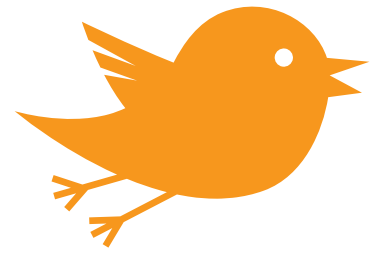


SWEDEN'S ENVIRONMENTAL OBJECTIVES

– AN INTRODUCTION



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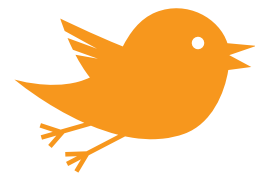
OBJECTIVES FOR A BETTER ENVIRONMENT

Environmental problems are something we need to tackle now, and not pass on to future generations. That is the thinking behind Sweden's environmental objectives – goals that are crucial to our welfare, and that are intended to guide the sum total of Swedish efforts to safeguard the environment.

The overall aim of Swedish environmental policy is to hand over a society in which the major environmental problems facing the country have been solved. This is summed up in a 'generational goal', which describes what is to be protected and what changes need to be made in our society. The generational goal and the 16 environmental quality objectives have been adopted by the Riksdag (the Swedish Parliament), and are a promise to future generations of clean air, a healthy living environment, and rich opportunities to enjoy nature. These Swedish objectives, moreover, are to be achieved without increasing the environmental and health problems of other countries.

Meeting the environmental objectives will require a concerted effort across the whole of society – by public agencies, business communities, stakeholder organisations and, not least, each of us as individuals. A number of government agencies have a special responsibility for the objectives and for working towards them.

Sweden's environmental goals are also dependent on action at the EU level and around the world, for example to reduce harmful emissions. This calls for an ambitious environmental policy in this country, but also for an active lead by Sweden on environmental issues within the EU, the UN and other international contexts. Hopefully, in that way, we can inspire other countries in the common search for sustainable development.



THE ENVIRONMENTAL OBJECTIVES – ONE SYSTEM, MANY GOALS

The environmental objectives Sweden has adopted are of three different types. One is the generational goal, which defines the overall direction of environmental efforts. To facilitate those efforts, and to make the generational goal more tangible, there are also 16 environmental quality objectives and a number of milestone targets.

Generational goal

The generational goal is intended to guide environmental action at every level in society. It indicates the sorts of changes in society that need to occur within one generation to bring about a clean, healthy environment. It focuses environmental efforts on recovery of ecosystems, conserving biodiversity and the natural and cultural environment, good human health, efficient materials cycles free from dangerous substances, sustainable use of natural resources, efficient energy use, and patterns of consumption. You can read more about this goal at sverigesmiljomal.se.

Environmental quality objectives

The environmental quality objectives describe the quality of the environment that we wish to achieve. There are 16 of them, covering different areas – from unpolluted air and lakes free from eutrophication and acidification, to functioning forest and farmland ecosystems. For each objective there are a number of ‘specifications’, making clear the state of the environment to be attained. The 16 environmental quality objectives are presented in more detail in this booklet. Information about the specifications can be found at sverigesmiljomal.se.

Milestone targets

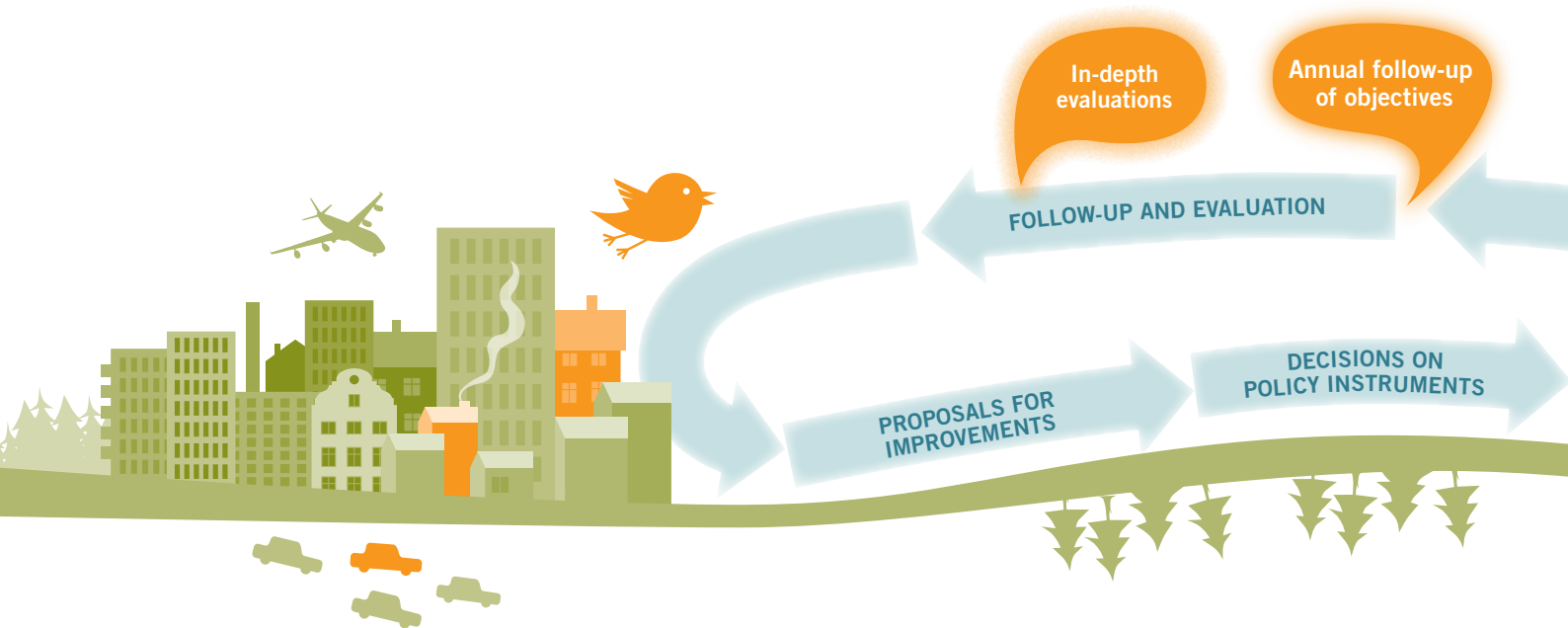
To facilitate progress towards the generational goal and the environmental quality objectives, the Government adopts milestone targets in priority areas. These are designed to set out the changes in society needed to meet the environmental quality objectives and the generational goal. You can find out more about milestone targets at sverigesmiljomal.se.

“The overall goal of environmental policy is to hand over to the next generation a society in which the major environmental problems have been solved, without increasing environmental and health problems outside Sweden’s borders.”

THE GENERATIONAL GOAL



PUTTING THE OBJECTIVES INTO PRACTICE



Significant action is being taken to solve different environmental problems. Evaluations of the effects of that action show what additional measures are needed. These steps are part of a systematic, ongoing effort to achieve Sweden's environmental quality objectives.

Guided by the generational goal and the environmental quality objectives, a range of policy instruments and measures to improve the environment have been and continue to be introduced. These can involve everything from emission reductions and protection of natural areas to financial support for environmentally smart alternatives and international cooperation on the Baltic Sea.

GENERATIONAL GOAL
AND 16 ENVIRONMENTAL QUALITY OBJECTIVES



PROGRESS MADE?

MEASURES


CHANGES IN SOCIETY AND
EFFECTS ON ENVIRONMENT

Regular evaluations provide important information on the state of Sweden's environment and the measures and priorities needed to improve it. In an annual follow-up of the environmental quality objectives, an assessment is made of whether the policy instruments decided on and the measures to be introduced will be sufficient to achieve the healthy environment which the objectives describe. This shows whether existing instruments need to be changed or new instruments and mea-

asures introduced. Every few years, a more in-depth evaluation is carried out of environmental action and the prospects of reaching the objectives.

Various tools are used to assess progress, including indicators that reflect trends in relation to the different objectives. There are currently around a hundred such indicators, based on regular sampling, emission statistics, questionnaire surveys and other studies of the state of the environment.

WORKING TOGETHER TO MEET THE OBJECTIVES



All Party Committee proposes strategies, policy instruments and measures to achieve the environmental objectives.

Various government agencies and county administrative boards are working to achieve the environmental objectives and monitoring progress towards them.

Government and Riksdag decide on legislation, taxes and other policy instruments to meet the objectives.

We are many who need to work together to achieve the environmental objectives. Each one of us as individuals can change our habits and consumption patterns and adopt a greener lifestyle. Others have a more specific responsibility for achieving the objectives, for example the Government, government agencies, county administrative boards, municipalities and the business community.


Government and Riksdag

The Swedish Government gathers information on the progress being made towards the objectives and if we are close to achieving them. This information forms the basis for the Government's policy and priorities, and government bills on strategies and instruments intended to carry the work forward. The Riksdag decides on taxes and passes laws that can help us come closer to achieving the objectives.

Government agencies

Some twenty government agencies have specific responsibilities for achieving the environmental objectives. Within their respective operations, they are to contribute to achieving the generational goal and the environmental quality objectives. They do so in cooperation with organisations and businesses, for example. Eight of the government agencies have a separate responsibility for following up its particular objective or objectives, and reporting on the possibilities of achieving these environmental quality objectives. The Swedish Environmental Protection Agency is tasked with guiding these government agencies and coordinating their follow-up of the environmental objectives. The Swedish Environmental Protection Agency is tasked with guiding these government agencies and coordinating their monitoring of the environmental objectives.

The Environmental Objectives Council is a platform for the heads of government agencies that are strategically important to achieving the environmental objectives. Each year, the Environmental



Municipalities, the business community, organisations and we as individuals, by our actions, affect progress towards the objectives.

The EU and other international bodies make decisions crucial to meeting several of the objectives.

Objectives Council presents measures which the government agencies undertake to implement in order to lift the pace of efforts to achieve the environmental objectives.

All Party Committee

An All-Party Committee on Environmental Objectives submits proposals to the Government on how Sweden's environmental quality objectives and generational goal can be achieved through broad cooperation with actors in society. The aim of the All-Party Committee is to secure a broad political consensus on issues requiring long-term decisions in the most difficult areas of environmental policy, and on issues marked by conflicts in aims between different stakeholders in society. The committee consists of MPs from all of the Riksdag political parties, supported by experts from county administrative boards, municipalities, the business community and stakeholder organisations.

Local and regional

Efforts at the local and regional levels also have a major impact on the possibilities for achieving the environmental objectives, whether it be a matter of the design and siting of housing, roads and other infrastructure, or the conservation and use of green spaces and cultural environments. County administrative boards have overall responsibility and a coordi-

nating role for regional and action programmes. The county administrative boards' responsibilities also include following up the environmental objectives in their own counties.

The environmental objectives are an important tool in the municipalities' efforts for sustainable development. For example, they are used in outline planning, inspection plans, waste planning, energy programmes and climate strategies.

Business community and stakeholder organisations

Environmental efforts by the business community in terms of production, transport and technological development are crucial to the prospects for achieving the environmental quality objectives. Environmental and other organisations also contribute by shaping public opinion and fostering an understanding of the need for change in order to meet the objectives.

EU and international cooperation

Many of our environmental challenges can only be solved by cooperation with other countries. For approximately half of Sweden's environmental quality objectives, action within the EU or international action is critical for achieving these objectives. At the same time the Swedish impact on the environment of other countries must be reduced.



SWEDEN'S 16 ENVIRONMENTAL QUALITY OBJECTIVES

REDUCED CLIMATE IMPACT



IN ACCORDANCE WITH the UN Framework Convention on Climate Change, concentrations of greenhouse gases in the atmosphere must be stabilised at a level that will prevent dangerous anthropogenic interference with the climate system. This goal must be achieved in such a way and at such a pace that biological diversity is preserved, food production is assured and other goals of sustainable development are not jeopardised. Sweden, together with other countries, must assume responsibility for achieving this global objective.

Carbon dioxide and other greenhouse gases released into the atmosphere from a range of human activities are causing warming of the global climate. The biggest contribution to climate change, in Sweden and around the world, comes from burning of fossil fuels such as oil, coal and natural gas to generate heat and electricity, for industrial processes and to power transport.

Enhancement of the greenhouse effect is raising the average temperature on earth. The last decade has been the warmest for 150 years, i.e. since reliable records of global mean temperature began. To reduce the risk of dangerous impacts on our climate system, it is considered necessary to limit the rise in the global average temperature well below 2 °C above pre-industrial levels, pursuing efforts to limit the temperature increase to 1.5 °C.

High northern latitudes could experience more pronounced climate change than the global average. This could have far-reaching impacts on agriculture and forestry, for example. Sensitive habitats in mountain areas and in the Baltic Sea could be damaged or lost altogether.

What are the challenges?

With global emissions increasing, atmospheric concentrations of carbon dioxide and other greenhouse gases show a steady rise. To limit the increase in temperature well below 2 °C, and preferably below 1.5 °C,



emissions of these gases worldwide must quickly be reduced towards zero during the second half of the century.

Achieving the fundamental reorientation of society which this implies will require both action by individual countries and international cooperation to reduce emissions, including under the UN Climate Change Convention. The Riksdag has decided that Sweden is to have zero net emissions of greenhouse gases by 2045 at the latest, which represents a huge challenge for the whole of society.

CLEAN AIR



THE AIR MUST BE clean enough not to represent a risk to human health or to animals, plants or cultural assets.

Inhaling air pollutants adversely affects health. For many people, pollution in the air around them can also reduce life expectancy. The pollutants that are most harmful to health are inhalable particles, ground-level ozone and certain hydrocarbons.

Air pollution also causes corrosion, speeding the breakdown of materials such as metals, plastics and limestone. This can result in damage, for example, to buildings and cultural heritage. In addition, ground-level ozone harms forest trees and farm crops.

High concentrations of air pollutants thus represent a large cost to society, in terms for instance of health care, reduced harvests and repairs.

Local emissions, from factories, vehicles, wood-fired domestic heating and other sources, affect the air in the immediate vicinity. Certain pollutants however, such as sulphur dioxide and ground-level ozone, can be transported long distances across national borders.

What are the challenges?

A major source of air pollution, especially in urban areas, is road traffic. Vehicle exhausts contain particles, nitrogen dioxide and organic compounds, and promote the formation of ground-level ozone. Traffic also causes emissions of abrasion particles, loosened from road surfaces by studded tyres. Positive trends include increasingly efficient engines and new, environmentally less damaging fuels, but these developments are partly offset by constant growth in



traffic. In many towns, air quality is also impaired by emissions of particles and organic compounds from the burning of wood.

To reduce emissions of pollutants that are carried long distances by winds, international cooperation is under way within both the EU and the UN. There is often uncertainty about what impact legislation and other policy instruments have in practice, which means that it may be several years before we can assess whether and how air quality has been affected.

NATURAL ACIDIFICATION ONLY



THE ACIDIFYING EFFECTS of deposition and land use must not exceed the limits that can be tolerated by soil and water. In addition, deposition of acidifying substances must not increase the rate of corrosion of technical materials located in the ground, water main systems, archaeological objects and rock carvings.

Forest soils, lakes and streams are often naturally acidic, but atmospheric deposition of acidifying pollutants has accelerated acidification. This process affects plants and animals and increases corrosion, i.e. chemical attack on materials. Corrosion causes damage, for example, to archaeological remains and water mains. There can also be adverse impacts on human health, for instance from drinking water obtained from acidified wells.

The substances giving rise to acidification are sulphur dioxide, nitrogen oxides and ammonia. These originate mainly from road traffic and shipping, power stations, district heating plants and factories, and agriculture.

Forestry also contributes to acidification, both as trees grow and when they are felled. With increasing demand for biofuels, whole-tree harvesting has become more common. If not carried out correctly, this practice can result in increased acidification of the soil and depletion of nutrients.

What are the challenges?

Recovery of the natural environment is a slow process. Despite a sharp fall in total emissions of sulphur dioxide and nitrogen oxides in Europe over the last twenty years, Sweden's lakes and watercourses have seen only a gradual improvement. One in ten lakes is still judged to be acidified as a result

of human activities. Forest soils and groundwaters are taking even longer to recover.

Most acidifying pollutants deposited in Sweden are brought here by winds from other countries or from international shipping. Curbing Swedish emissions is thus not enough to reduce acidification in the country. However, international agreements to cut emissions are in place, both at EU level and under the UN Convention on Long-Range Transboundary Air Pollution.

The biggest challenge is to further reduce acid emissions from the transport sector, in Sweden and internationally. This also applies to international shipping, which emits large quantities of nitrogen oxides.



A NON-TOXIC ENVIRONMENT



THE OCCURRENCE OF man-made or extracted substances in the environment must not represent a threat to human health or biological diversity. Concentrations of non-naturally occurring substances will be close to zero and their impacts on human health and on ecosystems will be negligible. Concentrations of naturally occurring substances will be close to background levels.

Dangerous chemicals in products and buildings risk ending up in the environment, and may be absorbed by plants, animals and humans. Environmental levels of many substances are too high and are causing problems for people and the environment. A few per cent of the population, for example, have high concentrations of cadmium in their kidneys, and PCBs and brominated flame retardants can be found in breast milk. Endocrine disruptors are suspected of causing common diseases. In some places, such as old factory and petrol station sites, soils are heavily contaminated.

Levels of many well-known toxic pollutants in the environment, such as DDT, PCBs and some brominated flame retardants, have fallen. Levels of highly fluorinated substances have increased and contaminated drinking water.

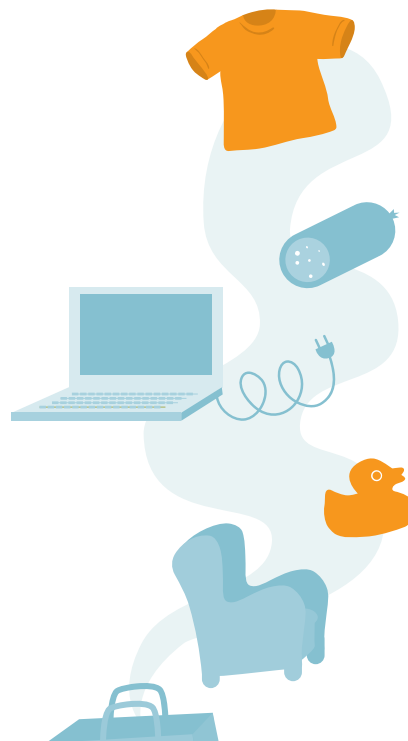
What are the challenges?

Persistent substances that are dispersed in the environment or stored in products and buildings can affect people and the environment over a long period of time. Growth in consumption is increasing production of chemicals and other products, and with it the spread of dangerous substances. In many cases, we still know very little about how chemicals affect human health and the environment. Chemical risks need to be prevented by a better understanding of the hazardous properties of substances, informa-

tion on how they are used and, in certain cases, regulations to restrict their use.

In recent decades, the use of many hazardous chemicals has been reduced by Swedish environmental laws, stricter EU legislation and international agreements. Voluntary measures, such as ecolabelling, environmental management systems in companies, and organic farming, have also contributed to progress.

To further limit the spread of dangerous substances, all these measures must continue to be developed. There is a need both for more international agreements and for technological development, for example in the area of 'green chemistry'.



A PROTECTIVE OZONE LAYER



THE OZONE LAYER must be replenished so as to provide long-term protection against harmful UV radiation.

The ozone layer of the atmosphere protects life on earth by filtering out some of the harmful ultraviolet (UV) radiation from the sun. Thinning of this layer therefore poses a threat. In humans, it increases the risk of conditions such as skin cancer, suppression of the immune system and eye cataracts.

Thinning is a result of the release into the atmosphere of substances which destroy ozone. These include chlorinated compounds that are to be found for example in fridges, air conditioning systems and foam plastics.

Since 1987 there has been an international agreement called the Montreal Protocol, which requires signatory states to ban and restrict the use of ozone-depleting substances. The measures taken have been very successful. Thanks to the Montreal Protocol, emissions of these substances are now falling. So too, with certain exceptions, are levels of ozone-depleting gases in the atmosphere. Most current evidence suggests that the ozone layer is no longer thinning, and there are even signs that it is set to increase in thickness again.

What are the challenges?

Many ozone-depleting substances remain in the atmosphere for a long time. Although emissions of most of them have been reduced or halted altogether, it will therefore be several decades before their thinning effect on the ozone layer is eliminated.



International efforts under the Montreal Protocol must continue, to further reduce production and consumption of ozone depleters. It is also important to ensure that new substances of this kind do not end up on the market.

The thickness of the ozone layer is difficult to determine, partly owing to its natural variability. It is also affected by both climate and by levels of certain greenhouse gases in the atmosphere. Rising emissions of nitrous oxide, for example, could delay ozone recovery.

A SAFE RADIATION ENVIRONMENT



HUMAN HEALTH AND biological diversity must be protected against the harmful effects of radiation.

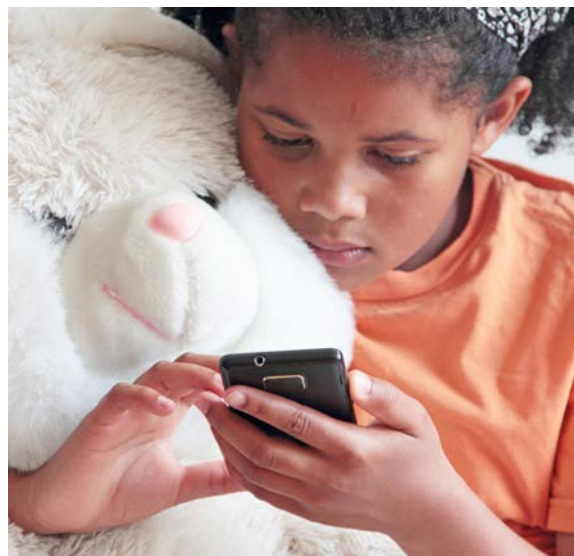
Radiation has always been part of our natural environment, originating from space, the sun, and naturally radioactive substances in the ground and in our own bodies. We have developed ways of producing radiation and making use of radiation properties in research, health care and industry, for example involving X-ray technology and the use of uranium in nuclear power reactors. Radiation can also occur in the form of electromagnetic fields, for instance as radio waves from mobile phones and magnetic fields from power lines.

Radiation can be beneficial, but it can also cause damage. To minimise its harmful effects on humans and the environment, all activities involving radiation have to be justified. This means that the radiation must do more good than harm and that doses must be limited as far as is reasonably possible.

What are the challenges?

The annual incidence of skin cancer – the main cause of which is exposure to ultraviolet (UV) radiation – continues to rise. To reverse this trend, exposure from both outdoor sunbathing and sunbed use needs to be reduced. This will require changes in people's lifestyles and attitudes to personal appearance and sunbathing.

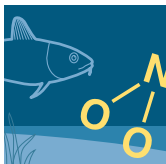
Discharges of radioactive substances from nuclear facilities are normally very low and pose no health risk to the general public. Spent nuclear fuel remains radioactive for a very long time, which is why a permanent repository needs to be built for it.



There are currently two areas in which research has identified a risk of possibly harmful effects on health from exposure to electromagnetic fields. One area concerns low-frequency magnetic fields from sources such as power lines; the other area is radio waves from mobile phones. The Swedish Radiation Safety Authority therefore recommends that certain precautions be taken.

When planning for new housing and infrastructure, recommendations should be followed regarding magnetic fields from power lines. Reducing one's exposure from mobile phones is easily done, for instance by using hands-free equipment.

ZERO EUTROPHICATION



NUTRIENT LEVELS in soil and water must not be such that they adversely affect human health, the conditions for biological diversity or the possibility of varied use of land and water.

Eutrophication – nutrient over-enrichment – affects not only lakes, rivers and seas, but also soils. It is a problem above all in the south of Sweden, but there are indications that mountain areas are also affected. Eutrophication causes gradual changes in vegetation, as species adapted to nutrient-poor conditions are displaced.

In the Baltic in particular, eutrophication is one of the most serious threats to the marine environment. In both sea areas and lakes, symptoms include plant overgrowth and algal blooms. In the worst cases, oxygen depletion occurs on the sea or lake bed, killing plants and animals. If blooms are formed by toxin-producing algae, both human and animal health can be threatened.

Eutrophication is caused by excessive levels of nitrogen and phosphorus in soil or water. These nutrients can enter the environment via atmospheric emissions, for example of nitrogen oxides from road traffic, shipping and power stations. Other sources of eutrophication are run-off from agriculture and discharges from sewage treatment plants and factories.

What are the challenges?

Further reductions need to be achieved in nutrient inputs to lakes, rivers and seas from Sweden and other countries affecting the environment of the Baltic, Kattegat and Skagerrak. Under the Baltic Sea Action Plan, Sweden and other nations around the Baltic have pledged to cut inputs by 2021.

Many of the emissions that are of significance for eutrophication are limited by international agreements. For progress to be made, Sweden, like every other signatory state, must fulfil its part of existing accords. Important agreements include the Gothenburg Protocol to the UN Convention on Long-Range Transboundary Air Pollution and the EU's Water and Marine Strategy Framework Directives.

Emissions to air from road traffic, industry and international shipping also have to be reduced. Most atmospheric deposition of eutrophying pollutants comes from other countries and from international shipping. Further decisions to curb air emissions are therefore needed at the international level.



FLOURISHING LAKES AND STREAMS



LAKES AND WATERCOURSES must be ecologically sustainable and their variety of habitats must be preserved. Natural productive capacity, biological diversity, cultural heritage assets and the ecological and water-conserving function of the landscape must be preserved, at the same time as recreational assets are safeguarded.

Lakes and watercourses are under pressure from many quarters, including forestry, agriculture, industry and hydroelectric power. Many plant and animal species are dependent on free-flowing rivers and streams, and naturally fluctuating water levels. This may conflict with our wish to build houses near lake shores and riverbanks, or our need to regulate river flow to generate electricity.

Preserving the natural productive capacity of aquatic environments is also important. Rivers are

used for example for fishing and provide drinking water. Fresh waters are important for recreation too, for instance for bathing and boating. In their vicinity, moreover, there is valuable cultural heritage that needs to be conserved and managed so that it can be enjoyed by generations to come.

What are the challenges?

A good deal remains to be done to achieve good environmental status in our lakes and watercourses. Currently, one of the biggest threats to biodiversity is physical disturbance from hydroelectric schemes. Regulation of rivers causes fragmentation and, in the worst cases, complete loss of species' habitats.

Many valuable waters, including both cultural environments and some drinking water sources, still lack long-term protection. Bacteria and other microbial contaminants are already a problem for drinking water supplies. In the longer term, the climate change now under way could increase the risks to health arising from the spread of pollutants and pathogenic organisms.

Progress in restoring disturbed fresh waters is slow. If a sufficient number of ecologically sustainable and diverse habitats are to be reinstated, both the financial and the legal frameworks for restoring rivers and streams need to be strengthened.



GOOD-QUALITY GROUNDWATER



GROUNDWATER MUST PROVIDE a safe and sustainable supply of drinking water and contribute to viable habitats for flora and fauna in lakes and watercourses.

Groundwater is important as drinking water for humans, and also affects the habitats of plants and animals in surface waters. Emissions of environmentally hazardous substances can contaminate this water resource – pesticides are one example, particularly in agricultural areas of southern Sweden. Sodium chloride (common salt) from roads salted in winter has also found its way into groundwater. As well as affecting the quality of the water, this causes corrosion of water mains.

Water moves in a continuous cycle. It evaporates as water vapour from lakes and seas, and falls to the earth's surface as rain and snow. Some of it seeps down through soil and rock to form groundwater, which in turn, after a certain residence time in the ground – determined by local conditions – discharges into lakes, watercourses and seas.

What are the challenges?

In general, demand for and hence the pressures on groundwater are increasing. This is partly because people are moving permanently to coastal areas and what used to be second homes. To prevent groundwater contamination, water protection areas need to be established.

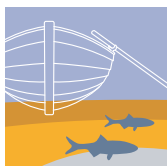
Eskers and similar formations in the landscape are important sources of drinking water. These natural gravel deposits are also of significance for our energy



supply, the natural and cultural landscape, and recreation. At the same time, there is pressure to extract gravel from them, for concrete and other uses. By creating more protection areas, the authorities can safeguard deposits of this kind against exploitation.

We need to know more about how groundwater affects surface waters. Contaminants such as mercury and nutrients may be transferred from groundwater to lakes and watercourses, but as yet we have a poor general understanding of the processes involved.

A BALANCED MARINE ENVIRONMENT, FLOURISHING COASTAL AREAS AND ARCHIPELAGOS



THE NORTH SEA and the Baltic Sea must have a sustainable productive capacity, and biological diversity must be preserved. Coasts and archipelagos must be characterised by a high degree of biological diversity and a wealth of recreational, natural and cultural assets. Industry, recreation and other utilisation of the seas, coasts and archipelagos must be compatible with the promotion of sustainable development. Particularly valuable areas must be protected against encroachment and other disturbance.

The marine environment is affected by fishing, the spread of toxic pollutants, and emissions of nutrients that end up in the sea and cause eutrophication. Alien species, for example from ships' ballast water or fish farms, can also become established there. All these things disturb biodiversity and important habitats, affecting marine production of food and other key ecosystem services.

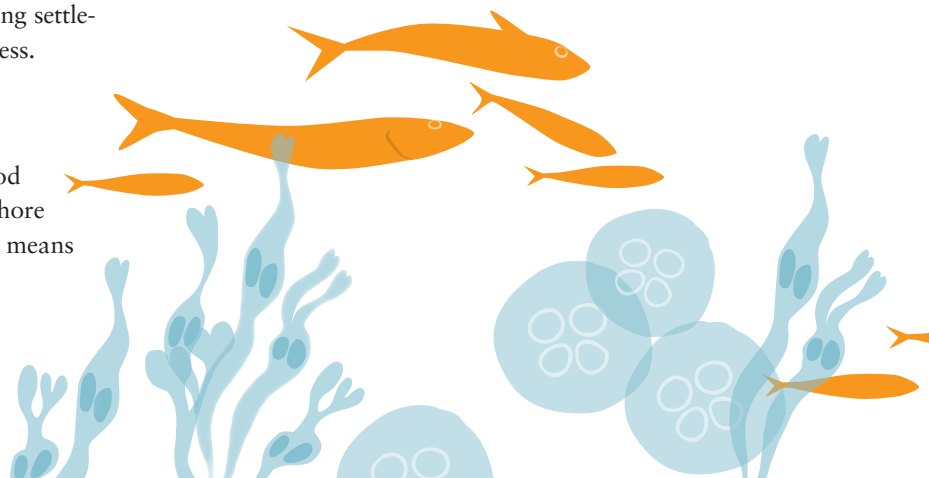
Seas, coasts and archipelagos offer a wide range of opportunities for recreation and a rich cultural heritage, values that can also be adversely affected by human activities. Archipelago and coastal environments come under pressure, for instance, from heavy development, settlements, shipping and boating. Cultural heritage, in the form of lighthouses, boathouses, meadows and pastures, is harder to conserve in areas affected by depopulation, while there is a risk of it suffering damage where there are concentrations of second homes and large-scale tourism. Growing settlements and traffic also reduce recreational access.

What are the challenges?

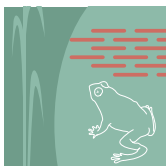
There is still much to be done to achieve good environmental status in our coastal and offshore waters. The transboundary nature of the sea means

that action is needed both in Sweden and internationally to reduce emissions and the negative impacts of activities that make for a poorer environment. Cooperation to improve the marine environment is for example taking place under the EU's Marine Strategy and Water Framework Directives and the Helsinki and OSPAR Conventions.

The design of EU fisheries and agricultural policies is also important, as is protection of areas of significant natural and cultural heritage interest. Conservation of cultural environments also depends crucially on people being able to live and make a living in coastal and archipelago areas. Another key factor in safeguarding both natural and cultural values is improved knowledge.



THRIVING WETLANDS



THE ECOLOGICAL AND water-conserving function of wetlands in the landscape must be maintained and valuable wetlands preserved for the future.

A large number of plants and animals are dependent on different types of wetlands. Many threatened or near-threatened species are linked to these habitats. One reason for this is that large parts of Sweden's wetlands have been drained and thus lost since the early 19th century. In addition, many of Sweden's remaining wetlands are impacted by drainage and other water operations, forestry, nitrogen deposition, damage from vehicles and by no longer being cut for herbage or grazing. Many types of wetlands will also be impacted negatively by climate change and the establishment of alien species.

Damaged wetlands have a reduced capacity to provide important ecosystem services, such as binding and storage of carbon, cleaning water, providing flood protection and contributing biological production. Many wetlands have archaeological remains that may suffer damage when sites are restored or cut for fuel peat.

What are the challenges?

It is important to protect wetland environments, and many bogs, fens, wet meadows and wet woodlands are included in Natura 2000, the EU's network of valuable natural areas. Sweden has also designated wetlands of international significance as Ramsar sites within the framework of a wetlands convention. Even so, many Swedish wetlands with high natural and cultural values lack satisfactory protection.



New drainage schemes are now prohibited in some parts of Sweden. A review of the regulatory framework for water operations is needed to determine whether it can be tightened up for other parts of the country, and improved for other water operations. As well as preventing new damage, many wetlands need to be restored and managed so as to preserve their values and safeguard valuable ecosystem services. It is also important that everyone using land and water does so in a sustainable manner.

SUSTAINABLE FORESTS



THE VALUE OF forests and forest land for biological production must be protected, at the same time as biological diversity and cultural heritage and recreational assets are safeguarded.

Forests cover over half the area of Sweden. The majority of them are coniferous, but in the south there are extensive broadleaved woodlands. The appearance and dominant tree species of these forests are a product of the country's climate and our history. Forests offer unique habitats for a variety of animal and plant species. They are also an important source of renewable raw materials and of value for outdoor recreation.

The state of the forest environment is affected partly by the intensity of forestry and the methods used, and partly by the cessation or decline of management regimes such as forest grazing, as well as of forest fires and other natural disturbances. Owing to these trends, certain types of forests are contracting,

along with the unique habitats they contain. Climate change and deposition of air pollutants are also having adverse effects.

What are the challenges?

To preserve important forest environments, nature reserves and other forms of protection are needed, combined with voluntary set-aside of forest land by owners. Forest areas may also need to be restored or managed in ways that enhance their values. Urban-fringe woodlands and other forests with large numbers of visitors may have to be managed using methods geared to making them more attractive and accessible.

International action is needed to reduce air pollutant emissions, both in Sweden and abroad. Cooperation under various global conventions and EU directives has greatly reduced deposition of sulphur, for example, which is a cause of soil acidification. Substances that acidify soil also form to some extent when trees are harvested, but this can be offset if more wood ash is recycled to forest land.

A broader challenge is to adapt forestry practices so that they conserve and develop the natural and cultural values of forests, while still remaining competitive. One difficulty is that it takes a long time for measurable environmental effects to emerge. More therefore needs to be known about how forest ecosystems respond to different interventions, and about how climate change will affect forests.



A VARIED AGRICULTURAL LANDSCAPE



THE VALUE OF the farmed landscape and agricultural land for biological production and food production must be protected, at the same time as biological diversity and cultural heritage assets are preserved and strengthened.

The natural values of today's agricultural landscape are a product of thousands of years of human use. Many of Sweden's plant and animal species are to be found in hay meadows and pastures, field margins and roadside verges, mid-field patches of rocky ground, wetlands and other small-scale habitats. Many of these environments, along with old farm buildings, are also of cultural heritage interest, providing a picture of how our ancestors lived and worked the landscape.

The biodiversity and cultural environments of farming areas are dependent on agriculture being maintained, but also on the methods it employs. Grazing livestock, for example, are crucial to preserving species-rich pastures. In some parts of Sweden, agriculture has become increasingly specialised and intensive, while in others land is no longer being cultivated and many farms are being abandoned. Both trends pose a threat to many farmland species and habitats.

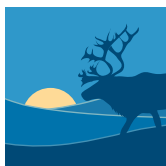
What are the challenges?

Agricultural practices need to be adapted so as to conserve and develop the natural and cultural values of the farmed landscape. At the same time, farming has to be efficient and competitive. It is also important to preserve Swedish crop plants and livestock breeds with unique characteristics, as they may prove important for future food supplies and are part of our cultural heritage.



If biodiversity and cultural heritage are to be preserved, action is needed at every level in society – from efforts by local authorities to limit development on farmland, to attempts to shape the design of the EU's Common Agricultural Policy. Agri-environment payments, funded both nationally and by the EU, are promoting the management of pastures and the establishment of wetlands.

A MAGNIFICENT MOUNTAIN LANDSCAPE



THE PRISTINE CHARACTER of the mountain environment must be largely preserved, in terms of biological diversity, recreational value, and natural and cultural assets. Activities in mountain areas must respect these values and assets, with a view to promoting sustainable development. Particularly valuable areas must be protected from encroachment and other disturbance.

Sweden's mountain areas, with their distinctive natural environments, are sensitive. At the same time, a wide range of stakeholders wish to make use of them. In southern parts of the mountain range in particular, soil and vegetation may be damaged, for example, by visitors and by off-road driving on ground unprotected by snow, and also by development for wind energy, hydropower, mining and other activities.

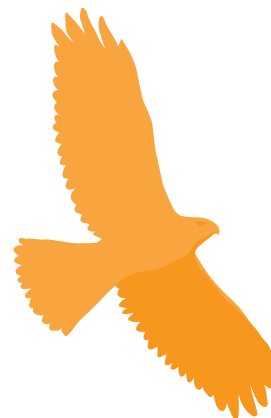
Large parts of the mountain region are protected so as to preserve their natural and cultural values, but there are still important areas lacking protection from future development. Valuable environments and rich recreational opportunities could be encroached upon by growing numbers of wind farms and increased exploration and extraction of valuable minerals. In addition, more and more snowmobiles are being used in mountain counties, affecting the quality of the environment above all by their unwanted noise.

What are the challenges?

Continued reindeer herding, together with other forms of livestock rearing, is needed to maintain an extensive mountain landscape, characterised by grazing and offering habitats for many different species. At the same

time, the reindeer sector's need for large, continuous grazing areas has to be balanced against the need for facilities for outdoor recreation, nature-based tourism, wind power and mineral extraction. Growth in tourism, more off-road vehicles and increasing interest in development in mountain areas could create difficulties for reindeer herders, thereby eroding the benefits which grazing has in terms of biodiversity. Another conflict is over the size of predator populations, which affect reindeer husbandry in several ways.

Different stakeholders wanting to make use of mountain areas must work together if these sensitive environments are to be developed and used sustainably. An ongoing research programme is focused on developing a deeper understanding of the conflicts and opportunities posed by the alpine environment and promoting sustainable development based on respect for these different perspectives. This programme includes around 10 projects. This effort to increase knowledge is important to improving our chances of achieving this environmental objective.



A GOOD BUILT ENVIRONMENT



CITIES, TOWNS AND other built-up areas must provide a good, healthy living environment and contribute to a good regional and global environment. Natural and cultural assets must be protected and developed. Buildings and amenities must be located and designed in accordance with sound environmental principles and in such a way as to promote sustainable management of land, water and other resources.

Our built environment has to meet the needs of people and society, offer a good living environment and contribute to sustainable development. How we live our lives affects the environment in many ways, whether it be a matter of the way we heat our homes, travel to work and leisure activities, or separate our waste. The built environment accounts for almost 40 per cent of Sweden's total energy consumption, for example, and the waste we leave behind needs to be reduced and better used as a resource. Many built environments also have significant cultural heritage values.

In recent decades, the populations of Sweden's larger urban areas have grown. Towns and cities have spread, and shopping developments have been established outside their centres, increasing the need for transport. Meanwhile, central areas of towns are becoming denser. This may reduce transport demand and offer climate benefits, but can also increase problems of noise. Sometimes, 'densification' has been achieved by building on green space, reducing opportunities for outdoor recreation close to people's homes.

What are the challenges?

Key challenges include conserving the cultural heritage of built environments, reducing the impacts of transport noise and poor indoor environments, and minimising hazardous waste. Action is needed at every level of society, ranging from international agreements on vehicle noise to greater consideration



for the environment when roads and homes are planned and built. Building design and methods of construction are also very important, as are the ways in which buildings are managed and renovated. In addition, there needs to be a shift to renewable energy sources and sustainable means of transport.

In physical planning, existing regulatory frameworks, especially the Planning and Building Act, need to be applied in ways that offer greater environmental benefits. Local authority comprehensive planning, if developed, could become a vital tool in achieving several aspects of *A Good Built Environment*. Among other things, up-to-date and relevant planning documents are needed, as is coordinated planning of settlements and infrastructure.

A RICH DIVERSITY OF PLANT AND ANIMAL LIFE



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. Finally, 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.

Sweden has a great diversity of plants and animals, inhabiting a mosaic of different environments, from arable land, forests and mountains to wetlands, streams, rivers, lakes and seas. Many species and habitats show negative trends and are in danger of disappearing in the long term. One reason is that traditional methods of farming and forestry, which once benefited many species, are now rarely used. Heavy nutrient loads and commercial fisheries are adversely affecting several marine environments.

Preserving biodiversity is crucial if ecosystems are to function and provide benefits such as purifying water and air, storing carbon and pollinating our crops. Without a diversity of species with different functions, there is a considerable risk that use of natural resources, climate change and other pressures could damage the capacity of ecosystems to deliver these services. Biodiversity also promotes public health, as many natural and cultural environments are important sites for outdoor recreation.

What are the challenges?

We already make intensive use of land and water, and the demand for resources such as food, raw materials, energy and water is growing. Meeting these needs without overexploiting ecosystems and increasing pressure on species is a major challenge. Ever greater fragmentation of the landscape by roads and buildings is also making it harder for animals and plants to spread and undermining conditions for them.

Under the UN Convention on Biological Diversity, Sweden is committed to the conservation and sustainable use of biodiversity. Valuable natural areas are being protected and action plans are being drawn up to preserve our most threatened species. If such efforts are to succeed, there also needs to be greater consideration for the environment and better planning in the use of natural resources, with a view to promoting a green infrastructure. In addition, agriculture and forestry need to be based on methods that contribute to a rich biodiversity. Monitoring and control of non-native species and conservation of genetic variation in plants and animals are also very important.



A SHARED JOURNEY

In many areas, progress is being made towards a better environment. Comparing the state of the environment today with that of a decade or so ago, we see a great many positive changes. This is true, for example, when it comes to protecting the ozone layer, reducing acidification, and safeguarding valuable natural areas.

But if Sweden is to meet its environmental objectives, there is still much to be done and much that needs to change. Production of goods and services has to be brought into line with what nature and its ecosystems can withstand. Land and water resources must be managed more sustainably. Investments need to be made in environmentally sounder energy systems and infrastructure. And there also needs to be political resolve to address conflicts of interest and make the environment a priority.

Last but not least – each one of us can change our habits and consumption patterns and adopt a greener lifestyle. Achieving the environmental objectives is a major collaborative undertaking, requiring the involvement of every member of society.

Find out more

At sverigsmiljomal.se you can read much more about Sweden's environmental goals. The site includes information, for example, on the latest follow-up of each of the 16 environmental quality objectives.



The overall goal of Swedish environmental policy is to hand over to the next generation a society in which the major environmental problems have been solved, without increasing environmental and health problems outside Sweden's borders.

This is the generational goal, which serves to guide environmental action in Sweden. It has been adopted by the country's parliament, along with 16 environmental quality objectives covering different areas. These goals are a promise to future generations of clean air, a healthy living environment, and rich opportunities to enjoy nature.

To achieve the environmental objectives, everyone has to play their part – public agencies, business communities, stakeholder organisations and, not least, each of us as individuals.

