



Environmental Quality Objectives: A Shared Responsibility

Summary of Government Bill 2204/05:150

Table of contents

The bill: background and main contents	8
What has been done so far?	8
Can the objectives be achieved, and what must be done?	9
Structure of the objectives	10
Proposal to the Riksdag	11
Principal implementing actors	11
 The 15 environmental quality objectives: status report	 14
Reduced Climate Impact	15
Clean Air	17
Natural Acidification Only	19
A Non-Toxic Environment	21
A Protective Ozone Layer	25
A Safe Radiation Environment	27
Zero Eutrophication	29
Flourishing Lakes and Streams	31
Good-Quality Groundwater	33
A Balanced Marine Environment, Flourishing Coastal Areas and Archipelagos	35
Thriving Wetlands	39
Sustainable Forests	41
A Varied Agricultural Landscape	43
A Magnificent Mountain Landscape	45
A Good Built Environment	47
 A new environmental quality objective: A Rich Diversity of Plant and Animal Life	 51
Why a new environmental quality objective?	53
Achieving the EQO	53
 Three strategies for achieving Sweden's environmental quality objectives	 59
 A strategy for more efficient energy use and transport	 61
Strategic action areas	61
Action proposals and development of policy instruments	62
Renewable energy sources and other measures	63
The electricity certificate system	64
Renewable fuels	64
Economic instruments in the transport sector	65

Increasing and extending the nitrogen oxide charge	66
Tighter emission requirements for vehicles and machines	66
Information, research and development	67
A strategy for non-toxic, resource-efficient ecocycles	69
Strategic action areas	70
Action proposals and development of policy instruments	70
A strategy for the management of land, water and the built environment	75
Strategic action areas	75
Action proposals and development of policy instruments	76
Swedish environmental action in the EU	81
Transboundary environmental cooperation	83
International cooperation	83
Regional cooperation in Europe	85
The role of the EU	85
Legislation	87
Other tools for more effective action	89
Special sectoral responsibility for the environment and environmental management	89
Research and development	90
Education	90
Follow-up and evaluation	93
Environmental monitoring	93
The Environmental Objectives Council and its next in-depth report to the Riksdag	93
Impact assessments	94
Sustainable development: Environment policy in relation to other policy areas	95
Benefits and costs	97

The bill: background and main contents

The overall goal of the Government's environmental policy is to hand on to the next generation a society in which the major environmental problems facing Sweden have been solved.

This includes a good living environment, good standards of public health, the safeguarding of biological diversity and long-term ecosystem productivity, and conservation of the natural and cultural landscape. To realize these policy aims, the Riksdag¹ has adopted 15 environmental quality objectives (EQO). Action taken in pursuit of these objectives in turn inform development and welfare policies for achieving sustainable development in Sweden.

What has been done so far?

In 1999, the Riksdag approved a new structure for Sweden's environmental policy goals. The 15 national EQOs were established. A total of 71 interim targets have since been adopted. These will serve as a basis for environmental policy objectives and priorities in different social sectors.

The government bill, Swedish Environmental Quality Objectives: Interim Targets and Strategies (prop². 2000/01:130)³, proposed the adoption of interim targets for all 15 EQOs with the exception of *Reduced Climate Impact*, which was dealt with in a separate bill. In the same bill, the Government announced its intention to lay a 16th EQO on biodiversity before the Riksdag not later than 2005. It also promised annual follow-up reports and an evaluation of the objectives and interim targets every fourth year.

¹ The Swedish Parliament.

² *Proposition*: Government bill.

³ *Svenska miljömål – delmål och åtgärdsstrategier (prop. 2000/01:130)*.

Can the objectives be achieved, and what must be done?

The present bill represents the Government's first in-depth evaluation of ongoing efforts to realize its EQOs. Which objectives have been achieved? What difficulties were encountered? What must be done to solve the problems that arise and achieve the objectives? Should the objectives be changed? These and similar questions provide the basis for the overhaul of the existing system of EQOs and interim targets proposed in the bill, and of the three action strategies adopted by the Riksdag in 2001.

Reports by the Environmental Objectives Council provided much of the background data and supporting material for the evaluation. The council has submitted annual reports to the Government since 2002, when it was established as part of the Government's strategy for achieving the EQOs. Sweden's Environmental Objectives – Our Shared Responsibility⁴, proposing amended interim targets, was presented to the Government in February 2004. The council's latest report, Sweden's Environmental Objectives – Will We Achieve Them?⁵ which included a progress report on the state of the environment, was submitted to the Government in June 2004.

The evaluation is also based on supporting documentation from public authorities and non-governmental organizations.

Swedish environmental policy has recorded some notable successes in recent decades. These include a diminution in the environmental effects of acidification and a reduction in the impact on human health of pollution of the outdoor environment. The introduction of the EQOs has generated new ideas and stimulated the development of new forms of cooperation and collaboration. However, problems remain.

Attaining the goal of handing on to the next generation a society in which the major environmental problems have been solved will pose formidable challenges and involve considerable effort. A vital concern is to prevent new environmental problems from arising. This can be achieved mainly by 'decoupling' economic growth from environmental impact and maintaining sustainable production and consumption patterns.

It is particularly important in this connection to continue to develop measures under the three action strategies already adopted by the Riksdag:

- More efficient energy use and transport.
- Non-toxic, resource-saving ecocycles.
- Effective management of land, water and the built environment.

⁴ *Miljömålen – allas vårt ansvar.*

⁵ *Miljömålen – når vi dem?*

With the strategies reviewed and amended, the main criteria for the measures set out by the Government in the present bill are cost-effectiveness and their ability to achieve several EQOs simultaneously. They must also contribute to the attainment of goals in other policy areas, in particular public health and gender equality.

Solving the most serious environmental problems also presupposes extensive international cooperation. It is essential that Sweden take part in ongoing global action to safeguard the environment and that all forces in our society pull in the same direction. Efforts must be made to intensify involvement in environmental issues at all levels, including the business sector, local government, central government agencies and households.

In certain areas the problems are particularly intractable. Two difficult objectives are *Sustainable Forests and Zero Eutrophication*. *A Non-Toxic Environment and Reduced Climate Impact* also pose formidable challenges. *A Balanced Marine Environment and Flourishing Coastal Areas and Archipelagos* is another problematic objective, as success is dependent on the outcome of efforts to achieve, inter alia, *A Non-Toxic Environment and Zero Eutrophication*.

One of the most difficult issues to deal with is the environmental status of marine ecosystems. Examples of threats to sustainable development include over-fishing, eutrophication, the build-up of stable toxins, and the establishment of non-native species and fish stocks. The bill's targets and measures for the protection of our seas reflect a higher level of ambition than previous initiatives. The Government also intends to return to the Riksdag with a coherent, national, multi-objective strategy for long-term sustainable development of the marine environment.

Structure of the objectives

Together, the EQOs present a description of a desirable environmental state for Sweden, and all efforts should be directed at bringing this state about. The objectives and any changes or additions are laid down by the Riksdag. The interim targets, which are also laid down by the Riksdag, specify what action is required to achieve the objectives and set out the timetables for attaining them.

The Government considers that the clear-cut structure now established – comprising EQOs and interim targets – is appropriate to the task of solving the major environmental problems facing Sweden. The central values and criteria on which the interim targets are based accordingly remain unchanged.

The values are:

- Human health.
- Biodiversity and the natural environment.
- The cultural environment and cultural heritage.
- Long-term ecosystem productivity.
- Effective management of natural resources.

As regards the criteria, the interim targets must be:

- clear and accessible,
- capable of being followed up in the short term,
- form part of an all-inclusive structure, and
- capable of serving as a basis for local environmental work and efforts to achieve the objectives.

The bill emphasizes the need for time-bound interim targets to facilitate follow-ups. The targets should also be easily understood by all those contributing to the work of meeting them. While proposals for new interim targets should be realistic they must also maintain a high level of ambition, even if the most challenging goals prove difficult to meet.

Interim targets that have been met will be removed from the target list. Future reports by the Environmental Objectives Council should include accounts of the interim targets attained to ensure a balanced overall picture of environmental work undertaken and to facilitate monitoring.

Proposal to the Riksdag

The Government's overhaul of the system of EQOs, interim targets and strategies has led to a proposal for a 16th objective on biodiversity: *A Rich Diversity of Plant and Animal Life*. The government bill also proposes 5 new interim targets for the existing 15 EQOs, revised wording in the case of 18 interim targets and the removal of 9 interim targets.

The EQO *Reduced Climate Impact* will be dealt with in a separate bill to be presented to the Riksdag in 2005.

Principal implementing actors

Responsibility for achieving the EQOs is shared among a wide range of actors. These include public authorities, non-governmental organizations, the business

community, households and private individuals. Government agencies, county administrative boards and the business sector have key roles to play.

County Administrative Boards

Sweden's county administrative boards will retain overall responsibility for EQO-related action at regional level. An important part of their task will be to develop and adapt regional goals, action programmes and strategies for achieving the EQOs. These should lead to a clearer and more appropriate basis for the boards' inspection and supervisory work, as provided in the Environmental Code.

The boards' EQO-related efforts should be characterized by an integrative, cohesive approach and implemented in close dialogue with other sectors such as regional authorities and bodies, local authorities and the business community. This means, *inter alia*, that efforts must be coordinated and given greater emphasis in the context of regional growth and development.

Water management is one example of the crucial importance of coordination with EQOs. The Government has also emphasized the need to take the EQOs into account when drawing up county transport infrastructure plans.

To ensure the further integration of environmental and sustainability concerns into regional development work, the Government intends to pursue the development of an education programme on these issues. This will be aimed at county administrative boards, and coordinating and regional autonomous bodies. The Government also intends to commission an agency to develop: a) different forms of cooperation, and b) ways in which the EQOs can be linked into regional development programmes.

Local government

Swedish local government authorities (municipal and county councils) have a central role to play in achieving the EQOs. These bodies are important actors, not only as key participants in the work of implementing regional EQOs, but also as initiators of their own local objectives and action programmes. They are capable of making a concrete contribution to the achievement of the EQOs, *inter alia*, through appropriate application of the Environmental Code and the Planning and Building Act. Other instruments at their disposal that can be used to help move development in the right direction are survey plans, detailed development plans and planning permission.

Local involvement in projects such as Agenda 21 is also extremely valuable. Local government procurement of goods and services is another example of an instrument that can be used to promote long-term sustainable development.

Many local government authorities have already made significant

contributions. To obtain an overview of efforts undertaken by local authorities in this sphere, the Government intends to give the Swedish Environmental Protection Agency the task of surveying the scope and direction of EQO-related activities at local government level. The survey will be conducted in cooperation with relevant actors and regional and local representatives.

The business sector

The business sector can make significant contributions in a number of areas. It can for example take steps to reduce emissions, minimize the use of hazardous chemicals, promote more efficient energy use and/or improve waste management.

Companies should make wider use of the EQOs as a basis for their environmental work. The Government therefore intends to commission projects aimed at supporting the county administrative boards in their efforts to encourage the business sector to implement forward-looking environmental measures based on the EQOs and the three strategies. The Environmental Protection Agency and the Swedish Agency for Economic and Regional Growth (Nutek) will also be involved.

Efforts to introduce and disseminate new environmental technology are essential. In April 2005, the Government announced its decision to establish a national council for environmental technology, the Swedish Environmental Technology Council (Swentec). The council will be responsible for coordinating action and initiatives in the spheres of environmental technology, environmentally-driven business development and the export of environmental technology. The council, which will be organizationally attached to Nutek, will be based at Chalmers University of Technology in Göteborg.

The Government considers that state-owned enterprises should set an example for environmental action. They should take an active part in EQO work by implementing the Government's ownership policy. They should also introduce and apply environmental management systems. Their boards are required to monitor environment work and submit yearly reports on company measures and initiatives.

The 15 environmental quality objectives: status report

A short presentation of the 15 EQOs adopted by the Riksdag follows below. These are accompanied by brief accounts of the current status of the interim targets, proposals on their reformulation or deletion, and some of the measures regarded as essential to their fulfilment.

Reduced Climate Impact

The UN Framework Convention on Climate Change provides for the stabilization of concentrations of greenhouse gases in the atmosphere at levels which ensure that human activities do not have a harmful impact on 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 jeopardized. Sweden, together with other countries, must assume responsibility for achieving this global objective.

Interim target:

1. As an average for the period 2008–12, Swedish emissions of greenhouse gases will be at least 4% lower than in 1990. Emissions are to be calculated as carbon dioxide equivalents and are to include the six greenhouse gases listed in the Kyoto Protocol and defined by the IPCC. In assessing progress towards the target, no allowance is to be made for uptake by carbon sinks or for flexible mechanisms.

The Riksdag has approved a climate strategy, and new national targets for greenhouse gas emission reductions have been adopted. Average Swedish emissions of greenhouse gases for the period 2008–2012 will be at least 4% lower than in 1990.

The Reduced Climate Impact objective states that emissions – expressed as carbon dioxide equivalents – of the six greenhouse gases listed in the Kyoto Protocol and defined by the IPCC, are to be stabilized at a level lower than 550 parts per million (ppm) in the atmosphere.

Sweden must work internationally to promote global efforts to achieve this objective. By 2050 Sweden's total annual emissions must be lower than 4.5 tonnes of carbon dioxide (CO₂) equivalents per capita, with further decreases thereafter. Fulfilment of this target is crucially dependent on international cooperation and action by all countries.

Checkpoints have been introduced. Evaluations of the first checkpoint will be presented in a special climate bill in 2005.

Clean Air

The air must be clean enough not to represent a risk to health or to animals, plants or cultural assets.

This objective is achievable but further action will be needed.

Interim targets:

1. A level of sulphur dioxide of $5 \mu\text{g}/\text{m}^3$ as an annual mean will have been achieved in all municipalities by 2005.
The target can probably be met.
2. A level of nitrogen dioxide of $60 \mu\text{g}/\text{m}^3$ as an hourly mean and of $20 \mu\text{g}/\text{m}^3$ as an annual mean will largely not be exceeded by 2010. The hourly mean may not be exceeded for more than 175 hours per year.
The target can largely be met.
3. By 2010 concentrations of ground-level ozone will not exceed $120 \mu\text{g}/\text{m}^3$ as an 8-hour mean.
The target can probably be met.
4. By 2010 emissions in Sweden of volatile organic compounds (VOCs), excluding methane, will have been reduced to 241,000 tonnes.
The target can be met.
5. A level of particles (PM10) of $35 \mu\text{g}/\text{m}^3$ as a daily mean and of $20 \mu\text{g}/\text{m}^3$ as an annual mean will not be exceeded by 2015. The daily mean may not be exceeded for more than 37 days per year.
A level of particles (PM2.5) of $20 \mu\text{g}/\text{m}^3$ as a daily mean and of $12 \mu\text{g}/\text{m}^3$ as an annual mean will not be exceeded by 2015. The daily mean may not be exceeded for more than 37 days per year.
The target can be met but further action will be needed.
6. A level of benzo(a)pyrene of $0.3 \text{ ng}/\text{m}^3$ as an annual mean will largely not be exceeded by 2015.
The target can be met but further action will be needed.

Target 2 has been partly reformulated. Targets 5 and 6 are wholly new.

Particles, ground-level ozone and nitrogen oxides (NO_x) cause many different types of problems and illnesses. Meeting the interim targets for nitrogen dioxide and particle reduction will require further measures. Although occurrences of high levels of ground-level ozone have decreased somewhat in recent years, there is no indication on current trends that average levels will fall by 2010. Action at both local and European level are essential if the problem is to be tackled successfully. Environmental quality standards for outdoor air are an effective instrument for achieving this EQO.

Examples of measures

- A new environmental quality standard for the carcinogen benzo(a)pyrene will be introduced.
- Municipal councils should be able to issue directions concerning emission requirements or equivalent regulations governing small-scale wood burning in specially designated areas.
- High priority has been given to international atmospheric pollution control.
- The sale of light, low-particle emission diesel-powered vehicles will be promoted.
- The Government considers that the interim target for ground-level ozone should be reviewed as a matter of urgency in the light of new findings on the seriously detrimental health effects of this air pollutant.
- An environmentally-oriented tax adjustment affecting heavy goods vehicles will be introduced in 2006.
- Procurement requirements for transportation services involving heavy goods vehicles and machines will be developed with a view to encouraging the adoption of more environmentally sound technology before the introduction of mandatory standards.
- Consideration will be given to the introduction of new interim targets for carcinogenic substances such as benzene and fluorathene.

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 or cultural artefacts and buildings.

Both national and international action will be necessary to the achievement of this EQO.

Interim targets:

1. By 2010 not more than 5% of all lakes and 15% of the total length of running waters in the country will be affected by anthropogenic acidification.
The target can be met but further action will be needed.
2. By 2010 the trend towards increased acidification of forest soils will have been reversed in areas that have been acidified by human activities, and a recovery will be under way.
The target has probably already been met.
3. By 2010 emissions of sulphur dioxide to air in Sweden will have been reduced to 50,000 tonnes.
The target can be met.
4. By 2010 emissions of nitrogen oxides to air in Sweden will have been reduced to 148,000 tonnes.
The target can be met but further action will be needed.

Target 3, concerning sulphur dioxide emissions, has been raised, from 60,000 to 50,000 by 2010.

The negative trend with regard to acidification of forest land has probably been broken. Nitrogen levels in precipitation have fallen in large areas of Sweden in recent years. However, the period has seen an rise in overall precipitation volumes. This makes it impossible to verify whether any definite change in the total fallout of nitrogen compounds has taken place. Forecasts indicate that in 2010 the fallout of acidifying substances will exceed what nature can tolerate in approximately 13% of Sweden's total forest and lake area. Atmospheric pollution also speeds up

corrosion in metals, limestone, rubber and plaster, and damages buildings of cultural and/or historical value, statues and ancient monuments.

Examples of measures

- High priority has been given to work in connection with atmospheric pollution control issues at EU and global level.
- Sweden will seek to promote the reduction of sulphur concentrations in marine fuels and a reduction in emissions of nitrogen oxides from shipping.
- Exhaust regulations governing the emission of nitrogen oxides from diesel-powered vehicles should be tightened.
- A study of the effect of raising and extending the nitrogen oxide charge will be undertaken.

A Non-Toxic Environment

The environment must be free from man-made or extracted compounds and metals that represent a threat to human health or biological diversity.

It will be difficult to achieve this EQO within the prescribed time.

Interim targets:

1. By 2010 data will be available on the properties of all deliberately manufactured or extracted chemical substances handled on the market. For substances handled in larger volumes and for other substances which, for example after initial general tests, are assessed as being particularly dangerous, information on their properties will be available earlier than 2010. The same information requirements will apply to both new and existing substances.

In addition, by 2020 data will be available on the properties of the most important unintentionally formed and extracted chemical substances.

It will be difficult to meet the target within the prescribed time.

2. By 2010 finished products will carry health and environmental information on any dangerous substances they contain.

It will be difficult to meet the target within the prescribed time.

3. With regard to the phasing out of hazardous substances, the following will apply: Newly manufactured finished products will as far as possible be free from:

- new organic substances that are persistent and bioaccumulating, new substances that are carcinogenic, mutagenic and reprotoxic, and mercury, as soon as possible, but no later than 2007;
- other carcinogenic, mutagenic and reprotoxic substances, and endocrine disrupting substances or highly allergenic substances, by 2010, if the products that contain them are intended to be used in such a way that they will enter natural cycles;
- other organic substances that are persistent and bioaccumulating, and cadmium and lead, by 2010.

Nor will these substances be used in production processes unless the company can prove that human health and the environment will not be har

med. Already available finished products containing substances with the properties listed above, or mercury, cadmium or lead, will be handled in such a way that the substances in question are not released to the environment.

The spread to Sweden by air or water of substances covered by this interim target will decrease continuously.

This interim target applies to substances that are man-made or extracted from the natural environment. It also applies to substances giving rise to substances with the above properties, including those formed unintentionally.

It will be difficult to fully meet the target within the prescribed time.

4. Health and environmental risks associated with the manufacture and use of chemical substances will be reduced continuously up to 2010, as measured by indicators and ratios to be established by the competent authorities. Over the same period, the occurrence and use of chemical substances which impede recycling of materials will decrease. This target applies to substances not covered by interim target 3.
The target can be met but further action will be needed.
5. By 2010 guideline values will be established by the competent authorities for at least 100 selected chemical substances not covered by interim target 3.
The target can be met.
6. Studies will have been carried out and, where necessary, appropriate action will have been taken by the end of 2010 at all contaminated sites that pose an acute risk on direct exposure, and at contaminated sites that threaten important water sources or valuable natural environments, today or in the near future.
The target can be met.
7. Between 2005 and 2010, measures will be implemented at a sufficiently large portion of the prioritized contaminated sites to ensure that the environmental problem as a whole can be solved by 2050 at the latest.
The target can be met.

Targets 1, 3 and 5 are partly new. Targets 6 and 7 are wholly new and will replace the earlier Target 6.

Several fish species from lakes, the Baltic Sea and the Gulf of Bothnia now contain environmental toxins in such high concentrations that eating them poses a health risk. Although levels of environmental toxins in our food have fallen,

every tenth person in Sweden consumes unacceptable amounts of dioxins and polychlorinated biphenyls (PCBs). The number of unintentionally formed and extracted substances is extremely high and less is known about them than about intentionally produced substances. Hazardous substances are spread via goods and via air and water. This is a transboundary problem which can only be solved through cooperation within the EU and at international level. The number of polluted areas is considerably larger than previously thought. Only 10% of the areas now regarded as posing a major risk to human health and the environment can be dealt with by 2010.

Examples of measures

- More resources for chemicals and environmental toxicology research are needed.
- A global system for information on hazardous substances in products should be introduced as part of the United Nations Environment Programme (UNEP) global chemicals strategy.
- The business sector must be encouraged to develop information on dangerous substances in products.
- The sector must also be encouraged to continue to replace particularly hazardous substances wherever possible.
- An action strategy on mercury must be introduced in the EU and globally under the UNEP.
- Endocrine disrupting substances and highly allergenic substances should be covered by the EU system for registration, evaluation and authorization of chemicals (REACH).
- The level of protection against plant protection products should be high, and at least as high as that against other chemicals.
- More must be known about the environmental impact of medicines, cosmetics and hygienic products.
- The responsibility of operators must be clearly defined.
- The Geological Survey of Sweden (SGU) will be given the task of carrying out responsibility studies and necessary surveys of sites or features polluted by government authorities that no longer exist.

A Protective Ozone Layer

The ozone layer must be replenished so as to provide long-term protection against harmful UV radiation.

This EQO can be achieved.

Interim targets:

By 2010 the great majority of emissions of ozone-depleting substances will have ceased.

The target can be met but further action will be needed.

Thanks to international agreements on the phasing out of ozone-depleting substances, depletion of the ozone layer that protects the earth from damaging ultra-violet radiation has slowed significantly. Sweden has made considerable progress in this target area. Remaining emissions are mainly caused by leakage from older products in which ozone-depleting substances are used as refrigerants or insulating material. In 2003, the ozone hole over the Antarctic was one of the largest since the 1980s. Scientists believe that the ozone layer over Europe will not show signs of recovery before 2020 and will not be fully restored before 2050.

Examples of measures

- Tougher regulations on ozone-depleting substances need to be introduced in the EU and efforts should be made to disseminate knowledge about the best available techniques for the handling and safe disposal of these chemicals.
- The cutoff date for using ozone-depleting substances should be moved forward for each application as soon as this becomes technically feasible.
- Support to developing countries in the fields of legislation and supervision should be stepped up along with Sweden's contribution to the transfer of knowledge and technology.
- The Government will introduce the legislative amendments necessary to prevent the export of used refrigeration and air-conditioning equipment containing ozone-depleting substances.

A Safe Radiation Environment

Human health and biological diversity must be protected against the harmful effects of radiation in the external environment.

This EQO can be achieved.

Interim targets:

1. By 2010 environmental concentrations of radioactive substances emitted from all human activities will be so low as not to represent a threat to human health or biological diversity. The additional individual dose to members of the public will be lower than 0.01 mSv per person per year from each individual operation.
The target can be met.
2. By 2020 the annual incidence of skin cancer caused by ultraviolet radiation will not be greater than it was in 2000.
The target can be met provided more targeted measures are adopted.
3. Risks associated with electromagnetic fields will be studied on an ongoing basis and necessary action will be taken as any such risks are identified.
The target can be met.

Target 2 has been partly reformulated.

Our knowledge of the way in which ionizing and non-ionizing radiation affects people, animals and the natural environment is increasing but is still incomplete. Radiation protection has traditionally been confined to human beings. Extensive efforts are now being made at international level to develop radiation protection criteria for the environment as well. At present Sweden lacks a national system for the handling and disposing of radioactive waste from the health care services, research, industry, etc. The incidence of skin cancer continues to rise. Increasingly widespread use of telecommunications and IT has meant that members of the public are more exposed to certain types of non-ionizing radiation.

Examples of measures

- A national system for the handling and final disposal of radioactive waste from non-nuclear applications will be introduced.
- Continued targeted action is needed to change people's outdoor and sunbathing habits.
- Information initiatives should be aimed particularly at parents and staff responsible for the care of small children.

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 use.

This EQO will be difficult to achieve by 2020 in the case of many marine environments. In respect of land areas and other bodies of water, however, the objective is attainable.

Interim targets:

1. The target has been withdrawn.
2. By 2010 Swedish waterborne anthropogenic emissions of phosphorus compounds into lakes, streams and coastal waters will have decreased by at least 20% from 1995 levels. The largest reductions will be achieved in the most sensitive areas.
The target can be met.
3. By 2010 Swedish waterborne anthropogenic emissions of nitrogen compounds into sea areas south of the Åland Sea will have been reduced by at least 30% compared with 1995 levels.
The target will be difficult to meet.
4. By 2010 emissions of ammonia in Sweden will have been reduced by at least 15% compared with 1995 levels.
The target can be met.
5. By 2010 emissions of nitrogen oxides to air in Sweden will have been reduced to 148,000 tonnes.
The target can be met but further action will be needed.

Targets 2, 3 and 4 have been partly reformulated.

The situation in Sweden with regard to eutrophication has shown no perceptible improvement in the last 5–10 years. Marine environments have suffered most. Despite reductions in Swedish emissions of nitrogen and phosphorous compounds into the sea, the seas surrounding Sweden, in particular the Baltic Sea, are still severely affected by eutrophication. There are indications that the Baltic Sea has

undergone a dramatic dislocation, altering ecosystem structures and functions and shifting the sea into a new, stable equilibrium. If so, longer-term action will be needed to restore the Baltic Sea to its former state. The outlook for land areas and other bodies of water is brighter.

Examples of measures

- As agriculture accounts for a major share of emissions of nitrogen and phosphorous compounds, it is crucial that action against eutrophication in our waters includes efforts to ensure that the next rural development programme for the period 2007-2013 continues to incorporate suitably comprehensive, appropriately directed measures. Examples of such measures include financial compensation for growing break crops, foregoing autumn tillage, and the establishment of protected zones, wetlands and ponds.
- The Government intends to return to the Riksdag with a written communication outlining a strategy for future rural development programmes.
- The initiatives taken by the newly established water authorities will be vital to the work of achieving this EQO.
- The Government will also announce measures to deal with sewage and waste-water discharges. These include assigning the Environmental Protection Agency to look into the possibility of introducing more efficient waste-water treatment technology for private sewage systems in areas sensitive to eutrophication.
- New environmental quality standards for nitrates in groundwater will be introduced.
- The Government intends to commission the National Board of Forestry to carry out a study, in consultation with the Environmental Protection Agency, to ascertain the need for a new interim target on nitrogen accumulation and leaching in forest areas.

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.

This EQO can be achieved.

Interim targets:

1. By 2005 the competent authorities will have identified and drawn up action programmes for natural and cultural environments, in or in the vicinity of lakes or streams, that are of particularly high conservation value and require long-term protection. By 2010 long-term protection will be provided for at least half of these environments, which must be evenly distributed among the five water districts. There must be at least 15 no-fishing areas in every water district.
The target can be met but further action will be needed.
2. By 2005 the competent authorities will have identified and drawn up action programmes for the restoration of Swedish rivers and streams of high conservation value or with the potential to acquire high conservation value following remediation. By 2010 at least 25% of valuable and potentially valuable rivers and streams will have been restored.
The target can be met.
3. By 2009 water supply plans, including water protection areas and protection regulations, will have been adopted for all public and large private surface water sources. Large surface water sources are defined as surface waters used for the abstraction of water and serving more than 50 persons or providing more than 10 m³ a day as an average.
The target can be met.
4. By 2005 releases of aquatic animals and plants will be undertaken in ways which do not adversely affect biological diversity.
The target cannot be met in 2005.

5. By 2005 action programmes will have been prepared and introduced for threatened species and fish stocks that are in need of targeted measures. *The target can be met but further action will be needed.*
6. The target has been withdrawn.

Target 1 has been partly reformulated.

The aquatic environment suffered major encroachments in the 19th and 20th centuries: lake surfaces were lowered, extensive areas were drained, water channels were cleared and deepened, and Sweden's network of hydroelectric power plants was expanded. Green hydropower generation should give Sweden a good chance of improving the environment using existing plant. Many bodies of water are adversely affected by activities in the forestry and agricultural industries and by fishing. The percentage of wholly unaffected or mildly affected watercourses is now small but many previously damaged bodies of water can be restored. Although existing biotope protection provisions are effective and have been successful, they must be widened to include more threatened species and habitats.

Action on a range of basic issues is being taken in connection with this EQO: The relevant authorities are identifying especially valuable lakes and watercourses in need of long-term protection or restoration, and drawing up action plans. The Government will accordingly announce a range of measures aimed at heightening the effectiveness of restoration and protection work on lakes and watercourses.

Examples of measures

- Action is needed to ensure that fish stocking is carried out sustainably and that due consideration is given to the impact of stocking on the environment. Efforts must be made to ensure cooperation between local representatives and the relevant authorities.
- Advice on forestry measures will be targeted at landowners and entrepreneurs in connection with forestry measures implemented in the vicinity of lakes and watercourses. Better instructions and information material need to be developed for workers in forest conservation organizations and forestry sector personnel.
- The Government intends to examine the possibility of reviewing water rights rulings on conservation grounds. The Government will also look into ways of ensuring that supervision can be made more effective in terms of regulating water flows not covered by water rights rulings.

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.

This EQO can be achieved but further action will be needed.

Interim targets:

1. By 2010 long-term protection from development activities that restrict water use will be provided for water-bearing geological formations of importance in meeting present and future water supply needs.
The target can be met.
2. By 2010 the use of land and water will not cause changes in groundwater levels that adversely affect the water supply, soil stability, or the animal and plant life of adjoining ecosystems.
The target can be met.
3. By 2010 all bodies of water used for the abstraction of water intended for human consumption, and providing more than 10 m³ a day as an average or serving more than 50 persons, will meet the Swedish standards for good-quality drinking water with respect to anthropogenic pollution.
It may not be possible to meet the target in all areas.
4. The target has been withdrawn.

The state of Sweden's groundwater is generally good. In some places, however, polluted groundwater is responsible for poor water quality, primarily in private wells. High nitrate concentrations are often present in the agricultural regions of southern Sweden. Pesticide residues have been found in urban environments as well as in agricultural areas. The impact of urbanization on groundwater reserves is growing at a time when the need to use them to meet our water supply needs increases. Emissions of pollutants as a result of accidents is a risk factor.

Examples of measures

- Ground water reserves should be designated an item of national interest so as to ensure that greater importance is attached to them in the spatial and community planning process.
- Environmental quality standards for nitrates and pesticides in groundwater will be introduced.
- More municipal groundwater sources need appropriately planned and designed water protection zones and protective regulations.

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 characterized by a high degree of biological diversity and a wealth of recreational, natural and cultural assets. Industry, recreation and other utilization 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.

It will be difficult to achieve this EQO within the prescribed time.

Interim targets:

1. By 2010 long-term protection will be provided for at least 50% of marine environments of high conservation value and at least 70% of coastal and archipelago areas with significant natural and cultural assets. By 2005 an other five marine areas, plus a further 14 by 2010, will be protected as nature reserves. Together, these will form a representative network of marine natural habitats. In addition, an area in which fishing is permanently banned will be established by 2006 for evaluation by 2010. A further three coastal and open sea areas with permanent bans will be established in the Baltic Sea and the North Sea respectively by 2010 for evaluation by 2015.

The target can be met.

2. By 2005 a strategy will have been adopted for the preservation and use of the cultural heritage and agricultural landscapes in coastal and archipelago areas.

The target can be met.

3. By 2005 action programmes will have been prepared and introduced for threatened marine species and fish stocks that are in need of targeted measures.

The target cannot be met within the prescribed time.

4. By 2010 total annual bycatches of marine mammals will not exceed 1% of each population. Bycatches of seabirds and non-target fish species will have a negligible impact on the populations concerned or on the ecosystem.
The target can be met but further action will be needed.
5. By 2008 catches of fish, including bycatches of juveniles, will not exceed levels commensurate with maintaining fish stocks of a size and composition sufficient to ensure that the ecosystem's basic structure and functions are preserved. Populations will have been restored to levels well above biologically safe limits.
It may not be possible to meet the target.
6. By 2010 noise and other disturbance from boat traffic will be negligible in particularly sensitive and designated archipelago and coastal areas.
The target can be met.
7. By 2010 discharges of oil and chemicals from ships will be minimized and reduced to a negligible level by stricter legislation and increased monitoring.
The target can be met.
8. The target has been withdrawn.

Targets 1, 4 and 5 have been partly reformulated.

Success in achieving this EQO is heavily dependent on progress towards the EQOs A Non-Toxic Environment and Zero Eutrophication. As the latter will be difficult to attain, achieving the EQOs A Balanced Marine Environment, Flourishing Coastal Areas and Archipelagos will not be easy. Much also depends on progress in achieving the EQOs A Varied Agricultural Landscape, A Good Built Environment, Sustainable Forests and Flourishing Lakes and Streams.

Examples of measures

- Our seas have reached a critical state as a result of over-exploitation, discharges from shipping and problems associated with eutrophication. The Baltic Sea is particularly affected. The Government has accordingly decided to put a national marine environment strategy before the Riksdag.
- Areas meriting protection will be identified.
- Nineteen new marine reserves will have been established by 2010, five of which will have been completed by 2005.
- Six no-fishing areas will have been established by 2010 for evaluation by 2015. Three of these will be in the Baltic Sea, the other three in the North Sea. One no-fishing area will be set up for subsequent evaluation in 2006.
- An action plan to limit noise and other forms of disturbance from boat traffic will be drawn up.
- The Government's intensive efforts to promote the protection of areas of high conservation value from shipping, including oil tankers, will continue.

Thriving Wetlands

The ecological and water-conserving function of wetlands in the landscape must be maintained and valuable wetlands preserved for the future.

This EQO can be achieved.

Interim targets:

1. A national strategy for the protection and management of wetlands and wet woodlands will be drawn up by 2005.
The target can be met.
2. By 2010 long-term protection will be provided for all the wetland areas listed in the Mire Protection Plan for Sweden.
The target can be met.
3. By 2006 forest roads will not be built over wetlands with significant natural or cultural assets or in such a way as to adversely affect such wetlands.
There is insufficient background data to determine whether the target can be met.
4. At least 12,000 hectares of wetlands and ponds will be established or restored on agricultural land by 2010.
The target can be met but further action will be needed.
5. By 2005 action programmes will have been prepared and introduced for threatened species that are in need of targeted measures.
The target can be met.

Target 3 has been partly reformulated.

Each year over the past five years, approximately 10 of the over 500 action targets listed in the Mire Protection Plan for Sweden have been designated as protected areas. At present, approximately half the targets, corresponding to some 70% of the total area, are protected. However, the rate at which nature reserves are being created is too slow to meet the stated target by 2010. The percentage of roads that encroach in some way on wetlands is growing. The rate at which wetlands and ponds are being newly created or restored on agricultural land is too slow. At the

present rate, only about two thirds of the planned 12,000 hectares of wetlands and ponds will be established or restored by 2010.

Examples of measures

- Landowners must be encouraged to create and/or restore wetlands.
- Progress towards this EQO will depend to some extent on the scope and direction of measures in the forthcoming rural development programme for the period 2007–2013. The Government intends to return to the Riksdag with a written communication outlining a strategy for future rural development programmes.
- County timetables will be drawn up for implementing the Mire Protection Plan.
- To help meet Target 3, which deals with forest access roads, a knowledge base will be set up to assess the need for general mandatory consultation when building such roads.

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.

It will be difficult to achieve this EQO within the prescribed time.

Interim targets:

1. A further 900,000 hectares of forest land of high conservation value will be excluded from forest production by the year 2010.
The target can be met but further action will be needed.
2. By 2010 the amount of dead wood, the area of mature forest with a large deciduous element and the area of old forest will be maintained and increased by:
 - increasing the quantity of hard dead wood by at least 40% throughout the country and considerably more in areas where biological diversity is particularly at risk;
 - increasing the area of mature forest with a large deciduous element by at least 10%;
 - increasing the area of old forest by at least 5%;
 - increasing the area regenerated with deciduous forest.*The target can be met.*
3. By 2010 forest land will be managed in such a way as to avoid damage to ancient monuments and to ensure that damage to other known valuable cultural remains is negligible.
The target can be met.
4. By 2005 action programmes will have been prepared and introduced for threatened species that are in need of targeted measures.
The target can be met.

Many of the biological processes in forest environments need considerable time to recover. Today, most forest land in Sweden is managed in accordance with long-term sustainable forestry requirements. Only 4% of all productive forest land in Sweden is under formal protection. Most protected forest areas are located in the sub-alpine zone. Only 1.1% of forest land below the sub-alpine

boundary is protected. Progress in achieving this EQO will be affected by, among other factors, climatic changes, damage from grazing in growing forests, and acidification. The impact of atmospheric pollution, particularly in south-western Sweden, is still significant. The majority of ancient remains on forest land remain undiscovered.

Examples of measures

- A study will be commissioned to look into ways in which forests of high conservation value on state-owned land can contribute to achieving this objective.
- An evaluation will be made a) of the long-term economic cost-effectiveness of existing conservation instruments for the establishment of nature reserves, habitat conservation areas and conservation agreements on state-owned forest land, and b) of the forest industry's voluntary efforts in this regard.
- The geographic distribution of protected forest areas will be reviewed.
- The need to build up a knowledge base will be reviewed.
- Forest land will be managed in such a way that damage to ancient monuments and cultural remains is avoided.
- The Government intends to review the National Property Board's management duties in connection with the rules on profitable forestry in mountain areas. Consideration will also be given to the question of which government body is best suited to assume responsibility for state-owned forests in mountain areas.

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.

This EQO can be achieved with respect to the condition of arable land and long-term production capacity. However, further action will be needed to achieve the objective as a whole.

Interim targets:

1. By 2010 all meadow and pasture land will be preserved and managed in such a way as to preserve its value. The area of traditionally managed meadow land will increase by at least 5,000 hectares and the area of managed pasture land of the most endangered types will increase by at least 13,000 hectares by 2010.
The target can be met.
2. Small-scale habitats on farmland will be preserved to at least the same extent as today throughout the country. By 2005 a strategy will have been adopted to increase the number of such habitats on the agricultural plains of Sweden.
The target can be met.
3. The number and extent of culturally significant landscape features that are managed will increase by about 70% by 2010.
The target can be met.
4. By 2010 the national programme for plant genetic resources will be fully developed and there will be sufficient numbers of individuals to ensure the long-term conservation of indigenous breeds of domestic animals in Sweden.
The target can be met with respect to plant genetic resources. However, further action will be required if the target for domestic animal genetic resources is to be met.
5. By 2006 action programmes will have been prepared and introduced for threatened species that are in need of targeted measures.
The target can be met.

6. By 2005 a programme will have been prepared for the conservation of farm buildings of cultural heritage value.
The target can be met.

Animal husbandry as an agricultural component is essential to the long-term conservation and development of natural and cultural assets in the agricultural landscape. Favourable progress has been made since the rapid, pre-1990s decline in the total acreage of managed meadow and pasture land. Conditions for the preservation of cultural assets and conservation of species have thereby improved. The inclusion of relevant measures in terms of scope and direction in the rural development programme for the forthcoming period will have a significant impact on the sustainable development of the agricultural landscape.

Examples of measures

- Quality concerns will be integrated into follow-up studies of meadow and pasture land and small habitats.
- Work on animal genetic resources will be further developed.
- Increased application of ecological production methods is an important factor for the achievement of this EQO. Objectives for ecological production after 2005 will be dealt with in a separate communication to the Riksdag.
- If this EQO is to be achieved, the forthcoming rural development programme for the period 2007–2013 must continue to include relevant measures in terms of scope and direction. The Government intends to return to the Riksdag with a written communication outlining a strategy for future rural development programmes.

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.

This EQO can be achieved.

Interim targets:

1. By 2010 damage to soil and vegetation caused by human activities will be negligible.
The target can be met.
2. Noise in mountain areas from motor vehicles driven off-road and from aircraft will be reduced to meet the following requirements:
 - by 2015 at least 60% of light all-terrain vehicles will meet stringent noise standards (below 73 dBA);
 - by 2010 the noise from aircraft will be negligible both in class A regulated areas under the Off-Road Driving Ordinance (1978:594) and in at least 90% of the national park area.The target can be met.
3. By 2010 long-term protection, including where necessary management and restoration measures, will have been provided for the majority of mountain areas with representative and significant natural and cultural assets.
The target can be met.
4. By 2005 action programmes will have been prepared and introduced for threatened species that are in need of targeted measures.
The target can be met.

Although nature reserves and national parks provide protection to large areas containing natural and cultural assets, not enough is known about cultural assets in particular and their care and management. Tourism, reindeer herding, fish stocking and the fallout of atmospheric pollutants are some of the factors

impacting on recreational, natural and cultural assets in mountain areas. Noise from snow scooters, all-terrain vehicles and over-flying aircraft will clearly be difficult to deal with. We still know too little about vegetation, aquatic organisms, noise pollution, cultural environments and non-native and endangered species in mountain environments. Climate changes can have a major impact on mountain environments. Temperature changes cause vegetation zones to be displaced. For example, tree lines can shift and ground flora can be affected.

Examples of measures

- Off-road driving legislation will be reviewed and regulations requiring off-road driving plans will be introduced.
- In order to obtain a more detailed picture of the extent of aircraft noise, airline operators will be required to furnish information about their routes and operations.
- A survey will be carried out on the use of light all-terrain vehicles in mountain areas, and compliance with noise abatement regulations will be followed up.
- Noise requirements for snow scooters will be included in the relevant EU directives.

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.

It may not be possible to achieve this EQO within the prescribed time.

Interim targets:

1. By 2010 land use and community planning will be based on programmes and strategies for:
 - achieving a varied supply of housing, workplaces, services and cultural activities, in order to reduce transport demand and improve the scope for environmentally sound and resource-efficient transport;
 - preserving and enhancing cultural and aesthetic assets;
 - preserving, maintaining and enhancing green spaces and water bodies in urban and suburban areas for nature conservation, cultural and recreational purposes, and ensuring that the proportion of hard-surface areas in these environments does not increase;
 - promoting more efficient energy use – thereby reducing it over time – and promoting use of renewable energy resources and development of production plants for district heating, solar energy, biofuels and wind power.

The target can be met.
2. By 2010 built environments of cultural heritage value will be identified and placed under long-term sustainable management.

The target can be met but further action will be needed.
3. By 2010 the number of people who are exposed to traffic noise in excess of the guide values approved by Parliament for noise in dwellings will have been reduced by 5% compared with 1998.

The target will be difficult to meet.
4. By 2010 extraction of natural gravel in the country will not exceed 12 million tonnes per year.

The target can be met but further action will be needed.

5. The total quantity of waste generated will not increase and maximum use will be made of its resource potential while minimizing health and environmental effects and associated risks. In particular:
 - The quantity of waste disposed of to landfill, excluding mining waste, will be reduced by at least 50% by 2005 compared with 1994.
 - By 2010 at least 50% of all household waste will be recycled through materials recovery, including biological treatment.
 - By 2010 at least 35% of food waste from households, restaurants, caterers and retail premises will be recovered by means of biological treatment. This target relates to food waste separated at source for both home composting and centralized treatment.
 - By 2010 food waste and comparable wastes from food processing plants etc. will be recovered by means of biological treatment. This target relates to waste that is not mixed with other wastes and that is of such a quality as to be suitable, following treatment, for recycling into crop production.
 - By 2015 at least 60% of phosphorus compounds present in wastewater will be recovered for use on productive land. At least half of this amount should be returned to arable land.

The target can be met but further action will be needed.
6. The target has been withdrawn.
7. The environmental impact of energy use in residential and commercial buildings will decrease and will be lower in 2010 than in 1995. This will be achieved, inter alia, by improving energy efficiency and eventually reducing total energy use, and ensuring that the proportion of energy from renewable energy sources increases.

The target can be met.
8. By 2020 buildings and their characteristics will not have adverse impacts on health. It must therefore be ensured that:
 - all buildings in which people frequently spend time or spend extended periods of time have ventilation of documented efficiency by 2015;
 - radon levels in all schools and pre-schools are below 200 Bq/m³ air by 2010; and that
 - radon levels in all dwellings are below 200 Bq/m³ air by 2020.

There is at present insufficient background data to determine whether the target can be met.
9. *The target (formerly interim target 9) has been incorporated into interim target 5.*

10. *The target (formerly interim target 10) has been incorporated into interim target 5.*

Targets 1, 2, 4 and 7 have been partly reformulated. Target 5, which now subsumes interim targets 5, 9 and 10, has also been supplemented to some extent. Target 3 will be reviewed, with greater emphasis being placed on health effects and the number of people disturbed by noise from different sources.

This EQO is a complex issue and the interim targets only partially reflect popular conceptions of a good built environment. This makes it difficult to pronounce on the objective's overall development.

Overall spatial planning under the Planning and Building Act⁶ varies from municipality to municipality. Traffic noise is a major public health problem, particularly in larger urban areas. Some 2 million people in Sweden are exposed to traffic noise levels in excess of prevailing guide values when outside their homes. Approximately 80% of traffic noise is caused by road traffic. The problem is expected to be remedied within one or two years in the case of Sweden's worst affected buildings. The use of natural gravel in concrete aggregates has fallen sharply since 1987. There is still considerable scope for more efficient energy use in residential and commercial buildings and premises. Radon decontamination in residential buildings is up on previous years.

Examples of measures

- The Government plans to commission relevant central agencies to provide county administrative boards and municipal councils with further guidance on compiling and processing basic spatial planning data.
- A comprehensive survey of ambient noise will be conducted by 2007 and municipalities with more than 250,000 inhabitants will have drawn up action programmes by 2008. The target dates for municipalities with more than 100,000 inhabitants are 2012 and 2013 respectively.
- Further information on the technical status of buildings and their impact on the indoor environment will be produced.
- Good indoor air quality criteria should be developed.
- The Government intends to examine the need for economic incentives aimed at stepping up recovery of phosphorous compounds for use on productive land and promoting the development of wastewater systems and technologies for phosphorous recovery.

Further measures are set out under the section heading, *A strategy for more efficient energy use and transport*, below.

⁶ *Plan och bygglagen (PBL).*

A new environmental quality objective: *A Rich Diversity of Plant and Animal Life*

A new, 16th EQO on biological diversity is proposed, as follows:

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 wellbeing.

Achieving this objective within a single generation presupposes, inter alia, that:

- action by central and local government to preserve biological diversity are undertaken from a landscape perspective on ecosystem management,
- the buffering capacity of ecosystems – their ability to cope with change and undergo further development so that they can continue to be productive and deliver goods and services – is maintained,
- the landscape, lakes and seas are constituted so as to secure species habitats and dispersal pathways,
- habitats exist in sufficient numbers to maintain long-term viable species populations (favourable conservation status),
- where important habitat types have been damaged, these must be restored, significantly improving conditions for biological diversity. Examples include habitats that have shrunk substantially in area and/or distribution, whose quality as habitats has been generally degraded, or which support large numbers of species or genetically distinctive populations,
- the distribution throughout the country of animal and plant species within their natural ranges ensures sufficient genetic variation within and between populations,
- non-native species or genetically modified organisms posing a potential

- danger to human health or threatening to deplete biological diversity in Sweden are not introduced,
- biological diversity is primarily maintained through a combination of sustainable use of biological resources, conservation of species and their habitats, measures to minimize the pollutant load, and action to limit climate impact;
 - species that are exploited, e.g. through hunting or fishing, are managed in such a way that they can be harvested as a renewable resource in the long term without affecting ecosystem structures or functions,
 - people have access to natural and cultural environments with a rich diversity of plant and animal life that helps promote and maintain high standards of public health,
 - Sweden's biological cultural heritage is managed in such a way that important natural and cultural assets are preserved,
 - government and citizens alike are widely knowledgeable about and aware of the importance of biological diversity,
 - traditional and local knowledge about biological diversity and its benefits is safeguarded and used appropriately, and
 - Sweden takes an active part in international environmental cooperation aimed at preserving biological diversity.

Interim targets

Three interim targets for this EQO are proposed:

1. Halting loss of biodiversity

By 2010 loss of biological diversity in Sweden will have been halted.

2. Reducing the proportion of the total number of species under threat.

By 2015 the conservation status of threatened species in Sweden will have improved to the point where the proportion of evaluated species classified as threatened will have fallen by at least 30% on corresponding figures for 2000, with no increase in the percentage of species that have become regionally extinct.

3. Promoting sustainable development

By 2007 follow-up methods will have been developed with a view to ensuring that biological diversity and biological resources, both terrestrial and aquatic, are used in a sustainable manner. By 2010 biological diversity and biological resources, both terrestrial and aquatic, will be used in a sustainable manner, so that biodiversity is maintained at the landscape level.

Why a new environmental quality objective?

Biological diversity is the basis of all human life. It is crucial to the survival and wellbeing of the human species. However, it is now diminishing rapidly. This applies to genetic and functional diversity, species and their habitats as well as whole ecosystems.

Sweden has signed and ratified a number of international conventions on biological diversity. The global Convention on Biological Diversity (CBD) is one example. Sweden and other countries are committed, under the action programme adopted by the EU at the World Summit on Sustainable Development in Johannesburg in 2002, to halting loss of biodiversity by 2010. In the Government's view, this will require a nationally coordinated effort.

The new EQO will help ensure that efforts to preserve and use biological diversity sustainably are more efficient, effective, focused and better coordinated. A number of biodiversity-related aspects already addressed in existing interim targets have not been adequately dealt with. These include knowledge building, communication, education and public awareness. The new EQO, combined with measures forming part of the Strategy for the Management of Land, Water and the Built Environment, can remedy these deficiencies.

The purpose of the new EQO is not to freeze-frame a particular environmental state. Biological diversity is about continuous development and change.

Despite vigorous efforts, progress in preserving and developing biodiversity has not been rapid or widespread enough to attain national or international objectives. Achieving this EQO within a generation will prove a formidable challenge. In the Government's view, Sweden has the potential to succeed. However, this will require the application of more resources and measures than those proposed for the existing 15 EQOs.

Achieving the EQO

The greatest threat to biological diversity is the degradation or destruction of ecosystems and species habitats. At present, our knowledge of the biodiversity mix likely to be of significance to future generations is somewhat sketchy. Efforts should be aimed at improving conditions for biodiversity conservation and preserving habitats. Preservation is in turn contingent on the sustainable use of land and water. If biodiversity is to be preserved, conservation and sustainable use must go hand in hand.

Action should be focused on ecosystems and habitats. At the same time, it is important that interim targets reflect different levels and aspects of biodiversity, such as the importance of genetic variation. It is also important that this EQO is not restricted to species currently under threat.

Another basis for action is the adoption of a landscape and ecosystem perspective. The landscape, including bodies of water, should be treated as an indivisible whole, with natural and cultural assets forming an integral part. It is also vital that existing knowledge of biodiversity in the community is turned to account when developing and implementing measures, processes and initiatives.

The Government has emphasized that the introduction of a new environmental quality objective must not adversely affect biodiversity-related efforts in pursuit of other EQOs. It is accordingly proposed that only cross-sectoral issues that do not fall under any of the other EQOs be addressed under this objective. Overall responsibility for the 16th EQO should lie with the Environmental Protection Agency. The duties of the sectoral agencies in this sphere will remain unchanged.

Interim target 1: Halting loss of biodiversity

Halting loss of biological diversity by 2010 is an international commitment which Sweden is pledged to fulfil. The Government considers that this undertaking should be followed up by a national interim target. Its assessment is that the target can be met provided the measures relating to biological resources set out under the EQOs and in the resource management strategy are implemented.

The target involves halting biodiversity loss at every level – genetic, species and ecosystem. Known genetically valuable and distinctive populations will be preserved. Efforts will also be made to enhance our current knowledge so that genetic variation can be incorporated into future interim targets and the EQO as a whole. In the case of species whose conservation status has worsened, the decline will be halted. Flourishing species whose conservation status is favourable will retain that status. The loss of other habitat types and species habitats will also be halted.

Biodiversity plays a key role in maintaining ecosystem functions and processes. It is especially important to preserve the buffering capacity of ecosystems – their ability to withstand and absorb natural disturbances such as storms and fires, and pressures on the environment caused by human activity. This capacity is crucial to the ability of ecosystems to continue to supply us with goods and services in the future.

Functioning ecosystems are not only of major economic value; they also make a significant contribution to our quality of life. One example is the natural water cycle, which regulates the climate, cleans the air and water and produces fish.

We still don't know enough about the capacity of ecosystems to cope with change and recover from strains and impacts, about genetic variation, or about the way species function within ecosystems.

Action: The Government intends to task the Environmental Protection Agency with drawing up a national action programme for the preservation of genetic variation by 2007. The agency will work in close cooperation with other relevant authorities.

Interim target 2: Reducing the proportion of threatened species

The present very rapid and unnatural rate of species extinction is a direct result of human activity and its impact on the environment. The Swedish Red List now contains 4,000 species threatened with extinction. Of these, almost 2,000 are classified as critically endangered, endangered, or vulnerable. The Government has calculated that to achieve this EQO it will be necessary to reduce the proportion of the total number of threatened species by at least 30% on 2000 levels. The percentage of extinct species should not have risen during that period.

The conservation status of threatened species in all major ecosystems (seas, forests, mountains, etc.) needs to be improved and further action is required. Although interim targets for action programmes have been set under other EQOs, the Government considers that further programmes for protecting threatened species will be needed. In the Government's view, the target can be met provided all action programmes are implemented.

Action: The Government intends to task the Swedish Environmental Protection Agency with coordinating all work on action programmes. The country administrative boards also have an important role to play here. However, success is contingent on the active contribution of all relevant actors.

Interim target 3: Promoting sustainable development

Biodiversity is most abundant in environments utilized by humans: for agriculture, forestry, fishing and other types of production, or for buildings, plant and other structures. The sustainable use of biodiversity and biological resources is therefore essential.

Interim target 3 is primarily concerned with defining an integrative approach to the landscape and highlighting its sustainable use. In other words, the aim will be to preserve biological diversity and biological resources in the landscape, as defined by the various ecosystems – forest, agricultural land, lakes and seas – that make it up. Where existing EQOs address biodiversity issues, these focus for the most part on individual ecosystems. The new interim target – based on the definitions of sustainable use and biological resources set out in the Convention on Biological Diversity – will therefore serve as a valuable complement.

Sustainable use methods and indicators for land and water areas will be developed in stages by 2007 in order to meet the target by 2010.

Action will require close cooperation between agencies and other actors, and sectoral responsibility will be of vital significance.

Action: To meet the target, a range of measures will be required, including the production of regional landscape strategies, the development of operational definitions and criteria for sustainable use, and a package of measures to deal with non-native species. Most of these have been proposed in the *Strategy for the Management of Land, Water and the Built Environment*.

The Government also intends to commission the National Institute for Economic Research to compile the results of efforts to assess the economic value of biological diversity. The work will be carried out in cooperation with the Environmental Protection Agency and other bodies. The assignment is to be completed by 2007.

Follow-up

It is particularly important that Interim target 1 be followed up in the short term so that an account of what has been achieved and what further action will be needed can be prepared by 2010. The follow-up should be based on the framework of indicators and benchmarks used in international and European work on biological diversity.

The Government intends to give the Environmental Protection Agency a special assignment to this effect. In Sweden's case, the base year for biodiversity status measurements should be 2000.

Other sources of background data and supporting documentation for the follow-up of this EQO include Swedish environmental monitoring activities, follow-ups by sectoral agencies, work on the Habitats and Birds Directives, etc.

Building and disseminating knowledge

To develop appropriate measures, a thorough knowledge of Sweden's ecosystems, habitat types, species habitats, distinctive genetic variation, etc. is essential.

The Government intends to return to the Riksdag with proposals for measures aimed at building and disseminating knowledge about biological diversity. The proposals will be based on the report of a committee of inquiry (dir.⁷ 2004:144) appointed in 2004.

⁷ Terms of reference.

The formal education system, along with adult education associations, folk high schools and other organizations have a major part to play in imparting basic knowledge about, understanding of and insight into nature and natural assets. Local and traditional knowledge which has been passed down from generation to generation is of great value to the preservation and sustainable use of biological diversity. Valuable sources of local knowledge include farmers, foresters, the Sami, fishermen and hunters.

Action: In the Government's view, a national programme for local and traditional knowledge should be set up. The Swedish Biodiversity Centre will accordingly be entrusted with the task of developing one.

The economic implications

Biological diversity is the basis of our welfare. It is essential if our fields, forests, seas and lakes are to offer opportunities for outdoor recreation while providing us with food and other commodities. These benefits in turn help generate a broad range of economic activities in local, regional and international markets. Estimates show that approximately 40% of the global economy is based on biological products and processes.

Ecosystems not only provide us with goods, but also with services. They clean the air and water, break down waste and hazardous substances, provide protection against erosion, produce fertile soil, keep down vermin and pollinate fruit and flowers, to cite just a few examples. These services are also of major economic value.

The aim of the proposed EQO is to ensure that ecosystems can continue to deliver these goods and services well into the future. As there is a direct connection between biodiversity and the ability of economic systems to function, this quality objective will in all likelihood lead to economic gains in the long term.

In the short and medium term, however, efforts to achieve this EQO will involve costs and consequences for the Government, local government authorities, companies and individuals.

Three strategies for achieving Sweden's environmental quality objectives

About the strategies

The solution to most of today's major environmental problems is directly related to how and what we consume and produce. Sustainable production and consumption may be defined as the competitive development, manufacture, sale, consumption and final disposal of environmentally sound products and services. Achieving the EQOs and achieving sustainable development is thus our common responsibility – our shared mission.

Three key action areas have been defined. Measures must be taken to: 1) promote the changeover to sustainable energy and transport systems, 2) create a non-toxic environment and resource-efficient ecocycles, and 3) ensure effective management of natural resources. Following up and further developing the three action strategies previously adopted by the Riksdag is therefore a matter of urgency. *More efficient energy use and transport* – primarily to reduce emissions from the energy and transport sectors and increase the proportion of renewable energy sources used by these sectors.

Non-toxic and resource-efficient ecocycles – to reduce the use of toxic pollutants and their emission from diffuse sources, and to promote energy- and materials-efficient ecocycles.

Management of land, water and the built environment – to preserve biological diversity and valuable cultural environments and protect people's health, and to promote environmentally sound spatial planning and sustainable building structures.

A key point of departure for these strategies is that they should contribute to the simultaneous achievement of several EQOs and interim targets. The measures must aim at economically, socially and environmentally sustainable development. Continued efforts to achieve the EQOs must accordingly be marked by:

- measures designed to have short- as well as long-term effects,
- integrated approaches and cost-effectiveness,

- the development of effective policy instruments such as legislation, economic incentives, information material, education, research and development, etc.,
- involvement on the part of all key actors in the community, in particular the business sector and local government authorities,
- particular focus on EU action in the environmental sphere, and
- evaluation of previously implemented measures.

General measures in support of the strategies

The Government intends to appoint a committee of inquiry to be tasked with securing a general overview of economic instruments in the environmental sphere. The aim is to undertake a basic analysis and evaluation of such instruments from a holistic perspective.

The Environmental Protection Agency will be tasked with drawing up an action plan for environmentally sound public procurement. The plan will aim at extending and strengthening procurement practices and at ensuring that the EQOs serve to promote procurement of the most environmentally sound products.

A strategy for more efficient energy use and transport

The Government affirms that the measures to promote the changeover to sustainable energy and transport systems dealt with in the present strategy are crucial to Sweden's chances of achieving the EQOs *Reduced Climate Impact*, *Clean Air*, *Natural Acidification Only*, *Zero Eutrophication* and *A Good Built Environment*. The energy and transport sectors in fact account for the bulk of emissions of carbon dioxide, nitrogen oxides, sulphur dioxide, volatile organic hydrocarbons and particles.

Sweden's energy policy goal – the promotion of efficient energy use and a cost-effective energy supply that has no adverse impact on health, the environment or the climate – is largely linked to the country's climate policy goals. The strategy for reducing climate impact is dealt with in the bill to be put before the Riksdag in 2005. In the short term – up until 2010 – measures will be aimed primarily at achieving interim targets relating to:

- greenhouse gas and nitrogen oxides,
- nitrogen dioxide and particular emissions in certain urban areas, as specified under the *Clean Air* EQO.
- supporting/background data for spatial planning by municipal councils, and
- proposals for a new interim target on particles (Interim target 5), under the *Clean Air* EQO.

Strategic action areas

The measures discussed or proposed in the present strategy can be classified under one of the following main area headings:

- More efficient use, production and transfer of energy in the industry, energy, building construction and transport sectors, with the primary aim of reducing emissions to air.
- A greater commitment to renewable energy sources.
- The planning and development of buildings, settlements and other social

structures that encourage environmentally sound transport and reduced vehicle use.

The section on more efficient energy use and transport also includes measures for the further development of policy instruments, primarily:

- economic incentives aimed at intensifying environmental management,
- tighter emission requirements for motor vehicles and machines,
- research and development and targeted information initiatives.

Action proposals and development of policy instruments

An account of the measures regarded by the Government as most vital to the achievement of the EQOs and their interim targets is given below. A number of these will also be dealt with in the 2005 climate bill, the 2005 transport policy bill and the budget bill for 2006.

More efficient energy use

Sweden should continue to pursue a vigorous and successful energy efficiency policy targeted at the industry sector, buildings and settlements, and the energy sector as a whole. Motor vehicles must also become more energy-efficient.

It is important that Swedish efforts to promote energy efficiency have a governing objective. An EU directive on energy end-use efficiency and energy services is currently being deliberated. It is proposed that member states adopt an energy end-use savings target of 1 % per year. The Government is actively seeking the inclusion of an energy goal in the final directive, an objective which will also apply at national level.

Energy policy programmes encourage more efficient energy use. Under the 2002 energy policy programme, a total of SEK 1,000 million was allocated for the period 2003–2007 to stimulate energy-efficient technology and promote more efficient energy use through information and advisory initiatives. A special energy efficiency enhancement programme aimed at energy-intensive industries has also been introduced. As of 1 January 2005, the latter will offer companies with electricity-intensive production processes the opportunity to take part in five-year energy efficiency enhancement programmes. In exchange for their participation, the companies will be exempted from energy tax. In Sweden, buildings account for approximately 40% of total energy use, including central heating, hot water and electricity (for heating, central cooling/ventilation systems, lifts, stairway lighting, and other systems belonging to the property

owner, and for ordinary household appliances belonging to the tenant. Examples of measures intended to encourage more efficient energy use and other environmental improvements in new and existing buildings include:

- A tax reduction, applying from 1 January 2004 to 31 December 2006, for certain environmentally enhancing systems and devices installed in single-family houses.
- The RMI (repairs, maintenance and improvement) deduction, applying from 15 April 2004 to 30 June 2005, on building construction expenses, including energy-saving measures.
- Investment support for energy-saving measures and conversions to renewable energy sources in public buildings will be made available between 15 May 2005 and 31 December 2006. In the case of solar cell installation, support will be extended until 31 December 2007.
- The National Board of Housing, Building and Planning has been tasked with assessing and giving concrete form to measures proposed in the Environmental Advisory Council's memorandum, *A Strategy for Energy-Efficient Buildings*⁸. The task is to be carried out in collaboration with the Swedish Energy Agency and the Environmental Protection Agency. The Council has proposed a series of measures. These include amended legislative provisions governing new building construction and renovation, and economic instruments. Examples include interest-free loans and grants for energy efficiency-enhancing solutions, a differential tax on white goods based on energy consumption, and changes in energy companies' pricing policies. The council has also looked at ways in which tighter planning and building regulations could lead to more efficient energy use. The aim of the board's assignment is to realize the potential for energy savings in the running of dwellings and commercial buildings. The Government intends to return to the Riksdag with a bill on energy efficiency enhancement in buildings.
- The Council has proposed that real estate tax should be adjusted so that measures to enhance energy efficiency do not lead to higher taxation. The Government intends to assess the proposal without, however, losing sight of the principle that property tax must be based on market values.

Renewable energy sources and other measures

At just under 30%, the proportion of total renewable energy sources in Sweden is high. In the case of electricity production, the figure is 50% over a normal year.

⁸ *Strategi för energieffektiv bebyggelse.*

Our long-term aim is to base Sweden's energy supply entirely on renewable energy sources.

The objectives established with the aim of increasing the use of renewable energy sources must continue to be developed. It is the Government's intention to continually review, follow up, update and further clarify these objectives. Although all actors have an important part to play in the changeover to sustainable production, state-owned enterprises should set an example while continuing to observe the requirement to conduct their operations on commercial lines.

The electricity certificate system

The main policy instrument for expanding the proportion of renewable energy sources is the electricity certificate system. The system was introduced on 1 May 2003 and has worked well. There is a need to keep the system in place long enough to ensure that investment, in, for example, large scale windpower generation, can get under way. Ambition levels should also be raised. The Government intends to re-address this issue before the end of 2005.

Renewable fuels

The introduction and use of renewable vehicle fuels is essential to the reduction of carbon dioxide emissions. The main biofuels used in Sweden today are bioethanol, rape methyl esters (RME) and biogas. According to preliminary statistics from 2003, these then accounted for 1.3% of all fuel used for transport in Sweden. There are some 100 refuelling points in the country.

The Government will continue to encourage the long-term introduction of renewable fuels. A legislative proposal which, if approved, will require all petrol stations to supply renewable fuels is being drawn up. This is scheduled to come into force on 1 January 2006. The Government is also actively seeking to change the specification for Environmental Class 1 diesel. The new specification will allow all diesel fuels to be mixed with up to 5% of RMEs.

The feasibility of introducing a suitable fuel certificate system should be further investigated. The target date for the system to take effect should be 1 January 2009.

Under an EU directive, a maximum of 5% of ethanol may be mixed with petrol. The Government will continue to press for this to be raised to 10%.

Economic instruments in the transport sector

If emission targets for greenhouse gases, nitrogen oxides and particles are to be met, vigorous action to reduce emissions in the transport sector will need to be taken. This applies particularly to road traffic. A large number of economic instruments are already in place. More need to be developed – for example, as part of the green tax shift – to strengthen environmental management. The Government's proposals:

- *Carbon dioxide-based vehicle tax.* A vehicle tax based on a vehicle's carbon dioxide emissions instead of its weight was announced in the 2005 budget bill. The introduction of such a tax on light vehicles is intended to encourage more buyers to choose fuel-efficient cars. The Government will re-address this issue during the year and the new rules should come into force in 2006.
- *An environmentally oriented tax adjustment for heavy goods vehicles.* The Government considers that less tax should be payable on heavy goods vehicles that meet the latest exhaust emission requirements for new vehicles. The matter will be pursued so that the new rules can come into force on 1 October 2006.
- *Congestion tax.* The new law on congestion tax will be applied in Stockholm's inner city for a trial period, ending in August 2006. If the trial turns out well and the scheme is made permanent, it could result in reduced emissions of nitrogen oxides, particles, hydrocarbons and carbon dioxide.
- *A per-kilometre tax for heavy goods vehicles.* The introduction of a per-kilometre tax for heavy goods vehicles could represent an important step towards the sustainable development of the road traffic sector and the achievement of the EQOs. The Government intends to return to this issue in the upcoming transport policy bill.
- *Differentiated shipping lane and landing charges.* The system of differentiated shipping lane charges involves discounts for ships using low-sulphur oil or which have installed nitrogen oxide removal equipment. The Government calculates that emission levels will fall as a result of its decision to further increase the discounts. The Government will continue to press for the introduction of a system of differentiated shipping charges in the EU. Greater environmental differentiation of aviation charges is also important, internationally as well as nationally, and different economic instruments will be considered.

Increasing and extending the nitrogen oxide charge

Since 1992, a law has been in place requiring the payment of an environmental charge on nitrogen oxide emissions from certain types of boilers, stationary internal combustion engines and gas turbines used in energy production. The environmental charge system has resulted in the cost-effective reduction of nitrogen oxide emissions. However, further measures are required.

The Environmental Protection Agency's proposal to raise charges and extend them over a wider range of activities, could lead to a further reduction in emissions. The Government has commissioned the agency to further examine the potential effects of its proposal on the industries concerned.

Tighter emission requirements for vehicles and machines

Emissions of nitrogen oxides, hydrocarbons and toxic substances are falling as advanced technology for controlling exhaust emissions is introduced. On the other hand, carbon dioxide emissions from road vehicles are still rising. The vehicle industry in the EU has voluntarily agreed to reduce fuel consumption in new vehicles by 25% by 2008. However, it does not seem likely that this target will be met. The adoption by the European Commission of a new, common programme for the introduction of new technology aimed at reducing carbon dioxide emissions is therefore a matter of particular urgency. Sweden is also proactive within the EU in connection with a number of other issues relating to tighter emission requirements. These are:

- improved quality assurance for the regulatory framework. Examples include a more reliable test method for measuring fuel consumption in light vehicles.
- the forthcoming EU exhaust emission requirements for diesel-powered vehicles. Here, the Government has been pressing the Commission to further tighten the requirements and bring them into line with those governing petrol-driven vehicles.
- The Commission has adopted a recommendation to introduce voluntary emission standards in the case of light diesel-powered vehicles with especially low particular emission levels. The Government intends to return to the Riksdag with a proposal on ways of promoting the sale of such vehicles.

Information, research and development

Information about the EQOs and their interim targets must be disseminated to all actors involved or concerned, as well as among the general public. There must be continuous, active dialogue with the country's citizens. Central and local government authorities, businesses and organizations have a special responsibility here.

An earlier, successful campaign on climate issues effectively increased knowledge and awareness of the greenhouse effect and other issues. The Government intends to return to the matter of future climate information work in the 2005 climate bill.

The changeover to a sustainable energy system is predicated on greater knowledge and technological development. In view of the urgency of the situation, the Government has increased its allocation on energy research for 2006–2007 by SEK 200 million.

A strategy for non-toxic, resource-efficient ecocycles

The primary aim of this strategy is to contribute to the achievement of the EQOs *A Non-Toxic Environment*, *A Protective Ozone Layer* and *A Safe Radiation Environment* along with their interim targets, as well as parts of the EQO *A Good Built Environment*. To a limited extent, it will also contribute to the attainment of interim targets under *Zero Eutrophication*, *A Balanced Marine Environment*, *Flourishing Coastal Areas and Archipelagos*, and *Reduced Climate Impact*.

The strategy is designed to ensure the sustainable use and management of society's natural resources, including waste. Thus, for example, the use of chemical substances that have an adverse impact on people's health or the environment must cease altogether or be heavily restricted. Polluted land and water areas must be made free from toxins, hazardous substances and other pollutants. While action must be taken to minimize the quantity and dangerous properties of waste, its potential as a resource should be exploited as far as possible.

Some strategic starting points:

The closed loop principle

What we extract from the natural environment must be sustainably used, reused, recycled or finally disposed of using the smallest possible amount of resources and without damaging the environment.

The lifecycle perspective

Action proposals must include a lifecycle perspective. Measures must be aimed at more than one environmental aspect or at several phases in a product's lifecycle. Conflicts between objectives must be avoided as far as possible.

Greater consensus among actors

Identifying and developing measures capable of generating synergies between EQOs call for a greater degree of consensus among all the actors involved.

Work at international level

This strategy should serve as a basis for Sweden's international initiatives – both at EU and global level – relating to the restriction, use and management/disposal of chemical, products and waste.

Cost

More than ever, the cost of today's environmental problems and resource waste must be calculated on the basis of prices that reflect the cost of a product's environmental impact throughout its life cycle.

Guidance and supervision

Guidance and supervision are needed to ensure that waste receives the right type of treatment. They are also necessary to ensure effective protection for the environment in the production stage, when the product is used and when the waste is disposed of.

Other policy instruments

Efforts should be made to determine whether further action is needed in the legislative sphere, research and development, the information field or in terms of economic instruments.

Strategic action areas

Three strategic action areas have been defined for this strategy:

- Non-toxic, resource-efficient production.
- Non-toxic, resource-efficient consumption.
- Non-toxic, resource-efficient waste disposal.

Action proposals and development of policy instruments

An account of the measures which in the Government's view are needed to supplement previous action to achieve the EQOs and their interim targets is given below.

Non-toxic, resource-efficient production

Non-toxic, resource-efficient production is above all essential to the attainment of the interim targets under the EQOs *A Non-Toxic Environment*, *A Safe Radiation Environment* and *A Good Built Environment*. The aim of the strategy is not only to limit the use of dangerous chemical substances in products and processes, but also to minimize the use of materials in general in order to keep the amount of waste generated and danger levels at a minimum.

Identifying and dealing with sources of pollution

Vigorous measures must be taken to prevent and, over time, reduce concentrations of harmful substances such as PCBs and dioxins. The work of finding and dealing with the sources of the toxins that impact ecosystems and form the subject of current dietary advice on fish consumption should be undertaken at international level and in closer cooperation with other countries. The Government will press for the establishment of a working party tasked with reducing toxin levels in Baltic Sea fish. The group should be made up of representatives of all the Baltic rim countries and the European Commission working in collaboration with relevant EU bodies and the Helsinki Commission (HELCOM).

A national action plan is also needed to reduce the total environmental load of PCBs, dioxins and furans on the Baltic and North Seas, and other substances of particular concern originating in Sweden.

Statistics on material flows

The production and consumption of goods and services impact the environment at every stage of the process – extraction, production, use, disposal and transport. Production and consumption generate material flows, and more must be known about material flows and the material flow requirement (MFR) if the EQOs are to be achieved.

Statistics on material flows are scattered among a number of government agencies and in some cases need improving. Statistics Sweden will be tasked with submitting a proposal involving the accounting of flows measured in tonnes in industrial and foreign trade statistics.

Health and the environment

When people are exposed to noise or air pollution, for example, their health is adversely affected. Environmentally related illnesses and ill-health also entail a major economic cost to society. As our knowledge in this area is still deficient, the Government intends to promote further research into the causal links between ill-health and environmental factors.

Pesticide use

A national action programme for the use of pesticides has been adopted. The aim is to ensure long-term sustainable use at acceptable risk levels. The Government considers that there are strong arguments in favour of continued efforts to reduce the risks associated with pesticide use, at national level and through continued efforts to influence the composition of the EU regulatory framework. The current action programme will be extended until the end of 2009.

Non-toxic, resource-efficient consumption

Non-toxic, resource-efficient consumption is a primary contributing factor to the attainment of the EQOs *Zero Eutrophication*, *A Non-Toxic Environment*, *A Safe Radiation Environment* and *A Good Built Environment* and their respective interim targets. This strategy is concerned with improving information on and knowledge about chemical substances in products and the risks involved when consuming them. Households, public sector actors and the business community must be able to make active choices to restrict the use of hazardous substances.

Information on chemical substances in products

In the Government's view, producers should be required by law to supply information identifying the chemical substances – including their properties – contained in their products. The voluntary information scheme already in place should be developed and strengthened as a complement to these requirements. The Government will continue to press for the creation of a common EU system for producing health and environmental information on goods which are not chemical products. Voluntary information systems such as environmental product profiles and eco-labelling should be encouraged as a complement to existing requirements.

Information on the environmental impact of products

The Government considers that there is a need to develop information on the environmental impact of products and that such information should embrace the entire production chain. The Environmental Protection Agency has been tasked with submitting a report by 31 December 2006 on how this should be achieved.

Non-toxic, resource-efficient waste disposal

A non-toxic, resource-efficient waste disposal system is a primary contributing factor to the achievement of the EQOs *A Non-Toxic Environment*, *A Safe Radiation Environment* and *A Good Built Environment* and their respective interim targets. The strategy involves utilizing waste on the basis of its inherent properties, without spreading hazardous chemicals. Waste recycling is a sound principle that should be developed in accordance with Swedish and EU waste policy, which includes the waste management hierarchy.

Use of waste for structural purposes

Following the waste disposal tax introduced in 2000 an increasing proportion of waste has been used in structural work such as road embankments and noise barriers. The Government considers that the Environmental Protection Agency should seek to ensure that relevant actors receive guidance on how to use waste without putting people's health or the environment at risk. The agency will also be tasked with proposing binding regulations governing the use of such waste.

Pollution and risk of infection from sewage sludge

The Government takes the view that existing regulations governing the use of sewage sludge on arable land should be tightened. It therefore intends to bring in an ordinance containing more stringent provisions for reducing pollutant discharges and the risk of infection.

Treatment of wastewater

Discharges of nitrogen and phosphorus compounds from private sewage systems need to be further reduced. The Government will commission the Environmental Protection Agency to examine the feasibility of introducing a subsidy for the development and introduction of new technology. The subsidy will not be intended for measures designed to comply with current legislative provisions, but for undertakings that meet longer-term wastewater treatment requirements or solutions aimed at closing the organic loop by returning nutrients in organic matter to farm soils.

The Government also emphasizes the need to improve nitrogen removal in sewage treatment plants that fail to meet standards set out in the agency's instructions. The Government is also considering tasking the agency to look into the feasibility and suitability of introducing tighter nitrogen removal requirements in treatment plants in coastal areas.

Toxic substances from waste incineration

The Government considers that the discharge and formation of toxic substances from waste incineration must be reduced to safe levels. The Environmental Protection Agency has been assigned to identify sources of unintentionally created substances, such as dioxins. The agency's report, released in March 2005, will form the basis for further government action. The Government intends to return to the agency's proposal as it considers that binding regulations are needed to ensure that waste intended for incineration is properly sorted, characterized and inspected.

A strategy for the management of land, water and the built environment

The land, water and built environment management strategy is mainly designed to contribute to the achievement of the following EQOs: *Flourishing Lakes and Streams, Good-Quality Groundwater, A Balanced Marine Environment, Flourishing Coastal Areas and Archipelagos, Thriving Wetlands, Sustainable Forests, A Varied Agricultural Landscape, A Magnificent Mountain Landscape, A Good Built Environment*, and the newly proposed quality objective, *A Rich Diversity of Plant and Animal Life*.

The aim of the strategy is to establish a policy and develop a long-term approach to the work at hand. One of the strategy's basic concepts is that management considerations and concerns must be addressed in the early stages of all planning processes. The ecosystem approach developed under the CBD is an important point of departure. Any decision involving resource utilization must be assessed for its effect on ecosystem function and productivity.

Possible synergies between the various EQOs and with other societal goals should be made use of. The strategy should help create greater awareness, understanding and interest. More people should become involved and collaboration between the central government, local government authorities, voluntary organizations, property owners and businesses is vital. An active, preventive approach among major stakeholder groups should lead to the sustainable management of land, water and the built environment. The guiding principle here is the environment as a resource for maintaining high standards of public health and a good quality of life.

Strategic action areas

The strategy should continue to target three basic areas:

- sustainable use of land and water,
- the preservation and sustainable use of especially valuable environments, and
- environmentally sound spatial and community planning and sustainable regional development.

Action proposals and development of policy instruments

An account of the measures regarded by the Government as most vital to the achievement of the EQOs and their interim targets is given below.

Sustainable use of land and water

The sustainable use of land and water involves safeguarding biological diversity without thereby adversely affecting conditions for production. Environmental and natural resources, the cultural environment and historical values must be regarded as assets and treated accordingly. Damage that cannot be restored must be avoided. This calls for an integrated approach to the landscape, in which public health, natural and cultural considerations all have a place.

The main sectors affected by this part of the strategy are agriculture and forestry, fisheries, reindeer husbandry and renewable energy production.

Sustainable use of natural resources

All sectors and actors have a common responsibility to take the whole landscape into consideration when planning or engaging in resource utilization. To ensure the adoption of a holistic approach, the Government intends to:

- Assign selected county administrative boards to coordinate efforts to draw up regional landscape strategies for biological diversity at county level.
- Task the Environmental Protection Agency with drawing up guidances on landscape strategy development and planning, in consultation with other relevant central agencies, and in close dialogue with the county administrative boards concerned. The guidances must be completed in 2006.
- Commission the National Heritage Board to draw up a proposal for implementation at national level of the European Landscape Convention, whose purpose is to promote landscape protection, management and planning.

To facilitate practical application of the concept “sustainable use of biological diversity and biological resources”, the Government also intends to commission the sectoral agencies responsible for land-based industries to further define and develop the concept.

Cultural assets perspective on the cultural environment

Our cultural heritage and cultural environments are significant assets in the broader context of societal development and contribute to the quality of our living

environments and lives. In-depth coordination of natural and cultural asset conservation measures is vital.

To ensure that changes and opportunities in the cultural environment are noted, followed and evaluated, the Government intends to commission the National Heritage Board to design a strategic cultural environment monitoring system. The board will be expected to work in close consultation with other relevant authorities. Monitoring should lead to regular 'cultural environment audits'.

Sustainable water use

Water use here refers to ground and surface water sources for household consumption, irrigation, hydropower and fish farming. It also refers to the way we use the aquatic environment indirectly, e.g. in the course of outdoor activities. The discharge of sewage and wastewater into lakes and watercourses is another example.

The Government regards the EU Water Framework Directive as an important instrument for achieving many of the EQOs. The Government and the Riksdag have incorporated the provisions of the directive into Swedish law through amendments to the Environmental Code and the introduction of a special ordinance.

Publicly owned land as a resource

Land and water areas owned by the state and local government authorities contain major natural and cultural assets. Land near built-up areas is a particularly valuable asset in terms of opportunities for outdoor activities and recreation, and experience of the natural world and our cultural heritage. It is vital that such land is protected for these purposes, either through appropriate spatial planning or the creation of nature reserves. This applies particularly to local government authorities that own the largest tracts of land.

Preservation and sustainable use of especially valuable environments

Preservation and sustainable use of particularly valuable environments means ensuring that activities are undertaken in such a way that natural and cultural assets and distinctive features are preserved and can be developed. It might, for example, be a matter of restoring or re-establishing landscapes, habitats and plant and animal populations that have been lost. However, the guiding rule is to halt loss of biodiversity and other values first. Work in this area is informed by a set of basic principles further developed in the government communication, A Cohesive Nature Conservation Policy (skr.⁹ 2001/02:173).

⁹ *Regeringsskrivelse.*

A natural and cultural environment rich in biodiversity

In the Government's view, the benefits to people of high-quality natural and cultural environments and their connection to the EQOs must be more clearly highlighted.

The objectives established for especially valuable areas cannot be achieved through government action alone. It is essential that conservation efforts already involving local government authorities, the business sector, landowners, users, voluntary associations, local interest groups and individuals continue and are strengthened.

Conservation methods and approaches

Making use of the knowledge and active involvement of local actors, boosting participation and maintaining a constructive dialogue are all important aspects of conservation of the natural and cultural environment. These methods and approaches need to be further developed. The Government accordingly intends to give selected county administrative boards the special task of reporting on their experience, and to draw up programmes for continued action. The Government also intends to:

- assign a number of county administrative boards to examine ways in which conservation work and development of environmentally sound tourism can be mutually supportive.
- commission all county administrative boards to get a general picture of the availability of qualified nature and cultural heritage guides, encouraging continued training and promoting the development of a labour market for them.

Protection

The Government has also declared that formal protection of valuable environments, including nature and culture reserves, should continue to play a central role in ongoing efforts to achieve the EQOs. Efforts to strengthen protection and establish and develop culture reserves must continue.

There are other useful instruments which can be used and further developed for the preservation and sustainable use of valuable environments. Examples include agri-environment schemes providing compensation for traditionally managed meadow and pasture land.

The Environmental Protection Agency will be tasked with determining what formal protection measures will be needed in light of the CBD and OECD recommendations. The assignment is to be completed by 2006.

Environmentally sound spatial and community planning and sustainable regional development

The Government considers that spatial planning has an important role to play in achieving the EQOs, and should therefore be used to a greater extent than hitherto. Municipal Comprehensive Plans (MCP) in particular provide scope for integrating societal objectives, using the Environmental Code and the Planning and Building Act as strategic tools.

The aim of the ongoing review of the Planning and Building Act is to make spatial planning a better and more effective environmental policy instrument.

Sustainable regional development

Regional development measures, including regional development and regional growth programmes, also have a key role to play in environmental work. The same applies to government assignments on sustainable coastal area planning and the regional environment and sustainable use programmes aimed primarily at archipelagos and mountain areas.

Strategic environmental assessments

The system of strategic environmental assessments (SEA) and environmental impact assessments is crucial to the successful design – from the environmental standpoint – of plans, programmes and projects. These tools can prove even more powerful when applied to the development of an environmentally sustainable society. Here, even greater consideration should be given to human health, biodiversity and cultural assets. The Government accordingly intends to:

- commission the Environmental Protection Agency to report on ways in which the impact on biological diversity can be appropriately addressed in environmental impact assessments, and
- commission the National Heritage Board to report on appropriate, effective ways of addressing cultural heritage concerns in strategic environmental assessments (SEAs) and environmental impact assessments (EIAs).

Sustainable urban development

Continuing urbanization poses a further challenge. Close interplay between spatial planning work, environmental action and regional development policies is called for. The Government will seek to establish conditions conducive to sustainable urban development as part of ongoing efforts to create a sustainable development strategy.

Access to natural environments near or adjacent to urban areas is a key consideration in this connection, particularly from the public health perspective. The role of the natural environment will be further dealt with in the Government's

proposed action plan for public health. Efforts should be made to develop models for key indicators to measure access to natural environments in the vicinity of urban areas and for their use in spatial planning at local government level.

Genetically modified organisms

The Government recognizes that use of genetically modified organisms (GMO) in land-based industries involves risks to the environment as well as opportunities. It is essential that the EQOs are taken into account when drawing up regulations and designing practices and procedures in this area. The introduction of GMOs must support ongoing efforts to achieve the EQOs while promoting efficiency and profitability in the agricultural sector.

The Government accordingly intends to entrust the Environmental Protection Agency with the task of examining and reporting – after due consultation with relevant agencies – on the implications of GMO use for the achievement of the EQOs. Current regulations governing GMO use should provide a suitable basis for such a study. The Swedish Board of Agriculture should report regularly on the outcome of its monitoring and supervisory activities. Such reports should be evaluated in collaboration with the Environmental Protection Agency and other competent authorities. These bodies should also take the introduction of GMOs into account when following up the EQOs.

Non-native species

The introduction of non-native species can have detrimental as well as beneficial effects. Modern Swedish agriculture and horticulture are largely dependent on species introduced from other parts of the world. Nevertheless, non-native species capable of threatening or depleting biological diversity are a growing problem for Sweden as well.

However, the problem can be prevented in a number of ways. The Government intends to work at national, EU and international level for the establishment of a regulatory framework and a system for dealing with the introduction, movement and release of non-native species. A four-part preventive action package has been developed. Principal measures include:

- development of a national cross-sectoral, inter-agency strategy and action plan,
- listing risk categories and consistent application of risk analyses,
- development of an appropriate regulatory framework, and
- targeted monitoring and development of structures for inspection procedures.

Swedish environmental action in the EU

In many cases, achievement of the Swedish EQOs is dependent on EU decisions or initiatives. This is partly due to the fact that environmental problems such as acidification, eutrophication, air pollution and discharges into the sea and watercourses are transboundary phenomena, and can only be dealt with effectively by introducing a common regulatory structure.

EU enlargement in 2004 has meant that more countries are now subject to the common environmental regulations. This has improved Sweden's chances of achieving the EQOs. Through cooperation, Sweden can help new member states harmonize their countries' environmental regulations with EU legislation and promote a better understanding of Swedish priorities vis à vis the EU in the environmental sphere.

The 6th Environmental Action Programme, adopted in 2002, laid down the guidelines for EU environment policy until 2012. It requires the European Commission to put forward thematic strategies on air quality, the marine environment, resource utilization, pesticide use, waste recovery, land and the urban environment by 2005.

The Government will continue to accord high priority to the EU strategy for sustainable development adopted during the Swedish presidency in the spring of 2001. Sweden intends to pursue the following issues in the EU as a matter of priority:

- Climate, acidification and air pollution-related issues.
- The use of chemicals, including pesticides; resource utilization and waste management in the context of sustainable consumption and production patterns.
- The sustainable management of natural resources and the preservation of biological diversity.
- Matters relating to the marine environment.

The Government will also seek to ensure – as in the past – that EU agricultural, environmental and trade policies promote equitable and sustainable development in poor countries outside the EU.

Transboundary environmental cooperation

International cooperation

Environmental issues transcend borders and EQO action is an integral aspect of growing international cooperation. Sweden will seek to strengthen this cooperation for several reasons:

- A number of EQOs can only be achieved through international collaboration.
- The state of the environment at regional and global level must be improved.
- Sweden's policy for equitable and sustainable global development emphasizes the need to improve conditions and opportunities for the world's poor.

Achieving the Swedish EQOs and interim targets

Action at international level is particularly important in the case of the following EQOs:

- *Reduced Climate Impact.* The Government will continue to pursue the climate convention's long-term goals and to press for implementation of the Kyoto Protocol.
- *Clean Air and Natural Acidification Only.* The Government will continue to press for new international commitments to the Gothenburg Protocol under the Convention on Long-Range Transboundary Air Pollution (CLRTAP). Sweden will also cooperate closely with the EU on efforts to improve air quality, with particular emphasis on the Clean Air for Europe (CAFE) programme.
- *A Non-Toxic Environment.* Sweden has taken a proactive role in the final drafting of the new EU chemicals legislation (REACH). The Government also gives priority to work on the UNEP global chemicals strategy.
- *A Balanced Marine Environment, Flourishing Coastal Areas and Archipelagos.* International action is crucial to the achievement of the EQOs. The regional conventions, The Oslo-Paris Convention (North-East

Atlantic) and the Helsinki Convention (Baltic Sea) will play an important part in the EU marine strategy currently in preparation. The Government has invited the North Sea states to attend an inter-ministerial conference in April 2006. The meeting will focus on the impact of shipping and fishing on the environment.

- *A Rich Diversity of Plant and Animal Life.* The Convention on Biological Diversity (CBD) plays a crucial role in international cooperation in this area.

Protecting the environment at regional and global level

Despite progress in implementing environmental policy in recent decades, the impact of human activity on the environment is growing. The rapid growth in the global population and rising prosperity makes the sustainable use of natural resources and concern for the environment all the more vital. The impact of human activity on ecosystems is so extensive that many natural functions are in danger of being permanently disabled unless vigorous cooperative action is taken at international level.

Industrialized countries, including Sweden, have a particular responsibility to change their consumption and production patterns. Examples of relevant areas include trade in commodities, the activities of Swedish companies throughout the world and the indirect effect of domestic consumption of imported goods on the environment in other countries. The Government will continue to pursue these issues. It intends to appoint a committee of inquiry to draw up priority proposals for action by Sweden to improve the global state of the environment while maintaining economic growth. The Government will also promote efforts to strengthen the UNEP.

The Government intends to appoint a committee of inquiry to draw up priority proposals for action by Sweden.

Protecting the world's poor from environmental threats

The poorest people of the world are the hardest hit by global threats to the environment such as climate change and soil degradation. Sweden actively seeks to improve conditions for the world's poor through implementation of international conventions and compliance with internationally agreed goals.

Climate, chemicals management and biological diversity are issues which the Government will be prioritizing as part of efforts to cooperate with the international community in protecting the environment for the poor. Action will include efforts to strengthen UNEP cooperation on implementation of existing global environmental conventions.

Regional cooperation in Europe

For Sweden, regional cooperation has two purposes. One is to help achieve the Swedish EQOs; the other is to promote good environmental quality in Europe.

Among the results of Nordic cooperation are a Nordic strategy for sustainable development and an environmental action programme for the period 2005–2008. Nordic cooperation on the environment is increasingly concerned with bringing joint influence to bear on EU and international negotiations.

Common Nordic action facilitates efforts to achieve the EQOs.

This applies particularly in the case of objectives such *Zero Eutrophication*, *A Balanced Marine Environment*, *Flourishing Coastal Areas and Archipelagos* and *Clean Air*, which can only be achieved through cooperation across national borders.

One of the aims of environmental cooperation among the Baltic rim countries is to improve the marine environment and reduce emissions to air and water. Cooperation under the Helsinki Convention is of major significance for the marine environment of the Baltic Sea. Strengthening cross-border cooperation and supporting sustainable development in all relevant sectors are also important.

Sweden is working to improve the environment in several countries in its vicinity through direct development cooperation and cooperation within organizations such as the UN Economic Commission for Europe, the Council of the Baltic Sea States, the Arctic Council and the Barents Euro-Arctic Council.

The role of the EU

In recent years, the EU has been proactive in international environmental cooperation characterized by increasingly coordinated action by its member states. EU legislation and the Union's environmental policy, the guidelines for which are laid down in the 6th Environmental Action Programme, provide a basis for action.

It has been shown that even small countries like Sweden can be highly successful in influencing the EU in international negotiations. Examples include the preparations ahead of the world summit in Johannesburg and ongoing climate-related work. The Government will continue to be proactive in this area.

Legislation

The Environmental Code should be regarded as an effective policy instrument for achieving the EQOs. The EQOs and the Code are clearly linked by the common aim of promoting sustainable development. The EQOs give concrete form to the environmental aspects of sustainable development and provide a guide for the application of the provisions in the Code.

The Planning and Building Act is another important environmental tool. The act is currently under review, with particular reference to the sections dealing with the EQOs. The review will also examine the feasibility of coordinating the provisions of the act with the Code. The Government is awaiting the outcome of the review process.

The Government has also affirmed that the EQOs should feature more prominently in the supervisory activities laid down in the Code than in the past. The EQOs are not legally binding, however.

Other tools for more effective action

A number of instruments are of particular importance to more effective environmental action, in the Government's view. These are:

- The special sectoral responsibility for EQO action and environmental management vested in government agencies.
- Research and development.
- Education and training.

Special sectoral responsibility for the environment and environmental management

Responsibility for environmental issues is not confined to the traditional environmental actors but extends to all societal sectors. So-called sectoral responsibility has been a part of Swedish environmental policy for the last fifteen years. Special sectoral responsibility for ecologically sustainable development has rested with 24 authorities.

The present bill contains a clearer definition of action to be taken as part of this responsibility and strengthens the link with EQO-related work. Which authorities will in future have special sectoral responsibility was also the subject of review. The Government's assessment was based on:

- the sector's environmental impact,
- the mandate the authority has been given to implement measures,
- the authority's ability to reach and influence key actors.

Following the review, the number of authorities with special sectoral responsibility for EQO-related action was reduced to 18. The following authorities will continue to exercise sectoral responsibility: the National Road Administration, the Swedish Board of Housing, Building and Planning, the Swedish Energy Agency, the National Board of Fisheries, the Swedish Armed Forces, the Swedish Board of Agriculture, the Swedish Consumer Agency, the Swedish Civil Aviation Authority, the Swedish National Agency for School Improvement, the Swedish Business Development Agency, the Swedish National Heritage Board, the National Board of Forestry, the Swedish Rescue Services Agency, the Swedish International Development Cooperation Agency, the Swedish Maritime

Administration and the National Road Administration. These will be joined by the National Food Administration and the Medical Products Agency.

Among other things, special sectoral responsibility for EQO work involves mainstreaming environmental issues. The agencies concerned are also expected to maintain a dialogue on the implementation of goal-related measures with authorities responsible for specific objectives. In addition, they are required to submit progress reports every four years.

The Environmental Objectives Council will be responsible for ensuring that special sectoral responsibility is integrated with other EQO-related action. The Environmental Protection Agency is responsible for following up and evaluating the input of agencies with sectoral responsibility for the EQOs, and for proposing ways in which their work can be further developed. The agency is also required to support, guide and coordinate agencies with special sectoral responsibility.

Both the latter agencies and other authorities should regard environmental management systems as important environmental tools. At present, some 220 authorities have been charged by the Government with introducing and applying such systems. The Government intends to initiate measures aimed at further developing EQO work in connection with indirect environmental impacts. Initiatives will also be taken to improve follow-up and auditing procedures.

Research and development

Continued research in all areas is essential if action on the environment is to move forward and the EQOs and their interim targets are to be achieved. The Government places particular emphasis on the need to step up research in order to achieve the EQOs *A Non-Toxic Environment* and *A Safe Radiation Environment*. Research on environmental toxicology is one example. Gaining an overall picture of the radiation environment and how it affects people and animals is another.

There is also a need to intensify research efforts in the social sciences into methods and policy instruments to be used in pursuit of the EQOs.

Education

Broad-based instruction on Sweden's EQOs can help solve the environmental problems we are facing. Greater knowledge can also lead to a better understanding of the environmental measures needed to achieve the EQOs.

Education on environmental issues and sustainable development is already being provided on an extensive basis at all levels in the education system.

However, the national EQOs should play a bigger part in teaching curricula. For example, the Environmental Protection Agency should – in consultation with the Environmental Objectives Council and the National Agency for School Improvement – disseminate suitably adapted information about the EQOs to Sweden's schools.

Follow-up and evaluation

Environmental monitoring

Environmental monitoring is an important tool as it provides supporting data for ongoing revision of EQOs and interim targets and serves as a basis for future action. Benchmarks such as green indicators allow the state of the environment and environmental impacts to be measured or estimated.

The Government considers that existing programmes for monitoring the state of the environment need to be reviewed. For example, there is a need to intensify environmental monitoring with respect to the proposed interim target for particular emission under the *Clean Air* EQO. There is also a growing need to revise monitoring procedures in the case of the EQO *Natural Acidification Only*. Monitoring of the impact of chemical substances on ecosystems (EQO *A Non Toxic Environment*) must be improved, and indicators showing the impact on health of environmental problems need to be developed. Another urgent requirement is the development of a system for following up the EQO *A Rich Diversity of Plant and Animal Life*. The Government intends to assign this task to the Environmental Protection Agency.

Overall responsibility for revision of environmental monitoring programmes should reside with the agency. The agencies responsible for the EQOs should actively contribute to this undertaking within their respective spheres of operation.

The Environmental Objectives Council and its next in-depth report to the Riksdag

The Environmental Objectives Council was set up to provide the Government with supporting data for its work in connection with the EQOs. The council should continue to follow-up, assess and report on the environmental situation in relation to the objectives. It is also responsible for identifying possible conflicts between these objectives and other societal goals adopted by the Riksdag.

The council compiles the background material assembled by the agencies responsible for each EQO. However, the Government considers that the

council's coordinating role should be more clearly defined. The Environmental Protection Agency has been assigned to overhaul the reporting system for EQOs with a view to enhancing the effectiveness of agency reporting and improving the quality of background data and material.

Most of the EQO interim targets must be met by 2010. The Government accordingly intends to put new or amended target proposals before the Riksdag in 2009. Reporting will be based on an in-depth evaluation to be presented to the Government in 2008. Reports, using background data from the agencies responsible for the EQOs and authorities with special sectoral responsibility, should also include proposals for action strategies. Assessments of economic, social and environmental impacts are important in this context.

Impact assessments

The agencies responsible for each EQO are additionally required to carry out economic impact assessments of all proposed measures. Such assessments must also address social and environmental aspects. The economic benefits resulting from the positive environmental effects produced by action in the environmental sphere are often difficult to measure. The Government therefore intends to commission the Environmental Protection Agency to improve existing methods for evaluating benefits to the environment in economic terms. The agency will also be tasked with identifying ways in which economic models can be used more effectively in impact assessments of environmental measures.

Sustainable development: Environment policy in relation to other policy areas

Sustainable development is an overall objective of government policy. Health, the environment and welfare must be safeguarded even as spatial, physical and community planning help create new jobs and promote economic progress. If this is to be achieved, all policy decisions must take account of long term economic, social and environmental impacts.

The 15 EQOs provide a structure for environmental policy measures aimed at achieving sustainable development. Efforts to achieve the EQOs must go hand in hand with other policy objectives in areas such as wealth redistribution, gender equality, public health, child and family policy, the cultural environment and integration.

The Government's strategy for sustainable development (skr. 2003/04:129) is based on three premises:

- Sustainable development can only be achieved through global and regional cooperation.
- Sustainable development must be mainstreamed into all policy areas.
- Further action at national level will be needed to ensure investment in and the safeguarding of resources that form the basis of sustainable development. These include natural resources, infrastructure and buildings, as well as human resources such as health and know-how and skills.

Sustainable development cannot be achieved unless actors in the community take part in the practical tasks ahead, including effective environmental action. Four strategic issues for the future should help intensify cooperation across sectors and areas of responsibility. They are:

- Environmentally driven growth and welfare.
- Good health – the most important resource for the future.
- A coherent policy for building a sustainable society.
- Policies for children and young people in an ageing society.

These issues – concerned as they are with sustainable development – are closely linked to the three action strategies for achieving the EQOs.

Benefits and costs

The positive outcomes of our endeavours to achieve the EQOs constitute the foundation of our collective welfare, predicated on biological diversity, the productive capacity of ecosystems and the preservation of the natural and cultural landscape. Achieving the EQOs will not only secure a good living environment and a high standard of public health for present and future generations. Environmentally sustainable development also provides a basis for economic development in many areas. We are dependent on what our ecosystems – forests, seas and farmland – can provide us with in the form of goods and services.

It is therefore necessary to reduce the negative impact of human activity on ecosystems. Environmental damage and degradation can often be attributed to the fact that the environment by and large has neither owners nor price. The environment has been exploited and burdened virtually ‘free of charge’.

Given a sustainable approach to production and consumption we can overcome the adverse effects of human activity on the environment, and thereby reap major social and economic benefits. In fact, poorer health, the destruction of our cultural heritage, production losses, material destruction and the depletion of renewable and non-renewable natural resources have a price.

However, the total cost, as well as the benefits, of the measures proposed in the bill are difficult to calculate. A guiding principle is that the combination of measures which achieves the desired objectives at the lowest possible cost must be implemented. A second criterion is that the societal benefits of any action must be greater than the total cost to society of that action.

The total cost of environmental measures for the period 2001–2003 was SEK 12.6 billion, financed via the central government budget.

During the preparation of the present bill, the benefits of achieving some of the EQOs were quantified in money terms. For example, calculations were made of the monetary value of better air quality, reduced nitrogen emissions south of the Åland Sea and the preservation and extension of meadow and pasture land. The total is calculated on the values derived from wetlands in the form of nitrogen removal and recreation.

A study for the previous environmental objectives bill put the present-day cost of environmental problems at SEK 20 billion per year. These include costs of environment-related impacts on health such as premature deaths, disability pensions, health care and medicines. Other examples are costs for liming, filtering of polluted drinking water and surface treatment of cultural treasures.

It is clear from the above that overcoming our environmental problems will yield major economic benefits.

This is a summary of the Bill, and where there are any differences between the text of the summary and that of the Bill itself, the text of the Bill is the authentic text.

The summary is available on the Government website
(www.sweden.gov.se)



Article no. M2006.26