

SWITZERLAND

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CONCLUSIONS AND RECOMMENDATIONS*

Switzerland's environment is under intense pressure (pollution, natural resource use, spatial restructuring) notably from industry, agriculture, transport and tourism. These pressures reflect very high densities of population and activity as well as a location in the heart of Europe. Switzerland nevertheless still has remarkable natural scenery and wilderness areas.

During the 1970s and 1980s ambitious environmental policies promoted by the Confederation were implemented by the cantons and municipalities. Fundamental to these policies were a regulatory approach, substantial government funding and an actively involved public demonstrating great environmental awareness (following several industrial accidents and the debate on forest decline). Remarkable results to pollution abatement were achieved in consequence.

Since the beginning of the 1990s environmental policies have focused on prevention of damage to the environment, application of the polluter pays principle and collaboration with the business community. The Federal Council recently confirmed its intention to consider the requirements of sustainable development in all sectoral policies, notably those affecting energy, transport and agriculture. However, Switzerland must overcome two major obstacles: the difficulty of translating the concept of sustainable development into actual changes in consumption and production patterns, and the tendency for concerns about economic stagnation, employment and competitiveness to lower the priority given to environmental issues.

This OECD report establishes a baseline for assessing future environmental progress and reviews Switzerland's environmental performance in three areas:

- implementation of environmental policies;
- integration of environmental concerns in economic decision-making; and
- international co-operation in environmental protection.

1. **Implementation of Environmental Policies**

Environmental effectiveness and economic efficiency

Ambitious policies and very good results in pollution control

Switzerland has designed and implemented pollution abatement policies with ambitious objectives. Most of these objectives have been met with remarkable success: air pollution emission rates among the lowest in the OECD area, very high levels of waste water infrastructure and in waste management facilities. This success was achieved by means of an ambitious regulatory approach combined with rigorous enforcement, strong support from the public and a considerable financial effort.

The prescriptive environmental policy applied in Switzerland rests on a very comprehensive body of federal and cantonal laws and regulations. Their enactment is preceded by lengthy and intensive consultations between the different authorities and economic actors, which facilitates their implementation and observance.

Public involvement is very developed. Citizens may intervene in the preparation of legislation, propose subjects for referendums and vote directly on major policy issues. A number of referendums have been decisive in strengthening environmental action. As regards right of redress, the prominent NGOs have extensive possibilities which it is important that they retain.

Expenditure on environmental protection is equivalent to about 1.7 per cent of a GDP which is high compared with that of other OECD countries. The Confederation, cantons and municipalities finance roughly one-third of this expenditure, businesses and households roughly two-thirds.

Although Switzerland is one of the OECD countries that has invested most in environmental protection, much remains to be done. Concerning "grey" environmental issues, it is necessary to meet air management targets

* Conclusions and Recommendations approved by the Group on Environmental Performance at its June 1998 meeting.

for NO_x, VOCs and ozone, maintain and renovate waste water infrastructure, supplement municipal and industrial waste management infrastructure, clean up contaminated sites, treat non-point source pollution, regulate genetic engineering, and so on. As regards “green” environmental issues, despite some successes such as the stabilisation of forested area, measures to protect, nature, landscapes and biodiversity have been insufficient to counteract the pressures of economic activity in a country notable for its population density and its highly-developed tourism industry. These measures therefore need to be reinforced, particularly at cantonal level.

Improving the economic efficiency of environmental policies

Switzerland’s environmental policies are now at a critical juncture characterised by rapidly rising marginal costs of pollution abatement, sluggish economic activity, public budget restrictions, concerns about competitiveness in Europe, and globalisation. As a result, Switzerland is seeking and should continue to seek greater economic efficiency in its environmental policies and consistency of its environmental law with European law.

Switzerland has accordingly revised and modernised its Constitution and its various laws concerning the environment. It is moving towards a more balanced use of sets of regulatory, economic and voluntary measures. The principle of causality has been adopted with the aim of internalising external costs, and several economic instruments have been introduced. The new charges on VOCs and on the sulphur content of heating fuel are very promising in that they are fiscally neutral and highly incentive. Nevertheless, the number of economic instruments used in environmental policies in Switzerland is comparatively modest. In accordance with the principle of collaboration, several voluntary agreements with industry have been adopted, thus permitting flexible progress towards environmental objectives.

Economic analysis and evaluation of environmental policies is still relatively little developed in Switzerland, despite a recent expansion of research capabilities in this area. There is a shortage of data on the results and implementation of environmental protection measures in the cantons and municipalities, expenditure incurred, checks and sanctions applied, and the effects of eco-taxes and of “green” payments to farmers. The Confederation therefore must not confine itself to promoting policies, but must also monitor them.

It is recommended that consideration be given to the following proposals:

- continue efforts to apply the principle of causality (polluter pays and user pays principles) and reduce subsidies for pollution abatement;
- raise the rates of existing charges and taxes progressively so as to internalise externalities that are insufficiently taken into account; introduce new economic instruments without increasing fiscal pressure;
- encourage monitoring of results and assessment of the economic efficiency of environmental policies on the basis of more comprehensive and comparable data concerning individual cantons and municipalities, for example on pollutant emissions, expenditure on environmental protection, and degrees of target attainment;
- continue efforts to apply the principle of collaboration with the parties concerned, in particular by developing voluntary agreements with the business community together with involvement and information of the public;
- develop preventive action and land use planning, especially as regards non-point source pollution and the protection of nature, landscapes and biodiversity.

Water

Switzerland took measures very early on to prevent and control water pollution, notably from industrial and urban sources. There has been considerable investment in waste water infrastructure (over SF 40 billion in the past 30 years), partly financed by federal and cantonal subsidies. As a result, many watercourses are now of good physical-chemical quality (content of organic contaminants, heavy metals and micro-pollutants). With the ban on phosphates in detergents, and phosphate removal at many treatment plants, phosphate loads from these sources have decreased very significantly. Switzerland is also very active in the management of lakes and river basins of European importance.

A new generation of water management policies has been developed to solve remaining problems. First, the new water pricing system will enable the implementation of the principle of causality and will provide economic incentives for better management of water resources. Maintenance and renewal of the sewerage network will require

considerable and sustained financial efforts. Second, control of non-point source pollution has fallen behind. The overall phosphate load has remained the same due to the increasing load from agricultural sources, and eutrophication is still a major concern for most lakes. Nitrate concentrations in groundwater continue to increase. Many drinking water catchment points need to be better protected from pollution by nitrates and pesticides. Third, flood control, power generation and urban development have in many cases disrupted the morphology and biological life of watercourses. The recent introduction of minimum flows downstream from water withdrawal points is only a partial solution. Fourth, integrated, partnership-based management could be encouraged so as to ensure sustainable development of water resources.

It is recommended that consideration be given to the following proposals:

- continue to implement the new water pricing system; envisage the application of new economic instruments such as effluent charges and taxes on polluting agricultural inputs;
- ensure funding for the maintenance and renewal of waste water treatment facilities;
- accelerate the application of measures to control non-point source pollution, notably from agriculture;
- improve the protection of withdrawal points for drinking water supply, for example against harmful or persistent substances (nitrates, pesticides);
- give higher priority to the restoration of watercourses; improve target definition in this area and seek a broad consensus in regard to such programmes;
- speed up improvement of the federal network for monitoring groundwater quality so as to obtain a better understanding of trends in this area, as well as of the influence of measures taken in other sectors such as agriculture;
- with a view to sustainable development of water resources, develop a system of integrated, partnership-based management for all water users; this should include inter-sectoral interests and policies such as nature and biodiversity.

Air

Swiss performance as regards air quality is among the best. Switzerland has met or will shortly meet all its international commitments for atmospheric emissions reduction. Since the early 1980s it has achieved remarkable declines in emissions of the main air pollutants (SO_x, NO_x, VOCs, CO, particulates, heavy metals) and substantial improvements in air quality. These results are largely attributable to a consistent and ambitious federal strategy for air pollution abatement and to efficient implementation of regulatory measures by the cantons. Associated with the country's economic characteristics (low energy intensity, economic stagnation in the 1990s) and energy structure (almost entirely hydro and nuclear power, relatively high energy prices), this environmental policy has ensured that Switzerland's emissions per unit of GDP are the lowest or among the lowest in the OECD area. In addition, considerable progress has been made with the Energy 2000 action programme, which is contributing to a decline in emissions of CO₂ and conventional pollutants.

However, the very ambitious targets set at national level for 1995 with respect to NO_x and VOC emissions have not been achieved. Despite remarkable reductions of 26 per cent in NO_x emissions and 37 per cent in VOC emissions since 1985, ozone concentrations over the country as a whole are still too high. A 70-80 per cent reduction of such emissions would be necessary to solve the problem of summer smog more or less permanently; this now seems possible for VOCs by the end of the decade, but difficult in the case of NO_x. The essentially regulatory approach to air management is now being reinforced by economic incentive measures (redistributed charges on VOCs and on high-sulphur heating fuel). It would be advisable to facilitate this development by securing a broader consensus on air management policy both within the administration and among the public.

It is recommended that consideration be given to the following proposals:

- pursue the use of economic instruments for air management by implementing the redistributed charges on VOCs and the sulphur content of heating fuel and by increasing taxes on gasoline in order, inter alia, to reduce NO_x emissions;
- define a strategy to control fine particulates, especially from mobile sources, and improve data on their emission and concentration;
- reinforce co-operation at all levels of government so as to better integrate air quality concerns in transport, energy, regional planning and taxation policies;
- better explain the objectives of air protection (both health and environmental) and secure greater involvement of NGOs in issues relating to the environment, tourism and cars;

- pursue the implementation of the Energy 2000 action programme, and increase efforts concerning renewable energy sources.

Waste

Over the past ten years Switzerland has developed the legislative and regulatory framework, institutions and infrastructure needed to ensure efficient waste management. Expenditure in this area now amounts to 0.6 per cent of GDP. Collection of unsorted municipal waste is available to almost the entire population. Eighty per cent of this waste is now incinerated in appropriate facilities. Landfilling of incinerable waste will be totally prohibited from 2000. Subsidies for municipal waste disposal facilities will shortly be abolished. Enforcement of the Order on environmentally hazardous substances has brought about a marked decline in the quantities of certain pollutants present in waste, such as mercury and PCBs. The level of selective collection of municipal waste for purposes of recovery and recycling is one of the highest among OECD countries; the recycling is done essentially by the private sector and is financed chiefly by an advance disposal charge. Incineration capacities for special waste are now sufficient to meet the country's needs; exports of special waste for incineration or open landfilling have been prohibited.

With regard to municipal waste, it will be necessary to complete the implementation of the policy already adopted, in particular by expanding incineration capacities, resolving the problems of recycling management, and providing financing in accordance with the principle of causality. For example, the introduction of the charge per bag to finance collection and disposal of unsorted municipal waste has reduced quantities to be treated and increased sorted waste collection, but has also led to unsuitable methods of disposal, more uncontrolled landfilling and depositing of inappropriate materials in sorted waste containers. The costs of recycling wastepaper, glass and organic waste, which are not covered by the bag charge, also present increasing problems. Differences in incineration capacity suggest a need for more intercantonal co-operation in this area. Exports of special waste for physical-chemical treatment or for underground landfilling have increased greatly since 1992, in contrast to the amount sent for other types of treatment. Consequently the total quantities of special waste exported have remained fairly constant since 1988 despite the self-sufficiency target set in 1992. The existence of contaminated sites is of growing concern to the public, although no major case of related pollution has been recorded. The inventory of these sites (about 5 000) should be completed in 1998 in most cantons; it will cost about SF 5 billion to resolve the problem.

It is recommended that consideration be given to the following proposals:

- improve intercantonal co-operation in the matter of waste inventory and treatment, so as to promote optimal use of available national treatment capacity;
- make a particular effort at cantonal and municipal levels to accelerate the closure of irregular landfills and meet the target for 2000 of total elimination of landfilling of incinerable waste;
- intensify public consultation and information efforts to gain acceptance of the principle of causality in respect of waste management and, in particular, re-establish the quality of selective waste collection, improve the rate of recovery of certain materials and ensure financing of the system over the long term;
- accelerate the inventory and clean-up programme for disused landfills and other contaminated sites; undertake the necessary work and ensure financing.

Nature, landscape and forests

The Swiss public and NGOs have been and continue to be a moving force behind policies for protected areas. The success of the 1987 Rothenthurm initiative (whereby wetlands protection was written into the Federal Constitution following a referendum) and the amendments to the law on nature and landscape protection have given the Confederation an important role in this area. Federal inventories have recently been completed or undertaken to identify biotopes and landscapes in need of protection. In order to influence economic activities outside protected areas, instruments such as environmental impact assessments (EIAs) and regional planning are being used. Fundamental changes have been made in agricultural policies with a view to encouraging more sustainable agriculture; direct ecological payments to farmers are beginning to have a positive effect on landscapes. Forest management has shifted from a quantitative approach related to timber output, which helped stabilise and even increase woodland area, to a more balanced approach that gives equal importance to forests' ecological, social and economic functions. Switzerland has ratified the main international agreements on biodiversity and nature conservation and takes an active part in international debates, notably on wetlands protection.

The percentages of rare, endangered or extinct animal and plant species in Switzerland are nevertheless among the highest in the OECD for mammals, fish, reptiles, amphibians and vascular plants, and the highest for birdlife (56 per cent) — and these percentages are rising. Destruction or physical transformation of biotopes and landscape features continues, chiefly due to continuous urbanisation, agricultural modernisation and the development of transport and tourism infrastructure; loss of biodiversity and damage to landscapes has not been halted. Arbitration by the cantons and municipalities often do not favour the protection of nature, landscapes and biodiversity. The area of protected biotopes covers only 3.5 per cent of Swiss territory. On going inventory activities lead to often quite small areas being protected; management plans for these areas are often still being prepared. The means allocated to nature and landscape protection have not been sufficient to overcome the problems created by economic pressures. The Swiss Landscape Concept strategy, approved by the Federal Council in December 1997, aims to turn this deteriorating situation around by extending efforts to the whole country and to all relevant public policies. Extensive participation by citizens' groups and public bodies in the design of this strategy has secured its widespread acceptance and improved awareness of the ecological problems involved. To implement the strategy successfully, it will be necessary on the one hand to define precise quantified targets and performance monitoring arrangements, and on the other to ensure that regional and land use planning take more account of nature and landscape protection. The parties involved at the federal, cantonal and municipal levels will need to redouble their efforts and act more concertedly, notably to: develop cantonal plans and programmes related to nature and landscapes; implement the Swiss Landscape Concept strategy in all its aspects; create a network of protected landscapes linked by ecological corridors; and incorporate environmental concerns in tourism policies. These initiatives should also further stimulate the movement towards more sustainable policies and practices in regard to agriculture and forestry.

It is recommended that consideration be given to the following proposals:

- increase funding for a more vigorous policy in regard to protected areas and intensify efforts to establish inventories and to manage designated areas effectively;
- increase the surface area devoted to biotope protection; establish an ecological network;
- set realistic quantitative targets for biotope and species preservation;
- improve monitoring and assessment of results achieved in the area of biodiversity and nature conservation;
- strengthen the partnership between the authorities and scientific and economic actors concerning the development and implementation of biological diversity policy;
- ensure progress towards the implementation of the Swiss Landscape Concept strategy by setting precise or numerical targets together with time schedules and by making sure sufficient funding will be available;
- pursue the implementation of sustainable agricultural practices; in particular, assess the effects of direct ecological payments on nature and landscapes and promote the creation of “green” corridors in rural areas;
- continue to apply sustainable forestry practices, giving high priority to biodiversity in forest biotopes;
- integrate environmental concerns more systematically in tourism policies and practices.

2. Towards Sustainable Development

Environment and the economy

Decoupling and sustainable development strategy

Switzerland has clearly decoupled economic growth from air pollutant emissions. Where water and waste management is concerned, the decoupling is less marked. In the 1990s most objectives have been achieved in a context of very low economic growth. The considerable advances in environmental protection do not appear to have had any negative effects on either competitiveness or employment.

Switzerland has not only recognised the need to review its government policy in light of sustainable development concerns, but has also created structures that facilitate dialogue; the sustainable development strategy adopted in 1997 identifies the efforts that need to be made. Switzerland has introduced policies to bring about the internalisation of externalities and the removal or reorganisation of subsidies. Related measures have been taken in the energy, transport and agricultural sectors and results have been achieved.

Greater integration of environmental concerns in sectoral and economic policies

The new Committee on Sustainable Development has an important role to play and will need to seek a satisfactory balance between economic, environmental and social goals. It would be advisable for quantitative targets and deadlines to be established. It will also doubtless be necessary to use the political processes in order to reach trade-offs.

The Federal Council has come out in favour of a green tax reform which would be part of a general tax reform as from 2001, taking into account the need to reduce labour taxation and concerns about fiscal neutrality. Elements of this reform might be: to continue to reduce existing taxes and subsidies that generate distortions and negative environmental effects; to promote environmental taxation in close consultation with the cantons and municipalities, and to create new eco-taxes, for example in the areas of agriculture, natural resources, transport and energy. Separately, a significant increase in gasoline taxes might be considered.

Greater weight should be given to the integration of environmental concerns notably in economic and social policies and in policies related to employment and technological innovation. Problems also persist in regard to balancing nature conservation, tourism and land use objectives.

The efforts made to promote more environmentally-friendly consumption patterns have had a positive effect on consumers. The environmental performance of national and cantonal administrations can be improved by using instruments such as public procurement policies and environmental management systems.

Reinforced environmental protection in the cantons and municipalities

The implementation of environmental protection programmes and strategies is far from uniform across cantons. In many cases arbitration in the cantons and municipalities favour short-term development, infrastructure creation and scattered urbanisation over preservation of nature, landscapes and biodiversity.

Preparation of cantonal plans for sustainable development and local implementation of Agenda 21 should go ahead. In a very compact country like Switzerland, regional and land use planning should be made to play a key role in the coming years to channel urban growth and development of transport infrastructure and ensure effective protection of nature and landscapes. In some cases it will be necessary to strengthen environmental aspects of cantonal administrative structures and to define more precise plans of action in order to give effect to federal strategies.

Pollutant emission, pollution abatement and control expenditure and environmental performance are not adequately monitored in some cantons. An intercantonal or federal-cantonal mechanism might be useful for reviewing environmental performance: for example, a body that would systematically assess the implementation of national policies and the environmental performance of cantons, identifying those areas where targets have or have not been met.

It is recommended that consideration be given to the following proposals:

- develop sustainable development strategies with quantified targets;
- increase the integration of environmental and sectoral policies, notably with regard to transport, energy, agriculture, tourism and land use;
- promote green tax reform in such way that the environment, natural resources and employment are protected;
- pursue the development of action plans to promote sustainable development at cantonal level;
- undertake the assessment of cantons' environmental performance by intercantonal co-operative mechanisms;
- give more weight to environmental considerations in regional planning at the federal, cantonal and municipal levels, and take the necessary steps to integrate environmental considerations in urban development schemes and transport-related construction projects;
- pursue federal and cantonal action to promote more sustainable private and public patterns of consumption.

Sectoral integration: transport

Switzerland was for a long time a European front-runner in developing regulations designed to limit motor vehicle pollution by enforcing strict emission standards. Now such regulations are harmonised throughout Europe. Partial use of the revenues from excise taxes on motor fuels for environmental purposes was approved in a 1993 referendum. The integration of environmental considerations in transport infrastructure projects has improved over the past ten years with the increased use of environmental impact assessments. Federal and cantonal authorities have launched ambitious traffic noise abatement programmes. Thus, in many respects, the integration of environmental and transport policies in Switzerland can serve as an example to other OECD countries.

For more than fifteen years now, there has been a broad consensus of public opinion on the harmful consequences of road traffic growth for the environment, regional planning and energy balances, and this has paved the way for an improvement in public transport supply through support measures, together with restricted use of private transport (notably in cities, as a result of traffic management measures) and transport of goods by road (on transalpine routes in particular). As a result, Switzerland now has one of the world's densest rail networks along with urban and intercity modal distributions that give pride of place to public transport.

Owing to public finance constraints and increased competition from private road transport, maintaining dense and cohesive public transport and freight rail networks is more difficult today than in the past. Development of these networks, with the construction of new transalpine rail link and other projects concerning railways, poses a major funding problem which Switzerland plans to solve through a special fund. Generally speaking, pursuit of environmental objectives regarding transport is being subjected to new requirements concerning financing, profitability and the internalisation of external costs. These concerns have to be placed in the European context of free trade and non-discrimination.

It is recommended that consideration be given to the following proposals:

- promote co-operation between the actors involved in transport and environmental policies at federal, cantonal and municipal levels;
- implement measures adopted in the transport sector and strengthen the national transport strategy towards sustainable development;
- introduce environmental impact assessments of transport and land use strategies, plans and programmes;
- review the road/rail balance of the investment funding system, so as permit the maintenance and development of rail transport;
- continue to improve the internalisation of external costs in transport pricing and taxation, notably as regards road freight transport;
- be certain to reduce the gasoline price differential between Switzerland and neighbouring countries so as to encourage savings in motor fuel consumption and reduce emissions due to “gasoline tourism”;
- define priorities and sources of financing investment in transport noise abatement in order to meet the noise exposure targets set for 2002.

Sectoral integration: agriculture

Over the past ten years Swiss agriculture has undergone a major structural adjustment leading to a contraction of agricultural activity. While value-added and farmland have not decreased much, agriculture's share in GDP has declined by one-half, the number of farms by one-quarter, agricultural employment by 30 per cent, and stocking density by 10 per cent for cattle and 25 per cent for pigs. Swiss agriculture continues to show a very large livestock share in value-added (70 per cent), a high proportion of grassland (60 per cent) and a marked food trade deficit. In the short term structural adjustment has had mixed effects on the environment: reduction of pressures due to the use of chemical fertilisers and pesticides, and reduction in greenhouse gas emissions (CH₄, NH₄, N₂O), but continuing concerns about water quality, soil erosion and pollution; positive effects on biodiversity and landscape (maintenance of Alpine pastures by means of summer grazing) and negative ones (fragmentation of biotopes due to growing farm size).

A process of major reforms towards sustainable agriculture to address economic, environmental and social concerns is under way. It is intended to respond in particular to the growing imbalances in farm product markets, the high rate of transfers under recent farm policies, the environment consciousness of the Swiss public, and the new international challenges following the agricultural agreement of the GATT Uruguay Round. Reduction of

agriculture's negative environmental effects and due recognition of its positive externalities are central to this reform, which is replacing farm price support with direct payments to farmers meeting ecological requirements defined according to very precise criteria. Switzerland has set itself the very ambitious target of getting almost all farms to change over to integrated production by 2002 through the introduction of environmental criteria to determine eligibility for virtually all direct payments. Nearly two-thirds of farmers have already agreed to operate their farms according to the stringent rules of integrated production. Positive environmental effects are already apparent. The forthcoming implementation of a further stage of reform (Agricultural Policy 2002) should lead to a significant reduction of pollutant emissions from agriculture.

To date, the measures taken by the authorities have been based for the most part on a regulatory approach and payments in exchange for ecological services. The aim is to reduce agriculture's harmful environmental effects and increase its beneficial ones. Organic farming, however, is still limited: 6 per cent of farmers and of useful farmland are now involved. Agriculture continues to create serious pollution problems, especially as regards phosphate and nitrate loads. In so far as the steep increase in federal spending on direct ecological payments is matched by a decline in price supports, it is likely to encourage more efficient use of natural resources by reducing distortions in the supply of agricultural products.

It is recommended that consideration be given to the following proposals:

- establish environmental objectives, within the framework of environmental protection programmes, on the basis of close co-ordination between the federal departments concerned with agriculture and the environment;
- develop further incentives and voluntary approaches;
- apply the polluter pays principle whenever possible;
- adopt a more place-based approach to the design of agri-environmental measures so as to associate environmental offset areas with an ecological network and with the improvement of natural species habitats and biodiversity;
- pursue efforts to prevent pollution from agricultural sources, for example through measures to reduce livestock numbers, in the context of strict application of the Water Protection Act, or through ensuring that one-quarter of farms practise organic farming;
- increase attention given to monitoring and assessing periodically the effects of agriculture on the environment.

3. International Co-operation

Switzerland has co-operated actively with its neighbours in environmental matters at the European level and worldwide for many years now. This international openness can be explained by Switzerland's size and location, its heavy dependence on foreign trade, and the tourist and vehicle flows to and across the country. In 1993, the Federal Council chose the conservation of the natural environment as one of the main objectives of Switzerland's foreign policy.

Switzerland co-operates closely with the European Union in many areas related to environmental protection, including transit of goods. Although it has not joined the European Economic Area, Swiss environmental law is being progressively adjusted in order to achieve closer alignment with EU directives and thus limit the distortions of competition which differences might generate. As regards international trade, Switzerland supports compliance with environmental and social objectives by way of binding rules.

Switzerland maintains good neighbour relations with all adjacent countries and, for more than a 100 years, has engaged in effective joint action to protect the environment (water and fishery management). Co-operation in managing international lakes (Constance, Geneva) has made it possible to stabilise and subsequently reduce phosphate releases and to reduce eutrophication.

Co-operation with the countries and organisations concerned has made possible considerable reductions in pollutant discharges to catchment areas of the major European rivers and to the North Sea. With regard to acid rain, Switzerland has already met or will shortly meet the internationally agreed targets for reduction of SO_x and NO_x emissions. Acid deposition on Swiss territory has already been greatly reduced, but efforts still need to be made at the international level to ensure that critical loads are not exceeded. Unlike many other countries, Switzerland will probably succeed in reducing its NO_x emissions by 30 per cent, in line with the Sofia declaration.

At world level, Switzerland has embarked determinedly on the control of ozone-depleting substances, achieving its targets and the reduced use of replacement HCFCs. It has agreed to stabilise CO₂ emissions at their 1990 level by 2000 and proposes to reduce them by 10 per cent by 2010. Switzerland seems likely to meet the target of stabilisation by 2000. In 1997 it was the first country to adopt a law for reduction of CO₂ emissions incorporating mandatory quantified targets and even providing for the introduction of a CO₂ tax as a subsidiary measure. In regard to co-operation with developing countries, Switzerland adopted North-South guidelines for promoting sustainable development as early as 1994 and has not reduced development aid significantly.

Despite these exceptional achievements in international co-operation, environmental problems persist. At some of the international lakes, in particular Lake Lugano, there is still too high an intake of phosphates and continuing eutrophication. The Rhine receives discharges of nitrogenous substances in excess of the targets set. Although the cantons are very autonomous in their relations with neighbouring countries, they are not always fully associated in negotiations on major international conventions; this can cause delays detrimental to the implementation of international environmental co-operation. It is important to adopt and put into effect a national strategy concerning biodiversity. The policy for sustainable development as applied to the Swiss Alpine area must address difficult problems regarding regional planning and transport (creation of new international transport routes). These problems are difficult to separate from the energy policy problems associated with the reduction of CO₂ emissions. Concerning the control of chemical substances, Swiss legislation should be coordinated with international recommendations. Where development aid is concerned, Switzerland has not yet met its targets and the proportion of its environmental aid is relatively low.

It is recommended that consideration be given to the following proposals:

- ratify and implement the recent international agreements on environmental protection (Annex III);
- develop action to associate the cantons more closely in the preparation of international conventions;
- continue and reinforce environmental co-operation with the European Union;
- encourage the development of a plan of action for the preservation of Lake Lugano through harmonised actions;
- pursue the development of Alpine co-operation with a view to reinforcing the Convention on the Protection of the Alps, notably with regard to transport, energy and tourism;
- introduce charges and taxes that will positively affect CO₂ emission reduction and make precise arrangements for future imposition of a CO₂ tax, in the event that this should prove necessary;
- strengthen co-operation between federal offices that deal with development aid, foreign economic affairs and environment;
- increase development aid so as meet to the national target of 0.4 per cent of GNP, move towards the international aid objective of 0.7 per cent, and increase environmental aid.