonomy and a power base of their own with which they manage, for example, social services, pre-school and regular school education, planning and building issues, environmental and public health protection, refuse collection and waste management, water, sewage**,** rescue services, civil defence, library services, and housing. The municipalities are also responsible for practically all education, with the exception of higher education. They have responsibility for the pre-school system, the nine-year compulsory school system for the 7-16 age group and the three-year voluntary upper-secondary school system. Local government operations are divided into obligatory tasks and voluntary tasks. A special chapter of the regulatory reform review of Sweden is devoted to analysing relationships between the local and national levels [see GOV/PGC/REG(2006)6].

This high degree of fiscal and political decentralisation is, however, combined with a fairly ambitious set of goals for equal treatment of all citizens. Municipal politicians are therefore often caught in a dilemma between the two goals of local self-determination on the one hand and following national legislation to guarantee equal treatment on the other. To a lesser extent, the same can be said of the regional or county level, where the twenty County Councils manage (among other things) the health sector. Responsibility for the transport sector is shared between the regional and municipal levels (see Section 2).

At the same time, government in Sweden exercises its authority through an unusually large number of public agencies. The Swedish Constitution mandates a very strict separation of policy-making from implementation. This implies that ministries are small by international standards and never get themselves involved with day-to-day issues of individual cases. The agencies that formally have the authority to implement policy are relatively more numerous and well-staffed.

This double decentralisation (thematically by agency, as well as geographically, to counties and municipalities) has the potential to generate some degree of tension in implementation. This tension is particularly relevant in the environmental area, where local conditions might warrant important differences in some areas of policy making or implementation. As discussed in Section 2, the thematic division into agencies at the national level is partly (but not always nor consistently) replicated at the local levels. Some municipalities have tried to simplify the situation facing industry and other local parties by creating broader agencies to provide more coherent local implementation and easier "one-stop" processes. With such a large number of small local administrations, the level of professional competence and specialisation cannot always be as high as would be desirable. For instance, RIAs are generally not undertaken to guide policy implementation at this level.

Another important characteristic of the Swedish situation is the rather skewed distribution of industry. There are a small number of very important, very large, international industries that dominate the business sector (along with a large state sector). In total over 94% of firms in the manufacturing sector have less than 20 employees in Sweden, and less than 1% have more than 250 employees. However, in 2002, firms with more than 250 employees in the manufacturing sector represented almost 65% of total turnover, a higher figure than for all other European economies except Germany, Finland, Ireland and Hungary (OECD, *Structural and Demographic Business Statistics Database*). To a large extent, this has historic roots. Sweden's industry is either based on natural resources (timber and minerals) or on a limited number of inventions (often from the 19th or early 20th century) that led to large manufacturing industries. Sweden has also very strong trade unions and generally social-democratic government with very strong ties to the trade unions. This creates a very strong and pragmatic, but closed, alliance of insiders: governments and trade unions have found mechanisms for constructive coexistence with the large incumbent industries. This coexistence does not necessarily include outsiders.

Indeed, this specific institutional context may sometimes represent an impediment in the relationship between the government and SMEs or new industries. This has been the subject of considerable political debate in Sweden: the government has sometimes been accused of policy-making that is only in the interests of the major companies, and that causes unnecessary burdens for SMEs. There are now several procedures (such as RIAs) intended to reduce the burden of new legislation on SMEs. This is regulated in the Government Agencies Ordinance (V*erksförordningen (1995:1322))* and in the Ordinance on the Special Impact Analysis of Rules on Small Enterprises (f*örordningen (1998:1820) om särskild konsekvensanalys av reglers effekter för små företags villkor)* – the latter is the so-called Simplex Ordinance, which contains a checklist with questions the authorities have to analyse to check for impacts on small enterprises (MSD 2006).

One factor that serves as a check on other problems, such as the bias against SMEs just mentioned, is the strong culture of consultation in Swedish administration. Rule-making and regulation are regularly preceded by public committees of inquiry, and these typically build on the principles of transparency and right of knowledge and provide ample opportunities for consultation. This is the case for legislation originating at both the national or European level. However, integration into the EU has necessitated the development of processes and mechanisms to ensure transparency and consultation are safeguarded.

In comparison with some of its main trading partners (in the EU and elsewhere) Swedish administration and industry are fairly non-hierarchical. Thus, it is important to ensure that integration within the EU does not result in an 'extra layer of government', but rather an efficient allocation of roles and responsibilities between the national and European levels. In the absence of the development of suitable processes and mechanisms, there is a risk of reduced transparency and consultation, not least because co-operation at the European level can sometimes reduce the time available for involving stakeholders. In the context of multi-level governance, a clear delineation of roles and responsibilities is also important to ensure accountability, since in the absence of such clarity different levels of government may refrain from dealing with issues that they assume are the prerogative of another level.

1.2 Regulatory reform and the environment

Reviewing environmental regulation requires analysing the cases where public intervention is necessary, and where (if necessary) those interventions should be made using regulatory tools. Environmental policy is needed in situations of market failure or where other public policy objectives such as health and social concerns call for attention, and some form of environmental regulation by public authorities is attached to these goals. Thus, there are several characteristics that policy interventions with respect to the environment share with other public policies that are not market-driven, such as social and equity issues.

The underlying principle from a regulatory quality and market-oriented perspective is not that all regulation should be avoided since, at the very least, a strong competition agency is clearly needed. If a competitive free-market economy is sought, one must be prepared to use regulation to counter the incentives that firms have to restrict that competition. Similarly, there is a need for certain agencies that address market failures that lead to environmental problems. In this respect, the environmental area is akin to social policy. An unregulated market economy may lead to both pollution and social inequality that are considered to be socially or politically undesirable. If this is so, then the purpose of regulatory reform is not to leave the market unfettered (even if this implies a regulatory burden on firms), but to ensure that the policy objectives that have been fixed can be efficiently met. The goal must be to keep unnecessary burdens and distortions to a minimum, and to weigh the costs and benefits of each piece of new regulation carefully.

There are other factors that set the environmental area apart from other areas of policy making: Since ecosystem and economic conditions vary strongly from one geographical area to another, the optimal degree of environmental regulation will also vary. However, this clearly can cause problems from the viewpoints of equal treatment, as well as trade and factor mobility, and the mutual recognition of standards. Having recognised this tension, there are, in individual cases, different trade-offs needed between trade, efficiency and environmental goals. Note however that the government also has other goals (such as social or regional goals) and the government must show concern for the overall consistency of policy-making with the domestic institutions.

Policy making will thus be different in federal or unitary States and will depend on the legal systems, the degree of decentralisation, and the cultures of consensus or conflict that dominate. Furthermore, some tools might be prone to "gaming" by agents, so policy-making must be seen as a dynamic game that evolves over time. This is particularly so in a regulatory framework with many different levels of geographic scope. For instance, it is not uncommon to see industries initially fight proposed local or national legislation, but once they have acceded and started to comply, they often struggle to ensure that the same legislation is adopted in other jurisdictions (sometimes even becoming an ally of 'green' NGOs in the process) because it gives them an advantage compared to competitors who have not yet invested in cleaner methods, unless environmental performance itself becomes a basis for differentiation in the market.[4]

2. Striking features of Swedish Environmental Policy-Making

2.1 Introduction

Swedish environmental policy is ambitious, and although it has a fairly long[5] history, it has been evolving rapidly in recent years. A new Environmental Code was adopted recently, and there has been an increased use of courts, as well as an increased use of market-based instruments to implement Swedish environmental policy. This section offers a brief overview of some selected features, as well as a summary

of some important recent changes in Swedish environmental policy-making. As noted, there has recently been an *Environmental Performance Review* of Sweden (OECD 2004), as well as several domestic reviews. Instead of trying to cover all of environmental policy, this section has selected some issues that have been important in Swedish environmental policy-making, and that set Swedish policy apart from other countries, or that simply illustrate a point to be discussed later in Section 4.

2.2 The changing organisation of Swedish environmental policy-making

The most fundamental change is undoubtedly at the political level. Over the last several decades, the relative prominence of environmental issues has, despite short-run variations, been generally increasing over time. Government in Sweden has been restructured. Separate Ministries that were previously responsible for environmental, energy and building issues have been brought together under the Ministry of Sustainable Development, which is responsible for co-ordinating government work to promote sustainable development.[6] The rationale for bringing the different tasks together under the same roof was that, with the desk officers working closer together, it would facilitate discussions and promote policy coherence. Since the Ministry now has a broader mandate, it might be argued that economic and social issues must be considered alongside pure environmental/ecological issues, with the Ministry increasingly engaged in discussions about topics such as employment and regional economic growth. However, even prior to the change, the Ministers responsible for such issues had to agree on policy initiatives unanimously, along with all other Ministers. Furthermore, the co-operation with other departments and ministries has also been strenghtened through the establishment of the Co-ordination Unit for Sustainable Development within the Ministry, with people participating from other ministries.

In Sweden, the Government takes decisions collectively after a strenuous process of co-ordination and consensus building - between Ministries, within the Government and between the Government and the political parties supporting it. Generally, this process is informed by, and built on, the extensive use of public enquiries, which in turn allow all parties to voice their opinions in an organised, formal and inclusive manner.[7]

In 1998, Sweden reformed the structure of its environmental legislation with the adoption of the *Environmental Code*, which entered into force on January 1st 1999. This new framework law spells out general principles relating to the environment. It is a comprehensive law that consolidates previous legislation from various sources and introduces ambient quality standards as well as new institutions. It contains provisions that were previously contained in 15 separate Acts. Since all these statutes were replaced by common rules, the number of provisions has been reduced and the whole legal structure is intended to be more transparent. One of the main purposes of the reform was to modernise environmental legislation. Therefore a number of new provisions were also introduced into the Code. The *Environmental Code* introduces specific environmental courts as well as environmental sanctions, and clarifies the role of environmental impact assessment. It is also intended to transpose the EU Water Framework Directive, and the Integrated Pollution Prevention and Control (IPPC) Directive. The *Environmental Code* contains 33 chapters comprising almost 500 sections.

The ambition has clearly been to create a uniform and unified body of law. Whether or not this has actually occurred is another matter, and there are critics[8] who maintain that the law is not really very new, nor particularly unified. In fact, some incoherence may have been created by trying to merge essentially different rules. For instance the rules for compensation are quite different in Chapters 9 and 11, which reflect the respective origins of these chapters in the old Water Act and Environmental Law, respectively. These differences are fundamental, since the role of property owners was much stronger in the Water Law. The access to courts has a history in water, but is new for most other areas of environmental legislation. The problem now is that the consolidation can itself be a source of some new incoherence – *i.e.* conflicting principles in existing laws were retained and plaintiffs or applicants can now refer to the whole Code to make their case.

The 15 *Environmental Quality Objectives (EQOs)* adopted by Parliament in 1999 provide long-term strategic orientation based on environmental goals, while their *interim targets* serve as medium-term planning tools. The majority of these targets are to be attained by 2020 (in the case of Reduced Climate Impact, by 2050). A 16th objective, on biodiversity, was adopted in November 2005. In a series of decisions, Parliament has laid down 72 interim targets that are generally to be reached by 2010. These targets flesh out the EQOs, which refer to objectives with respect to the state of the environment in different areas. Appendix 1 presents a very condensed overview of the EQOs and some sketch of the interim goals. Even a quick look at the Appendix shows clearly how the EQOs are rooted in an ecosystem view of the relationship between man and nature. This helps give them legitimacy in the eyes of the ecological community. Goals start with the major global and regional environmental threats by focusing on anthropogenic climate change, acidification and stratospheric ozone. Note the varying structure of the EQOs: for example, the long run goal of EQO 5 is a "protective ozone layer"; intermediate or short run goals focus on quantifiable and achievable goals such as the phase-out of certain emissions or substances. The EQOs also include other aspects of the environment, ranging from the attainment of good water quality, pleasant and ecologically sustainable landscapes, water bodies and coastal ecosystems to include even the man-made, built environment.

Some goals relate directly to the welfare of citizens (such as reduction of noise in recreational areas), while others are more instrumental in nature (such as the energy efficiency of buildings which in turn helps meet goals such as that of climate change).[9] The perhaps most crucial aspect of the EQOs is the process of drafting and periodically reviewing and modifying them. The EQOs are not static targets but change over time, as knowledge increases, with new technology, and as a result of dialogue. This provides a natural forum for a society-wide dialogue on environmental goals including the trade-offs between goals and the timing and implementation of interim goals at the sectoral and local levels. This forum for dialogue and consultation is particularly important as a consensus-building device in Sweden, because of the decentralised implementation of environmental policies, with autonomous agencies at the national level and powerful local agents who may, as discussed below, have multiple agendas. Moreover, progress toward meeting the EQOs is evaluated annually by SEPA, with a more comprehensive evaluation every four years. The National Audit Office recently reviewed the evaluations and made recommendations for improvements in the reporting process. Also, a large number of other more specialised agencies such as the Chemicals Inspectorate (KEMI)[10] have important monitoring and enforcement roles to play – as have the local municipal and regional governments and agencies.

One unresolved problem is that there will generally be conflicts among the EQOs and between these and other societal goals. These conflicts are not resolved at the central level, and there is no given process for how to resolve them. Instead they are handed down as a matter for 'discussion and resolution' at lower levels that do not, however, have any particular instruments to apply or methodology to adopt in order to meet the objectives. A rather odd aspect is that the EQOs themselves have little legal status and have not *per se* led to any changes in the Environmental Code. It is, for instance, not clear what role they play in permitting processes.

Rather, it seems that the EQOs were adopted by Parliament as an elegant manner of introducing the EQS (mandatory Environmental Quality Standards) that the EU Directives require. The EQS are basically related to the interim goals of the EQOs. There is a distinction between the Swedish regulatory tradition which has focused on regulating the *emissions* from *sources*, and that prevailing in some other European countries which focus law-making to a greater extent on ambient conditions. However, this distinction is due in part to a more far-reaching aspect of the Swedish regulatory tradition, in which the preparatory legal work (*förarbeten*) plays an important role in the interpretation and the reading of legal Acts. The legal status of the EQOs should therefore be assessed in this context. Article 1 of Section 1 of the Environmental Code sets out the overall principles applicable to all the provisions of the Code. The preparatory legal work concerning the EQOs is to be read in connection with these principles since it gives the principles and also the wording of the Code content and meaning. The EQOs are therefore to be seen as the lawmaker's ambition, with the overall principles laid down in the Code.

2.3 Institutions and the process of environmental decision-making in Sweden

This section focuses on the process of permitting and review of environmentally hazardous activities in Sweden. The main institutions involved are the local authorities, the government agencies and the environmental courts. To guarantee participation and openness, the processes generally rely heavily on the availability and transparency of information and on various processes for consultation and participation. In order to achieve progress in regulatory reform, the institutions and decisions are continuously evaluated and improved.

Sweden has historically applied an integrated approach to licensing, using a case-by case approach at the level of the individual facility (dating back to the 1969 Environmental Protection Act). The introduction of the Environmental Code has further strengthened and streamlined[11] the integrated approach following the EU Directive on Integrated Pollution Prevention and Control (IPPC).

Five new regional Environmental Courts were created to replace the earlier licensing and overview procedures which were more administrative - the National Licensing Board for Environmental Protection, which issued decisions concerning permits, compensation and damage. The only 'environmental' courts were the Water Courts, since water is more clearly an issue concerning several different claimants with clearly-defined property rights. In this connection it is worth pointing to a general difference in the Swedish tradition *vis-a-vis* that of many other countries: Individuals have not had the same ready access to courts to defend their rights. Rather, there has been the general expectation that the State would take care of individuals' rights through the administrative permitting and review procedures. Some critics might think this was always a politically convenient illusion, but a larger number would agree that there may be particular problems in a period of transition when, as at present, state agencies like the SEPA have less resources to attend to issues, but the legal system is not (yet) geared to accommodate fully individuals who seek to defend their own rights.

Installations of any concern to the environment and human health are classified into three categories, depending on the significance of the effects and risks involved. The most significant are in the A list, which currently covers around 500 large point sources. These are required to obtain an integrated license from an Environmental Court. The second tier (currently around 5 500 installations) are on the B list and must apply for integrated permits from the county administrative boards. Finally the third category (including roughly 17 500 installations on the C list) are simply required to notify their respective municipalities. Some 1 000 installations requiring permits are regulated under the IPPC Directive and 133 under the Seveso II Directive. Permitting in Sweden has historically been based mainly on best available technology for source emissions rather than on legally binding environmental quality standards.

In recent years there have been proposals have been put forth to shift a rather large number of installations (by Government Ordinance) from the "B" to the "C" list. While this would simplify administrative procedures for some industries, it could be argued that it would simultaneously weaken the assessment of environmental impacts and reduce the possibilities for various interested parties to influence decisions of environmental significance. However, the determination of installations which would be affected would be based upon the assessment of the environmental impacts of those installations. The point of departure for the proposed reform has therefore been an analysis of which kinds of installations would be suitable to which level of permitting procedure in relation to the extent of environmental impacts of the installation.

Thus apart from the very largest of installations[12] most permitting decisions are taken at the regional. This is motivated in large part by a belief that responsibility for permitting and notification should be at the level where relevant knowledge, including knowledge of specific local environmental conditions, is greatest. However, this also gives rise to potential for conflict between multiple roles. On the one hand

local politicians want to attract industries to create employment and increase local tax receipts (and thus get re-elected); on the other hand they may want to avoid local sources of pollution (NIMBY). In making these decisions they need to balance their roles as politicians and administrators of central government law. More generally, they need to balance the trade-off between the important guiding principles of local self-determination and equal treatment before the law.

It appears that many smaller firms find the transaction costs to obtain a permit very burdensome.[13] They complain of having to apply in separate procedures for building permits and environmental permits and consider the current system specially designed for large enterprises, They would prefer simpler, one-stop, standardised licensing procedures that could be tailored to the conditions of each specific branch. According to Michanek & Söderholm 2006, permitting procedures for windpower stations are slow and complex in Sweden, and this may be a factor explaining the relatively slow expansion of wind power capacity.

In response to such concerns, two Commissions, the PBL-Committee and the Environmental Code Committee, have assessed the potential to increase coherence between the Environmental Code and the Planning and Building Act. The Government has also adopted Government Bill 2005/06:143 (*Miljövänlig el med vindkraft*), which contains proposals to facilitate the establishment of wind turbines. Furthermore, the Government has just (Sept. 14th, 2006) decided to revise the regulation in the Ordinance of Environmentally Hazardous Activities and Health Protection in order to facilitate the development of wind power. Specifically, according to the revised regulation wind power stations below 25 MW no longer require permission from the county administrative board. This means that the administrative procedures for establishing a wind power station will be simplified. The Planning and Building Act have also recently been analysed by a Government Committee (SOU 2005:77). The Committee has among other things proposed new regulations in order to obtain better co-ordination between the Planning and Building Act and the *Environmental Code*. The proposals of the committee will be taken into further consideration in the continued work on reform of the Planning and Building Act.

The system of supervision (monitoring and enforcement of the regulations) and appeal has been modified in connection with the adoption of the new *Environmental Code*. OECD (2005a and 2005b) provides a detailed description of the system, which includes both self-monitoring and monitoring[14] by the municipal authorities that grant the permit. There are concerns that conflicts of interest may have arisen since the municipalities were permitting, inspecting, sanctioning, and sometimes even running (*e.g.* waste management and water supply) the affected firms. Indeed, a report from the Swedish EPA indicated that in 1999-2000 19 municipalities had brought together the tasks of supervision and responsibilities for operations regarding environmental hazardous activities under one and the same committee. However, in 2004, according to the Enforcement and Regulations Councils, only six municipalities had inspection, enforcement and operation responsibilities in the same administration. Five municipalities had responsibilities for inspection and enforcement and the responsibility for operations in the same committee. In addition, the report indicated that 48 municipalities had brought together tasks of supervision and responsibilities for operations under the same administration. In order to obviate this possibility, a new rule of "conflict of interests" in the municipality law (SFS 2003:519) was introduced in 2003 by Government Bill 2002/03:54. Moreover, the Environmental Code obliges the Government (or Government agencies) to revoke supervisory responsibility from a municipality if it revises its Committee structure in an manner that conflicts with this rule. Whether the introduction of the Bill has resulted in a better delineation of responsibilities at the local level has yet to be evaluated.

Municipal decisions can be *appealed* to the county administrative board and then to the Environmental Courts. Judgements and decisions by the latter can thereafter be appealed to the Environmental Court of Appeal in Stockholm, which is a division of one of the general Swedish Court of Appeal. Some (more important) cases can be appealed to the Supreme Court.[15]

Sweden signed the Århus Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters in 1998 but was somewhat slow in ratifying it. Ratification came in 2005. It was not the issue of access to information *per se* that was problematic; rather, it appears that one of the factors that complicated ratification in Sweden was the access to justice by NGOs and others, which required a number of legal changes. While this ratification has brought about a strengthening of the environmental NGOs (see below), it should also be borne in mind the proposed reclassification, already mentioned, of many environmentally hazardous activities from the "B" to the "C" list. Since this would reduce possibilities for public participation in the decisions regarding affected facilities, this would counteract, at least partly, the benefits of increased access to justice.

As already mentioned, there is a yearly national process of policy evaluation and development, through the EQOs. At the local level, the Agenda 21 process provides a vehicle for consensus building, prioritisation, and evaluation. This process started with the Rio Conference and was intended as a mechanism to spread sustainability thinking to all levels. Currently, over 70% of the 290 municipalities have adopted Agenda 21 plans. Many of these are ambitious and provide for both environmental activities and monitoring within their jurisdiction. Many local government authorities have already made significant contributions in implementing regional and local EQOs. A recent survey from the Swedish Association of Local Authorities and Regions (SALAR) shows that 84% of all municipalities are working with local EQOs and one third have already adopted local EQOs derived from the national and regional EQOs. Measures adopted are primarily concerned with the environmental aspects of waste management, chemicals, housing, transport and energy use. Municipalities frequently lack technical resources for all the supervision tasks formally assigned to them[16] and often join together in associations to help each other or to reduce monitoring costs.

In order to reduce the regulatory burden, a 'Better Regulation Unit' has been established within the Business Division of the Ministry of Industry, Employment and Communications in order to co-ordinate the work on improving the quality of regulations. This unit provides guidance on issues concerning regulation, and specifically has the role of approving the quality of the small business impact assessments.[17]

2.4 The use of new policy instruments

Sweden has a history of using flexible market-based environmental policy instruments. Sweden has a high level of economic taxation and has lately introduced new environmental taxes and increased the rates of several other taxes and charges. Currently there are about 75 Billion SEK in tax revenue that can be clearly considered to be 'environmental'. This amounts to 10% of the taxes collected or 3% of GDP, see Table 1. As shown in this Table, Swedish environmental taxation shares are actually about average by European standards. (See also Sterner & Köhlin (2003) for a comparison with the OECD as a whole.) However, note that VAT is not included in comparison, although it is generally applied not only to environmentally sensitive goods, but to the environmental tax itself.

An ambitious tax shift has been initiated involving higher environmental taxes, offset by reductions in other taxes such as labour taxation; the shift is intended to amount to an additional SEK 30 billion over a ten year period 2001-10. In the years 2001-4 it is estimated that the green tax shift amounted to roughly SEK 10 billion. Several taxes, including those on CO_2, energy, electricity, landfill and gravel, were increased while others were decreased, especially labour taxes and employers' social contributions. Many of the fuel taxes in Table 1 are further differentiated by environmental attributes. For instance petrol and diesel have three different tax rates depending on the content of contaminants (*e.g.* sulphur).

Table 1. Environmental taxes in Sweden (Millions of SEK)

	1993	2000	2003	2004*	2005*
Total	47 726	61 547	71 931	73 464	77 570
Energy tax	39 029	52 807	62 555	63 994	65 903
including fuel tax	20 524	27 013	20 797	17 987	19 662
Electricity tax	5 710	11 300	15 657	17 206	18 222
Nuclear tax	100	1 708	1 829	1 864	1 794
Carbon tax	10 552	12 149	23 813	26 428	25 535
Sulfur tax	184	89	199	90	75
Tax on domestic flights	196	-	-	-	
Tax on pesticides etc	13	58	67	61	78
Tax on fertilizer	185	357	340	303	329
Tax on waste	-	1 085	892	752	736
Tax on transport	8 119	7 026	7 685	8 062	10 249
whereof: Vehicle tax	4 095	6 832	7 685	8 062	10 249
Sales tax on vehicles	1 287	194	-	-	-
Kilometer taxes	2 737	-	-	-	-
Tax on Natural Resources	-	125	193	202	200
Whereof Gravel tax	-	125	193	202	200
Environmental taxes as % of GDP	3,10%	2,80%	2,90%	2,90%	2,90%
Environmental taxes as % of taxes	10,90%	8,70%	10,60%	10,10%	10,00%
EU average env taxes as % of GDP	2,80%	2,80%			

Source: Adapted from Statistics Sweden (*www.scb.se/templates/tableOrChart39450.asp*)

There are a number of additional taxes and fees that in some cases have considerable importance for the environment although they have no or negligible budgetary impact. These include the congestion taxes in Stockholm city (which thus far have only been on trial); parking fees (which are often differentiated so that "environmental" cars do not have to pay); a car-scrapping fee; environmentally differentiated fairway, port and landing fees for aircraft and ships and battery charges, see MSD (2006). There are also some local instruments such as differentiated waste collection fees for households with source separation or waste fees based on weight. Municipalities are however not able to use economic instruments freely: Their utilities are not allowed to charge higher fees than what is warranted by their capital and operational costs. The extent to which municipalities choose to implement full cost coverage through the imposition of fees, varies across municipalities. In some cases the tariffs cover on average 99% of the total capital and operating costs, with the remaining 1% financed through municipal taxes (see MSD 2006). However, for some cost items (*e.g.* environmental supervision), cost recovery may be much lower.

Finally, a new environmental sanction fee has been introduced in the Code, applied when environmental regulations are violated (including the duty to apply for permits or provide adequate reporting etc). The charge is levied even if the violation is not deliberate (it is thus founded on the concept of strict liability). It is not necessary for the business to have derived financial gain from the violation. The fees range from €500 to €100 000. The purpose of the charge is to encourage compliance with regulation at reasonable administrative cost. In the absence of sanctions greater resources would have to be devoted to supervision in order to encourage compliance. Appeals against the fees can be lodged with the Environmental Court. However, this requires resources which some SMEs might not have.[18]

Sweden also belongs to the European Union's Greenhouse Gas Emission Trading System, which is designed to reduce the cost of meeting Europe's international obligations. This is the first major case in which tradable permits have been applied in Sweden. Another instrument that is used in Sweden - as well as in several other European countries - is green certificates (discussed in Section 3c). One particularly innovative instrument is the refunded emission payment used for nitrogen oxide emissions from large combustion units (described in Section 4). Other interesting instruments that appear to be more frequently used in Sweden than most other countries include labelling. However, this is not necessarily a "public policy" instrument in the classic sense since it is not used or initiated uniquely or even mainly by government. One of the more interesting schemes, "Good Environmental Choice", is run by an environmental NGO and this appears to be a factor that gives this label particular credibility. Subsidies are, in principle, used sparingly (see however the LIP/KLIMP programme discussed later) as Sweden generally ascribes to the Polluter Pays Principle. This implies for instance that municipalities charge households the full cost of environmental services, such as waste and sewage treatment.

3. Climate and energy policy

Climate and energy policy are major areas of environmental policy making in Sweden, with many different instruments. Three of these instruments are discussed below: taxes (and tax exemptions); subsidies/payments through the LIP and KLIMP schemes; and green certificates. A number of energy policy instruments (*e.g.* green certificates) also have an impact on climate policy. Each illustrates a number of issues important to regulatory reform. The tax raises a number of issues such as political economy of taxes and competitiveness when other nations do not tax and the possibility of avoiding these effects by tax exemptions which, in turn, raise other regulatory issues such as that of equal treatment. Subsidies have their own particular problems (including rent-seeking), but they may be motivated in special circumstances. Green certificates are a fairly new instrument, designed in part to avoid the need for the State to use subsidies or to provide other forms of preferential treatment.

A number of articles study the design of optimal instruments either from a theoretical or empirical viewpoint. As shown in Goulder *et al.* (1999) an optimal instrument operates through four effects:[19]

1. The *abatement effect*, (the incentive to use less of an input);
2. The *input substitution effect*, (substitution among inputs);
3. The *output substitution effect* (higher product prices leads to less use of embodied emissions);
4. *Revenue-recycling effect*, (budgetary effect of taxes collected).

A perfect tax (or an auctioned permit) operates by addressing an environmental problem through all the mechanisms 1-4, which implies that a given target (such as optimal climate management) can be achieved at least cost.

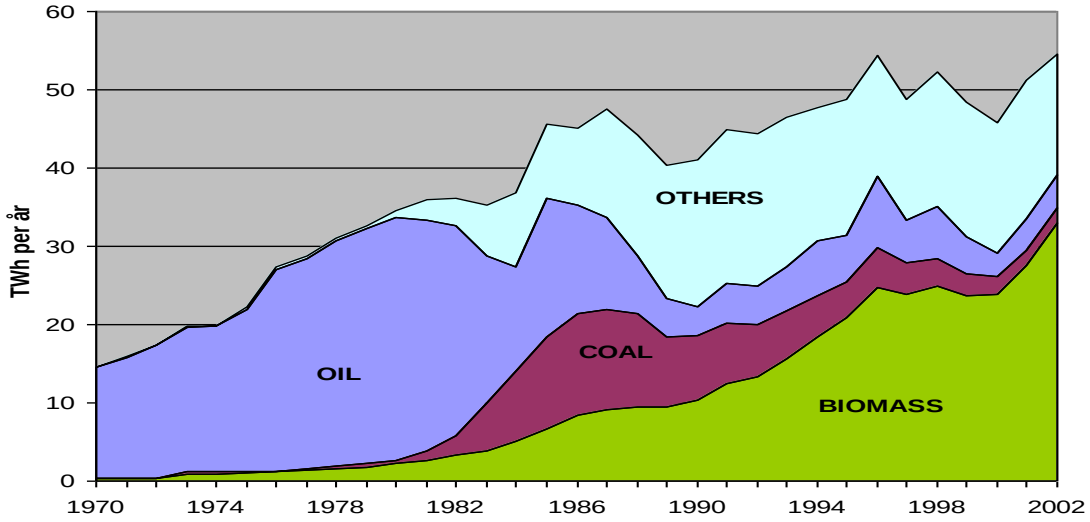
One of the clear conclusions of Fischer and Newell (2004) is that raising the true price of carbon is the most efficient way to reduce emissions. Subsidizing the use of renewable energy sources, or research into such sources, are less efficient methods. An emissions tax is more effective than the alternatives because it simultaneously puts pressures on consumers to conserve, on producers to employ technologies that generate more energy for every ton of carbon emitted, and on renewables to expand production because they are untaxed. But emission taxes are unpopular because they are visible. Subsidies for renewable energy avoid burdening consumers, but they tend to be costly in terms of tax revenues foregone, and they can be significantly less effective when the goal is reducing carbon. For these reasons it may be the ineffective subsidy instrument that actually threatens economic growth more than the tax instrument.

3.1 Reconciling high environmental goals with limited effect on competition

The discussion here starts with the use of what would be the optimal[20] instrument: taxes. However, one of their inherent difficulties in this case is that they are a national instrument to deal with a global externality. There is thus a strong case for international co-ordination, and if taxes are low or non-existent in other countries then a national tax may lead to distortions and the demand for tax exemptions from those affected by competition.

Sweden has (with Norway) much higher carbon taxes than any other country in the world. This has had a remarkable effect in the heating and household sectors, where the dependency on fossil fuel has been reduced to such an extent as to be essentially eliminated and a very large and efficient use of biomass has come to take its place. This can be illustrated by Figure 1, which shows the development of energy use in the district heating sector. This sector is now very efficient in terms of heat supply, but used to be based mainly on oil. As can be seen from the figure, there has been a rapid transition away from fossil fuels (and to biofuels and waste), driven mainly by the carbon tax.

Figure 1. Energy use in the district heating sector



Carbon taxes have had a positive environmental effect in this sector – with fairly little resistance (the forest owners were glad for higher prices, while the pulp industry complained about competition for forest products). Sweden also (like most of Europe) has very high taxation of fossil fuels[21] with (relatively speaking) minor political opposition. When it comes to industry, the effect on competitiveness rises up the political agenda. In Sweden, as in many other countries, the design of environmentally related taxes reflects not only general environmental objectives, but also the specific interests of enterprises subject to international competition.

Discussions concerning this trade-off have been on the political agenda since the late 1980s and early 1990s when environmentally related taxes were first introduced on a large scale in Sweden. In particular, it was felt that as a small open economy the application of equal tax rates on energy to all sectors in Sweden would result in either: a) an insufficiently high general tax rate to meet environmental objectives; or, b) adverse competitiveness impacts for the 'exposed' industrial sector. As such, prior to 1993 tax reductions were granted to energy intensive industries on the basis of established criteria (*i.e.* above a minimum level of tax receipts in value of shipments). This was neither environmentally effective nor economically efficient, with some of the lowest-cost sources for abatement facing no incentive to reduce

emissions. This system was replaced by a tax with differentiated levels of taxation for different sectors of the society. Higher levels of taxation for households and service sector companies have been combined with a lower tax level for industry. The lower tax level for heating fuels used by industry consists of no energy tax and a reduced carbon tax. The reduction has varied over time but is currently 79%, which is approximately three times higher than the EU minimum tax level on these fuels. Whether the right balance has been struck between ensuring the environmental effectiveness of the system and its implications in terms of competitiveness for exposed sectors is, of course, likely to be a continued source of debate in Sweden.

The transition from taxes (with exemptions) to carbon emissions trading is an example of relying on less distorting market-based approaches from a regulatory quality angle. Under the EU's Emissions Trading Scheme new markets are created for carbon emission allowances. There is a subtle but important difference with respect to the groups which are favoured under the ETS in comparison with taxes. The current allocation of permits is largely based on historic use (so called grandfathering), see Egenhofer et al (2006) and Kolshus and Torvanger (2005)) and is thus rather beneficial to incumbents. It has also been suggested that free allocation of *all* permits could even result in overcompensation to vested interests, above that which would be strictly necessary to ensure political acceptance (see Burtraw *el al.* 2002). In addition, the free allocation of permits can also act as an incentive for rent-seeking: firms expend efforts seeking permits rather than productive work.[22]

The introduction of the ETS clearly has implications for the necessity of retaining pre-existing energy and carbon taxes for those facilities which fall under the ETS. Indeed, in the Budget Bill for 2006 the Swedish Government proposed to abolish the carbon tax for fuels used in installations covered by the ETS. The Government argues for a zero tax for these installations because a joint application of taxation and emission trading gives rise to distortions and increased costs to society, while no additional environmental benefits will be obtained. Thus, it suggests that the two instruments should not be used simultaneously. As the operators have been given a "right" to pollute by being allocated tradable permits, it is claimed that the tax is superfluous for those installations which fall under the ETS. This argument is weakened by the fact that the ETS is not nearly stringent enough to meet long run climate targets. In any event the proposal to abolish the tax has not yet been put into force, due to ongoing discussions with the European Commission concerning state aid approval for the measure.

It is also important to recognise that permits and taxes do not "combine" in the same way as a tax and a subsidy. If a tax on carbon is combined with a subsidy on alternatives, these two policies are broadly speaking additive. If, however, there is a trading scheme for X tons of C in Europe and this is then complemented with a tax, the result depends on which of the instruments is the binding constraint. In the event that the tax is binding then the permit scheme would be irrelevant (and the permit price zero). As long as the permit scheme is binding, however, the emissions will still be X tons whether or not Sweden or other countries impose taxes. Even if all countries had a harmonised tax, emissions would still be X and no climate objective would be fulfilled above and beyond those already achieved through the permit scheme.[23] The inclusion of 'project mechanisms' in the ETS (*i.e.* Joint Implementation and the Clean Development Mechanism) through the so-called 'linking directive' gives countries the opportunity reduce emissions within Europe independently of the cap.

If Sweden is alone in having a carbon tax, then the effects are more complex: the Swedish State gets the tax revenue, and the emissions from the trading sector in Sweden are reduced. On the other hand, the efficiency gains from the ETS are lost, since the marginal cost for reducing emissions is not equalised across industries within the ETS. This implies that emission reductions will be inefficiently distributed throughout the trading scheme. As a result, the total cost of achieving the EU emission reduction target will increase. Moreover, the environmental benefits will be zero, since the sum of emissions from the trading sector in Europe will be constant and thus it could be said that the emissions just "move" away from Sweden and toward some competing country.

The issue becomes even more complicated when taking account of the non-trading sector, with important implications for the distribution of burdens to meet climate change objectives across the economy. If Sweden takes its overall Kyoto target strictly, then larger permit allocations to the trading sector make it necessary to have higher reduction requirements for other sectors. Ultimately, there will be effects on the level of taxation (and the tax receipts) in these sectors. Theoretically, if all countries over-allocate and the ETS price of permits is low Sweden would have to have a very high tax in the non-trading sectors to reach its Kyoto target. The views of different Ministries on the appropriate distribution of such burdens may, of course, differ.

3.2 Climate Policy: Direct public spending LIP and KLIMP

The Government allocated SEK 6.2 billion for Local Investment Programmes (LIP) during the period 1998-2003. Support for local investment programmes were intended to speed up the transition of Sweden to an ecologically sustainable society. A subordinate purpose was to help raise employment. The support went to municipalities, often in collaboration with local companies and organisations. The municipalities were expected to put together an investment programme consisting of a combination of several projects aimed at ecological sustainability, and based on a comprehensive economic and environmental analysis of local environmental problems and priorities. Over the period 1998 to 2002, 211 investment programmes with more than 1800 individual projects and a total value of more than 27 billion SEK (almost 3 billion €) were launched (whereof the state paid for around a quarter). Since LIP was terminated, a similar mechanism was created, but focussing exclusively on climate issues. The support to Climate Investment Programmes goes under the name of KLIMP, and was proposed by the Swedish Climate Bill (prop. 2001/02:55) and is administered by the same board at the Swedish EPA as that which oversaw LIP. It has so far been allocated over 2 Billion SEK (MSD 2006).

As shown by Eckerberg (2005), although LIP is not the only large subsidy programme in place with environmental objectives, it was unique in terms of the amount of funds disbursed, and must be characterised as a very significant policy initiative (significantly larger in relative terms than similar programs in a number of other European countries studied), particularly since it comes on top of other schemes such as Agenda 21 and EU LIFE programs.

The implementation of the programme involved the submission of applications from municipalities, with the review process administered by a department at the Swedish EPA. Formally, the allocation decisions were initially taken by the Government. This was criticized as potentially encouraging use by the Minister for political (electoral[24]) purposes. The fund and the process were therefore transferred to the Swedish EPA. There it is managed by a Board, which in turn is served by a Secretariat and administrative staff of civil servants. An important feature of the decisions taken was that not only were the individual municipal projects evaluated, but the quality of the overall environmental planning and vision presented by the individual municipality.

Subsidies always have the potential to give rise to incentives for rent-seeking, and for this reason are viewed as a very inferior alternative to taxes in the economic literature (see Sterner 2003 or Goulder *et al.* 1999). However, LIP (and KLIMP) have a number of features that reduce these problems to a minimum: The funds go to municipalities (and only indirectly to companies); there is a solid formal review process based upon quality of proposed reductions, and some of the subsidies are for clean up that is related to historic pollution (where taxes do not offer a viable instrument alternative anyway).

A report prepared by the Swedish EPA concludes that the effects in the completed measures have been greater than was anticipated in the applications. By May 2006, 148 of 211 investment programmes that were accepted had been completed.[25] The total environment-related investment was 18 billion SEK, and it has been estimated that the completed programmes had reduced CO_2 emissions by 820 000 tonnes per year. Ultimately, it is anticipated that the reduction for all 211 programmes will be 1.6 million tonnes annually. Other anticipated effects from the programme are shifts to increased use of renewable energies, energy savings due to efficiency measures of 1,8 TWh per year, and a reduction in the amount of waste sent to landfill reduced by 400 000 tonnes per year due to measures such as making biogas, recycling or composting.

A recent evaluation (Kåberger, Jürgensen 2004) concludes that the LIP has been extremely successful in achieving cost efficient reductions in various emissions. Even without taking into account the fact that many projects led to the reduction of multiple emissions, the costs per kg of reduction for carbon, sulphur and nitrogen oxides were extremely low. Total Swedish emissions of carbon dioxide have actually been reduced by more than 1 % due to LIP. The subsidy cost of the carbon dioxide reductions achieved was still only 0.12 SEK/Kg. This is very low - around 15 US$/ton and only a fifth of the Swedish tax level. Moreover, there are important ancillary benefits such as reductions in sulphur and nitrogen oxides. The report ascribes this success to two design features of the program: firstly there was competition among municipalities; and, secondly the secretariat and SEPA were very flexible in allowing changes to the project design after grants had been awarded. This implied that learning and progress could easily be incorporated at late stages of planning thus further improving design.

The differences between LIP and the current KLIMP programme are the focus on climate uniquely, and the fact that KLIMP is somewhat more open to participation of industries in the projects. The programme has been classified as state aid by the EU, but such state aid is legal if temporary, and if motivated by important goals (in this case environmental objectives). Both schemes are essentially a way for the central government to get local authorities engaged. Municipalities apply (sometimes in co-operation with some local agencies and or even companies), and SEPA grants money to the applications it considers to be of the highest quality. As mentioned, the LIP and KLIMP were criticised as a potential means for the government to favour certain municipalities. However, the evidence was inconclusive at best. Moreover, it is interesting to note that even light criticism led to rapid changes in process in that the decisions that used to be taken by the Minister were delegated to an independent board at the SEPA.

3.3 Energy Policy: Green certificates

Green certificates are being applied by a number of countries, including Sweden, to meet a variety of energy-related policy objectives.[26] Green certificates are akin to tradable permits. The regulator (government or parliament) sets a target - in the case of Sweden, the target is to increase the share of renewable electricity production by 17 TWh between 2002 and 2016, with intermediate targets for each year.[27] This means that the electricity suppliers have to buy certificates as a proportion of electricity sold. If the suppliers do not fulfil their quota obligation, they must pay a sanction fee. At the same time producers of electricity from renewable energy sources receive certificates from the state - one certificate for each MWh of electricity produced. When selling certificates the producers of renewable electricity receive extra income.

An interesting feature of green certificate trading is that in most cases they are not considered State aid, since the money does not go directly from the State to the producer of the "green" electricity.[28] Instead, it is a scheme whereby households, service industries, and industries which are not electricity-intensive[29] pay other industries.[30] Furthermore, certificates have been promoted as an instrument of national policy by the EU Commission. (See Commission Proposal COM (00) 279 and Directive 2001/77/EC.)

Referring back to the discussion of Goulder *et al.* (1999) on optimal instruments, green certificates can be compared to fossil taxes or emission permits. Green certificates might perhaps provide a good subsidy for renewables but there will be no incentive for energy conservation or for more efficient fossil technologies. To achieve the same reduction in carbon emissions without providing incentives to conserve energy, the subsidy to renewables would have to be inefficiently large, implying that resources are wasted. Note that tradable emission permits would actually be preferable to green certificates since they have all the flexibility of green certificates, but also the additional flexibility that carbon-efficient technologies can be used (for instance coal combustion with carbon capture and storage). Speaking specifically of green certificates, Fischer and Newell write that they will imply a greater burden in order to meet an emissions reduction target: *"For example, a renewable energy portfolio standard creates an implicit tax on fossil energy in the form of the mandate to buy green certificates, which then funds a subsidy to renewable energy through the certificate value. The combination raises the total price received by the renewable energy sector and encourages more renewable energy output and R&D than a tradable emissions performance standard or a fossil fuel tax, but at a greater welfare cost."*

The overall picture is thus fairly clear. However, there are some very strong lobbies in the area of energy policy, and a great deal of resistance is built up against raising, for instance, carbon taxes. Various arguments such as concern for competitiveness and the fear of losing jobs are put forward as well as concerns regarding negative distributional effects. One of the few neutral arguments in favour of some other instrument than taxes is the existence of additional market failures in innovation markets. R&D is expensive and the firm or country financing it cannot be certain to appropriate the whole benefit, since there may be spill over effects to other firms and the possibility to protect new technologies through patents is limited. This implies that emission pricing may not provide sufficient incentives for new technologies to develop. Fischer and Newell note that in this case the optimal policy would be a combination of a tax on carbon emissions and subsidization of R&D as well as learning-by-doing (*i.e.* actual production of renewable energy). It seems that politicians have maybe entertained the hope that one instrument (green certificates) would in this case be sufficient to deal with two goals. This is of course typically unrealistic since normally, at least one instrument is needed for each goal.

An empirical evaluation of green certificates will thus inevitably hinge on what goals they are evaluated against. The certificates have mainly benefited biomass investments and many of these would have been profitable anyway in the face of high electricity prices and low levels of hydropower reservoirs. This could be seen as a good thing: the instrument is steering money to the least cost alternatives. Wind power has not benefited much and new solar alternatives even less. This could however change in the future if the goals are tightened. Indeed, the Swedish Government expects a rapid increase of wind power production in the coming years because of the very ambitious target until 2016 that has been set within the certificate system.

If, however, one evaluates green certificates against the goal of promoting innovations in renewable energy technologies (or experience in the next tier of somewhat less profitable sources or technologies), the evidence is less clear-cut.[31] Final judgement thus depends on whether one thinks that the purpose of this instrument is to promote R&D, and not just the delivery of commercially-ready alternatives. In this context, the role of green certificates must be examined alongside other instruments which are used to support new renewable technologies such as additional financial support for wind, and R&D and demonstration of new renewable energy sources.

4. Refunded emission payments in acid rain policy

The next example of policy making has been selected for discussion here for two reasons: it is a unique Swedish instrument and it addresses, in a very clever way, some problems related to the political economy of policy implementation that may have broader relevance for other countries.

Sweden has a bedrock that is unusually sensitive to acidity since it has low buffering capacity. This (with other factors such as some naturally acidic spruce ecosystems) creates an extreme sensitivity to acid rain. The effects of acid rain were therefore seen in Scandinavia much before they were noticed in other parts of Europe where most of the emissions originated. Sweden and Norway have thus exerted considerable efforts directed to getting the EU (and others) to accept that this is a problem and there is a need to act. In 1979, the United Nations Economic Commission for Europe (UNECE) implemented the *Convention on Long-Range Transboundary Pollution*. In 1985 most UNECE members adopted the Protocol on the Reduction of Sulphur Emissions, agreeing to reduce emissions by 30%, from 1980 to 1993. This has been followed by a series of much more stringent agreements, the latest of which is the Gothenburg Protocol, signed by 27 countries in December 1999. This Protocol broadens the issues somewhat from acidification (which is mainly a Scandinavian interest) and aims to address acidification, eutrophication and ground-level ozone. It includes not only sulphur and nitrogen oxides but also volatile organic compounds and ammonia. Sweden managed to put these issues on the EU agenda, although only a few states were affected. This was achieved largely by interlinking acid rain with other air quality issues such as ground level ozone and cultural heritage / health issues in order to broaden the interest.

Swedish emissions actually play a relatively minor role in Swedish deposition and thus for ecological effects in Sweden. Yet, in order to set a good example, to show commitment, and to develop cleaner technology, Sweden has put great emphasis on reducing its own sulphur emissions. These have been reduced very significantly, partly because of the reduction in use of fossil energy, but also because of the highest sulphur tax in the world. This has led to the phase-out of fuels with high sulphur content (see Hammar and Löfgren 2001). Sweden also used part of the revenue to finance the liming of lakes, which was a temporary palliative that helped a number of important fish species (such as trout) to survive in many lakes during the period in which Europe was reducing its emissions.

The other major precursor of acid rain is NO_x, so naturally, Swedish policy-makers wanted an equally stringent policy for NO_x. However, this is technically quite different since NO_x must be measured at the point of emission, whereas the SO_x all comes from sulphur (S) in the fuel. The amount of sulphur can thus be reliably estimated from the sulphur content of the fuel.[32] In the case of NO_x however, most of the nitrogen does not come from the fuel but from the atmosphere and so rule of thumb calculations are virtually useless. NO_x emissions depend on highly non-linear and complex factors in combustion (such as temperature). This implies that reduction requires real time monitoring and unfortunately this is very expensive. Hence it can only be done on big facilities. Sweden thus wanted a high price signal on NO_x but could not use the tax since small facilities were to be exempted and also because of competitiveness issues. (The installations could be built in for instance Denmark instead in which case they would avoid the fee, and Sweden would still get the acid deposition). This dilemma was solved by creating the Refunded Emission Payment (REP).

Under the REP scheme, a charge of *t* per unit of emission is charged, and revenues are refunded to the firms proportionally to output. It can easily be shown that the incentives for abatement and input substitution are very similar to that of a tax (as long as no firm has very significant market shares as in an oligopoly). The output substitution effect is however lost since the refund acts as a subsidy to production [see Sterner and Isaksson (2006)[33]].

The REP scheme collected just over 500 million SEK in the year 2000 (75 million USD) from the companies. Due to the refund, the median firm only paid 4% of the tax as a net fee. 46% of the firms had net returns instead of paying a net fee. Only 7% of the firms in this scheme paid 50% or more of what they would have paid without a refund and the sum of all the net payments was equal to 94 million SEK or less than 20% of the gross charges. It should be clear that this kind of refunding will reduce the resistance by industry to the policy so that for instance lobbying against the charge (or for a lower fee level) will be much weaker than in the case of a tax. Furthermore, the resistance is less unified. A tax implies that all firms "lose" and thus serves to catalyze industry associations into lobbying organizations. The case of refunded payments is different: There is no clear mandate for the industry association to lobby against a policy from which almost half the firms actually receive net payments[34] (see Fredriksson and Sterner 2005).

The comparison between a refunded emission payment and a tax is interesting and not as obvious as it might seem. If the fee was set at the same level as the tax, one might conclude that the tax is a better instrument since it has the output substitution effect and revenue recycling effect that is lacking in the REP. However it is not necessarily reasonable to compare a tax and a REP *of the same level*. One of the main points of the REP is that it makes it politically feasible to have a much higher fee level. In a comparison between a high REP and a small tax, the high REP may well be a better instrument (depending on a number of criteria, see for instance Sterner 2002).

In a recent evaluation of the REP applied to NO_x in Sweden, it appears most companies were fairly positive. Also the administrative costs are very limited and the competition effects neutral. The main advantage lies in the political economy:[35] the firms that are cleaner than average make a net gain in money since refunds are bigger than fee payments. This means that the industry is split: the cleaner half of the firms likes the fee. Thus lobbyism (maybe the main problem of all in environmental policy making) is practically eliminated.

5. Environmental labelling and public procurement

Information is key to efficient markets - and labelling is concerned with the provision of information about some attribute of the product (or production process) for which consumers might have preferences. There has been a growing awareness in recent years of just how incomplete (and asymmetric) information is in the environmental sphere[36] - and how limited are the individual's resources for information handling and processing. This is an important source of market failure. Providing information can sometimes be considered as an important complement to regulation and is therefore important from a quality regulation perspective. Sweden appears to house one of the more successful labelling schemes, and therefore a section on this subject is provided.

The number of product labelling schemes has been increasing rapidly. At the turn of the century there were about 20 national OECD programs (plus an EU program) (Nadaï 1999). "Organic" certification of food is widespread and probably one of the oldest schemes. The German Blue Angel, started in 1977, was the first national eco-labelling program. In Scandinavia, the Nordic Council of Ministers started the "Nordic Swan" in 1989, and in Sweden, the Swedish Society for Nature Conservation (an NGO), runs the "Good Environmental Choice" independent labelling scheme. At the European level, the EU Flower label is also influential.

Good Environmental Choice covers a wide range of goods and services, from electricity to transport. One of their first successes was soaps and detergents. Because of the nonpoint-source characteristics of these effluents, it is difficult to imagine any monitoring system that would detect the effluents going through the household drains and therefore it would be natural for policymakers to choose an instrument that applies directly to the product. Standards, rules, liability, taxation, and several other policy instruments could be applied to dishwashing and laundry detergents. The large number of inter-related factors makes taxation difficult, and thus the main alternatives are perhaps some form of direct control or voluntary instruments such as information disclosure and labelling.

Laundry detergents have three characteristics that make labelling particularly appropriate: the ecological and technical criteria are complex; the main hazards lie in the product, not the production process; and the product is bought mainly by households (rather than by industries as an intermediary good). In Sweden, both Good Environmental Choice and the Nordic Swan offer eco-labels for these products. At least in market shares, they have both been strikingly successful. The market shares of eco-labeled shampoo, laundry detergent, dishwashing liquid, and sanitary cleaners have risen from 0% in 1990 to more than 90% in 1997 (50% for Good Environmental Choice alone), and the eco-labels appear to enjoy a sound level of acceptance and credibility. If the eco-labeled products really are less environmentally damaging, as many evaluations support, this policy will have reduced the toxicity of effluents in a significant way, decreasing the impact of an important category of household waste.

To acquire the label, companies must abide by a set of criteria and pay a fee. The criteria focus on the ingredients or production process. Proponents of eco-labelling consider that the companies have been forced to decrease or eliminate the use of various harmful ingredients (such as phosphates) from laundry powders etc. Others however claim that the companies would have done this anyway or that they replace the omitted ingredients with other, maybe equally hazardous, products. This is an area where more research would be needed.

A criticism sometimes levied against eco-labelling is that the criteria tend to be static and are renewed almost automatically which tends to "lock in" the technology at one moment in time. This would reduce the benefit from technical progress. The managers of the labelling schemes themselves however affirm that they tighten the criteria continuously, thus pushing technological progress as fast as possible. Diverging opinions concerning the usefulness of the labels are inescapable because the science and technical details are complicated. (Otherwise the labelling would not be needed). However, the positions may also be motivated by ideology or economic interest. Governments and environmental groups could be suspected of a desire to interfere and control with little interest in profitability or freedom of trade. They could on the other hand also become dependent on the revenue generated and start viewing the market share of eco-labeled products (and the revenues they produce) as a primary objective, ultimately leading to a lowering of standards. Ultimately this is a matter of credibility. It is possible that the success of Good Environmental Choice hinges partly on the fact that it is run by an NGO that is well known for its "green" grass-root credentials.[37]

An interesting question is why eco-labelling has been more successful in the Nordic countries than elsewhere. It could be higher environmental consciousness or lower availability of other means of regulation but neither explanation appears very convincing. Another possibility is that there is some relationship with the oligopolistic[38] structure of retail business in Sweden: There are only three major retail chains, one of which is a consumer co-operative. The environmental organizations appear to have managed to make eco-labelling acceptable and (even) attractive. The Environment Choice label is run in collaboration between the Swedish Nature Conservancy and the major retail chains, which is perhaps a practical reason for its relatively rapid success. The existence of a large co-operative may have been important. In soap products, mainstream manufacturers initially tried to ignore eco-labelling in Sweden, but this strategy led to the emergence and rapid rise in popularity (as measured by market share) of a few

small independent producers of supposedly more "ecological" laundry detergents. Because the label had turned out to be so popular with consumers, the large producers were forced to follow suit. However, the same firms often continue to resist labels in other markets.

There are, however, instances in which firms that have been forced to adapt and acquire a label in one market, then find they can use the label in promotion on other markets. They may even become proponents of labelling or standards as a means to limit competition. In extreme cases it is even possible that nations would use eco-labels as disguised protectionism thereby favouring local manufacturers. This is an issue often confronted in trade policy in relation to national standards. Good regulations must attempt to balance the positive and negative aspects of this type of instrument.

In this context, another important factor is the interest in Sweden in using procurement proactively. Public procurement has played quite an important role as an instrument of environmental policy making in Sweden, for example in the case of chlorine-free paper as mentioned frequently in interviews conducted in Sweden. In 1998, the Government appointed a Committee for Ecologically Sustainable Procurement that operated until 2001 to encourage public procurement as an instrument of sustainable development. The Committee developed internet-based guidelines for public purchasers, the EKU-tool. This is being further updated and improved and is used by business, public sector agencies and NGO´s, see MSD 2006 and *www.eku.nu/eng/*. The Swedish Confederation of Professional Employees (TCO) label[39] for monitors has become world leading. Sweden is currently developing an action plan for 'sustainable procurement' as part of an EC initiative to try and reduce uncertainty associated with the incorporation of environmental criteria in public procurement.

6. Chemicals policy

Chlorinated hydrocarbons are good solvents and they dissolve fats, which is important in many industrial applications. Unfortunately they also dissolve the fats that protect nerve cells. The same properties that make them useful also make them health hazards. Many of these chemicals are, therefore, hazardous or toxic directly or indirectly (they may form dioxins when burned). In the case of chlorofluorocarbons (CFCs) their effect on the ozone layer is by now, well known. Before this effect was discovered, several ozone-depleting substances (ODSs) such as the CFCs were introduced as substitutes for other types of chlorinated solvents including trichloroethylene, TCE because they were *less hazardous* to human health. After the phase-out of CFCs to protect the ozone layer, there was some substitution back to TCE, perchloroethylene (PER), and methylene chloride. To stop this increased use, the Swedish Government passed an ordinance (1991) prohibiting the use of TCE in consumer products from 1993 and all professional use (of TCE and some similar solvents) from 1996.

This is an interesting since what appears as a strong traditional regulatory instrument turned out not to be wholly effective. The apparent stringency of the instrument generated very strong opposition among some users who found it particularly difficult to replace TCE, or simply disapproved of the timing or policy method. In the context of this paper, it is the lack of consultation or participation and transparency in the TCE policy making that is the most important lesson: a lesson that appears to have led to a rather profound reorientation of Swedish policy making today. The current work with the 'Registration, Evaluation and Authorisation of Chemicals' (REACH) is very much more oriented towards consultation and industry participation. It appears that more consultation at an early stage can improve policy design and also reduce the enforcement, monitoring and implementation costs considerably.

The ban on TCE was controversial since the evidence on its toxicity was not so clear-cut and other European countries did not ban it. The uncertainty concerns mainly how serious TCE is as a contaminant in nature. There is less doubt that TCE is a serious professional workplace hazard, but this implies that it might be more appropriate to use direct instruments such as ambient environmental quality standards for the workplaces themselves. The ban led to considerable strife: Some firms wrote an open letter to the Prime Minister, saying that the prohibition was poorly motivated and should be withdrawn, making the case that their competitiveness was threatened and that they would have to close or move abroad if the prohibition were to be enforced. Several companies even fought the legislation in the courts which is very unusual in Sweden. This led to a number of exceptions being allowed. In the first year (1996), some 500 companies were given waivers; however, after that, only companies that could show they were making serious efforts to substitute for TCE were granted exemption. Exempted firms also were charged an exemption fee of 150 SEK/kilogram, which was not only an environmental tax but intended to remove any unfair disadvantage that a complying company would suffer vis-à-vis its non-complying competitors. Hundreds of companies continued to apply for exemptions, and when rejected, they appealed the decision.

The Stockholm court reversed the decision by SEPA, and several further rounds of appeals progressed to higher courts. Other countries also started to criticize the Swedish ban. Sweden has no production of TCE, it was all imported and the ban was thus a barrier to trade in this particular commodity. The case of one company, Toolex, was referred (by a Swedish court) to the European Court of Justice (case C-473/98) to determine whether the Swedish prohibition was in accordance with the free movement of goods. Meanwhile, the Chemical Inspectorate (*Kemikalieinspektionen*) modified its rules for exemption, dropping the requirement of a phase-out plan and removing the fee, because the EU Commission considered it to be "out of proportion" to the environmental damage. The only requirement left for exemption was that the company seek to identify other alternatives and avoid harmful exposition.

On July 11, 2000, the Court finally ruled that the Swedish prohibition was not counter to EU legislation on the free movement of goods. Several interesting principles of European law underlie this case. The motivation for the ruling was that the basis for the prohibition was concern for health and environment. The EU itself has classified TCE as toxic and carcinogenic. Member countries further have the right to stricter environmental legislation. The fact that there was no explicit EU-wide harmonisation for TCE was an important factor in permitting the Swedish regulations. In areas of law which are harmonised (such as pesticides or vehicles), special national legislation would have been harder to accept. Furthermore, it is worth noting that there is no reasonable basis for suspecting that the prohibition was motivated by an attempt to restrict trade. Finally, an important factor for the court was that reasonable possibilities for obtaining a waiver were available. Thus the critics might conclude that the prohibition was accepted because it was watered down by more generous rules for waivers. Alternatively, the frequency of waivers was such that the ban might be better characterised as a threat (rather than a binding constraint) to encourage the development of alternative chemicals.

There is some similarity with the NO_x charge case. In the case of TCE it was impossible to enforce the ban for political reasons, and so waivers were introduced. In the case of the charge, the refund provides a means to address concerns about the effect on industry, without undermining the environmental effectiveness of the measure. The waivers to the prohibition do however reduce its environmental effectiveness quite significantly. Different instruments provide different opportunities to address political stumbling blocks. Moreover, the granting of waivers was very resource-consuming (for both public and private agents).

The ban did, of course, reduce use very substantially and has led to a process of innovation whereby a number of companies have found new degreasing and cleaning methods that are less environmentally damaging. The ban has however *not* stopped all use, since some companies have waivers. It is also worth mentioning that Norway introduced a tax on TCE (and the closely related solvent perchloroethylene) at a

rate of 50 Norwegian crowns or US$ 8/kg. This led to a drastic decline in TCE use without any legal strife. Germany used stiff ambient regulations which led to reductions in emissions and to the development of new closed-loop machines that have become very successful as a German export item.

All in all, it is actually hard to evaluate the Swedish prohibition. Sweden played a pioneering role in pointing to the health hazards of this chemical some 10 years ahead of most other countries (it is still used quite extensively in most EU countries). On the other hand the *prohibition* per se has turned out to be a less successful instrument than some people believed. It led to considerable resistance within and outside the country. Sweden had to fight hard in its membership negotiations with the EU to keep the prohibition and it is now generally accepted that this policy was somewhat heavy-handed. It is perhaps symptomatic of a change in policy style that Sweden appears to have switched to a completely different approach in promoting the broader issue of chemicals regulation within the EU. Interestingly, however, under REACH TCE falls within the criteria of the class "especially dangerous/phasing out substances", providing indirect support for Swedish claims.

During the last couple of years, Sweden is seeking to address the fact that chemicals policy is among the prerogatives of the EU. 99% of all legislation in this area originates from the EU.[40] In the context of REACH legislation Sweden played a very different strategy - working hard for flexible basic instruments such as registration and testing. Swedish representatives have a strong feeling of ownership about the final outcome. Swedish officials in this area operated quite strategically with a Swedish proposal, secondment of Swedish technical experts, and support at political level. Swedish observers seem both proud of REACH and disappointed that it did not achieve more far-reaching policy reform.

7. Regulatory policy and tools

The previous Sections (3-6) analysed some salient features of four very important areas of environmental policy making in Sweden: climate, acidification, chemicals, and labelling of consumer products. This section relates the issues concerning the general process of regulatory reform (Section 2) to these important areas of environmental policy-making.

The categories of the analysis follow the organisation of Section 2, with a separate discussion of the organisation of Swedish policy-making, its institutions, the selection and design of policy instruments, and (finally) of policy evaluation.

7.1 The changing organisation of Swedish environmental policy-making

An important feature of regulatory reform is the "whole of government approach" which emphasizes that it will not suffice to make piecemeal reforms: instead it is necessary to get the whole of the state apparatus to "toe the line". The preceding discussion shows that such issues become particularly important in the context of multi-level governance implied by the expansion of EU policy-making in various areas (particularly chemicals). This has two somewhat distinct aspects: legislative and institutional. The main legislative vehicle for policy integration is of course the introduction of a unified *Environmental Code* (discussed more in the next section). All laws have been brought together in one framework law. A number of Environmental Quality Objectives (EQOs) have been systematically elaborated and are supposed to act as guiding policies for *all* policy-making.

A major challenge to Swedish policy-making appears to come from the many levels of government which exist (see Section 5). Sweden has an unusually strong local government with its own right of taxation and in fact more than half of Swedish taxes are in fact paid (decided and used) at the local level.[41] This gives the municipalities significant power, even compared with some federal countries. Swedish

policy makers are very aware that there is a potential conflict between the desire for decentralisation (which carries with it benefits such as local relevance and participation) on the one hand, and on the other, the equal and fair treatment of citizens or firms across the country as a whole. At the same time, the on-going process of co-ordination with other European countries also increases the need for policy coherence.

From the institutional viewpoint, the most important reforms appear to have been the prominence given to the Ministry of Sustainable Development and the over-riding importance attached to sustainable development per se. The adoption of the 16 EQOs has also led to a much broader degree of participation by all affected parties in matters related to sustainability and this in turn makes for greater accountability in the implementation phase. The process of revising the EQOs involves all major sectors in a constructive dialogue both at the central level and (through the Agenda 21 institutions) also at the regional and local levels. Instruments that imply the allocation of financial resources such as the LIP/KLIMP programs clearly are intended to encourage and promote cohesion in policy making between different levels of government. In the instances when environmental concerns are in conflict with other sectoral (for instance energy or transport) concerns there is a process of inter-ministerial discussion, first at the level of civil servants and if necessary rising to the office of the Prime Minister for mediation.

The Swedish experience of the EQOs and the process around them is innovative and a constructive aspect of Swedish policy making. However, the National Audit Office, has reviewed the reporting and reform of the EQOs and finds that the information provided is insufficient to judge appropriately the progress towards the goals set (RIR 2004:18). They further point out that data on the costs of various measures is even more deficient. In response to NAO findings, the Government has implemented changes in the instructions and approval documents of the central authorities and regional authorities.

In spite of the unity of government just discussed, there is one area in Swedish policy making where there is concern for the fact that (local) government agencies have multiple – and potentially conflicting roles. There seem to be three distinct roles that sometimes may conflict:

a) Enforcement of national law including the handling of notifications by installations

b) Roles as local politician

c) Owner of water/waste facilities

There seems to be some tension between two pairs of these; each is discussed in turn below.

First, between A and B – which is also a tension between local accountability on the one hand and national, legal uniformity of rights on the other. Local politicians in Sweden wield considerable power through the exceptionally large degree of decentralisation of responsibility for taxes and budgetary decisions. Thus politicians may, for instance, campaign for local employment goals and may feel tempted to negotiate favourable conditions with business to keep jobs. These conditions may concern social issues, access to infrastructure, tariffs or, what is particularly relevant for this context: environmental standards. Swedish law strives to delineate the areas within which local decision makers must follow national legislation and standards to guarantee uniformity but there still appear to be grey zones within which conflicts between the two roles can surface.

Second, between A and C - which illustrates the conflicts between the state as a monitoring and enforcement agent and the state as an owner (the gatekeeper-poacher problem). There is a tension between two important aspects of Sweden's political culture - local self-determination and significant public ownership in producing sectors. Sweden has the highest such public ownership in the OECD, most other countries have to a significant extent encouraged private sector provision. Even in those cases when there is private sector participation, some observers consider that there are still procurement problems.[42] There

are many municipally or public owned enterprises whose role can be discussed in this context. At the municipal level, there have for instance, been conflicts and discussions concerning waste treatment facilities of various kinds (from collection to disposal or incineration). Such facilities tend to be large and complicated and may sometimes be owned jointly by several municipalities. Once built, there is clearly a strong interest in capacity utilisation and this tends to determine management and other decisions.

At the national level, a series of similar issues concerning Vattenfall, the largest of the state companies in Sweden, have recently been pointed out by the National Audit Office, RIR (2004:18). The NAO points to the considerable disparity between the official goals that the Swedish government sets for keeping Vattenfall as state property rather than privatising it: "to facilitate the transition to an environmentally sustainable energy system in Sweden" and the actual operations of Vattenfall the last few years, when the company expanded enormously to become a major player in Germany, Poland and other Nordic countries. Specifically, the purchase of large nuclear and brown coal facilities in Germany would appear to run exactly counter to Swedish official environmental goals of abolishing nuclear energy and avoiding increased fossil emissions.

7.2 Institutions and processes of policy making

One of the fundamental pillars of the Swedish style of policy-making is open and free access by the public to information. The process of decision making is founded on respect for transparency, and public consultation[43] is granted an important role: law-making is regularly preceded by public enquiries[44] that include parliamentarians from various Parties and in which various stakeholders have good possibilities to make their case.[45] It is worth pointing to the extensive use of consultation and enquiries, as well as their openness, as an area where Sweden has good experience that may be of interest to other countries.

There is no one-to-one relationship between the processes and the results of policy development, but some policies such as the refunded emission payment scheme (see Section 4) seem to be very well accepted by those regulated, and this may well be seen as one result of dialogue between the regulator and the regulatee. Another possible example in this context would be in the area of chemicals policy. It would appear that Swedish policy-making has learnt some lessons from prohibiting TCE and that the way in which the Chemicals Inspectorate has worked in the development of REACH was much more participatory.

The complexity created by the many layers of government is also noteworthy. European membership implies that many areas of policy making must be co-ordinated, and while this naturally has many advantages, it may also imply disadvantages. Among the clear advantages from a Swedish viewpoint, there was a vital Swedish interest to get acceptance for a radical European policy with respect to acidification (since most of the precursors to acid rain that affect Sweden come from abroad - see Section 3). Conversely, the lack of clarity about who makes the decisions and the reduced political accountability at the local and national levels is a clear disadvantage. Another is that the time needed for participatory decision making is reduced. In European processes, Sweden may sometimes only have a short period of time to formulate its position, which makes it difficult to include all parties in the traditional manner.

In several cases, membership in the EU has necessitated intensive negotiation and co-operation with other Member States in order to ensure implementation of policies in specific areas. The prohibition on TCE is one such case. According to MSD 2006, Sweden had at the time of EU entry a generally more stringent legislation for chemicals than the EU, although one which do not mandate systematic testing of chemicals and assessment of their risks. Since then the differences have been largely evened out, with the development of a European-wide policy which seeks to be environmentally effective, without undermining the competitiveness of the European chemicals industry. Given the complex set of interests and objectives which had to be balanced, evaluation of the success of the scheme is particularly important from both the Swedish and European perspectives.

Sweden has ambitious laws concerning the freedom of information.[46] This has, on numerous occasions, led to controversies with the EU since a given document may be confidential in other EU member states but becomes publicly available in Sweden. Naturally, this is gradually leading to greater restrictiveness in Sweden too. Although labelling is not a government policy on a par with other policy instruments discussed, it is maybe symptomatic that Sweden with its focus on transparency and information provision also harbours one of the more ambitious environmental product labelling schemes.

With the introduction of the *Environmental Code* the role of the judiciary relative to the executive arm of Government in environmental policy has increased. This increases the rights of at least some parties, but it may increase uncertainty and cause some delays, at least in the early years following the transfer of responsibilities.

The increased role of courts in turn entailed a number of other legal changes such as those related to the Århus Convention on the right of access to justice. Once an issue is being heard by a court, the question arises as to who has the right to information from the courts and access to justice.[47] Access to justice implies a possibility to combat lax permitting procedures and the low quality of EIAs (Box 1). However, in spite of the steady embracement of the principle of freedom on information, Sweden was rather slow with the ratification of the Århus Convention. This appears contradictory at first glance. However, the delay was largely attributable to minor technical issues. Moreover, this was new legal territory for Sweden, and one interpretation is that it simply took some time to find the right mechanisms.

Box 1. The Swedish Society of Nature Conservation (SSNC) and Access to Justice

The SSNC with its 160 000 members is one of the environmental NGOs that meets the Environmental Code's criteria for having access to justice (according to paragraph 16:13). Since Sweden acceded in 2005 to the Århus Convention this right actually became somewhat extended compared to the original rules of the Environmental Code. The right to appeal now covers a broader class of decisions concerning permits. The right to appeal now also covers permits under other laws (for infrastructure projects).

The SSNC has had some success in cases involving large-scale environmental issues such as the tunnel through "Hallandsåsen", the oil refinery Scanraff and finally the Botnia railway which goes through the Umeå delta. This delta has an unusually rich bird life and is a Ramsar site. The Swedish government also agreed to make it a Natura 2000 site, but at the same time the government asked the EU Commission to agree to an exemption which implied that the railway could still be given permission to pass through the site. The EU Commission agreed, but the SSNC and other organisations and persons concerned have continued to take action in the County permitting process and the Environment Courts. An interesting issue of process as been raised in this case since the Environment Court of Appeal considered itself bound by the Government decision. The SSNC has questioned this, saying that if this were the case then the project is effectively not tested legally by a court but only by the Government. This would imply that the government can circumvent the courts and that there would, for instance, be no legal route through which the interpretation of the Swedish rules' compliance with EC-law could be tested by the European Court. This issue is currently being considered by the Supreme Court.

Another important principle from a regulatory quality perspective is that regulations should be non-discriminatory. Section 3 discussed how environmental taxes with exemptions raised a number of difficult issues related to discrimination between companies. For instance the point was made that new companies may benefit much more from environmental taxes that treat old and new firms symmetrically, than from subsidies and tax-exemption schemes that are often designed to appease old (and polluting) firms. Some firms - particularly the small and medium sized enterprises (SMEs) - consider the current permitting procedures to be discriminatory since they are very complex and take considerable time. Large companies may have the resources to deal with such costs and uncertainties, but SMEs do not. The efficiency of permitting was raised by a number of individuals interviewed for this report, and the need to reduce such burdens is reflected in recent legal amendments. For instance, Government bill 2004/05:129 (*En effektivare miljöprövning*) is an attempt to streamline the permitting process, without risking the achievement of the EQOs and without disregarding the right of the public to obtain insight into the process and public participation.

An industry association, Svenskt Näringsliv (2005), considers that the new Environmental Code has not led to simplification or clarity in environmental law. On the contrary, the report argues that the new law is not transparent, and it is very complex. SMEs need to employ consultants to know what rules to which they are subject. Svenskt Näringsliv (2005) reports on interviews with environmental inspectors, 84% of whom say that it is hard to get an overview of all the rules and laws. 70% of them say that the long permitting times make it hard for firms to invest, particularly for SMEs.[48] The same author carried out a small study to compare permitting times in the UK, Finland and Sweden. It appears to have been hard to make the comparison truly fair, but the general impression was that permitting times were quite a lot longer in Sweden, particularly if the time for appeals was included. In some cases permitting can drag on for many years. The authors also consider that the regulator spends a disproportionate amount of time on small administrative errors by the companies (such as reports being incorrectly filled) instead of dealing with issues of real significance to the environment. There was considerable critique of the environmental sanction fees the first year they were applied to small service industries, such as hairdressers who had not understood that they had to file applications. On the other hand, in the absence of the fees, the authorities would be wasting considerable resources in simply looking for data. A prerequisite for efficient regulation is, of course, some form of data provision and sanctions may be necessary to make sure that firms engage in the necessary applications and data provision.

While Svenskt Näringsliv clearly represents its member companies first and foremost, it is interesting that the report's authors assert that in general the companies have few problems meeting the environmental regulations or goals per se - it is just the administrative apparatus surrounding the requirements that needs reforming. Svenskt Näringsliv considers that one of the most serious aspects is the double role of the county administrative boards (*länsstyrelser*) which deal with appeals against their own supervisory or permitting decisions. While the permitting is actually carried out by independent "*miljöprövningsdelegationen*" (MPD) within the county administrative boards, Svenskt Näringsliv argue that this separation is not sufficient and suggest the creation of a new agency for appeals. A further example related to non-discrimination might be the professionalisation of decision-making. Sweden has a long tradition of strong professional agencies and ministries – and Ministers very rarely take any operative decisions in individual cases. For example, as illustrated in the section on the LIP/KLIMP subsidies, the task of allocating funds was removed from the Minister's desk to a committee within the SEPA.

The *Environmental Code* has also generated a number of institutional changes. The National Audit Office's reviews have already been mentioned. They have also recently audited the way in which the Swedish government controls SEPA (RIR 2006:2). One conclusion was that government was using the SEPA in an advisory role to government such that this (in combination with important legislative changes and some reduced funding) reduced SEPAs ability to perform its central role of guiding municipalities in their role as inspectors and monitors.[49] The reduced funding mentioned was part of a budgetary freeze and primarily affected money to be paid for the cleanup of hazardous waste sites. It also affected the ability of the SEPA to pursue important environmental issues in permitting processes. The National Audit Office did not question the need for budgetary tightening, but rather the way in which the changes were made, in the middle of a budgetary year with very short notice and with no assistance to overcome the difficulties caused for the Agency. It is all the more remarkable that ordinary budgets should be cut when one considers other very generous extraordinary government programs such as LIP and KLIMP already mentioned. In RIR (2005:28), the National Audit Office further criticizes the way in which the government and its agencies disburse funds for special programs on sustainable growth when many of the agencies lack funding for their regular tasks. This report describes agencies as applying for money in each others' programs basically just to cover deficits in their regular budgets. This is, of course, unproductive and reduces overall transparency and accountability.

Another critique levelled by the National Audit Office, concerns the fact that there is little real control of chemicals in Swedish companies. RIR (2006:4) shows that in spite of the multiplicity of control agencies it seems Swedish companies have low environmental costs by international comparison and the actual number of persons really involved in the control of chemicals in the various agencies is low. Perhaps there is an issue with the number of agencies, such that a disproportionate amount of time is spent keeping internal contact among all the agencies?

7.3 Tools of policy making

One of the central objectives of high quality regulation is to identify innovative market-based policy instruments to meet public policy objectives. As discussed in OECD *Taking Stock of Regulatory Reform* (2005), flexible policy instruments should be at least as environmentally effective as direct regulation and more economically efficient. They should also be designed to reduce the burdens of administration monitoring, compliance and enforcement as well as avoiding the creation of incentives for rent seeking, and other bad practices associated with direct regulation.

In a comparison of all the Nordic and Baltic environmental policy regimes, Sweden uses a large number of economic instruments in the environmental area (OECD 2004 or TemaNord 2006:525). Particularly striking is the fairly broad acceptance of the instrument that many environmental economists think of as the ideal instrument; the tax. In many other countries there are considerable difficulties of political acceptability which restrict the use of taxes. Some of these taxes are also very high[50] and ambitious from an international perspective. This applies in particular to carbon and energy taxes, but also sulphur and nuclear taxes. Views on environmental taxes appeared to be divided. The high taxes on carbon and the exemptions to energy intensive industry have engendered a considerable amount of controversy in the past. The transition to carbon trading is hailed by some as an opportunity to remove or lower taxes, while others perceive taxes as inherently fairer and more efficient than permits.

In the case of nitrogen oxides, taxes were not acceptable (even in Sweden) for a large number of reasons (related to competition and to the fact that it was only possible to regulate the largest sources). The instrument selected: a refunded emission fee on NO_x is a particularly interesting innovation among instruments. It makes it possible to have a very high level of the fee without creating distortions to competition between regulated and unregulated sectors or *vis-a-vis* international competition. It also makes a very high fee politically acceptable by splitting the industrial lobby, since the cleaner half of the industry actually makes money out of the scheme rather than losing. One might have expected some further use of this instrument, but it has so far not been tried in any new contexts.

There are also other traditions in Swedish policy-making that are worthy of note. One is a tendency towards rather ambitious and detailed (some would say overly paternalistic) public regulation. However, this tendency may be a reflection of Swedish membership in the EU and the requirement to implement EC legislation. Moreover, the discussion in Section 6 on chemicals shows how the Swedish policy-makers appear to be moving away from prohibition and towards collaboration with stakeholders using more information-based and flexible market instruments.

Public procurement may also be used proactively as an instrument of environmental policy and is also worthy of comment in the context of regulatory reform. On the one hand, many of those interviewed felt that uncertainty about the extent to which (and the means by which) environmental criteria can be included in procurement decisions was serving as a brake on its use. While the European Commission has sought to address this uncertainty,[51] many of those interviewed for this report felt that procurement officers continued to be wary of introducing environmental criteria in calls for tender.

According to the Competition Authority, the municipalities do not appear to be taking full advantage of existing opportunities to open up for competition in areas such as waste management. Many municipal activities in the refuse collection sector are conducted via municipal companies, and whether or not the procurement rules have been properly complied with is a matter of some dispute. Critics argue that procurement processes do not always take place, and also question such aspects as lengthy contractual periods. It is very difficult, however, to come to grips with such problems via the legal remedies currently available in the procurement field [see DAF/COMP/WD(2006)33].

Particular concerns have been raised with respect to the issue of producer responsibility. In a report on the subject,[52] the Competition Authority found that the current system restricts competition and trade to some extent, and makes it particularly difficult for smaller and foreign companies to enter the Swedish market. Since then, partly due to the Competition Authority report, the system has been overhauled, although it is still too early to gauge the full impact of this reform [see DAF/COMP/WD(2006)33].

Another instrument in which the State plays a dominant and often criticized role is in providing subsidies. An elementary and important element to limit market distortions is to avoid subsidies unless they are absolutely necessary since they distort competition and provide incentives for rent seeking. Within the EU, State aid is, for these reasons banned.[53] However State aid may sometimes be allowed: For instance LIP and KLIMP are State aid but since they are temporary (<5 or 10 years) and designed to meet environmental objectives they are therefore not in breach of treaty obligations. It should also be remembered that most of the money within LIP and KLIMP went to local governments and that the instrument was a way for the national government to coerce the local level to work along the lines of national goals. The municipalities appear to have been fairly pleased with these instruments and some evaluations appear to consider this to be an example where subsidies can be considered to be fair and efficient.

At a general level, many of the environmental problems discussed are quite complex. They often involve several different market failures - for instance the environmental externality coupled with market failures related to the appropriability of research or with asymmetric information. There are also frequently restrictions of a political economy character, as well as concerns related to the distribution of economic burdens. All these factors imply that it is often necessary to resort to combinations of policy instruments rather than single instruments. Several of the examples discussed (refunded emission payments, carbon taxes with exemptions; green certificates; combinations of taxes and subsidies) are to some extent illustrative of these problems.

There is also a link between the issues of instrument choice and some of the institutional issues raised in the previous section. One advantage of many (but not all) market-based instruments is that they remove discretionary power downstream at the permitting and enforcement stages. As such, incentives for rent-seeking are reduced on the private side, and incentives for poaching are lost on the public side. Policy instruments such as the tax, the refunded emission charge, permit trading, all sidestep the local authorities altogether, or make their role entirely instrumental. This reduces the problems of the race to the bottom competition for lax regulation or easy permitting to attract jobs at the local level.

7.4 Policy Evaluation

One of the keys to regulatory efficiency is consistent evaluation of regulation. In Sweden this is not always achieved through full-blown cost-benefit analyses, but generally through more informal regulatory impact analyses of various kinds. It appears however that regulatory impacts are sometimes not properly evaluated and that a possibly neglected aspect is the extensive cost to SMEs of the considerable time taken for permitting.

According to NUTEK (R2006:01), the total administrative costs for the regulated parties, (measured mainly as time but also consultancy services purchased) of complying with all environmental laws, regulations and all monitoring, has been estimated at 3.6 Billion SEK (about 400 M €).[54] The Agency does not state whether or not this should be considered an inefficiently large amount. However, it is revealing that one quarter of this total was attributable to external assistance in the form of consultants and the like. In addition, a high proportion of costs were associated with applications and notification procedures of one kind or another [see DAF/COMP/WD(2006)33]. The purpose of the estimation is however to serve as a baseline for future measurements and thus the Swedish government is showing awareness that there is a serious cost and frustration in business over such costs and the publication mentions a number of ways in which efforts are being made to reduce such costs.

The Board of Swedish Industry and Commerce for better Regulation (NNR), has as its main goal to promote a less burdensome regulation in Sweden. They have for several years assessed the quality of RIAs in Sweden and their Regulation Indicator for 2005 shows 58% of proposals for new or amended business regulations were submitted to NNR for consultation.[55] They also show a high and increasing number of proposals which fulfil at least elementary criteria such as including summaries of the goals and of earlier legislation. Roughly half also include information on alternatives to the proposed legislation. Still, only a very small number of proposals include proper data on the costs to business of the regulations (NNR (2005)). 86% (as compared to 75% in 2004) gave sufficient time for an official review period so that concerned parties are able to prepare and submit high quality reviews.

The main suggestions for improvement from NNR are:

- A clear quantitative target for a reduction in the overall administrative burden.
- The setup of a body within Government with primary responsibility for regulatory simplification.
- Carry out national RIAs of EU proposals.

Other important goals for policy evaluation include

- Avoidance of unnecessary trade restrictiveness.
- Non-discrimination. (of SMEs vs big industry).
- Use of internationally harmonised standards.
- Streamlining conformity assessment procedures.
- Costs of enforcement (and risks of regulatory capture).
- International concerns (competitiveness and trans-frontier pollution).

As mentioned, environmental (and other) regulation in Sweden is regularly preceded by thorough public investigations, even if they sometimes fall short of full CBAs and even if the RIAs are sometimes criticized as weak. A more important deficiency may be that there is no automatic ex post evaluation. However the SEPA does evaluate environmental management and a large number of studies are carried out annually. These evaluations are also used by the agency, the Cabinet Office and other public agencies to improve regulation. A systematic review, SEPA 2004b, summarises some of the lessons from these evaluations. If legislation is to be renewed there will normally be an evaluation, but this does not mean that

all regulations are evaluated ex post and in particular it does not mean that full-scale cost-benefit analyses are carried out. Both LIP and the refunded emission payments for NOx, as well as many other instruments, have recently been evaluated. In addition to the work by the agency there are also, as has been mentioned above, evaluations by the National Audit Office, which is the Supreme Audit Institution in Sweden established in 2003.

8. Conclusion and issues for further consideration

Swedish environmental policy is generally ambitious, and particularly so in particular areas such as acidification, access to nature, and chemicals. The style of regulatory policy-making in Sweden has been formed by a long institutional history, combined with the dominance of a small number of very large export-oriented firms. It is a culture of consensus, collaboration, openness and participation but also a culture that can be somewhat heavy-handed (as shown by the ban on TCE) and bureaucratic (as shown by complex and sometimes slow permitting procedures that can be very difficult for SMEs). The goals of environmental regulation in Sweden have focused on regulation of emissions from point sources: The regulation of ambient quality through environmental quality standards is a novelty that has not yet proven to be easy to accept.

During the last decade, there have been several fundamental changes at the political level. As a response to the increased prominence of environmental issues, the government has been restructured, the Ministry of Sustainable Development has been created and given an overarching role. To harmonize and direct environmental efforts within the country, 16 new Environmental Quality Objectives have been adopted by Parliament (in 1999). These provide long-term strategic orientations, as well as *interim targets* that are more instrumental for medium-term planning. Progress toward meeting the EQOs is evaluated annually by SEPA, with a more comprehensive evaluation every four years. The EQOs are, to some extent, a parallel (political) process to the *Environmental Code*, with which they have relatively modest interaction.

Partly as a response to EU membership and partly for other reasons, the environmental regulatory system in Sweden has been evolving quite fast lately, and there is clearly an interest in finding new and more effective ways of achieving environmental goals, without causing undue disruption to business. A new framework law (the *Environmental Code*) was adopted in 1999. Appeals for public decisions in environmental matters were transferred to a new system of environmental courts, leaving less power to administrative bodies. The *Code* spells out general principles relating to the environment; it also attempts to bring together a large body of earlier law and to transpose EU laws into the Swedish context. Whether or not it succeeds is a matter of judgment. There are still incoherencies within the law itself, and there are many cases of incoherence between this type of framework law, on the one hand, and the actual application of detailed laws and ordinances, on the other. However, such contradictions are perhaps best understood as an inevitable reflection of the process of renewal and progress. It is difficult for a law to be increasingly radical in response to new environmental issues, flexible in time and space, democratically legitimate through a process of referral, simple and easy to use, and at the same time internally consistent in all respects. However, this would call for some caution from a regulatory quality perspective.

There are areas in which Sweden has difficulty meeting EU legislation (such as the EQOs), but this is not to say that Sweden is performing poorly compared to other EU members. To the contrary, it seems that Sweden is one of the better countries at implementing EU legislation in the environmental area; in fact, Sweden often wants to carry EU legislation even further. This was illustrated in the sections on chemicals. Another area in which multi-level governance appears to have generated disadvantages is that the time available for referral and democratic consultation tends to have been reduced with EU membership.

The process of permitting is of particular importance from a regulatory reform viewpoint, and is particularly crucial for SMEs. Sweden has historically applied an integrated approach to licensing, using a case-by-case approach at the level of the individual facility. The introduction of the *Environmental Code* was intended to streamline the integrated approach following the EU Directive on Integrated Pollution Prevention and Control (IPPC). However, many smaller firms find the associated transaction costs to be very burdensome. At the same time, there is also concern that the efforts to simplify regulation and permitting may have gone too far. The proposed change in the status of some types of facilities from the "B" to "C" lists implies that case-specific environmental issues are not given as much consideration at the permitting stage as would have been the case formerly.

There is also some concern about changes in the systems of supervision. The Swedish system of self-monitoring is rather different from more traditional approaches, which tends to make the relationship more antagonistic between regulator and industry. As shown by the IMPEL review mentioned earlier, there may be some interest in other members of the EU concerning the potential benefits of such an approach. On the positive side, the possibilities of appealing decisions in Sweden are improved through greater access to courts. With the signing of the Århus Convention, NGOs and other concerned parties have been given increased access to justice.

A striking feature of policy-making in Sweden is the strong position of the local (municipal and county levels). The EQOs fill an important role in helping to create dialogue through which national and local interests can be aligned. At the local level, the Agenda 21 process provides a very important vehicle for consensus building, prioritisation, and evaluation. Still, there has been considerable criticism of the multiple roles played by local politicians. There is therefore considerable awareness and interest in resolving the issues related to the separation of responsibilities at the local level.

Linking further environmental regulations into the regulatory oversight quality overview process could offer promising avenues for the future, particularly to reduce the regulatory burdens. This could involve co-operation with the Better Regulation Unit in the Business Division of the Ministry of Industry, Employment and Communications. The quality of the Regulatory Impact Analyses currently available also remains an issue.

Sweden is keen on the application of flexible environmental policy instruments, including environmental taxes and charges. An ambitious tax shift has been carried out during the last couple of years. A particularly relevant advantage of MBIs, such as taxes, is that they remove discretionary power "downstream" at the permitting and enforcement stages. For this reason, some firms (particularly the new, small and "green" ones) may prefer instruments such as environmental taxes to other instruments.

Other instruments include participation in the European Trading System for Carbon Rights, as well as the refunded emission payment used for nitrogen oxide emissions from large combustion units. The latter allows the regulator to impose much higher levels of a fee than would otherwise be acceptable (and thus, politically feasible). Other interesting instruments include labelling and large scale subsidy programs targeted at the local (municipal) level. However, the National Audit Office commented agencies or municipal authorities should not be facing cuts in their (ordinary) budgets while they are simultaneously being offered additional financing through very generous (extraordinary) government programs, such as the LIP and KLIMP.

Policy Options for Consideration

Options which Sweden is encouraged to consider in the environmental policy sphere stem directly from some of the more general principles which guide regulatory quality and performance, such as:[56]

- Evaluation and review of proposed and existing policies.
- Ensuring transparency and non-discrimination.
- Application of efficient and non-distorting instruments.
- Keeping administrative burdens to a minimum.

Interestingly, in Sweden and elsewhere in the OECD policy development and implementation in the environmental sphere has been particularly pro-active with respect to the application of some of these principles, and particularly the use of innovative policy instruments, widespread use of policy evaluation (if not cost-benefit analysis), and transparency and consultation.[57] However, as Sweden's environmental regulatory framework continues to evolve, a number of issues stand out as warranting further consideration and analysis.

1. Strengthen co-ordination of policy making across different government levels.

Multilevel governance imposes a number of difficult choices on Swedish policy-making in the environmental sphere, essentially due to the variability associated with local conditions and the strong tradition of decentralised responsibility in Sweden. Effective co-ordination of effort among different levels of rule-making is therefore very important.

2. Ensure that transparency and consultation are safeguarded.

Sweden needs to defend its long history of information transparency when it comes to certain areas of environmental policy. However, as the institutional complexity of the development and implementation of environmental regulation increases (*e.g.* in the context of EU membership), the time available to ensure this transparency declines. Sweden may therefore need to revisit such procedures and mechanisms, in order to ensure opportunities for stakeholder consultation are safeguarded.

3. Address inconsistencies arising out of major policy reforms.

The formulation of Environmental Quality Objectives, the creation by the former Government of a Ministry of Sustainable Development with a broad mandate and the attempt to create a new unified framework law and the *Environmental Code* are all inspiring and interesting policies that show serious political commitment to the environment. As with any far-reaching reforms of this type, certain inconsistencies remain and will need to be addressed.

4. Further deepen the separation of responsibilities at the municipal government level.

In another (not uniquely environmental) dimension, the autonomy of the municipalities and counties is also a policy choice that might be of interest to other nations. However, the separation of responsibilities at the local level needs to be further entrenched, particularly in areas in which the municipalities are themselves service providers (*i.e.* waste collection, water treatment).

5. Ensure consistency between ambient and emission standards.

The regulation of pollution sources and the regulation of ambient environmental standards both seek to improve environmental conditions. However, both types of regulation need to be consistent with each other in order to be environmentally effective. Sweden should look at all environmental regulations affecting its territory from this perspective.

6. If exemptions or waivers are granted, ensure that the economic efficiency and environmental effectiveness of the measure are not undermined.

For some environmental policies, exemptions, waivers and refunds have been accorded - often for reasons of political economy, and often in an effort to seek a balance between environmental and other public policy objectives. However, careful consideration needs to be given to how this balance is struck, since different provisions can have very different consequences in terms of economic efficiency and environmental effectiveness.

7. Seek to reduce the administrative burden associated with permitting, particularly for SMEs.

Sweden ought to speed up and streamline routine permitting where there are no major threats to the environment. Better processes for prioritisation are necessary, so that SEPA and other authorities know where to focus their resources, and in order that an appropriate balance can be struck between cutting red tape, on the one hand, and more effective environmental management, on the other. The administrative burdens faced by small and medium-sized enterprises have been the focus of much discussion in Sweden, and the special efforts the Government has been making to reduce these burdens should be intensified.

Notes

1. This report was drafted by a team involving Thomas Sterner, Environmental Economics Unit, School of Business Economics and Law, Göteborg University and staff from the OECD Secretariat. The assistance of several officials from the Swedish Ministries of Industry and Sustainable Development is also acknowledged. Special thanks are also due to Sverker Jagers and Lena Gippert, as well as to members of a review group within the OECD Secretariat, for very insightful comments.

2. As it appears, Sweden does not use as much formal ex ante or ex post CBA as, for example the USA or UK. Instead more 'limited'/'partial' evaluation is used (*e.g.* regulatory impact analysis or multi-criteria analysis). Agencies are required to analyze and document the consequences of their regulations in an impact analysis. There is, however, no requirement to use any particular methodology.

3. OECD 'Alternatives to Traditional Regulation' [GOV/PGC/REG(2006)9].

4. This is closely related to the Porter Hypothesis – which basically says that environmental regulation is good for *firms* because it forces them to adopt production methods that are cleaner and which also turn out to be more efficient and more attractive to customers so that the regulated companies actually benefit from regulation, see for instance Porter (1991) or Porter & van der Linde (1995).

5. The Swedish system of integrated individual environmental permitting dates back to 1969.

6. *"Sustainable development is the overall goal of Government policy. This means that all political decisions must take into consideration long-term economic, social and environmental consequences"*. (http://www.sweden.gov.se/sb/d/2066/a/21609;jsessionid=a8FWGGFe1MY4).

7. Public enquiries may include politicians from government and opposition as well as affected parties and experts. Affected parties, government agencies and others normally have the right to state their opinions in formal review processes. After this process, working groups with civil servants from several government agencies or ministries may work together to draft legislation. The political parties with which the government collaborates (in a form that is all-but-a-formal coalition) also have representatives in this process. Disagreements between representatives from different ministries are usually sorted out at the level of civil servants and rarely require the secretaries of state or ministers to negotiate but some cases are referred to the office of the Prime Minister for mediation.

8. A prominent example is Staffan Westerlund, Professor of Environmental Law, interviewed by the OECD mission in Stockholm 2006 06 26.

9. The inclusion of instrumental goals among the EQOs may seem strange and could be potentially counter-productive. Perhaps it should be seen in light of the very over-arching ambitions that the Ministry for Sustainable Development has: the intention is not to appear only to be protecting the environment, but of all aspects of planning for a sustainable society.

10. SEPA is responsible for ten of the sixteen objectives, while the Chemical Inspectorate, the Radiation Protection Authority, the Geological Survey, the National Board of Forestry, the Board of Agriculture and the National Board of Housing, Building and Planning are each responsible for one (MSD 2006).

11. The streamlining is intended i.a. to reduce the variation from case to case.

12. In very special cases, such as nuclear power stations, large hydropower projects or refineries, the central government determines whether to grant a permit.

13. The average time for permit processing is up to two years. The Government has recently adopted the government Bill 2004/05:129 *(En effektivare miljöprövning*) as an attempt to simplifying the permitting

process under the *Environmental Code* by, for instance, requiring only one consultation and allowing partial EIA when only part of an installation is modified. Another example of better regulation during last year is that the Swedish Chemicals Inspectorate (KemI) and the Swedish Rescue Services Agency coordinated the implementation of the European Community (EC) directives 67/548/EEG and 1999/45/EG (both relating to the classification, packaging and labelling of dangerous material) to one regulation in KemI's Code of Statutes, instead of regulations in two different Code of Statutes, MSD (2006).

14. The whole range of central agencies such as the Chemicals Inspectorate and the Surgeon General are also involved, coordinated by the SEPA.

15. Cases where the initial decision was taken by a municipality or county administrative board can only go to the Environmental Court of Appeal.

16. The National Audit Office, describes this clearly when it comes to contingency plans for oil spills which are one of the responsibilities that the municipalities are often grossly unprepared for – to the point of even not knowing whither to turn for help, RIR 2005;31

17. This is discussed in greater detail in the report on 'High Quality Regulation'.

18. SEPA has investigated the environmental sanction charge system, M2004/2012/R. Their conclusion was that it fulfils its purpose and has a preventive impact. The Agency suggests an increase in the number of infringements that should be subject to a fee, see MSD (2006).

19. Most instruments also have a fifth (non desirable) *tax interaction effect.*

20. 'Optimality' here refers to the standard view among economists and ultimately to neoclassical theory. In basic economic models of closed, non-distorted economies, taxes appear preferable to other instruments since they would achieve goals with fewer distortions to the economy. In a more complex model, or in a real world where taxes are resisted or evaded, there may be better instruments.

21. Note that relative to the EU average Sweden actually has a very old and rather inefficient vehicle stock. Moreover, tax breaks for driving (tax deductibility for driving to work or during work) and other subsidies explain why gasoline demand is less price-sensitive in Sweden.

22. In the case of the US Acid Rain Policy very significant resources were spent on negotiating permit allocations, see Joskow and Schmalansee (1998).

23. The only effect would be a lower permit price and some revenue to the various states. The fact that the permit price is lower could have political economy effects: It might make it easier to negotiate tighter targets in future periods.

24. There were accusations that the government would give more money to social-democratic municipalities. However, this turned out not to be the case. An alternative hypothesis that grants were given to municipalities with many swing voters received some support, but the evidence can only be described as inconclusive (see Dahlberg & Johansson 2000).

25. 250 of 1 250 measures listed in the 148 programmes were not implemented, for a variety of reasons.

26. As discussed earlier, the simplest rule is one instrument per goal. In some complex cases, more than one instrument may be needed for a given goal (if there are more imperfections or barriers to policy). In this case, one instrument is being promoted to resolve several goals which is very optimistic: There are several goals provided for the European Union Directive on promoting renewable sources of electricity. The last of these is to fulfil the Kyoto targets more quickly. Other arguments are improved security of supply, social cohesion, local employment opportunities (EU Commission 2000).

27. Since existing large scale hydro power is not included in the system- the actual share of RES-E is therefore much higher.

28. In a case concerning Preussen Elektra, the European Court of Justice clarified that State aid rules only refer to aid granted directly. Thus, even if a law or instrument benefits some companies it is not "state aid" in the legal sense as long as no extra financial burden is placed upon public authorities, see Case C-379/98 Preussen Elektra v. Schleswag AG [2001] ECR I-2099, para. 58.

29. Electricity-intensive industries are exempted.

30. Without unduly implying value judgments the former could be called "non-compliant" or "dirty", and the latter "clean" – this emphasizes some degree of similarity with the refunded emission payments that will be discussed in the next section.

31. It would also have been different if the rules for the scheme had been oriented towards new technologies. This is difficult to evaluate because there are a multiplicity of objectives, and ideally one would have to evaluate against a counterfactual in which each objective was achieved at least cost, but with all the ancillary impacts affecting the achievement of the other objectives.

32. The Sulphur tax law allows agents to further deduct any sulphur captured by filters or similar.

33. Assume that there are n profit-maximizing firms ($j = 1, \ldots n$) with production costs $cj(ej,qj)$ to produce output qj with emissions ej. An REP scheme imposes a charge of t per unit of emission and refunds revenues to the firms proportionally to output. The firms now face total supply costs of operation $Cj = cj(ej, qj) + t[ej - \Sigma i ei(qi/\Sigma qi)]$. The fee is just like a tax tej while the refund is $t\Sigma i ei(qi/\Sigma qi)$.

34. In line with the results from Burtraw et al (2002), one might wonder whether it was really necessary to refund the *whole* of the rent collected. It is quite possible that partial refunding might be sufficient to reach the most important of the policy objectives.

35. Since this instrument reduces administrative costs (as well as costs of private rent-seeking and public resources used to thwart such efforts) it may in fact be more 'efficient' than a tax of equal size.

36. There are in this context at least two different information asymmetries: Those concerning the product characteristics per se and those concerning their impact on the environment. Both types of information are needed for a consumer who has environmental preferences.

37. The behavior of business is interesting and complex. Apparently there are differences in opinion within the World Business Council for Sustainable Development - the European firms want to collaborate and influence labelling while the US firms want to stop labelling.

38. This may allow manufacturers and retailers in Sweden to more efficiently capture the rents associated with environment-related product differentiation and firm branding.

39. See *e.g. www.noradcorp.com/swedish.htm* or *http://library.thinkquest.org/C0123325/sta.htm*.

40. As noted during the interviews.

41. According to Konjunkturinstitutet, local (municipal and county) taxes correspond to roughly 23 % of GDP while national direct income taxes make up less than 4%. Including indirect taxes such as VAT, the total national taxes amount to around 18% of GDP. (Social security fees and some taxes are not included here), see http://www.konj.se/download/18.2f48d2f18732142c7fff2798/KLdia5_jun02.xls.

42. Several respondents raised such issues in the interviews conducted in Stockholm. This is distinct from the use of environmental criteria in public procurement, and relates to simple application of good practice for awarding contracts/concessions for 'contestable' services, see OECD 2004b.

43. See also Section 2.

44. During 2005 there were for instance more than a hundred regular full-blown White papers (public enquiries - in addition to numerous other investigations at lower levels).

45. According to Government Ordinance (verksförordningen 1995:1332), the SEPA is required to refer the proposals to affected parties (including business and NGOs) and give them sufficient time (normally three months) to respond.

46. There are at least two different dimensions worth mentioning here: A civil servant or politician who, for instance, leaks information to the press may in the EU be brought to court while in Sweden it is strictly forbidden for the public authorities even to try investigate the sources a journalist might have had. A second form of freedom is that, under Swedish law, documents including memos or letters to ministers, MPs or civil servants are subject to freedom of information, and thus publicly available.

47. For a comparative discussion within Europe see *www.inece.org/newsletter/12/lavrysen.pdf*.

48. One could also cite in this connection, similar viewpoint from the farmers organisation LRF (2006).

49. This is, furthermore, not the only case in which the National Audit Office has found the government does not properly prioritize regular control activities. In RIR 2005:4, they criticize the lack of supervision over the way in which waste incinerators dispose of their hazardous ashes (that may contain dioxins).

50. The acceptance of taxes in Sweden should not be exaggerated. Also in Sweden there has been considerable resistance to some particular taxes (particularly when powerful lobbies have been concerned about competitiveness). In other areas some neighbouring countries have more ambitious instrument applications than Sweden (for instance: in the areas of petrol, natural gas, electricity, water and waste, taxes are higher in at least one other country (often Denmark, see TemaNord 2006:525). It is, however, true that taxes are less vilified in Scandinavia than elsewhere.

51. Notably through the publication of the *European Commission Handbook on Environmental Public Procurement* and the "Interpretative Communication on the Community Law Applicable to Public procurement and the Possibilities for Integrating Environmental Considerations into Public Procurement" [COM 2001/0274]).

52. Report 2003:3 in the Swedish Competition Authority's report series.

53. Green certificates are a new instrument designed in large part to provide support for some technologies without directly involving the state in any subsidies or transfers.

54. This is much smaller than total annual environmental costs and investments but it happens to be roughly equivalent to the yearly budget of the SEPA. A (maybe extreme) point of comparison is a business sector estimate of 53 billion SEK (almost 5 B €), Svenskt Näringsliv 2005.

55. See also the report "The use of economic impact assessments by environmental authorities" *(Ekonomiska konsekvensanalyser i myndigheternas miljöarbetet, SEPA Report no 5398, 2004a)* which addresses the existing Swedish experience of economic impact assessments. The report shows that in general, economic impact assessments at public authorities are not very ambitious.

56. See OECD (2005a) for an elaboration of the 'guiding principles'.

57. See ENV/EPOC/WPNEP(2006)11/REV1.

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APPENDIX 1. SWEDISH ENVIRONMENTAL QUALITY OBJECTIVES

1. Reduced Climate Impact

- Average GHG emissions 4% lower than in 1990, by 2008-12.

2. Clean Air

- Ambient targets for SO2, NO2 and Ground-level ozone concentrations Emission reductions for NMVOC

3. Natural Acidification Only

- No more than 5% of all lakes and 15% of the total length of running water affected by anthropogenic acidification.
- Trend towards increasing acidification of forest land reversed. Emission reductions for SO2 and NOx

4. A Non-Toxic Environment

- Data availability for all chemical substances sold. Labelling of all products with health and environmental properties.
- Phasing out of particularly hazardous substances and guideline for human exposure for some others
- Contaminated site inventory finished and remediation started on a number of sites by 2005.

5. A Protective Ozone Layer

- Virtually all emissions of ozone-depleting substances halted.

6. A Safe Radiation Environment

- Environmental concentrations of radioactive substances from anthropogenic sources reduced to safe levels
- Annual incidence of skin cancer caused by the sun no greater in 2020 than in 2000.
- Risks associated with electromagnetic fields studied continually and preventive action taken as needed.

7. Zero Eutrophication

- Programs in line with EU Water Framework Directive by 2009, to achieve goals in lakes, streams and coastal waters.
- Reduced Anthropogenic phosphorus discharges into lakes, streams and coastal waters
- Detailed targets for reduced emissions of nitrogen: ammonia and NOx.

8. Flourishing Lakes and Streams

- Action programs by 2005 for valuable shore environments; long-term protection by 2010 for at least half of these
- Action programs for restoration of streams. No adverse effects from releases of aquatic animals and plants.
- Action programs introduced by 2005 for priority threatened species and fish stocks

9. Good Quality Groundwater

- Water-bearing geological formations of national importance for water supply protected.
- Land and water use must not modify groundwater levels adversely for water supply, or ecosystem integrity.
- All major drinking water sources meeting Swedish standards for good quality drinking water.
- Action programs by 2009 specifying measures to achieve good groundwater status.

10. A Balanced Marine Environment, Flourishing Coastal Areas and Archipelagos

- Long-term protection for 50% of valuable marine and 70% of valuable coastal areas. Five new marine reserves 2005
- Action programs prepared and introduced for priority threatened marine species and fish stocks by 2005.
- Fish catches at sustainable levels by 2008. Detailed targets for by-catches of fish, birds and mamals
- Noise and other disturbance (including oil spills) from boat traffic reduced to negligible levels in sensitive coastal areas.

11. Thriving Wetlands

- National wetland strategy adopted by 2005. Long-term protection provided for all wetlands

- By 2004, no construction of forest roads adversely affecting valuable wetlands.
- At least 12 000 ha of wetlands and ponds established or restored on agricultural land.
- Action programs introduced by 2005 for priority threatened species.

12. Sustainable Forests

- Area of valuable forest land under protection increased by 900 000 ha.
- Other increases: quantity of dead hardwood by >40%, targets for area of mature forest and old growth forest
- Damage from forest management eliminated for ancient monuments
- Action programs introduced by 2005 for priority threatened species.

13. A Varied Agricultural Landscape

- Area of traditionally managed meadow land increased by >5 000 ha and of valuable pasture by >13 000 ha.
- Small habitats preserved as much as today; by 2005, a strategy adopted to increase such habitats.
- Detailed goals for culturally significant features; plant genetic resources and populations of indigenous domestic animal breeds
- Programme prepared for conservation of culturally valuable farm buildings by 2005.

14. A Magnificent Mountain Landscape

- Negligible anthropogenic damage to soil and vegetation. Protection for priority threatened species.
- Detailed goals for noise reduction in mountain areas from aircraft and off-road motor vehicles

15. A Good Built Environment

- Spatial planning for transport efficiency, cultural and aesthetic values, urban green spaces and sustainable energy.
- Goals for traffic noise, culturally valuable built environments and energy efficiency of buildings.
- Extraction of natural gravel <12 million tonnes/year; reused material >15% of aggregates used.
- Landfilling of waste halved from 1994; total waste generation stabilised at 1994 level.

- Ventilation efficient in all frequently used buildings by 2015; radon levels >200Bq/m3 in schools by 2010

- At least 35% of organic waste from households, restaurants, shops, food industry etc recycled through biological treatment.

16. Biodiversity

- Biological diversity must be preserved and used sustainably for the benefit of present and future generations.

- Species habitats and ecosystems and their functions and processes must be safeguarded.

- Species must be able to survive in long-term viable populations with sufficient genetic variation.

People must have access to a good natural and cultural environment rich in biological diversity, as a basis for health, quality of life and well-being.