Sweden’s environmental objectives – are we getting there? de Facto 2004

This year’s report from the Swedish Environmental Objectives Council offers a few glimpses of what businesses and local authorities in Sweden are doing to achieve a better environment. The report also presents the Council’s assessment of the prospects of attaining each of the fifteen environmental quality objectives and the seventy-one interim targets that have been adopted. In addition, there is a brief discussion of certain aspects of the four broader issues that cut across the different objectives.

The report shows that good progress is being made towards one-third of the interim targets, but also makes it clear that additional action needs to be taken if all the targets are to be met.
Progress towards the objectives

The environmental quality objectives are more than simply the sum of the envisaged interim targets; many other factors and circumstances need to be taken into account in assessing progress towards them.

For this reason, the symbols indicating the prospects of attaining an objective may be set, even though the assessments made regarding the interim targets are mostly favourable.

One example of how implementing an environmental quality objective may depend on much more than our success in meeting the interim targets is Zero Eutrophication. In this case, too, the targets are expected to be met (indicated by a green face). The other three should also be capable of being achieved, provided that more measures are introduced than can currently be foreseen. And yet there is a considerable risk that the state of the environment which this objective describes will not be brought about by 2020. The answer is that a large proportion of the measures responsible for eutrophication come from other countries. In other words, Swedish action alone will not be enough to attain the objective.

Current conditions, provided that they are maintained and the decisions taken are implemented in all essential respects, are sufficient to achieve the environmental quality objectives in targets within the defined time-frame.

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The report shows that good progress is being made towards one-third of the interim targets, but also makes it clear that additional action needs to be taken if all the targets are to be met.
In April 1999 the Swedish Parliament adopted fifteen national environmental quality objectives, describing what quality and state of the environment and the natural and cultural resources of Sweden are ecologically sustainable in the long term. In a series of decisions from 2001 to 2003, Parliament has subsequently adopted a total of seventy-one interim targets, indicating the direction and timescale of the action to be taken to achieve the fifteen objectives.

In this, its third annual report to the Government, the Environmental Objectives Council presents its appraisal of progress towards the objectives. The main body of the report deals with the fifteen environmental quality objectives. The fold-out diagram on the inside front cover gives a summary of the assessments made, symbolized by smiley and less cheerful faces. Our assessments answer the questions: Will the environmental quality objectives be achieved by 2020 (or 2050, as a first step, in the case of the climate objective), and will the interim targets be met within the time-frames laid down for each of them?

This year’s report also deals – very briefly – with the four broader issues, related to the objectives, that are referred to in the Environmental Objectives Bill: ‘The Swedish Environmental Objectives – Interim Targets and Action Strategies’ (2001). It is very important that the values and principles which these issues represent are pursued and upheld as efforts to implement the environmental objectives continue.

In addition, de Facto 2004 offers a few glimpses of how businesses and local authorities are working to achieve a better environment. This chapter of the report is based on interviews and information from Sweden’s county administrative boards.

For further information about the country’s environmental goals, readers are referred to the Environmental Objectives Portal, miljomal.nu.

The ultimate aim of our endeavour to attain the environmental quality objectives is to ensure that the next generation – our children and grandchildren – and generations to come will be able to live their lives in a rich and healthy natural environment, enjoying the benefits of sustainable development.

Jan Bergqvist
Chairman, Environmental Objectives Council
The environmental objectives – are we getting there?

A progress report from the Swedish Environmental Objectives Council

Will the objectives be achieved?
The environmental policies of recent decades have been successful. The effects of acidification and eutrophication have abated, and the health impacts of pollutants in the outdoor environment have also been appreciably reduced.

Our assessment is that eleven of the fifteen environmental quality objectives can be achieved on the intended timescale, provided that additional action is taken. The objectives Reduced Climate Impact, A Non-Toxic Environment, Zero Eutrophication and Sustainable Forests, on the other hand, still look difficult to attain. What is quite clear is that major commitments of effort and resources are essential if we are to succeed, with regard to both these four objectives and the other eleven. Action needs to be taken both locally – by businesses and individuals – and at a national level. Further successes in international negotiations and a serious resolve on the part of Sweden, the EU and the rest of the world to shoulder their responsibilities are also necessary.

Measures already introduced or decided on should be sufficient to achieve 24 of the 71 interim targets within the time-frame laid down. This is assuming that the decisions taken are actually implemented. And, provided that further action is taken, there is every chance of attaining another 33 of the targets. The remaining 14 interim targets are not expected to be met by the stated dates, even if measures going beyond those already decided on are introduced.

Health and the environment
One essential condition of sustainable development is that people are able to enjoy good health and a sense of well-being. Compared with many others, the public health problems caused by a poor outdoor environment are small. However, new findings have led us to reassess the health effects of a number of environmental factors, with the result that they are now viewed more seriously. This is true, for example, of air pollutants such as particulates and ozone, which are emerging increasingly clearly as serious risk factors, even at low exposure levels.

Concentrations of air pollutants in Sweden have fallen very significantly since the 1980s, but in the last few years this trend seems to have been broken. In several urban areas, it now appears to be difficult to reduce levels of particulates and nitrogen dioxide in ambient air to a sufficient degree to meet environmental quality standards. Local authority planning is important in limiting the health risks of particulates and nitrogen oxides in air.

Another challenging problem is the noise generated by growing traffic. The National Road, Rail and Civil Aviation Administrations are expected to have reduced noise levels in the worst-affected homes within a few years, but many local authorities lack the necessary action programmes to tackle noise from their own streets and roads. Other health problems include radon and other pollutants in indoor air, and heavy metals and toxic organic substances in food. In addition, we are exposed to a constant, diffuse release of chemical substances whose properties are inadequately understood.
Outdoor recreation

Opportunities for recreation and access to recreational areas are another issue of significance for health. This is an area on which growing emphasis is being placed in nature conservation policy, and in 2003 the Government set up a Council for Outdoor Recreation to further strengthen cooperation between different bodies and agencies. The Stockholm, Västra Götaland and Skåne county administrative boards, in consultation with local authorities and other local partners, have proposed a total of 239 new reserves to protect the most valuable natural and cultural heritage areas on the urban fringe.

The objectives and local government

Sweden’s local authorities (municipalities) have an important part to play in achieving a good number of the interim targets. Many of them have already laid a good foundation for progress towards the environmental objectives through their long-standing and active commitment to the environment, manifested for example in Agenda 21 initiatives or local environmental goals. In several cases, the process of developing local objectives and targets has given rise to broad partnerships involving local authority departments, the business sector, interest groupings, county administrative boards, regional forestry boards and county councils.

According to the European Environment Agency, excessively high concentrations of ground-level ozone and fine particles pose a threat to human health across much of Europe. In many places, they represent a far greater problem than in Sweden’s towns and cities.

Note: PM10 = particles, O3 = ozone, NO2 = nitrogen dioxide.

Source: EEA Signals 2004
County administrative boards have reported that most local authorities make use of the environmental quality objectives when preparing new comprehensive plans and in other planning activities. According to the boards’ reports, almost all the country’s municipalities have been actively involved in efforts to elaborate regional environmental goals.

The Planning and Building Act provides local authorities with tools both to safeguard and make wise use of cultural heritage assets in the physical environment, and to require protection and careful management of buildings. Studies show that the majority of local authority cultural environment programmes are more than ten years old, and were drawn up with the primary aim of protecting and conserving. Interest in cultural environment resources has now grown, and a broader perspective has evolved. Documentation and strategies therefore need to be drawn up to promote the careful use and development of these resources.

The list of 1,700 areas of national interest for the purposes of conservation of the cultural environment, identified under the Environmental Code, and the descriptions of those areas have basically not been updated since 1987. One reason for this is that the legislation is framed in such a way that the division of roles and responsibilities at the central, regional and local levels is unclear.

As a result of the social trends of recent decades, more people are now living in towns and cities, but they are no longer living as close together. One consequence of this is that demand for transport is growing and that resource-efficient solutions such as public transport and district heating may consume more resources and become more expensive. Despite lower urban densities, many local authorities have achieved significant expansions of their district heating systems, and it would thus appear to be possible, after all, to further reduce the environmental impacts of energy use in homes and premises.

Several municipalities are drawing up special plans for their urban areas.

The objectives and the business sector

The different sectors of society each have a responsibility for environmental, health and cultural heritage issues in their particular spheres of activity and policymaking, making it necessary for them to broaden their capabilities.

The environmental quality objectives have not had a major impact as a lever of environmental policy in the business sector, and in most companies knowledge of them remains limited. Many businesses are nevertheless actively committed to protecting and improving the environment. The county administrative boards have involved the business communities of their regions in the development of regional environmental goals, which has promoted greater knowledge about and interest in the objectives.

A Non-Toxic Environment is one example of an objective whose achievement is dependent on action being taken by a wide range of enterprises. In addition to measures required by law, voluntary development efforts and other voluntary undertakings are needed. Such undertakings are important, for instance, in phasing out particularly hazardous substances and reducing the risks associated with the handling of chemicals. For large groups of companies not primarily concerned with chemicals, e.g. in manufacturing, the relevant interim targets need to be communicated as part of a systematic effort to implement the environmental objectives.

Many county administrative boards clearly link their permit decisions and supervisory work to the environmental quality objectives or regional environmental goals. Similarly, several local authorities are currently developing their arrangements for supervision in the area of environment and public health so that they clearly reflect local environmental objectives. Many business people feel uncertain about the legal status of the environmental quality objectives and about their use as a basis for supervisory decisions. The Environmental Objectives Council considers it important that the objectives serve as a guide in
the licensing of environmentally hazardous activities under the Environmental Code. They should also guide the planning of supervision and the design of regulations and other interventions. Regional goals may be important in this context, in that they flesh out the national objectives at the regional level.

The Environmental Objectives Council considers it necessary to develop closer collaboration with the business sector, to enable the environmental objectives to lend support to enterprises’ own management and monitoring activities. In addition, information should be adapted to the needs of companies, and it must be made clear what is required and expected of them. This is a task for both national and regional authorities.

Revised assessments
Our assessments of the prospects of attaining the environmental quality objectives and interim targets differ very little from those made last year, but in the case of five interim targets the Environmental Objectives Council has arrived at a different conclusion from that presented in de Facto 2003.

😊 ► ☻ CLEAN AIR, INTERIM TARGET 2
The prospects of meeting the environmental quality standard for nitrogen dioxide in ambient air, and hence achieving this target, seem less bright than before. The fall in concentrations has levelled off, despite a continued decrease in total emissions of nitrogen oxides. Vigorous action to reduce traffic and hence the health risks associated with air pollution needs to be taken in certain towns in particular. Göteborg and Stockholm have drawn up action plans to achieve compliance with the environmental quality standard.

😊 ► ☻ THRIVING WETLANDS, INTERIM TARGET 1
It is our assessment that a national strategy to protect and manage wetlands and wet woodlands can be drawn up by 2005, now that the Government has issued clear directives to the authorities responsible.

😊 ► ☻ THRIVING WETLANDS, INTERIM TARGET 3
The target calling for action to prevent forest roads being built across wetlands with significant natural or cultural assets seems unlikely to be met during 2004.

😊 ► ☻ SUSTAINABLE FORESTS, INTERIM TARGET 1
Major efforts have been made over the last few years to protect forest land by establishing nature reserves and habitat protection areas and on a voluntary basis. Nature reserves carry a great deal of weight in our assessment of progress towards this target, owing to the large areas involved, the systematic way in which sites are selected, and the fact that their designation guarantees long-term protection. The reason for the revised assessment is that progress in setting aside forest land in nature reserves is far too slow. To meet the interim target in full, and protect 320,000 ha of forest in nature reserves by 2010, the rate at which new areas are designated would have to be almost quadrupled. This is judged to be extremely difficult to achieve.

😊 ► ☻ A VARIED AGRICULTURAL LANDSCAPE, INTERIM TARGET 3
The number of culturally significant landscape features (e.g. mounds of boulders cleared from fields, mid-field pockets of rocky ground and pollard trees) that are being managed is not increasing at quite the rate needed to be sure that this target will be met. The reasons for this are being studied by the Swedish Board of Agriculture.

Global cooperation
At the global level, there are a number of worrying signs. Emissions of carbon dioxide and other greenhouse gases continue to rise, despite the need for a substantial reduction if climate change is to be reined in. Russia has not yet ratified the Kyoto Protocol to curb greenhouse gas emissions, and the United States has withdrawn from the process altogether. It looks as if the EU, too, will have difficulty meeting
its commitment to cut emissions of greenhouse gases by 8% from 1990 levels by 2008–2012.

So far, efforts to phase out ozone-depleting substances have been highly successful in many parts of the world. New research findings, however, show that recovery of the ozone layer will be slower, owing to the effects of climate change. In negotiations under the Montreal Protocol to protect the ozone layer, the US has expressed a wish to continue using methyl bromide in pest control products, even though it depletes ozone. A failure to phase out this substance, along with other ozone depleters, would be a setback and would probably further delay recovery.

Action across Europe affects Sweden’s environment

Large catches of fish in the seas surrounding Sweden remain a major problem, despite tighter regulation under the EU’s Common Fisheries Policy. Catch quotas could do with being even lower to ensure the recovery of cod and other stocks.

Eutrophication of the Baltic and North Seas is a problem that we share with other countries of Europe, and which has to be solved on a collaborative basis within the EU. The EC Water Framework Directive requires all member states to establish programmes of measures, one aim of which is to reduce nutrient inputs to sea areas. Considerable effort will be required of both Sweden and other nations to reduce nutrient inputs from sewage, agriculture and air pollution.

Atmospheric emissions of acidifying pollutants, sulphur in particular, have fallen very significantly in Europe in recent years. This is a major factor behind the rapid abatement of acidification, in both surface waters and forest soils. However, recovery is a long-term process, especially in forest soils. Background concentrations of ground-level ozone show no sign of declining. Active efforts to reduce emissions of ozone precursors must therefore remain a high priority across Europe.

The new chemicals legislation proposed by the European Commission is a major step forward in controlling the flow of chemicals. It represents a fundamental, but by no means sufficient, advance in terms of achieving the goal of A Non-Toxic Environment. Shortcomings in the proposal need to be addressed when it is considered by the European Parliament and the Council.

The European Environment Agency monitors and evaluates environmental trends in Europe. In its latest report, EEA Signals 2004, one of the points made is that the chief obstacle to achieving the pledged reductions of greenhouse gas emissions is increased emissions of carbon dioxide from transport. Little progress has been made in decoupling economic growth from pollution. The advances secured in terms of reducing the fuel consumption of cars and lorries have therefore been eaten up by growth in the volume of transport, resulting in higher emissions of carbon dioxide.
the environmental quality objectives in business and local government – a few glimpses
Local authority planning processes and the environmental efforts of businesses are two important factors in achieving the environmental quality objectives. In the autumn of 2003, the Environmental Objectives Council therefore put the following two questions to the country’s county administrative boards:

- How, in your experience, have the environmental quality objectives and efforts to implement them shaped and influenced local authority planning processes (e.g. comprehensive plans and transport plans)? Please give examples from local authorities.
- How, in your experience, have the environmental quality objectives, interim targets and regional goals influenced environmental activities in the business sector? Please give examples.

In addition to responses to these questions, material for this chapter was obtained from interviews with individuals working in business and local government, commissioned by the Secretariat for the Environmental Objectives Council. The individuals concerned hold key positions with regard to the environment in their respective fields of activity. They were not selected to draw attention to particularly good or bad examples, but rather as a random sample of people who are important in the process of achieving the environmental objectives.

This chapter gives an impression of some aspects of local authorities’ and the business sector’s efforts to protect and improve the environment, as perceived by county administrative boards and some of the people directly involved.

Cooperation on regional environmental issues
As they have set about formulating regional environmental objectives and action programmes, the county administrative boards have collaborated with most of the local authorities in their areas. This has been a broad-based process, involving not only local authorities, but also a wide range of other interested parties. The business community has been represented in many working groups and has attended or actively contributed to seminars and meetings. County administrative boards are fairly unanimous in their view that, by participating in this process, business people have become more aware of the environmental quality objectives, resulting in greater insight and understanding. The Jämtland County Administrative Board, for example, reports that an evaluation in conjunction with a climate seminar revealed that many of the enterprises present wanted more information about climate issues, and felt motivated to reduce their impacts on climate.

According to the Skåne County Administrative Board, advisory services may need to be expanded if boards are to be able to use the environmental objectives to encourage businesses to be environmentally proactive. The lessons learned from partnerships and dialogues with industry, such as the Building/Living and Future Trade dialogue projects, should be actively communicated to business operators in the regions.

Developing arrangements for collaboration is important in the regional process of implementing the environmental quality objectives.
To make it easier to plan in such a way as to ensure efficient use of resources, the Västerbotten County Administrative Board has developed an overall strategy for wise management of land and water. Others have given priority, when defining regional environmental goals, to action to promote sustainable development in their counties. The measures proposed relate to such issues as public and other environment-friendly transport alternatives, conservation and careful development of areas of nature conservation and cultural heritage interest, county energy balances and energy flows, and conditions promoting the use of renewable energy. The documentation thus produced can be of value to local authorities in their land use planning.

In most counties, the active involvement of municipalities in cooperation to develop regional environmental objectives has laid a good basis for integrating national and regional environmental goals in local authority planning. Several county administrative boards, though, point out that local authorities need further support and assistance in the area of methods development, to ensure that the environmental objectives have a sufficient impact. A need for more resources at both the municipal and the county level is also mentioned.

One conclusion that can be drawn is that interaction between local authorities, businesses and regional and national agencies is necessary if the regional and national environmental goals are to be achieved.

The objectives in land use planning

Under the Planning and Building Act, every local authority is required to have an up-to-date comprehensive plan for the whole of its area. This plan is intended to guide decisions on the use of land and water and the development and conservation of the built environment. Comprehensive plans are not binding on authorities or individuals.

Regulation of land use and the built environment within a local authority area is effected through detailed development plans. Each detailed plan may only cover a limited part of the area.

Most county administrative boards report a heightened awareness of the environmental quality objectives among local authorities. The objectives have probably made it easier to take environmental issues into account in planning. Many local authorities have integrated them into their planning processes, or are currently doing so. Several boards point out that municipalities are incorporating the objectives in transport, energy and cultural plans, for example, as well as in comprehensive plans and environment programmes. In Västra Götaland, for instance, 22% of local councils have adopted programmes to reduce car use, 30% have a strategy to enhance green spaces and water bodies in urban areas, and 37% have programmes to expand their district heating systems.

Local authorities with well-established environment programmes have often introduced several different aspects of the environmental objectives into their comprehensive plans. In Skåne, eight out of 33 local authorities refer to the national objectives in their comprehensive plans, and three have decided to take them into account in current reviews of their plans.

LOCAL AUTHORITY REPRESENTATIVES INTERVIEWED

* Bertil Gustafsson
  Chief Development Officer, Jönköping

* Marie-Louise Henriksson
  Planning Officer and Agenda 21 Coordinator, Sundsvall

* Anders Håberger
  Municipal Architect, Nora

* Håkan Lindström
  Chief Strategic Planning Officer, Helsingborg

* Nils Sylwan
  Planning Architect, Nynäshamn
‘The environmental quality objectives have given us stronger arguments and lent greater clarity to what Sundsvall is doing to improve the environment,’ says Marie-Louise Henriksson, a planning officer with the Sundsvall local authority.

Sundsvall’s Agenda 21 is structured in the same way as the environmental objectives, and a decision has been taken to apply the objectives in all areas of activity within the municipality. Also, as a deliberate strategy, the city has adopted a combined approach to environmental and public health issues, and Henriksson feels it is useful to have the national public health objectives, too, to guide the authority’s efforts. This approach has also influenced the way the county’s local authorities have worked together on a regional growth programme. Sundsvall is currently overhauling its comprehensive plan, and this process is to be guided by the environmental objectives, especially with regard to energy and climate issues.

The Stockholm County Administrative Board reports that many local authorities take the environment into account in a commendable manner, though there is no clear indication that the environmental quality objectives form a basis for their planning. In addition, authorities sometimes refer to the objectives in their plans, but it is not possible to see how they have influenced the emphases and conclusions to be found there.

A problem highlighted by the Västmanland board is the negative population trend prevailing in some places. One result of this is that, even though comprehensive plans are often out of date, land use planning is not considered a very high priority, since new development is in any case not envisaged.

Objectives need to be fleshed out in detailed plans

Several county administrative boards argue that planning documents should be drafted in fairly general terms and not weighed down with too much detail, making them unnecessarily difficult to apply. In detailed development plans, environmental impact assessments, supervisory and permit decisions etc., on the other hand, the environmental quality objectives do need to be fleshed out. In the county of Jönköping, the municipalities of Aneby, Tranås and Nässjö took part in a project in 2003 aimed at improving their planning procedures. The focus was on how detailed development plans had helped or hindered the achievement of the environmental objectives.

The Stockholm County Administrative Board considers it important to establish to what extent positions adopted on different issues are followed up in planning and in the handling of building permit applications. The aim is to make it possible to assess the impact which environmental concerns have on municipal planning and decision-making processes. The board believes there is a danger that the environmental aspirations expressed in comprehensive plans could weigh too lightly in the balance when set against other important development goals. A tangible example of this is reported from Gävleborg county, where the siting of an out-of-town shopping centre proved to have adverse consequences with regard to several regional environmental goals. The effects were described in the planning process, but other interests carried more weight in the political process – and the shopping centre was approved.

Urban area planning

In the county of Stockholm, Upplands-Bro, Sundbyberg and other local authorities are drawing up more in-depth descriptions of their built-up areas, as part of a review of their comprehensive plans. These descriptions highlight the unique features of the urban centres concerned – the features that define their character and help create a sense of identity. Various reference groups have been involved in the process, representing NGOs, schools and others. This has strengthened the democratic dimension of planning. The county administrative board believes that
The chosen approach is helping to enhance understanding and awareness of environmental issues and thus to generate greater concern for the environment. Although in this case the focus has been on the national objective A Good Built Environment, the other environmental goals have also been touched on.

Other local authorities that have engaged in urban area planning include Lund, Västerås, Alingsås, Härnösand and Jönköping.

The main thrust of Jönköping’s environmental efforts is to create conditions that will encourage more people to travel by public transport or bicycle. To achieve that aim, the municipality is among other things making use of ‘mobility management’, an approach involving information and persuasion – a form of marketing to get people to take advantage of the possibilities of public transport. ‘A number of car pool trials are also under way,’ says Bertil Gustafsson, Jönköping’s chief development officer.

**Municipal transport planning**

Many local authorities are committed to developing sustainable transport solutions, and in some cases they refer clearly to the environmental quality objectives in their work, as in the MaTs (environmentally sustainable transport systems) projects in Eskilstuna, Lund and Varberg. The municipality of Laholm is seeking to increase the share of freight carried by rail, and to develop the cycleway network and public transport. The Kalmar local authority’s pilot project ‘Let’s Meet’, which is being undertaken in association with the National Road Administration, has a similar emphasis. Its goal is to develop an environmentally sounder transport network and improve safety for cyclists. It involves a staged approach, the primary aim being to change people’s car use habits, with changes to infrastructure as a secondary objective.

The municipality of Helsingborg sees a more densely developed town centre and investments in public transport as important components in environmentally oriented planning. Pollution problems in its built-up area make it difficult for the municipality to meet existing air quality standards. One stated goal is to reduce levels of nitrogen oxides on central sites and thoroughfares. The principal source of nitrogen oxide emissions is ships, many of which burn poor-quality fuels. Efforts are being made to encourage the fitting of emission control equipment, on a voluntary basis, to as many vessels plying the Sound (Öresund) as possible. There are no legal means of requiring such equipment to be installed.

‘Trucks and buses are the second biggest source of air pollution in Helsingborg,’ says Håkan Lindström, who is responsible for strategic planning in the town.

Helsingborg is also trying to promote greater use of the railways for freight transport. In addition, it plans to invite new bids for urban bus services using gas-powered buses (primarily biogas, secondarily natural gas). In the future, the electric rail network is to be expanded to include tram and other services. The local authority also wishes to encourage cycling by extending the network of cycle tracks and creating coherent, straight and unimpeded cycling routes.

**The cultural environment in planning**

Cultural environment programmes serve as a basis for local authority planning, regional development, and decisions in other sectors. Of the existing regional programmes of this kind, only three date from later than 2000.

The municipality of Nora is engaged in an active effort to conserve its cultural heritage, including action to protect old built environments and valuable cultural landscapes. The local authority’s view is that buildings and the cultural landscape form a coherent whole, protection of which is in the public interest. Local history is to be preserved and brought to life. One goal is that development of the tourist trade should be based chiefly on the cultural heritage of the area. In Nora, building in rural areas is looked on favourably, the aim being to maintain a living rural community and living cultural environments.
Tourism is an important sector in Nora, expanding by 35% in 2003. Much of it revolves around the built environment and cultural heritage conservation. In addition, more people are choosing to move to Nora than to neighbouring municipalities.

‘We hope that the growth in tourism will be a first step in helping people make up their minds to move to our area,’ says municipal architect Anders Håberger.

Coastal planning
To be able to plan both conservation and development, the coastal municipality of Nynäshamn needed good documentation of the aquatic environment of its area. It embarked on cooperation with the Haninge local authority on questions of common concern, and Stockholm University was also brought in. The main focus was on identifying sensitive sites, such as different types of benthic areas and spawning grounds for fish. The result was a coastal plan which to a large extent forms a basis for protection and conservation.

‘This is not a comprehensive plan, but it does contain an unusually large number of proposals,’ comments planning architect Nils Sylwan.

The business sector and the environmental quality objectives
Most county administrative boards take the view that, up to now, the business sector has not been influenced to any great extent by the environmental quality objectives. But they also believe that many companies are not yet actually familiar with the objectives. Despite this, many enterprises have active environmental programmes, even if they are not directly linked to the national objectives.

There is fairly wide agreement among the business representatives interviewed that the environmental objectives affirm and lend stability to their companies’ efforts to protect and improve the environment, but that they do not necessarily directly influence those efforts. They would presumably have worked along similar lines even without the objectives.

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**Good environmental programmes, but varying interest in objectives**

Torbjörn Brorson, senior vice president for environmental affairs with the industrial group Trelleborg, believes that the environmental quality objectives, when they become better known and are broken down at the local level, can help companies to pursue longer-term environmental strategies. He believes in cooperation between local authorities and companies, or county administrative boards and companies. In his view, if fifteen to twenty businesses in a town with polluted air work together to achieve a local target for air quality, then they can feel that they are making a difference.

“The environmental objectives probably haven’t had any impact yet at the group level, since Trelleborg is a global company with 90% of its operations outside Sweden,” Brorson explains. Sweden’s en-
Environmental goals are seen as a national concern and probably cut little ice in other countries. According to environmental coordinators at Trelleborg’s Swedish plants, the objectives only figure to a very limited extent in day-to-day and strategic environmental activities. They have, though, been used in environmental impact assessments in connection with a number of permit applications.

The retail chain ICA has used the fifteen national objectives as a basis for its own environmental goals. Its distribution units subsequently break down some of the environmental quality objectives for their logistical operations and define their own goals, but for ICA Sverige AB the national objectives apply. And it is in the area of logistics that ICA considers there to be most potential to reduce the company’s direct environmental impact. The choice of products in its range, meanwhile, has indirect consequences for the environment.

‘For us as a company, we quite like the idea of being able to link our own goals to the environmental quality objectives. It means there’s a coherent thread to our operations. It feels logical, as the objectives spell out what we as a business need to do,’ says Anna Carlsson, environmental manager at ICA Sverige AB.

The Västra Götaland County Administrative Board reports that it has become increasingly common for major companies to incorporate the national environmental objectives in their environmental statements. Where economics and the environment go hand in hand, many companies have made impressive contributions, as in the forest products, engineering and surface treatment industries. In Gävleborg county, businesses are using the regional environmental goals to develop their environmental management systems. In a broad-based project in the county of Jämtland, both companies and public agencies have developed such systems on the basis of national and regional environmental objectives.

Torbjörn Brorson at Trelleborg feels that the environmental quality objectives have the potential to shape environmental management activities, but that the company is not there yet. At present, only a few factories within the Trelleborg group use one or more of the objectives in their environmental management systems. However, a discussion is under way among environmental managers and auditors about how these goals could be incorporated into such systems.

Licensing and supervision

The environmental quality objectives have an indirect impact on businesses in connection with permit applications and supervisory decisions. Several county administrative boards invoke the objectives when stating the reasons for permit decisions and in supervisory contexts. The Norrbotten board for example, when considering applications under the Environmental Code, always determines emission limits etc. on the basis of the objectives. The environmental objectives are also referred to in explanations of the reasons for decisions to reduce emissions, and in boards’ opinions to the environmental courts relating to the supervision of industrial operations.

The Halland County Administrative Board mentions a project entitled ‘Tools and methods for business participation in sustainable growth programmes’ as an example of how environmental quality objectives, interim targets and regional environmental goals have influenced environmental activities in the business sector. The board writes that the national objectives have a natural role to play in contacts with enterprises relating to licensing and supervision under the Environmental Code. Applications are expected to contain an analysis of the possible implications of operations for relevant environmental objectives.

‘One problem today is that some companies can feel somewhat uncertain about their legal position,’ says Torbjörn Brorson. ‘A firm may for example have received a permit, subject to defined conditions, to install environment-friendly machinery or emission abatement equipment requiring an investment of SEK 10 million. But what happens if, a few years later, the authorities say that that is not enough, on
Brorson also asks whether the authorities plan to use the objectives as a weapon in their supervisory role. He hopes that they will rely on other tools than the environmental objectives and the statute book to influence companies’ environmental performance, and points out that many businesses probably feel unsure about the legal status of the objectives.

Environmental objectives and arguments help firms compete
Trelleborg’s view is that good environmental management gives a company access to the market. In many cases, customers require their suppliers to have well-developed environmental improvement programmes. Without one, a company may simply be unable to compete.

‘I believe very firmly in close cooperation between government and business in the environmental sphere. For companies, moreover, there’s money to be earned from environmental management. But you have to be realistic, too – company managers have hundreds of different priorities to consider,’ says Torbjörn Brorson.

‘These days, it’s taken for granted that a business will have a good environmental programme and environmentally sound products,’ says Mia Torpe, environmental affairs director with the cooperative housing organization HSB. ‘And, in the eyes of consumers, this is often linked to quality. We’re working with other organizations and companies on a number of projects, to achieve a greater impact. Safeguarding the environment has become an integral part of our operations.’

The Federation of Swedish Farmers (LRF) would like to see a better balance between environmental requirements and competitive pressures. Enterprises would then be able to market themselves on the basis of their strong environmental performance, while still coping with stiff competition on prices. As an example, Jan Eksvärd at LRF mentions standards for ammonia emissions from pig farms, which are stricter in Sweden than elsewhere:

‘The result is that Swedish pig farmers, with their high standards of animal welfare, are put out of business. Instead, consumers buy their pork from Denmark or the Netherlands, which can produce it more cheaply, but where ammonia emissions are much higher.’

Eddie Johansson, managing director of Värmeverket Enköping, which supplies the town of Enköping with district heating, says that his company sees environmental improvement as a competitive weapon: ‘It can save the company and consumers money, assuming that environmental investments lead to lower prices. But it’s also a matter of thinking long-term and promoting consumer confidence in the company.’

‘If the public realized how widely new buildings can differ in terms of environmental performance, they would perhaps take this factor into account when deciding what to buy,’ says Mia Torpe at HSB. ‘Heating costs, for instance, obviously have a direct impact on people’s wallets. Introducing ecolabelling for new buildings could well result in environmentally more aware buyers – motivated by ethical, health and financial considerations.’

‘A company that wants to be able to hold its head up these days has to be committed to protecting the environment,’ Anna Carlsson at ICA believes. It is also possible to make this part of a firm’s identity, through PR and marketing, but her company has not done that, focusing instead on marketing its products. One limiting factor for ICA’s environmental efforts is that it is not able to issue central directives to store owners, since they are independent operators. ICA says that it has put a lot of effort into transport and logistics, but marketing the company on that basis is more difficult. Most people think of the group’s stores, rather than its transport system, when they hear the name ICA.'
Is the business sector helping to achieve the environmental objectives?

In the agricultural sector, farming organizations and the authorities are collaborating on an information and advisory project called ‘Focus on Nutrients’. The aim is to tackle eutrophication by giving farmers knowledge and tools that will help them to cost-effectively reduce leaching of nitrogen and phosphorus from arable land. Together with the relevant authorities, LRF is also running a project known as ‘Safe Plant Protection’, which seeks to reduce the risks of pesticide use, to both the environment and individual farmers. The effects of these initiatives will probably be reflected in permit decisions in 2004, chiefly relating to handling of animal manure and plant nutrients, but also to the use of chemical pesticides. In addition, LRF is involved in the education and advisory campaign ‘Living Landscapes’, which deals with the impacts of agriculture on the natural and cultural features of farmland.

One result so far of the environmental efforts of farmers and forest owners is a reduction of ammonia emissions to air. Leaching of nitrates from farmland into streams is also appreciably lower now than 10–20 years ago. Applications of phosphorus fertilizers have decreased by 70% and are now in balance with the amounts of phosphorus removed from fields. Furthermore, LRF estimates that the area of forest land set aside voluntarily totals around a million hectares, exceeding the target for 2010 adopted by Parliament under the Sustainable Forests objective.

HSB has built five ‘eco-villages’ and launched several environmentally improved construction projects. In collaboration with others, it is also developing a system for environmental surveys (of both the indoor environment and the overall environmental status of buildings) for the cooperative housing societies which it serves. Mia Torpe points out that HSB is a step ahead of the legislation when it comes to surveying and remediating homes with regard to PCBs. Despite this, when the relevant law is passed, the individual societies will have very little time to complete the process. Another concern of HSB has been to change attitudes to harmful substances in the construction sector, and it has drawn up a list of ten chemicals that need to be phased out.

HSB’s regional associations have started to switch to renewable vehicle fuels. They are also involved in an ongoing effort to support individual housing societies that are trying to conserve energy. Some have introduced individual heating and water meters in every apartment, which saves money for those who want to live more economically, while reducing environmental impacts. In addition, several societies are switching from oil to district heating, which is largely based on renewable energy sources. In 2002, moreover, HSB’s housing societies considerably improved their performance in terms of handling hazardous wastes and applying environmental purchasing criteria.

Värneverket Enköping’s commitment to environmental improvement is long-term, and the intention is that all concerned should benefit from what they are doing. The company’s first contribution to achieving the environmental quality objectives came in the 1990s, with a wish to increase the proportion of biofuels used. In 1997, for example, an oil-fired boiler was converted to burn wood powder. In collaboration with Enköping’s sewage treatment plant and local farmers, energy forests were planted and lagoons were constructed to reduce nitrogen inputs to the Baltic Sea. The goal was to cut inputs from the town by 50%, and that was achieved. What is more, the whole project cost less than the traditional nitrogen removal equipment which the sewage works had been about to invest in. In addition, it turns out that the trees being grown for energy absorb cadmium, at a rate of some 10 kg per hectare per year. When the wood is burnt, the cadmium vaporizes, is intercepted by a flue-gas filter and is disposed of to a small landfill.

One of ICA’s aims is to increase its sales of ecologically sound products, and the company is continuing...
its efforts to offer ecological alternatives in all product categories. For its cleaning agents and toiletries range, the rule is that all new products must be eco-labelled if criteria exist for the type of product concerned under the Swan and Good Environmental Choice schemes. ICA’s own-label range includes products developed with special attention to the environment. In 2003 the company began to require all its drivers to undergo training in more environment-friendly driving (‘heavy eco driving’), which saves both fuel and money. Moreover, all the company’s contracts with road haulage firms stipulate that they must have a driver training plan, in addition to meeting requirements regarding vehicle fuels, tyres and vehicle maintenance products. Another of ICA’s goals is to use a higher proportion of bioenergy. All its warehouses now use ecolabelled electricity, and three of the company’s own delivery vehicles run on biogas.

At Trelleborg’s factories, numerous environmental improvements have been introduced over the years. Driving forces behind these changes have included legislative requirements, greater environmental awareness, the demands of group management and customers, and the introduction of ISO 14001.
the 15 national environmental quality objectives
1. 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.

Will the objective be achieved?

The environmental quality objective Reduced Climate Impact requires the combined atmospheric concentration of the six greenhouse gases listed in the Kyoto Protocol and defined by the Intergovernmental Panel on Climate Change (IPCC), calculated as carbon dioxide equivalents, to be stabilized below 550 ppm. Sweden should seek to ensure that global efforts are directed to attaining this objective. International cooperation and commitment on the part of all countries are crucial to the goal being achieved.

In recent years, agreement has been reached on the rules required to implement the Kyoto Protocol, but the protocol has yet to take effect. Following US withdrawal from the Kyoto process, the protocol needs to be ratified by the EU, Japan and Russia. The EU countries and Japan ratified in 2002, and Russia announced its intention to do so – but has since bided its time. Russia can in principle postpone ratification until the beginning of the first commitment period in 2008.

Under the Kyoto Protocol, negotiations are to start no later than 2005 on undertakings to reduce emissions beyond the first commitment period 2008–12. These negotiations can begin irrespective of whether the protocol has come into force at that point.

The EU is giving a lead in the global climate negotiations. In June 2003 the EU Council and Parliament adopted a Directive on Greenhouse Gas Emissions Trading. The scheme will initially cover carbon dioxide emissions from large factories, refineries and energy plants. Trading is intended to begin in 2005, and intense preparations are now under way in all the member states, including Sweden. During spring 2004, plans for the national allocation of emission allowances were submitted to the European Commission. Decisions on allocations at the plant level are to be taken in the autumn of 2004.

The emissions trading scheme will be a key policy instrument in honouring the EU’s joint commitment under the Kyoto Protocol. It can be implemented regardless of whether the protocol has taken effect.

By 2050, total Swedish emissions should be below 4.5 tonnes of carbon dioxide equivalents per capita per year, with further reductions to follow. This long-term goal can be compared with the average level in Sweden in 2002, which was an annual 7.9 tonnes per capita, and a global average of around 5.8 tonnes per
capita per year. To achieve the long-term target for emissions – and then reduce them still further – far-reaching changes will be necessary. However, several futures studies have shown that such a target can be attained.

Will the interim target be achieved?

GREENHOUSE GAS EMISSIONS
INTERIM TARGET, 2008–2012

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 most recent projection of emissions, in Sweden’s third national communication on climate change (2001), suggests that they will reach roughly their 1990 level in 2010. According to an assessment by the European Environment Agency (EEA) in 2003, only Sweden and the United Kingdom are expected to achieve their share of the joint EU commitment by means of measures within their borders. The EU’s burden-sharing agreement allows Swedish emissions to increase by up to 4% compared with 1990. This interim target, on the other hand, says that, as an average for 2008–12, they are to be at least 4% lower than in 1990.

According to the projection, economic instruments – such as energy and carbon dioxide taxes and renewables certificates – are the key to cutting emissions. Policy instruments relating to waste (chiefly bans on landfill disposal of combustible and organic waste) and the motor vehicle industry’s undertaking to reduce fuel consumption in cars will also affect the outcome. The reason why total emissions are nevertheless not predicted to fall, according to the national communication, is increases in emissions from transport (above all, road freight) and industry.

At the request of the Government, the Swedish EPA and the Swedish Energy Agency are to present a new projection no later than 30 June 2004, as a basis for the 2004 climate policy ‘checkpoint’ provided for by Parliament.

New statistics for 1990–2002 show that emissions of greenhouse gases in Sweden were 3.5% lower in 2002 than in 1990. In 2001, they were 5.4% below their 1990 level. (However, neither of these figures is climate corrected, i.e. corrected for variations in temperature and precipitation compared with a normal year.) Work is currently in progress to improve the quality of the emission statistics. To make emission data comparable over a period of time, any changes made also have to be applied retroactively. As a result, the new data on past emissions may differ from those reported last year.

Emissions from electricity and heat generation, industrial energy production and the residential and services sector combined were 6.8% lower in 2002...
than in 1990. Total emissions from the same sectors in 2000 and 2001 were somewhat lower still. Emissions vary from year to year, depending on such factors as precipitation, temperature and the state of the economy. In 2002, the available supply of hydroelectric power was unusually low and Sweden was a net importer of electricity. (Emissions attributable to imported power are not included in the national statistics, however.) During the previous two years, on the other hand, hydropower was in plentiful supply and emissions were therefore lower.

Greenhouse gas emissions from combustion in the residential and services sector, though, show a steady downward trend, owing to a switch away from oil, primarily to district heating, but also to electricity and biofuels. The altered fuel mix at district heating plants, from oil and coal to biofuels, is also reducing emissions. Apart from in the residential and services sector, the largest emission cuts have been achieved in agriculture and at landfill sites.

Emissions from energy production in industry and from industrial processes were at roughly the same level in 2002 as in 1990.

Transport sector emissions, on the other hand, increased (by 10%) between 1990 and 2002, with road traffic the dominant factor. Heavy goods vehicles accounted for a significant share of the rise.

A comprehensive projection is to be produced in 2004, and the need for measures to attain this interim target will then be reassessed. The most obvious need is for further action in the sectors that are responsible for a large share of emissions, and in which emissions are continuing to rise. In Sweden, transport is of particular relevance in this regard.
2. Clean Air

The air must be clean enough not to represent a risk to human health or to animals, plants or cultural assets. This objective is intended to be achieved within one generation.

Will the objective be achieved?

Concentrations of sulphur dioxide are now low and, with the action decided on and planned, the interim target for this pollutant will be achieved. Human exposure to nitrogen dioxide has been significantly reduced, but in the last few years the downward trend seems to have slowed down, and in this case there is some uncertainty as to whether the interim target will be met. It is still too early to say for sure whether the tendency for nitrogen dioxide concentrations to rise that has been observed is a temporary phenomenon. In the case of ozone, background levels are not declining, even though episodes of high concentrations of this pollutant are now less frequent.

A small number of local authorities have reported that they will be unable to meet the environmental quality standards for nitrogen dioxide and/or particulates. For these areas, special action programmes are to be adopted to tackle the exceedances. The Stockholm and Västra Götaland county administrative boards have proposed programmes to achieve compliance with the environmental quality standard for nitrogen dioxide. The measures considered necessary include stricter emission standards in inner city environment zones, passenger/traffic planning, traffic restrictions and improvements in public transport.

The Stockholm board has also put forward an action programme to reduce levels of particulates at exposed sites. The problem judged most difficult to tackle is particles arising from abrasion of road surfaces by studded tyres in winter. The main focus of the measures proposed is on curbing the use of such tyres and reducing the volume of traffic.

FIG. 2.1 Air quality index

Air pollutant levels have been falling for quite some time, but in recent years the decline seems to have slowed down.

The index is based on concentrations of nitrogen dioxide, soot and sulphur dioxide during the period October–March in some 50 local authority areas, weighted by population. Concentrations in base year 1990/91: NO₂: 25 µg/m³; SO₂: 7 µg/m³; soot: 9 µg/m³. SOURCE: IVL AND SWEDISH EPA
Particulates, ozone and nitrogen oxides are examples of pollutants that cause a wide range of symptoms and illnesses. Particles and ozone in ambient air can be linked to premature death from cardiovascular and lung disease. Estimates suggest that up to 1,700 premature deaths in Sweden as a whole may be due to exposure to ozone, and that more than 1,000 can probably be associated with particulates. In addition, air pollutants generally are estimated to be responsible for an increase in cancer mortality in Sweden of the order of several hundred deaths a year. They are also believed to account for a large number of hospital admissions. In a statistical sample of the country’s population, one in ten reported symptoms due primarily to vehicle emissions and burning of wood.

The loss of production in Swedish agriculture caused by ground-level ozone is judged to be substantial. Ozone also affects forest trees. In addition, air pollutants accelerate the degradation of metals, limestone, rubber and plastics, and damage culturally and historically significant buildings, statues and archaeological remains.

Will the interim targets be achieved?

**SULPHUR DIOXIDE**

**INTERIM TARGET 1, 2005**

A level of sulphur dioxide of 5 µg/m³ as an annual mean will have been achieved in all municipalities by 2005.

As a result of action in Sweden and other countries, concentrations of sulphur dioxide especially have been greatly reduced in recent decades. Today, the interim target level is exceeded in only a few places. There is some uncertainty as to whether concentrations have stopped falling, but the measures decided on will probably result in this target being met.

**NITROGEN DIOXIDE**

**INTERIM TARGET 2, 2010**

Levels of nitrogen dioxide of 20 µg/m³ as an annual mean and 100 µg/m³ as an hourly mean will have been achieved in most places by 2010.

Stricter vehicle emission standards have reduced nitrogen dioxide levels in urban air. In the last few years, the decline has slowed down, probably because there is more ozone in urban air to help form nitrogen dioxide. Other factors, such as the weather or changes in traffic or other sources, may also be of significance. Overall, human exposure to nitrogen dioxide has decreased, but some 300,000 people in Sweden are still exposed to concentrations exceeding the environmental quality standard. At present, there is a risk of urban background levels exceeding the standard in a quarter of the country’s municipalities.

Even more stringent exhaust standards for cars are to be introduced by 2010. The assessment is that, by then, the interim target will largely have been achieved in terms of urban background concentrations, provided that planned measures are introduced. Exceedances will still occur, though, on and around the streets of the major cities.

The reason our assessment of progress towards the target is more pessimistic this year than in 2003 is that it is uncertain whether the downward trend in nitrogen dioxide levels is continuing. Nor do we know to what extent action programmes in the larger towns will have the desired effects.

**GROUND-LEVEL OZONE**

**INTERIM TARGET 3, 2010**

By 2010 concentrations of ground-level ozone will not exceed 120 µg/m³ as an 8-hour mean.

During the period April–September 2002, the target level of 120 µg/m³ was exceeded on between 2 (in northern Sweden) and 27 occasions (in the south of the country).
The number of episodes of elevated concentrations of ground-level ozone has decreased somewhat in recent years. This can be attributed to the action taken in the EU and Sweden to reduce emissions of volatile organic compounds (VOCs) and nitrogen oxides. Although high ozone episodes have become less frequent, however, there is no indication that average concentrations will have fallen by 2010. This fact, combined with the rising concentrations in large towns, means that there is reason to fear a long-term increase in the population’s exposure to ozone. Given the disquieting picture regarding this pollutant, it is of the utmost importance to reduce emissions of ozone precursors, such as VOCs (other than methane) and nitrogen oxides, throughout Europe. Despite the discouraging situation, this interim target will probably be met.

**VOLATILE ORGANIC COMPOUNDS**

**INTERIM TARGET 4, 2010**

By 2010 emissions in Sweden of volatile organic compounds (VOCs), excluding methane, will have been reduced to 241,000 tonnes.

Action already decided on and planned packages of measures, relating both to transport (e.g. congestion charges) and to wood-fuelled heating, solvents and industrial processes, are expected to substantially reduce VOC emissions. Despite uncertainty about the true level of emissions, this target can probably be achieved.

![Graph showing changes in ground-level ozone concentrations in rural areas and cities](image-url)
3. 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.

This objective is intended to be achieved within one generation.

Will the objective be achieved?

Between 1990 and 2002, atmospheric deposition of sulphur fell by about 60% in southern and central Sweden and some 55% in the north.

Levels of nitrogen in rain and snow declined over much of the country towards the end of the period. At the same time, precipitation increased, with the result that no clear trends in nitrogen deposition can be made out. In 2002 deposition of nitrogen was somewhat lower than the years immediately preceding – probably owing to lower precipitation.

Estimates suggest that critical loads for forest soils and lakes will be exceeded in 13% of the total area in 2010. However, these estimates take no account of recovery times. This means that, even if deposition is reduced below critical levels, it will be a long time before the effects of acidification in the environment are eliminated. The trend up to 2020 is difficult to assess.

To enable Sweden’s natural environment to recover, further emission cuts also need to be achieved in the rest of Europe, going beyond Gothenburg Protocol goals and the EC’s National Emission Ceilings Directive. One of the top priorities is to reduce emissions from international shipping, which currently account for around one-sixth of acid deposition. In December 2003 EU environment ministers endorsed a proposal for a strategy to reduce atmospheric emissions from seagoing ships. One of the key elements of this strategy is action to curb releases of acidifying pollutants from marine fuels.

At the national level, further steps should be taken to bring down nitrogen oxide emissions, and action is also needed to reduce the acidifying effects of forestry.

Will the interim targets be achieved?

ACIDIFICATION OF LAKES AND STREAMS
INTERIM TARGET 1, 2010

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 for lakes refers to acidified lakes, not treated with lime, with an area of more than 4 ha. The most recent nationwide survey of surface waters, in 2000, showed 10% of lakes larger than 4 ha to be acidified, as defined by existing environmental quality criteria, compared with 13% in 1995.

The principal victims of acidification are the plant and animal life of lakes and streams, partly as a result of acidic, aluminium-contaminated water draining...
from forest land. However, according to the Swedish EPA's in-depth evaluation of the objective Natural Acidification Only, high concentrations of inorganic aluminium in running waters also occur in areas not very significantly affected by acidification.

Recovery from acidification is proceeding somewhat more rapidly in the worst-affected areas in south-west Sweden. Modelling studies of acidified lakes show that recovery of acid-sensitive lakes will continue until 2010 and then slow down over the ensuing decades.

A total of 7,500 Swedish lakes have been limed, representing some 90% of the acidified lake area.

**ACIDIFICATION OF FOREST SOILS**

**INTERIM TARGET 2, BEFORE 2010**

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.

In addition to atmospheric deposition of sulphur and nitrogen, a contributory factor behind soil and surface water acidification in forest areas is forestry itself, owing to the effects of growth and harvesting. The most severely affected area is in the south-west of the country.

This target has probably already been achieved. Available data give no indication that acidification is continuing, pointing rather to an improvement. The Swedish EPA's in-depth evaluation of this environmental objective showed that changes in the parameters describing the acidity status of forest soils are

Many acidified lakes will probably be restored relatively quickly, thanks to natural recovery processes, but where these are not sufficiently rapid problems will persist for a long time.

At present, the most acidic soils are showing the clearest signs of recovery.

**FIG. 3.1 Estimated trends in acidification, measured as pH, in 133 reference lakes, 1860–2100**

**FIG. 3.2 Proportions of forest land in Sweden assigned to different soil acidity classes, as defined in Environmental Quality Criteria – Forest Landscapes**
small and conflicting, even if clear differences emerge from a classification based on *Environmental Quality Criteria – Forest Landscapes*. Since this evaluation was carried out, the percentages of forest land with high and very high soil acidity have decreased further, while the proportion classed as moderately acidic has increased to a corresponding degree.

Action in the forestry sector to counteract further acidification in affected areas would facilitate the recovery of forest soils. The Swedish EPA and the National Board of Forestry have proposed that priority should be given to the following measures:

- Implement the development phase of the Board of Forestry’s action programme on soil acidification.
- Develop recommendations on modified forestry methods for areas affected by acidification.
- Review existing recommendations on the extraction of forest-based fuels and compensatory fertilization.

**SULPHUR DIOXIDE EMISSIONS**

**INTERIM TARGET 3, 2010**

*By 2010 emissions of sulphur dioxide to air in Sweden will have been reduced to 60,000 tonnes.*

Swedish emissions of sulphur dioxide are primarily due to the burning of sulphur-bearing fuels such as coal and fuel oils. Another major source is the pulp industry.

In 2002 emissions of this pollutant totalled 59,000 tonnes (excluding international bunker fuel emissions), and the interim target has thus already been met. The forecast for 2010 points to a further fall in emissions, to around 50,000 tonnes per year. Since 1990, emissions of sulphur dioxide have fallen from 106,000 tonnes, i.e. by 45%.

In 2002, heat and power plants, together with combustion in industry, accounted for some 60% of sulphur dioxide emissions. Greater reliance on renewable energy and improvements in energy efficiency could help to
reduce these emissions. Other measures and policy instruments that could lead to lower emissions of sulphur dioxide include a green tax shift and measures in the area of climate policy.

**NITROGEN OXIDE EMISSIONS**

*INTERIM TARGET 4, 2010*

By 2010 emissions of nitrogen oxides to air in Sweden will have been reduced to 148,000 tonnes.

The majority of nitrogen oxide emissions originate from vehicles, primarily cars and trucks, but ships and mobile machinery are also important sources. Emissions fell from 324,000 tonnes in 1990 to 243,000 tonnes in 2002, a reduction of 25%. This was achieved mainly by measures in the road transport sector, in the shape of progressively more stringent emission standards for both cars and heavy vehicles. Freight now accounts for 60% of nitrogen oxide emissions from road transport, and is expected to be responsible for a growing share in the years to come.

With the decisions now taken, emissions of nitrogen oxides are forecast to fall to around 160,000 tonnes by 2010. Provided that further measures are introduced, the interim target can be achieved. The Environmental Objectives Council proposes the following priorities for attaining the target:

- Differentiate the annual vehicle tax on heavy vehicles, according to the environmental class to which they are assigned.
- Promote the early introduction of low-emission mobile machinery, ahead of the date proposed by the European Commission.
- Introduce a kilometre-based road tax on freight transport by road.
- Develop environmental criteria for public purchasing of freight transport, mobile machinery and construction contracts.

**FIG. 3.4 Swedish emissions of nitrogen oxides to air**

![Graph showing Swedish emissions of nitrogen oxides from 1990 to 2002, with target set for 2010.](image)

*Note: Interim target refers to emissions excluding bunker fuels.*

*Source: Swedish EPA, Swedish Reporting Under Climate Convention*

Provided that further action is taken, this target should be met. One source of uncertainty, however, is trends in road traffic.
4. 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.

This objective is intended to be achieved within one generation.

Will the objective be achieved?

It will be difficult to achieve this environmental quality objective on a timescale of one generation. With additional measures under EU legislation, global agreements and action in Swedish industry, it should be possible, within a generation, to tackle the production of new hazardous chemicals. However, dealing with the persistent substances already present in the environment and the continuing problem of diffuse releases of hazardous substances from existing buildings and products will be more difficult. In addition, dangerous substances will continue to be formed unintentionally during the extraction, production and handling of different materials.

The European Commission’s proposal of November 2003 for new legislation on chemicals (REACH) is of fundamental significance for A Non-Toxic Environment and for achieving the first four interim targets. In an enlarged EU, new, common rules will be of great value. The proposal involves major advances in terms of controlling production and imports of chemical substances, but in many respects it does not go far enough. Additional measures are needed to rectify deficiencies in the proposed system. On the basis of the REACH proposal, it is not possible at present to assess whether the interim target deadlines will be met.

For product groups subject to other EU regulations, at least the same level of protection should be established as under REACH. In the case of plant protection products, at least the same protection level as for other biocides should be achieved.

Will the interim targets be achieved?

DATA ON HEALTH AND ENVIRONMENTAL PROPERTIES OF CHEMICAL SUBSTANCES

INTERIM TARGET 1, BEFORE 2010/2010/2020

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 as far as possible be available on the properties of all unintentionally produced and extracted chemical substances.

The European Commission’s proposal for new, coherent legislation on chemicals, REACH, covers a wider range of substances than the existing rules and provides a better basis for producing data on the properties of chemicals. Such data are also essential to achieving interim targets 2, 3 and 4. It is proposed that the same requirements should apply to new and existing substances. The new rules on registration of
and information on chemicals already on the market are of very great significance and will promote progress towards this interim target. One serious problem, however, is that the proposed testing requirements for substances manufactured/imported in volumes of less than 10 tonnes are far from adequate. REACH does not cover unintentionally produced substances, and with regard to them the target will be difficult to meet on schedule with the measures decided on so far.

**ENVIRONMENTAL AND HEALTH INFORMATION ON PRODUCTS**

**INTERIM TARGET 2, 2010**

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

The REACH proposal does not include information requirements for chemical substances in products other than chemical products. It is unsatisfactory that EU regulations do not ensure users and consumers access to information on hazardous chemicals in finished products. Existing voluntary schemes are important, but do not provide full coverage in terms of either product groups or the substances on which information is required. This target will not be met on time unless vigorous additional action is taken.

**PHASE-OUT OF SUBSTANCES OF VERY HIGH CONCERN**


- Newly manufactured finished products will as far as possible be free from
  - carcinogenic, mutagenic and reprotoxic substances, by 2007, if the products are intended to be used in such a way that they will enter natural cycles;
  - new organic substances that are persistent and bioaccumulating, as soon as possible, but no later than 2005;
  - other organic substances that are very persistent and very bioaccumulative, by 2010;
  - other organic substances that are persistent and bioaccumulative, by 2015;
  - mercury by 2003, 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 harmed.

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.

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.
The proposed authorization system within REACH for ‘substances of very high concern’ – CMRs (substances that are carcinogenic, mutagenic and/or toxic for reproduction), PBTs (persistent, bioaccumulative and toxic substances) and vPvBs (very persistent and very bioaccumulative substances) – will probably provide a basis for some progress towards this target. The proposed criteria for defining substances of very high concern are in line with the definitions given in the target. However, wide-ranging exemptions could erode the effectiveness of the authorization system. The final details of the legislation and the way it is implemented will crucially determine to what extent the interim target can be achieved.

It is hard to assess the prospects of eliminating hazardous substances from newly manufactured products by the stated dates, but these deadlines could be difficult to meet. It will, for example, not be at all easy to find substitutes for lead accumulators in vehicles by 2010. Certain substances of very high concern have already been accepted for a ten-year period under the EC’s Plant Protection Products Directive, and these will be difficult to prohibit in Sweden during that period.

CONTINUOUS REDUCTION OF HEALTH AND ENVIRONMENTAL RISKS OF CHEMICALS
INTERIM TARGET 4, 2010

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.

Existing indicators do not reveal any clear-cut trends, and it is difficult to gain an overview of what companies are doing in this area. However, our assessment is that it will be possible to attain this target, provided that additional action is taken.

REACH will place greater responsibility on manufacturers, importers and downstream users, who will...
have to perform risk assessments. The system will put operators in a better position to reduce risks and choose safe products, by improving access to information on chemical substances. However, for substances manufactured or imported in quantities of less than 10 tonnes per enterprise per year, which make up the majority of all chemicals, REACH will not require risk assessments.

During 2003 decisions on pesticides were taken which could stand in the way of achieving this interim target. Under the Plant Protection Products Directive, paraquat, a herbicide that poses very serious health hazards, has been approved for continued use in the EU. Up to now, though, the industry has refrained from registering it in Sweden, and farmers do not want it back. In the absence of alternatives, the insecticide cypermethrin has been approved up to 2005 by the National Chemicals Inspectorate, to protect tree seedlings from pine weevils. Cypermethrin is toxic to aquatic organisms at concentrations far below those detectable under the environmental monitoring programme.

The risks associated with the use of phthalates have been assessed within the EU. This diagram shows that the use of DEHP, which has been found to have reprotoxic properties, is decreasing, while that of DINP is increasing. This indicates that the substitution (or product choice) principle has been applied. Use of DBP and BBP has declined. DBP and other short-chain phthalates are mainly used as solvents in paints and adhesives. Long-chain phthalates, such as DINP, DIDP and DEHP, primarily serve as plasticizers in plastics, paints etc. Products made from plasticized PVC (e.g. floor coverings and cables) also contain DEHP, DINP or DIDP.

Of the chemical products on the Swedish market, 30,000 (i.e. around half) are hazardous to human health in some way. Of the roughly 10,000 available to consumers, around 4,000 are classed as hazardous to health. The number of consumer-available chemical products thus classified has not changed appreciably in recent years, while the number not classed as health hazards has increased. The reason a product is not classified as posing a health hazard may be that it does not contain dangerous substances. It may also be that concentrations of such substances are below the classification thresholds, or that the constituents have not been adequately tested and assessed for potential hazardous properties.
GUIDELINE VALUES FOR ENVIRONMENTAL QUALITY

INTERIM TARGET 5, 2010

By 2010 guideline values will be established by the competent authorities for at least 100 selected chemical substances not covered by interim target 3. These values will indicate the maximum concentrations to be permitted in the environment or to which humans may be exposed. The aim is that the guideline values will in the long term be adopted as environmental quality standards.

This target is judged to be achievable within the defined time-frame. The REACH proposal means that industry will be required to produce information on thousands of substances. This information corresponds to the data that are incorporated in guideline values, i.e. the concentrations at which substances are not expected to have any effects. The guideline values will be of use, for example, in monitoring the quality of surface waters.

CONTAMINATED SITES

INTERIM TARGET 6, 2005

By 2005 contaminated sites will have been identified and remediation will have begun at a minimum of 100 of the sites given highest priority with regard to the risks to human health and the environment. In addition, remediation will have been completed at a minimum of 50 of the sites at which such work has begun.

The number of suspected contaminated sites is considerably higher than was previously assumed. County administrative boards have now identified around 35,000, and believe there to be another roughly 10,000. The process of identifying sites should be completed during 2005, in line with the interim target. As regards remediation, the assessment is that just over half the number of sites envisaged in the target will have been cleaned up. A progress report and proposals for new interim targets for the period 2005–10 were presented to the Government in September 2003.

Inventories suggest that around 10,000 contaminated sites can be assigned to the highest or the second highest risk class. They consequently need to be investigated further and possibly remediated. It is often difficult to determine who is legally responsible and has to pay for remediation. The state system for measures eligible for grants is working well now, but more must be done to step up the pace of clean-up where responsible operators can be identified. The cost of dealing with one site given priority with regard to health and the environment can vary from SEK 2 million to over SEK 100 million (average: SEK 30–40 million), and is thus higher than previously anticipated.

With an investment of around SEK 1 billion a year (with central government providing just over half and responsible operators – where they exist – paying for the rest), it would take around 45 years to tackle most of the risks to health and the environment attributable to contaminated sites. Such an investment would mean that all 1,500 sites in the highest risk class would be remediated by around 2050.
5. A Protective Ozone Layer

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

Will the objective be achieved?

As a result of action in Sweden and other countries, the adverse effect of ozone-depleting substances on the ozone layer has abated. The total concentration of CFCs in the troposphere is falling. The concentration of HCFCs is still rising, however, and, contrary to earlier assumptions, so too is that of bromine. This is a result of increased levels of halons.

Changes in concentrations in the stratosphere reflect changes in the troposphere, but with a time lag of three to five years. The total concentration of chlorine and bromine in the stratosphere began to fall around 2000.

The ozone hole above Antarctica in 2003 was one of the largest since the phenomenon was discovered in the mid-1980s. At its maximum extent during the year, around 28 million km², it was roughly twice the area of the Antarctic continent.

According to international scientists working for UNEP/WMO, recovery of the ozone layer will not begin to be seen until 2020 at the earliest. If all parties comply with the agreements reached under the Montreal Protocol, it will be 50 to 100 years before the ozone layer is restored.

At the meeting of the parties to the protocol held during the year, it emerged that the commitment to implementing the agreements varies between the countries, and it is therefore uncertain whether this objective will be achieved. At the meeting, the United States called for significant exemptions for methyl bromide, wishing to increase its production of this chemical by almost 30%. Under the protocol, methyl bromide, normally used in agriculture to control pests, is to be phased out altogether by 2005. It has not been used in Sweden since the end of the 1990s.

The political decisions reached in the framework of the Montreal Protocol – with the aim of not exposing humanity to a substantial increase in ultraviolet radiation – are now under threat. Sweden must therefore continue to give priority to providing a lead in this area within the EU and under the protocol.
Will the interim target be achieved?

**EMISSIONS OF OZONE-DEPLETING SUBSTANCES**

**INTERIM TARGET, 2010**

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

If existing rules are adhered to, there is a good chance of moving closer to this target. However, to actually achieve it, further decisions need to be taken on the use and handling of ozone-depleting substances.

Swedish emissions of ozone depleters have fallen sharply since the late 1980s. In 2003, CFC emissions were estimated at around 340 tonnes, compared with almost 4,000 tonnes fifteen years earlier. Today, emissions of CFCs are now mainly due to leakage from products in which these chemicals have been used as refrigerants or in insulating materials. Releases of other substances (chiefly HCFCs) from other sources and applications are judged to be marginal compared with those of CFCs.

By 2010, the use of old refrigerators, refrigerated displays and refrigeration plants containing ozone-depleting substances will probably have largely ceased; by then, they are expected to have reached the end of their technical lifetime and to have been replaced. How soon products incorporating insulating materials foamed with CFCs or HCFCs are replaced with more environment-friendly alternatives will depend on the rate at which old buildings and other structures are renovated or demolished.

**FIG. 5.2** Historical change and modelled recovery of ozone layer between 60° N and 60° S

It will be many years before the ozone layer has fully recovered.
Human health and biological diversity must be protected against the harmful effects of radiation in the external environment.

Will the objective be achieved?

The overall assessment of whether this environmental objective will be attained is basically unchanged from previous years. It is possible that it will be achieved on the timescale envisaged, but untiring efforts will be needed to make that happen. The form of radiation in the external environment that is currently judged to have the greatest implications for human health is ultraviolet radiation. As for effects on the environment, existing knowledge is inadequate. On the one hand, it is unclear what environmental quality criteria should apply, and on the other the availability of data that could serve as parameters is limited.

To achieve the environmental quality objective, the main concerns are to alter attitudes to sunbathing and to continue to study and – if necessary – take action on a wider range of activities that give rise to radiation doses. In addition, systems to manage non-nuclear radioactive waste need to be introduced and decisions reached on arrangements for the final disposal of nuclear waste. Encouragement must be given both to basic radiological protection research and to further research on the biological effects of electromagnetic fields.

Will the interim targets be achieved?

**RADIOACTIVE SUBSTANCES**

**INTERIM TARGET 1, 2010**

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.

Whether there are any individual operations currently giving rise to doses exceeding the 0.01 mSv/year target has yet to be clarified. In recent years, nuclear facilities in Sweden have met this target, but there is uncertainty regarding other activities. Dose estimates for research and hospital laboratories are based partly on older data, which need to be verified. According to estimates by the Swedish Radiation Protection Authority (SSI), recycling of caesium-contaminated wood-fuel ash to forests could entail doses exceeding 0.01 mSv/year to some sections of the public. Other facilities that could conceivably give rise to such doses include pulp mills and landfills used to dispose of ash. As long as the question of permanent disposal of nuclear energy wastes is not finally resolved, nuclear power also remains an environmental problem.

In December 2003, the Committee on the Management of Non-Nuclear Radioactive Waste presented its report ‘Radioactive waste in safe hands’ (SOU 2003:122) to the Government. The committee had studied the quantities of radioactive waste...
arising from non-nuclear activities and the problems associated with it, and proposed a national system for its management and disposal. The committee’s proposals would mean that there would be legislation to regulate the handling of all types of radioactive waste. Given the principle of producer responsibility, this would also create a financial incentive to deal with such waste in an effective manner. In addition, the report contains recommendations on funding for the disposal of waste for which no owner can be established. If the committee’s recommendations are acted on, the prospects of achieving the environmental objective will be significantly improved.

To meet this interim target with regard to recycling of wood ash, regulations and guidelines are being prepared on the handling of ash contaminated with caesium-137.

Our assessment is that this target can be attained. To do that, it is important to implement the committee proposals just referred to. In addition, efforts must continue to identify and take action on further types of operations that could give rise to high radiation doses. The process of establishing a permanent repository must be pursued according to plan. A crucial factor in minimizing radioactive emissions to the environment is continuous preventive action. This includes both establishing adequate levels of safety for high-risk activities and ensuring satisfactory emergency preparedness should something nevertheless go wrong. To ensure that relevant expertise is available in the future, it is also important to strengthen basic research in radiological protection.

An analysis has been made of what information county administrative boards, local authorities etc. need concerning A Safe Radiation Environment, and the results will form the basis for improved support from SSI. By extension, this will also reinforce efforts to implement the objective at the regional and local levels.

SKIN CANCER
INTERIM TARGET 2, 2020

By 2020 the annual incidence of skin cancer caused by the sun will not be greater than it was in 2000.

Over the last ten years, between 1,400 and 1,900 cases of malignant melanoma have been discovered in Sweden every year, and the number is still rising. Changes in the thickness of the ozone layer are presumably of less significance than people’s behaviour and attitudes to sunburn. Steps have been taken to raise awareness of the risks of ultraviolet radiation, but it will take decades for any effects to make themselves felt in the cancer statistics. The fact that the incidence of cancer is continuing to rise, therefore, does not necessarily mean that the action taken has been ineffectual.

To get some indication of whether the annual incidence of skin cancer will be at the same level in 2020 as in 2000, studies of attitudes and behaviour need to be carried out. As yet, few data are available in this
area. Another source of uncertainty in estimates of future UV exposure is climate trends: the numbers of sunny and rainy days in a normal summer have a significant effect on total UV doses.

Information campaigns aimed at children, for example on milk cartons, are among the measures implemented that are expected to help change people’s behaviour. Another is the information now posted on the SSI and SMHI web sites concerning daily UV radiation levels, together with forecasts regarding the UV index and ‘safe time in the sun’.

Our assessment is that it is still possible to achieve this interim target if public information efforts are intensified. Recurring campaigns are needed, aimed primarily at changing the behaviour of children. Suitable target groups include parents, via child health clinics, and pre-schools.

**ELECTROMAGNETIC FIELDS**

**INTERIM TARGET 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 radiation environment with regard to electromagnetic fields (EMFs) can be considered good, in the sense that existing reference values are generally not exceeded. However, trends in society mean that the use of equipment generating EMFs is increasing. At the same time, data on the effects at lower levels of radiation are neither complete nor unequivocal.

The research findings of recent years have not changed the existing risk assessment, but as yet unconfirmed studies suggest that biological effects may arise from exposure to EMFs below the existing reference values. This has prompted SSI to propose improved information to the public about ways of reducing unnecessary exposure when using mobile phones.

Achievement of this target will depend primarily on whether relevant research is undertaken in the field of mobile telephony and its effects on health. At present, virtually no such research is being conducted in Sweden, partly owing to a lack of resources. Currently, therefore, it is uncertain whether the target will be achieved. To ensure a safe radiation environment, it is essential that research on electromagnetic fields can be carried out, so that any measures implemented are able to rest on a sound foundation.
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.

This objective is intended to be achieved within one generation.

Will the objective be achieved?

No clear improvements in the state of the environment, in terms of either nutrient levels or the effects of eutrophication, have been observed over the last five to ten years. The state described in this environmental quality objective will therefore be difficult to bring about by 2020. It will be particularly hard to achieve in southern Sweden, where the highest nutrient loadings have been and still are observed.

Part of the difficulty in attaining the objective by 2020 lies in the long timescale of recovery of natural systems. In addition, the coastal waters of the Baltic are very significantly affected by eutrophication in open sea areas, to which the other littoral states also contribute. Furthermore, natural, large-scale processes are a major factor governing the state of the marine environment. This may either facilitate or impede achievement of the objective. For example, the steady rise in nutrient concentrations in the open sea means that the water entering the coastal zone from such areas is increasingly rich in nutrients. As a consequence, action in coastal and archipelago areas may become less significant in terms of reducing eutrophication at a local level.

The trend for Swedish emissions of nitrogen oxides and ammonia to air is encouraging, but the decline in nutrient emissions to water is not as clear. Vigorous action, both national and international, needs to be taken to tackle these emissions if the objective is to be attained. The programmes of measures to be established by 2009 under the EC Water Framework Directive are likely to promote progress towards the objective, as all the member states have to comply with the directive’s requirements. It is important therefore that Sweden gives an active lead in ensuring that the directive results in energetic action throughout the EU. As from May 2004, only one of the littoral states of the Baltic will not be an EU member.

Will the interim targets be achieved?

Programmes of measures to achieve good ecological status

Interim target 1, 2009

By 2009 programmes of measures as provided for in the EC Water Framework Directive will be established, specifying how good ecological status is to be achieved in lakes and streams and in coastal waters.

Since EC legislation requires Sweden to prepare programmes of measures, this target will be met. In its in-depth evaluation, therefore, the Environmental Objectives Council proposes that the target should
be dispensed with. However, implementation of the programmes will be of decisive importance in achieving the environmental quality objective. In view of the serious eutrophication situation and the difficulties involved in attaining this objective, we propose that the possibility of establishing programmes earlier than 2009 in areas with eutrophication problems should be explored.

PHOSPHORUS EMISSIONS
INTERIM TARGET 2, 2010

By 2010 Swedish waterborne anthropogenic emissions of phosphorus compounds into lakes, streams and coastal waters will have decreased continuously from 1995 levels.

Model estimates suggest that emissions of phosphorus compounds fell by 11% between 1995 and 2000. Agriculture is credited with the largest decrease, of 19%, although this figure is uncertain, partly due to a lack of data on the effects of measures introduced in that sector.

The Swedish EPA has been asked by the Government to make this target more precise, and in its response the Agency has proposed that it be rephrased as follows: ‘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 Agency also proposes additional measures and policy instruments relating to agriculture, forestry and single-household sewage systems, with the aim of meeting the revised target.

In addition, to enable action to be undertaken in a cost-effective manner, it is necessary to develop a better understanding of what measures are effective. This is particularly true as regards the effects of measures on phosphorus losses from farmland.

NITROGEN EMISSIONS
INTERIM TARGET 3, 2010

By 2010 Swedish waterborne anthropogenic emissions of nitrogen into sea areas south of the Åland Sea will have been reduced by at least 30% compared with 1995 levels, to 38,500 tonnes.

Improved modelling of nitrogen emissions to water in 1995 shows that they were considerably higher that year than previously estimated, and the earlier figure of 55,000 tonnes has now been revised to 67,000 tonnes. Since the interim target calls for a reduction of 30% compared with 1995, this means that annual emissions must fall by 20,000 tonnes by 2010, rather than the earlier calculated figure of 16,500 tonnes. The measures planned, however, correspond to a reduction of only 15,600 tonnes.

In view of this, additional action will be needed to meet this target. In the in-depth evaluation, we recommend for example that the environmental quality standard for nitrates in groundwater, jointly proposed by the Swedish EPA and the Geological Survey of Sweden, should be brought into effect.

In recent years, the problems of eutrophication observed in coastal and open sea areas around southern and central Sweden have prompted stricter standards for nitrogen removal at large sewage treatment
plants on the west coast and on the east coast as far north as the Stockholm archipelago. These standards also apply to certain major inland plants. The average nitrogen removal efficiency of municipal treatment plants discharging into sea areas south of the Åland Sea in 2000 was 68%, an improvement of 15% compared with 1998.

Judging from model results, leaching of nutrients from farmland seems to have remained largely unchanged during the second half of the 1990s. The action programme on nutrient losses in agriculture is expected to reduce nitrogen leaching by around 8,000 tonnes by 2010, from 1995 levels. As part of Sweden’s Environmental and Rural Development Programme (ERDP), payments are available to encourage growing of catch crops and delayed tillage. Take-up of this scheme has been considerably higher than expected, and model estimates for 2001 suggest that the measures implemented are reducing nitrogen leaching from agriculture by between 1,850 and 2,100 tonnes a year. Since 2001, there has been a further increase in take-up.

Another measure supported under the ERDP is the establishment of wetlands, which is estimated to have curbed nitrogen losses by some 300–400 tonnes per year. A shift from autumn to spring spreading of animal manure is also believed to be helping to reduce leaching of nitrogen, as is the information and advisory project ‘Focus on Nutrients’. Overall, losses from agriculture are expected to decrease at at least the rate envisaged when the action programme was proposed.

**AMMONIA EMISSIONS**

**INTERIM TARGET 4, 2010**

By 2010 emissions of ammonia in Sweden will have been reduced by at least 15% compared with 1995 levels, to 51,700 tonnes.

In all, some 53,800 tonnes of ammonia are estimated to have been released into the atmosphere from Swedish sources in 2001. Compared with 1995, this was a reduc-
tion of around 12%, and the prospects of meeting this target therefore appear to be good. In 2001, agriculture was responsible for about 85% of emissions. Since 1995, ammonia emissions from this source have fallen by some 18%. Half of the decrease between 1999 and 2001 can be attributed to reduced livestock numbers, and half to improved handling of manure.

A succession of regulations to curb ammonia losses associated with storage and spreading of animal manure have been introduced since 1995. As part of the ‘Focus on Nutrients’ programme, advice is also being provided with a view to reducing these emissions. Investment support has been introduced for certain types of spreading equipment that minimize losses of ammonia.

An ammonia source of growing importance is road transport, since certain amounts of the compound are produced by catalytic converters.

**NITROGEN OXIDE EMISSIONS**

**INTERIM TARGET 5, 2010**

By 2010 emissions of nitrogen oxides to air in Sweden will have been reduced to 148,000 tonnes.

Emissions fell from 324,000 tonnes in 1990 to 243,000 tonnes in 2002, a reduction of 25%. This was achieved mainly by measures in the road transport sector, in the shape of progressively more stringent emission standards for cars and heavy vehicles.

With the decisions now taken, emissions of nitrogen oxides are expected to fall to around 160,000 tonnes by 2010. The biggest decrease is predicted for road transport and diesel-powered mobile machinery, as a result of new, stricter emission standards. To meet the interim target, however, measures corresponding to a reduction of 12,000 tonnes still need to be introduced. In its in-depth evaluation, therefore, the Environmental Objectives Council proposes that the following action be taken to achieve the target:

- Differentiate the annual vehicle tax on heavy vehicles, according to the environmental class to which they are assigned.

- Promote the early introduction of low-emission mobile machinery, ahead of the date proposed by the European Commission.

- Introduce a kilometre-based road tax on freight transport by road.

- Develop environmental criteria for public purchasing of freight transport, mobile machinery and construction contracts.

**FIG. 7.4 Swedish emissions of nitrogen oxides to air**

Emissions of nitrogen oxides in Sweden have been reduced by 25% since 1990. With the decisions now taken, they are projected to fall to around 160,000 tonnes by 2010. Provided that additional action is taken, this target should be met. One source of uncertainty, however, is trends in road traffic, with freight transport accounting for a particularly large share of emissions.
8. 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 objective is intended to be achieved within one generation.

Will the objective be achieved?

The various factors with adverse impacts on lakes and streams remain unchanged or are increasing in intensity. There is a risk that insufficient attention will be paid to freshwater environments, for example when more raw materials are needed for the forest products industry, demand for hydroelectric power grows as a result of a shift towards renewable energy sources, or there is strong pressure to develop shores and banks.

To achieve this objective, the relevant sectors need to be actively involved in implementing the measures which the interim targets require. In addition, more care must be taken generally to safeguard surface waters. In 2003, the Swedish EPA, the National Board of Fisheries and the National Heritage Board prepared a background report for the in-depth evaluation of the environmental objectives, identifying various measures to speed progress towards this objective.

**FIG. 8.1** Buildings erected within 100 metres of water line of a lake, river or stream in 2001 (total number 756)

Increased building activity on lake shores and river banks may restrict public access and reduce the amenity interest of the natural and cultural environment. It may also adversely affect biodiversity. New construction often leads to further development of the aquatic environment, e.g. building of jetties, boat traffic or dredging. Complementary built development in harmony with the distinctive character and settlement patterns of a region or local area can be beneficial from a cultural environment point of view. However, the purpose of the shore protection regulations – which normally apply within at least 100 m of the shoreline – is to ensure good conditions for recreation and for flora and fauna.

Source: Statistics Sweden
Will the interim targets be achieved?

PROTECTION OF NATURAL AND CULTURAL ENVIRONMENTS
INTERIM TARGET 1, 2005/2010

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.

The Swedish EPA has drawn up guidelines for the conservation of valuable natural environments. They describe, among other things, how freshwater environments can be delimited and valuable areas protected, and are aimed primarily at county administrative boards, regional forestry boards and local authorities, which can implement the necessary measures.

In 2003, some 70 new sites hosting one or other of the freshwater habitat types were proposed for inclusion in the European Natura 2000 network, which already incorporates some 770 such areas in Sweden. Guidelines on conservation measures for the different habitat types have been prepared, and county administrative boards are drawing up conservation plans for the sites. Many of the designated areas are among the natural environments of particularly high conservation value, referred to in the target, which need long-term protection in the form of site safeguard or other conservation measures.

According to the Nature Conservation Register, three new nature reserves have been designated with specific regard to freshwater ecology, and more are planned.

As a contribution to developing a national action programme, freshwater environments of particular value with regard to nature conservation, cultural heritage and fisheries have begun to be documented. This material is to be supplemented with regional data on valuable natural and cultural environments in and around lakes and watercourses. The aims are to quantify the conservation measures required and identify the most significant gaps in existing knowledge.

RESTORATION OF RIVERS AND STREAMS
INTERIM TARGET 2, 2005/2010

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.

Many valuable watercourses need restoring. The authorities’ documentation of freshwater environments of particular value (interim target 1) will provide basic data for this target as well.

Note: Lakes and streams are often included in other protected areas, without being specifically mentioned in their statement of purpose.

Sources: Swedish EPA, National Board of Forestry, National Heritage Board

County administrative boards most frequently make use of nature reserve designation, and forestry boards habitat protection areas, to provide long-term protection for sites. Nature reserves offer stronger protection and are larger in extent than habitat protection areas. Since 1987, local authorities have been able to designate nature reserves, and it has been proposed that they should also have a power to establish habitat protection areas. Other ways of conserving aquatic environments include nature conservation agreements, planning, and environmentally careful practices.
Common criteria to determine which rivers and streams are in greatest need of restoration are being established as part of the process of drawing up action programmes. In the same context, methods are being developed to resolve conflicts of interest between nature, fisheries and cultural heritage conservation. The Gävleborg and Jämtland county administrative boards are supporting a pilot project to explore ways of preserving remains of log-driving activities when rivers are restored. This project is intended to result in a guide, setting out common principles for cultural heritage and nature conservation. The lessons learnt are to be put to use and developed further.

To avoid or minimize damage to structures of cultural heritage interest, we need a better understanding of their value and more information about their location. Restoring watercourses is costly and time-consuming. Existing cultural environment grants are not sufficient to ensure the necessary conservation and maintenance of structures associated with water. If this interim target is to be met, responsibility for funding must be extended beyond the nature conservation and fisheries sectors.

In the river Gullspångsälven, a partnership between the local power company, other local bodies and national agencies has enabled action to be taken to improve the conservation status of the unique Gullspång salmon. The National Road Administration has introduced a method whereby road maintenance bodies and others can work together to eliminate barriers to migration created by culverts. In Dalarna, Norrbotten and Västerbotten the method has produced tangible results. Collaboration of this type makes it possible to give priority to particularly valuable watercourses.

**WATER PROTECTION AREAS**

**INTERIM TARGET 3, 2009**

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.

This target emphasizes the importance of developing water supply plans to safeguard supplies of drinking water in the long term. In 2003 the Göteborg Regional Association of Local Authorities presented such a plan for its region. Many local authorities’ planning documents, e.g. comprehensive plans, and county administrative boards’ environmental analyses can be used as a basis for drafting water supply plans.

The EC Water Framework Directive requires steps to be taken to ensure that drinking water sources are protected. This can be done by establishing safeguard zones, e.g. water protection areas.

In 2003 the Swedish EPA published guidelines and a new handbook in support of local and regional efforts to establish protection areas and regulations to safeguard surface- and groundwater sources.

Our assessment is that this interim target will be met if decisions are taken at the municipal or county level to ensure long-term protection.
RELEASES OF ANIMALS AND PLANTS
INTERIM TARGET 4, 2005

By 2005 releases of aquatic animals and plants will be undertaken in ways which do not adversely affect biological diversity.

Stocking of fish has been practised for several hundred years, affecting an estimated one-third of Sweden’s lakes. Interest in the ecological and genetic effects of non-native species and stocks has grown in recent years, as has understanding of the risks which releases entail.

In March 2003 the National Board of Fisheries presented a study of the ecological consequences of releases of fish. The most dramatic effects have been observed in previously fishless lakes, where changes in the species composition of zooplankton have occurred. The effect of stocking whitefish to Arctic char lakes can also be dramatic, since it can cause a marked decline in the original char population.

The more often a non-native species is released, the greater is the likelihood of it establishing naturally reproducing populations. Brook char (American brook trout) is now breeding in the wild in Sweden and has formed around 300 populations. Reproduction of rainbow trout has also been observed in the natural environment, and large-scale stocking is increasing the risk of this species, too, eventually establishing wild populations.

Releases of fish require a permit, and decisions on such permits should be guided by the precautionary principle. Several illegal releases of signal crayfish have been discovered in southern Sweden – often in waters where attempts are being made to conserve the native noble crayfish. Signal crayfish carry crayfish plague, with the result that several large, viable populations of the native species have been eliminated in recent years. Illegal stocking of fish and crayfish is an obstacle to achieving this target.

Implementation of the Water Framework Directive will provide a better basis for planning and licensing releases.

ACTION PROGRAMMES FOR THREATENED SPECIES
INTERIM TARGET 5, 2005

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

The aim of action programmes for threatened species is to provide information about species and their needs, bring together different bodies to implement measures, and determine priorities regarding the use of resources for conservation.

A study by the Swedish Species Information Centre identifies some 50 threatened freshwater species in need of measures that justify action programmes. Several of these programmes will be adopted or revised in 2004.

Of the 103 species covered by the EC’s Habitats Directive, at least 20 are associated with lakes and streams. To facilitate implementation of the directive...
with regard to these species, the Species Information Centre has drawn up conservation guidelines. Fifteen of the directive species linked to surface waters are on the Swedish Red List, and at least seven of these are also judged to require action programmes.

Since July 2003, the Board of Fisheries’ powers to issue regulations have been extended to include particularly threatened species or populations of national interest. Under these powers, fishing bans have been proposed for certain freshwater species (including spring-spawning vendace (*Coregonus trybomi*), sunbleak, ziege and four-horned sculpin).

No new action programmes for threatened freshwater species were adopted in 2003.

**PROGRAMME OF MEASURES TO ACHIEVE GOOD SURFACE WATER STATUS**

**INTERIM TARGET 6, 2009**

By 2009 a programme of measures as provided for in the EC Water Framework Directive will be established, specifying how good surface water status is to be achieved.

In December 2003, amendments to the Environmental Code took effect, enabling environmental quality standards to be used to introduce binding water quality objectives of the type required under the Water Framework Directive. An ordinance regulating issues relevant to programmes of measures for special water districts should come into force in 2004.

In consultation with the Geological Survey of Sweden and the National Board of Housing, Building and Planning, the Swedish EPA has begun to compile a water handbook. The aim is to promote a concerted effort to achieve the relevant national environmental quality objectives and interim targets, to implement the Framework Directive, and to develop a national plan for integrated water resources management, in line with the conclusions of the Johannesburg summit in September 2002. The handbook is expected to be completed in 2004.
9. 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 objective is intended to be achieved within one generation.

Will the objective be achieved?

As yet, we have only limited data on which to base an assessment of the prospects of achieving this environmental quality objective in the defined timeframe. However, we believe that the objective can be attained, if additional action is taken. In certain areas of southern Sweden, though, problems will remain, owing to the inertia of the soil- and groundwater system. By international standards, the status of Sweden’s groundwater is good, in terms of both quality and quantity. This may be one reason why, up to now, groundwater has been a secondary consideration in the context of land use planning and environmental protection. The county administrative boards’ efforts to regionalize this objective have increased awareness of groundwater issues around the country. The process of implementing the EC Water Framework Directive has also played a part.

The Framework Directive should result in greater weight being attached to groundwater, both as a source of drinking water and from an ecological point of view. Progress towards the objective will very much depend, though, on the steps taken by the relevant bodies – water authorities, county administrative boards and local authorities – to establish and implement the programmes of measures which the directive requires.

Not enough has been done yet to give higher priority to water supply issues. This is necessary, since protection of groundwaters for water supply purposes often comes into conflict with other interests. In the autumn of 2003, the Swedish EPA published guidelines and a handbook on the establishment of protection areas for water sources. These documents could help to ensure that more attention is paid to hydro-geological factors when water protection areas are established or revised.

Will the interim targets be achieved?

PROTECTION OF WATER-BEARING GEOLOGICAL FORMATIONS
INTERIM TARGET 1, 2010

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.

Our assessment is that this target can be met, provided that additional steps are taken to enhance the protection given to groundwater. In consultation with county administrative boards and the Swedish EPA, the Geological Survey of Sweden (SGU) has identified the groundwater areas (i.e. water-bearing geological formations and their recharge zones) that are of importance in meeting present and future water supply needs, in a national and a regional perspective.
To achieve the target, the competent authorities must now provide protection for these areas. Water protection areas can be designated under ch. 7, ss. 21–22, of the Environmental Code.

However, there are also water-bearing geological formations from which local authorities do not currently intend to abstract water, but which in a long-term national or regional perspective are considered important for supply purposes. There is no power to protect such formations under the Environmental Code. Ch. 3 of the Code should therefore be amended to allow aquifers to be designated as being ‘of national interest for the purposes of water supply’. This would provide a better basis for long-term protection of groundwater bodies from activities that could impede or prevent their use as sources of supply in the future.

Geological formations that can be used for artificial recharge of groundwater also need to be protected. In large towns which lack sufficient naturally occurring groundwater, artificial recharge is often necessary if water supplies are to be based on underground sources. Using groundwater in this way, rather than surface water, normally reduces the quantities of chemicals needed at drinking water treatment plants.

Partly as a result of current efforts to reduce the use of natural gravel (interim target 4 under A Good Built Environment), fewer water-bearing sand and gravel deposits are being exploited.

It is important that local authorities analyse their long-term water requirements, and that regional water management plans are drawn up, as proposed in Government Bill 2000/01:130. The resultant documents can then serve as a basis for establishing the necessary protection.

**GROUNDWATER LEVELS**

**INTERIM TARGET 2, 2010**

> 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.
Stockholm counties, owing to excessive withdrawals or wells being drilled too deep. Implementation of the programmes of measures required under the Framework Directive will help to achieve the environmental quality objective, but not this interim target, since these programmes do not have to be established until 2009.

Nevertheless, it is SGU’s assessment that the target can be met, provided that – as proposed in Government Bill 2000/01:130 (approved by Parliament in autumn 2001) – local authorities take the following action without delay:

- identify land areas and systems that are sensitive to changes in groundwater levels and groundwater flow,
- ensure to a greater extent than previously that sensitive areas are recognized in comprehensive and detailed development plans,
- make use of powers under the Planning and Building Act and/or the Environmental Code to introduce restrictions on new abstractions and a notification requirement for existing abstractions in these areas.

**GOOD-QUALITY DRINKING WATER**

**INTERIM TARGET 3, 2010**

*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.*

With some hesitation, it is our assessment that this target can be achieved. Our uncertainty is due to the poor state of knowledge about the majority of contaminants, the inertia of the soil- and groundwater system, and the fact that certain aspects of other environmental quality objectives, on which this target depends, are considered difficult to attain. The main objectives in question are Zero Eutrophication, Natural Acidification Only and A Non-Toxic Environment.

![Graph showing progress in establishing water protection areas, 1955–2003](source: SGU)

**FIG. 9.2 Progress in establishing water protection areas, 1955–2003**

Note: Some local authorities have yet to report.

For there to be a better chance of meeting interim target 3, the pace of progress in establishing protection areas for groundwater sources needs to be stepped up considerably. At the present rate, protection areas will not be in place for all groundwater bodies used for public supplies until around 2030.

The most important preventive measure when it comes to avoiding groundwater pollution is to protect major water sources by introducing regulations that exclude contaminating activities from protection areas. According to the information so far assembled in SGU’s database of groundwater bodies and water sources, water protection areas of varying quality have been established for 62% of the 977 public groundwater sources reported. However, protected sources provide as much as 89% of the water abstracted. Progress in establishing new protection areas needs to be stepped up. At the present rate, protection will not be in place for all public sources of groundwater until around 2030.

Sampling of raw water at public treatment plants is often the only source of information about groundwater quality. The National Food Administration’s drinking water regulations (2001) do not require monitoring of raw water, with the result that such monitoring can be sporadic and is then of no value in
assessing the quality of the country’s groundwater bodies. The consequences of this need to be studied.

The EC Water Framework Directive will help to achieve this interim target, in that it requires the competent authorities to identify all bodies of water providing more than 10 m³ a day or serving more than 50 people. Where necessary, they also have to introduce protection or take other steps to improve or avoid a deterioration of the quality of the water bodies used.

Local authorities need to carry out surveys of densely settled areas, especially those with a preponderance of second homes, that are served by private wells and individual, on-site sewage disposal systems. Sewage effluent can contain bacteria, nitrogen, drug residues, hormone-like substances etc. In such areas, there is a great risk of well-water quality being affected by sewage.

\[\text{Acidification impact according to Environmental Quality Criteria} \]

\[-\text{Groundwater}\]

- very strong impact (5)
- strong impact (4)
- pronounced impact (3)
- moderate impact (2)
- no or insignificant impact (1)

Shallow groundwaters in south-west Sweden are still very seriously affected by acidification. Long runs of data point to a marginal lessening of the severity of the problem. Groundwater takes a very long time to recover, and the changes in the pattern of acidification over the last few years are presumably more a result of fluctuations in weather than a reflection of a trend.
PROGRAMMES OF MEASURES TO ACHIEVE GOOD GROUNDWATER STATUS
INTERIM TARGET 4, 2009

By 2009 programmes of measures as provided for in the EC Water Framework Directive will be established, specifying how good groundwater status is to be achieved.

In the Environmental Objectives Council’s in-depth evaluation, it was proposed that this interim target could be dropped, on the basis that Swedish legislation regarding implementation of the Water Framework Directive is mandatory. In other words, programmes of measures are required by law, making the target superfluous. The Framework Directive should be seen, rather, as an important policy instrument both in achieving the environmental quality objective and in setting the pace for efforts to meet all the interim targets.

During 2003,

• the Swedish EPA, in consultation with SGU and the National Board of Housing, Building and Planning, worked on a handbook to guide implementation of the Framework Directive;

• the Government presented a bill (2003/04:2) on management of the quality of the water environment. Parliament did not approve the bill in its entirety, with the result that Swedish implementation of the Framework Directive will be delayed.
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.

This objective is intended to be achieved within one generation.

Will the objective be achieved?

To create the conditions needed to attain this environmental objective, measures going beyond those already implemented must be introduced. With a view to reversing the current negative trend in coastal waters and open sea areas, the Swedish Commission on the Marine Environment proposed, in its June 2003 report, that a ‘strategy for the sea’ be drawn up.

Efforts to preserve environments of high conservation value are progressing. In 2003, another two sizeable offshore areas, Fladen and Lilla Middelgrund, were designated as Natura 2000 sites. The Swedish EPA and the National Board of Fisheries have conducted a joint study of the feasibility of prohibiting fishing in a marine protected area.

A conservation plan for Swedish lighthouses and lighthouse sites has been prepared. In addition, consultation procedures were established in 2003 to reduce the risk of ships and boats of cultural heritage value being scrapped.

Steps have been taken to address bycatch problems and make fisheries more sustainable, but further action is needed, especially at the international/EU level. In addition, monitoring of bycatches of marine mammals and birds is inadequate and needs to be improved. A significant innovation during the year was the decision to move the trawling limit further out from the west coast. This will give greater protection to sensitive benthic areas and spawning and nursery grounds for fish in the coastal zone.

Other important action taken included further efforts to develop management plans for certain commercial fish species.

The volume of oil shipped from Russian and Baltic state ports is expected to rise, increasing the risk of accidental discharges of oil. To improve maritime safety in the Baltic Sea, an application was made to the International Maritime Organization in 2003 to have the Baltic designated as a Particularly
Trawling limits off the west coast of Sweden are being adjusted to protect nursery grounds, coastal fish populations and sensitive bottom areas in the Kattegat and Skagerrak. In the hatched areas, trawling for Norway lobster using selective gear, with a grid to exclude fish from the trawl, will continue to be permitted. Off the northern Bohuslan coast, benthic surveys were carried out in 2003, and in spring 2004 consultation is taking place to identify areas in these waters, too, that are suitable for lobster trawling.
Sensitive Sea Area. At the beginning of April 2004, a decision in principle was taken to class the Baltic, with the exception of Russian waters, as such an area.

Will the interim targets be achieved?

**MARINE ENVIRONMENTS OF HIGH CONSERVATION VALUE**

**INTERIM TARGET 1, 2005/2010**

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 another five marine areas will be protected as reserves, and the competent authorities will have decided which other areas in the marine environment are in need of long-term protection.

A substantial body of knowledge exists regarding the land-based natural features of Sweden’s coastal and archipelago areas, but when it comes to the marine environment, and especially offshore waters, few data are available. In 2003, surveys of some of the marine habitat types listed in the EC Habitats Directive and inventories of shallow offshore areas were set in hand.

To develop the European Natura 2000 network, natural habitat types and species of particular conservation value are being selected. Twenty-three of the habitat types identified are exclusively marine or marine-related. Sweden’s list now includes 376 areas containing marine habitat types. During 2003, the Government designated another two offshore banks of considerable biological interest for inclusion in Natura 2000: Fladen and Lilla Middelgrund, off the coast of Halland.

In December 2003, the Halland County Administrative Board decided to designate Kungsbackafjorden as a nature reserve. This means that the fjord, which is of interest with regard to nature conservation, recreation and cultural heritage, can now be given long-term protection. In all, there are now eight nature reserves consisting primarily of marine areas.

The National Board of Fisheries and the Swedish EPA have been asked by the Government to study the feasibility of introducing a ban on fishing in a marine protected area by 2005 and to evaluate the effects up to 2010. Without singling out any specific area, their study suggests that the next step should be to introduce a ban on a trial basis, following a local and regional consultation process with relevant stakeholders. It also shows that a total fishing ban in the areas considered will not be able to be put to the test by 2005, as there will not be time to complete the necessary consultations.

At the request of the Stockholm County Administrative Board, the Board of Fisheries has decided to prohibit all fishing in spring in 17 limited areas of the Stockholm archipelago. The county administrative board plans to study how a network of protected spawning inlets for pike and perch affects local populations. The hope is that the meagre stocks of these species will recover.

The Government has decided to protect five modern naval fortifications, forming part of the Naval City of Karlskrona World Heritage Site, as state listed buildings.

The National Heritage Board, in collaboration with the Swedish Maritime Administration, has drawn up a conservation plan for Swedish lighthouses and lighthouse sites. So far, this joint undertaking has resulted in 24 lighthouses being designated as forming part of the national cultural heritage. When the plan has been implemented, around 80 lighthouses along Sweden’s coasts and in Lake Vänern will be classed as listed buildings.

**CULTURAL HERITAGE AND AGRICULTURAL LANDSCAPES OF COASTS AND ARCHIPELAGOS**

**INTERIM TARGET 2, 2005**

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

The National Heritage Board has started work on a strategy for the cultural heritage of coastal and archipelago areas. In certain areas, strong development
pressures could have adverse consequences for the cultural environment, while in others depopulation means that cultural assets are in danger of falling into disrepair. To safeguard and develop the cultural heritage of coasts and archipelagos within one generation, a wide range of measures are required. These include maintaining good public services and communications, and promoting small-scale fisheries, agriculture and other economic activities.

As an NGO initiative, a study is being made of the possibility of forming a network of organizations committed to promoting sustainable use of the natural and cultural environments of coastal areas. Older fishing vessels are a seriously endangered part of the cultural heritage. Since the 1980s, partly as a result of decommissioning grants, the number of such vessels has been reduced. Wooden fishing boats, in particular, are under threat. In 2003, consultation procedures were established between the State Maritime Museums and the Board of Fisheries to reduce the risk of vessels of cultural historical interest being scrapped.

As part of the Swedish Industrial Heritage project, a programme is being developed to enhance public awareness of Karlskrona’s naval shipbuilding traditions.

A decision has been taken to continue international collaboration on the cultural heritage of the Baltic, which has been under way since 1999 in the ‘Baltic Sea Cooperation’ framework. In this context, particular attention has been paid to the underwater archaeology and common coastal culture of the Baltic Sea area.

**ACTION PROGRAMMES FOR THREATENED SPECIES**

**INTERIM TARGET 3, 2005**

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 aim of action programmes for threatened species is to provide information about species and their needs, bring together different bodies to implement measures, and determine priorities regarding the use of resources for conservation.

In 2003 a working group including representatives of the Board of Fisheries, county administrative boards and the Swedish EPA began a review of ways of protecting threatened fish species and populations. Since July 2003, the Board of Fisheries’ powers to issue regulations have been extended to include particularly threatened species or populations of national interest. Under these powers, fishing bans have been proposed for certain marine species (including porbeagle, common skate and thornback ray).

A joint action programme for the harbour porpoise has been adopted by the Board of Fisheries and the Swedish EPA. Among its proposals are measures to reduce bycatch of this species, including development of fishing gear and the use of acoustic alerts (‘pingers’).
on drift-nets for salmon and mackerel. The programme also encompasses surveys and information activities.

The Swedish Species Information Centre currently considers 17 marine Red List species to be in need of measures that justify action programmes. The total number of species in marine environments that require targeted measures, though, has yet to be clarified. Apart from the one adopted for the porpoise, action programmes are being implemented for three species found in coastal or marine environments, namely the pool frog, natterjack toad and green toad. Work at the national level on an action programme for wild salmon is continuing in the framework of the agreed international plan for Baltic salmon.

For the interim target to be met by 2005, efforts to establish a national Red List of threatened marine species must continue.

**BYCATCHES**

**INTERIM TARGET 4, 2010**

By 2010 total annual bycatches of marine mammals will not exceed 1% of each population. Bycatches of sea birds and undesired fish species will have been reduced to levels that have no adverse effect on the populations concerned.

In the early spring of 2003, cod trawling in the Baltic Sea attracted a good deal of attention, the reason being that a large proportion of catches consisted of cod smaller than the minimum permitted size (38 cm). Partly on the basis of studies by the National Board of Fisheries, the International Baltic Sea Fishery Commission decided that, as from 1 September 2003, only trawls equipped with escape panels would be allowed. The aim is to reduce the numbers of small fish caught.

During the year the Board of Fisheries decided that, inside the trawling limit off the west coast of Sweden, only lobster trawls fitted with an exclusion grid were to be permitted (see fig. 10.1). The Board has also conducted behavioural studies and fishing gear experiments, with a view to improving selectivity with regard to size and species. These relate to the eel, perch and vendace fisheries.

Studies of the quantities of fish and shellfish discarded in commercial fisheries continued in 2003. The fisheries concerned were cod fishing with trawls and gill-nets in the Baltic and trawling for demersal fish and Norway lobster in the Skagerrak and Kattegat. During the year, some 150 trawl hauls and 100 gill-net sets were studied.

Generally, the state of knowledge about bycatches of birds and marine mammals is poor. With regard to seals and porpoises, reporting is voluntary, and many instances may therefore go unrecorded. To improve data on bird and mammal bycatches, more fishermen are to be enlisted to keep records of bycatches and damage to gear. The new action programme for the...
harbour porpoise proposes several measures to reduce bycatch of this species. On 22 March 2004, the EU Council decided to phase out drift-net fishing in the Baltic and to ban it altogether from 2008. The Council also decided that vessels over 12 metres in length fishing with bottom-set gill-nets and drift-nets in the southern Baltic are to use acoustic deterrent devices to avoid porpoise bycatch.

**CATCHES – RECRUITMENT**

**INTERIM TARGET 5, 2008**

- **By 2008 catches of fish, including bycatches of juveniles, will not exceed recruitment, enabling fish stocks to survive and, where necessary, recover.**

Biologically, the coastal zone is of immense significance, having greater biodiversity and higher primary production than areas further out to sea. Within it, there are important spawning grounds, where adult fish congregate in the breeding season. Trawl-based fisheries have seen rapid technical advances and improvements in efficiency. With electronic equipment, fish can be located and trawling carried out on previously inaccessible areas of the seabed.

In Sweden, the National Board of Fisheries has decided to move the trawling limit further out from the west coast to protect vulnerable stocks, in particular of cod and herring, and sensitive benthic areas. This will create conditions for population recovery and for sustainable commercial fisheries in the future. The new regulations came into force on 1 January 2004.

In December 2003 the EU Council adopted a recovery plan for cod and the northern hake stock in the Kattegat and Skagerrak. It includes measures to achieve a biologically sustainable population of adult cod. The total allowable catch (TAC) is to be reduced, to enable the spawning biomass of cod to increase by at least 30% a year. However, the recovery plan has not been followed up with acceptable catch quota decisions. Owing to the excessively high quotas for haddock and plaice, which result in an unacceptable bycatch of cod, Sweden and Germany voted against the proposed catch quotas for 2004.

To protect spawning cod, the Baltic Sea Fishery Commission decided in 2003 to extend the closure area for this species off Bornholm.
The volume of shipping from Russian and Baltic state ports is expected to rise significantly in the future, increasing the risk of maritime accidents and discharges of oil.
NOISE AND OTHER DISTURBANCE
INTERIM TARGET 6, 2010

By 2010 noise and other disturbance from boat traffic will be negligible in particularly sensitive and designated archipelago and coastal areas.

The Swedish EPA has submitted proposals to the Government concerning guide values for noise in recreational and other areas. It has also proposed indicators for use in assessing sound quality in areas with no or very limited environmental noise. These indicators define good environmental quality and should also be of use in determining ‘negligible’ noise levels, inter alia in particularly sensitive and designated archipelago and coastal areas.

DISCHARGES OF OIL AND CHEMICALS
INTERIM TARGET 7, 2010

By 2010 discharges of oil and chemicals from ships will be minimized and reduced to a negligible level by stricter legislation and increased monitoring.

A range of measures have been introduced to reduce the number of illegal discharges from ships. The beneficial effects are borne out by statistics from the Coast Guard’s marine surveillance programme: the number of illegal discharges of oil is falling. The risk reduction measures that are being phased in, however, are not expected to entirely offset the increased risk of tanker accidents resulting from more frequent shipments of oil from Russian and Baltic state ports.

An application to have the Baltic designated as a Particularly Sensitive Sea Area (PSSA) was submitted to the International Maritime Organization in December 2003. All the Baltic Sea countries apart from Russia are behind the application, which, if successful, is expected to provide a basis for improving maritime safety. At the beginning of April 2004, a decision in principle was taken to class the Baltic, with the exception of Russian waters, as a PSSA. A final decision will be reached when the applicant countries have submitted proposals for measures to protect the area, which is to be done within two years.

PROGRAMMES OF MEASURES TO
ACHIEVE GOOD SURFACE WATER STATUS
INTERIM TARGET 8, 2009

By 2009 programmes of measures as provided for in the EC Water Framework Directive will be established, specifying how good surface water status can be achieved.

In December 2003, amendments to the Environmental Code took effect, enabling environmental quality standards to be used to introduce binding water quality objectives of the type required under the EC Water Framework Directive. An ordinance regulating issues relevant to programmes of measures for special water districts is expected to come into force in 2004.

In consultation with the Geological Survey of Sweden and the National Board of Housing, Building and Planning, the Swedish EPA has begun to compile a water handbook. The aim is to promote a concerted effort to achieve the relevant national environmental quality objectives and interim targets, to implement the Framework Directive, and to develop a national plan for integrated water resources management, in line with the conclusions of the Johannesburg summit in September 2002. The handbook is expected to be completed in 2004.
11. Thriving Wetlands

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

Will the objective be achieved?

 долгосрочным усилиям по сохранению мокрых местообитаний и их ресурсов продолжаются в рамках ЕС, включая программу EAE и дальнейшее развитие Natura 2000. Новые процедуры для составления программ по защите угрожаемых видов были разработаны. Интенсивная оценка этого объекта в 2003 году показала, что прогресс был сделан, но не достаточно быстро в сравнении с заданными целями. На наш взгляд, в настоящий момент промежуточные цели по защите лесных дорог в мокрых местообитаниях и новые мокрые местообитания на сельскохозяйственных землях не будут достигнуты. Цель по реализации плана защиты болот может быть достигнута только при активных дополнительных мерах. С другой стороны, в этом году должна быть разработана стратегия по защите и управлению мокрыми местообитаниями, что означает, что промежуточная цель 1 будет достигнута.

Will the interim targets be achieved?

**STRATEGY FOR PROTECTION AND MANAGEMENT**

**INTERIM TARGET 1, 2005**

- A national strategy for the protection and management of wetlands and wet woodlands will be drawn up by 2005.

**FIG. 11.1 Number of Natura 2000 sites in Sweden containing certain wetland types**

*Wetland types 7110 and 7140, 7310, 7230 and 9080 in the EU classification*

The European Natura 2000 network is one of the contexts in which work is under way to safeguard different wetland environments. New sites are being selected on the basis of evaluations by the European Commission, in collaboration with the member states concerned. If the Commission judges a particular wetland type to be inadequately represented in one country, designation of further areas there may be considered. As far as Sweden is concerned, the Commission is unlikely to require significant additional areas.

The Swedish EPA’s appropriation directions for 2004 entrusted the Agency with the task of elaborating this strategy, in consultation with the National Board of Forestry, the Swedish Board of Agriculture and the National Heritage Board. Following consultation with county administrative boards and others, the strategy is to be presented no later than 1 October 2005.
Planning of the drafting process began in the autumn of 2003. Certain issues are to be dealt with separately. An important background document is the Swedish EPA’s in-depth evaluation of the Thriving Wetlands objective, from 2003.

In the context of the national wetlands inventory, begun in 1980, cultural traces in wetland areas are reported only sporadically. Often, no information is available on features of cultural heritage interest, such as archaeological finds, traces of past haymaking or other management regimes, or historical records of drainage and lake-lowering projects.

From a cultural history point of view, greater attention to small wetland areas and wetlands remote from human settlements would be welcome.

In our view, this interim target can be achieved. The reason for our more optimistic assessment, compared with last year, is that supplementary directives from the Government have clarified when the strategy is to be presented.

**MIRE PROTECTION PLAN**

**INTERIM TARGET 2, 2010**

By 2010 long-term protection will be provided for all the wetland areas listed in the Mire Protection Plan for Sweden.

In our 2003 report, we noted that much remained to be done to achieve this target. During 2003, another 38 nature reserves, incorporating some 4,900 ha of mires, were designated. Most of this area is in the county of Jämtland. The result for 2003 gives no indication that efforts to protect mires have been stepped up – which has to happen if the target is to be met.

Meanwhile, the process of site selection for the Natura 2000 network continues. Sites designated by the Government in 2003 included some 3,700 ha of bogs and fens. In addition, the Swedish EPA proposed that some 50 of the Mire Protection Plan sites should be added to the network. These areas are not included in figs. 11.1 and 11.2, as the Government has not yet reached a decision on the proposal. Natura 2000 sites are eventually to be given appropriate protection.

The national wetlands inventory is nearing completion, with a final field season in Norrbotten county in 2004. The results will, among other things, be used to designate areas of national and international interest.

The Mire Protection Plan does not deal to any great extent with features of cultural heritage interest. Where information on this subject is available, it should be included in the area descriptions in the plan. Many previously managed mire environments are now left to their own devices. Management guidelines would be useful, e.g. for alkaline fens.
The Swedish EPA has therefore decided that a special action programme for this particular mire type should be drawn up in 2004.

**FOREST ROADS**  
**INTERIM TARGET 3, 2004**

- **By 2004 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 in other respects.**

At present, ‘notice for consultation’ is required under the Environmental Code for activities and measures that could significantly alter the natural environment. Judging from standard administrative practice and a few court rulings, forest road projects are included in that category. Parallel legislation exists in the Forestry Act. The regional forestry boards’ assessment is that, under these provisions, they are informed of the overwhelming majority of plans for new forest roads. In many cases there are no serious objections, and then consultation generally does not ensue.

Standard practice in this area differs somewhat from one regional forestry board to another, depending on which legislation is applied. In 2003, consultations under the Environmental Code took place for 843 forest road projects. One way of reducing impacts on wetlands would be to establish stricter procedures, to ensure that consultations are always held for such projects where serious objections exist.

National statistics on the number of forest roads affecting wetlands with significant natural or cultural assets are not available at present. Good data do exist, however, for the county of Västerbotten. There, all forest road projects are dealt with under the Environmental Code. In 2003, 355 consultation notices relating to such projects were handled in the county. Of these, 138 involved roads affecting wetlands, including 11 class 1 or class 2 (very high or high conservation value) wetlands. In seven of these cases, the notifier wished to build a road across a class 1 or class 2 wetland. Of these, one project was approved by the Supreme Administrative Court, two were rejected by the regional forestry board, in one case a different route was chosen for the road, two projects were approved by the forestry board on the basis of earlier disturbance of the site, and one case has yet to be determined. In Västerbotten, the proportion of road projects affecting wetlands and surface waters in some way seems to be increasing.

The National Board of Forestry is currently developing country-wide statistics.

The reason our assessment of progress towards the target is more pessimistic than in 2003 is that it is judged to be more uncertain than before whether the necessary national statistics will be available within the stated time-frame.

**WETLANDS ON AGRICULTURAL LAND**  
**INTERIM TARGET 4, 2010**

- **At least 12,000 hectares of wetlands and ponds will be established or restored on agricultural land by 2010.**

Some 2,800 ha of wetlands were created or restored on agricultural land over the period 2000–3. In addition, there were an estimated couple of hundred hectares with private funding. For example, in 2003, 50 ha of wetlands were created under the auspices of WWF Sweden. At the present rate, 7,500–8,000 ha of wetlands will have been established or restored by 2010.

EU agri-environment schemes have helped to establish 2,000 ha of new wetlands, including some 650 ha in 2003. In addition, around 600 ha of wet meadows and pastures were restored between 2000 and 2003. The Swedish Wetlands Fund’s projects all made use of EU funding.

In the framework of local investment programmes (LIPs), some 150 ha of wetlands were established in farming areas in 2003. Many ‘LIP wetlands’ receive management payments under Sweden’s Environmental and Rural Development Programme (ERDP, established under EU agricultural policy), and the two forms of support are therefore estimated to have resulted in 2,100–2,200 ha of new wetlands in 2000–3.
On behalf of the Swedish Board of Agriculture and the Swedish EPA, the Wetland Research Centre at Halmstad University has evaluated wetlands created between 1996 and 2002 with agri-environment or LIP funding. In all, almost 1,200 wetland sites with an area of some 3,300 ha were studied more closely. The newly created wetlands were found to have the potential to develop a rich flora and fauna. The age and size of the wetlands and the variety of habitats present were judged to be of great significance for their biological diversity.

According to the Wetland Research Centre’s estimates, some wetlands remove up to one tonne of nitrogen per hectare per year from the water passing through them. Differences in the capacity of wetlands to retain nutrients are largely due to where in the landscape they are located.

The Board of Agriculture has drawn up quality criteria for the location, design and management of wetlands. The aim is to ensure that they are efficient as nitrogen sinks, while also promoting biodiversity and safeguarding the cultural heritage features of sites.

**ACTION PROGRAMMES FOR THREATENED SPECIES**

**INTERIM TARGET 5, 2005**

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

In 2003 the Swedish EPA commissioned several county administrative boards to draw up programmes for around a dozen species associated with wetlands.

One of the species for which action programmes are to be prepared is the lesser white-fronted goose (*Anser erythropus*), which is critically endangered. Intense hunting pressure in the species’ wintering areas around the Caspian and Black Seas is one of the reasons why, at the beginning of the 1970s, the Swedish population was down to just a few pairs.

For more than 25 years, the Swedish Association for Hunting and Wildlife Management, with support primarily from WWF Sweden and the Swedish EPA, has been engaged in an effort to reintroduce the lesser white-fronted goose to an area in Swedish Lapland. Since 1981, the Association has released 348 captive-reared birds. Using barnacle geese (*Branta leucopsis*) as foster parents, it has been possible to alter the lesser white-fronted geese’s migration route, with the result that they now winter in the Netherlands. The released geese have managed at least thirty successful nestings, and the Swedish population now numbers around 100 individuals.
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. This objective is intended to be achieved within one generation.

Will the objective be achieved?

This environmental quality objective will probably not be attained by 2020. As far as biodiversity is concerned, this is mainly due to the long timescale of many biological processes in forests. A marked enhancement of biological diversity will probably not become apparent until after 2020, despite appreciable improvements for several of the factors on which it depends (dead wood, large trees, deciduous trees in coniferous forests, and old forests). One reason for this is that the trend has for so long been towards a more uniform forest landscape.

Although many species will eventually benefit from the measures now being implemented, others will no doubt require other types of action, presumably increasingly specialized.

The value of forests and forest land for biological production and biodiversity is currently threatened by air pollution and by locally high removals of biomass. It is uncertain whether pollution will be reduced to a sufficient degree by 2020. Especially in south-west Sweden, nitrogen deposition in particular remains high. Harvesting of large amounts of biomass must be offset by such measures as recycling of wood ash if acidification of forest soils is to be avoided.

Initiatives have been launched to develop and highlight the social values of forests, including urban woodlands. These initiatives should produce good results.

Will the interim targets be achieved?

LONG-TERM PROTECTION OF FOREST LAND
INTERIM TARGET 1, 2010

A further 900,000 hectares of forest land of high conservation value will be excluded from forest production by the year 2010.

Of the total area of productive forest land that is to be excluded from production by 2010, 320,000 ha are to consist of nature reserves and 30,000 ha of habitat protection areas, while 50,000 ha are to be covered by nature conservation agreements. Forest owners are expected to set aside at least a further 500,000 ha on a voluntary basis, resulting in an area of at least 730,000 ha with voluntary protection by 2010.

The targets for habitat protection areas and nature conservation agreements can be met, provided that sufficient funding is made available. For 2004, the allocation for these two forms of protection has been reduced to SEK 150 million, from SEK 170 million in 2003. The funding required is estimated at some SEK 250 million a year.
Nature reserves are important in achieving the overall goal of safeguarding the biodiversity of the forest landscape. From 1999 to 2003 inclusive, around 60,000 ha of productive forest land were protected by nature reserve designation. This means that less than 20% of the target area has been achieved during the first 40% of the target period – primarily owing to insufficient funding for land purchases and compensation to landowners for the creation of reserves. In 2003 the whole of the budgeted sum, SEK 444 million in all, was used to acquire just over 11,000 ha of forest land. To meet the target, funds to purchase or pay compensation for around 37,000 ha of forest land will be needed every year up to and including 2010.

For 2004, the budget for land purchase and compensation amounts to SEK 633 million, which is barely half the required level of funding. It could therefore be difficult to achieve the target in full by 2010 and, at the same time, meet the need for nature reserves in different regions. As well as adequate funds, a key factor in attaining the target for nature reserves is a general strengthening of county administrative boards’ organizational resources for reserve designation and an increase in the number of decisions.

As for voluntary undertakings, the situation looks relatively promising. As early as 2002, some 990,000 ha of forest land had been set aside voluntarily. However, the permanence and quality of many of these undertakings is uncertain, and further monitoring is necessary.

The reason our assessment is more pessimistic this year than in 2003 is the difficulty of achieving the nature reserves target on schedule.

**ENHANCED BIOLOGICAL DIVERSITY**

**INTERIM TARGET 2, 2010**

- 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;
At forest owners may be needed. The area regenerated with deciduous forest is expected to increase.

At present, the principal means by which the state can promote progress on the various aspects of interim target 2 are advice and education aimed at forest owners. The regional forestry boards have run advisory schemes addressing several of the issues involved, e.g. as part of the ‘Greener Forests’ campaign.

### PROTECTION OF CULTURAL HERITAGE

**INTERIM TARGET 3, 2010**

- 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.

At present, forestry operations cause damage to too many ancient monuments and cultural remains, one of the basic reasons being that most such remains on forest land have yet to be located. In virtually all counties of Sweden, inventories of ancient and cultural remains are under way, chiefly as part of the ‘Forests and History’ project. So far, around 20% of forest land has been surveyed. It is important to extend these inventories to cover the entire country. However, this will not be achieved in time to meet the target, although digital mapping techniques and more effective, targeted advice from regional forestry boards can appreciably improve the situation.

### ACTION PROGRAMMES FOR THREATENED SPECIES

**INTERIM TARGET 4, 2005**

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

Following a more careful review of which threatened species are in need of targeted measures, the assessment is that a total of around 30 action programmes are required, covering some 60 forest species. This target is expected to be met.
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 objective is intended to be achieved within one generation.

Will the objective be achieved?

With the measures already in place, it will be quite possible to achieve, by 2020, the aspects of this environmental quality objective that relate to the condition and long-term productivity of arable land. As for biological diversity and cultural heritage assets, good progress has been made, but it is less certain whether this trend will be maintained until 2020. Progress towards the objective will depend to a large extent on the changes to be made to the EU’s Common Agricultural Policy. It is therefore difficult to predict the longer-term outcome, particularly with regard to the conservation of pasture land.

One component of the cultural heritage of agricultural areas is old farm buildings. Many of these are now redundant and hence under threat. If such buildings are demolished or fall into disrepair, or are insensitively renovated or extended, valuable cultural features of the farmed landscape may be lost.

At the regional level, the prospects of preserving biodiversity and cultural heritage are affected by the fact that farmland is being taken out of production. At present, the rate at which this is happening has slowed down, but it is not clear whether this is a lasting trend, or what the factors determining the pace of the process are.

Will the interim targets be achieved?

**MEADOW AND PASTURE LAND**

*INTERIM TARGET 1, 2010*

- 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.

With existing measures, the area of meadow and pasture land will largely be maintained. Management and restoration are primarily being funded under Sweden’s Environmental and Rural Development Programme (ERDP), established under the EU’s Common Agricultural Policy (CAP). Since 2000, other aspects of the CAP, such as livestock aid, have also benefited biodiversity.

The area of pasture managed under the agri-environment schemes is still increasing, though at a somewhat slower rate. The area of meadows covered by the schemes, on the other hand, is not expanding at a satisfactory pace. Nor is it always the most valuable types of meadow land that are increasing in extent. The most straightforward sites have probably already been restored, and those remaining may require more far-reaching measures. There is thus cause to review the policy instruments used for this purpose.
Withdrawal of farmland from production affects progress towards the environmental quality objective, since both biodiversity and cultural heritage are dependent on agriculture being maintained. The arable area has declined more slowly in the last few years, but it is too early yet to draw any far-reaching conclusions.

The most endangered types of pasture are grazing land in northern Sweden, alvar grasslands (grasslands on thin soil over level limestone), forest pastures, shielings (summer upland pastures) and heather heaths. Overall, the area of northern Swedish pastures has increased, and this part of the interim target seems to have been achieved. The only exception is Norrbotten county, where the area has decreased. The biggest threat to alvar grasslands is scrub encroachment, which can be held in check by appropriate levels of grazing and clearance of invading vegetation. With existing schemes to promote management and restoration, the target for this type of pasture land will be met.

The areas of forest pasture covered by agri-environment payments have changed since 2000, decreasing on Gotland, for example, but increasing in Kronoberg county. Much of the reduction on Gotland is due to changes in the rules and transfers between schemes, rather than to land no longer being managed. Clearer definitions of forest pastures and of management requirements for them need to be developed. The number of shielings in use is rising in line with the target.

Changes in the biological value of meadows and pastures are difficult to measure. A review of the methods and species that can be used for this purpose has been published, and its findings are now being applied.

Payments under the ERDP are currently calculated on the basis that livestock production is profitable. They primarily cover the extra cost of getting the animals to pastures, rather than grazing them on arable land or rearing them indoors. The planned reform of the CAP could make beef production less

![FIG. 13.1 Change in area of arable land, 1989–2003](image1)

Withdrawal of farmland from production affects progress towards the environmental quality objective, since both biodiversity and cultural heritage are dependent on agriculture being maintained. The arable area has declined more slowly in the last few years, but it is too early yet to draw any far-reaching conclusions.

![FIG. 13.2 Total area of meadow and pasture land in Sweden](image2)

Note: The figures for 2000 have been corrected for an overlap of 4,000 ha between the support schemes for pasture land and an open agricultural landscape, and those for 2001–3 for a change in the method of calculating the area of shielings.

The proportion of meadow and pasture land covered by agri-environment schemes continues to rise. Areas outside the schemes may be managed on some other basis, but they may also include meadows and pastures affected by fertilizer applications and past tillage, or in need of restoration. The interim target also applies to these areas.
profitable, since livestock aid, which now makes up a substantial share of farmers’ incomes, is to be largely decoupled from production. This will chiefly affect categories of livestock that are heavily reliant on grazing. When the change is implemented, additional funds for pasture land may therefore be needed to meet this interim target.

The main reason CAP reform will affect future progress towards the target is the planned decoupling of livestock aid. The principal purpose of the reform is to get away from a subsidy-driven system and steer production towards what consumers want. The economic incentive for farmers to use their pasture land will depend on what levels of payment the new forms of support involve and what management requirements they entail. National implementation of the reform will therefore be of great significance for this target.
PLANT GENETIC RESOURCES AND INDIGENOUS BREEDS
INTERIM TARGET 4, 2010

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.

As part of the Programme for Cultivated Diversity (POM), a nationwide inventory is under way of cultivated plants in Sweden that have not previously been surveyed. The part of the inventory covering seed-propagated plants has been completed.

A national programme for the management of livestock genetic resources was proposed in 2003. In particular, it clarifies the responsibilities of different bodies and agencies. The programme also seeks to promote greater understanding of the need for long-term, sustainable management of livestock genetic resources. It extends the existing range of measures and policy instruments, and covers all indigenous breeds. At present, the key measures and instruments to conserve endangered breeds are to be found within the ERDP. Payments are made both to breed societies, to promote information activities, and to livestock owners, to encourage them to keep cattle, sheep, goats and pigs of the most endangered breeds.

ACTION PROGRAMMES FOR THREATENED SPECIES
INTERIM TARGET 5, 2006

By 2006 action programmes will have been prepared and introduced for threatened species that are in need of targeted measures.

In the assessment of the Swedish Species Information Centre and the Swedish EPA, more than 200 species associated with the farmed landscape require targeted measures. For these species, 60 action programmes need to be elaborated no later than 2006. So far, 17 such programmes have been adopted and introduced, or are about to be adopted, and 10 are being prepared. Between 2004 and 2006, another 33 programmes need to be drawn up.

The number of farmland species at risk is very large. Nevertheless, it will probably be feasible to draw up action programmes and begin to implement targeted measures to conserve these species by 2006. This is assuming that the action included in the programmes is coordinated, for example, with ERDP schemes and other policy instruments that may be introduced. Whether it will be possible to begin to implement measures for all species by the target date is uncertain.

FARM BUILDINGS OF CULTURAL HERITAGE VALUE
INTERIM TARGET 6, 2005

By 2005 a programme will have been prepared for the conservation of farm buildings of cultural heritage value.

Inventories have been carried out in a number of parishes in the country, as a basis for monitoring the status of agricultural buildings and the changes affecting them. Preliminary proposals have been drawn up for a national scheme to support the restoration and maintenance of farm buildings of cultural heritage value, primarily aimed at smaller redundant buildings.
14. 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 objective is intended to be achieved within one generation.

Will the objective be achieved?

This objective presupposes the survival of reindeer herding, which will enable a landscape characterized by grazing to be maintained. At the same time, herding must continue to be pursued and developed along environmentally sustainable lines.

Pressure to establish new wind energy installations in mountain regions could adversely affect both the natural and cultural assets of such regions and the chances of increasing the area of undisturbed mountain terrain, unless such projects are preceded by careful land use planning. On the other hand, wind power will benefit mountain ecosystems that are dependent on progress towards the environmental quality objectives relating to acidification, eutrophication and climate change. The regional environment

FIG. 14.1 Reindeer numbers, 1900–2003

Reindeer are counted in winter, after the autumn slaughter and before calving. At this time of year, they graze mainly on lichens. Fluctuations in reindeer numbers reflect the varying abundance and accessibility of lichens, chiefly in forest areas outside the mountain region.

and sustainable use programme to be drawn up jointly by the county administrative boards concerned, and the environmental plans of reindeer husbandry districts, are crucial tools in addressing the land use issues of mountain areas.

More research is needed concerning vegetation, aquatic organisms, noise pollution, cultural environments and non-native and threatened species in mountain areas. In addition, much remains to be done to coordinate the efforts of county administrative boards and the Swedish EPA to develop and select indicators that can be used to monitor progress towards this objective.
Our overall assessment is that the environmental quality objective can be achieved within one generation, provided that the relevant sectors and society as a whole show the environmental consideration which the interim targets require. A wide range of action is in progress, and additional measures are planned. However, implementation of these measures needs to be accelerated.

Will the interim targets be achieved?

**DAMAGE TO SOIL AND VEGETATION**

**INTERIM TARGET 1, 2010**

полнение the interim targets require. A wide range of action is in progress, and additional measures are planned. However, implementation of these measures needs to be accelerated.

**Will the interim targets be achieved?**

**DAMAGE TO SOIL AND VEGETATION**

**INTERIM TARGET 1, 2010**

By 2010 damage to soil and vegetation caused by human activities will be negligible.

It is essential to maintain adequate environmental monitoring of damage to soil and vegetation, and to ensure that the data available to reindeer herders are of sufficient quality to enable them to use pasture resources without harming the natural environment.

The Swedish Board of Agriculture has been asked to develop a survey method for reindeer pasture areas, with assistance from the Sami Parliament, the Swedish University of Agricultural Sciences (SLU) and the Swedish EPA, but no funding has been provided for this work in 2004. A usable method is certainly needed, however. The National Inventory of the Landscape in Sweden (NILS), a new environmental monitoring programme which also covers mountain areas, has now been launched. Moreover, methods are being developed to monitor damage to soil by means of satellite-based remote sensing. Practical conditions for using these methods need to be created at both the national and the regional level.

Data on the state of the mountain environment, in other words, have still to be produced. At present, the risk of damage can only be assessed indirectly, on the basis of numbers of all-terrain vehicles and reindeer. An appraisal also needs to be made of the impacts of infrastructure and settlements on soil and vegetation.

The number of all-terrain vehicles has increased insignificantly in recent years. Reindeer numbers have continued to rise, by 3.5% compared with 2002, the whole of the increase occurring in Norrbotten county.

Our assessment is that this target can be achieved within the time-frame, provided that the necessary measures are implemented. This presupposes that current work on new methods is completed and that inventories are started soon enough to allow sufficient data to be collected and progress towards the target to be verified. If this does not happen, the assessment will have to be reviewed.
NOISE

INTERIM TARGET 2, 2010/2015

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 Swedish EPA is preparing proposals for a voluntary environmental classification scheme for snowmobiles, with a view to reducing noise levels in mountain areas. Environmental standards for vehicles must also be pursued at the EU level and on a voluntary basis within the industry.

Only a small number of light all-terrain vehicles in Sweden’s mountain counties meet stringent noise standards. If the target for noise from these vehicles is to be met, existing vehicles must be replaced with new ones complying with such standards. Highly effective policy instruments are needed, e.g. economic instruments to encourage a switch to quieter vehicles. Statistics also need to be improved, to provide separate data on vehicles with different noise levels and on those with two- and four-stroke engines.

The Civil Aviation Administration, together with the Swedish EPA, has submitted proposals to the Government for legislative changes relating to aviation in mountain regions.

NATURAL AND CULTURAL ASSETS

INTERIM TARGET 3, 2010

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.

Large areas of Sweden’s mountain regions are already protected by nature reserve or national park designation. Protection of the freshwater environment, though, is limited, as is our knowledge of where the representative and significant cultural assets of these regions are to be found. Only relatively rarely do the decisions creating national parks and nature reserves, or the management plans established for them, specify what cultural assets they contain or how those assets are to be managed and restored. More resources must be made available to the cultural heritage bodies, to enable them both to play a role in existing reserves and parks and to work together with the nature conservation authorities to provide long-term protection for new areas in the future.

There are large protected areas containing significant assets in terms of both cultural heritage and nature conservation, as well as key geological sites. However, the representativeness of the sites and features safeguarded needs to be reviewed and additional funding requirements for management and restoration assessed. Aquatic environments, for example, need to be better protected, and protection of mountain rivers not harnessed for hydroelectric power must be maintained. Furthermore, gaps in existing data on the cultural environments, archaeological remains and settlements of mountain areas need to be filled.
ERDP payments for the conservation of valuable natural and cultural environments in reindeer-herding areas have been increased to promote progress towards this target.

**ACTION PROGRAMMES FOR THREATENED SPECIES**

**INTERIM TARGET 4, 2005**

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

The number of action programmes needed for threatened species and habitats is larger than earlier estimates suggested.

Two species action programmes of specific relevance to mountain areas are under way, for the Arctic fox and the wolverine. Another three in progress – for the wolf, brown bear and lynx – are closely associated with mountain regions. In addition, programmes are being prepared for the gyrfalcon and golden eagle, and for naturally fishless lakes. Programmes will probably also be needed for flora, rich fens, and fish populations, primarily Arctic char. A review of procedures to develop action programmes for species and habitat types is currently in progress.

The National Board of Fisheries has studied how fishing affects the abundance of Arctic char in mountain lakes. Experiments have been conducted since 1983, in collaboration with fishing rights owners, in two comparable lakes in the Västerbotten mountains. The study underscores the importance of reducing fishing pressure and improving protection for fish stocks by developing action programmes and management plans.

![Graph showing average sampling catch of Arctic char in grams per net](source: national board of fisheries)

In Lake Västansjön, fishing for Arctic char using nets was stopped, and rod fishing was restricted. In Lake Bollvattnet, fishing for domestic consumption and recreation continued as before. Over the following six years, catches of char during sampling in the lake with fishing restrictions increased more than fourfold.

Most accessible lakes in the Swedish mountains are overexploited, and overfishing is damaging their vulnerable Arctic char and brown trout populations. Both net- and rod-based fishing are selective, mainly catching larger and older fish.
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.

This objective is intended to be achieved within one generation.

Will the objective be achieved?

Some of the interim targets under A Good Built Environment will be very difficult to meet on time, and it is therefore uncertain whether the environmental quality objective as a whole will be achieved within one generation. Several of the interim targets relate to infrastructure and supply systems, e.g. those concerning traffic noise, supplies of aggregates, waste, and energy use in buildings. Other, ‘softer’ dimensions also need to be taken into account if the objective is to be attained. In the 2003 Housing Market Survey, conducted by the National Board of Housing, Building and Planning, almost half the country’s local authorities reported that, at the time of the survey, they were devoting particular attention to questions of accessibility in public settings and to measures to ensure security and/or prevent crime. Many authorities also stated that they were looking at ways of involving children and young people more fully in land use planning. Such issues are important in shaping people’s perceptions of their built environment.

Local authorities and county administrative boards have an important part to play in achieving the environmental quality objective and its interim targets and other dimensions. A lack of resources, especially in smaller municipalities, is a serious obstacle to attaining these goals, as is inadequate study of what problems need to be addressed.

Will the interim targets be achieved?

PROGRAMMES AND STRATEGIES FOR PLANNING
INTERIM TARGET 1, 2010

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 car use and improve the scope for environmentally sound and resource-efficient transport;
- preserving and enhancing cultural and aesthetic assets;
- preserving and enhancing green spaces and water bodies in urban and suburban areas and ensuring that the proportion of hard surfaces does not increase;
- promoting more efficient energy use, use of renewable energy resources and development of production plants for district heating, solar energy, biofuels and wind power.
Local authorities have the most important role to play in achieving this target, partly because land use planning is their responsibility. Progress in terms of developing comprehensive plans under the Planning and Building Act varies from one authority to another. Almost two-thirds of the country’s local authorities still have municipality-wide comprehensive plans that were adopted in the early 1990s. Many of these authorities, however, have started work on a second generation of such plans or have developed existing plans in greater depth.

Low levels of planning activity on the part of local authorities can largely be attributed to inadequate resources and expertise. The majority of county administrative boards, too, report a lack of resources in terms of funding and staff hours. This reduces their capacity to compile regional data and to support municipalities in their planning efforts. In view of these factors, it is uncertain whether this interim target will be met.

**BUILT ENVIRONMENTS OF CULTURAL HERITAGE VALUE**

**INTERIM TARGET 2, 2010**

By 2010 built environments of cultural heritage value will be identified and a programme will be in place for the protection of their cultural assets. In addition, long-term protection will be provided for at least 25% of valuable built environments.

Many local authorities report that they are developing programmes or strategies dealing specifically with the issues covered by interim target 1. The 2003 Housing Market Survey shows that local authorities with specific programmes and strategies have incorporated these issues in their comprehensive plans to a greater extent than others. This enables the questions concerned to be taken into account in subsequent planning and development.

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**FIG. 15.1** Proportions of local authorities with programmes or strategies specifically addressing environmental issues covered by interim target 1

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**FIG. 15.2** Demolition prohibitions in detailed development plans with the aim of protecting built environments of cultural heritage value

How active local authorities have been in introducing demolition prohibitions in their detailed development plans, in order to protect built environments of cultural heritage value, varies from one county to another. Only 11% of authorities have made use of this possibility on several occasions.
To achieve this target, local authorities must take active steps to protect both entire built environments and individual buildings. Of Sweden’s 290 municipalities, just over a third have not protected any buildings by means of demolition prohibitions. The majority have only protected one or two buildings, and only 11% have made use of this possibility somewhat more frequently.

There are no data at present that can be used to assess how many buildings require long-term protection. Even if sights were set as low as 1% of the building stock, each local authority would on average have to protect over 100 buildings. Unless vigorous action is taken, this target will be very difficult to meet.

NOISE
INTERIM TARGET 3, 2010

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.

Traffic noise is a major public health problem, especially in large towns and cities. Despite this, deviations from guide values for noise are becoming increasingly common in connection with the building of new homes. A review is under way of how these values should be applied in the future. Recent research shows that people feel less disturbed by noise if their home has a ‘quiet side’, overlooking a garden or courtyard, to offset a noisier side facing the street.

The transport agencies are expected to have reduced noise levels in the worst-affected homes within a few years, but many local authorities lack the necessary action programmes to tackle noise from their own streets and roads. This, combined with growth in traffic, means that the target is judged to be difficult to achieve. It will be even harder to attain the goal of a good sound environment for all within one generation.

EXTRACTION OF NATURAL GRAVEL
INTERIM TARGET 4, 2010

By 2010 extraction of natural gravel in the country will not exceed 12 million tonnes per year and reused materials will represent at least 15% of the aggregates used.

The amount of natural gravel extracted, as a share of all aggregates, is continuing to decline, but the decrease was smaller in 2002 than the previous year. In 2002, 22.9 million tonnes of natural gravel was extracted. It is considered feasible to meet the target of a maximum of 12 million tonnes per year.

Data on the quantities that are and can be reused must be improved if we are to be able to assess progress towards the second part of this target. It also has to be decided what materials are reusable in a sustainable society. In addition, environmental legislation should be amended to allow recycling to be coordinated with regular production of aggregates.

FIG. 15.3 Quantities of aggregates supplied, 1984–2002

The quantities of natural gravel extracted continue to fall, though the rate of decrease was somewhat slower in 2002. To ensure that the target is met, there is a need for better planning of aggregate supplies and information on how crushed rock can be used for different applications.
WASTE
INTERIM TARGET 5, 2005

The quantity of waste disposed of to landfill, excluding mining waste, will be reduced by at least 50% by 2005 compared with 1994, at the same time as the total quantity of waste generated does not increase.

This target covers different types of waste. In the case of household waste, the total quantity is increasing, but the proportion disposed of to landfill is decreasing. In other words, current trends are both unfavourable and favourable as regards achieving the target. To reduce landfill disposal, several powerful instruments have been introduced, but these have little impact on the total amount of waste arising. It will therefore be difficult to meet the interim target as a whole within the stated time-frame.

Local authorities are collecting an increasingly large share of hazardous wastes from households for treatment. In particular, there has been a sharp rise in the overall proportion of electronics waste collected and recovered in recent years.

LANDFILL SITES
INTERIM TARGET 6, 2008

All landfill sites will conform to uniform standards by 2008 and will meet stringent environmental requirements in accordance with Council Directive 1999/31/EC on the landfill of waste.

The most powerful instrument for attaining this target is the Landfill Ordinance. By 1 July 2002, landfill owners had submitted modification or closure plans, setting out how they intended to comply with its provisions. The supervisory authorities are now assessing whether the measures described in these plans meet the statutory requirements. It is estimated that around half of the country’s landfill sites in operation on 1 July 2001 will be closed by 2008.

In many cases, the proposed measures have yet to be implemented at sites, and there are no statistics on how many landfill sites currently meet the requirements of this interim target. The target is expected to be achieved on time, however.

FIG. 15.4 Quantities of household waste 1985–2002, by treatment/disposal route

<table>
<thead>
<tr>
<th>Year</th>
<th>kg per capita</th>
</tr>
</thead>
<tbody>
<tr>
<td>1985</td>
<td>100</td>
</tr>
<tr>
<td>1990</td>
<td>200</td>
</tr>
<tr>
<td>1994</td>
<td>300</td>
</tr>
<tr>
<td>1998</td>
<td>350</td>
</tr>
<tr>
<td>2001</td>
<td>400</td>
</tr>
<tr>
<td>2002</td>
<td>450</td>
</tr>
</tbody>
</table>

The total quantity of household waste received by waste treatment and disposal facilities is continuing to rise. However, both the amount and the proportion of it disposed of to landfill are decreasing compared with the base year 1994.

ENERGY USE ETC. IN BUILDINGS
INTERIM TARGET 7, 2010

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.

The built environment accounts for some 40% of total energy use in Sweden. To reduce carbon dioxide emissions and consumption of finite resources, fossil fuels need to be replaced with renewable energy sources. An expansion of district heating based on biofuels is helping to achieve these aims. The goal regarding the environmental impact of energy use is expected to be attained, but it is uncertain whether total consumption of energy will be reduced by 2010. Some appraisals
suggest, rather, that it will increase. The EC Directive on the energy performance of buildings, providing for minimum requirements and energy performance certificates, is important in this context.

Measures which reduce environmental impacts in terms of certain pollutants may simultaneously increase emissions of others. Small-scale burning of wood, for example, is good from a carbon dioxide point of view, but can also release other substances, representing health hazards, if it is not done in the right way and in appropriate locations.

A GOOD INDOOR ENVIRONMENT
INTERIM TARGET 8, 2010/2015/2020

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.

Many people suffer from ill health as a result of their indoor environment. Poor ventilation may be one cause. The Ordinance on Mandatory Inspection of Ventilation Systems (OVK) requires property owners to check that their ventilation systems are working effectively, and to remedy any defects. But compliance and enforcement are unsatisfactory, and the rules do not apply to all buildings.

In 2003, amendments to the Radon Grants Ordinance resulted in a substantial rise in the number of applications for such grants. The number of buildings remediated will have to increase many times over, however, if this target is to be met. The National Board of Health and Welfare is developing proposals to lower the guide value for radon in homes, to bring it into line with the Ordinance.

Surveys of radon levels in schools and pre-schools are under way, and the goal for these types of premises is judged to be attainable. On the other hand, the other aims expressed in the interim target will be very difficult to achieve.

Two new interim targets

In the autumn of 2003, the Swedish Parliament adopted another two interim targets relating to waste under the environmental quality objective A Good Built Environment. Both are concerned with recovery of food waste. In its in-depth evaluation, the Environmental Objectives Council proposes that these targets should be incorporated as indents under interim target 5, which is also concerned with waste.
FOOD WASTE FROM HOUSEHOLDS, RESTAURANTS ETC.
INTERIM TARGET 9, 2010

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.

As this target was adopted only recently, progress towards it has not yet been directly monitored. It may be noted, though, that facilities for biological recovery of separated food wastes from households, restaurants etc. are currently expanding rapidly. The data available suggest a continuing significant rise in the quantities recovered, at least up to 2005. In view of this, the new interim target is probably not unrealistic, although further rapid development and expansion will be needed to achieve it.

FOOD WASTE FROM FOOD PROCESSING PLANTS ETC.
INTERIM TARGET 10, 2010

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.

As this target, too, has just been adopted, no direct monitoring has been undertaken yet. However, the volume of food waste from food processing facilities that is being recovered by means of biological treatment is currently increasing at a considerable rate. Data on how this category of waste is dealt with at present are somewhat more limited than in the case of food waste from households, restaurants etc. Since this interim target relates to large volumes of material of a more uniform quality, recovery should be economically competitive even in the shorter term. The indications are, therefore, that the quantities recovered will grow rapidly in this case, too. At the same time, with fewer data available, the feasibility of achieving the target is more difficult to assess.
the 4 broader issues related to the objectives
An understanding of the natural environment and environmental issues in general is essential to the task of implementing the environmental objectives. Relevant issues include how action taken with regard to one natural habitat type will affect other habitat types. In the case of species associated with several different habitats, we need a grasp of broader questions, which are not always addressed under the individual environmental quality objectives. Through collaboration between the relevant authorities, proposals for measures of broader relevance can be acted on and overall solutions developed.

To a large extent, trends in the state of the natural environment will depend on the progress made towards the fifteen environmental quality objectives. These objectives cover a great many issues affecting the natural environment. By and large, therefore, monitoring of the natural environment is achieved by monitoring progress towards the objectives. Certain questions, though, are not covered by the fifteen objectives. A separate account of action relating to some of these will be found below.

Local involvement and outdoor recreation

OUTDOOR RECREATION COUNCIL SET UP
Outdoor recreation is an area on which growing emphasis is being placed in nature conservation policy, and a Council for Outdoor Recreation, attached to the Swedish EPA, has been established. The Council’s role is to assist and work together with government agencies, researchers and organizations in this area.

This includes encouraging development activities and networking. In addition, the Council has the task of distributing funding of some SEK 16 million to organizations in the field of outdoor recreation.

STUDY OF VISITORS TO FULUFJÄLLET NATIONAL PARK
The Fulufjället National Park was opened in 2002. One of the factors behind its creation was an awareness of the employment opportunities which it could generate by boosting tourism.

FIG. 1.1 Number of visitors using trail to Njupeskärsfallet in Fulufjället area in 2001

Note: Data were collected by automatic instruments, as part of a methods development project for the measurement of outdoor recreation in protected areas.

Some 36,000 visitors used the trail between June and September 2001, before the area became a national park.
To demonstrate the effects of national park designation, the Swedish EPA is carrying out a study of visitors to the area, before and after the park was established (frequency of visits, patterns of movement, attitudes, services utilized etc.). The results, to be presented in 2004, will be used in park management and to develop local tourism.

MORE INFORMATION ON RIGHT OF ACCESS
The Swedish EPA has set up a web site to provide information about the right of public access to the countryside (www.allemansratten.se), in Swedish, English and German, with brief summaries in 15 ethnic minority languages. The site deals both with the right of access in general and with more specific issues, such as canoeing, riding and berry picking. A new booklet on protected natural areas – how they are established and can be used – has also been produced. Well designed information can result in more visits to nature reserves and national parks, and satisfied visitors who are aware of the value of safeguarding the natural environment.

Nature conservation on the urban fringe
In 2003, at the request of the Government, the Stockholm, Västra Götaland and Skåne county administrative boards presented programmes for long-term protection of the most valuable natural areas on the urban fringe in their respective urban regions. The programmes have been drawn up in collaboration with local authorities and other local partners. The Stockholm board has proposed 71, the Västra Götaland board 40 and the Skåne board 128 new nature and cultural heritage reserves, to be designated within ten years. Stockholm has proposed areas within 30 km of the city centre, while in Västra Götaland areas within a radius of 40–60 km of central Göteborg are proposed. Skåne has chosen to study a wider area, since it interprets the entire county as ‘urban fringe’.

Wildlife management
For Sweden’s four large predatory mammals, the brown bear, wolf, lynx and wolverine, targets have been set by Parliament in a decision establishing an overall policy on predatory animals. Population trends for these four species have varied in recent years. The brown bear has developed favourably, reaching the target of 100 litters per year; the figure for the wolf is unchanged at 8–10 litters, which is half the interim target (of 20) set by Parliament; the lynx has declined from 300 to around 240 litters; and the wolverine remains steady at about 50 litters – well short of the target of 90.
One local authority in three has second comprehensive plan

Land use planning is concerned with how land and water are to be used and how the built environment is to be designed. Good planning is crucial in achieving a sustainable society in which human health is promoted, cultural assets are taken into account as an integral aspect of development, the natural environment and biodiversity are conserved, and natural resources are used efficiently and with a long-term approach. For local authorities, land use planning is perhaps the most important means of contributing to attaining the environmental quality objectives. In their comprehensive plans, municipalities set out how they intend to use different areas of land and water. A third of Sweden’s local authorities have adopted a second plan of this kind, and 43% are in the process of preparing a new one. Other councils are still only using their original plan, from the early 1990s. Most local authorities find their comprehensive plan useful, chiefly because it facilitates decision making on building permit and other applications under the Planning and Building Act. They also feel that it represents a clear statement of local authority policy. Fewer than half, on the other hand, take the view that these plans guide their efforts in the area of sustainable development.

**FIG. II.1 Growth of urban areas and their populations**

Over the last 40 years, the area of towns and cities in Sweden has increased by 50%, while their total population has grown by 37%.

*Source: Statistics Sweden*
Urban areas are changing
Over the last 40 years, Sweden’s towns and cities have expanded by 50% in terms of area, while their total population has increased by just 37%. This means that more land per capita is being used for homes, infrastructure and services. One result of the declining density of urban areas is to make resource-efficient solutions such as public transport and district heating more resource-intensive and expensive. At the same time, the centres of many towns are becoming more compact. To make use of existing infrastructure and public transport, new homes are also being built in popular green spaces. Higher-density development, with the aim of saving resources, may compromise the conservation of green spaces and reduce opportunities for daily, health-enhancing outdoor recreation. By means of conscious, long-term planning of open spaces, local authorities can strike an appropriate balance between planned development and existing and desired green structure.

Another structural change currently affecting urban areas is the establishment of out-of-town shopping centres, which mainly attract customers with cars. The pace of this change is rapid: in 1992, such centres accounted for around 8% of retail turnover; by 2000 the figure had risen to just over 45%. Roughly 25 new shopping centres have been built in Sweden since 1997. Local authorities are currently planning at least 40 new centres or extensions to existing ones. Two effects of this trend are to put smaller grocery stores out of business and to leave suburban centres impoverished. A few municipalities have policies on new retail developments, but it is not unusual for them to be set aside if an interesting business proposal turns up. Regional or inter-municipal implications are rarely considered. Adverse consequences for the environment, local centres within the town, or rural stores seem to be largely ignored in favour of competition with a view to cutting prices.

Many homes poorly maintained
Many dwellings are in a neglected state of repair. Between 500,000 and 1,300,000 apartments, especially in the ‘million homes programme’ areas, will soon require extensive renovation of plumbing, wiring, windows, balconies and cladding. In houses from the ‘record years’ of the 1970s, too, similar work needs to be done.

Improved housing management is one of the goals of the voluntary agreements entered into by companies, local authorities and central government as part of the Building/Living dialogue project. The most important aims in this context are to improve energy and resource efficiency and to ensure a good indoor environment.
Cultural environment aspects of objectives and targets

The chances of securing adequate attention to the cultural environment dimension of the environmental objectives depend primarily on the commitment of decision makers and the general public. Another factor of great significance is the capacity of the bodies and individuals concerned to manage cultural heritage. To achieve a good living environment, it is very important that cultural assets are used, with care, as resources for regional and local development.

The interim targets regarding protection, adopted under several of the environmental objectives, need to be supplemented with goals relating to sound management of cultural assets and environmentally sustainable development of society. Interim targets corresponding to the one under A Good Built Environment, which calls for land use and community planning to be based on programmes and strategies, should be adopted for environmental quality objectives linked both to built environments and to landscapes.

Local authority planning important for cultural environment

The Planning and Building Act provides local authorities with tools both to safeguard and make use of cultural heritage assets in the physical environment as a whole, and to require protection and careful management of buildings. Strategic statements in authorities’ comprehensive plans are therefore of decisive importance in the management of cultural heritage.

Several studies have been made by the cultural heritage agencies of what local authorities are doing with regard to the cultural environment. They have looked at how cultural environment issues are handled in background documents, comprehensive plans, detailed development plans and the processing of permit applications. The studies reveal consider-
The cultural environment

The cultural environment

able variation in the degree to which programmes and plans exist, and the age of those that do. Most local authority cultural environment programmes have not been updated for ten years. Views of cultural assets have changed; existing documents were produced for purposes other than careful use and development. As a result of the Planning and Building Act, limited local authority resources, broader responsibility for the cultural environment, and the overall state of the economy, the situation has changed for all concerned.

Knowledge and expertise need to be updated

In Sweden, different sectors of society are now responsible for managing the cultural environment within their particular spheres of activity and policy-making. This calls for broader capabilities in this area; individual landowners, businessmen and women, and public utilities also need access to knowledge, resources and incentives that will enable and encourage them to manage and make wise use of ‘their’ cultural assets.

In the context of the environmental objectives, as in other areas, importance is attached to the participation of ordinary citizens. In both the short and the long term, it is essential to find ways in which the general public can influence the evaluation and management of cultural features of the physical environment.

As a result of the adoption and implementation of the environmental objectives, the roles of many agencies, organizations and individuals have been broadened and, to some extent, altered. Arrangements for collaboration therefore need to be improved and cultural environment documentation kept up to date, for example by means of new inventories. Existing documentation needs to be updated from different points of view (e.g. experts – citizens) and adapted to different decision-making situations. New expertise and knowledge must be developed on a continuous basis, at both the regional and the local level.

Regional cultural environment programmes

Regional cultural environment surveys and programmes should provide a basis not only for local authority planning and regional development, but also for decisions in other sectors. Of the existing regional programmes of this kind, only three date from later than 2000. As regards the 1,700 areas of national interest for the purposes of conservation of the cultural environment, identified under the Environmental Code, the application of the law, basic data, and the range of areas selected need to be brought up to date. The present list has not been revised since 1987.

The basic documentation for cultural environment programmes needs to be updated at both the regional and the municipal level. For this to be possible, both county administrative boards and local authorities must be given the support and resources that they need.
IV. Human Health

One essential condition of sustainable development is that people are able to enjoy good health and a sense of well-being. Although in some respects the environmental situation has improved in recent years, difficult problems that entail risks to humans still remain. In addition, new findings are resulting in a number of environmental factors being reassessed and viewed more seriously. This is true, for example, of air pollutants such as particulates and ozone, which are emerging increasingly clearly as serious risk factors, even at low exposure levels. Other challenging problems are noise, radon and other pollutants in indoor air, and heavy metals and persistent toxic substances in food. Just as important as reducing our exposure to hazardous substances in the environment are efforts to promote good environments in which to live and to create opportunities for recreation by means of careful land use planning.

Until recently, human exposure to nitrogen dioxide in Sweden was abating, but the downward trend has now levelled off. Some 300,000 people are still exposed to concentrations exceeding the environ-


Dioxins and PCB levels in human breast milk have fallen since the 1970s. Concentrations of polybrominated diphenyl ethers (PBDEs), which are used as flame retardants, on the other hand, rose sharply between the early 1970s and the end of the 1990s. A trend break in the form of a slight decrease is suggested by more recent Swedish studies, but further measurements are needed to confirm this. We know very little about whether other brominated flame retardants occur in breast milk and, if so, in what concentrations.
mental quality standard. Exposure to nitrogen dioxide can temporarily increase the sensitivity of the respiratory tract. This is a problem for individuals with asthma, respiratory tract allergy and chronic obstructive bronchitis, since the heightened sensitivity resulting from elevated levels of the pollutant can precipitate attacks of these conditions. Nitrogen dioxide is an indicator of local air pollution, from traffic and other sources.

Ozone concentrations in larger towns and cities have increased, aggravating the problems of sensitive groups. In the national environmental health survey carried out in 1999, over 25% of respondents reported that they had either asthma or hay fever. Of all the individuals surveyed, 6% stated that they were adversely affected by vehicle exhausts or other air pollutants.

Asthma and allergy
aggravated by air pollution

One Swede in every three or four now suffers from some form of allergy. The 2003 environmental health survey, which focused on children up to the age of 12, will give some indication of allergy trends in this age group. The results are to be presented in spring 2005. No data are available on trends for the rest of the population. Although environmental pollution as such is not the primary cause of asthma and allergies, there is ample evidence that it does make matters worse for those who already have these conditions.

Planning promotes health

One of the most important tools when it comes to taking action to address environmental health concerns is land use or physical planning. Prior to decisions on new activities that can have significant impacts on the environment, operators are required to carry out an environmental impact assessment (EIA). This includes a study of the effects of the proposed activity on human health. To a large extent, it is at the local level that tangible steps have to be taken to tackle pollution of air, groundwater and surface waters, as well as noise and indoor environment problems. The degree of local interest determines how much weight is given to questions concerning human health and its protection in local planning and decision making. To achieve the goal, which is that the environment should not adversely affect human health, vigorous initiatives and measures must continue to be pursued.
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**Area of national interest** = area designated as being of national interest under ch. 3 and ch. 4 of the Environmental Code.

**ASTA** = International and National Abatement Strategies for Transboundary Air Pollution – a research programme funded by MISTRA.

**BBP, DEHP, DIDP, DINP, DBP**: The commonest long-chain phthalates are diisononyl phthalate (DINP), diisodecyl phthalate (DIDP) and diethyl hexyl phthalate (DEHP). Butyl benzyl phthalate (BBP) is also a long-chain phthalate. Dibutyl phthalate (DBP) is a short-chain phthalate.

**Biomass** = weight; spawning biomass refers to the weight of the sexually mature members of a fish population.

**Bq** = becquerel, unit of activity of a radioactive material. 1 Bq corresponds to one radioactive disintegration per second.

**Carbon dioxide equivalent** = quantity of a greenhouse gas expressed as the amount of carbon dioxide that has the same impact on climate: 1 kg of methane corresponds to 21 kg of carbon dioxide, for example.

**Carbon sink** = the ongoing accumulation of carbon in biomass, soil or water.

**CFCs** = chlorofluorocarbons, used in refrigeration, heating and air-conditioning equipment, chemical products and foamed plastics.

**Climate corrected** = (of greenhouse gas emission figures) corrected to allow for fluctuations in the weather from one year to another.

**CMRs** = substances that are carcinogenic, mutagenic and/or toxic for reproduction (reprotoxic).

**County administrative board** = authority responsible for state administration at the regional level in Sweden.

**Culturally significant landscape features** = e.g. stone walls, wooden fences, ditches, solitary trees, avenues, ponds, mid-field pockets of rocky ground, field margins, meadow barns or redundant farm buildings (a full list, with definitions, can be found in Swedish Board of Agriculture Regulation 2001:114).

**dBA** = unit of sound level. Sound pressure level is usually given in decibels (dB). To approximate to the frequency response of the human ear, a sound pressure meter is equipped with a frequency filter (A filter). The value thus obtained is referred to as the ‘sound level’, and expressed in dBA.

**DU** = Dobson unit, a measure of the thickness of the ozone layer. 1 DU = 0.01 mm. The annual mean thickness of the ozone layer above Sweden is normally 350 DU, i.e. about 3.5 mm.

**Ecosystem** = a dynamic complex of plant, animal and micro-organism communities and their non-living environment, interacting as a functional unit.

**Electromagnetic fields** = radio waves, microwaves, visible light, ultraviolet, X-rays and gamma rays are all examples of the same basic physical phenomenon, the electromagnetic wave or field.

**Environmental Code** = a major codification of environmental law that came into force in Sweden in 1999.

**ERDP** = Sweden’s Environmental and Rural Development Programme.

**Flexible mechanisms** = various mechanisms for trading in greenhouse gas emissions.

**Habitat protection area** = form of site safeguard (area protection) provided for in the Environmental Code (ch. 7, s. 11), used for relatively small areas of land and water.

**Habitats Directive** = Council Directive 92/43/EEC, which can be said to be a complement to the Birds Directive, in that it also deals with other groups of species and with different natural habitat types. The term ‘natural habitat (type)’ is used in a very broad sense in the directive, including everything from geological formations to plant communities.
HCFCs = hydrochlorofluorocarbons, used in refrigeration, heating and air-conditioning equipment, chemical products and foamed plastics.

ICES = International Council for the Exploration of the Sea.

IVL = Swedish Environmental Research Institute.


Limit value = the highest or, in certain cases, the lowest permissible value.

Linear features = e.g. stone walls, avenues or ditches.

Malignant melanoma = highly malignant form of skin cancer.

MIFO = Method for Inventories of Contaminated Sites, presented by the Swedish EPA in Report 4918 (in Swedish).

MISTRA = Swedish Foundation for Strategic Environmental Research.

Mobility management = an approach to travel and transport whereby all concerned cooperate to try to change the demand for travel and transport in the direction of a sustainable system.

mSv = millisievert, a thousandth of a sievert, a unit used to express the absorbed dose of radiation, taking into account the biological effect of the radiation. Since one sievert is a very large dose, the millisievert is often used.


Nature conservation agreement = contract entered into between the state or a local authority and a landowner for the purpose of preserving and developing the natural features of a site.

ng = nanogram, \(0.000\ 000\ 001\ \text{g}\).

Percentile = a value which, in a statistical distribution, divides off a certain percentage of the observations etc.

Permanent repository = facility for final disposal, e.g. of radioactive waste.

Persistent = long-lived – a substance that takes a very long time to break down.

pg = picogram, \(0.000\ 000\ 000\ 001\ \text{g}\).

Phthalates = plasticizers, used in plastics.

PM10 = fraction of particles from which half the particles measuring 10 µm and all particles larger than 14 µm have been removed. Corresponds to the particle fraction that is not filtered off in the nose and mouth and thus reaches the lungs and bronchi.

Point features = e.g. mid-field pockets of rocky ground, mounds of boulders cleared from fields, or solitary trees.

ppm = parts per million.


Site safeguard = protection of an area under ch. 7 of the Environmental Code, e.g. through designation as a nature reserve, habitat protection area or national park.

SLU = Swedish University of Agricultural Sciences.

Small-scale habitat = small area of land or water which constitutes or could constitute a habitat for valuable plant and animal species associated with farmland.

SMHI = Swedish Meteorological and Hydrological Institute.

SOU = Swedish Government Official Reports.

Spawning biomass, see biomass.

SSI = Swedish Radiation Protection Authority.

Swedish EPA = Swedish Environmental Protection Agency.

TEQ = toxic equivalents, a unit used when assessing the risks associated with the intake of chemicals such as dioxins.

Transport agencies = Swedish National Road Administration, National Rail Administration, Civil Aviation Administration and Maritime Administration.

Urban background = refers to pollutant concentrations found in air in the background environment of a town or city, as opposed to in the immediate vicinity of streets.

VOCs = volatile organic compounds.

On 1 January 2002 the Swedish Government established the Environmental Objectives Council to promote consultation and cooperation in implementing the environmental quality objectives adopted by Parliament. The Council consists of representatives of central government agencies, county administrative boards, local authorities, non-governmental organizations and the business sector.

The principal functions of the Council are:

- to monitor and evaluate progress towards the environmental quality objectives,
- to report to the Government on how efforts to achieve the objectives are advancing and what further action is required,
- to coordinate the information efforts of the agencies responsible for the objectives,
- to ensure overall coordination of the regional application of the objectives, and
- to allocate funding for monitoring of progress towards the objectives, environmental monitoring, and some reporting at the international level.

**THE FOLLOWING INDIVIDUALS HAVE BEEN APPOINTED AS MEMBERS OF THE ENVIRONMENTAL OBJECTIVES COUNCIL FOR THE PERIOD 1 JANUARY 2002 – 31 DECEMBER 2004:**

Jan Bergqvist, *Chairman*
Lars-Erik Liljelund, Director-General, Swedish Environmental Protection Agency, *Vice-Chairman*
Gunnar Ågren, Director-General, National Institute of Public Health
Ingela Bendrot, Sustainable Development Officer, Confederation of Swedish Enterprise (member since 29 March 2004)
Kerstin Blix, Environmental Coordinator, Citybanan Rail Link, Swedish National Rail Administration
Göran Enander, Director-General, National Board of Forestry (member since 20 March 2003)
Ann-Sofie Eriksson, Acting Head of Planning and Environment Section, Swedish Association of Local Authorities (member since 21 November 2002)
Ethel Forsberg, Director-General, National Chemicals Inspectorate
Lars-Erik Holm, Director-General, Swedish Radiation Protection Authority
Anna Jonsson, environmental NGO representative
Thomas Korsfeldt, Director-General, Swedish Energy Agency
Inger Lilliequist, Director-General, National Heritage Board (member since 1 March 2003)
Lars Ljung, Director-General, Geological Survey of Sweden
Karl Olov Öster, Director-General, National Board of Fisheries
Mats Persson, Director-General, Swedish Board of Agriculture (member since 10 April 2003)
Ingemar Skogö, Director-General, National Road Administration
Karin Starrin, County Governor, Halland County Administrative Board
Ines Uusmann, Director-General, National Board of Housing, Building and Planning
Kerstin Wizzell, Director-General, National Board of Health and Welfare
Progress towards the objectives

The environmental quality objectives are more than simply the sum of the interim targets; many other factors and circumstances need to be taken into account in assessing progress towards them.

For this reason, the symbol indicating the prospects of attaining an objective may be red, even though the assessments made regarding the interim targets are mostly favourable. One example of how implementing an environmental quality objective may depend on much more than our success in meeting the interim targets is Zero Eutrophication. In this case, the targets are expected to be met (indicated by a green face). The other three should also be capable of being achieved, provided that more measures are introduced than can currently be foreseen. And yet there is a considerable risk that the state of the environment which this objective describes will not be brought about by 2050. The answer to that is a large proportion of the actions responsible for eutrophication come from other countries. In other words, Swedish action alone will not be enough to attain the objective.

Current conditions, provided that they are maintained and the decisions taken are implemented in all essential respects, are sufficient to achieve the environmental quality objectives set within the defined time-frame. The environmental quality objectives set within the defined time-frame, but further changes/measures will be required.

The environmental quality objectives set within the defined time-frame, but further changes/measures will be required.
Sweden’s environmental objectives – are we getting there? de Facto 2004

This year’s report from the Swedish Environmental Objectives Council offers a few glimpses of what businesses and local authorities in Sweden are doing to achieve a better environment. The report also presents the Council’s assessment of the prospects of attaining each of the fifteen environmental quality objectives and the seventy-one interim targets that have been adopted. In addition, there is a brief discussion of certain aspects of the four broader issues that cut across the different objectives.

The report shows that good progress is being made towards one-third of the interim targets, but also makes it clear that additional action needs to be taken if all the targets are to be met.