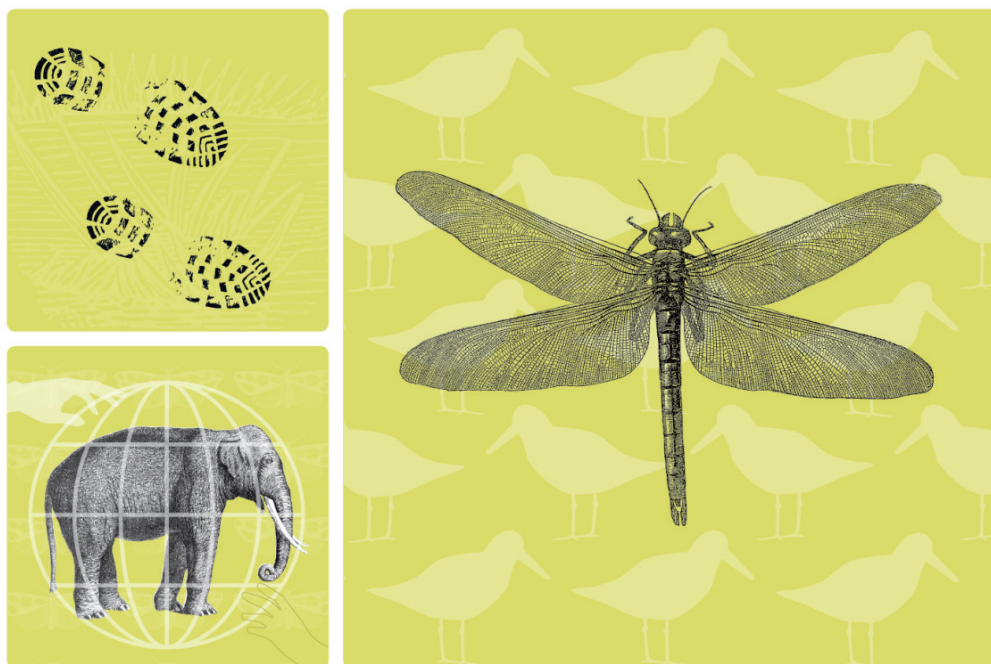


Overall assessment and analysis

Extract from the Swedish Environmental Protection Agency's
2012 in-depth evaluation of
Sweden's environmental objectives



SWEDISH ENVIRONMENTAL
PROTECTION AGENCY

Introduction

Every four years, an in-depth evaluation is undertaken of Sweden's 16 environmental quality objectives and the generational goal. In June 2012, the Swedish Environmental Protection Agency reported the third such evaluation since the Riksdag introduced the environmental objectives system in 1999.

The in-depth evaluation was conducted in collaboration with county administrative boards and some thirty central government agencies, together with stakeholder and environmental organisations. As well as assessments and forecasts relating to the environmental quality objectives and the overarching generational goal, the evaluation includes analyses that cut across the different objectives: an analysis of synergies and goal conflicts affecting environmental action, a review of available policy instruments, and a progress report on environmental efforts at the regional and local levels.

In an effort to bring together and give an overview of the state of the environment and in particular of action towards achieving the environmental objectives, the Swedish EPA made an overall assessment and analysis based on the other material presented in the 2012 in-depth evaluation. This document holds the English version of the overall assessment and analysis, chapter 2 in the Swedish Environmental Protection Agency's 2012 In-depth Evaluation of Sweden's Environmental Objectives (*Steg på vägen – Fördjupad utvärdering av miljömålen 2012. Swedish EPA report 6500*).

Contents

INTRODUCTION	3
CONTENTS	4
OVERALL ASSESSMENT AND ANALYSIS	5
Current state of the environment, trends, and prospects of achieving the objectives	5
Current state of the environment	6
Trends in the state of the environment	6
Conditions for meeting the objectives	9
Status and trend for the generational goal largely negative	10
How far are we from achieving the environmental quality objectives?	11
Environmental action based on policy objectives	14
The role of policy instruments in environmental action	14
Implementing policy decisions	15
Areas for development linked to policy instruments	16
Environmental action – the situation at the regional and local levels	21
What is Sweden able to do to improve the state of the environment?	23
The environmental objectives in time and space	25
What action is needed today?	26
Improving the processes for achieving the environmental objectives is fundamental	26
Key structural areas	28
Perspectives for future action	32

Overall assessment and analysis

This chapter takes its starting point in and is based on the other material presented in the 2012 in-depth evaluation of Sweden's environmental objectives.¹ The aim has been to bring together and give an overview of the responsible government agencies' assessments of the environmental quality objectives and the generational goal, in relation to the other elements of the in-depth evaluation (*Steg på vägen – Fördjupad utvärdering av miljömålen 2012. Swedish EPA report 6500*). The approach has been to make an overall analysis of the assessments from different perspectives, with a view to identifying causal factors and problem areas in efforts to safeguard the environment. Such an analysis is intended to help provide a better basis for decisions on what needs to be done, how and why – in order to further develop environmental action.

The environmental objectives vary in character, scope and context, which presents a challenge for the analysis undertaken. Using approaches such as analysis of the gap to goal achievement, and in terms of the structure of environmental efforts, from policy goals to outputs and impacts, issues have been examined from partly new angles. Further refinement of this analysis is called for, however.

Current state of the environment, trends, and prospects of achieving the objectives

The assessment by the government agencies responsible for the environmental objectives is that 14 of the 16 environmental quality objectives will not be met by the target year 2020 (2050 in the case of *Reduced Climate Impact*). At the same time, there are positive trends in terms of both the state of the environment and action to protect it. These trends are not strong enough, however, to alter the negative picture.

The assessment arrived at regarding the generational goal is also negative. It will not be possible *'to hand over to the next generation a society in which the major environmental problems in Sweden have been solved, without increasing environmental and health problems outside Sweden's borders'*. Trends regarding the seven 'bullet points' which spell out the implications of this goal vary, however, and here, too, certain positive tendencies can be noted.

Follow-up of the environmental quality objectives is based on the assessment criteria set out in the Government Bill *Sweden's Environmental Objectives – For More Effective Environmental Action*². Assessments of progress towards the objectives involve two elements: the agencies concerned judge whether the state of the

¹ Some of the data included in the analysis have been separately checked for accuracy by the government agencies responsible for the objectives. This is the case as regards Tables 1–3 and Figures 1 and 4.

² Regeringens proposition 2009/10:155: *Svenska miljömål – för ett effektivare miljöarbete*.

environment described by each of the objectives can be achieved by the target year, or whether conditions for meeting the objectives are in place. Such conditions are deemed to be in place if decisions have been taken on national and/or international policy instruments that will result in sufficient action being taken by 2020/2050 to enable the quality or state of the environment which a given objective describes to be achieved at a later date.

Current state of the environment

For most of the environmental quality objectives the situation is complex, with positive trends for some components of them, but more negative trends for other components. Certain emissions, for example of phosphorus, nitrogen, sulphur dioxide and lead, have been reduced to some extent, but in some areas the beneficial effects, for instance on air quality, acidification and eutrophication, are taking time to emerge, owing to nature's slow capacity for recovery and the complex relationships between emissions and levels in the environment. The use of certain well-known and long prohibited toxic pollutants has declined, yet concentrations in freshwater fish, for example, remain high. Worldwide, production and consumption of chemicals are increasing, a factor which, together with inadequate knowledge of many substances and the combined effects of substances, obstructs progress towards the environmental quality objective *A Non-Toxic Environment*.

Global emissions of greenhouse gases are rising, and future climate change will have negative implications for many of the environmental quality objectives. *Reduced Climate Impact* is among the objectives that are furthest from being attained.³

Certain aspects of the environmental status of seas, lakes, watercourses and groundwaters, and of several terrestrial ecosystems, remain problematic, not least as regards eutrophication and biodiversity. For several environmental quality objectives, the elements relating to cultural heritage and outdoor recreation will be difficult to achieve.

Trends in the state of the environment

While the overall situation regarding the environmental quality objectives is negative, trends in the state of the environment vary from one objective to another. The goals with the most negative trends are *Reduced Climate Impact*, *Thriving Wetlands*, *A Varied Agricultural Landscape* and *A Rich Diversity of Plant and Animal Life*. The objectives *Clean Air*, *Natural Acidification Only*, *Good-Quality Groundwater* and *A Magnificent Mountain Landscape*, on the other hand, show positive trends, albeit weak. Table 1 summarises the responsible agencies' assessments of trends – today and over the next couple of years – for all the environmental quality objectives.

³ The milestone target to be met by 2020 under *Reduced Climate Impact* is considered achievable, however, provided further action is taken in the framework of existing policy instruments.

Table 1. Assessments of the prospects of success and trends in the state of the environment for each of the environmental quality objectives.

Environmental quality objective	Assessment of prospects of achieving objective by 2020 (2050)	Trend in state of environment	Brief explanation of environmental trend
Reduced Climate Impact	No	Negative	Global emissions of greenhouse gases are rising, as are atmospheric concentrations. Factors behind the increase in emissions include combustion of fossil fuels for power and heat generation and transport.
Clean Air	No	Slightly positive	Although air quality in Sweden as a whole is good, elevated air pollutant levels are still causing significant damage to human health, vegetation and cultural heritage. The previously strong trend towards better air quality in Swedish towns and cities has been weaker since the turn of the present century – with the exception of a few pollutants that show a continued decline.
Natural Acidification Only	No	Slightly positive	Deposition of acidifying pollutants in Sweden has fallen sharply in recent decades. The acidifying effects of forestry have become more pronounced. An improvement can be seen in the acidification status of surface waters, but not in that of forest soils or groundwaters.
A Non-Toxic Environment	No	Neutral	Growing consumption is increasing global production of chemicals and other products, contributing to a rise in diffuse releases of hazardous substances. Use of some substances of very high concern has been restricted by EU regulations. Certain well-known toxic pollutants that have long been subject to restrictions, and for which long-term data sets exist, now show a positive trend in the environment. For most substances, there are no data either on levels in humans and the environment or on how levels have changed over time. At present, therefore, no clear-cut assessment can be made of the overall trend in the state of the environment.
A Protective Ozone Layer	Yes	Positive	All ozone-depleting gases apart from HCFCs (hydrochlorofluorocarbons) and N ₂ O (nitrous oxide) show a decline in both emissions and concentrations. Depletion of the ozone layer appears to have stopped. There are uncertainties in the assessment made, linked to both the scientific data and the significant natural variability of the ozone layer. There is also a threat to the ozone layer from continued or even increasing production and use of ozone-depleting chemicals, as well as a risk of diffuse leakage and emissions when products containing such substances are scrapped.
A Safe Radiation Environment	Close	Neutral	Trends for the elements of this objective relating to radiological protection principles, radioactive substances and electromagnetic fields are judged to be positive. The annual incidence of skin cancer is still rising, however. This is true of all forms of the disease, and all the evidence points to a continuing increase in all skin cancer types in the population. The principal cause is ultraviolet (UV) radiation, linked to exposure to the sun and sunbed use.

Zero Eutrophication	No	Neutral	Available data suggest that the state of the environment as regards eutrophication is unchanged or slightly improved. Nitrogen and phosphorus losses from agriculture have declined in the last 20 years. In general, atmospheric emissions are falling, but those from international shipping show an upward trend. Measures to reduce nutrient emissions have produced results, but it will take time for the environment to respond to the changes achieved. Trends vary according to the perspective applied (e.g. international/national, freshwater/marine).
Flourishing Lakes and Streams	No	Neutral	Many species have declined owing to a deterioration of habitats and water quality, resulting from fragmentation, channel clearance, river regulation and land use change. Surface waters are being protected, but not on a sufficient scale. Restoration of rivers and streams is under way at the county level, though progress is slow. Acidification has abated in recent decades, but still adversely affects lakes and watercourses.
Good-Quality Groundwater	No	Slightly positive	A slight positive trend can be noted. Progress has for example been made in protecting groundwater resources and conserving natural gravel deposits, and as regards changes to groundwater levels. Two of the biggest concerns regarding the quality of groundwater are inputs of nitrogen (in the form of nitrates) and pesticides. Problems of microbial contamination of both public and private water sources have attracted growing attention. Geological conditions in Sweden are such that the effects of human activities on groundwater are generally local in character.
A Balanced Marine Environment, Flourishing Coastal Areas and Archipelagos	No	Neutral	For several aspects of this objective, trends in the state of the environment are negative, but for the objective as a whole the environmental trend is judged to be neutral. Problems of eutrophication are most pronounced in the Baltic Sea, but also affect the Kattegat and Skagerrak. Twenty-one Swedish marine fish species and 34 invertebrate species are currently red-listed by the Swedish Species Information Centre, largely as a result of overfishing and eutrophication. Persistent toxic pollutants such as PCBs and DDT have declined dramatically since the 1970s. However, dioxin levels in oily fish from the Baltic remain high.
Thriving Wetlands	No	Negative	Many wetlands are becoming overgrown owing to drainage and cessation of mowing or grazing. Vegetation changes are expected to accelerate as a result of climate change, alien species and nitrogen deposition. The area of wetlands in the farmed landscape is increasing, albeit slowly, which will have beneficial effects on flora and fauna and ecosystem services.
Sustainable Forests	No	Neutral	The picture here is mixed. Over the last ten years, trends in terms of formal protection and voluntary set-aside have been positive. Restoration work, conservation management of forests and cultural heritage conservation are being undertaken, though on a relatively small scale. Consideration for the environment is now seen as a natural part of forestry, although there are shortcomings in this respect and efforts are under way to secure improvements. Measures introduced have given rise to several positive trends, e.g. in the quantity of dead wood in forests and the areas of old-growth forest and of mature forest with a large deciduous component. At the same time, felling is occurring in forests of high conservation value.

A Varied Agricultural Landscape	No	Negative	The trend for farmland species and habitats is partly negative. Despite a wide range of action, there is still no clear break in the trend regarding natural and cultural values of the agricultural landscape. In some cases, the assessment is made more difficult by the long timescale of recovery in the natural environment. The area of farmland continues to decline. Pastureland is contracting, and many grassland species and habitats are not in favourable conservation status. In the past decade, after a long period of decline, trends for farmland birds have been broadly stable. On the southern and central agricultural plains, small-scale habitats are in short supply, adversely affecting both biodiversity and ecosystem services. In addition, many rural buildings risk falling into disrepair.
A Magnificent Mountain Landscape	No	Slightly positive	Mountains are a sensitive environment, under pressure from a wide variety of competing interests. The last 25 years have seen a marked rise in the use of off-road vehicles designed for snow-free ground, increasing damage to soil and vegetation. Efforts to conserve and enhance biodiversity are continuing. Not enough is known about the cultural heritage values of mountain areas, creating a need for research and survey work. There are also major gaps in our understanding of what pressures mountains and their ecosystems can withstand from different activities.
A Good Built Environment	No	Neutral	Positive developments include radon remediation, abatement of indoor levels of noise from transport, and improvements in energy efficiency in an increasing number of homes. On the negative side, road transport is growing, giving rise to noise and poor air quality; green space in towns is contracting; and many homes have indoor environment problems. The cultural heritage values of buildings are inadequately protected, and the quantities of waste continue to grow.
A Rich Diversity of Plant and Animal Life	No	Negative	Three-quarters of the habitats and half the species listed in the EU's Habitats Directive are not in favourable conservation status. A number of new species were added to the Swedish Red List in 2010. Use of natural resources is jeopardising the stability of ecosystems and their capacity to deliver services that we take for granted. Growth in the number of alien (non-native) species continues unabated.

Conditions for meeting the objectives

For some objectives and sectors, trends are positive and many policy instruments and measures have had an effect. Thanks to legislation and measures introduced, a positive trend can for example be noted for certain dangerous chemicals. In forestry, the areas set aside voluntarily have increased, with beneficial effects in terms of the *Sustainable Forests* objective. *A Protective Ozone Layer* is expected to be achieved, partly thanks to the binding international agreements contained in the Montreal Protocol. And, owing in part to a high level of ambition in the area of supervision and monitoring, *A Safe Radiation Environment* is close to being met.

Trends in terms of conditions for meeting the environmental quality objectives have proved harder to assess than trends in the state of the environment. An evaluation and assessment of external factors shaping progress, such as the world economy, political developments and EU decisions, as well as of the effects of policy

instruments and measures, conflicts between policy areas and the influence of different agencies and stakeholders, requires a far-reaching analysis of complex relationships – an analysis that has not always been undertaken. Given the significant differences between the objectives, it is also difficult to make an overall assessment, covering all these goals, of present status and trends in terms of the conditions for achieving them. The sections on the individual objectives later in this report offer a more accurate picture.

At a more general level, though, it is possible to sum up the most important background factors affecting progress towards the objectives. These include a need for policy instruments at the international level, common EU policies in sectors such as agriculture and fisheries, a need for initiatives in other policy areas besides environmental policy, implementation of legislation, collaboration, and public agencies' resources for environmental action.

Another way of looking at the conditions for meeting the objectives is to study the underlying reasons why they are not being achieved. There are many such reasons, at many different levels; one is increased pressure on resources, which is having a negative impact via forestry, agriculture and energy production. High living standards and high levels of material consumption affect both the situation in Sweden and the state of the environment in other parts of the world. Examples of this include high visitor pressure in mountain regions and residential pressure in coastal areas, and the impacts Swedish consumption has on the biodiversity of other countries. Both land- and sea-based transport are growing. Partly for resource reasons, the central government investments needed to conserve and restore cultural and natural environments to the degree which certain objectives require have not been made. Conflicting goals and interests stand in the way of adequate consideration for the environment in comprehensive and detailed development planning, and in land use. EU-wide legislation and policymaking provide both an impetus to environmental action and the framework in which different aspects of it can be pursued.

Status and trend for the generational goal largely negative

The present in-depth evaluation includes the first follow-up of the generational goal and the bullet points associated with it. However, the goal and its bullet points have not been assessed in the same way as the environmental quality objectives, nor are they to be viewed as objectives in the same sense. Follow-up and assessment have been mainly qualitative, based on relevant environmental quality objectives, trends, indicators and other information. The assessment has been undertaken by a working group made up of representatives of the Swedish Environmental Protection Agency, the National Board of Health and Welfare, the Swedish Energy Agency, Regional Development and Cooperation within the Environmental Objectives System (RUS), the Swedish National Heritage Board and the Swedish National Board of Housing, Building and Planning. Indicators and other basic data for assessing progress towards this goal are an important area for future development.

The seven bullet points of the generational goal express desired states with respect to the structure of society, human behaviour and the environment. They relate

to ecosystem sustainability, biodiversity and the natural and cultural environment, human health, materials cycles, sustainable management of natural resources, energy use and renewable energy, and the environmental and health impacts of consumption patterns.

In many areas, trends are pointing in the right direction, that is, we are moving towards the desired states which the bullet points describe. This is true, not least, in the area of waste, where the EU's Waste Framework Directive has resulted, and is expected to result, in far-reaching action. Regarding human health, developments are positive in several respects, although further measures are required. For ecosystem services such as drinking water, food and forest raw materials, good conditions exist for maintaining supplies in the future. Climate change could further increase the capacity to produce food and forest raw materials. In the energy sector, the share of renewable energy shows a steady rise, and energy intensity (energy input in relation to GDP) is falling.

Although in many cases society is moving in a more sustainable direction, progress is too slow, and more ambitious implementation of existing policy instruments needs to be combined with new instruments. Among other things, a better understanding is needed of the pace of change in different areas and how we respond to these changes when developing policy instruments. In certain cases, such as some areas of nature conservation, insufficient funding and inadequate regulatory supervision are a large part of the explanation, while in others progress is held back by a lack of knowledge. This is particularly true as regards health and its links with dangerous substances, chemicals and pharmaceutical residues. For many natural resources, environmental impacts are not adequately reflected in prices.

In a number of areas, trends are pointing in the wrong direction, that is, away from the desired states which the bullet points describe. A concern common to several areas is the significant impact of high and growing consumption, which among other things swallows up the benefits of technological advances, improved efficiency and greener consumer choices. Total greenhouse gas emissions attributable to Swedish consumption, for example, grew from 90 million tonnes of carbon dioxide equivalent in 2000 to 98 million tonnes in 2008, a rise of 9 per cent. The whole of that increase occurred outside Sweden's borders.

How far are we from achieving the environmental quality objectives?

The environmental quality objectives present different types of challenges and, in the case of the ones not expected to be met by 2020, the distance to achieving them varies. The analyses of this gap that are included in the assessments of the different objectives are qualitative and are not based on common criteria, which makes them difficult to summarise. A review of all the assessments, however, shows that the reasons for the gap can be grouped as follows:

- A. Uncertainty in assessing whether sufficient conditions are in place to meet the objective, when recovery times in the natural environment are long.

- B. Most aspects of the objective cannot be addressed in Sweden.
- C. Negative pressure or competition from other areas or sectors.
- D. A lack of policy instruments (nationally and/or internationally).
- E. Inadequate implementation of policy instruments (including insufficient measures resulting from them and insufficient resources for implementation).

Table 2 shows the different environmental quality objectives and the reasons referred to in the assessments of them.

Table 2. Underlying reasons for the gap to achieving each of the environmental quality objectives.

Objective	A	B	C	D	E
Reduced Climate Impact	X	X	X	X	
Clean Air			X	X	X
Natural Acidification Only	X	X	X	X	
A Non-Toxic Environment	X	X	X	X	
Zero Eutrophication	X	X	X	X	
Flourishing Lakes and Streams	X		X	X	X
Good-Quality Groundwater	X		X		X
A Balanced Marine Environment, Flourishing Coastal Areas and Archipelagos	X	X	X	X	X
Thriving Wetlands			X		X
Sustainable Forests	X		X		X
A Varied Agricultural Landscape	X		X	X	
A Magnificent Mountain Landscape	X		X	X	
A Good Built Environment			X	X	X
A Rich Diversity of Plant and Animal Life	X		X		X

As Table 2 shows, in many cases there is uncertainty surrounding the assessment of conditions for meeting the objectives, partly owing to long recovery times in the natural environment. Even if it takes a long time for policy instruments and measures to feed through into positive effects in the environment, that alone should not affect the assessment of progress towards the objectives, since progress is judged in terms of instruments being in place by the target year.

However, where the appraisal of conditions for achieving the objectives is very uncertain, for example because it is unclear whether the policy instruments adopted will have the intended effect or whether external influences will be greater than expected, the state of the environment is taken into account in the assessment.

The table also shows that, in many contexts, the prospects of attaining the environmental quality objectives are adversely affected by competition or conflicts between different goals and sectors. This problem is touched on in assessments of all the objectives. Conflicts arise, for instance, from production requirements in sectors such as forestry and agriculture, over land use (protection and conservation

versus exploitation), and from growth in transport due to increased trade. This shows how vulnerable and sensitive to external factors the environmental objectives are. Many of the conflicts mentioned are genuine ones, i.e. conflicts that cannot be resolved at an administrative level. To address them, policy positions need to be translated into practical action, for example by introducing more powerful policy instruments or more stringent demands.

Another conclusion familiar from previous in-depth evaluations is that policy instruments are clearly lacking in several areas (chiefly at the international level), and that many existing instruments are not being implemented to a sufficient degree. The latter can be attributed to a number of factors, including a lack of clear priorities, resources, knowledge and interest. This is examined in more detail in the next section, on environmental action in society.

By ‘adding up’ the reasons why the different objectives will not be achieved, we can get some idea of how large the gaps to meeting them actually are and what those gaps consist of. In Figure 1, assessments of the number of reasons for the gap in each case (based on the number of crosses in Table 2) and of trends in the state of the environment (from Table 1) have been combined. The further to the right on the scale an objective appears, the greater is the gap to achieving it, i.e. to establishing sufficient conditions to meet it. This does not automatically mean that objectives that are closer to ‘Close’ are easier to attain, since the reasons for the gap can vary in complexity from one goal to another. This is an initial attempt at a gap analysis, and requires further development. Among other things, equal weight has been attached here to the different types of reasons.

Figure 1. Gradation of the environmental quality objectives given the assessment ‘No’ (i.e. not expected to be achieved), based on reasons (Table 2) and trends (Table 1). This is an initial attempt at a gap analysis and requires further development.

YES	CLOSE	NO			
A Protective Ozone Layer	A Safe Radiation Environment	Clean Air A Magnificent Mountain Landscape Good-Quality Groundwater	A Good Built Environment Sustainable Forests Thriving Wetlands Natural Acidification Only	A Non-Toxic Environment Zero Eutrophication A Rich Diversity of Plant and Animal Life Flourishing Lakes and Streams A Varied Agricultural Landscape	Reduced Climate Impact A Balanced Marine Environment, Flourishing Coastal Areas and Archipelagos

Environmental action based on policy objectives

Action to achieve the state which the environmental quality objectives and generational goal describe is undertaken with the support of environmental policy and measures in other policy areas. The environmental objectives, like other 'impact objectives', require cross-sectoral efforts. Large sections of society and a range of different actors at every level are involved, and future progress hinges crucially on the interventions and initiatives that can be put in place. Environmental problems are complex, not least in view of the varying scope for national action, long recovery times, and complex relationships in the natural environment. Like problems in other, similar goal areas⁴, they pose extra challenges to the politicians who have to decide on policy instruments and to the agencies and stakeholders that subsequently have to implement them. This complexity also creates difficulties when impacts are to be monitored and evaluated.

In the 2008 in-depth evaluation, a number of conclusions were drawn concerning the effectiveness of environmental efforts, the reasons the objectives were proving difficult to meet, and the action that needed to be taken. Most of the points raised in that context remain relevant: for example, the need for better integration of an environmental perspective in the activities of different stakeholders and sectors, not least in the world of business; the importance of individual choices; the need for political resolve to address conflicts of interest; and the importance of efforts in the international arena. It was also noted in 2008 that, for various reasons, many of the measures decided on had not been implemented. Two of the reasons for non-achievement of the objectives identified in the gap analysis in the previous section (Table 2) were linked to the existence of policy instruments and their inadequate implementation. In the present section, we will look more closely at these issues.

The role of policy instruments in environmental action

Policy instruments are the tools central government uses to promote measures that will help to achieve specific objectives. Measures may involve either a physical change (e.g. investing in abatement equipment or establishing a wetland) or a behavioural one (e.g. using public transport instead of the car, separating waste at source, or buying greener products). They may be implemented by private individuals, organisations or companies, or in the public sector.⁵ Policy instruments can be of four types: administrative, economic, information and research.

Administrative instruments play a major part in environmental efforts in Sweden, and central among them is the Environmental Code. International conventions

⁴ Public health policy is one example.

⁵ Swedish Environmental Protection Agency (2011), *Samhällsekonomisk styrmedelsanalys – begrepp och kriterier kopplat till styrmedelsanalys* (Socio-economic policy instrument analysis – concepts and criteria linked to policy instrument analysis). NV-08022-11.

and EU legislation form the basis for a large proportion of national instruments of this kind. EU regulations, such as the REACH Regulation on chemicals, are directly binding on member states.

Administrative instruments in turn often provide a basis for economic instruments and information. International instruments which significantly affect progress towards several of Sweden's environmental objectives are the UNECE Convention on Long-Range Transboundary Air Pollution, the UN Convention on Biological Diversity and the Montreal Protocol. Important EU directives are the Water Framework Directive, the Marine Strategy Framework Directive and the Habitats and Species Directive. These conventions and directives either have direct effect or are transposed into acts, ordinances, taxes etc. that guide environmental action at the national level.

Implementing policy decisions

With the introduction of a new basis for assessing progress towards the environmental objectives, policymaking and the initiatives and policy instruments that are proposed and implemented assume a much more central role.

Decisions taken at the political level have to be implemented by a number of different actors if the policy adopted is to have an effect. What is termed the *implementation problem* – the fact that not all decisions are carried out as intended – is an important issue to reflect upon when the impacts of different types of initiatives and policies are to be assessed.⁶

Implementation of policy can be illustrated in terms of a 'chain of implementation'⁷, in which, among other things, outputs (such as policy instruments and measures), outcomes and impacts (in society and the environment) and important actors can be identified and put in context.

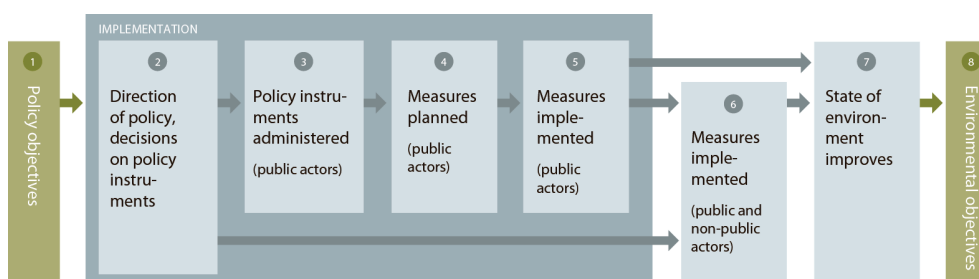
The chain of implementation in Figure 2 describes the implementation process with a focus on environmental policy instruments and measures initiated within the Swedish public administration. The chain begins with central government management by objectives and results, that is, an envisaged ideal guided by policy objectives (1). Next, decisions are reached on the direction of policy and on individual policy instruments (2). These decisions are taken mainly by the Riksdag (Parliament), the Government and central government agencies, depending on the type of instrument involved. Administration of policy instruments (3) is concerned with creating clarity and conditions for their implementation, for example through information, guidance, methods development and evaluation. Key actors here are the Government and central and regional authorities. The instruments adopted should then result in planning and implementation of appropriate measures (4), and for this to happen the question must be given priority and plans must be drawn up.

⁶ Bo Rothstein (ed.), *Politik som organisation*, 1991, pp. 13–14; Evert Vedung, *Utvärdering i politik och förvaltning*, 1998, p. 37 (English translation: *Public Policy and Program Evaluation*, 1997).

⁷ Evert Vedung, *Utvärdering i politik och förvaltning*, 1998, pp. 123 ff.

Both public and non-public actors then implement measures (5, 6) which affect the state of the environment in the direction of the environmental objectives. Policy instruments thus lead, via outcomes in society, to impacts in the environment, which in turn mean that the state of the environment improves (7) and, finally, that the objectives can be achieved (8). However, it is the actors concerned who 'choose' whether to implement the measures. Only retrospectively, when the policy instrument and its impacts are evaluated, is it possible to say whether the instrument has 'hit the mark', i.e. resulted in measures that have improved the state of the environment.

Figure 2. Chain of implementation illustrating the implementation and impacts of policy instruments linked to the environmental objectives.



Administrative instruments of various kinds often have a longer road to travel through the administration before measures are implemented. One example of this is supervision under the Environmental Code. In other cases, policy instruments have direct impacts on the environment, as for example with funding for county administrative boards' measures to protect valuable natural areas – where the state of the environment improves as a result of measures being implemented. Certain instruments have a shorter implementation chain, like the nitrogen oxides charge, designed to reduce companies' nitrogen emissions, where a decision results directly in a measure being taken.

The chain of implementation does not reflect every dimension of a real-life implementation process. For example, decisions in other policy areas and other external factors influence to varying degrees whether a policy instrument and the measures associated with it are sufficient to secure an improvement in the state of the environment. Incentives to undertake measures may also exist outside the chain, as for instance with independent initiatives in the business sector that have a positive impact on the environment. The objectives themselves can also directly prompt measures in society, such as behavioural changes resulting from a political discussion of environmental issues.

Areas for development linked to policy instruments

There are many reasons why the environmental action being undertaken is not sufficient to meet the objectives. They include shortcomings in implementation: policy instruments may not be in place for example, or they may not be sufficiently

powerful; intended measures linked to a particular instrument may be given lower priority; or the knowledge or resources needed to implement measures adequately may be lacking. Insufficient incentives for behavioural change, or external factors such as global trends, may also play a part.

In the assessments of the environmental quality objectives and in the report on policy instruments, various types of problems associated with the implementation of environmental action are highlighted for the different objectives. Table 3 below shows, for each objective, which part of the chain of implementation (Figure 2) primarily needs to be developed. This identifies the level at which increased efforts or development are needed, and the actors primarily involved. The chain does not capture every aspect of environmental action: the focus is on policy instruments and measures that are established within the public administration, and on which public and non-public actors base their actions.

NEED TO DEVELOP POLICY INSTRUMENTS

For several of the environmental quality objectives, new policy instruments need to be adopted (column 2). This may require decisions at an international level, as in the case of the objective *Natural Acidification Only*, which calls for more far-reaching decisions on emission targets and policy instruments within the EU and the UN. The same is true of *Zero Eutrophication*, in that important elements of the Marine Strategy Framework Directive are not yet in place and existing decisions under the marine environment conventions are not particularly demanding. As for the environmental quality objective *Reduced Climate Impact*, progress hinges crucially on the adoption of a new, strong global climate agreement, signed by the major emitting countries.

Regarding policy instrument decisions at the national level, areas for development include creating combinations of instruments that will have greater impacts on society and the environment. Success in that endeavour will require a better understanding of the effects of different instruments, a need that clearly exists for the majority of the environmental quality objectives. It may also be necessary to implement EU legislation in Swedish law, for example to introduce instruments relating to alien species (*A Rich Diversity of Plant and Animal Life*). In addition, existing instruments may need to be made more stringent – like the nitrogen oxides charge, which is important in meeting the *Clean Air* objective – or clarified in standing instructions and appropriation directions to government agencies.

Administration of policy instruments (column 3) is concerned with how instruments are to be implemented. One important area for development that emerges in relation to several of the environmental quality objectives is information and guidance to public agencies, the business sector and individuals. National and regional supervisory guidance and advice require constant development if they are to remain up to date and give supervisory authorities and stakeholders with impacts on

Table 3. Development needs in different parts of the chain of implementation for the environmental quality objectives.

	Decisions on policy instruments (2)	Policy in- struments administered (3)	Measures planned (4)	Measures implemented (public ac- tors) (5)	Measures implemented (public and non-public actors) (6)
Reduced Climate Impact	X			X	
Clean Air	X			X	
Natural Acidifica- tion Only	X				X
A Non-Toxic Environment	X	X	X	X	X
A Protective Ozone Layer				X	X
A Safe Radiation Environment	X				
Zero Eutrophica- tion	X			X	X
Flourishing Lakes and Streams	X			X	
Good-Quality Groundwater		X	X	X	X
A Balanced Marine Environ- ment	X		X	X	
Thriving Wet- lands	X	X		X	
Sustainable Forests		X	X		X
A Varied Agricul- tural Landscape	X			X	X
A Magnificent Mountain Land- scape		X	X	X	
A Good Built Environment		X	X	X	X
A Rich Diversity of Plant and Animal Life	X	X			X

the environment the support they need to act 'correctly'. Other areas with potential for development, relevant to several objectives, are research, methods development, follow-up and evaluation. The objective *A Non-Toxic Environment*, for instance, requires a continuous supply of new knowledge about dangerous substances, as inadequate knowledge makes it difficult to do the right thing and to monitor progress. Another example is in the area of species protection and conservation in mountain environments, where both greater knowledge and better methods are called for. In certain cases, relevant research findings are available, but they are not effectively transferred from researchers to users. Measures to bridge this gap are needed to achieve *A Varied Agricultural Landscape*, for example.

Another area requiring attention is developing a clearer division of roles between different actors. There is a lack of clarity, for instance, about the division of supervisory responsibilities between county administrative boards and local authorities regarding remediation of contaminated sites, adversely affecting the state of the environment and progress towards *A Non-Toxic Environment*. In the case of *A Safe Radiation Environment*, responsibilities and requirements regarding plans for radioactive waste need to be clarified. The extent to which an area is highlighted and due consideration shown for it at an overarching level likewise affects whether policy instruments result in measures being taken. One problem in the forest sector is that there are several competing conceptions of what proper consideration for the environment entails, and this has a negative impact on *Sustainable Forests* and other objectives. As another example, greater account needs to be taken of groundwater issues in water management and spatial planning, to enable the *Good-Quality Groundwater* objective to be met.

NEED FOR BETTER PRIORITISATION AND PLANNING OF MEASURES

Once policy instruments have been adopted, considerable scope exists for initiatives at a national level to improve the environment. Even when instruments are in place, however, they may need to be supplemented and their administration strengthened. Although policy instruments have in many cases been decided on, for several of the environmental objectives measures have not been introduced to the extent that is necessary. In part, this has to do with prioritisation and planning of measures (column 4). To be able to strike a well-judged balance, there is a need for knowledge and understanding of what should be given priority, what can be regarded as non-priorities, and what effects this will have in the long term. It is problematic therefore that, in many municipalities, comprehensive plans have not been updated. In addition, the impact of the new provision of the Planning and Building Act (2010:900), requiring local authorities' comprehensive plans to take national and regional environmental objectives into account, has yet to be fully felt. So far, barely half of Sweden's municipalities have addressed the environmental quality objectives in their comprehensive plans. This failure to apply the Act as intended could obstruct progress towards several of the objectives, including *A Good Built Environment*, *Good-Quality Groundwater*, *A Balanced Marine Environment*, *Flourishing Coastal Areas and Archipelagos*, *Sustainable Forests* and *A Varied Agricultural Landscape*.

Shortcomings traceable to this part of the implementation chain can also arise when the intentions behind legislation are not followed, owing to other policy areas such as regional development being given higher priority. This has an impact, for example, on the conservation of shore areas for outdoor recreation (*A Balanced Marine Environment, Flourishing Coastal Areas and Archipelagos*). Overall, greater priority needs to be given to planning, both to ensure continuity of implementation and to be able to follow up, evaluate and develop environmental action.

NEED FOR BETTER UNDERSTANDING OF DRIVERS THAT RESULT IN MEASURES

The next step in the chain is the implementation of measures by public and non-public actors (columns 5 and 6). That shortcomings in this respect are most visible in the case of public agencies may be because most is known about the environmental action they undertake. This is reflected in the more limited attention paid in the assessments of the environmental quality objectives to other actors' environmental efforts, or lack thereof.

Failure to implement measures can largely be attributed to a lack of resources, knowledge and expertise. Functioning supervisory guidance at a national and regional level, and effective and consistent operational supervision by supervisory authorities, are important tools in ensuring that the aims of the Environmental Code are achieved. To be able to carry out their supervisory role, authorities need to have well-founded priorities and sufficient information, knowledge and resources, things that are lacking in many quarters. The conditions under which they operate vary widely, partly depending on their size and the geographical areas for which they are responsible. Other policy areas and interests can also influence supervision. There are several examples of environmental quality objectives where inadequate resources are a problem. One is *Thriving Wetlands*: here, the authorities need additional funding and staff to implement the measures required. In the case of *A Balanced Marine Environment, Flourishing Coastal Areas and Archipelagos*, knowledge and resources to establish protected areas are in short supply.

One example of a policy instrument aimed at non-public actors that fails to provide a sufficient incentive for change relates to the recycling of construction materials, which is impeded by inadequate knowledge and could be increased by better information. The tax on natural gravel is a good economic instrument, but to have more of an impact it needs to be seen as part of a green tax shift, i.e. as a financial return to the sector for good environmental practice. A more general phenomenon, affecting progress towards several of the objectives, is that it may be felt to be cheaper to do the wrong thing than the right thing, as few checks are carried out and supervision in a number of fields is inadequate.

SUCCESS FACTORS MENTIONED IN RELATION TO SEVERAL OBJECTIVES

Success in achieving several of the environmental quality objectives, including *Zero Eutrophication, Thriving Wetlands, A Varied Agricultural Landscape and A Rich Diversity of Plant and Animal Life*, will depend on the future direction and effects of EU agricultural policy. The design of the Rural Development Programme

will significantly affect progress towards the majority of the objectives, among them *Zero Eutrophication*, *Good-Quality Groundwater*, *A Balanced Marine Environment*, *Flourishing Coastal Areas and Archipelagos*, *Sustainable Forests* and *A Varied Agricultural Landscape*. The strict regulation of shipping emissions decided on internationally needs to be supplemented with additional action if it is to help meet objectives such as *Clean Air*, *Natural Acidification Only* and *Zero Eutrophication*. The strategy for land use and strategy for an integrated water policy, proposed by the All Party Committee on Environmental Objectives, will also be important factors.

In general, holistic thinking is needed to secure further progress in safeguarding the environment. Environmental issues cannot be addressed in isolation, but have to be integrated into other policy areas if the environmental objectives are to be achieved. Examples of holistic approaches at different levels which recur in the assessments include comprehensive plans in line with the Planning and Building Act, cross-sectoral strategies, measures encompassing the landscape as a whole (land and water), and initiatives to promote rural development. In addition, comprehensive monitoring of cultural heritage is currently lacking, and the rule requiring consideration needs to be strengthened. Integrating the environment and human health and making clear the links between the two is another necessary step towards meeting the objectives.

The system of permitting under the Environmental Code is an important policy instrument for attaining several of the environmental quality objectives. This is true of *Clean Air*, *Natural Acidification Only*, *A Non-Toxic Environment*, *Zero Eutrophication*, *Flourishing Lakes and Streams*, *A Balanced Marine Environment*, *Flourishing Coastal Areas and Archipelagos* and *A Magnificent Mountain Landscape*. Other instruments that have had an impact include energy and carbon dioxide taxes (*Reduced Climate Impact*), the Focus on Nutrients project (*Zero Eutrophication*), local nature conservation (LONA) and local water management (LOVA) grants (*A Rich Diversity of Plant and Animal Life*), high and increased taxes on fuel oils and landfill, and the national waste plan and policy instruments associated with it (*A Good Built Environment*). A close connection between research and policymaking is also mentioned as an important success factor (*Natural Acidification Only*). As noted above, improvements in spatial planning are a key factor for success in balancing different interests and hence integrating the environmental objectives into planning of our use of land and water resources.

Environmental action – the situation at the regional and local levels

County administrative boards play an important part in protecting the environment. The in-depth evaluation report on environmental action at the regional and local levels, shows that many of the functions entrusted to these boards are in line with the environmental objectives. The functions in question include supervision, permitting and guidance to supervisory authorities under the Environmental Code, nature conservation, cultural heritage conservation, action on energy and climate, water management, rural development, and the environmental responsibilities of the Swedish Forest Agency. The environmental objectives have been particularly

to the fore in strategic planning in the areas of supervision and supervisory guidance relating to environmental protection, the Forest Agency's environmental activities, energy and climate, and water management. For this group of regional responsibilities, the primary need is access to sufficient resources.

Other tasks are less closely aligned with the environmental objectives. Here, strategic planning is less common. In the case of regional growth, business development and regional transport planning, there are other goals which in some respects give rise to conflicts with the environmental objectives. When it comes to spatial planning, planning documents and guidance under the Planning and Building Act, the conflicts are not quite as clear. Regarding public health, few conflicts exist, but at most county administrative boards this area is poorly developed. What the functions just mentioned have in common is that the body responsible is the local authority or region, rather than the county administrative board. In the context of these responsibilities, the environmental objectives need to be more closely integrated at all stages in the chain, with more planning, collaboration and, in certain cases, more stringent policy instruments. County administrative boards call for methods development to achieve better integration of the environmental objectives in implementation, not least in the area of spatial planning.

County boards also have varying insight into how well integrated environmental action is in the different sectors they work with or are affected by. Clearly, the principal drivers of such action are economic competition, international standards and legislation, and, to a small degree, the environmental objectives. In some cases, however, the boards' remit to work towards those objectives could contribute to the environmental efforts of the sectors concerned. Environmental action varies, moreover, between sectors and individual companies.

County administrative boards have in addition assessed the local authorities in their counties and the environmental work they undertake. Overall, it emerges that environmental efforts and the significance of the environmental objectives vary a great deal in that context. In some cases, the situation resembles that found in the different sectors, in others, that existing at the regional level. Many local authorities have environmental goals of their own, and in the areas of environmental supervision, nature conservation, and climate and energy, strategic planning with a view to achieving the environmental objectives occurs more frequently. For physical planning and cultural heritage, business development, public procurement and information, the picture is more negative. Support from county administrative boards for the work of local authorities varies, as does collaboration between municipalities.

What is Sweden able to do to improve the state of the environment?

Many environmental problems cannot be solved within Sweden's borders, but require initiatives in the international arena. The basic conditions for and legislation governing environmental action are shaped largely within the EU, where there is scope to influence the level of ambition on different issues. In cases where EU legislation lays down minimum standards, Sweden can introduce stricter requirements. On quite a number of issues, the Swedish central government is able to adopt policy instruments and measures that will remove the obstacles to meeting the environmental quality objectives. In the case of the air quality and climate objectives on the other hand, and also the objectives for the marine environment and a non-toxic environment, there is a greater need for instruments at the international level.

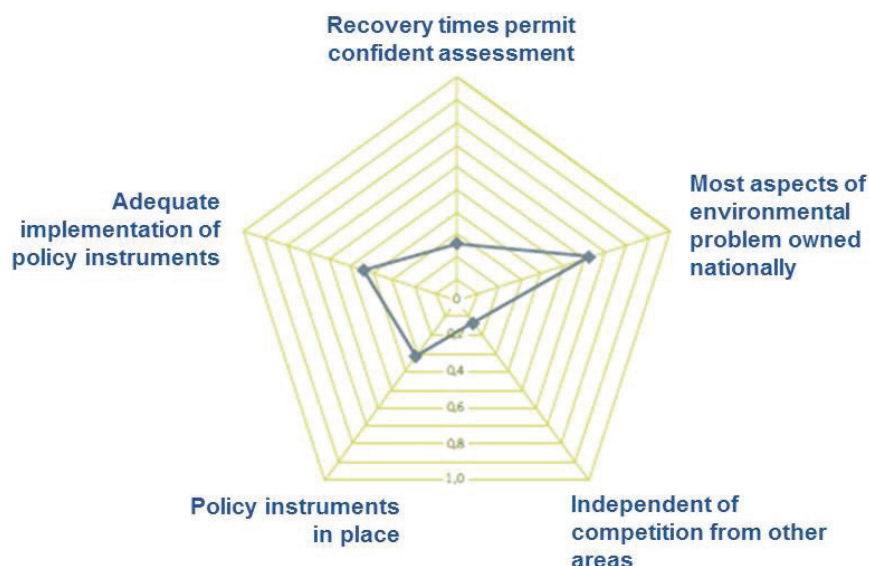
When it comes to the generational goal, Sweden has appreciable, but not full, control over the progress that can be achieved. The situation regarding many of the bullet points of this goal is complex, and the scope to act on a national basis varies both within and between areas. On most environmental issues, the influence of the EU and countries outside the EU is considerable, which in some cases limits Sweden's scope for action of its own. That scope is judged to be relatively wide, however, when it comes to physical planning, energy use and Swedish consumption patterns. For further details, readers are referred to the section of the in-depth evaluation dealing with the generation goal and scope for national action in different environmental fields.

The section describing the gap to meeting the environmental quality objectives presented five groups of reasons why the objectives will not be achieved, and stated which of these reasons are relevant to each one. The situation in these five areas serves as a measure of how far environmental action has progressed and, to some extent, of the room for manoeuvre that is available. Figure 3 gives an overall picture of the factors which environmental efforts need to take into account, based on the assessments of progress towards the environmental quality objectives.

The diagram shows that a majority of the environmental problems concerned are owned nationally, but that there are very few cases in which environmental action is unaffected by competition from other areas or sectors. Policy instruments are in place for fewer than half the environmental quality objectives, and are adequately implemented to roughly the same extent. Confident assessments are possible for around a quarter of the objectives, while for the others the recovery times of ecosystems make it difficult to predict whether sufficient conditions exist for achieving them.

From the overall analysis, it emerges that considerable scope exists for action on a national basis, primarily when it comes to adopting policy instruments and ensuring that they are implemented. Important factors to note here are potential synergies and conflicts between goals. The most significant goal conflicts are those between the environmental quality objectives and other policy areas.

Figure 3. The situation in relation to the five groups of reasons, as a measure of how far environmental action has progressed and, to a certain extent, the room for manoeuvre available. The diagram is based on the proportion of objectives for which each reason was stated. A score of 1 means that the reason was not mentioned for any the objectives.⁸



In many cases, goal conflicts and problems arise because of a lack of clarity about ownership of and responsibility for an issue. Solutions to the more significant, 'genuine' conflicts are to be found at the political level, as for example with the conflict between the objectives *Sustainable Forests* and *Reduced Climate Impact*. Here, a genuine conflict exists between biodiversity and vigorous efforts to extract more bioenergy from forests. Several major conflicts also exist between environmental quality objectives and other policy areas, as described in more detail in the in-depth evaluation report on synergies and conflicts. To handle goal conflicts of that kind, clear political positions and priorities are needed.

Efforts to safeguard the environment are strongly influenced by trends in society, and it is the strongest such trends that have a negative impact in that respect. These include growth in consumption and economic short-termism. It is important to identify key stakeholders in society who can rein in the effects of such negative trends. This can be done, for example, through various forms of collaboration with the business sector. Supporting key actors who can reinforce the positive trends is equally important. One possible approach is to build on the positive links that exist

⁸ The diagram is based on Table 2, but also includes *A Protective Ozone Layer* and *A Safe Radiation Environment*, which are judged to be achievable and close to being achieved, respectively, and which are not included in Table 2.

with the desire of individuals for good health, affecting for instance what they consume and how they choose to get around.

The available room for manoeuvre is influenced by international contexts and EU legislation, and is dependent on the scope for national action, or degree of national control, a concept that can be defined in several ways. The narrower interpretation is concerned with the power to take decisions, which forms the starting point for the discussion in the in-depth evaluation report on the generational goal. At the same time, the influence Sweden may be able to exert over EU policy can be interpreted as either full or limited national control, as the assessments of the different environmental quality objectives make clear. It remains relevant to examine where and in what contexts Sweden is able to act to influence progress towards the objectives, but the concept of national control is problematic.

The environmental objectives in time and space

Studying the different components of the environmental quality objectives and how they can be defined geographically and in time is important in shedding light on the types of policy instruments and measures needed for the different objectives.

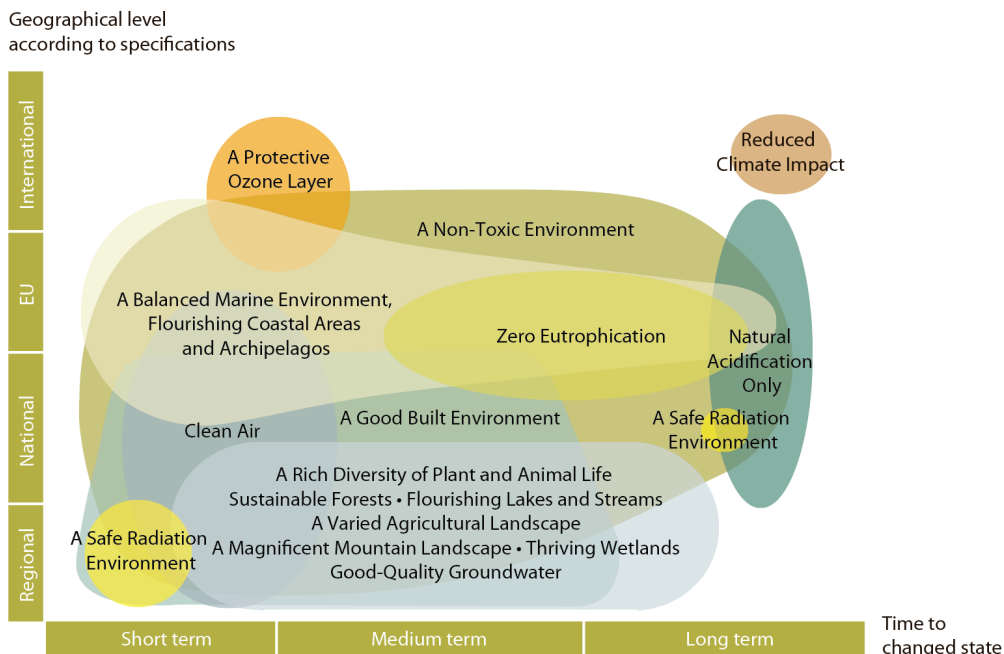
Figure 4 shows how the desired state of the environment is defined geographically in the objectives (at a regional, national or EU/international level), and to what extent achieving that state is dependent on time. The time dimension is concerned with how long it will take to move from the present to the desired state. The figure is based on the specifications of the objectives,⁹ which spell out in more detail what each one entails.

Progress towards environmental quality objectives with a mainly national focus may be easier to influence. Where achievement of objectives is strongly dependent on international cooperation, there is added uncertainty, since other parties besides Sweden are involved and their influence on domestic measures cannot be predicted. Objectives with long recovery times and a significant international dimension thus call for international cooperation. There are also areas in which Sweden collaborates internationally, even where an objective has a national or regional focus. This is true, for instance, of objectives linked to biodiversity.

The diagram above illustrates the complexity of the environmental quality objectives, in that several of them have a wide range in geographical and temporal terms. The objectives closer to the short-term and regional ends of the scales have a clearer connection between cause and effect, since it is easier to get an overview of the drivers influencing the prospects of achieving them. The goals that involve a long timescale, and problems requiring international solutions, have numerous – but fewer clear – links between cause and effect. Here, the drivers are harder to define, and there is greater complexity and uncertainty about attaining the objectives.

⁹ As revised in Swedish Environmental Protection Agency, *Miljömålen på ny grund* (with a summary in English: A changed environmental objectives system), Report 6420, 2011.

Figure 4. Position of each of the environmental quality objectives, geographically and in terms of the time needed to reach the desired state of the environment, based on their specifications.



What action is needed today?

The environment needs to be seen as an integral part of the overall development of society. To resolve the genuine conflicts that exist and achieve the environmental objectives, environmental issues must be given higher priority at the political level. Only then can the necessary reorientation of society be brought about. All sections of society are responsible for their direct and indirect environmental impacts and for implementing and continuously developing and strengthening action to safeguard the environment. Everyone in society needs to play their part. The overall assessment and analysis undertaken here identifies many areas requiring further development. In the Swedish Environmental Protection Agency's view, the most important needs can be summed up in terms of process improvements and key structural areas.

Improving the processes for achieving the environmental objectives is fundamental

There are clear advantages in considering the overall structure in place for environmental action, rather than focusing on individual aspects of it. Everything is connected, from policy decisions to impacts on the state of the environment. To raise our level of ambition in this area, so as to move closer to meeting the environmental objectives, we need a holistic approach that is subsequently translated into practical action. The starting point for the discussion is management by objec-

tives and results, that is to say, clear, tangible policy goals are set in order to influence and shape society, and there are then actors responsible for implementing the policies adopted.

Many initiatives and actions come about for quite different reasons from those defined at a political level, and are implemented by actors other than those defined within the public sector. These initiatives and actors are very important in carrying environmental action forward. However, the in-depth evaluation of the environmental objectives is primarily designed to support the setting of political priorities and the environmental efforts of public agencies, which is why the focus here is on management by objectives and results.

UNCERTAIN IMPACTS OF POLICY INSTRUMENTS AFFECT ASSESSMENTS OF PROGRESS

The causal links between policy instruments and their impacts on the state of the environment are not always clear, making it harder to monitor such effects. At present, there are many gaps in our understanding of how different policy instruments are applied and which of them promote progress towards the objectives. This in-depth evaluation offers examples, first, of cause and effect being less clear with administrative than with economic instruments; and second, of there often being a need to combine several types of instruments to achieve a desired effect. To arrive at an effective mix of instruments, sound policy instrument analysis needs to be undertaken, covering all three of the perspectives presented in the in-depth evaluation report on policy instruments – goal achievement, cost-effectiveness and dynamic effectiveness.

The value of a better understanding of the impacts of policy instruments is particularly clear, given the new basis for assessing progress towards the environmental objectives. The present evaluation reveals considerable uncertainty about these impacts in some cases, and this in turn affects assessments of progress. If decisions on new instruments are to rapidly result in more positive assessments, more material for analysis is required.

SOCIETY-WIDE ENVIRONMENTAL ACTION WILL HAVE THE BEST EFFECT

Policy instruments defined and adopted in the context of environmental policy, with the right effects and no adverse side effects, are an important part of working towards a better environment. Initiatives in other policy areas are at least as important, however, in particular ensuring that instruments and measures in such areas do not have negative impacts on the environment, as can happen for example with environmentally damaging subsidies. The effects of policy instruments, achieved via environmental improvement measures, may also be swallowed up by an even more rapid development in the opposite direction in another area. Growth in transport, for instance, may cancel out the effects of more efficient technology. Ultimately, this can mean that a negative pressure on the environment remains unchanged, even though a policy instrument as such has been a success.

CONSISTENT FOCUS ON OBJECTIVES WILL PROMOTE THE RIGHT ACTION

The environmental objectives should carry more weight than they do at present in the design of policy instruments and other initiatives to benefit the environment. Breaking the environmental quality objectives down into more detailed specifications provides a definition of what they entail in practice. To steer environmental efforts in the direction of the objectives, the link between the state of the environment and the environmental action being undertaken needs to be made clear. The actors concerned must be familiar with the environmental objectives, what they entail, how progress towards them is measured, and the situation in the environment. This is important, not least, when it comes to the generational goal and its bullet points.

Based on knowledge about the present state of the environment, it is possible to say something about the gap that exists between the present and the desired state, and to deduce from that what the main factors are affecting the state of the environment. This knowledge is needed to guide the actors who, directly or indirectly, consciously or unconsciously, affect progress towards the environmental quality objectives. It is important both to identify these actors and to define the drivers of their behaviour. The next step should be to see how these drivers can be used or modified to bring about a change in behaviour. It may for example be a matter of increasing the proportion of journeys made by public transport, so as to reduce air pollutant emissions.

By clearly linking objectives and states to pressures on the environment and environmental action by different stakeholders in society, we can more easily create cost-effective policy instruments beneficial to society and monitor their impacts.

The process can be summed up in the following points:

1. Understand the environmental objectives, their scope and content.
2. Be familiar with desired and current states of the environment.
3. Be aware of relevant actors and the drivers that influence them.
4. On this basis, develop and use policy instruments to influence actors/drivers.

Key structural areas

What we here term 'key structural areas' serve several purposes. First, they identify fields or contexts in which, according to the in-depth evaluation, action is important or there are clear problems affecting several different objectives/sectors. Second, they provide examples of concrete initiatives.

CHANGING SOCIETY IN LINE WITH THE GENERATIONAL GOAL

The generational goal defines the direction of the changes in society that are needed to achieve the environmental objectives. To enable all actors in society (politicians, administrators, the business sector and individual citizens) to take responsibility for and implement the changes required, it is necessary, for one thing, to make clear the health and environmental problems resulting, inside and outside Sweden, from the way we live.

Swedish consumption is steadily increasing, putting growing pressure on the environment and human health both in this country and abroad. Swedish pressures on health and the environment in other countries arise chiefly from production of the goods we import, but also from exports of goods produced in Sweden and from the activities of Swedish organisations and individuals abroad. This wide-ranging impact on health and the environment from Swedish consumption needs to be made visible and conditions need to be created for mitigating it, for example through policy instruments to promote reduced and environmentally sounder consumption.

To a greater extent than at present, the environment and all the services which ecosystems produce need to be priced. Ecosystem services are functions of ecosystems that are necessary or useful in various ways. Some of them, such as timber or game, can be assigned a clear value and hence a price in society. Others, like clean water, experiences of nature, and pollination, do not have as clear a value or are undervalued. They are crucial to long-term sustainability and human life, and their value is considerable, but can be difficult to determine in economic terms. Valuing such services and putting a price on their destruction or conservation would thus be a way of highlighting their true value.

MUCH CAN BE DONE IN SWEDEN TO SECURE A BETTER ENVIRONMENT

Environmental problems are both global and local. In many cases, global problems can only be solved by agreements and instruments at the international level, and Sweden needs to be active in achieving these. Areas of great significance for several of the environmental objectives include work on a new, strong global climate agreement, and ensuring that EU agricultural and fisheries policies (the CAP and CFP) take greater account of environmental concerns.

Even where the causes of environmental problems are global, as in the case of the climate objective, it is important to remember that a good deal can nevertheless be done in Sweden. Depending on the problem and its causes, however, this will require different strategies and the scope for national action will vary. The majority of the environmental quality objectives have a clear national basis, and among these there is considerable potential for improvement. For goals such as *A Good Built Environment*, *A Safe Radiation Environment*, *Thriving Wetlands*, *A Rich Diversity of Plant and Animal Life*, *Good-Quality Groundwater*, *Flourishing Lakes and Streams* and *Sustainable Forests*, national efforts can produce good results. Relevant measures here include information initiatives and stepping up protection and restoration.

GENUINE CONFLICTS REQUIRE POLITICAL RESOLVE

One of the clearest findings of the gap analyses performed as part of the assessments of the environmental objectives is that pressures and competition from other policy areas and sectors greatly affect the prospects of meeting the objectives. Basically all the objectives and bullet points are subject to this influence, which assumes different forms. These include conflicts arising from competing goals (production objectives and environmental objectives), as noted in earlier in-depth eval-

uations; highly influential forces and trends in society (living standards, consumption patterns and urbanisation); and a need for action in other policy areas (such as regional development to promote a living countryside). For some objectives, such as the one relating to climate, the influence is less direct, but nevertheless significant. All of these conflicts or competing areas can be traced either to the use of land and water or to heavy use of resources, resulting from lifestyles and consumption of goods. What is clear is that environmental concerns are not valued as highly by comparison, and to achieve many of the objectives it will be necessary to make the environment a political priority.

Regarding the use of land and water, environmental consideration and protection and conservation of sites and natural environments have to contend with development interests. In mountain areas, conservation interests may for example have to compete with wind power, mining and high visitor pressure. In agriculture and forestry, conflicts exist between production and biodiversity goals. In towns and in coastal and riparian zones, the need for recreational areas and protection of nature conflicts for instance with the development of roads and housing. A clear conflict between environmental objectives can be seen in the growing pressure to extract biofuels from forests, so as to reduce greenhouse gas emissions, and the effects this has on forest ecosystems, acidification and so on. Much of the increase in pressure on the environment can be traced to growing use of resources, arising from lifestyles and high levels of consumption of goods.

SEVERAL STEPS IN THE IMPLEMENTATION OF ENVIRONMENTAL ACTION NEED TO BE DEVELOPED

How and to what extent policy decisions are translated into practical action depends on the ensuing process of implementation. Where decisions do not have the intended effects, the reasons can be traced to different levels, different actors, and different steps in the chain of implementation. It has emerged that, for different environmental objectives, deficits exist in different parts of this chain. It is important to define where the main problem lies, in order to deploy the right measures and strengthen the chain so that the desired impacts of a policy instrument are achieved.

An overview of all the objectives reveals that most development is needed when it comes to implementing measures, i.e. at a concrete level in the work of, above all, regional and local authorities. However, the analysis also shows that, in many cases, the reasons why measures are not implemented can be traced back to earlier steps in the chain. It may be a matter of the support given by central and regional authorities in the form of supervisory guidance, or an unclear division of responsibilities between different agencies. This has, for example, had a limiting effect on remediation of contaminated sites, slowing progress towards the environmental quality objective *A Non-Toxic Environment*.

Failure to implement measures to the extent expected may in addition be a result of inadequate resources, but it may also have to do with the way an issue is prioritised and planning undertaken in relation to it. For well-founded decisions on measures to be possible, these processes need to be based on knowledge and in-

formation. As an example of this, the lack of comprehensive plans in many municipalities may result in the wrong priorities from a long-term perspective, with negative consequences for several of the environmental objectives.

Yet another reason why measures are not implemented as intended may be that there are insufficient incentives to do the right thing. This may be the case if supervision is inadequate, or insufficient checks are carried out, so that doing the wrong thing costs less than doing the right thing. Another example is when improvements in technology do not pay in terms of reduced consumption of energy.

ACTORS AND DRIVERS CAN STEP UP THE PACE OF ENVIRONMENTAL ACTION

Different actors have different aims, basic conditions and drivers when it comes to implementing measures that will carry environmental action forward. It is important therefore to identify the actors who, directly or indirectly, consciously or unconsciously, affect the environment, as well as their driving forces and their capacity to implement measures to improve the environment. This is true of both public agencies and private stakeholders, organisations and individuals.

For a private stakeholder, one driver may be a desire to cut costs. Resource use can be reduced by gaining a better understanding of one's energy consumption, switching to new technology, or reusing or recycling a larger proportion of materials previously regarded as waste. Other possible incentives include different forms of tax relief for measures to improve or safeguard the environment. Drivers may also have their basis in collaborations between stakeholders, such as voluntary certification schemes, which are not regulated, but can become the norm and hence constitute a very powerful motivating force. An interesting example of this is voluntary set-aside in forestry.

Public agencies have a responsibility based on their role of putting policies into practice, i.e. implementing political decisions. Central government authorities therefore need a good understanding of the conditions and drivers guiding public bodies at the regional and municipal levels, as well as of those guiding private stakeholders involved in various ways in environmental efforts. Public actors also have a responsibility when it comes to procurement and assessing the indirect environmental impacts arising from major decisions.

Change may in addition be brought about by external pressure, for example from individual consumers or consumer organisations. Information and knowledge about the effects of our actions, clearly linked to our health and our local environment, can drive us as private individuals to make demands and alter our behaviour. New forms of collaboration and citizen participation can also have a significant impact on spatial planning and serve as drivers of involvement and behavioural change. Other important actors in developing and strengthening environmental action include universities and other higher education institutions, voluntary organisations and popular movements, which need to make the environmental objectives a more integral part of their activities.

To be able to create the right drivers and conditions, a more nuanced picture of different actors is called for. Local authorities, for example, cannot be lumped together as a single actor, but rather represent several different roles with different

driving forces. Furthermore, they have widely differing capacities to implement environmental improvement measures, partly depending on their size.

The link between a possible increased stakeholder influence on environmental action and the measures that can be implemented emerges with varying clarity for the different environmental quality objectives. For some of the objectives, the links with the drivers motivating different actors are less clear. By identifying the positive drivers that influence and guide different stakeholders in society and creating basic conditions, for example in the form of policy instruments, in the light of them, it is possible to ensure that, to a greater extent than at present, responsibility for environmental action is owned by the whole of society.

Perspectives for future action

The picture that emerges here of the major environmental problems and their causes is similar to that found in earlier in-depth evaluations. The difference, however, is that we are now even closer to the target year of 2020/2050; there is still much to be done, and no time to lose. To secure progress towards a better environment in a short space of time, political decisions need to be reached on where additional efforts should be deployed. Below, we propose a number of perspectives to guide the work that lies ahead.

One approach could be to focus on initiatives linked to objectives and areas where a small investment of effort can yield a substantial return. Such initiatives should be straightforward, involve low cost and be achievable within a short time. Here it is possible to work on the basis of geographical levels, focusing for example on objectives or areas where there is a clear link between cause and effect. To set priorities based on benefits for the economy, action now can be compared with the cost of waiting to tackle an environmental problem. Environmental consideration in forestry is a case in point: the cost of good environmental practice today can be compared with that of restoring forests at a later date – if the damage can in fact be repaired then.

Another approach could be to assess the risk of serious damage to the environment. The emphasis would then be on where current trends pose a risk of an irreversible environmental state, with major implications for the environment and health of future generations of both humans and animals.

A third perspective that could form the basis for decisions is the scale of different pressures. Are there common causal factors that are responsible for many of the objectives not being met? Can these factors be addressed by a common approach? This could be relevant when progress towards a large number of objectives is affected by one and the same actor, process or piece of legislation.

From the overall assessment and analysis carried out here, we can identify a number of areas of environmental action requiring further development. Holistic thinking and cross-sectoral initiatives are critical factors for success in safeguarding and improving our environment.