NATIONAL ENVIRONMENTAL ACTION PROGRAMME

FOREWORD

There is a long tradition of environmental protection in Slovenia. It is therefore no coincidence that Slovenia marked the occasion of the First World Conference on the Environment, held in Stockholm in 1972, by publishing the Green Paper on the Environment, which presented the state of the environment in Slovenia and laid down the first guidelines for its improvement. The institutional framework did not favour efficient environmental protection, nevertheless it offered enough opportunities and freedom to environmentally aware organisations and individuals. The setting-up of the assembly commission and the republic committee (government sector) for environmental protection, the adoption of the first environmental protection regulations in the 70s and the conference on ecology, energy and economization, which took place in the mid-80s, integrated our efforts towards better environment. They produced very good results, far better then those achieved by other countries of the former socialist block. Foundations were laid for the rehabilitation of large thermal power plants and the construction of a national gas pipeline network. At that time, Slovenia established its first ecological fund and a special-purpose resource, intended for financing this fund. The first programme document was drawn up, which provided a basis for the allocation of the finances accumulated in this fund and defined priorities in the fields of air, water and soil protection and waste management. The result of good organisation and forest management, comparable to that of other states, was an exceptionally well preserved forest ecosystem, a legacy to independent Slovenia. Slovenian farmers have always taken good care of their land. Thereby they contributed to the fact that at the time when Slovenia gained independence and started to change its political and economic system, its environment was relatively well preserved, especially if compared to other countries in transition.

However, the success and good results do not lessen environmental problems. The pollution of rivers, endangered underground water and water springs, hazardous substances in the soil, uncontrolled disposal of large quantities of waste - these and many other problems severely reduce the quality of life and hinder the country's overall development. People have a right to be concerned about the slow elimination of the causes and consequences of these problems. Effective problem-solving is the basic task and mission of this document, which will become a document of change. The purpose of the document is to establish a connection between all responsible persons and bodies and the interested parties, on the basis of clearly defined goals and measures. The Ministry of the Environment and Spatial Planning believes that the successful implementation of the programme will enable us to achieve the following objectives in the next decade:

In the field of water management, the use and exploitation of water will further develop; wastewater generated by major cities, industry and agriculture will be treated; and all strategically important sources of drinking water will be protected.

It is possible to predict that in the field of waste management Slovenia will have at least one modern waste management facility and three effective systems for regional collection and treatment of wastes. It is certain that waste at source will be reduced.

The four- to fivefold increase in the size of protected areas and effective prevention in the event of new activities will be of major importance for the conservation of biodiversity and will prevent further degradation of the environment caused by development.

It is expected that by 2008 a significant number of traditional air pollution problems will be eliminated and that progress will be achieved in solving new-generation problems, related mostly to the depletion of the ozone layer and the warming of the atmosphere. The application of effective measures in the field of transport is one of the fundamental tasks in the forthcoming period.

It is expected that in the near future more will be known about the dangers threatening the production of healthy food and drinking water, which arise from soil pollution, caused in particular by heavy metals. This is the basic condition for taking appropriate measures in threatened areas.

Protection against environmental disasters caused by the inappropriate handling of hazardous substances will improve significantly.

We have a good reason to believe that environmental protection will no longer be considered as someone else's responsibility. The mechanisms incorporated in the National Environmental Action Programme guarantee that sectors will carry out the tasks in the field of environmental protection that they can and have to carry out by themselves.

By the set year, Slovenia will have an environmental protection system comparable to that of EU Member States with regard to performance indicators and the effectiveness of environmental protection policy.

Many have criticised the document saying that it has been written to suit the European Union rather than Slovenia. This is not true. The document has been drawn up in and for Slovenia. It is written to suit the European Union inasmuch as it fulfils all the obligations that Slovenia assumed by deciding to join the European Union, including the transposition of EU legislation. With regard to the current state, the assumption of these obligations is a step forward rather than a step back.

Pavel Gantar
Minister for the Environment and Spatial Planning

SUMMARY

The National Environmental Action Programme (NEAP) has been drawn up pursuant to Article 47 and in accordance with Article 104 of the Environmental Protection Act[1]. The objectives, guidelines and strategy of environmental protection and of the use of natural resources for at least ten years are included in the programme. In accordance with the NEAP national programmes and strategies concerning activities affecting the environment and programmes concerning particular environmental components (e.g. water, air, soil, biodiversity) will have to be supplemented.

Concepts and objectives of the NEAP

Slovenia's territory is a meeting-point of Central European and Mediterranean natural features. It is open in all directions: towards Central Europe and the Balkans, towards the Po Valley and the West and towards Eastern Europe. Therefore Slovenia has an exceptional biological and landscape diversity and very sensitive environment.

Environmental problems have accumulated during the process of industrialisation and urbanisation, particularly in the second half of this century. Owing to the landscape characteristics, the bulk of problems have concentrated on the fifth of the territory. These problems can only be addressed gradually, within the limits of material capacities and technological achievements. The experience of more developed countries and Slovenia's advantages have to taken into account.

Expectations regarding positive changes in the environment are high. The NEAP does not offer quick solutions; even countries with substantially better material and organisational conditions have needed decades to solve their environmental problems.

The NEAP is not a collection of wishes but rather a document that directs our efforts towards priority goals and a gradual expansion of tasks, in accordance with Slovenia's capacities and foreign support. It does not merely repeat the objectives and tasks included in Agenda 21 (Rio, 1992), the Fifth EC Environmental Action Programme (Towards Sustainability) and the Environmental Protection Act, but takes them fully into account in laying down objectives and development tasks.

Despite the fact that priority goals and areas have been selected, the complexity of the environmental programme has not been neglected. Problems concerning particular environmental components can only be solved by introducing changes in particular sectors (energy, transport, tourism, agriculture, industry, etc.). An important and demanding task will be to improve research, spatial planning and the functioning of administration at all levels of society. The goals can only be achieved if the institutions and individuals accomplish their tasks and not blame others for their failure.

The NEAP focuses on solving the most pressing environmental problems and is merely the first step in the long-term management of relations between nature and society.

The fundamental objectives of the NEAP are to guarantee a better living environment in Slovenia and to establish the environment as a limiting, but stimulating factor of development. In accordance with these objectives, the NEAP comprises a harmonised set of environmental protection instruments, which is with regard to the present level of degradation of the environment focused on the elimination of the most pressing problems. The aim of the NEAP is to contribute to the strengthening of those institutions whose primary concern is to ensure an appropriate level of environmental protection and thus enforce the principles of sustainable development in the transition to a modern state.

The proposed measures are aimed at the following objectives:

- to manage environmental problems and to ensure that priority is given to the most important ones; special attention should be given to Slovenia's accession to the EU;

1 Environmental Protection Act – Zakon o varstvu okolja (ZVO) (Ur. l. RS, št. 32/93); Ur.l. RS - Uradni list Republike Slovenije – Official Journal of the Republic of Slovenia

- to carry out institutional strengthening of administration and local self-government, as a basis for gradual enforcement of sustainable development;
- to enforce all environmental protection principles laid down in the Environmental Protection Act;
- to integrate environmental considerations and the principles of sustainable development into the programmes of particular sectors.

Slovenia and the EU

The process of Slovenia's accession to the EU is expected to have positive effects on the co-ordination of environmental, economic and development policies in the country. It is an important factor of change and additional encouragement for effective implementation of a contemporary (sustainable) environmental policy.

Method of work and the concept of the NEAP

In terms of methodology, the NEAP follows the proposals of the Ministerial Conference held in Lucerne[2] (1993). It is based on the reports on the state of the environment of 1990, 1995 and 1996; on research carried out within environmental Target Research Programmes and PHARE aid programmes; and on development programmes of individual government sectors. The emphasis is put on the Strategy for Economic Development of Slovenia[3].

In the period of fast post-war industrialisation and urbanisation the state of individual environmental components declined sharply, but it has since stabilised. Nevertheless, a more effective response of society is needed. Since Slovenia gained independence the quality of surface waters and air has improved, while the quality of groundwater in certain areas has been declining. The management of urban and industrial waste is still a problem. The main reason for the improved quality of surface waters is the reduction in the production volume (the closure of a number of major polluters). The improved air quality is a result of the stepped-up transition to the use of more environment-friendly fuels and heating systems and of the already completed desulphurisation in some thermal power plants. Threats to the biological and landscape diversity and non-living nature have not yet been successfully managed. An important resource, necessary for the existence and further development of society is thereby jeopardised. Furthermore, the situation is getting worse.

In the past, one of the major problems in Slovenia was air pollution. It threatened more than 40% of the population and largely contributed to the deterioration of forests. It is therefore not surprising that the first priority enforced in practice was the improvement of air quality. In the period of ten years coal was to a large extent substituted with other, more environment-friendly fuels and more appropriate energy systems were applied. One block of the Šoštanj thermal power plant has been successfully rehabilitated and the rehabilitation of the fifth block has started. Cogeneration plant in Ljubljana began to use the coal with a substantially lower sulphur content.

Priority goals

On the basis of an analysis of environmental problems, and taking into account Slovenia's strategic advantages, the following priority goals have been set:

- to improve the state of the aquatic environment
- to introduce the modern methods of waste management
- to conserve and protect biological diversity and genetic resources

2 Central and Eastern European countries should develop their own national environmental action programmes to set environmental priorities, where order is determined with respect to the possible impact on the environment, health, etc. In the process of implementation, investment programmes, which would be supported by international financial institutions, should be prepared for solving the presented problems. Phare supported such approach through technical assistance provided in 1995 and 1996.

3 Strategy for Economic Development of Slovenia – Strategija gospodarskega razvoja Slovenije (SGRS) (EPA 1107, Poročevalec Državnega zbora, št. 19/95)

- to strengthen environmental protection institutions at all levels.

Priority orientations

Shift towards sustainable development. Sustainable development is defined as an increasingly important strategic task of the State, which has to find its place in the orientations of all development sectors and at all levels of organisation – from the national to the local community levels.

The consensual problem solving should have priority. The NEAP encourages all interested parties, state administration, the economy and the public to co-operate in order to reach voluntary agreements in all the fields in which this method of environmental protection management is more effective than the legally prescribed one.

Shared responsibility. It demands an active involvement of and co-operation between all relevant factors: national bodies, public and private companies and the public. The NEAP defines fundamental environmental protection factors: the State, public and private companies and the public.

Action programme

The action programme covers two periods with regard to individual environmental policy areas. The period until 2008 (in accordance with requirements of the Environmental Protection Act) and the period until 2003 (as the planned year of Slovenia's accession to the EU). Within these two periods individual measures are defined. For the long term only provisionally, with the possibility of adapting to new conditions, while for the short term only those measures are stated which form the basic condition for achieving the strategic goals laid down in the programme.

The NEAP summarises and puts into operation the principles and requirements included in the Environmental Protection Act, Strategy for Economic Development of Slovenia, assumed international obligations and strategies for integration into the EU (the principle of the hierarchy of documents).

Only those measures are defined for which it is currently possible to assess all the issues concerning their implementation assessment (the principle of restrictiveness).

The NEAP does not define measures which have to be identified in the programme documents of individual sectors. However, the NEAP defines the mechanisms to control the inclusion of environmental considerations in particular activities (the principle of shared responsibility).

The action programme is defined according to: problem areas, sectors and particularly sensitive regions.

The NEAP includes the following problem areas:

- Improvement of the state of the aquatic environment, waste management and the conservation of biodiversity are discussed as priority areas.
- The NEAP also covers air, soil and forest protection, noise, radiation and risk management.

For each of these areas, the following measures are defined:

- Measures concerning policies of individual fields, with an emphasis on those measures which either lay down requirements for defining the policy (e.g. in the field of air pollution) or require a revision of already adopted policies in accordance with the principle of sustainable development and with NEAP orientations.

- Measures concerning legislation with two basic aims: to improve the legislative framework and to adopt EU legislation.

- Measures concerning institutional strengthening, which are focused mainly on achieving greater efficiency of institutions and their mutual co-operation. This will strengthen the credibility of and trust in institutions, which is the condition for successful institutional settlement of disagreements and solving of problems by following the internationally recognised principle of consensual problem-solving.

It has been proposed that a special service be set up to promote investment projects and assist in their preparation. In accordance with the approximation to the EU, environmental protection funds will have to be substantially increased, which is not feasible without additional support in project preparation.

- The main investments needed to achieve the NEAP goals are indicated together with the measures. Detailed analysis of investments falls within the scope of the operational implementation of the NEAP; it is carried out within the budget appropriation and in accordance with NEAP orientations.

- The measures applying to research are aimed mostly at covering deficient sectors and providing the necessary methodological solutions.

In accordance with the guideline that environmental protection is in the interest of (and the responsibility of) everyone, emphasis is placed on measures concerning education, training and information.

Five sectors which, according to professional estimates, have or are likely to have the greatest impact on the environment are discussed separately in the NEAP. Those sectors are: industry and mining, the energy sector, agriculture and forestry, transport and tourism. In accordance with the principle that environmental protection should be a constituent part of every activity and therefore of all development documents of individual sectors, the NEAP mainly defines the relationship towards these orientations and practice and requires that the orientations be examined and brought into line with the requirements of sustainable development.

The coast region, countryside and mountain regions are discussed as particularly sensitive regions; therein the problems concerning the karst region, which is a specific feature of Slovenia, are included. The NEAP follows the assumption that these regions must have a special place within spatial plan, which is the sole answer to the problems of the spatial, and therefore environmental, dimension of development. By emphasising the principle of prevention, the NEAP highlights the importance of one of the most fundamental measures – environmental impact assessment.

Measures for supporting the implementation of the NEAP

One of the weaknesses of the series of examined national programmes is the gap between the goals and practice. In order to narrow this gap as much as possible, which is necessary due to the nature of the political process of document adoption, the NEAP defines the basic measures for supporting the implementation of the programme. These measures are aimed at:
increasing the efficiency of the administration; research and development, as a basis for effective solving of environmental problems; setting up an information system; harmonising the legislation to that of the EU; introducing economic environmental protection instruments; strengthening the role of NGOs and other organisations interested in environmental protection issues; enforcing the principle of integration; raising environmental awareness and promoting education; and successful international co-operation.

Costs of implementation of the NEAP

The estimated costs of the implementation of NEAP measures are **SIT 263.51 billion.** This estimate takes into account only measures planned in the NEAP for the next **five years**. The dynamics of cost distribution by years is linear; **approximately SIT 52 billion (1.5% GDP) a year is envisaged** for the implementation of the measures mentioned. It is expected that nearly 85% of the funds earmarked for the implementation of the measures will be needed in the fields of water protection and waste

management; 11% in the field of air protection; almost 4% for the conservation of biodiversity; and less than 1% for other fields. The main source of the funds will be the public sector, which is expected to cover 77% of the total cost. The rest will be covered by the private sector.

In accordance with the Strategy for Economic Development of Slovenia, in the forthcoming medium term the expenditure of budget funds for environmental purposes, including environmental protection investments, should amount to 1.5% of GDP. It is estimated that in recent years the share of public funds allocated to environmental protection projects has been less than 0.5% of GDP.

The gap between the needed and available funds is expected to be “bridged” with the progressive setting-up of the “polluter pays” system. An important financial resource are environmental reservations – funds companies have reserved for environmental protection and are obliged to invest in the rehabilitation of the environment by 2003. Among the most important national financial resources for the implementation of the NEAP are the loans granted by the Environmental Protection Development Fund. The terms under which these loans are granted should become more favourable when funds obtained through collection of pollution tax are reallocated.

Environmental protection projects are one of the priorities for the allocation of foreign funds. The most important and, of course, the most favourable are the non-refundable Phare aid, loans from multilateral creditors and direct foreign investments focused primarily on those branches of the industrial sector which are the most critical in terms of environmental burden. It is estimated that the aforementioned sources will constitute one third of all the necessary financial resources.

Monitoring of the implementation of the NEAP

The measures for monitoring and supplementation of the NEAP are defined in the programme itself. The basic tendency is to unequivocally define the responsibility of the Ministry of the Environment and Spatial Planning for the implementation of the NEAP and, at the same time, provide this ministry with the possibility of obtaining the necessary data for exercising this responsibility.

Given that the NEAP defines concrete measures only for the period until 2003, the deadline for reviewing and updating the NEAP is also defined.

Pursuant to Article 47 of the Environmental Protection Act[4] and pursuant to Article 168 of the Rules of Procedure of the National Assembly[5] the National Assembly at its session of 16 September 1999 adopted the

NATIONAL ENVIRONMENTAL ACTION PROGRAMME (NEAP)

1. INTRODUCTION

1.1 Framework

The level of degradation of the environment in Slovenia can in no way be compared to the state of the environment in individual areas of some countries of the former Eastern Block. Fortunately, Slovenia belongs to those countries in transition in which the impact of the former socialist economy on the environment is less distinctive. Nevertheless, rapid industrialisation and urbanisation disregarding the environment, particularly in the first decades following the second World War, resulted in the degradation of practically all environmental components. According to some estimates, the economic loss and other costs of environmental degradation several times exceed public environmental expenditure, which amounts to approximately 0.5% of GDP[6].

Current state of the environment is an important obstacle in the transition to a modern state with a balanced attitude towards the environment. The need to change the attitude towards the environment is also an acid test for Slovenia's efforts to join the EU. It appears that the possibilities for addressing accumulated environmental problems are limited and that the crucial steps are hindered by some extremely pressing social problems. As long as the environmental protection is considered to involve merely costs, prohibitions and orders, such a standpoint is justified. Fortunately, there is enough evidence in the world showing that environmental protection can be an important agent of the development and of changes in the production and consumption as fundamental sources of environmental problems.

Environmental problems have traditionally been given special attention of the general public in Slovenia. Slovenia has followed the first steps introduced throughout the world with practically no lag behind the most developed industrial countries. With the Green Paper on the Environment, Slovenia marked the first UN Conference on the Environment (held in Stockholm in 1972) in the best way possible. However, until the late 80s the development and effectiveness of environmental protection were crucially affected by the collective ownership and self-management system. The environmental protection was exercised mostly at the declaratory level and in practice significantly deviated from the constitutional right to a healthy and human-friendly environment.

In the second half of the 80s the environmental protection was one of the fields which, owing to their public significance, created a favourable environment for the introduction of a wider social change. At that time the atmosphere in Slovenia enabled the Ecological Fund to be established in spite of various obstacles. The Fund was financed by the so-called "ecological dinar" (a tax for environmental protection). Slovenia was the first Central or East European country to set up such a fund. The funds collected in this manner were to be spent in accordance with a special programme adopted by the then Assembly of the Republic of Slovenia. This programme contained certain elements (rehabilitation of thermal power plants; improvement of the quality of watercourses; implementation of the strategy for and operational programme of waste management; and protection of soil against pollution) which are of interest even today.

4 Environmental Protection Act - Zakon o varstvu okolja (ZVO) (Uradni list RS, št. 32/93, 1/96)
5 Rules of Procedure of the National Assembly - Poslovnik Državnega zbora (Uradni list RS, št. 40/93, 80/94, 28/96, 26/97)
6 The Strategy for Economic Development of Slovenia (Strategija gospodarskega razvoja Slovenije) states that the environmental damage is estimated at 4 to 6% of GDP a year.

With independence the legal, economic and social frameworks of environmental protection in Slovenia have changed thoroughly. Ownership transformation and struggle for profit have significantly influenced the motives and objectives of decision-makers. The attitude of the new owners towards the environment can not be predicted at the moment, but considering the situation in developed countries it is reasonable to expect that the role of the government, as the body responsible for the introduction of mechanisms for preventing profit-making at the expense of the environment, will have to be strengthened, at least in the initial phase.

International comparisons show that Slovenia is currently less developed than EU Member States. Nevertheless, the economic conditions in Slovenia are, like in the Czech Republic, the most favourable of those in Central and East European countries[7]. The gap between Slovenia and EU Member States is most evident with regard to purchasing capacity (GDP per capita): in 1991 Slovenia was thirty years behind Italy, nineteen behind Spain, thirteen behind Ireland, six behind Portugal and one ahead of Greece[8].

Slovenia has decided to join the EU, where the environmental protection is indispensable for ensuring the free movement of people, goods, services and capital. Living in the changed economic and political conditions calls for a prompt analysis of consequences and for the adoption of appropriate measures, due to:

- the reorientation towards demanding Western markets;
- the emergence of a large number of small and medium-sized private companies;
- the admittance of foreign investors and strategic partners;
- the swift internationalisation and computerisation of business operations as one of the basic conditions for inclusion in the international division of labour and economic integration agreements, etc.

Expectations regarding changes in the environment are high, given that a wish of the vast majority of Slovenian citizens is to live in a healthy and pleasant environment. The nature of disparities accumulated over decades does not allow fast solutions. The countries with far better material and organisational conditions had needed decades for a significant progress in solving environmental problems.

The NEAP has not been drawn up as a collection of desires which, when adopted, would be satisfactory to everyone but would subsequently be impossible to realise and would therefore become a source of distrust. It is not a reproduction of the objectives and tasks listed in the Agenda 21, the Fifth EC Environmental Action Programme - Towards Sustainability[9], the Environmental Protection Act and the development programmes already adopted for certain sectors; the document focuses on the operationalisation of these tasks and objectives. It has been established during the preparation of the programme that merely repeating known definitions, without adopting appropriate measures, will not contribute to fast problem solving.

1.2 Concepts and Objectives

Environmental protection problems are very complex. They should be studied in an interdisciplinary manner and solved through the co-ordinated and active participation of numerous factors. Environmental problems may be addressed by taking into account various components, the environment itself, economic development, the development of science and technology, and others. Due to the complexity of problems, all national programmes (including this one) are more or less

7 Scenarij gospodarskega razvoja Slovenije do leta 2000, UMAR 1995 (Scenarios of Economic Development up to the year 2000)

8 Other indicators of the quality of life show that the gap is much narrower (10 years less) than with regard to the GDP per capita criterion, making the overall picture more optimistic. In comparing itself with EU Member States, Slovenia should primarily try to follow the example of Ireland and Spain, although due to the recent recession it will have to catch up with Portugal and even Greece in many areas. Source: The Strategy for Economic Development of Slovenia (Strategija gospodarskega razvoja Slovenije).

9 Towards Sustainability - the European Community Programme of Policy and Action in Relation to the Environment and Sustainable Development (OJ No C 138, 17.5.1993)

incomplete. They fail to answer many questions, leaving them to be addressed by the next-generation NEAP.

The NEAP focuses on solving the most pressing environmental problems and is merely the first step in the long-term management of relations between nature and society. The NEAP should not be assessed by its integrity and its commitment to sustainable development, but rather by:
a) the selection of key environmental problems based on scientific knowledge;
b) the effectiveness of the problem-solving mechanisms;
c) the achieved changes in production and consumption patterns in accordance with the principles of sustainability.

The purpose of the NEAP is not to resolve various conceptual and methodological dilemmas. It is necessary to clearly define the subject of the programme, therefore the NEAP is focused merely on those environmental problems which are generated by man and his activities. It does not discuss problems resulting from natural processes as such (floods, landslides, etc.), unless these have environmental consequences which can be dealt with promptly.

Modern environmental protection practice has developed in two directions:

- In the early 70s the highly developed industrial countries of the "Western" type were faced with the limits of economic growth and the disastrous consequences of pollution. They started to respond and their first measures were focused on direct control. Governments assumed the role of a guardian, while the industry had no choice but to fulfil the requirements. The direct regulatory function of governments has been gradually replaced with the more effective indirect mechanisms, based mostly on the market strength. Moreover, the nature of environmental problems is changing. If local problems were dominant in the beginning, inter-regional and even global problems are at the fore today [10]. Traditional pollution problems are being superseded more and more by the problems of nature as a whole (conservation of biodiversity, etc.).
- The "Eastern" type countries, where the state or collective ownership predominated, were characterised by unfeasible goals and unenforceable, although very strict, regulations (e.g. the Soviet Union). The type and structure of production and consumption have never been considered a problem. In changing the production and consumption patterns the environmental issues have not been taken into account.

It is not possible to draft a simplified scheme for the direct transfer of modern and more effective concepts for designing national programmes to Slovenian practice, despite the potential political attractiveness of apparently ideal solutions. Such solutions could not be realised as they were designed under incomparable conditions.

The fundamental objectives of the NEAP are to guarantee a better living environment in Slovenia and to establish the environment as a limiting but stimulating factor of development. In accordance with these objectives, the NEAP comprises a harmonised set of environmental protection instruments, which is with regard to the present level of degradation of the environment focused on the elimination of the most pressing problems. The aim of the NEAP is to contribute to the strengthening of those institutions whose primary concern is to ensure an appropriate level of environmental protection and thus enforce the principles of sustainable development in the transition to a modern state. The NEAP is the basic programme document concerning environmental protection in Slovenia, oriented towards the following objectives:

- to manage environmental problems and to ensure that priority is given to the most important ones. Special attention is given to Slovenia's accession to the EU and, in relation to this, to its specific problems (expected increase in transit traffic, depopulation of large areas, etc.) and to the protection of its special features (the karst region, biological and landscape diversity, etc.);

10 Sustainable development concept is mainly a response to relations between the developed and the underdeveloped countries at the global level. It is an attempt of developed countries to control the environmental risk caused by the rapid development of the underdeveloped countries.

- to carry out institutional strengthening of administration and local self-government, which is a basic condition for effective environmental protection, and to ensure organisational and economic basis for gradual enforcement of sustainable development;
- to enforce all environmental protection principles laid down in the Environmental Protection Act;
- to enforce economic instruments and ensure financial resources for environmental protection programmes;
- to integrate environmental considerations and the principles of sustainable development into the programmes of particular sectors;
- to direct domestic and foreign funds to the regions of priority interest in order to ensure the maximum level of cost-effectiveness.

Environmental protection and health protection are closely related. The framework of environmental and health-care policy was established at the First European Ministerial Conference on the Environment and Health, held in Frankfurt in 1989, and at the Second European Ministerial Conference on the Environment and Health, held in Helsinki in June 1994. The two important documents binding both, the health and the environmental sector are the *European Charter on Health and Environment* (Frankfurt, 1989) and the *Helsinki Declaration on Action for Environment and Health in Europe* (Helsinki, 1994). At the Second Conference on the Environment and Health in Helsinki, the Ministers agreed that each Member State would produce a National Environmental Health Action Plan. Such plans should establish a link between the environmental and health sectors, which would result in a co-ordinated implementation of measures for improving the environment and health at the national and local levels. The European health policy is defined in the *Targets for Health For All 2000* (comprising 38 objectives). In the Targets the improvement of health, the strategy for achieving a healthy lifestyle and the improvement of the environment are included. Seven objectives are related to the environmental factors which affect the health of people. These objectives are defined in the Health Care Plan of the Republic of Slovenia for the Period Until 2000, drawn up by the Ministry of Health.

2. APPROXIMATION TO THE EU – CHALLENGE AND OPPORTUNITY

It is evident from the Strategy for Economic development of Slovenia that the approximation to the EU is the right choice for Slovenia. But if we are to prevent possible detrimental effects on the environment in time and maximise the benefits arising from the approximation process, a thorough preparation is necessary. With regard to the possible positive and negative effects of the approximation process, the following should be emphasised:

- Slovenia has to adapt its environmental protection system to meet EU requirements[11]; transitional periods and additional funds will have to be ensured during the negotiations for those requirements which Slovenia, for various reasons, will not be able to fulfil by the time it becomes a member of the EU.
- The adoption of the system of environmental instruments established in the EU is not only an obligation but also an important opportunity to solve the problems of setting up the environmental protection system with greater speed.
- The alignment with EU environmental policy is an opportunity to introduce changes to the production and consumption patterns. Additional mechanisms will have to be established to prevent the undiscriminating transfer of environmentally-harmful technologies to Slovenia and to ensure the appropriate protection of Slovenia as an exceptionally sensitive area (biodiversity, the karst region, size, sensitivity to transboundary effects /sea, air/, settlements).
- The conservation of biodiversity is Slovenia's comparative advantage in the process of integration into the EU, especially in the promotion of sustainable development in rural areas.
- The expected negative effects of Slovenia's approximation to the EU (e.g. increased transit, changes in the habits of producers and consumers) will have to be controlled.
- The introduction of complementary environmental protection mechanisms will be needed. Traditional methods of supervision will be progressively supplemented by modern mechanisms, based on the market strength (introduction of process and production standards), consistent prevention, and the enforcement of the principles of wide co-operation and shared responsibility.
- Approximation to the EU calls for the strengthening of Slovenia's currently weak institutions.

The process of accession to the EU gives us an opportunity to facilitate effective implementation of a modern (sustainable) environmental policy. The decision to become a member of the EU and the fact that it has been invited to negotiate with the first group of candidate countries enable Slovenia to include among its short-term environmental objectives those objectives which would have been achieved later if only the national environmental protection requirements had been considered. This has been taken into account in determining the short-term objectives and measures, where obligations arising from the *acquis communautaire* have been given priority.

2.1 Environmental Accession Strategy of Slovenia for Integration into the European Union

The *Environmental Accession Strategy of Slovenia* is the basic programme document and a schedule, which will direct Slovenia's efforts to integrate with the EU in the field of the environment. The Slovenian Government had discussed the document and adopted it as an Annex to the National Programme for the Adoption of the *Acquis Communautaire* on 26 March 1998. At the beginning of negotiations with the EU, the European Commission evaluated the Strategy as a very good basis for Slovenia's accession activities in the field of the environment.

The document describes the accession process itself; defines the operational plan for accession activities and priority tasks with regard to the environment; assesses the compliance of Slovenian environmental legislation with that of the EU; and provides for the supervision and enforcement of environmental legislation.

11 As well as the requirements of other countries with effective environmental protection policies. EU requirements have a special significance, due to Slovenia's decision to integrate with the EU.

The Strategy is based on relevant documents drafted by Slovenia and the European Commission, including Strategy of the Republic of Slovenia for Accession to the EU (Ljubljana, September 1997, and subsequent amended versions); the White Paper of the European Commission (Brussels, 1995); the Agenda 2000; the Commission Opinion on Slovenia's Application for Membership of the EU (Brussels, August 1997); the Guide to the Approximation of EU Environmental Legislation (Brussels, August 1997). It also takes into account numerous resolutions and agreements adopted by the Slovenian Government and the institutions of the European Commission.

It is evident from the document that the Ministry of the Environment and Spatial Planning and other national bodies, municipalities and the entire economy are faced with exceptionally extensive tasks, which will have to be carried out in a relatively short time if Slovenia wishes to accede to the EU soon after 2000. The transposition of EU environmental legislation to Slovenian legislation will not present a serious problem. The transposition is expected to be completed by the end of 2000.

In the short term the Ministry of the Environment and Spatial Planning will harmonise Slovenian legislation with framework directives concerning air, waters and waste, and begin to implement harmonisation programmes, in accordance with the recommendations and resolutions in the Commission Opinion on Slovenia's Application for Membership of the EU. In the medium term the Ministry will harmonise the regulations with the IPPC directive and other environmental legislation and develop a system for monitoring of the enforcement of environmental legislation. The Ministry will continue with the implementation of harmonisation programmes and the required environmental investments.

3. CURRENT STATE OF THE ENVIRONMENT AND EXPECTED CHANGES

3.1 State of the Environment by Subject Areas[12]

In the period of fast post-war industrialisation and urbanisation the state of individual environmental components declined sharply, but it has since stabilised. Nevertheless, a more effective response of society is needed. Since Slovenia gained independence the quality of surface waters and air has improved, while the quality of groundwater in certain areas has been declining. The management of urban and industrial waste is still a problem. The main reason for the improved quality of surface waters is the reduction in the production volume (the closure of a number of major polluters). The improved air quality is a result of the stepped-up transition to the use of more environment-friendly fuels and heating systems and of the already completed desulphurisation in some thermal power plants. Threats to the biological and landscape diversity and non-living nature have not yet been successfully managed. An important resource, necessary for the existence and further development of society is thereby jeopardised. Furthermore, the situation is getting worse.

In Slovenia the relation between environmental pollution and the health of the population has not yet been systematically researched. However, our knowledge about the quality of individual environmental components and about the health status of the population living in the most frequently affected areas (e.g. Celje, Velenje, Mežica, the Zasavje region, etc.)[13] is rather good. More attention has been devoted to the research of relations between working conditions and the health of workers in different industries[14], which does not fall within the scope of the NEAP. Slovenia has not yet set up a co-ordinated information system health – environment, which is at the organisational level one of the crucial conditions for the effective action.

Waters. The majority of surface watercourses is excessively polluted (29% fall into the third and fourth water quality class). The pollution is spreading towards river sources. The quality of groundwater has been deteriorating recently.

The rehabilitation of point water pollution sources has not been carried out to the desired extent. Wastewater generated by 75% of the population is treated by various methods[15]. Drinking water supply for 80% of the population is organised through public service. Many industrial plant and facilities still discharge wastewater into watercourses without any prior treatment. The Decree on the Water Pollution Tax[16], issued in 1995, established an economic mechanism forcing polluters to look for more suitable solutions.

Among the diffused sources of water pollution are intensive agriculture, certain industrial sectors, traffic and dispersed settlements without wastewater collecting systems. Agriculture is responsible for the bulk of groundwater pollution caused by nitrates, phosphates and pesticides (mainly due to intensive arable farming in the north-eastern part of Slovenia) and by organic substances and ammonia compounds generated by livestock farms. Industry bears the main responsibility for pollution caused by heavy metals (in conjunction with traffic), phenols and organic solvents.

Air. Air quality in Slovenia has improved in recent years. The most evident is the reduction of the pollution caused by SO_2 emissions, especially in urban areas (introduction of gas pipeline network[17], district heating systems, etc.). The state of the environment in the vicinity of power plants has improved (Šoštanj, Ljubljana). Between 1980 (used as a reference year) and 1995 total SO_2

12 The description of the current state is based on the updated conclusions of the Report on the State of the Environment 1995 (Poročilo o stanju okolja 1995).

13 In 1995/96 a study was carried out on the relation between lung diseases and the quality of air in industrial towns, showing a specific correlation between the prevalence and pollution.

14 These data are available at the Institute of Public Health (Inštitut za varovanje zdravja) in Ljubljana.

15 Of which 15% is secondary waste water treatment, 12% mechanical treatment and 48% primary treatment (including cesspools).

16 Decree on the Water Pollution Tax – Uredba o taksi za obremenjevanje vode (Uradni list RS, št. 41/95, 44/95, 8/96)

17 According to some estimates, the introduction of gas pipeline networks is slowing down the transition to the use of renewable sources of energy, especially biomass. In the future the share of renewable energy sources will have to be increased, while environment-friendly systems and technologies are being introduced.

emissions in Slovenia decreased by more than 50% (from more than 250 000 to 120 000 tonnes a year). In accordance with assumed international obligations the SO_2 emissions should have been reduced by 30% by the end of 1993. In very unfavourable weather conditions the concentrations of harmful substances still exceed the critical levels at a number of exposed locations within the areas of influence of thermal power plants, increasing the mortality rate of the exposed population.

Air pollution of the air caused by nitrogen oxides (NO_x), which mostly affect the immediate vicinity of roads and power facilities, is increasing. In 1990 and 1991 NO_x emissions temporarily abated, due to decrease in traffic and production. Since then they have been rapidly increasing. The total quantity of NO_x emitted in 1997 was approx. 23% greater than in the reference year 1987. The Protocol concerning the Control of Emissions of NO_x requires that Contracting Parties stabilise emissions of NO_x at 1987 levels.

The electricity sector generates the major share of SO_2 emissions (81%) while 66% of NO_x emissions are caused by traffic. The motor traffic is the main source of lead emissions and emissions of volatile organic compounds (VOC), which can form photochemical oxidants. The source of a bulk of VOC is also industry.

During the summer months the concentrations of ground-level ozone at all permanent measuring stations almost daily exceed the limit values. High ozone concentrations have adverse effects on people and plants. In Slovenia much of the ozone is generated by the transit traffic but with the current measuring network the extent of pollution can not be determined.

The Kyoto Protocol to the UN Framework Convention on Climate Change binds Slovenia to reduce its emissions of greenhouse gases by 8% with regard to the reference year 1986. The quantity of CO_2 emissions, the major greenhouse gas, began to fall after 1986, mainly due to economic difficulties. Following the new impetus of economic growth and the revival of transport routes in 1992, the quantities of the emitted CO_2 have increased rapidly. In 1997 the emissions exceeded the amounts of the reference year 1986[18]. Electricity sector [19] and traffic contribute the largest share of CO_2 emissions (35% and 32% respectively). The greenhouse effect is also caused by methane (CH_4) and nitrous oxide (N_2O) emissions. The main sources of these are agriculture, waste management, coal industry and traffic. The remaining greenhouse gases covered by the Kyoto Protocol are HFC, PFC in SF_6. Their contribution to the greenhouse effect is smaller.

The programme for reducing the emissions of greenhouse gases is currently being drafted. The first estimates show that the reduction in greenhouse gas emissions will be a difficult task for Slovenia. Nevertheless, it is a challenge and an additional incentive for the restructuring of the energy sector and industry in order to ensure greater economic efficiency in the future. The way people live will have to be altered and the connection between the improved standard of living and the increase in energy consumption will have to be broken. If Slovenia wants to meet the requirements of the Kyoto Protocol, it will be of key importance to stabilise the emissions of greenhouse gases from traffic.

Owing to the long-term pollution of air, and consequently of soil, with substances (SO_2, NO_x) which cause acid rain, the forests have deteriorated in the major part of Slovenia and the biodiversity has been threatened.

In recent years the consumption of ODSs has decreased substantially. The use of CFCs in production has been abandoned but the consumption of HCFCs has increased between 1989 and 1996, reaching 16% of the permissible level in 1996.

The current network for automatic air pollution measurements has not been adjusted to the changes in the source of air pollution (motor transport) and neither to the new legal regulations.

Slovenia's long-term air protection strategy has not yet been developed. It will have to respond to the question of air quality (locally and generally) in relation to the international quality standards (e.g.

18 15.1 million tonnes in 1996.
19 Thermal power plants, which use indigenous coal contribute as much as 99%.

imposed by WHO) and simultaneously provide for the development of the services, industry and other sectors.

Soil and forests. Arable land covers approximately 32% of Slovenia's territory and forests more than 50%. After the second World War, and primarily in the last 20 years, the fertile land and forests have been substantially damaged. The reasons for that lie in the intensive industrialisation and agricultural production combined with dense traffic and urbanisation. Owing to the ineffective legislation the land use of agricultural land is often changed. Decline in soil productivity is stepped up by the pollution of air and surface waters. Intensive agriculture often causes excessive burdening of soil with nutrients (e.g. nitrates and, to a lesser degree, with phosphates) and plant protection agents (pesticides)[20]. The use of heavy machinery contributes to the physical degradation of soil. Institutional framework to deal with such threats to the environment still has to be set up (supervisory service to monitor the quality and pollution of soil and agricultural products, consulting service for the wise use of fertilisers and pesticides, introduction of sustainable production methods, etc.). Records of soil pollution are available only for some regions (Celje, Ljubljana, Dravsko polje, Krško polje, Koper, Jesenice). They will have to be completed and critical areas will have to be rehabilitated (especially groundwater areas and important production areas). The current forest monitoring network does not suffice for the monitoring of the areas with the significant level of tree damage. Measures for promoting sustainable animal husbandry are not adequate (e.g. the practice of using waste within a farm or some other suitable method of waste management - this problem is rather serious in Slovenia, especially with regard to pig farms). The use of sludge from wastewater treatment plants, silt from river beds and lakes and compost in agriculture is regulated by the Decree on the Input of Hazardous Substances and Plant Nutrients into the Soil[21].

Slovenian forests, particularly conifers (firs, spruces), have suffered extensive damage because of air pollution (mainly caused by SO_2 and acidification). Natural accidents further increase the damage. Forest fires pose a significant risk, especially in the karst region. The abundance of specific herbivorous animal species exceeds the natural capacity of forests. The tree damage caused by bark beetles in dry and warmer years is severe. Forests are also threatened by various diseases. In addition, forest exploitation is inappropriate and investments in the restoration and management of forests have been reduced. The Forests Act[22], adopted in 1993, together with a number of implementing regulations, international conventions and other measures, is a basis for the gradual rehabilitation of Slovenian forests.

Biological diversity. Experts estimate that biological diversity in Slovenia is above average[23]. Many different ecosystems can be found in Slovenia: forest, underground and aquatic ecosystems, wetlands, sea, Alpine and mountain areas, dry grasslands, etc. Biological diversity is not systematically monitored, but so far findings confirm the basic assumption that certain plant and animal species are endangered (red lists). The unregulated management of genetic material and the uncontrolled introduction of nonindigenous and modified organisms pose a threat to biological diversity. Most of the coast is built; 25% of major rivers are regulated entirely or in part; and only a number of watercourse sources are unpolluted. Many marshy meadows have been dried, chemical residues are accumulating in large farming areas, and the vital animal migration routes are often intersected by transport infrastructure. There are several reasons for such state: there is no co-ordination between sectors and economically strong sectors dominate; legislation is insufficient and its implementation ineffective; funds allocated to conservation of biological diversity and to basic and

20 In Slovenia the application of plant protection agents has substantially increased over the last 40 years. Nevertheless, the quantity of applied agents has been decreasing since the 80s. In the last two years the average quantity of applied agents was 2.5 kg/ha, while the average quantity of applied agents in the EU amounts to 4.2 kg/ha of arable land (the quantities used are the smallest in Portugal -1.9 kg/ha, and the largest in the Netherlands -17.5 kg/ha), although the use seems to be decreasing. In Slovenia the application of mineral fertilisers has been at approximately the same level for 10 years, amounting to 115 kg/ha of arable land (N, P_2O_5, and K_2O), or 90 kg/ha of agricultural land. The average surplus in nitrogen balance in Slovenia amounts to 56 kg/ha. It is the smallest in the Littoral-Karst region (0–25 kg/ha) and the largest in the Pomurje and Maribor regions (75–100 kg/ha). In the EU the average surplus in nitrogen balance is 71 kg/ha of arable land (the smallest is in Portugal - 6 kg/ha and the largest in the Netherlands - 321 kg/ha).

21 The Decree on the Input of Hazardous Substances and Plant Nutrients into soil - Uredba o vnosu nevarnih snovi in rastlinskih hranil v tla (Uradni list RS, št. 68/96)

22 The Forests Act - Zakon o gozdovih (Uradni list RS, št. 30/93)

23 Approximately 24 000 species live in the territory of Slovenia, while the estimated number of all potential species is between 45 000 and 120 000; 800 animal and 46 plant species are endemic.

applied research are insufficient; until now, not enough emphasis has been placed on the conservation of biodiversitiy in comparison to the traditionally well established environmental protection fields. The ratification of The Convention on Wetlands of International Importance especially as Waterfowl Habitat (the Paris Protocol has not yet been ratified) imposes on Slovenia the obligation to introduce an appropriate protection of its wetlands. Also, forest and mountain ecosystems are threatened more and more. By signing the Convention on the Protection of the Alps, Slovenia has taken a step towards reducing the threat. Protected areas cover 8% of Slovenia's territory (4.2% as nature parks – the Triglav National Park and the Trepče Memorial Park). In the last two years more has been achieved in the field of nature protection – the designation of the Škocjanske jame Regional Park and the Škocjanski zatok Nature Reserve. With respect to numerous natural features, approximately 30% of the territory of Slovenia should be protected.

In recent years the problem of uncontrolled trade in nonindigenous and exotic animal species is worsening. The introduction of indigenous species may have unpredictable effects on natural ecosystems. With the Decree on the Protection of Endangered Animal Species[24] and the Decree on the Protection of Wild Fungi[25] the scope of protection widened. However, the level of species conservation is not satisfactory. By ratifying the Convention on Biological Diversity (Rio, 1992), the Convention on the Conservation of European Wildlife and Natural Habitats (Berne, 1979) and the Convention on the Conservation of Migratory Species of Wild Animals (Bonn, 1979), Slovenia has taken additional regulatory steps, which will need to be implemented. Slovenia will soon ratify the Convention on International Trade in Endangered Species of Wild Fauna and Flora - CITES (Washington, 1973). With regard to the conservation of biological diversity, two more issues have to be addressed, namely, the removal of genetic material (seeds) from certain areas and the use of experimental methods not permitted in developed countries.

One of Slovenia's distinctive features is its landscape diversity. It is characterised by various geographic regions and land use categories and reflects the lifestyle of our predecessors. Traditional farming induced the development of specific secondary habitats, which are of exceptional importance for the conservation of biological diversity. Characteristic landscape diversity is threatened by the abandonment of certain agricultural activities in some regions (mown grasslands and pastures in the karst region, mountain pastures) and by the intensification of agricultural production, which change the landscape and biological diversity (disappearing of humid and dry grasslands). Unregulated spatial policy and town planning, changes in farming and re-orientation from agriculture to other activities (e.g. tourism) have a detrimental impact on landscape diversity. Large construction projects (the motorway network) present a special problem. They have direct (degradation of the landscape, intersecting animal migration routes) as well as potential impacts on the environment (improved accessibility of the remote parts).

Slovenia is rich in non-living natural elements (minerals, fossils) and geo-morphological and hydrological phenomena composing an assemblage of natural features (gorges, caves, waterfalls, etc.). Their attractiveness promotes the rapid development of various activities, which leads to encroachments on the most vulnerable areas and poses a threat to biodiversity.

Waste management. Waste management is one of the problems which has not been solved in a satisfactory manner. The disposal of waste at local (municipal) landfills is more or less the only possible method of managing urban and most industrial waste. Often the location of these landfills is inappropriate, they do not meet the technical requirements (unsealed, no gas drainage, exposed to floods, close to groundwater, etc.) and are mostly full. There are between 50 000 and 60 000 illegal waste dumps in Slovenia. One of the consequences of inappropriate waste management is the excessive release of methane from landfills, representing approximately 5% of the overall emission of greenhouse gases in Slovenia. Many landfills operate without proper documentation or have no legal status[26]. The separate collection of household wastes is organised only in some municipalities. The problem of processing the waste collected separately has not been solved satisfactorily. Industry

24 Decree on the Protection of Endangered Animal Species - Uredba o zavarovanju ogroženih živalskih vrst (Uradni list RS, št. 57/93)
25 Decree on the Protection of Wild Fungi - Uredba o zavarovanju samoniklih gliv (Uradni list RS, št. 45/94)
26 Source: Inventarizacija odlagališč komunalnih odpadkov v Sloveniji, VGP Drava, Ptuj, 1994 - Inventory of Municipal Waste Deposits in Slovenia.

frequently disposes its waste together with urban waste. Some companies, though, have their own mono-disposal sites for specific types of hazardous waste, e.g. sites for disposal of tailings, slag and cinders. The export of specific types of hazardous waste (e.g. waste paints, varnishes, solvents, etc.) in accordance with the procedures of the Basle Convention is for many industrial branches the only option. Some companies have their own incineration facilities which are used in their technological processes. Owing to the public opposition, waste is rarely incinerated in industrial facilities, although there are many environmentally sound possibilities for that (e.g. cement kilns).

The collection of certain secondary raw materials has a relatively long tradition and has been quite successful. However, with the loss of former Yugoslav markets the trade in secondary raw materials decreased (the 1994/89 index is 65). Among the collected raw materials iron, steel, non-ferrous metals, glass, paper, textiles and plastic prevail. The bulk of these materials is generated and collected in industry, the municipal share being fairly small.

The collection of certain types of urban waste, which are collected and recycled effectively in the EU, has not yet been organised in Slovenia, e.g. aluminium cans and PET bottles (beverage bottling), packaging styrofoam, wooden crates for fruit and vegetables, old clothes, household appliances, apparatuses containing electronic circuits, old cars, etc. Packaging waste will have to be reduced radically in the near future to meet the requirements of EU directive on packaging and packaging waste (94/62/EC).

The collection and sorting of hazardous components mixed with urban waste (car and other batteries, waste pesticides, waste paints and organic solvents, discarded medicines, etc.) has just begun. The system for managing collected materials until they are destroyed or recycled has not yet been set up.

The *Waste Management Strategy of the Republic of Slovenia – Problems and Specific Issues in Approximation to the EU*[27] (adopted by the Government of the Republic of Slovenia on 1 August 1996) is an important step towards the improvement of the current state. It defines basic guidelines and objectives in the field of waste management and grades possible waste management methods. In the Strategy economic development and the process of integration into European Union are taken into account. The Strategy is a constituent part of the NEAP, which in its programme section merely summarises the main objectives, measures and orientations.

Radiation. The main source of *ionising radiation* in the environment is radioactive waste. Spent fuel from Krško nuclear plant is the only high-level waste generated in Slovenia. It is stored in a special spent fuel pool, the size of which permits storage until 2005. Intermediate- and low-level waste from Krško nuclear plant is in special casks, also at the nuclear plant. Krško nuclear plant is the only facility which permanently monitors the radiological pollution in the surrounding area. The Žirovski Vrh uranium mine has disposed 660 000 tonnes of tailings at the Boršt landfill, posing a radiological threat to water sources. A lot of contaminated material and equipment is stored in the mine itself and in the processing units. Hospitals, institutes, industry and others store their low- and intermediate-level waste in temporary storage facilities (long-lived isotopes in Podgorica, illegal storage in Zavratec ...) until the rate of decay is within the limits permissible for the waste to be disposed together with urban waste (short-lived isotopes). Radioactive substances (especially iodine isotopes) in wastewaters from hospitals (especially the Medical Centre, Ljubljana), which are discharged into the river Ljubljanica without prior treatment present a special problem. The bodies responsible for the management of ionising radiation are the Nuclear Safety Administration of the Republic of Slovenia and the Agency for Radioactive Waste.

Non-ionising radiation in the environment is mainly the result of the operation of various installations (high-voltage power lines, transformer stations, radio transmitters, radars, monitors, etc.). Their impact on the residential and living environment has in Slovenia not yet been determined. In 1994 the Resolution on combating the harmful effects of non-ionising radiation (EP doc A3-238/94) was issued by the European Parliament. The corresponding decree was in Slovenia issued in 1996.

27 *Waste Management Strategy of the Republic of Slovenia - Problems and Specific Issues in Approximation to the EU* – Strateške usmeritve Republike Slovenije za ravnanje z odpadki - Problemi in specifičnost pri približevanju Evropi

Light pollution caused by outdoor night lighting from various sources has recently become a special problem. Such pollution has unfavourable effects on certain plant and animal species.

Noise. The living environment in Slovenia is not heavily polluted by noise. The main sources of noise are traffic and industry. Quiet vehicle development, the reduction of traffic speed and density (e.g. at night-time), the construction of new roads away from residential areas and the installation of anti-noise barriers (roads, railways, industry) have positive effects on the reduction of the average level of noise pollution. The main problem are outdated vehicles, old roads, roads in residential areas and the increase in personal and goods transport. Slovenian regulations governing noise in the natural and living environment are fairly harmonised with generally recognised foreign norms. With regard to the noise at workplaces, Slovenia lags behind the EU.

Environmental risk. Increased production, transport and distribution of chemicals and fuels, i.e. substances that threaten human health and burden the ecosystems, pose a permanent risk of accidents (discharges of hazardous substances into watercourses and underground, emissions of harmful substances into the air, inappropriate management or disposal of hazardous and nuclear waste, transport of fuels, hazardous substances and wastes, etc.). Slovenia has ratified the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal. Slovenia will also ratify the Helsinki Convention on the Transboundary Effects of Industrial Accidents.

Environment and health. Environmental pollution (polluted air, excessive noise, consumption of polluted drinking water, inappropriate waste management and exposure to ionising and non-ionising radiation) leads to the emergence of numerous diseases. The most susceptible are sick persons, children and older people. The greatest problem is polluted air, major pollutants being sulphur dioxide, nitrogen oxides, carbon monoxide, ozone and particulates. In Slovenia data on the prevalence or mortality due to polluted air are not collected systematically. The pollution of drinking water and the intake of various pollutants are serious health-care problems owing to the size of the population affected. In recent years the physico-chemical analyses of drinking water have shown that the situation has deteriorated, especially in the large water supply systems. The important environmental factors affecting human health also include excessive noise, radiation and indoor air pollution. The data on these factors are scarce, except for radon.

3.2 Expected Changes and Problems

The outcome of the restructuring of production and of the change in consumption patterns is unknown, therefore it is difficult to predict the future state of the environment us and related problems. According to the estimates referred to in the Strategy for Economic Development of Slovenia[28], the rapid economic growth will also affect the level of pollution[29] of the environment[30].

This prognosis shows the significance of technological modernisation for the reduction of environmental burden and for the wise use of natural resources. Active environmental protection policies affect economic growth in various ways. The costs of rehabilitation and payments of environmental protection taxes will hinder some and promote other activities. Environmental protection and economic development are two objectives which are strategically interdependent.

28 The Strategy for Economic Development of Slovenia - Strategija gospodarskega razvoja Slovenije (EPA 1107, Poročevalec 19/95)

29 Should the emission coefficients of environmental pollution remain the same, the scenario (+) shows that by 2000 emissions of SO_2 and waste would increase by 30%, and waste waters by 40%. With changed (environmentally more acceptable) emission coefficients, the emissions of industrial waste and waste waters would be reduced by 6 and 4% respectively, while emissions of SO_2 would increase by 15%. The scenario (-) shows that emissions of SO_2 would increase by 20% and emissions of waste and waste waters by 15%. Estimated environmental pollution by 2000 is according to both scenarios lower than the growth in the production (pollution per production unit will decrease). The scenario (+) anticipates that structural changes will keep pace with faster economic growth (the expected emissions per production unit are correspondingly lower), meaning that this scenario would result in a more environment-friendly economy.

30 The Strategy for Economic Development of Slovenia offers two scenarios defining the adoption and/or implementation of strategies by individual areas (waste management, air, etc.) and sectors (agriculture, forestry, industry, energy sector, tourism, etc.). The positive (+) scenario takes into account favourable elements, while the negative scenario (-) is based on unfavourable international environment. According to the former, the real GDP would grow at an average annual rate of 5.5% and according to the latter this rate would be 2.5%.

The tendency of gradual approximation to the production structure of small developed European countries is reflected in the increased share of service activities at the expense of industry and partly agriculture. According to the scenario (+), the share of industry should stabilise at approximately 38% of GDP, agriculture should retain a share of approximately 4% of GDP and service activities should reach 58% of GDP by 2000.

It is estimated that by 2000 the average productivity growth in industry will be 5.8% a year, provided that the employment is reduced by approximately 24 000 persons. The scenario (-) anticipates less favourable developments, resulting in 4% annual productivity, provided that the employment is reduced twice as much as above.

Given the available natural resources, crop production will increase in the next few years, while livestock production will slightly decrease. The State will promote by subsidising the programmes for the dezintensification of agricultural production (agri-environment programmes – Council Regulation (EEC) No 2078/92). Both scenarios predict similar agricultural production growth rate.

The following table shows the factors which increase and reduce the pressure on the environment.

Factors increasing the pressure on the environment	**Factors reducing the pressure on the environment**
• Economic revival may establish a pollution pattern similar to that in the period prior to the economic crisis. • The intensification of agriculture in suitable areas and abandonment of less suitable areas may threaten the traditional relations between man and nature. • The release of GMOs into the environment is expected to increase. • Animal and plant species are more and more endangered owing to hydro-technical and agri-technical activities, the construction of motorways and the introduction of nonindigenous plant and animal species. • The expansion of recreation and tourism into the areas with most vulnerable (though in terms of tourism very attractive) ecosystems, disregarding environmental considerations. • The expansion of private initiatives to new locations, which will lead to further threats to the environment and biological diversity if national environmental protection is not established. • The subordination of environmental objectives to other, mostly short-term (social and other) interests. • Increased transit goods transport resulting in increased emissions generated by traffic. • Intensified traffic is expected to increase the air emissions. • The attempts of foreign investors to introduce “dirty” and cheap technologies.	• The upgrading of legal and economic instruments of environmental protection in compliance with the requirements of harmonizing the environmental protection system with that of the developed countries. • The fulfilment of assumed international obligations (e.g. the Convention on Biological Diversity), as well as those which Slovenia will assume upon accession to the EU (e.g. the habitats directive and wild birds directive). • Institution building at all levels and strengthened control of sources of threats to the environment. • Adapting of export industry (mainly those branches which produce finished products) to EU environmental standards. • The realisation of rehabilitation programmes on the basis of ecological reservations (funds reserved for environmental protection) in the process of the ownership transformation of companies. • Raising environmental awareness and increasing knowledge of environmental protection problems. • The restructuring of Slovenian agriculture with the assistance of financial incentives for the preservation of traditional agriculture in accordance with EU policy.

4. SLOVENIA'S BASIC ENVIRONMENTAL PROTECTION OBJECTIVES

4.1 Ranking of Objectives by Importance

Environmental problems have been identified[31] and ranked by importance. They have served as a basis for defining strategic goals for the drawing-up of the action programme. The objectives themselves and their ranking will be subject to constant examination and supplementation in the process of the adoption and monitoring of the implementation of the NEAP.

A list of objectives ranked by importance has been drawn up for every subject area:

AQUATIC ENVIRONMENT

WTR1)	to reduce emissions from point sources – wastewater from industry and livestock farms and urban wastewater
WTR2)	to reduce emissions from diffuse sources – intensive agriculture, dispersed settlements without wastewater treatment facilities, traffic
WTR3)	to restrict old pollution sources threatening the aquatic environment
WTR4)	to prevent inappropriate activities affecting the aquatic environment

WASTE MANAGEMENT

WST1)	to reduce waste generation and its danger potential at a source
WST2)	to increase material and energy utilisation of waste and reduce greenhouse gas emissions
WST3)	to set up an effective waste management system
WST4)	to gradually eliminate old pollution sources

BIOLOGICAL DIVERSITY AND GENETIC RESOURCES

BIO1)	to prevent the reduction of biological diversity on the level of ecosystems (and habitat types), species (and habitats) and genomes (and genes)
BIO2)	to prevent further threats to natural balance caused by inappropriate exploitation of animal and plant species

AIR

AIR1)	to reduce air pollution from industrial sources
AIR2)	to reduce emissions from thermal power plants
AIR3)	to limit the air pollution caused by traffic
AIR4)	to reduce emissions from individual and collective heating systems (boiler rooms) in urban areas
AIR5)	to limit the causes of photo-chemical smog and tropospheric ozone
AIR6)	to abolish the use of CFC
AIR7)	to reduce greenhouse gas emissions (Kyoto Protocol)
AIR8)	to control long-range air pollution

SOIL AND FOREST

SOIL1)	to limit chemical soil pollution and to carry out the necessary rehabilitation
SOIL2)	to limit the physical degradation of soil (compaction, erosion, etc.)
SOIL3)	to limit the further degradation of forest soil

NOISE

NOS1)	to abate noise caused by road traffic
NOS2)	to abate noise caused by other sources

RADIATION

IONISING RADIATION	
RAD1)	to provide for an effective radioactive waste management
RAD2)	to control radioactive radiation in the environment

31 Fiftyfive basic environmental problems were defined.

NON-IONISING RADIATION	
NIR1)	to identify and control individual sources of non-ionising radiation

RISK

RISK1)	to provide appropriate procedures for handling chemicals and GMOs in production, transport and use
RISK2)	to enforce appropriate procedures for the storage, transportation and disposal of chemicals

4.2 Strategic Orientation

The characteristic of environmental policy in the past were its modest results. One of the many reasons was that more important environmental problems were not distinguished from less important ones, which led to the fragmentation of the limited environmental protection funds. By determining priorities, we do not neglect the integrated approach to environmental problems. On the contrary, we focus on critical sites or areas and on the more effective utilisation of available resources.

In the drawing-up of the NEAP, four strategic options were weighed:

1. There are no differences between individual environmental protection fields. All fields are equally important.
2. Priority should be given to one field.
3. Priority should be given to a number of strategically important fields.
4. Priorities are determined by the process of accession to the EU.

Following numerous discussions, a decision had been made to adopt the third option. The decision is based on the following:

1. The first option had not been accepted as it would have led to the fragmentation of the limited funds. In addition to this, Slovenia had in the past gathered positive experience from focusing on the key problems, for example in the field of air protection.
2. The second option had not been accepted for conceptual and practical reasons. Environmental problems are interconnected, which means that it is practically impossible to focus on one exclusively. In the late sixties and early seventies Japan took on such approach. It devoted all its attention to the elimination of the most hazardous pollutants (e.g. heavy metals). There are no real bases for a similar approach in Slovenia. This option would probably have brought stagnation in a number of environmental protection fields in which Slovenia had already achieved encouraging results.
3. The selected third option is not in discordance with fourth option. The objectives determined by the current state of the environment would not be abandoned. The comparison of costs of the implementation of EU approximation projects[32] with the costs of meeting the NEAP priority objectives has shown that 89% of the funds allocated for the approximation are directed to the three selected NEAP priority areas. The analysis of connections between the fundamental environmental protection objectives and the objectives concerning the fulfilment of the EU requirements has shown the following:
   - All investments related to the integration with the EU support the NEAP objectives. Landscape, soil and forest protection are not directly affected by EU requirements. They will be covered by the spatial plan of the Republic of Slovenia (in preparation) and the long-term forest management and agriculture programmes.
   - The investments in environmental protection required by the approximation to the EU exceed the funds currently available for that purpose. We will not be able to implement the required tasks without substantial EU assistance. In the next ten years virtually all available funds would have to be invested in the approximation projects. The budget funds will have to be allocated mainly to institutional strengthening at the national and the local level and to those fields were EU has no interests.

32 DISAE SLO-101, 1998. Developing of a Costing Assessment for the Slovenian Environmental Strategy. Draft Report. Agriconsulting Europe.

4. In the past, one of the major problems in Slovenia was air pollution. It threatened more than 40% of the population and largely contributed to the deterioration of forests. It is therefore not surprising that the first priority enforced in practice was the improvement of air quality. In the period of ten years coal was to a large extent substituted with other, more environment-friendly fuels and more appropriate energy systems were applied. One block of the Šoštanj thermal power plant has been successfully rehabilitated and the rehabilitation of the fifth block has started. Cogeneration plant in Ljubljana began to use the coal with a substantially lower sulphur content. Expert analysis of the current state and environmental trends and the assessment of Slovenia's strategic comparative advantages showed that most attention will have to be given to water, waste management and the conservation of biological diversity, which is an important strategic comparative advantage of Slovenia.

Slovenia's priority goals at the turn of the millennium are:

- to successfully conclude the air protection programmes and to supplement them with the programmes for reducing concentrations of tropospheric ozone and other hazardous substances and for reducing greenhouse gas emissions,
- to improve the state of the aquatic environment
- to introduce the modern methods of waste management
- to conserve and protect biological diversity and genetic resources.

It has to be emphasised that one of the priority goals is also:

- to strengthen environmental protection institutions at all levels,

which is the basic condition for achieving the objectives of the NEAP.

5. NEAP – BALANCING THE DESIRABLE AND THE FEASIBLE

5.1 Basic Principles for the Management of Environmental Issues in the Future

Shift Towards Sustainable Development

The period of transition is an opportunity to introduce changes in accordance with the principles of sustainability. In this document the concept of sustainable development is construed mainly as an agent for changing the current production and consumption patterns or, in the widest possible sense, the current relationship between nature and society. With this national programme the goals of sustainable development will not be achieved, although the application of the defined measures and the regular monitoring of the implementation of the NEAP will be important steps towards these goals[33]. This also includes the following postulations[34]:

- the continuation of human activity and unhindered development in the future depend on the appropriate management of the environment and natural resources;
- natural resources and capacities are limited, therefore the wise management of energy and matter flow throughout the entire cycle from extraction to utilisation is required;
- we all have to be aware that certain natural resources are non-renewable and that every time we use them, it is at someone else's expense.

Sustainable development is defined as an increasingly important strategic task of the State[35], which has to find its place in the orientations of all development sectors.

Better to Prevent than Cure

Modern environmental protection concepts are based on the prevention of environmental burdening. Slovenia is about to replace many of its obsolete technologies. This is an important opportunity to apply environmental protection concepts if the replacement is carried out in an environment-friendly manner and by consistently observing the principle of prevention. The modernisation and optimisation of technological processes are important for their positive economic effects, owing to the introduction of the more rational use of raw materials and energy. In relation to this, the problem of waste management comes to the fore and, along with it, the necessity to develop such economic and legislative systems which will ensure the wise use of raw materials and energy with minimised emissions.

The introduction of new technologies and rational use of raw materials and energy are processes inseparably related to education and available information.

Consensual Problem Solving should be Given Priority

In accordance with the principle of co-operation[36], the NEAP gives preference to co-operation over the direct settlement of issues by the State. It defines a basic framework for the promotion of co-operation between all interested parties, state administration, the economy and the public with a view to encouraging voluntary agreements in all the fields where this method of environmental protection management is more effective than the legally prescribed one. This decision is based on a comparative analysis of two extreme approaches (Picture 1). In order to enforce the principle of co-operation, independent institutions should have access to information and should be given an opportunity to check and interpret data. The Fifth EC Environmental Action Programme[37] is an

33 Which is also in accordance with the EU definition (see EC Environmental Action Programme, A.24, O.J. EEC, 93/C 138/01).
34 Source: EC Environmental Action Programme, A.23., O.J. EEC, 93/C 138/01
35 Strategy for Economic Development of Slovenia, p.13
36 Comparable to the principle of shared responsibility.
37 Towards Sustainability - the European Community Programme of Policy and Action in Relation to the Environment and Sustainable Development (OJ No C 138, 17.5.1993)

important step forward. Voluntary activities within the industrial sector play a key role in this, and Slovenia is no exception[38]. This approach does not exclude coercion but it limit it to the unresponsive segment of polluters. The condition for the successful functioning of the mechanisms is the public trust, which is not easily gained. It requires realistic objectives and positive experiences, already abundant in the world (the Netherlands), as well as good knowledge of weaknesses and limitations of the system, which cannot entirely replace the current environmental protection instruments.

Picture 1: SWOT analysis of the voluntary and legislative approach

SWOT ANALYSIS OF VOLUNTARY ACTIVITIES[39]	
STRENGTHS	WEAKNESSES
• flexibility, adaptation to circumstances • transfer of responsibility to the local level • based on consensus • potentially greater effectiveness • potentially faster realisation • ensure greater compliance with respect to long-term requirements • promote innovativeness	• insufficiently binding • apparent lack of consistency • require long-term planning • may be taken advantage of • require compliance review • may be expensive, time-demanding and bureaucratic • may hinder free competition
OPPORTUNITIES	THREATS
• greater effectiveness • environmental protection improvements • more target-oriented legislation • integration of environmental protection improvements into the business planning cycle	• free riders • excessive bureaucracy • short-sighted decisions • insufficient credibility in the eyes of the public
ANALYSIS OF THE LEGISLATIVE APPROACH	
STRENGTHS	WEAKNESSES
• simple interpretation and enforcement • enables the use of complementary standards • compliance is easily defined and reviewed	• orders judicially, is inflexible • slow response to changes • does not encourage the surpassing of the prescribed minimum • uncompromising • based on threats (fines, fees, taxes, prison)
OPPORTUNITIES	THREATS
• clearly defined goals • threatening with regulations may encourage innovativeness	• constant rise of environmental protection costs • slow progress of environmental protection improvements • action/reaction

Shared Responsibility for the Environment

In the world, the beginnings of environmental policy were based on legislation and direct control. The only parties involved in the process were the state on one side and the polluters on the other. Today, this phase has been replaced (across the world) by the concept of shared responsibility[40], demanding the active involvement of and co-operation between all relevant factors: national bodies, public and private companies, and the public. The NEAP defines fundamental environmental protection factors: the State, public and private companies and the public.

38 Article 7 of the Environmental Protection Act explicitly stipulates that the initiative of the person responsible to reduce the environmental burden shall have preference over institutional approach.
39 EU Commission, 1994.
40 The concept is in its sense comparable to the principle of co-operation, which is defined in the Environmental Protection Act (Article 7); however, the NEAP puts special emphasis on its operational dimension.

a) The **State's** primary role is not focused merely on the legislative area but also on economic planning and on the establishment of conditions for economic development, for land use and the use of natural resources, for accessing information, for education and for the changing of market conditions (through taxes, etc.). The State also owns some companies and is therefore responsible for their environmental practices. It is an important investor, whose task is not only to observe environmental requirements but also to directly or indirectly maximise environmental goals. In accordance with the legislation in force the State is responsible for activities performed by certain public environmental protection services[41]. In this scope the **local self-government** is included with its competencies in the field of environmental protection, which are otherwise dealt with in a special chapter.
b) Companies performing various activities affect the environment as users of natural resources or through environmental impact during all phases of their production cycles. With respect to this they are divided into two groups: companies which in environmental protection seek a business opportunity to improve their position in the market and companies which use their activities to maximise their profits at the expense of the environment. The NEAP defines objectives and measures for both groups using the so-called dual approach, which includes both the concept of coercion and the concept of stimulation[42]. It needs to be stressed that the treatment of companies does not end with merely controlling their activities, but extends to the control of and responsibility for their products in order to provide consumers with a possibility to choose among products according to their environmental features *(eco-labelling).*

Every member of society (the public) has three roles: as an *individual interested* in the state of the environment, as a *polluter* – a resident or worker, and as a *consumer.* For an individual to be an active factor in the field of environmental protection, the important conditions must be fulfilled: to have knowledge, to be environmentally aware, to be informed and to have at your disposal more environment-friendly options (example: until a system for separate collection of wastes or alternative means of transport are established, a more comprehensive campaign cannot be successful). In addition to individuals, non-governmental organisations and other organisations interested in environmental protection, trade unions, professional associations and many others play an important role in the achievement of environmental protection goals.

6. ACTION PROGRAMME FOR THE PERIOD UNTIL 2008, INCLUDING A DEFINITION OF PRACTICAL MEASURES FOR THE PERIOD UNTIL 2003

The action programme separately discusses individual areas of environmental policy (especially priority and other regions), sectors of activity and particularly vulnerable regions.

The action programme covers two periods with regard to individual environmental policy areas. The period until 2008 (in accordance with requirements of the Environmental Protection Act) and the period until 2003 (as the planned year of Slovenia's accession to the EU). Within these two periods individual measures are defined. For the long term only provisionally, with the possibility of adapting to new conditions, while for the short term only those measures are stated which form the basic condition for achieving the strategic goals laid down in the programme. In the drawing-up of the NEAP the following principles have been observed:

1. The principle of the hierarchy of documents – the general principle that the NEAP summarises and puts into operation the principles and requirements included in the Environmental Protection Act, assumed international obligations and the strategies for integration into the EU. Deviations from this principle are possible only when those measures are defined which are, as mentioned above, the basic condition for achieving strategic goals.
2. The principle of restrictiveness, according to which only those measures are defined for which it is currently possible to assess all the issues concerning their implementation.

41 Article 25 of the Environmental Protection Act.

42 To be compared with the Environmental Protection Act, which in its Article 7 clearly stipulates that the initiative of the person responsible to reduce the environmental burden shall have preference over institutional approach.

3. The principle of shared responsibility, according to which the NEAP does not define measures which have to be identified in the programme documents of individual sectors. However, the NEAP defines the mechanisms to control the inclusion of environmental considerations in particular activities.

6.1 Priority Areas

6.1.1 Improving the State of the Aquatic Environment

Elaboration of goals: water management strategy – in preparation (MESP)

Responsible ministry: Ministry of the Environment and Spatial Planning

The abundance of waters, although inappropriately distributed, is one of Slovenia's major comparative advantages at the turn of the millennium. Therefore it is very important to stop the deterioration of surface waters and, in particular, groundwater.

At the beginning of the 21st century we are facing the problems of the quality and quantity of waters, different and more worrying than those in the past, which a few decades ago initiated the development of pioneer environmental and water management policies. Today the initial approach, based on the local and partial discussion of individual water sources, no longer complies with the modern principles of the protection and optimal use of water and the aquatic environment. We must ensure co-ordinated action in order to meet the real needs of the energy sector, industry and mining, transport, agriculture and forestry, tourism and other sectors in a sustainable manner by using resources remaining after the primary needs (drinking water) had been met and nature conservation ensured. The risk control and reduction policy, as a part of optimal water management, helps to find a compromise between the continuation of activities affecting waters – under specific conditions – and the remediation of negative effects by reducing the possibility of their emergence. The guideline in the planning of various activities is to take into account the natural characteristics of water to the greatest extent possible.

As the custodian of natural resources, the State is obliged to enforce the general principles of water management based on ecology and economy and to take into account water as the crucial factor in sustainable development.

WTR1)	**to reduce emissions from point sources – wastewater from industry and livestock farms and urban wastewater**
WTR2)	**to reduce emissions from diffuse sources – intensive agriculture, dispersed settlements without wastewater treatment facilities, traffic**
WTR3)	**to restrict old pollution sources threatening the aquatic environment**
WTR4)	**to prevent inappropriate activities affecting the aquatic environment**

6.1.1.1 Provisional Programme for the Period until 2008

Activities will be focused on the reduction of emissions from industry into wastewater collecting systems and the aquatic environment, on the renovation of obsolete industrial wastewater collecting systems, on the better maintenance of facilities for storing hazardous substances and on the better management of run-off water from polluted surfaces. Direct control will be focused on the management of the impact on groundwater and on the prevention of the uncontrolled storage and/or disposal of waste containing hazardous substances.

Systems for collecting wastewater will gradually be connected to wastewater treatment plants using appropriate methods. The current state in the treatment of wastewater generated by the population is shown in Picture 2. The level of treatment in all existing plants and facilities will be determined by regulations. New collecting systems with wastewater treatment plants will have to be constructed in settlements with no public collecting systems. In determining which facilities have a priority, the criteria

for optimal and integrated water management[43] and individual levels of wastewater treatment, taking into account not only emission but also imission criteria[44], have to observed. In the regions with special ecological and economical characteristics (the karst region, the Alpine region, Pomurje, regions with specific landscape values and interesting for tourism) advanced treatment (tertiary treatment) will be necessary.

The informing and training of contractors and the control of the trade in chemical preparations should be improved in order to reduce the impact of agriculture on groundwater caused by nitrates, phosphates and pesticides (problematic mainly due to intensive farming in NE Slovenia), organic substances, nitrogen compounds generated at livestock farms, sludge from wastewater treatment plants, bio-technological waste (mycelia), etc.

The orientations and measures to be taken until 2008 to achieve the objectives in the field of aquatic environment are:

- To draw up a water management strategy[45], harmonised with the strategies in agriculture, industry, energy sector, transport and tourism. One of the priority tasks in Slovenia is to develop a strategy for achieving final objectives concerning individual catchment areas, taking into account optimal economic and environmental solutions within the integrated utilisation of water resources and the planned exploitation of comparative advantages.
- To adopt laws and related implementing regulations in the field of waters, which will supplement current legislation in accordance with EU directives. Additional mechanism for achieving the objectives in this field will be the drawing-up of eco-technological standards and criteria for introducing appropriate technologies for wastewater treatment, waste sludge management and drinking water supply, as well as the formulation of criteria for finding locations for relevant facilities.
- The initial phase of the implementation of the NEAP will be focused on the building of those wastewater treatment plants which are related to the fulfilment of the requirements of Slovenian legislation and EU directives. First projections show that building of wastewater treatment plants for settlements with less than 2000 inhabitants and for settlements with between 2000 and 15 000 inhabitants will be carried out in the second phase of the implementation of the NEAP (after 2003). The building of these facilities is the responsibility of local communities therefore it is not possible to estimate the scope and costs of these activities[46].
- To enforce the economical and justified exploitation of fresh water resources, especially of high-quality ones. This can be achieved, for example, by closing industrial water cycles, introducing dry technologies, etc.
- To introduce into the water quality protection environmentally and economically effective methods for the protection of the aquatic environment using technologies adjusted to the natural conditions and material capacities of Slovenia.
- To ensure the conditions which will enable the providers of public services for the collection and treatment of wastewaters to undertake the tasks laid down in this programme. Special attention has to be given to the method of following the Polluter Pays Principle (PPP), because the costs of building new environmental protection facilities are very high for countries in transition[47].
- To ensure the application of energy-efficient and environmentally optimal wastewater treatment techniques by introducing measures at the institutional and organisational levels. In the assessment of projects the selection among the proposed solutions and the introduction of environmentally sound and economical methods of disposal of sludge from wastewater treatment plants have to be ensured. Organisational measures, which are indispensable for achieving the objectives, include: the setting-up of an organisation system in accordance with the principle of

43 The problem of waste water treatment is closely related to water consumption, especially in relation to meeting the drinking water needs and ensuring minimum total costs of waste water treatment and water consumption.

44 It has to be taken into account that in the major part of the territory of Slovenia there are mostly smaller watercourses with a low intake capacity and are therefore more ecologically sensitive than larger watercourses.

45 In 1993 the MESP commissioned a national water management programme (contractor: Hidrogea). In the programme the current state, including water protection, was well analysed. The proposed measures for the protection of individual catchment areas, groundwater and sea are specified in two priority classes: the first class includes essential rehabilitation measures and the second one mesures for achieving the satisfactory state of water.

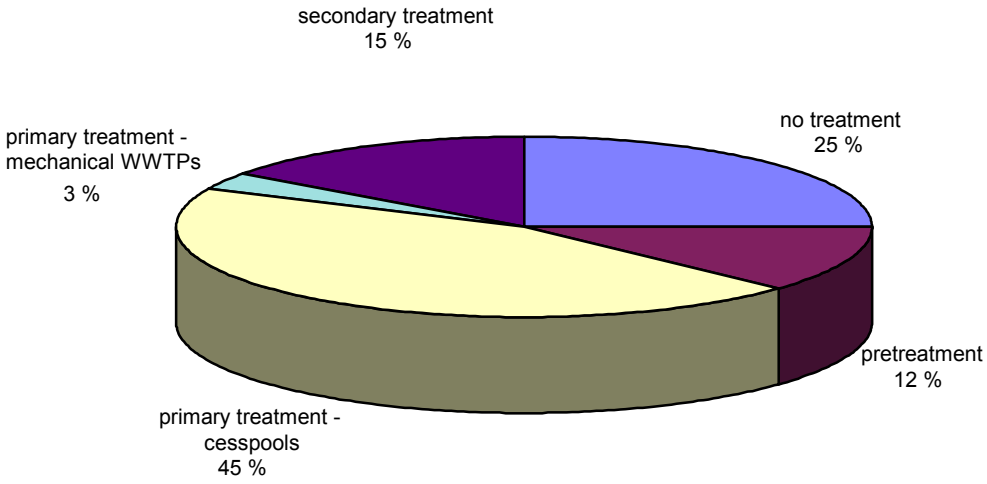
46 The costs shown in the Table 1 are estimated for the period until 2003 exclusively.

47 For example, in Austria the state covers between 50 and 75% of the costs of construction of new public utility facilities; the rest of the required funds is contributed by local communities (provinces, municipalities).

regional integration and strengthening of professional and administrative institutions at the national level to ensure the implementation of the principles of sustainability in the management of national water resources[48].

- To upgrade the current research system by the long-term planning of scientific studies, by promoting the co-operation of technical and nature science professions, by introducing modern methods and technologies for the protection and exploitation of waters and by motivating and training domestic experts.

Picture 2: Treatment of wastewaters generated by the population



6.1.1.2 Programme of Measures for the Period until 2003

The programme of measures for the period until 2003 is laid down in Table 1.

48 The setting-up of a body of experts to control the implementation of the strategy, to revise projects with regard to technical and economic issues, to manage, control and operate the systems for the protection and use of waters, integrally and by regions.

Table 1 The programme of water management measures for the period until 2003

GOAL	BASIC MEASURES FOR ACHIEVING THE GOALS		DEADLINE	COST ESTIMATE (IN SIT MILLIONS)	POSSIBLE SOURCES OF FUNDING	BODY RESPONSIBLE
Water protection policy (PO)						
WTR 1 - WTR 4	M-PO-1.WTR	Drawing-up of a water management strategy, including a detailed programme of implementation of its priority tasks at the national level and for particular water districts	1998[49]	40	budget	MESP
WTR 1 76/464/EEC 86/280/EEC 91/271/EEC	M-PO-2.WTR	Definition of a programme of measures for preventing pollution from point sources in water districts	1999	15	IND, LC, budget	MESP
WTR 2 91/676/EEC	M-PO-3.WTR	Definition of programme of measures for preventing pollution from diffused sources in water districts	1999	20	LC, MTC, MAFF, MESP	MESP
WTR 3	M-PO-4.WTR	Definition a programme for the gradual elimination of old pollution sources	1999	5	IND, LC, agriculture	PPP
Legislation (L)						
WTR 1 - WTR 4 COM(97)49-Final	M-L-1.WTR	Waters act and relevant implementing regulations	1999	10	budget	MESP
WTR 1	M-L-2.WTR	Drawing-up of technical standards for designing and constructing wastewater treatment facilities	1999	5	budget	MESP
WTR 1 - WTR 4 COM(93)680	M-L-3.WTR	Adoption of a regulation on the national monitoring of the aquatic environment	1999	10	budget	MESP
WTR 1, WTR 2	M-L-4.WTR	Revision of the pricing policy in the field of water supply and of the costs of collection and treatment of urban wastewaters	1999	5	budget	MESP
Institutional strengthening (IS)						

49 The drawing-up of the programme is related to the adoption of the waters act.

WTR 1, WTR 2	M-IS-1.WTR	Promotion and assistance in the preparation of projects for the construction of facilities and plants for the treatment of wastewaters as the basis for acquiring foreign financial aid and loans	2003	20	LC, budget	LC
WTR 1 - WTR 4	M-IS-2.WTR	Reorganisation of the administration and the control system at the national, regional and local levels	1999	30	budget	MESP
WTR 1 76/464/EEC 86/280/EEC	M-IS-3.WTR	Upgrading of the register of water pollution sources	2000	6	budget	MESP – APN
Investments (INV)						
WTR 1 76/464/EEC 86/280/EEC 88/347/EEC 90/415/EEC 82/176/EEC 83/513/EEC 84/156/EEC 84/491/EEC	M-INV-1.WTR	Construction of wastewater treatment facilities in industry	Continuous	See note**50**	IND, Eco-Fund	IND

50 The required funds are not included for methodological and practical reasons. A detailed review of the required investments is not available. For this reason, only the rough estimates of costs of approximation to the EU (DISAE SLO-101, 1989) are indicated, amounting to approx. SIT 4.5 billion (ECU 24.80 million). This footnote applies to all similar cases shown in the tables.

WTR 1
91/271/EEC
	M-INV-2.WTR	Construction of urban wastewater treatment plants and wastewater collecting systems:
		• New WTPs for agglomerations with population of more than 15 000 and for eutrophication areas[51] – sea:
		  • Ljubljana 500 000 PE[52] (SIT 10 000 million)
		  • Maribor 200 000 PE (SIT 5300 million)
		  • Celje 80 000 PE (SIT 2600 million)
		  • Nova Gorica 45 000 PE (SIT 1700 million)
		  • Izola 30 000 PE (T[53]) (SIT 1700 million)
		  • Trbovlje 30 000 PE (SIT 700 million)
		  • Tržič 20 000 PE (SIT 500 million)
		• Upgrade WTPs with primary treatment[54]
		  • Koper 100 000 PE (T) (SIT 1800 million)
		  • Piran 30 000 PE (T) (SIT 1000 million)
		  • Velenje 40 000 PE (SIT 400 million)
		• Construction of approx. 15 WTPs for agglomerations with a population of between 2000 and 15 000
			Long term
			2003
			
			2003
			
			2003
				See note[55]
				22 500
				
				3200
				
				10 000
					LC, budget, PHARE, Eco-Fund	LC

WTR 1 91/271/EEC	M-INV-3.WTR	Extension of collecting systems	2003	90 000	LC, budget, PHARE, Eco-Fund	LC
WTR 1 - 3 76/160/EEC	M-INV-4.WTR	Above-standard remediation of water pollution sources in the area of natural bathing sites: • Construction of approx. 10 WTPs in the area of bathing sites	Long term 2003	See note[56] 7000	PHARE, LC, budget	LC

51 The sea, natural lakes and areas in which eutrophication (saturation with nutrients) is expected – see a decree on the emission of substances into waters.
52 The size of the WTP is indicated with a population equivalent (PE), i.e. the unit which corresponds to the burden on the aquatic environment caused by one adult inhabitant. The indicated size of the WTP is only provisional and does not stipulate the dimension of facilities.
53 T – tertiary treatment, mandatory in eutrophication areas.
54 Mechanical phase with the treatment of sludge.
55 According to the estimates of the SLO DISAE 101, the costs amount to SIT 160 billion (ECU 889 million).
56 According to the estimates of the SLO DISAE 101, the costs amount to SIT 5.4 billion (ECU 30 million).

WTR 1 - 3 80/68/EEC 75/440/EEC 80/778/EEC	M-INV-5.WTR	Drawing-up of a programme of intervention measures to eliminate the threat to the quality of groundwater and other important water supply sources	1999	30	LC, budget, PHARE	MESP
Research (R)						
WTR 1- 4	M-R-1.WTR	Definition of the WATER research programme for the period until 2000, which will directly support the national programme in the field of waters	1998	20	budget	MESP
WTR 1	M-R-2.WTR	Expert groundwork for the determination of eutrophication areas	1999	10	budget	MESP
WTR 1- 4	M-R-3.WTR	Development of the methodology for integrated assessment of impact on the aquatic environment	2000	30	budget, PHARE	MESP
Education, training and informing (ETI)						
WTR 1- 4	M-ETI-1.WTR	Continuing (extra-institutional) education and training of experts responsible for water management	Continuous	10/year	budget, PHARE	MESP
WTR 1- 4	M-ETI-R-2.WTR	Provision of regular information to the public on the state of the aquatic environment	Continuous	10/year	budget, PHARE	MESP

IND - industry
LC - local communities
MTC - Ministry of Transport and Communications
MAFF - Ministry of Agriculture, Forestry and Food
PPP - Polluter Pays Principle
WTP - wastewater treatment plant
APN - Administration for the Protection of Nature

6.1.2 Waste

Elaboration of goals: Waste Management Strategy of the Republic of Slovenia (Strateške usmeritve Republike Slovenije za ravnanje z odpadki, EPA 1595/1996) - constituent part of the NEAP

Responsible ministry: Ministry of the Environment and Spatial Planning

Waste management is one of the most poorly regulated fields of environmental protection in Slovenia. Waste is both an important source of pollution and a threat to all environmental components. The accumulated waste management problems are multilayered and originate from the past social attitude towards waste and waste management; a lack of vertical and horizontal administrative and technical co-ordination and organisation; a lack of legal regulations and economic measures; the geology and hydrology of Slovenia; the characteristic settlement pattern; and NIMBY (not in my backyard) and NIMET (not in my election time), which are becoming more and more typical of Slovenia.

Most waste management methods are inappropriate. None of the attempts to solve the problem of waste has produced a significant result. A situation in the collection of secondary raw materials in industry is somewhat better, although under the new economic conditions this sector is currently in crisis too.

To achieve a significant number of objectives in the field of environmental protection, it is necessary to solve waste management problems. The problems are complex and, because of limited resources, call for a selective approach and a balance between organisational and legal/economic measures on the one hand and practical technical solutions on the other. This document is based on the assumption that the forms of addressing these problems to date have not given satisfactory results, owing to the non-selective approach and the emphasis placed on technical rather than other problems. The Waste Management Strategy, which the Slovenian Government has already adopted, forms the framework for addressing the waste management problems. Therefore this document does not repeat the definitions of the strategy. In principle, the proposed objectives and measures are in compliance with the specialised strategies, but at the level of implementation the NEAP merely incorporates practical measures into the wider framework of environmental protection policy with the purpose of producing synergistic effects.

The basic objectives are laid down in the Waste Management Strategy. On the global level the basic waste management objectives are the following:

WST1)	**to reduce waste generation and its danger potential at a source**
WST2)	**to increase material and energy utilisation of waste and reduce greenhouse gas emissions**
WST3)	**to set up an effective waste management system**
WST4)	**to gradually eliminate old pollution sources**

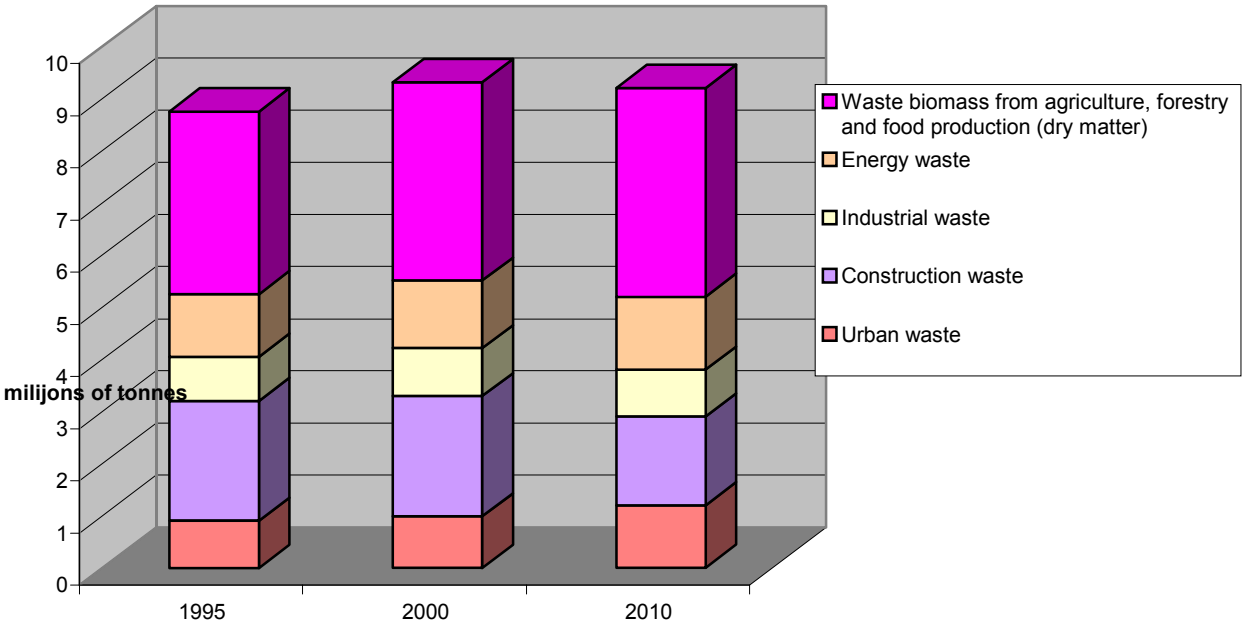
6.1.2.1 Provisional Programme for the Period until 2008

Effective and socially acceptable waste management requires a large number of measures and activities, which are closely related and supplement each other. If we want to achieve the set objectives, we have to understand the impact of waste problem on development and we have to obtain the consent of the general public when determining the location of facilities and plants.
In Picture 3 are shown: the approximate quantities and composition of all wastes; the estimated quantities until 2000; and the fluctuations in the first decade after 2000.

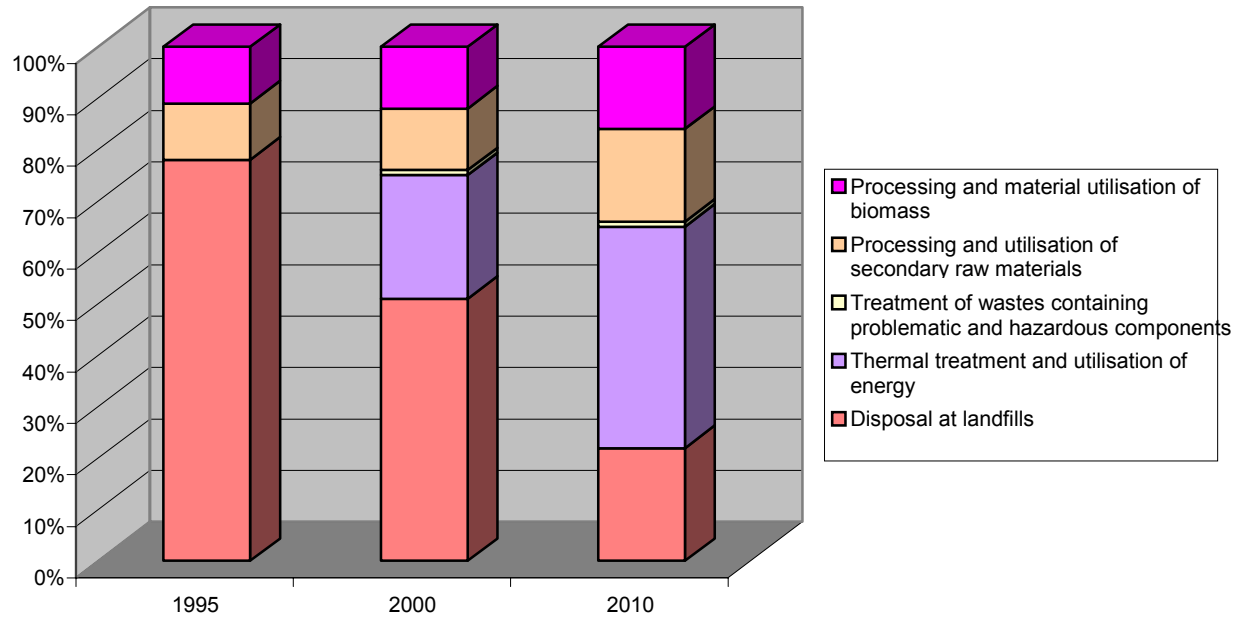
We can reduce the quantities of *urban waste* by collecting certain types of waste in an appropriate manner and by ensuring their material and energy utilisation (Picture 4)[57]. The separate collection of hazardous components will reduce the danger potential.

57 The data is taken from the Waste Management Strategy. The situation shown for 2000 and 2010 is expected to be achieved 5 years later, with regard to the envisaged revision of the Strategy in 1999.

Picture 3: Approximate amounts of waste and trends



Picture 4: Projected urban waste management



With regard to *industrial waste*, the emphasis will be placed on the introduction of measures necessary to set up a system of waste management in line with the EU. In addition to these measures, the measures based on market mechanisms will be introduced (e.g. environmental management systems - EMS, taxes for waste holders/generators, higher costs of waste disposal, tax reliefs for those introducing appropriate solutions, etc.), which will promote the material and energy utilisation of waste and the reduction of their harmful effects by detoxification, chemical/thermal/biological stabilisation, etc.

To put the Waste Management Strategy in practice is extremely demanding task, closely related to harmonised measures in numerous fields. The most important measures include:

- The adoption of a contemporary legislation including all the related implementing regulations, which will ensure waste management conditions comparable to those in the EU. The regulations will have to stipulate packaging waste management.
- The provision of organisational and technical/spatial conditions in order to apply solutions (drawing-up of waste management programmes and ordinances at the local community level, preparation of pre-investment programmes, spatial planning documents, etc.).
- The consistent fulfilment of obligations arising from international and bilateral agreements (Basel Convention).
- The setting-up of an information system concerning wastes and facilities and plants for the treatment and final disposal of wastes.
- The application of proposed solutions will mostly be based on economic instruments, which will promote waste minimisation at the source and the provision of material conditions for the operation of the envisaged system.
- In addition to economic instruments, the waste management will focus on establishing links between waste generators/holders and persons disposing of waste.
- Because of the sensitivity of the problem and the pronounced NIMBY effect, special attention will have to be devoted to continuous informing, education and development with the view of gradually heightening the awareness of the entire population.

6.1.2.2 Programme of Measures for the Period until 2003

The programme of measures for the period until 2003 is laid down in Table 2.

Table 2 The programme of waste management measures for the period until 2003

GOAL/ EU DIRECTIVE	MEASURES FOR ACHIEVING THE GOALS		DEAD LINE	COST ESTIMATE (IN SIT MILLIONS)	POSSIBLE SOURCES OF FUNDING	BODY RESPONSIBLE
Waste management policy (PO)						
WST 1 - 4	M-PO-1.WST	Analysis of the implementation of the waste management strategy	1999	1	budget	MESP
WST 1 - 4 75/442/EEC 91/689/EEC	M-PO-2.WST	Drawing-up of plans for the management of certain types of waste at the national and local level and at the level of economic sector	2003	estimate not possible	budget, LC, companies	MESP, LC, economic sector
Legislation (L)						
WST 1 - 4	M-L-1.WST	Adoption of a basic waste management legislation in compliance with the EU legislation[58]	1999	20	budget	MESP
Institutional strengthening (IS)						
WST 1 - 4	M-IS-1.WST	Administrative strengthening in order to fulfil programme, administrative and inspection tasks concerning waste management	1999 **59**	30	budget	MESP – APN
WST 1 - 4 75/442/EEC 91/689/EEC	M-IS-2.WST	Setting-up of a database on: a) the origin and quantity of waste and method of its management; b) waste management plants and facilities; c) waste management operators	2000	10	budget	MESP – APN
Basic investments[60] **and technical measures (INV) - a detailed list of the needed investments included in the Waste Management Strategy**						
A. Investments in the management of urban and similar waste						
WST 1 - 4 75/439/EEC 91/692/EEC 96/59/EC 91/157/EEC 94/62/EC	M-INV-1.WST	Setting-up of systems for collection, sorting, transhipment, pre-treatment and pre-preparation of waste	2010 **61**	11 900/year	public funds, foreign sources	MESP, LC, companies,

58 Here we have in mind the adoption of the basic regulations concerning waste management, which will enable us to start the implementation of the adopted Waste Management Strategy and of the National Programme for the Adpotion of the Acquis.
59 After the basic regulations have entered into force.
60 The investments are defined in detail in the Waste Management Strategy.
61 The reference years are taken from the Waste Management Strategy, which provides a sufficient basis for the shif from the 2003 milestone. It has to be stressed that, as a rule, the construction of waste management plants and facilities exceeds the period of 5 years.

WST 1 - 4 COM(97)105	M-INV-2.WST	Rehabilitation and reconstruction of current and construction of new waste disposal sites	2015			
WST 1 - 4 89/429/EEC 94/67/EEC 89/369/EEC	M-INV-3.WST	Construction of plants and facilities for heat treatment and energy utilisation of waste	2010			
B. Investments in the management of waste generated in certain sectors						
WST 1 - 4 75/442/EEC	M-INV-1.WST	Preparation and implementation of waste management programmes in industry, energy sector, agriculture, forestry and construction	2010	5600/year	IND, budget (MESP, MEA, MAFF)	economic sector
Research (R)						
WST 2	M-R-1.WST	Study of economic measures for promoting growth in the material and energy efficiency of society (public and economy)	1999	2	budget	MESP – APN
Education, training and informing (ETI)						
WST 1 - 3	M-ETI-1.WST	Enforcement of specialised programmes for the minimisation and recycling of waste (brochures, articles, TV programmes, posters, etc.)	Continuous task	10	budget	MESP, MEA, foreign sources, LC

IND - industry
LC - local communities
MEA - Ministry of Economic Affairs
MAFF - Ministry of Agriculture, Forestry and Food
APN - Administration for the Protection of Nature

6.1.3 Conservation of Biological Diversity

Elaboration of goals: Nature protection strategy – in preparation (MESP)

Responsible ministry: Ministry of the Environment and Spatial Planning

Slovenia is characterised by diverse and relatively well-preserved nature and landscape (rich biological, geological and landscape diversity). It is our collective responsibility to conserve, experience and use these values and to hand them down to our descendants. Biological diversity is one of the advantages of Slovenia over other European countries. In the past, protection efforts were focused more on natural heritage and natural monuments, in accordance with the Natural and Cultural Heritage Act[62], and less on nature as a whole. The protection of biological and landscape diversity is closely related to the majority of the issues discussed in the NEAP. For this reason, all fundamental goals listed in this document are at the same time the fundamental goals of the protection of biological diversity. Two basic specific goals are:

BIO1)	**to prevent the reduction of biological diversity on the level of ecosystems (and habitat types), species (and habitats) and genomes (and genes)**
BIO2)	**to prevent further threats to natural balance caused by inappropriate exploitation of animal and plant species**

6.1.3.1 Provisional Programme for the Period until 2008

The crucial tasks are:
- the drawing-up and adoption of a national strategy for the protection of biological diversity and for the protection of landscape and geological heritage, which will comply with the Pan-European Biological and Landscape Diversity Strategy;
- the drawing-up and adoption of the nature protection act in order to re-organise the administration responsible for nature protection; re-define competencies and dividing them at the local, regional and national level; to fill the lacunae in the field of the protection of species and habitats inside and outside the protected areas (especially in the karst region) and of geological and geo-morphological heritage;
- the ratification of international treaties (Washington Convention).

The following will have to be ensured:
- co-ordination between regional institutes for the protection of natural heritage and administrative units at other ministries responsible for forest management, hunting and fishing;
- strengthening of the management of various types of protected areas by establishing administrative units with respect to the size and significance of the protected area;
- a gradual increase in the total of protected areas of various categories to approximately 30% of the Slovenia's territory (Picture 5);
- a special strategy required by the Ramsar Convention will become a constituent part of the national nature protection strategy;
- the compilation of a list of endangered wetlands in accordance with the provisions of the Ramsar Convention;
- the basic tasks of international co-operation will be: integration into international nature protection programmes (e.g. UNESCO: MAB, WHC, Ramsar) and projects (international structural funds, e.g. GEF); integration into international standards (organisation of activities, links with other legal systems, etc.); continuation and intensification of participation in international organisations and funds (IUCN, WWF, Euronatur, Eurosite, etc.);
- the drawing-up of inventories of natural resources;
- activities for the inclusion of natural heritage protection in environmental policy in order to reduce the risk of the pollution-related physical deterioration of heritage, in accordance with the requirements of the Convention for the Protection of the Architectural Heritage of Europe and in

62 Natural and Cultural Heritage Act - Zakon o naravni in kulturni dediščini (Ur.l. SRS, št. 1/81, 42/86 and Ur.l. RS, št. 8/90, 26/92)

accordance with the Recommendations of the Committee of Ministers to Member States of the Council of Europe[63].

6.1.3.2 Programme of Measures for the Period until 2003

The programme of measures for the period until 2003 is laid down in Table 3.

63 The recommendations, which define in detail the listed requirements, are: the protection of architectural heritage against natural disasters; the integrated protection of cultural landscape as a part of landscape policy; and the sustainable protection of cultural heritage against pollution-related physical deterioration.

Table 3 The programme of measures for the conservation of biological diversity and genetic potential for the period until 2003

GOAL	MEASURES FOR ACHIEVING THE GOALS		DEADLINE	COST ESTIMATE (IN SIT MILLIONS)	POSSIBLE SOURCES OF FUNDING	BODY RESPONSIBLE
Policy on the conservation of biological diversity and natural resources (PO)						
BIO 1, BIO 2 Directive 92/43/EEC Directive 79/409/EEC Directive 83/129/EEC Regulation 338/97/EC Regulation 348/81/EEC	M-PO-1.BIO	Drawing-up of strategies for the conservation of biological and landscape diversity and for the protection of natural resources (Nature Protection Strategy and the National Strategy and Action Plan on Biological Diversity)	1998	4	MESP, international sources	MESP
BIO 1, BIO 2	M-PO-2.BIO	Inclusion of measures for the conservation of biological diversity and the protection of natural resources in development programmes, plans and spatial plans, in programmes, sectoral plans and measures relating to the use and exploitation of natural resources, and in plans and measures related to the protection of cultural heritage	Continuous task	4/year	MESP	MESP
Legislation (L)						
BIO 1, BIO 2	M-L-1.BIO	Ratification of international conventions (CITES, the Bonn, Bern and Barcelona conventions) and of protocols to these and the ratified conventions	2003	100	MESP, MST, MFA	MESP
BIO 1, BIO 2 Directive 92/43/EEC Directive 79/409/EEC Directive 83/129/EEC Regulation 338/97/EC Regulation 348/81/EEC	M-L-2.BIO	Drawing-up of nature conservation act and related implementing regulations	2002	-	MESP	MESP

BIO1	M-L-3.BIO	Drawing-up of act on the protection of karst caves	2000	-	MESP	MESP
BIO1	M-L-4.BIO	Drawing-up of implementing regulations pursuant to the act on the protection of karst caves	2001	-	MESP	MESP
BIO1	M-L-5.BIO	Drawing-up of act on Alpine regions	2000	-	MESP	MESP
BIO 1, BIO 2	M-L-6.BIO	Drawing-up and issuance of acts on the designation of protected areas encompassing natural resources of national importance, pursuant to the transitional and final provisions of the nature conservation act	2002	10	MESP, LC	MESP, LC
BIO 1	M-L-7.BIO	Drawing-up and issuance of acts on designation of nature parks (especially Kočevje, Notranjska-Snežnik, Pohorje, Kozjansko, Kras, Kamniško-Savinjske Alpe, Mura, Soča, Kolpa, Drava, Dragonja, Ljubljansko barje, Trnovski gozd, Goričko, Krakovski gozd) and other protected areas	2002	180	MESP, LC, MAFF, MERD, MEA, MC, MST, international sources	MESP, LC
Institutional strengthening (IS)						
BIO 1, BIO 2	M-IS-1.BIO	Setting-up and keeping of the register of natural resources	Continuous task	50/year	MESP	MESP
BIO 1, BIO 2	M-IS-2.BIO	Monitoring of the level of nature preservation (plant and animal species, habitats, ecologically important areas, ecosystems, genetically modified organisms, natural resources, geological and geo-morphological heritage)	Continuous task	150/year	MESP, MST, MAFF	MESP
BIO 1	M-IS-3.BIO	Keeping of the public records of areas important for the conservation of biological diversity	Continuous task	50/year	MESP, MST, MAFF	MESP
BIO 1	M-IS-4.BIO	Mapping of habitat types	2003	30	MESP	MESP
BIO 1	M-IS-5.BIO	Mapping of landscape types	2003	30	MESP	MESP
BIO 1	M-IS-6.BIO	Inventorying of wetland types and natural resources	2003	20	MESP	MESP
BIO 1, BIO 2	M-IS-7.BIO	Compilation and updating of red lists of endangered plant and animal species	2003	20	MESP	MESP
BIO 1, BIO 2	M-IS-8.BIO	Establishment and operation of the administrative, technical, management (for protected areas), supervisory and inspection services for the field of nature conservation	2003	3500	MESP, LC, international sources	MESP, LC
Investments and technical measures (INV)						

BIO 1	M-INV-1.BIO	Infrastructure in nature parks (info-centres, park trails, signs)	2003	800	budget (MESP, MC, MAFF, MEA, MTC), LC, international sources	budget (MESP, MC, MAFF, MEA, MTC), LC
BIO 1 - 2	M-INV-2.BIO	Establishment and maintenance of gene banks and other measures for the conservation of biological diversity	2003	200	MAFF, MFA, MESP, MST, international sources	MESP
BIO 1 - 2	M-INV-3.BIO	Arrangement and maintenance of rescue centres for wild indigenous and nonindigenous animals (CITES)	2003	80	MESP, MAFF	MESP
BIO 1	M-INV-4.BIO	Ecological rehabilitation of Škocjanski zatok	Stage to 2003	200	MESP, international sources	MESP
BIO 1	M-INV-5.BIO	Purchase of real property located in protected areas and areas rich with natural resources and the purchase of land important for the conservation of biological diversity	Continuous task	250/year	MESP, MC, LC, NGOs, international sources	MESP, MC, LC, NGOs
BIO 1	M-PO-1.BIO	Organisation of nature protection campaigns and interventions (physical protection of karst caves and other natural resources, rehabilitation of trees, etc.)	2003	250	MESP, MC, LC, NGOs, MAFF, MEA, MTC, international sources	MESP, MC, LC, NGOs, MAFF, MEA, MTC
BIO 1	M-PO-2.BIO	Implementation of technical measures to improve the state of endangered plant and animal species and their habitats (construction of corridors across transport routes, re-introduction of species)	2003	1000	MESP, MAFF, MTC, MEA	MESP
BIO 1	M-INV-1.BIO	Restoration of destroyed or damaged natural resources and areas important for the conservation of biological diversity	2003	300	MESP, MTC, MAFF, MEA, MD, LC, international sources	MESP, MTC, MAFF, MEA, MD, LC
BIO 1	M-INV-2.BIO	Implementation of contractual protection	2003	450	MAFF, MESP	MESP
BIO 1	M-INV-3.BIO	Compensations for damage caused by protected animal species and preventive measures	Continuous task	10/year	MESP	MESP
Research (R)						

BIO 1 - 2	M-R-1.BIO	Research necessary for the implementation of nature protection measures	Continuous task	20/year	MESP, MST, MAFF	MESP, MST, MAFF
Education, training and informing (ETI)						
BIO 1 - 2	M-ETI-1.BIO	Inclusion of nature protection issues in education programmes	Continuous task	15/year	MESP, MES	MESP, MES
BIO 1 - 2	M-ETI-2.BIO	Popularisation of nature protection with publications, exhibitions, awards and other promotional means, and other activities for raising the nature protection awareness of people (nature protection training)	2003	150/year	MESP, MC, MAFF, MES, MEA, MERD, LC, NGOs, international sources	MESP, MC, MAFF, MES, MEA, MERD, LC, NGOs

LC - local communities
MAFF - Ministry of Agriculture, Forestry and Food
MC - Ministry of Culture
MD - Ministry of Defence
MEA - Ministry of Economic Affairs
MERD - Ministry of Economic Relations and Development
MES - Ministry of Education and Sport
MFA - Ministry of Foreign Affairs
MST - Ministry of Science and Technology
MTC - Ministry of **Transport** and Communications

6.2 Other Fields of Environmental Policy

6.2.1 Air and Climate Protection

Elaboration of goals: Air protection strategy – not yet in preparation (MESP) Programme for limiting greenhouse gas emissions – in preparation (MESP) **Responsible Ministry**: The Ministry of the Environment and Spatial Planning

In recent years air pollution from stationary sources has substantially reduced, but pollution caused by traffic has increased. With the gradual revival of industry, the emissions from stationary sources will increase again, although it is estimated that the increase will be slower.

The basic orientation for the next decade is to formulate measures for the simultaneous control of stationary and mobile air pollution sources. The basic long-term tasks concerning air quality are to ensure effective protection of people against health risks due to air pollution[64] and to reduce greenhouse gas emissions. The priority tasks concerning air quality for the period until 2008 are:

AIR1)	**to reduce air pollution from industrial sources**
AIR2)	**to reduce emissions from thermal power plants**
AIR3)	**to limit the air pollution caused by traffic**
AIR4)	**to reduce emissions from individual and collective heating systems (boiler rooms) in urban areas**
AIR5)	**to limit the causes of photo-chemical smog and tropospheric ozone**
AIR6)	**to abolish the use of ozone-depleting substances (ODS)**
AIR7)	**to reduce greenhouse gas emissions (Kyoto Protocol)**
AIR8)	**to control long-range air pollution**

Framework objectives by individual pollutants are:

- Preparation and implementation of measures for the reduction of greenhouse gas emissions in accordance with the obligations arising from the Kyoto Protocol – the greenhouse effect of emissions of CO_2, CH_4, N_2O, HFC, PFC, SF_6 should be reduced by 8% with respect to 1986;
- Ozone-depleting substances (ODS): the enforcement of the adopted regulations. Prohibition of ODS emissions into the air and introduction of ODS recovery;
- SO_2: the reduction of emissions to the level of permissible burden – the reduction of the emission level by 45, 60 and 70% by 2000, 2005 and 2010 respectively with regard to the reference year 1980 (the Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution on Further Reduction of Sulphur Emissions);
- NO_x: attainment of the emission level of 40 000 tonnes/year in accordance with the Protocol concerning the Control of Emissions of Nitrogen Oxides by implementing the measures in thermal power and cogeneration plants and in traffic;
- NH_3: objectives will be harmonised with international obligations[65];
- Implementation of measures for the reduction of volatile organic compounds (VOC) emissions.
- Heavy metals: the reduction of emissions of cadmium (Cd), mercury (Hg) and lead (Pb) in accordance with the provisions of the Protocol on Heavy Metals;
- Dust: the enforcement of adopted regulations;
- Other contaminants, e.g. persistent organic pollutants (POP): the current state will have to be analysed. Practical objectives can only be determined for affected areas.

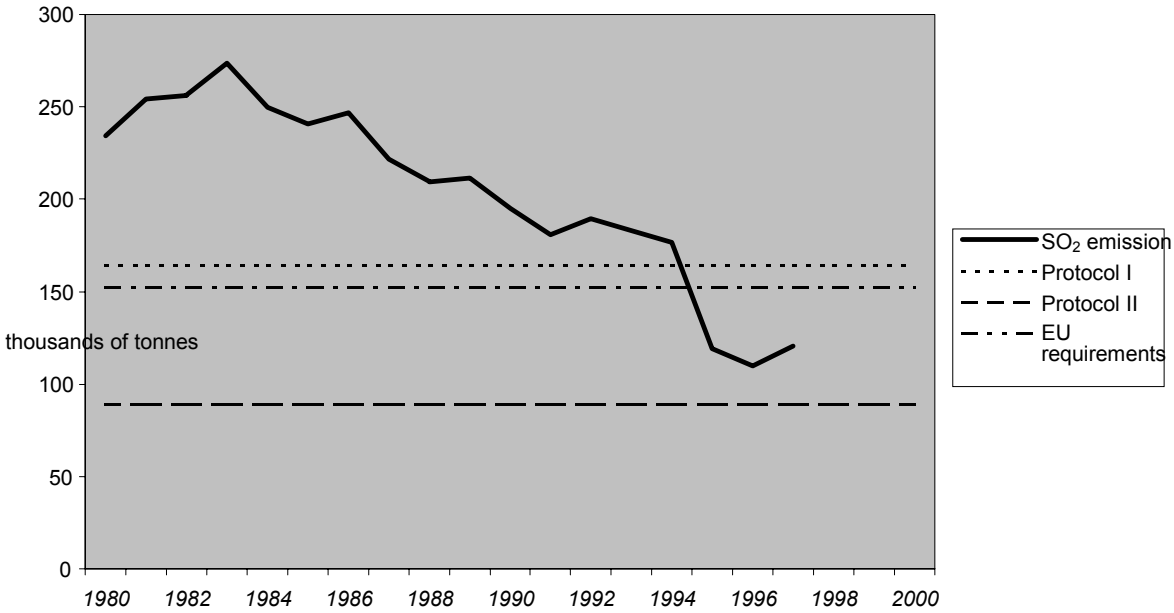
To meet the set objectives, the following objectives have to be fulfilled:
- Drawing-up of a long-term air protection strategy;
- Drawing-up of a programme for limiting greenhouse gas emissions;
- Fulfilment of the assumed international obligations:

64 After 2000 the Limit values stipulated by WHO will become mandatory for all EU Member States.
65 Protocol on Nitrogen.

1. The UN Convention on **Long-Range Transboundary Air Pollution** (UN/ECE CLRTAP), with several protocols (the second refers to the control of sulphur dioxide; new protocols are in preparation, e.g. for VOC, SO_2, NO_x, heavy metals, POP, etc.).

In accordance with the **second protocol on sulphur**, Slovenia has assumed the obligation to reduce annual SO_2 emissions to 93 000 tonnes in total by 2005, and to 70 000 tonnes by 2010. The 1996 emission was 110 000 tonnes; in 1997 the emission increased, totalling 120 391 tonnes. The EU directive plans a reduction of 35% from 1980 to 2000. Slovenia achieved that goal in 1996 (Picture 6).

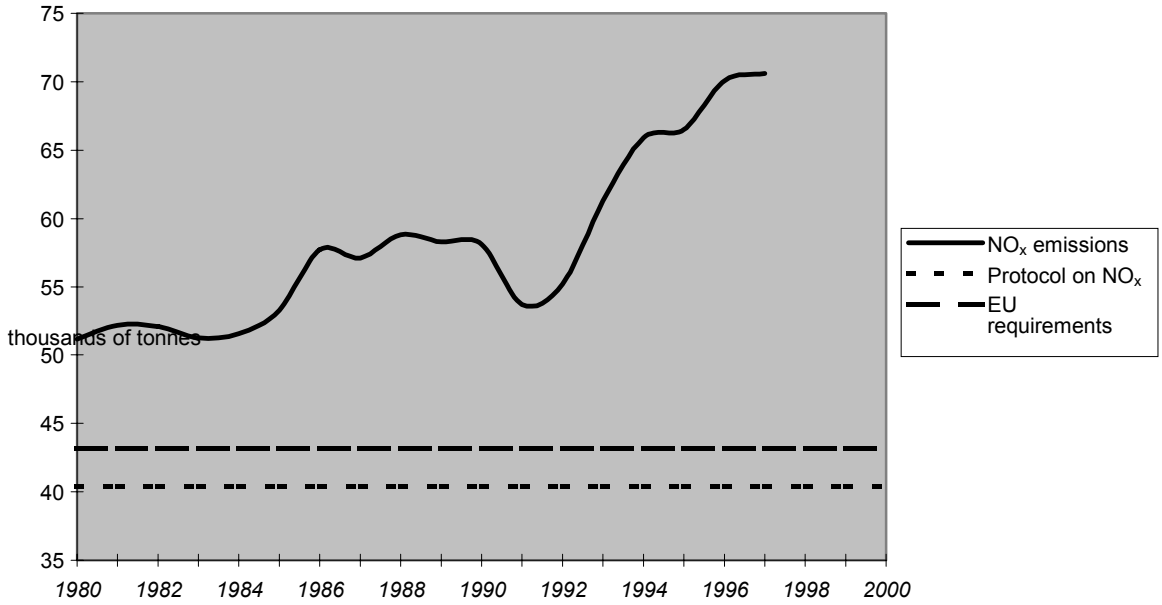
Picture 6: SO_2 emissions from 1980 to 1997



The **protocol on volatile organic compounds** stipulates a 30% reduction by 1999 (EU by 2000) with respect to 1988. Slovenia has not yet signed the protocol, which would oblige it to limit VOC emissions to 24 500 tonnes (the emissions were last calculated for 1990 – 35 000 tonnes).

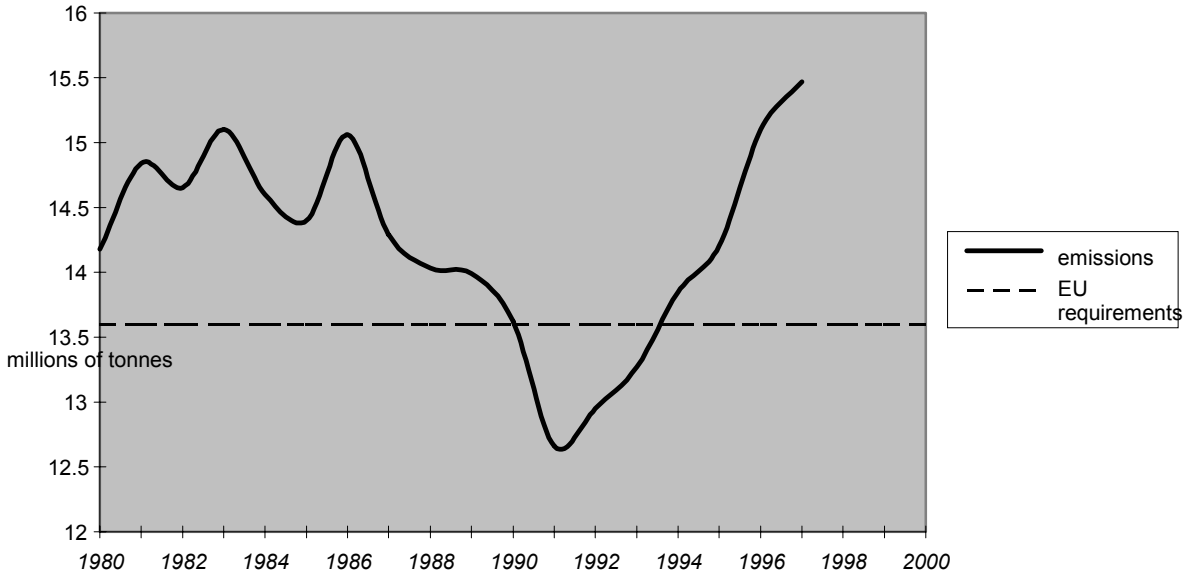
The **protocol on nitrogen oxides and related substances**, which would limit the harmful effects of acidification, photochemical smog and eutrophication, is in preparation. It is expected that annual NOx emissions will have to be reduced by at least 30% with regard to 1987, which means a permissible annual emission of 40 000 tonnes (in 1997, 70 600 tonnes of NOx were emitted). The EU has stipulated a 30% reduction of emissions between 1990 and 2000 (Picture 7). The protocols on heavy metals and persistent organic pollutants are in preparation.

Picture 7: NOx emissions from 1980 to 1997



2. **Convention on Climate Change**. The **Kyoto Protocol** requires developed countries and countries in transition to reduce greenhouse gas emissions. Under this protocol, the obligation of Slovenia is to reduce greenhouse gas emissions (CO_2, CH_4, N_2O, HFC, PFC and SF_6) by 8% on average between 2008 and 2012 with regard to 1986 as the reference year. In 1986 CO_2 emissions caused by fossil fuel consumption amounted to 15.1 million tonnes and have been decreasing until 1991 (12.7 million tonnes). Since then, CO_2 emissions caused by fossil fuel consumption have been increasing, reaching 15.5 million tonnes in 1997. The EU objective is to stabilise CO_2 emissions at the 1990 level by 2000 and to further reduce them after 2000 (Picture 8). The projections indicate that without additional measures emissions caused by fossil fuel consumption will amount to between 15 and 19 million tonnes of CO_2 in 2010, depending on the rate of economic growth. In order to meet the requirements of the Kyoto Protocol, a comprehensive programme for limiting greenhouse gas emissions will have to be drawn up and implemented simultaneously with the monitoring of the effects. The programme will have to be periodically updated. The possibilities to reduce other greenhouse gases will have to be fully exploited. In some sectors the possibilities for reduction are substantial, e.g. the waste management sector.

Picture 8: CO_2 emissions from 1980 to 1997



3. The **Montreal Protocol** (and its amendments) concerning the phasing out of ozone-depleting substances (ODS).

In accordance with the assumed obligations, the following will have to be ensured:

- The harmonisation of the energy, industry, transport, agriculture, forestry and waste management strategies with the air protection strategy and with the programme for limiting greenhouse gas emissions;
- That full advantage is taken of the synergistic effects of simultaneously addressing local air pollution problems and the problems concerning the reduction in greenhouse gas emissions;
- The integration of the provisions of adopted international protocols into Slovenian legislation;
- An active role of the Slovenian Committee for Climate Change Issues;
- The provision of Instruments (particularly economic) for the purpose of achieving the Kyoto objectives to minimise the costs of emission reductions (taking into account other relevant criteria). In accordance with this, the burden of emission reduction will be divided between sectors so as to equalise the limit costs of reduction in all key sectors.

Other general conditions are:

- **The provision of conditions for the replacement of environmentally unacceptable raw materials**[66]. The continuing elimination of use of substances harmful to the environment or health[67] – in accordance with the requirements of international treaties and/or the gravity of local problems.
- **The promotion of efficient and economic energy consumption** of all types will primarily be ensured with suitable energy prices (including environmental protection costs), favourable loans for investments in cost-effective energy systems and so on. Individual energy saving will have to be encouraged by stimulating improvements in building insulation and the purchase of pure energy

66 These are, in particular, substances which cause acid rain (SO_2, NO_x), ozone-depleting substances (CFCs, halons, halogenated solvents), greenhouse gases (CO_2, methane, etc.), persistent organic substances (PCB, dioxines, pesticides, etc.), certain heavy metals, asbestos, etc.

67 In Slovenia they are being replaced werever there is international trade or co-operation involved (e.g. the elimination of harmful CFCs from refrigerators, the elimination of the use of PCBs in condensers, the elimination of mercury from batteries, asbestos from various general-use products, etc).

feedstocks and by promoting cogeneration[68], etc. The possibility of introducing systems of quality assurance (ISO 9000) and environmental protection (ISO 14000) will have to be exploited more. The consumption of primary energy feedstocks in industrial thermal processes by the controlled co-incineration of specific waste materials (oils, solvents, resins, rubber materials) will have to be promoted, for which appropriate technical and ecological criteria will have to be defined.

- **The introduction of district heating systems and gas pipeline networks and the introduction of high-quality environment-friendly fuels**. We are planning to use measures such as stricter legislation and supervision, the application of pricing mechanisms and increased environmental awareness to promote the processes of replacing unsuitable energy feedstocks with those of higher-quality.
- **Increase in the share of renewable energy resources**. The supply of energy from renewable resources will have to be increased, in particular hydroelectric power, solar and wind energy, hydrothermal energy, wood, biomass and waste; the principle of sustainable development must be consistently observed in the exploitation of these resources[69]. We will have to promote the construction of solar energy collectors (great possibilities in private sector and in tourism), the use of wood and wood waste as fuel, the exploitation of landfill gas, etc.

Energy supply from the Krško nuclear plant: Given that the operation of the power plant has so far been relatively reliable, that the reserve capacities of other energy resources are limited and that energy consumption is unlikely to be reduced in the near future, it is not realistic to expect an early decommissioning of the power plant[70]. A decommissioning would result in a need for substitute fossil fuels energy, which would increase air pollution caused by CO_2, NOx and other pollutants and therefore make the fulfilment of international obligations difficult.

Air protection measures by sectors. In individual sectors the following will have to be ensured:

- **Energy sector**. The installation of desulphurisation unit in block 5 of the Šoštanj thermal power plant will reduce SO_2 emissions by 70%. Possible deviations from stipulated emission levels and the efficiency of implemented measures for other cogeneration plants will have to be assessed on the basis of measurements. By installing devices for the reduction of NO_x emissions and by simultaneously introducing measures concerning traffic, the State would meet the requirements of the Protocol on Nitrogen Oxides. In order to fulfil the obligations arising from the Kyoto Protocol we will have to explore the possibilities for the reduction of greenhouse gas emissions from energy facilities, including methane emissions caused by coal-mining.

- **Industry**. The energy optimisation and ecological remediation of major industrial emission sources shall require priority investments. It is expected that the transition to high-quality solid and liquid fuels and gas and/or the installation of efficient equipment for the reduction of emissions into the air will produce the fastest effects. In order to improve the utilisation of fuels and in this way reduce the emissions of toxic and greenhouse gases, we will have to ensure the conditions needed for the share of cogeneration in industry to be increased.

- **Agriculture**. The construction of plants for anaerobic treatment of manure, including the capture and use of gas, on all farms where the production of manure is not co-ordinated with its use in arable farming. This measure should be given priority in the regions with low intake capacity (groundwater regions, karst regions, etc.). The reduction of greenhouse gas emissions in agriculture can be achieved by the promotion of sustainable agriculture; the additional reduction in the application of nitrogen fertilisers by using agro-meteorological information to increase fertilisation efficiency; and a reduction in the number of cattle simultaneously increasing milk yield.

- **General consumption**. Systematic introduction of district heating in regions with a high thermal power consumption density (heating systems and the heating of water) and introduction of gas pipeline networks for individual heating systems in regions with medium consumption density. In other regions, the replacement of coal with liquid fuels with reduced sulphur content. The use of

68 Cogeneration of electricity and heat.

69 The share of hydroelectric power in the total energy consumption is 24%. With the construction of a chain of hydroelectric power plants on the river Sava and several small hydroelectric power plants (also private) this share could be increased to 30% of total consumption, which is expected to remain unchanged.

70 The Krško nuclear plant currently provides approx. 34% of the electricity consumed in Slovenia.

biomass will be given priority in regions where this is possible. Control of the maintenance of heating units, measures for the reduction of energy consumption when renovating existing and constructing new buildings and the introduction of energy-saving lighting and household appliances will contribute to the reduction of local air pollution and greenhouse gas emissions.

- **Transport**. To control the anticipated increase in traffic emissions we will have to determine critical loads for ecosystems likely to be affected; systematically monitor regions with dense population and protected areas along transport routes; introduce financial, legal and technical restrictions concerning traffic in threatened regions (particularly urban areas, large housing complexes and sensitive areas). By adopting relevant legislation we will have to ensure a better maintenance of vehicle engines. Tax policy instruments will ensure that new vehicles are energy-efficient. Other measures necessary for the reduction of environmental burden caused by personal transport are: the modernisation of public transport and a privileged position of such transport within town traffic planning; the regulation of stationary traffic systems by introducing appropriate pricing policy; provision of new and safe bicycle lanes; the limiting of personal transport in city centres; and the optimisation of the transport infrastructure to reduce traffic jams. Toxic and greenhouse gas emissions generated by traffic outside towns can be reduced by speed limits and higher tolls. Special attention should be given to transit road transport, which has to be transferred to railways (piggyback trains) in co-operation with neighbouring countries.

The programme of air protection measures for the period until 2003 is laid down in Table 4.

Table 4 The programme of air and climate protection measures for the period until 2003

GOAL	MEASURES FOR ACHIEVING THE GOALS		DEADLINE	COST ESTIMATE (IN SIT MILLIONS)	POSSIBLE SOURCES OF FUNDING	BODIES RESPONSIBLE
Air and climate protection policy (PO)						
AIR 1– AIR 8 96/62/EC	M-PO-1.AIR	Drawing-up of national air protection strategy	2000	12	budget	MESP – HMI
AIR 7	M-PO-2.AIR	Drawing-up of national programme for limiting greenhouse gas emissions; introduction of measures and monitoring of their effects; and drawing-up of national reports	1999 -2002	100	budget, international sources	MESP – HMI
AIR 1 - AIR 5	M-PO-3.AIR	Drawing-up of the programme of measures to be taken when alert thresholds are exceeded in selected sections of the motorway network	2000	6	budget	MI, MESP, MTC
AIR 3, AIR 5, AIR 7, AIR 8 96/62/EC	M-PO-4.AIR	Drawing-up of the programme for reducing toxic and greenhouse gas emissions caused by traffic in urban areas; interurban and transit traffic; and energy sector and industry	2002	70	budget, LC, international sources	MTC, MESP, MEA, LC
Measures in the field of legislation and financing (L)						
AIR 3, AIR 7	M-L-1.AIR	Introduction of contemporary (EU) technical standards for new vehicles	Implement ation	3		
AIR 1– AIR 8	M-L-2.AIR	Harmonisation of regulations concerning emissions/imissions with EU requirements	2000	60	budget	MESP
AIR 7	M-L-3.AIR	Drawing-up of a regulation on emissions from farms	2002	6	budget	MESP
AIR 1, AIR 2	M-L-4.AIR	Introduction of taxes for air pollution from industrial sources		3		
AIR 6	M-L-5.AIR	Adoption of a regulation on the mandatory containment, collection, recovery and destruction of ODS	2003	1	budget	MESP, MEA
AIR 4, AIR 7	M-L-6.AIR	Drawing-up of standards concerning utilisation rate and emissions of new and existing small combustion plants	2000	14	budget	MEA, MESP
AIR 4, AIR 7	M-L-7.AIR	Drawing-up of standards concerning the heat insulation of buildings and setting-up of a system for their enforcement in the construction of new buildings and the renovation of existing ones	1999	10	budget	MESP

AIR 1, AIR 2, AIR 4, AIR 5, AIR 7, AIR 8	M-L-8.AIR	Regulation of the status of independent producers of electric power from renewable or similar resources (cogeneration) in order to promote the efficient transformation of primary energy	1999	10	budget	MEA, MESP
AIR 4	M-L-9.AIR	Revision of the pricing policy concerning public heating systems and environmentally acceptable energy feedstocks	2002	12	budget, LC	MESP, LC
Institutional strengthening (IS)						
AIR 1– AIR 8	M-IS-1.AIR	Strengthening of the service responsible for keeping the register of emissions	2001	6	budget	MESP
AIR 7	M-IS-2.AIR	Monitoring of the effects of measures for limiting greenhouse gas emissions and their updating	Continuous task	12/year	budget	MESP – HMI
AIR 1 – AIR 8	M-IS-3.AIR	Modernisation of imission monitoring	2001	30/year	budget	MESP
Investments and technical measures (INV)						
AIR 1, AIR 2 88/609/EEC	M-INV-1.AIR	Ecological remediation of block 5 of TPP Šoštanj	In process	-	-	-
AIR 1 84/360/EEC	M-INV -2.AIR	Cleaning of flue gases in industry	2005	See footnote **71**	IND, Eco-Fund	IND
AIR 1, AIR 2, AIR 4	M-INV -3.AIR	Continuation of the programme for replacing coal with natural gas	2005	See footnote **72**	IND, Eco-Fund, households	IND, households
AIR 3	M-INV-4.AIR	Investments promoting the transport of goods by rail	2010	See footnote **73**	Rail	
AIR 1, AIR 6	M-INV-5.AIR	Measures for the reduction of CFC emissions		See footnote**74**	IND	
AIR 7	M-INV-6.AIR	Measures for the reduction of emissions of NO_x, NH_3, VOC, CH_4 and CO_2		See footnote**75**	IND, Eco-Fund, agriculture	
AIR 1, AIR 3	M-INV-7.AIR	Reduction of heavy metal emissions		See footnote**76**	IND, the State, MEA, MESP	

71 The required funds are not stated since they are not public funds but are provided by industry. According to the cost estimates included in the Environmental Accession Strategy of Slovenia for Integration with the EU, the costs will amount to a little more than SIT 14 billion (DEM 150 million).

72 According to the cost estimates included in the Environmental Accession Strategy of Slovenia for Integration with the EU, the costs will amount to approx. SIT 4.8 billion (DEM 50 million)

73 According to the cost estimates included in the Environmental Accession Strategegy of Slovenia for Integration with the EU, the costs will amount to approx. SIT 3.8 billion (DEM 40 million).

74 According to the cost estimates included in the Environmental Accession Strategegy of Slovenia for Integration with the EU, the costs will amount to approx. SIT 1.9 billion (DEM 20 million).

75 According to the cost estimates included in the Environmental Accession Strategy of Slovenia for Integration with the EU, the costs will amount to approx. SIT 23.8 billion (DEM 250 million).

76 According to the cost estimates included in the Environmental Accession Strategy of Slovenia for Integration with the EU, the costs will amount to approx. SIT 0.48 billion (DEM 5 million).

AIR 1, AIR 2	M-INV-8.AIR	Setting-up of operational monitoring for polluters having priority	2000	See footnote[77]	polluters	IND
AIR 6	M-INV-9.AIR	Setting-up of a system for collection and recovery of CFCs, HCFCs and HFCs			polluters	IND
Research (R)						
AIR 1 - AIR 8	M-R-1.AIR	Division of Slovenia into regions with respect to air pollution levels	2000	24	budget	MESP – HMI
Education, training and informing (ETI)						
AIR 6	M-ETI-1.AIR	Training in the appropriate handling of refrigerants in refrigeration and air-conditioning equipment	Continuous	-	producers	CCI, IND
AIR 6	M-ETI-2.AIR	Informing of the public and its education with respect to ODS recovery and the consequences of ODS releases into the air	Continuous	-	CCI	CCI, IND
AIR 1 - AIR 8	M-ETI-3.AIR	Informing of the public and its education in relation to efficient energy consumption and protection of the environment – industry, public sector, general public (publications, exhibition and other means of promotion)	Continuous	10		MESP, MEA
AIR 1, AIR 2, AIR 4	M- ETI-4.AIR	Training of boiler room operators, constructors, designers	Continuous	6		

CCI - Chamber of Commerce and Industry
HMI - Hydrometeorological Institute
IND - industry
LC - local communities
MEA - Ministry of Economic Affairs
MI - Ministry of Interior
MTC - Ministry of Transport and Communications

77 According to the cost estimates included in the Environmental Accession Strategy of Slovenia for Integration with the EU, the costs will amount to approx. SIT 0.28 to 0.48 billion (DEM 3 to 5 million).

6.2.2 Soil[78] and Forest

Elaboration of goals: Nature protection strategy – in preparation (MESP);
Strategy for the development of Slovenian agriculture - adopted (1993); Programme of agricultural policy reform (adopted by the Government in October 1998); Forest Development Programme of Slovenia[79] (MAFF)

Responsible ministry: Ministry of the Environment and Spatial Planning; Ministry of Agriculture, Forestry and Food

Soil is a natural resource vital for the production of food and industrial raw materials and for the extraction of energy feedstocks. It is a natural value which we protect as a part of the natural heritage. As a natural resource, a natural value and physical component of the environment, it is indispensable for the existence and development of humankind. Protection of the soil against physical destruction and pollution and the preservation of the balance between soil and other parts of the ecosystem is an important activity in Slovenia. The objective of soil management is to ensure the balance between the conservation of the natural properties of soil and the provision of a satisfactory quality of life for human beings. Sustainable development demands the preservation and protection of all soil functions in terrestrial ecosystems, both natural and anthropogenic, since soil damage or changes in the soil are frequently irreversible. The conservation and protection of agricultural land and forests are therefore of long-term strategic importance for the conservation of fertility of Slovenian soil and the production/reproduction capacity of forests.

Forests are essential for the conservation of all forms of life. They are also important for economic development. They are a source of wood, food and medicines and are rich storehouses of a great quantity of biological products, many of which have yet to be discovered. They retain water and carbon, which would function as a greenhouse gas if released into the atmosphere as CO_2. Forests are a home to a vast number of wild animal and plant species. They help us to become aware of the time dimension of evolution and to fulfil our cultural and spiritual needs. In 1993 the Forest Act[80] was adopted. The aim of this act is to ensure the sustainable and multi-purpose forest management in accordance with the principles of protection of the environment and natural values; continuous and optimal functioning of forests as ecosystems; and the fulfilment of their function. The National Assembly of the Republic of Slovenia has already adopted a forest development programme which determines a national policy of sustainable forest management; orientations for the conservation and development of forests; and conditions for their exploitation and multi-purpose use. The programme contains many of the elements of an environmental protection document. The NEAP does not repeat the goals and measures of the documents mentioned, but deals above all with the problems of threats to forests due to pollution.

The main goals for the period until 2008 are:

SOIL1)	**to limit chemical soil pollution and to carry out the necessary rehabilitation**
SOIL2)	**to limit the physical degradation of soil (compaction, erosion, etc.)**
SOIL3)	**to limit the further degradation of forest soil**

In order to successfully manage the problems related to soil pollution and the conservation of the original land-use categories, we have to be aware of the extent and intensity of the problem and have to draw up and observe the relevant legislation. Considering that data on soil pollution are available only for around 8% of the territory, the completion of soil pollution research, as envisaged by the preliminary distribution of sample locations on the basis of geographical coordinate system (Picture 9), is of a priority. The next condition is the setting-up of soil pollution monitoring and of soil information system.
Relevant regulations, which will introduce the rules of good agricultural practice, will have to be issued and implemented as soon as possible. On the basis of these regulations the consistent enforcement of

78 According to the classification of problems soil pollution takes the 1st place; pesticides in the environment 5th; air pollution from thermal power plants (also affects soil and forests) 6th; traffic (also affects soil) 9th; forest damage 12th; loss of biological and genetic diversity 21st; degradation of agricultural or forest soil 26st and 29th place respectively; soil erosion the 36th place, etc.
79 Forest Development Programme of Slovenia - Program razvoja gozdov v Sloveniji (Ur.l. RS, št. 14/96)
80 Forests Act - Zakon o gozdovih (Ur. l. RS, št. 30/93)

sustainable principles in soil cultivation and agrarian operations will have to be ensured. In order to achieve these goals, which will demand a fundamental change in the current method of management of agricultural land and forests, it will be necessary to ensure:

- the integration of soil and forest protection into work programmes of the following sectors: agriculture, forestry, industry, transport, tourism, water management, physical planning, defence, etc.;
- the harmonisation and observation of legislation which will adopt EU and FAO guidelines;
- the prevention of further pollution of soil from various point and diffused sources – the same applies to the problem of soil erosion;
- the implementation of the programmes for the rehabilitation of over-polluted soil;
- the setting-up of information and expert systems concerning the pollution and optimal use and effective rehabilitation of soil;
- stable conditions for the monitoring of the effects of air pollution and other factors having detrimental impact on forest ecosystems;
- the building-up of the network and incorporation of new methods of bio-indication into the forest damage inventory scheme; and support to cause-and-effect process studies concerning the functioning of forest ecosystems;
- the setting-up and maintenance of gene banks and gradual inventorying and characterisation of genetic diversity in forest ecosystems;
- the conservation of large intact forest ecosystems; and the co-ordinated use of the forest area in forestry, agriculture, military, transport, water management and electricity sector, etc.

The programme of measures is laid down in detail in Table 5.

Table 5 The programme measures for the protection of soil and forest for the period until 2003

GOAL	MEASURES FOR ACHIEVING THE GOALS		DEADLINE	COST ESTIMATE (IN SIT MILLIONS)	POSSIBLE SOURCES OF FUNDING	BODY RESPONSIBLE
Soil and forest protection policy (PO)						
SOIL 1	M-PO-1.SOIL	Drawing-up of a programme for the rehabilitation of polluted soil	2000	-	MESP	MESP
SOIL 1 - 3 Regulation 2078/92	M-PO-2.SOIL	Revision and supplementation of sectoral programmes for agriculture and forestry in accordance with the NEAP (agri-environmental programme)	2000	5	MAFF, MESP foreign technical assistance	MAFF, MESP
Measures in the field of legislation and financing (L)						
SOIL 1 - 3	M-L-1.SOIL	Drawing-up and adoption of a regulation on national monitoring of soil	2001	1	MESP, MAFF	MESP, MAFF
SOIL 1 - 3 Directive 91/676/EEC	M-L-2.SOIL	Drawing-up and adoption of a regulation on good agricultural practice	2000	3	MAFF, MESP foreign technical assistance	MAFF, MESP
SOIL 1 Regulation 2092/91	M-L-3.SOIL	Act on eco-farming	1999	-	budget	MAFF
Institutional strengthening (IS)						
SOIL 1 - 3	M-IS-1.SOIL	Forming of an inter-sectoral working group to ensure integration of the principle of sustainability into agriculture	1999	-	budget	MAFF, MESP, MH
SOIL 1 - 3	M-IS-2.SOIL	Setting-up of a database on emissions of substances into the soil and the level of soil pollution	2000	10/year	MESP, MAFF	MESP, MAFF
Investments and technical measures (INV)						
	M-INV-2.SOIL		-	-	-	-
Research (R)						
SOIL 1 - 3	M-R-1.SOIL	Analysis of the causes for changes in agricultural land use with proposed measures	2000	3	MAFF, MESP	MAFF, MESP
SOIL 1 - 3	M-R-2.SOIL	Further research of soil pollution (Koroška, Zasavje, Šaleška dolina, Maribor region, etc.) with a draft programme of urgent rehabilitation measures	2003	20/year	MESP, MAFF, MST	MESP, MAFF
Education, training and informing (ETI)						
SOIL 1 - 3	M-ETI-1.SOIL	Execution of educational agri-environmental	continuo	5/year	MAFF, MESP	MAFF,

		programmes in agriculture	us		foreign technical assistance	MESP
SOIL 1 - 3	M-ETI-1.SOIL	Issuing of popular publications on land use, sustainable farming, wise use of fertilisers and phytopharmaceuticals	continuo us	5/year	MAFF, MESP foreign technical assistance	MAFF, MESP

MAFF - Ministry of Agriculture, Forestry and Food
MH - Ministry of Health
MST - Ministry of Science and Technology

6.2.3 Noise[81]

Elaboration of goals: Strategy of protection against noise – not yet in preparation (MESP)

Responsible ministry: Ministry of the Environment and Spatial Planning

The environment in Slovenia is not heavily polluted by noise. Noise affects a large number of people. It causes neuroses, anxiety, fatigue, indisposition and affects the cardiovascular system[82]. The effects of noise are clearly manifested at levels above 50 dB (A). The main sources of noise are road and rail traffic, manufacturing activities and other sources (construction machinery, recreation grounds, etc.).

The results of noise measurements in cities (Ljubljana) show that the most important source of noise is traffic[83]. In addition to the noise in the environment, the indoor noise is important. People spend more than 90% of their time indoors. The World Health Organisation recommends that the noise indoors should not exceed 30 dB (A). Indoor noise is to a certain extent dependent on external noise, but more attention is being given to noisy neighbours and poor relations between neighbours, which is an important subjective component in tolerating noise. A number of estimates suggest that around 6% of people are exposed to such noise.

The priority goals in the forthcoming period are:

NOS1) to abate noise caused by road traffic
NOS2) to abate noise caused by other sources

These goals will be achieved by:

- institutional strengthening in the field of protection against noise (formulation of a policy and adoption of regulations on protection against noise, setting-up of a register of noise sources and of monitoring system, definition of protection areas and areas burdened by noise, etc.);
- consistent active and passive protection against noise in all new construction projects (roads, railways, residential areas);
- observing technical requirements when purchasing new vehicles, construction machinery, manufacturing machinery, agricultural machinery;
- protecting residential areas with anti-noise measures and reducing detrimental effects of noise through passive protection measures.

The programme of measures for the period until 2003 is laid down in Table 6.

81 The document only deals with noise in the environment.
82 The impact of noise on health is hard to prove, except when the intensity is so high that the direct impact is obvious. Noise of this type is not to be expected in the urban environment, except in rare cases. Low level noise affects the quality of life, although the response is very subjective.
83 The results of the measurements conform with the researches conducted in developed countries, where traffic is also the main source of noise. According to data from the developed countries of Western Europe, around 10% of the population is exposed to noise caused by traffic. Data for Slovenia are not yet available.

Table 6 The programme of measures for protection against noise for the period until 2003

GOAL	MEASURES FOR THE ACHIEVING THE GOALS		DEADLINE	COST ESTIMATE (IN SIT MILLIONS)	POSSIBLE SOURCES OF FUNDING	BODY RESPONSIBLE
Policy in the field of protection against noise (PO)						
NOS 1 - 2	M-PO-1.NOS	Drawing-up of a strategy of protection against noise	2003	6	budget	MESP
Legislation (L)						
NOS 1- 2 79/113/EEC 84/533/EEC 84/534/EEC 84/535/EEC 84/536/EEC 84/537/EEC 84/538/EEC 86/662/EEC 86/594/EEC	M-L-1.NOS	Setting-up of a system of regulations (emissions, imissions, technical)	2000	4	budget	MESP
Institutional strengthening (IS)						
NOS 1- 2	M-IS-1.NOS	Administrative strengthening of the ministries responsible for protection against noise (personnel reinforcement of the responsible ministry and inspection services, setting-up and maintenance of a register, compilation and maintenance of a noise chart, etc.)	2003	30	budget	MESP
Investments and technical measures (INV)						
	M-INV-1.NOS		-	-	-	-
Research (R)						
NOS 1 - 2	M-R-1.NOS	Pilot research of burdening, aimed at abatement of noise in the natural and residential environments	regularly	2	budget	MESP
Education, training and informing (ETI)						
NOS 1 - 2	M-ETI-1.NOS	Preparation of a programme for systematic education of employees of inspection and administrative services at the national and local level	1999	1	budget, PHARE	MESP

6.2.4 Radiation

Responsible ministry: Ministry of the Environment and Spatial Planning

6.2.4.1 Ionising Radiation

Elaboration of goals: Nuclear safety programme (MESP – Nuclear Safety Administration)

The problems of ionising radiation[84] and waste are not general or pressing, but the state of the problem and the nature of its solving and the considerable public interest give it an additional dimension. The long-term goal in the **field** of ionising radiation is to keep all types of man-made radiation within the limits not harmful to human beings and nature. The priority goals are:

RAD1) to provide for an effective radioactive waste management
RAD2) to control radioactive radiation in the environment

The framework goals and pre-conditions for the management of these problems are:

- drawing-up of a programme for systematic maintenance of the intensity of man-made ionising radiation in the environment within permissible levels;
- deciding on the location of facilities and installations for the collection and disposal of low- and intermediate-level radioactive waste (LIRW);
- drawing-up of a programme for the rehabilitation of existing storage facilities;
- deciding on the further operation of the Krško nuclear plant;
- drawing-up of expert groundwork for the disposal of high-level radioactive waste related to the operation and possible decommissioning of the Krško nuclear plant.

Nuclear safety programme. Operation of the nuclear power plant poses a high risk to human health and the quality of the environment. Therefore the strategic orientation is to ensure a high level of safety and the power level of the Krško nuclear plant during operation and after decommissioning and to gradually create conditions for its safe dismantling. A basic measure for safe operation and management of radioactive waste is the consistent implementation of a programme for appropriate management of LIRW[85]. Low- and intermediate-level waste should be compressed using modified technology, which would reduce the quantity of waste. A temporary storage facility (until the end of operation) should be provided by extending the existing storage facility. The strategy for the disposing of radioactive waste will have to be completed and implemented[86].

The programme of radiation protection measures for the period until 2003 is laid down in Table 7.

84 Man-made radioactive radiation in the environment is caused mainly by radioactive waste materials.
85 Nuclear Safety Administration, PR-019, Poročevalec 40/95.
86 In 1996 the strategy for the management of spent nuclear fuel was adopted.

Table 7 The programme of radiation protection measures for the period until 2003

GOAL	MEASURES FOR ACHIEVING THE GOALS		DEADLINE	COST ESTIMATE (IN SIT MILLIONS)	POSSIBLE SOURCES OF FUNDING	BODY RESPONSIBLE
Radiation protection policy (PO)						
RAD 1 - 2	M-PO-1.RAD	Strategy for controlling radiation in the environment (expert groundwork already completed)	1999	-	-	-
RAD 1	M-PO-2.RAD	Drawing-up of a programme for rehabilitation of temporary storage facilities for radioactive substances	1999	20	budget	MESP
RAD 1 - 2	M-PO-3.RAD	Deciding on the further operation of the Krško nuclear plant	1999	2	budget	MESP, MEA
Legislation (L)						
RAD 1 - 2 Directive 96/3/Euratom Regulation 87/3954/Euratom Directive 90/641/Euratom Directive 80/836/Euratom	M-L-1.RAD	Drawing-up of regulations including limit values for the intensity of certain types of radiation in particular environments and preparation of necessary protection measures harmonised with EU standards	1998	10	budget	MESP, MH
RAD 1	M-L-2.RAD	Drawing-up of a regulation on collection, storage, treatment, disposal of and keeping records on radioactive waste	1998	5	budget	MESP
RAD 1 - 2	M-L-3.RAD	Introduction of taxes on excessive burdening of the environment with radioactive radiation	1999	5	budget	MESP
Institutional strengthening (IS)						
RAD 1 - 2	M-IS-1.RAD	Administrative strengthening of the MESP to identify and eliminate excessive radiation in the environment	2003	30	budget	MESP
RAD 1 - 2 Decision 87/600/Euratom	M-IS-2.RAD	Upgrading of the basic permanent radiation monitoring; drawing-up of a register of risks; and drawing-up of safety plans for measures to be taken in the event of emergency	1999	13/year	budget	MESP
Investments and technical measures (INV)						

RAD 1 - 2	M-INV-1.RAD	Deciding on the location of plants and facilities for the treatment of LIRW	2001-2002	-	-	-
Research (R)						
	M-R-1.RAD		-	-	-	
Education, training and informing (ETI)						
RAD 1 - 2	M-ETI-1.RAD	Preparation of a programme for the systematic education of employees of inspection and administrative services at the national and local levels	1999	1	budget, PHARE	MESP, NSA

MEA - Ministry of Economic Affairs
MH - Ministry of Health
NSA - Nuclear Safety Administration

6.2.4.2 Non-Ionising Radiation

The intensity of non-ionising radiation[87] is increasing because more and more electrical appliances are used.

The long-term goal in the **field** of non-ionising radiation is to control all radiation sources, while taking into account the principle of reasonable prevention. A priority goal for the next ten years is:

NIR1) to identify and control individual sources of non-ionising radiation

The framework goals and conditions for the management of these problems are:
- institutional strengthening in the **field** of protection against non-ionising radiation (adoption and enforcement of regulations concerning non-ionising radiation, setting-up of a register of radiation burdens caused by relevant sources of non-ionising radiation);
- consistent implementation of non-ionising radiation protection measures when constructing new and reconstructing existing buildings;
- setting-up of a system for UV-radiation control (adoption of regulations, introduction of technical and organisational control, etc.).

The programme of non-ionising radiation protection measures for the period until 2003 is laid down in Table 8.

87 The most common sources of non-ionising radiation are power lines, household appliances, radio transmitters, mobile telephones, radars, etc.

Table 8 The programme of non-ionising radiation protection measures for the period until 2003

GOAL	MEASURES FOR ACHIEVING THE GOALS		DEADLINE	COST ESTIMATE (IN SIT MILLIONS)	POSSIBLE SOURCES OF FUNDING	BODY RESPONSIBLE
Radiation protection policy (PO)						
NIR 1	M-PO-1.NIR	Strategy for controlling non-ionising radiation in the environment	2003	6	budget	MESP, MEA
Legislation (L)						
NIR 1	M-L-1.NIR	Setting-up of a system of regulations	2003	1	budget	MESP
Institutional strengthening (IS)						
NIR 1	M-IS-1.NIR	Setting-up of a basic permanent monitoring and of a register of radiation burdens caused by relevant sources of non-ionising radiation, etc.	2003	6	budget	MESP
Investments and technical measures (INV)						
NIR 1	M-INV-1.NIR		-	-	-	-
Research (R)						
NIR 1	M-R-1.NIR	Recording the level of burdening of the environment with electromagnetic radiation due to large sources of non-ionising radiation in the environment	2000	15	budget, radiation sources	MESP
NIR 1	M-R-2.NIR	Selection of the most appropriate model for assessing radiation burdens	2000	3	budget	MESP
Education, training and informing (ETI)						
NIR 1	M-ETI-1.NIR	Preparation of a programme for the systematic education of employees of inspection and administrative services at the national and local levels	1999	1	budget, PHARE	MESP
NIR 1	M-ETI-2.NIR	Informing and education of potentially exposed population on the issues of non-ionising radiation	constant	2	budget	MESP

MEA - Ministry of Economic Affairs

6.2.5 Risks

Elaboration of goals: Strategy for the management of chemicals and genetically modified organisms (MH, MESP, MI, MAFF, MERD, MST)

Responsible ministry: Ministry of the Environment and Spatial planning; Ministry of Health

Slovenia is faced with risks arising from the production[88] and transport[89] of chemicals of all types; from various forms of chemical pollution; and uncontrolled chemical dumps, primarily those which are still in operation. Various safety programmes relating to hazardous chemical substances are being carried out within individual sectors of industry, particularly in the chemical, pharmaceutical and rubber industries. Fragmentation and partial approach to problem-solving in this **field** are apparent both at the organisational and legislative level. National data on chemicals are collected through various paths and sources. The methods of accessing the collected data also vary. Particularly deficient are eco-toxicological data, for which standardised tests are often not available. Procedures for informing the public regularly are not complete.

Gene technology does not have a legal basis in Slovenia yet. It is left to researchers and research institutions to respect the norms which apply in Europe and other western countries, particularly the USA. Considering the great opportunities which recombinant DNA technology, and partly protein engineering, offer in the fields of research and industry, increased activity in this area can be expected in Slovenia[90].

The basic goals relating to the protection against risks arising from the use or transport of hazardous substances are:

RISK1)	**to provide appropriate procedures for handling chemicals and GMOs in production, transport and use**
RISK2)	**to enforce appropriate procedures for the storage, transportation and disposal of chemicals**

There are no established legal principles and norms in Slovenia concerning gene technology which would guarantee the safety of human beings or nature with regard to potential harmful effects of genetically modified organisms (GMOs) with respect to handling, to the scope of works and releasing GMOs into the environment and to trade in products which are or contain GMOs.

Slovenia has to ensure the implementation of safety measures concerning chemical substances and to lay down the so-called eco-toxicological standards for the implementation of bio-monitoring. It also needs to ensure control of the use and release of and trade in (marketing) GMOs while involving the public in such a way that a normal flow of goods continues and development of gene technology is not hindered.

The world-wide established standards will have to be specified and put into force and general rules on the issuing of licences for working with GMOs, releasing them and putting them on the market will have to be laid down.

The goal in the field of protection against risks is to increase safety as much as possible and so reduce risk. In this, factors of economic development should be taken into account, which will guarantee sustainable development of the State and industry as a whole. In order to achieve this goal, we will have to develop a

88 Slovenia covers its own needs for consumer chemicals and 75% of its needs for industrial chemicals in the manufactuing and processing.

89 The production of pesticides and the processing of oil derivatives is very limited, therefore Slovenia covers most of its needs with imports.

90 Today several groups of researchers in Slovenia are involved in the recombination of DNA: at the Biotechnical Faculty, Chemistry Institute, the Jožef Stefan Institute, The Biochemistry Institute of the Faculty of Medicine (and to a certain extent at other institutes of that faculty), the Hop-Growing and Brewing Institute and certain units of the pharmaceutical industry such as Krka and Lek.

system for monitoring and handling chemicals in the environment, into which all sectors will be included. We will set up such system by specifying those environmental quality standards for the handling of chemicals, GMOs and products which will guarantee the conservation of biological diversity.

The programme of measures for the period until 2003 is laid down in Table 9.

Table 9 The programme of measures for the protection against risk arising from the use or transportation of chemicals and GMOs for the period until 2003

GOAL	MEASURES FOR ACHIEVING THE GOALS		DEADLINE	COST ESTIMATE (IN SIT MILLIONS)	POSSIBLE SOURCES OF FUNDING	BODY RESPONSIBLE
Policy in the field of protection against risks arising from the use or transportation of chemicals (PO)						
RISK 1- 2	M-PO-1.RISK	Drawing-up of a programme for the management of chemicals and for the protection against the environmental consequences of industrial accidents	2000	12	budget	MESP, MH, MAFF, MERD
RISK 1 90/219/EEC 90/220/EEC 90/415/EEC	M-PO-2.RISK	Drawing-up of a programme for the management of GMOs	2001	12	budget	MESP, MH, MAFF, MERD, MST
Measures in the field of legislation (L)						
RISK 1- 2	M-L-1.RISK	Adoption of a chemicals act[91]	in procedure			
RISK 1 90/219/EEC 90/220/EEC 90/415/EEC	M-L-2.RISK	Inclusion of the programme for the management of GMOs in the nature conservation act[92]	See the chapter on the conservation of biodiversity			
RISK 1- 2 96/82/EC 96/61/EC	M-L-3.RISK	Revision of the instrument for the mandatory preparation of protection and rescue plans	2001	6	budget	MD - ACPDR, MESP, MEA, MH
RISK 1 - 2 96/82/EC	M-L-4.RISK	Review of the suitability of mechanisms for enforcing the full responsibility of those causing accidents with ecological consequences	1999	1	budget	MESP
Institutional strengthening (IS)						
RISK 1 - 2	M-IS-1.RISK	Founding of a chemicals office and setting-up of a database (register) of chemicals, in co-ordination with a database of other hazardous substances, phytopharmaceuticals and waste, and of a database of GMOs	1999	50/year	budget, self-financing	MH

91 Chemicals Act - Zakon o kemikalijah (Ur. l. RS, št. 36/99)
92 Nature Conservation Act - Zakon o ohranjanju narave (Ur. l. RS, št. 56/99)

RISK 1 90/219/EEC 90/220/EEC 90/415/EEC	M-IS-2.RISK	Founding of an administrative body to implement administrative procedure with regard to GMOs	1999	30 /year	budget, self-financing	MESP
RISK 1 - 2	M-IS-3.RISK	Establishment of a centre of public information and international exchange of information concerning chemicals and GMOs	2000	12/year	budget	MESP in co-ordination with MH, MAFF, MST and others
Investments and technical measures (INV)						
RISK 1 - 2	M-INV-1.RISK	Upgrading of the system of notification and information in the case of industrial accidents	continuous	-	budget	National Information Centre
RISK 2	M-INV-2.RISK	Specification of routes for the transport of chemicals and of criteria for locating large storage facilities for chemicals	2002	10	budget	MI, MTC, MESP
Research (R)						
RISK 1 - 2	M-R-1.RISK	Setting-up of a register of chemicals and GMOs in use and drawing-up of a list of facilities and gene technology units; of a list of chemicals transported and stored; of a list of GMOs or products which contain GMOs and are in the market	2000	6	budget	MESP
RISK 1 - 2	M-R-2.RISK	Formulation of definitions and drawing-up of a catalogue of chemicals and GMOs	2000	12	budget	MH
Education, training and informing (ETI)						
RISK 1 - 2	M-ETI-1.RISK	Preparation of an education programme for informing the population about the possibilities of technical protection measures against industrial accidents and about the management of GMOs and their effects on human beings and the environment	1999	3	budget	MH, MESP, MEA, MD

MH - Ministry of Health
MAFF - Ministry of Agriculture, Forestry and Food
MERD - Ministry of Economic Relations and Development
MST - Ministry of Science and technology
MD - Ministry of Defence
ACPDR - Administration for Civil Protection and Disaster Relief

MEA - Ministry of Economic Affairs
MI - Ministry of Interior
MTC - Ministry of Transport and Communication

6.3 Programme with Regard to Selected Sectors

One of the most important foundations of modern concepts of environmental management, which are built on the principles of efficiency, is the fact that every activity affects the environment and that no activity should be absolved of its responsibility to the environment in advance. This is a basis of the *bottom-up* approach[93] to t
the management of environmental problems, which complements the traditional *top-down* approach[94].

The NEAP concentrates on five key sectors - industry, energy sector, agriculture and forestry, transport and tourism - which objectively speaking pose the greatest threat to the environment. The are key factors of development and are particularly important for the enforcement of sustainable development.

The NEAP cannot, and should not, make decisions instead or in the name of individual sectors. In accordance with the polluter pays principle the principle of shared responsibility, the NEAP only defines the basic conditions and guidelines which individual sectors will have to comply with. In no case does this document wish to merely repeat, perhaps already adopted, environmental orientations of individual sectors, since there is no need for this whatsoever. The objective of the proposed measures with regard to individual sectors is, in the first place, to harmonise the orientations of individual sectors with the relevant requirements of the Agenda 21, the Environmental Protection Act and EU policy.

6.3.1 Industry[95] and Mining

Main programme document: Strategy for economic development of Slovenia[96] – going through National Assembly of Slovenia

Responsible ministry: Ministry of Economic Affairs

Industry in Slovenia exerts a considerable pressure on the environment. The pressure results from emissions of harmful substances and energy into the environment, from the risks caused by accidents and from the consequences of the exploitation of natural resources. Pollution of the environment from industrial sources coincides with urban areas and cities (Ljubljana, Maribor, Celje, Kranj, Novo mesto, Nova Gorica, Koper). Despite the relatively obsolete technology and equipment in comparison to the leading industrial countries, the conditions have improved over the past years. The main reasons for this lie the decrease in industrial production and structural changes related to sovereignty. Less important are the construction of wastewater treatment plants and facilities for the reduction of air emissions and the introduction of modern environment-friendly technologies. A tenth of solid and gaseous waste and a half of wastewater in Slovenia is generated by industry. In 1994 for example, industry was responsible for 7% of total SO_2emissions (main sources: production of cellulose and paper, sulphuric acid and TiO_2, aluminium electrolysis, refinery).

Since the closure of the lead and zinc mine at Mežica, the mercury mine at Idrija and the uranium mine at Žirovski vrh, Slovenia no longer has any underground mineral mining production. Decommissioning activities are in progress at all these locations, including ecological rehabilitation above and below the ground. Following the closure of the brown coal mines at Zagorje, Senovo, Kanižarica and Laško only the lignite mine at Velenje and the brown coal mines at Trbovlje and Hrastnik remain. These mines produce coal to fuel the thermal power plants in Šoštanj and Trbovlje.

There are many non-metallic minerals excavation sites, quarries and gravel pits in Slovenia, which through surface mining degrade the natural environment. The following mineral raw materials are produced: chert, quartz sand, calcite, lacustrine chalk, bentonite, tufa (pozzolana), ceramic and brick clay, raw materials for

93 bottom-up – from the polluter to the state
94 top-down – from the state to the polluter
95 In accordance with the standard classification of activities based on the mandatory statistical standard of the EU (NACE) this group includes mining, processing industry and electricity, gas and water supply. In this part of the NEAP we above all discuss the processing industry (energy sector is discussed in a separate chapter); mining industry - except where connected with the energy sector - is in serious decline.
96 Strategy for economic development of Slovenia - Strategija gospodarskega razvoja Slovenije (EPA 1107 Poročevalec št. 19/95)

the lime and cement industry (limestone, marl), natural stone, technical building stone (limestone, dolomite), and gravel and sand.

Companies still consider money spent for environmental protection a cost rather than a long-term investment which could bring a market advantage. Primarily those companies which want to compete on the international market consciously include environmental considerations in their business. Slovenia's industry is export oriented and the number of such companies is constantly increasing.

The goals of sustainable development can only be achieved in a long term, but the consumption patterns have to be changed. The tasks which have to be completed in order to achieve these goals are of a global nature. Therefore the phasing-out of material and energy intensive technologies and the import of raw materials or semi-products does not solve the problem, even though national indicators might improve. In the future the industry will still have to fulfil its two basic functions: to supply goods to meet society's needs and to provide income for a part of the population; though with a significantly smaller input of material and energy.

The basic goal of the NEAP is to lay down framework conditions for industry. In accordance with the principles of sustainable development, such conditions should facilitate economic and social development without consequences for the environment which would limit future generations in meeting their needs. In the forthcoming period measures will be focused on:

1. Sustainable use of natural resources
2. Prevention of pollution through better management and control
3. Prevention of waste generation and/or safe disposal of waste
4. Enforcement of the sustainable conduct of companies.

It may be expected that owing to difficult economic situation environmental protection will be at the bottom of the priority list, at least at the beginning of transition. Positive effects of solving environmental problems are mainly long-term. In the period of transition the State will have to intervene when the quality of the environment is seriously threatened. It should enforce such measures which will motivate the economy for a transition to a higher level of management, rather than restrictive measures which, as a rule, merely worsen economic, social and environmental conditions.

Dynamic and successful companies will have to introduce modern environmental protection methods in order to persist in international competition. Protection of the environment is becoming an inseparable part of business and an important selection mechanism, particularly in international trade. It will be one of the greatest business challenges of the forthcoming period. In practice it is necessary to go beyond the traditional theory of the irreconcilable conflict between industry and the environment. Slovenia's industry is export oriented and does not need additional measures to respect the environmental protection demands of foreign markets. Therefore Slovenia can easily relate to the message of the Fifth EC Environmental Action Programme that *industry is not just part of the problem but part of the solution too*.

We are adopting the so-called **dual approach** as a basic approach to the control of environmental dimension of production. The concept of this approach is a combination of high standards and positive incentives, which actively interfere in all the phases of industrial process from research to the management of products after their final use. Environmental protection has to become a part of the education and professional training of all those involved in the product life-cycle: development, manufacturing, marketing, use and disposal.

A more balanced relationship between the environment and industry will be achieved by:

- substituting raw and other input materials (the use of less toxic substances and long-lasting materials);
- changing technological procedure (new technologies or modified production processes);
- modifying equipment (to increase the efficiency and reduce the losses);
- improving procedure management (the application of standard working procedures and instructions for work with machinery and appliances, effective supervision and accounting to ensure more efficient and more environmentally-sound production process);
- improving the management of resources (optimal maintenance of appliances and machinery);

- recycling of waste within the company;
- producing useful by-products (adaptation of procedures where waste is generated so that it can be reused outside the company);
- modifying products (to reduce the consumption of natural resources and emissions of substances and energy into the environment).

Responsibility to the environment is not related to the size of the company. The system of responsibility for damage and the system of rewards for responsible behaviour have to be independent of the size of the company. In this regard it is necessary to:

- enforce the principle that responsibility for pollution is borne by all companies, regardless of their size;
- increase the responsibility of big companies to enforce environmental requirements when placing orders with small companies;
- develop programmes for the introduction of modern management systems into small and medium-sized companies, which will guarantee their equal position with regard to large companies.

The transition to sustainable development comes up against many obstacles, which are the consequence of a lack of information, motivation and knowledge, as well as structural circumstances. Because of the long response time, the lack of information, motivation and knowledge should be treated as a priority and environmental education should be immediately improved at all levels, from apprenticeship programmes all the way up to technical faculties and seminars for management employees. Structural obstacles are multilevel. The main difficulty lies in the introduction of an integrated production-oriented environmental policy. Such policy will, contrary to the current partial treatment of the production process with regard to its effect on individual environmental elements (air, water, waste, noise), facilitate the integrated prevention of emissions and waste, and assessment of the consequences of the use and disposal of products. The setting-up of a centre for clean technologies could contribute to the surmounting of the mentioned obstacles.

The industry in the world has taken direction towards cleaner production and greater environmental efficiency (efficient utilisation of resources). Environmental policies encourage trading partners to take a more integrated approach based on environmental impact assessment in the production, use and final disposal of products (the “cradle to grave” principle) instead of applying the principle of purification and neutralisation of waste substances during production (“end-of-pipe” approach), which has prevailed until now. Clean production requires constant improvement of industrial procedures and products aimed at decrease in the consumption of substances and energy; in the pollution of air, water and soil; in waste generation at source; and risk to human beings and the environment.

6.3.2 Energy Sector

Main programme document: National energy programme – not yet adopted
Resolution on the strategy for energy use and supply[97]

Responsible ministry: Ministry of Economic Affairs

Energy supply in Slovenia is still predominantly based on the exploitation of non-renewable energy resources, which means it is dependent on imports of oil and oil derivatives and exploitation of its own coal reserves. In the concept of the reduction of pollution caused by energy sector, the installation of desulphurisation unit at the Šoštanj thermal power plant (TPP) and the use of high-quality coal at the cogeneration plant in Ljubljana should be mentioned. Desulphurisation unit in block 4 has contributed to the reduction of SO_2 emissions from the Šoštanj TPP by 35% (from 81 000 to 52 000 tonnes), while the partial use of imported coal at the cogeneration plant in Ljubljana has reduced emissions by 57% (from 21 000 tonnes in 1990 to 9000 tonnes in 1996). A desulphurisation unit in block 5 of the Šoštanj TPP, which should be installed by 2000, will have an even greater effect. A transfer to the use of gas in individual and district heating systems is under way, which has significantly improved air quality in larger urban centres. Favourable loans from the Environmental Protection Development Fund and the World Bank encourage

97 Resolution on the strategy for energy use and supply – Resolucija o strategiji rabe in oskrbe z energijo (Ur.l. RS, št. 9/96)

these investments. Legislation has partly contributed to the process, by introducing stricter standards on liquid fuel quality with regard to sulphur content. The CO_2 tax encourages the more efficient use of energy and a transfer to resources containing less or no carbon. With the adoption of new emission standards an obligation, under which existing large combustion plants have to comply with regulations by 2002 or 2004, came into force. In the last five years SIT 2 billion of budget funds, in the form of favourable loans or non-returnable aid, have been invested in around 200 projects in industry, energy production and households under the programme for efficient use of energy. Certain forms of tax relief have also been introduced on income tax and profit tax where funds have been invested in the efficient use of energy. In 1996 the Ministry of Economic Affairs founded the Agency for the Efficient Use of Energy to cover and promote the efficient use of energy. In relation to this, a network of energy advisory offices has been set up.

Energy sector will have to fulfil international obligations defined in the chapter on air.

The long-term strategic orientation is to increase energy efficiency in all areas of energy use. It is based on the following goals:
- long-term reliability and sufficiency of supply and efficiency of use;
- acceptability for health and the environment and the lowest possible risk;
- economic efficiency and social suitability;
- technological efficiency and adaptability.

Successful enforcement of energy efficiency measures requires the mutual influence of technological, economic and legal factors to be taken into account. These factor include:
- harmonisation of regulations and standards with EU directives (heat insulation of buildings, technical inspection of vehicles);
- inclusion of environmental protection costs in the prices of energy feedstocks and introduction of other economic measures (e.g. the CO_2 tax) which will encourage the use of purer fuels and the cogeneration of heat and electricity and provide funds for investments in efficient energy use and in renewable resources of energy[98], crucial for the reduction of CO_2 emissions;
- abolition of the use of leaded petrol by the year 2000 at the latest (lead emissions reduction by 100 tonnes a year);
- installation of desulphurisation unit at the Šoštanj TPP (block 5, reduction of SO_2 emission by 36 000 tonnes a year) and introduction of primary measures for reducing NO_x emissions at the Trbovlje TPPs and cogeneration plant in Ljubljana by 300 tonnes a year (necessary funds amount to EUR 100 million);
- renovation of blocks 1, 2 and 3 of the Šoštanj TPP;
- solving of environmental problems of Trbovlje TPP[99].

Long-term measures (for the period until 2015):
- construction of a number of hydro-electric power plants on the river Sava (220 MW of installed power, 900 GWh/year, investment value EUR 500 million); potential needs to replace the loss of 300 MW of power following the decommissioning of the Krško nuclear power plant have to be studied, while taking into account the obligation to reduce greenhouse gas emissions;
- construction of a disposal site for low- and intermediate-level radioactive waste (EUR 80 million);
- provision of an access to natural gas supply in all regions of Slovenia;
- increased use of renewable resources, EUR 365 million (small hydro-power plants, biomass, geothermal energy, heat pumps, thermal utilisation of waste – 14 PJ of additional energy a year), incineration of municipal waste;
- substantial reduction in fuel consumption in transport through better vehicle maintenance; transfer of goods transport to the railways; modernisation and reinforcement of public transport, etc.;
- extended construction of district heating systems at the local level, particularly through the use of cogeneration of heat and electricity and the introduction of gas supply to industrial and other combustion plants.

98 Funds for this purpose can be provided either through the Environmental Protection Development Fund or the Fund for Energy Efficiency.This issue, which does not exclude the potential setting-up of a new fund, should be addressed within the framework of systemic changes concerning the management of funds.

99 Construction of a new plant (investment estimated at SIT 48 billion) or closure of the Trbovlje-Hrastnik mine, for which approximately SIT 71 billion would have to be provided over the next ten years (source: the Ministry of Economic Affairs).

These measures enable us to achieve the required reduction in SO_2 emissions by the year 2010; a reduction of NO_x emissions by around 9% by 2003 – reference year 1996 (not including the potential of denitrification of smoke gases at thermal power plants, which amounts to 15%); and the reduction in greenhouse gas emissions in accordance with the Kyoto Protocol (2008-2012). It is not possible to increase the reduction without a transferring to other energy resources (conversion to gas-fired thermal power plants). However this only applies if the energy production and consumption remain the same owing to efficient use or are increased only by new capacities from renewable resources. Because the national energy programme envisages the abandoning of nuclear technology, the electricity currently produced by the Krško nuclear plant will have to be replaced after the plant is decommissioned. It is only possible to reduce CO_2 emissions by substantially reducing the total consumption of primary energy and increasing the use of natural gas instead of coal.

Over the next 5 years EUR 868 million will have to be provided for the implementation of the planned measures in the **energy sector** (EUR 165 million for short-term measures and approximately a third of the necessary funds – EUR 700 million – for those long-term measures, the implementation of which has to begin in the first five years). Further EUR 1490 million will be needed by 2015. In 1996 EUR 45 million were raised by the CO_2 tax. This would cover approximately 25% of the necessary annual investments provided that the money is used purposefully. In that case funds would have to be used through public invitations to tender from one of the existing funds (the Environmental Protection Development Fund or the Fund for Energy Efficiency).

The main goal of the efficient energy use (assessed potentials amount to around 20% of the current consumption of final energy) is to reduce the consumption of final energy by a fifth over the next 10 years at the same level of energy services (increasing energy efficiency by 2% a year in transport, industry and general consumption). To achieve this goal, we have to implement incentive price policy, strengthen the education and raising of public awareness and promote investments in new technologies.

6.3.3 Agriculture and Forestry

Main programme documents: Strategy for the development of Slovenian agriculture – adopted (1993), Programme of agricultural policy reform (adopted by the Government in October 1998), Forest Development Programme of Slovenia[100]

Responsible ministry: Ministry of Agriculture, Forestry and Food (MAFF)

Agriculture. Natural conditions for intensive agricultural production are less favourable in Slovenia than in other countries of Western and Eastern Europe. The main characteristics of Slovenian agriculture are: a large share of forest areas and a small share of agricultural land in the total surface area (less than 40% is agricultural land; around 32% is arable land); a disadvantageous relief and the resulting large share of agricultural land where growing conditions are difficult; extensive areas of grassland and a small share of fields in the land use structure. Such natural conditions undoubtedly reduce agricultural production capacity and increase costs. The result is the reduced competitiveness of Slovenian agriculture.

After 1945 agriculture in Slovenia was a part of Yugoslav agriculture and was developed accordingly. This is one of the reasons that the development of agriculture in Slovenia has caused a major imbalance of products (surplus of chicken meat, major shortage of grain, etc.). The agriculture was no longer in harmony with nature and its laws (large pig farms, unwise use of pesticides and fertilisers). Specialised arable and livestock farms (former public property) are a particular problem. In these the cycle of matter and energy has been interrupted – organic remains (especially manure) are not returned to the fields, owing to logistic problems (great distance between livestock farms and fields; the difficulty of harmonising the emptying of manure storage facilities with the time when plants need fertiliser) and related costs. Because of the short-term economic success, the crop rotation is limited to field crops which are commercially interesting and technologically undemanding. Detrimental effects on soil fertility become apparent after ten years or more. Slovenia has the opportunity to regulate farming in the future as a social, economic and environment-

100 Forest Development Programme of Slovenia - Program razvoja gozdov v Sloveniji (Ur.l. RS, št. 14/96)

friendly activity by implementing the model of family farms defined in the Strategy for the development of Slovenian agriculture (1993) and the Programme of agricultural policy reform (1998).

In Slovenia agriculture is not merely food production and subject to world competition. It will perform other essential functions. The most important factors of its development are:
- the conservation of fertile soil with intensive but ecologically acceptable farming;
- the conservation of the populated and diverse cultural landscape for recreation and the development of tourism.

Slovenian agriculture has to find a balance between social, environmental and commercial goals. The concept of "eco-social farming" must be a strategic orientation in which an environmental dimension is more and more present. Among the long-term goals of the Strategy for the development of Slovenian agriculture are: the conservation of settlements and cultural landscape; the conservation of agricultural land (conservation of production potential for the times of interrupted supply); and the protection of agricultural land and water against pollution and unwise use. In view of the approximation to the EU, measures will have to be taken to enforce moderate production, which will not burden the environment excessively. The goals of agricultural policy as laid down in the Strategy for the development of Slovenian agriculture do not differ fundamentally from the goals of the EU's Common Agricultural Policy, which emphasises the conservation of agricultural land and the protection of agricultural land and water against pollution and unwise use. However there are differences in the way these goals are realised.

An important step towards the realisation of the strategy was the adoption of the Programme of agricultural policy reform, which directs Slovenian agriculture to environment-friendly production. In addition to the conservation of uniformly populated and cultivated rural areas, special attention is given to the adaptation to the requirements concerning environmental protection and conservation of the typical rural landscape and to the conservation of land and water on which farming and survival are based. The reform introduces environmental protection programmes (EKO1, EKO2, EKO3), which are planned and implemented in accordance with the principles of sustainability and which take into account legislation governing the environmental protection.

In the forthcoming period the basic measures arising from agri-environmental programmes will be aimed at:
- reduction in the use of fertilisers and/or pesticides or better, introduction of organic farming methods;
- transition to extensive forms of crop production or conversion of arable land into extensive grassland;
- reduction in the number of sheep or cattle per forage area;
- use of other farming practices compatible with the requirements of protection of the environment and natural resources and the maintenance of the countryside and landscape (conversion of arable land into extensive grassland, rearing of local breeds in danger of extinction);
- upkeep of abandoned farmland or forests;
- abandonment of farmland for at least 20 years with a view to using it for the purposes related to the environment, in particular for the establishment of biotope reserves or nature parks or for the protection of hydrological systems;
- management of land intended for public access and leisure activities;
- training and the introduction of a guaranteed quality symbol in accordance with the EU regulations concerning the labelling of agricultural products.

The programme of measures mentioned above, including timetables, cost estimates and bodies responsible is partly defined in Chapter 6.2.2 Soil and Forest (Table 5).

Forestry. Forests cover 53% of the territory of Slovenia. Only Sweden and Finland have a larger share. Disturbances which reduce the biological and ecological stability of forests are:
- natural disturbances (dry years, wind damage, sleet damage, excessive proliferation of bark beetles and game);
- atmospheric pollution (NOx, O_3, SO_2);
- unbalanced interactions between plant and animal species.

Air pollution has a strong detrimental effect on the health and stability of Slovenian forests. Its reduction is therefore the first condition for successful sustainable forest management[101].

The long-term goals and the strategy for sustainable forest management are laid down in the forest development programme of Slovenia, which is based on the principles of sustainable development or sustainable management of forest. Therefore it is necessary to ensure its consistent implementation with regard to the environmental protection aspects. In determining the goals, orientations and measures in this document it is impossible to avoid a certain amount of overlapping with the strategy laid down in the forest development programme. Nevertheless, it is logical and necessary that the NEAP, in accordance with the criteria for sustainable forest management adopted at ministerial conferences on the protection of forests in Europe, should emphasise the orientations to be followed and measures to be taken in relation to the environmental importance of forests.

The long-term goals are based on Forests Act[102], which stipulates that the programme for the development of forests in Slovenia should guarantee:

- the conservation and re-establishment of the natural composition of forest communities and the strengthening of forest resistance;
- forest management which maintains all forest functions and is based on the natural restoration of tree communities;
- appropriate exploitation of forests in harmony with the natural development of forest communities;
- co-ordination of forest cultivation, wood production and production of other forest products.

The two most important long-term goals of forest management are the conservation and the sustainable development of forests, because of their biological diversity and all environmental, social and commercial functions. This includes conservation of the natural environment and the ecological balance of the landscape; the maintenance of settlement and cultural landscape; and the improvement of quality of life in the countryside.

6.3.4 Transport

Main programme document: Resolution on the Transport Policy of the Republic of Slovenia[103] – going through first reading in the National Assembly

Responsible ministry: Ministry of Transport and Communications

Transport is a significant cause of degradation of the environment, both as a source of pollution and as an important consumer of space. In 1992[104] transport across the entire national road network daily emitted 142 tonnes of CO; 23 tonnes of HC; 67 tonnes of NOx; 0.09 tonnes of Pb; and 4 tonnes of SO_2. Annual emissions were 46 000 tonnes of NOx (66% of annual emissions in Slovenia) and 4.9 million tonnes of CO_2 (33% of annual emissions). The share of domestic transport in total road transport is around 85%. The rest is foreign transport. Fulfilment of international obligations specified in the chapter on air will be important. The Kyoto Protocol requires a reduction of greenhouse gas emissions by 8%, therefore it will be necessary to control emissions of greenhouse gases caused by transport.

The National Assembly has already adopted or is about to adopt the documents which define the development of the motorway system and the modernisation of the railway and regional and main roads. These documents include environmental considerations. Attention needs to be given to the monitoring of the

101 The main detrimental effects of pollution are: changes in the properties of the forest soil; physiological weakening of trees and the appearance of larger clearings because of the necessary felling of damaged trees, which reduces the physical stability of forests; reduction of the forest's water retention ability and an increase in water erosion; threats to the natural habitats of wild animals; a reduction of the ecological and social functions of damaged forests; a reduction in the annual increment because of the general weakening of trees; a reduction in the quality of timber because of the large share of dry trees which soon degrade; an increase in the costs of lumber because of more frequent, small-scale felling; threats to the economic security of farms because of the reduced stability of forests.

102 Forest Act – Zakon o gozdovih (Ur.l. RS, št. 30/93)

103 Resolution on the Transport Policy of the Republic of Slovenia – Resolucija o prometni politiki Republike Slovenije (EPA365, Poročevalec št. 6/1998)

104 Final report on road transport – Končno poročilo za cestni promet, FAGG-PTI, 1996

application of solutions in practice. The National Assembly will soon adopt the transport policy of the Republic of Slovenia, which is focused on the problem of controlling transport flows with regard to various restrictions, including the capacity of the environment. The spatial planning aspects of transport will be discussed in the spatial development strategy and the national spatial plan, and are therefore not dealt with specifically.

The Strategy for Economic Development of Slovenia defines Slovenia's transport policy as a mechanism designed to ensure the achievement of a better quality of environment by:
- applying such price and tax policy that the prices of transport reflect the full price of fuel and other user costs and in this way influence the characteristics and extent of transport flows;
- transferring transport, especially transit, from roads to railways in more determined manner;
- applying a policy leading towards a greater role of public transport (promotion of regional local passenger transport);
- taking into account environmental and nature protection assessments in construction of transport infrastructure;
- providing corridors for animals whose migration routes are intersected by roads and railways;
- avoiding large areas of intact nature;
- laying down stricter environmental protection standards concerning transport (engine technology, fuel quality, expert adjustments of engines);
- limiting travel speed to a level at which fuel consumption is most efficient and reducing the amount of time that engines are running idle during travel time.

The measures of the NEAP regarding transport are divided into three groups:
- economic, technical and other measures for the reduction of pollution caused by transport;
- promotion of the sustainable development of infrastructure network;
- improved safety in the transport of hazardous substances.

The goals concerning the reduction of pollution caused by transport will be achieved by the implementation of the following measures:
- price policy for energy feedstocks (stimulating the consumption of fuels depending on their environmental effects);
- promotion of alternatives to car transport (modernisation of railways, construction of bicycle lanes, raising the quality of the city and local public transport);
- modernisation of public passenger transport and promotion of its privileged role within the city traffic plan;
- integrated management of stationary traffic in towns, including higher parking fees to be used for subsidising public transport;
- effective assessment of environmental impacts, when constructing new infrastructure facilities;
- management of discarded vehicles, spare parts, etc.;
- modernisation of technical standards (vehicles, fuels, etc.) and greater efficiency in assessing the conformity with requirements;
- limiting the speed of vehicles;
- limiting the use of herbicides on roads and railways;
- limit the use of calcium chloride ($CaCl_2$) for gritting roads in winter.

The goals set with regard to the sustainable development of infrastructure network will be achieved through the implementation of the following measures:
- measures laid down in the spatial plan of the Republic of Slovenia;
- promotion of combined transport;
- promotion of transport of goods by railway instead of road.

The goals set with regard to the safety in the transport of hazardous substances will be achieved through the implementation of the following measures:
- improved technical safety of transport corridors;
- identification of safe transport routes and provision of mandatory escorts for particularly dangerous loads;
- consistent enforcement of liability for damage.

6.3.5 Tourism

Main programme document: Resolution on strategic goals for the development of tourism in the Republic of Slovenia with a programme of activities and measures for its implementation[105]

Responsible ministry: Ministry of Small Business and Tourism

Travel and tourism are a part of modern life. Appropriately organised co-operation and expertise in the preparation and sale of tourist products facilitate the optimal use of all natural and other resources while observing the principle of sustainability. The development of tourism in Slovenia will have to be based on the quality of services which will value and preserve the natural and cultural heritage and the environment as fundamental tourist attractions and which will better satisfy the expectations and needs of tourists. A modern understanding of quality in tourism does not only relate to the basic tourist infrastructure but to the entire living environment. Therefore the development and preparation and the promotion and sale of tourist services have to take into account the complexity and interdependence of the natural and artificial resources of a given area.

Slovenia's activities in tourism will primarily be oriented towards the following:
- development of sustainable forms of tourism which facilitate wise use of space and environment-friendly activities, facilities and installations;
- development of a range of tourist services which in their marketing emphasise natural and cultural identity;
- development and promotion of public and NGOs activities which contribute to the protection and management of the environment and to the development of tourism.

The following measures are particularly important in view of environmental protection:
- granting of concessions for the use of natural resources in tourism;
- definition of criteria concerning environmental capacities of particular areas for tourism;
- improvement of technical requirements and norms for the renovation and construction of facilities which have to conform to norms of ecological acceptability;
- adaptation of tourism infrastructure to environmental protection and the preservation of natural and cultural identity;
- control of mass tourism where it causes unacceptable degradation of the environment.

105 Resolution on strategic goals for the development of tourism in the RS with a programme of activities and measures for its implementation – Resolucija o strateških ciljih na področju razvoja turizma RS s programom aktivnosti in ukrepov za njeno izvajanje (Ur.l. RS 7/95)

6.3.6 Programme Framework of Activities by Selected Sectors[106]

Table 10 Measures with regard to sectors

Industry	Energy sector	Transport	Agriculture and forestry	Tourism	
Control of emissions: • emissions/imissions regulations • national and operational monitoring • ISO 14001, EMAS • pollution taxes • development and application of more environment-friendly technologies • use of BATNEEC	Reduction of emissions: • definition of targets by pollutants • economic and fiscal incentives • radiation protection • ISO 14001, EMAS	Clean vehicles and fuels : • discouragement of the use of environment-unfriendly vehicles • greater safety in the transport of hazardous substances	Enforcement of sustainable production: • controlled intensive production, where unavoidable • controlled application of fertilisers and chemical preparations • education of producers and users • support to organic farming	Sustainable development: • protection of the basic resource of the activity • effective waste management • encouragement of mobility in accordance with the principle of sustainability • taking into account the environmental capacity of the area for the development of a particular activity	1
Reduction of quantity/ better waste management: • increased liability • ISO 14001, EMAS • deposit/refund • organisational measures • organised assistance in the preparation of projects	Wise use of resources: • rational use of energy • increase in the share of renewable resources • promotion of research and development • energy-saving house building	Management of transport flows with regard to environmental protection: • control of traffic congestion • more environment-friendly transport • reduction of the need for transport (informatisation) • protection of natural animal migration routes	Enforcement of modern principles of sustainability: • encouragement of the use of resources according to the principle of sustainability • introduction of mechanisms for the protection of resources	Protection of resources for tourism: • protection of cultural and natural heritage • protection of forests against fires • conservation of biological diversity	2
Environmentally -sound products with: • ISO 14001, EMAS and product labelling • modern production standards • consumer information • differentiated taxation	Low energy consumption: • introduction of various incentives • implementation of the efficient energy use programme • ISO 14001, EMAS and product labelling	Changes in the behaviour of drivers: • informing, education • alternative routes • incentives	Development of the countryside: • linking of tourism and agriculture • education • countryside management	Expansion of possibilities of choice: • promotion of environmentally more appropriate destinations and locations • better information • management of peak periods	3

Legend: 1 – impact of the activity on the environment; 2 – impact on resources; 3 – changed behaviour

106 Adapted from EC Environmental Action Programme, A.40.

6.4 Sensitive Regions

In the next five years Slovenia needs to devote special attention to the specific environmental problems of the coast region, the countryside, the karst and the mountain regions, and to the environmental problems in cities. The principal documents relating to the problem-solving in these regions are the spatial plan of the Republic of Slovenia; the development programmes of individual cities or settlements; and individual sectoral documents. Nevertheless, these regions are included in the NEAP because they represent specific areas where environmental problems are concentrated. These problems have to be controlled in order to ensure sustainable development.

6.4.1 Coast Region

In recent decades the coast region of Slovenia has been exposed to strong developmental pressures. This is reflected in a rapid growth of the population, urbanisation and the development of certain economic sectors (transport, trade, tourism, processing industry, agriculture). Both the biological diversity and cultural heterogeneity of the Slovenian coast face substantial threats. The quality of the coastal sea, drinking water (with an emphasis on the actual threat to the Rižana spring because of the transport routes) and the surface karst waters of Rižana and Badaševica is deteriorating and the pollution of air increasing. The basic public utility infrastructure is incomplete or decrepit, wastewater treatment plants are defective or inadequate and the problem of waste disposal has still not been solved.

The restricted space causes conflict between almost all development sectors with regard to sustainable development. In addition to its environmental problems the coast region suffers from poor roads and parking facilities, overcrowded roads, road accidents, noise, etc. The port creates spatial conflicts along its perimeter; environmental problems because of the transhipment of substances burdening the environment (coal and phosphates, dust from open depots polluting the air and water) and livestock (pollution of water); the possibility of environmental disasters. The spatial distribution of industry is unsuitable since some industrial facilities occupy valuable locations right on the shore (salt repositories in Portorož; Delamaris, shipyard and Mehanotehnika in Izola). Uncontrolled sewage outlets, high consumption of drinking water and pollution of the environment with harmful substances also cause serious problems. The development of tourism is still limited to the area or settlements directly along the shore. The consequences of this are overpopulation and noise during the season. Land drainage systems in valleys, the construction of water reservoirs and the pollution of soil and watercourses by fertilisers and pesticides have caused a reduction in biological and landscape diversity. In view of this, it is uncertain whether Slovenia will be able to fulfilling the international obligations.

In the forthcoming period the fundamental goal is to ensure the protection of the sea and coast and the predominantly karstic hinterland in accordance with the principles of sustainable development, on the basis of the widest possible social consensus and with the co-operation of as many participants as possible. The NEAP defines a range of measures designed to solve particularly urgent problems in this region. Key problems concerning land use will be addressed within the spatial plan of Slovenia. Important results are also to be expected from the Phare project designed to solve the problems of the coast region management. To ensure the necessary effect of all activities, we will have to[107]:

- improve the co-operation between ministries and regional and local authorities; and
- investigate the possibility of introducing public administration at the regional level or lay down a procedure for co-operation among municipal authorities and between them and the national administration.

These aims are in accordance with many international recommendations, which stress the importance of better co-ordination of bodies at various administrative, economic and other levels. They propose a more or less precise formalisation of such co-ordination. Priority projects concerning the coast region are included in individual programme groups of the NEAP (aquatic environment, waste).

107 EPR report, 1997

6.4.2 Countryside

Even in the past the countryside lagged behind urban areas and gradually changed its role, owing to general social conditions and industrialisation. Settlements close to urban centres have become dormitory towns, while farmland has been reserved for urban expansion (suburbanisation). Not all the countryside is equally sensitive. The karst region, for example, is particularly vulnerable. However, for methodological and practical reasons we have decided to deal with the countryside as a whole. In the NEAP specific characteristics of sensitive areas are taken into account in the goals and measures proposed.

Two types of settlement areas, problematic from the point of view of environmental protection, form the countryside:

1. **Areas of increasing population density**, where towns are expanding with satellite settlements into the countryside. In Slovenia such areas are gradually forming in the extensive traditionally urbanised Ljubljana basin; on the Dravsko-Ptujsko polje; the Celje basin; along the Slovenian-Italian border from Piran to Goriška Brda; and in general along the Slovenian motorway network.
2. **Areas of depopulation** are areas where the process of emigration and depopulation is strong and where ageing of the population and the degradation of the cultural landscape are pronounced. This phenomenon is evident mainly in the Eastern Slovenia (Kozjansko, Dravinjske Gorice, Haloze, Slovenske Gorice, Goričko); pre-Alpine highlands (Zasavje hills, Kozjak, the slopes of Pohorje, the fringes of the Slovenj Gradec basin, the Škofja Loka-Cerkno hills); and the valleys of Dolenjsko and the high mountain regions.

The result of the described social changes and the strong population growth in the out-of-town settlements, which surround manufacturing, supply and population centres, is a high level of daily commuting. This leads to an overburdening of infrastructure systems and mechanisms and increases environmental burden, reflected mainly in an excessive pollution of the atmosphere. With the industrial and general economic progress, city culture and industrial mentality started to permeate the countryside. The consequences of this are:

- degradation of the environment in settlements and of the cultural landscape with which settlements outside towns (countryside) are closely linked;
- in newly formed out-of-town settlements the new blocks of flats are not adapted to natural conditions and the human way of life and work; they encroach wastefully on vacant land and forcibly and inappropriately alter the architectural heritage; unsuitable materials and construction products are used; standards for new buildings are unsuitable when compared to those in the past; the location of buildings is aggressive and unsuitable in relation to all the values of traditional building in settlements;
- illegal building, which seriously disturbs the settled pattern of relations between man and nature.

The consequences of the lack of order in the regulation of out-of-town settlements are various. Some of the most important are:

- unwise changes in agricultural land use (i.e. building; the majority of new buildings are on flat land, which is most suitable for agricultural production);
- reduced production capacity of agricultural land (the land-use category of approximately 500 hectares of farmland is changed every year);
- utility services are expensive and incomplete. Partial problem-solving is typical for this are. It has resulted in the networks of cable conduits laid in a non-functional manner, temporary outlets and sewers, etc. The majority of new houses are not connected to the public collecting system but use cesspools which are not watertight. Many households discharge wastewater into nearby watercourses, sinkholes or even abandoned wells. Research has shown that the countryside is not polluted only by monocultural industrial agriculture excessively using pesticides, but also by the settlements generating large quantities of sewage, the consequence of inadequate collecting systems.

The basic goal is to halt and redirect the described trends. Other goals are:

- the preservation and development of regional identity and regional characteristics;

- uniform, balanced and sustainable development of settlements including environmental protection considerations, based on the reduction of population density in the vicinity of major towns and prevention of the depopulation in countryside areas where development has been neglected.

The spatial plan of Slovenia and the planning documents at the regional level will have to define measures for:
- sustainable development of landscape with regard to its functional, aesthetic, cultural and ecological characteristics;
- maintenance and renovation of existing buildings in all out-of-town settlements will have preference over new building; construction will mainly be possible on vacant land within settlements, on building land and in the areas with transport and utility infrastructure, in other words in the areas where infrastructure and public utility services can be provided in a most cost-effective and environmentally sound manner, taking into account rational use of vacant land and conservation of agricultural land and the natural environment;
- restoration and rehabilitation of poor quality areas and of degraded areas;
- increased transport-energy efficiency, which means that homes and workplaces need to be located in such a way as to reduce commuting, pollution of the environment and consumption of energy.

The following measures will have priority:
- provision of favourable terms for raising loans and of cheaper environment-friendly construction materials for organised house building;
- promotion of the exploitation of the existing building stock;
- promotion of construction on building land within settlements;
- drawing-up of projects at the regional or local level concerning the better accessibility of workplaces and of supply, service and cultural centres (especially by ensuring sufficiently frequent public passenger transport, which will reduce the use of private cars, etc.); special attention will be given to threatened regions in the karst;
- promotion of the use of environmentally less problematic alternative sources of energy (district heating, gas, heat pumps, solar energy, use of insulation materials in construction, etc.).

6.4.3 Mountain Regions

Preservation of mountain ecosystems is of fundamental importance for the population of Slovenia. Mountain regions provide renewable sources of energy and opportunities for recreation. Forests in these regions are particularly important for the conservation of soil and of water regime and for the protection against dangers. The mountain landscape is changing significantly because of the development of tourism and recreation, a decrease in population, soil erosion, landslides, etc. Mountain regions are generally economically and socially threatened, which merely exacerbates the problems. At particular risk are the west, south-east and part of the north regions, particularly the border mountain region and the karst region. There are a series of heavily polluted and affected locations in these regions (Krupa, Zavratec, Žirovski vrh, Anhovo, Mežica, clear-cuts along the Croatian border, etc.).

Mountains are given special attention at the international level. The emphasis is placed on the preservation of identity of mountain communities and of the essential role they play in the sustainable management of environmental resources, in the facilitation of recreation and in the manufacture of high quality products. Particularly important are the preservation and improvement of the mountain environment for future generations.

As a signatory to the Convention on the Protection of the Alps Slovenia has taken an important step towards reducing the threat to the mountain area; accepted the obligation to protect and ensure sustainable development in the Alps; and committed itself to ensure uniform policy for conservation and protection of the Alps through prudent and sustainable utilisation of resources and to observe the principle of prevention, the polluter pays principle and the principle of co-operation.

In order to achieve sustainable development of mountain regions, the following measures have to be taken:

- to significantly increase investments in these regions and ensure and preserve the identity of mountain communities and of the essential role they play in the sustainable management of environmental resources, in the facilitation of recreation and in the manufacture of high quality products;
- to promote environmentally-sound tourism and organic farming, which facilitates the production of high-quality food;
- to limit the traffic in mountain regions;
- to encourage the use of renewable sources of energy, for which there are many opportunities in these regions;
- to ensure support to mountain communities.

7. Measures to support the implementation of the NEAP

The insufficiently developed measures necessary for the achievement of environmental protection goals (covering the entire spectrum of instruments, from provision of effective institutional organisation, legislation and information system to measures designed to strengthen the role and influence of the interested public) is the basic reason for the lack of effectiveness of current environmental policy. The NEAP is based on the principle of maintaining a permanent balance between the level of organisation and the goals we wish to achieve in a specific period. In this way it hopes to bridge the gap between the goals and current organisation, which is already causing a spiralling lack of confidence in the effectiveness of environmental policy. In view of this, it is not possible to talk about priorities within this sector. All segments of the measures are equally important. The proposed activities are harmonised with the dynamics of defined goals and measures and in are in accordance with the basic guidelines of the EC Environmental Action Programme.

7.1 More Effective Administration

The primary role of the State is not focused merely on legislation, but also on economic planning and the establishment of conditions for economic development; on the use of land and natural resources; on access to information; on education; on the changing of market conditions (through taxes, etc.); on fiscal policies and other fields. The State also owns some companies and is therefore responsible for their environmental practices. It is an important investor, whose task is not only to observe environmental requirements but also to directly or indirectly maximise environmental goals. The Fifth EC Environmental Action Programme until the year 2000 is based on the assumption that industry hopes to gain an advantage over the competition in the market by improving its environmental practices and therefore substitutes the power of the state with the power of partnership. The situation is similar with other factors of environmental protection which is realised through the principle of shared responsibility[108]. This requires the active participation and co-operation of all relevant factors: national bodies; public and private companies; and the public, both in the role of citizens and consumers. Such co-operation is one of the conditions for a balance between short-term individual interests and the long-term interests of society as a whole. The balance cannot be achieved by constraint, but only by the co-operation of all involved, with a clear division of roles and responsibilities. Such position requires from us to widen the spectrum of environmental protection instruments to supplement the national regulatory mechanisms.

All national institutions should encourage the introduction of lifestyles which are in compliance with the principles of sustainability and which bring new quality to life. Agenda 21 specifies the goals and tasks for Slovenia in a special chapter entitled “State governed by the rule of law”, with an accompanying description of the current state of affairs. To a large extent it only considers the legislative and civil law aspect of the national administration and gives less attention to its system and organisational and other aspects. Agenda 21 stresses the global nature of environmental problems and at the same time the importance of the local level and its activities in solving them.

Slovenia, like other Central and East European countries, has an ineffective administration and lacks trained environmental protection personnel. Industry, however, is significantly better organised and through its independent response to events on the market compensates in part for the inefficiency of administration. At the same time the State is having difficulties enforcing solutions which do not accord with direct business motives of companies.

Slovenia is faced with a discrepancy between the tasks arising form the Environmental Protection Act and the present organisation of the administration. Available potentials and the long-term aims of the Strategy for Economic Development of Slovenia , which refers to *“slim administration”,* are not favourable to the strengthening of administrative apparatus. This means that traditionally neglected sectors, including environmental protection, are in an unfavourable position.

108 The principle is comparable to the principle of cooperation defined in the EPA (Article 7); the NEAP emphasise its operational dimesion .

With regard to the requirements of modern environmental protection instruments, the total or partial lack of personnel in several fields – most often concerning the legal and economic aspects of environmental protection – is particularly pressing.

The consequences of such situation are:
- the position (power) of the MESP with regard to the implementation of environmental protection goals is relatively weak within the national administration and does not conform to the new needs of the time;
- owing to operational needs, certain key individuals and sectors are overburdened at the expense of long-term and technically demanding tasks;
- research and specialist work for the needs of the MESP is not organised in a stable manner, which makes it more difficult to ensure the necessary professionalism of the work of the MESP;
- delays in the enforcement of contemporary legislation;
- operational problems in introducing EU-comparable practices in invitations to tender and the evaluation and monitoring of tendered projects for environmental protection subsidies (mostly investments in public utility sector) from the national budget;
- delays the processing of applications for concessions for exploitation of natural resources;
- problems in managing complex projects;
- the problems concerning the efficiency of the environmental protection inspectorate which, given the responsibilities stipulated in the Environmental Protection Act, is poorly staffed and satisfactorily controls only the largest polluters.

The priority goal of institutional strengthening is to raise the efficiency of the administration.

Institutional strengthening of the national administration as a whole, and of the MESP in particular, is one of the main conditions for approximation to the EU and for the management of environmental problems. A series of measures which will have to be introduced in accordance with this document will require the confidence of the general public in the work of the national administration and the MESP. The discrepancy between what has been announced and what has been done has shaken the confidence of the public. The tasks we will not be able to complete satisfactorily without the reestablishment of the confidence include: implementation of the waste management strategy (NIMBY effect); introduction of higher prices for natural resources and public utility services (water, gas, electricity, collection of wastewaters etc.); possible closures of industrial facilities and other sources of pollution which permanently burden the environment.

Under the Environmental Protection Act the MESP plays a leading role in the co-ordination and enforcement of the NEAP. To be able to carry out this organisationally and technically demanding task, the MESP has to be strengthened. If the conditions stayed the same, the implementation of the NEAP would be threatened.

The basic measures to be taken by the year 2008 have to be aimed at:
- demarcation of managing and administrative tasks and clear division between individual internal units of the ministry
- division of labour according to the principles of specialisation and linking of issues concerning the environment, space and nature through projects;
- staff reinforcement in certain sectors (economic and legal aspects, inspection) and better utilisation of existing potentials;
- strengthened co-operation within national administration and between national administration and the bodies at the local level.

In the first few years institutional strengthening or increase in the efficiency of the administration will be hindered by limited resources and possibilities to fill up staffing gaps. Experience gained from the introduction of effective organisational changes shows that because of the nature of the problem there are no quick solutions. It is unrealistic to expect that additional resources will be available for the staffing and technical strengthening of the administration, at least in the initial period. Therefore, finding ways to utilise human and other resources in the best possible manner will be of key importance in that period. The proposed measures are those which are financially less demanding and which are primarily based on the better utilisation of internal reserves (Table 11).

Table 11 Measures concerning institutional strengthening

MEASURES FOR ACHIEVING THE GOALS	DEADLINE	COST ESTIMATE (IN SIT MILLIONS)	POSSIBLE SOURCES OF FUNDING	BODY RESPONSIBLE
M-IS-1. Establishment of an environmental agency	2000	reallocation within existing sources	budget	MESP
M-IS-2. Drawing-up and implementation of a project for the functional demarcation of tasks concerning the environment, aquatic environment, space and nature	1999	5	budget	MESP
M-IS-3. Administrative strengthening with regard to legal and economic aspects of the environment and inspection	1998	12/year	budget	MESP
M-IS-4. The MESP in co-operation with the universities of Ljubljana and Maribor and the Faculty of Environmental Science in Nova Gorica sets up a system for the training of personnel to carry out tasks concerning environmental protection (national administration, local government, etc.) and enables the personnel to be trained abroad when relevant programmes are not available in Slovenia	Continuous	-	budget	MESP
M-IS-5. The introduction of a quality system in accordance with SLO ISO 9001 standard into the work of the MESP is to be considered	1999	-	budget	MESP
M-IS-6. Provision of conditions necessary for effective work of environmental protection inspection services (staff, equipment)	2003	-	budget	MESP
M-IS-7. Programme for improving co-ordination of work among departments	1999	2	budget	MESP
M-IS-8. Programme for improving co-ordination between the national and local levels of administration	1999	2	budget	MESP
M-IS-9. Setting-up of a system of indicators for the monitoring of the enforcement of sustainable development in accordance with Agenda 21 and the NEAP	2000	2	budget	MESP
M-IS-10. Compilation of an inventory of natural resources in Slovenia to ensure their sustainable utilisation	2003	10	budget	MESP

7.2 Research and Development

Research in Slovenia is fragmented and unharmonised. There is a lack of long-term strategic and interdisciplinary research aimed at understanding of basic processes in order to manage the current and future environmental problems. The study of social, legal, economic and health aspects of environmental protection is deficient. There is a critical shortage of staff in these fields. The transfer of foreign knowledge and technology is not critical and effective enough.

The link between environmental policy and the research sphere is too weak, despite the progress achieved with Target Research Programmes (TRP). The position regarding the inclusion of environmental protection specialists in the economic sector is even worse.

Without intervention these problems will only deepen, especially if funds for research and development in the field of environmental protection are further reduced. The result will be ever-increasing dependence on foreign know-how and low motivation of and lack of prospects for domestic

researchers. If experts are not included in policy making, we can expect measurable negative economic effects, the result of legal or administrative solutions which have not been thoroughly considered.

Situation can be improved only on the basis of changes planned over the long-term, which have to include both a material dimension and the establishing of ties between the state, the research sphere at all levels (institutes, the economic sector) and industry.

The basic goal is to control the entire cycle of environmental protection research – identification of problems, simulation of procedures, formulation of proposed solutions and monitoring of their effectiveness.

The long-term goals and orientations are:
- stable long-term link between the State and all qualified research and development entities;
- formation of research groups capable of carrying out the projects for conducting effective environmental policy;
- drawing-up and tendering of interdisciplinary projects for conducting effective environmental policy;
- activation of specific programmes such as programmes guaranteeing low CO_2 emissions, programmes concerning biomass and renewable energy resources, biotechnology programmes (e.g. integrated control of pesticides), etc.
- expansion of programmes concerning clean technologies, recycling and reuse of materials and other programmes;
- permanent inclusion of researchers in international projects with the priority goal to train personnel;
- maximum inclusion of trained personnel in the economic sector.

Measures for achieving these goals are shown in Table 12.

Table 12 Short-term measures concerning research and development

MEASURES FOR ACHIEVING THE GOALS	DEADLINE	COST ESTIMATE (IN SIT MILLIONS)	POSSIBLE SOURCES OF FUNDING	BODY RESPONSIBLE
M-R-1. Implementation of research projects based on the NEAP orientations and necessary for its implementation (applied research)	annually	80	budget	MESP
M-R-2. Implementation of target research programme concerning the environment with regard to priority areas	annually	40	budget	MESP, MST
M-R-3. Formation of a main centre for the co-ordination of environmental protection research within the environmental agency (register of environmental research, demonstration projects and experts)	2002	-	budget	MESP, MST
M-R-4. Offering scholarships for undersubscribed programmes for staff in the national administration	2000	6/year	budget	MESP
M-R-5. Promotion of participation in international scientific research in deficient fields	continuous	-	budget	MESP
M-R-6. Promotion of the application of modern technologies	continuous	-	budget, Phare, Eco-Fund	MESP

MST - Ministry of Science and Technology

7.3 Environmental Protection Information System

Slovenia has taken on many international obligations related to the environmental protection information system (EPIS). The majority of cases relate to the rights granted to individuals, from basic human rights and the right of access to information to the right to take part in the process of environmental decision making. The European Environment Agency - EEA (Slovenia is in the process of becoming a member), together with the newly founded European Environment Information and Observation Network - EIONET, plays a major role and has great responsibility in the common information system at the European level. The process of integration of Slovenia into the EIONET is progressing rapidly. It is expected that in 1998 the necessary information equipment will be supplied and basic training carried out to facilitate the work on EIONET. We hope to receive assistance from the EEA. At the same time we are aware of the new obligations to be taken into account and fulfilled.

The legal bases for setting up the EPIS are laid down in Article 69 (monitoring), Article 73 (EPIS) and Article 74 (statistics) of the Environmental Protection Act. Under the National Statistics Act[109] the MESP should propose methods of data collection and processing, while the Statistical Office of the Republic of Slovenia should give its opinion on the MESP's proposal. The provisions have not been operationalised. In certain segments the linking of informatisation has been successful: e.g. the Hydrometeorological Institute, the database on special waste, etc. However, it is not possible to talk about a harmonised and integrated system which would observes EU requirements (e.g. Eurostat).

Basic data banks, such as basic records, registers and cadasters, are the most important parts of information systems and it is because of them that information systems are built. The main purpose of these banks is to offer a basis for determining the state and trends of environmental pollution and for understanding and knowledge of ecosystems and natural resources in relation to socio-economic indicators. The second purpose is to provide relevant data to support decision-making processes, public information and the preparation of environmental education programmes. These banks are also a basis for environmental statistics and analyses and for various publications (including in electronic form – Internet) public information.

The basic goal is to set up an EPIS which will ensure effective conducting of environmental policy and will conform to EU requirements, using the following advantages which Slovenia has over other countries:

- numerous administrative registers with an active records-linking core and the best possibility for geocoding in Europe;
- a new, centrally administered database of the written part of the land cadastre;
- high-quality monitoring and databases;
- some high-quality statistics which conform to EU requirements, and experience gained from traditional collection and communication of environmental data (report on the state of the environment);
- sufficient number of good experts, although they are not properly associated.

In the technical implementation of the EPIS it will be necessary:

- to clearly define the method of collecting environmental data and find the best ratio between data collected indirectly through the system of reporting production results and data collected directly through the expansion of the monitoring network (the national network and polluters' monitoring networks);
- to establish a Slovenian institution comparable to the EEA to serve as a central institution for the collection, processing and publication of data (the institution will have to take over all the functions necessary for building a system compatible with the European one, which will collect, process and publish the data necessary for informing the public; for making important environmental decisions; and for monitoring the effectiveness of these steps); the agency also has to carry out all the technical work connected with the gradual building of the EPIS, in close co-operation with other departments and the Statistical Office of the Republic of Slovenia;

109 National Statistics Act – Zakon o državni statistiki (Ur. l. RS, št. 45/95)

- to observe the principle of formal responsibility for environmental protection and the collection of statistical data the principle of specialist qualifications for performing individual functions in establishing an EU-compatible EPIS adapted to Slovenia's needs.

Measures for achieving these goals are shown in Table 13.

Table 13 Measures concerning the EPIS

MEASURES FOR ACHIEVING THE GOALS	DEADLINE	COST ESTIMATE (IN SIT MILLIONS)	POSSIBLE SOURCES OF FUNDING	BODY RESPONSIBLE
M-INFO-1. Adoption of a regulation on the EPIS (Article 73 of the Environmental Protection Act)	1999	1	budget	MESP
M-INFO-2. Regular reports on the state of the environment	every 3 years	5/year	budget	MESP
M-INFO-3. Setting-up and maintenance of the EPIS[110] (up to 5 employees, additional equipment required)	2000	40/year	budget	MESP
M-INFO-4. Setting up a Slovenian EIONET centre	1998	6/year	budget	MESP

7.4 Harmonisation with the EU Legislation

On 10 June 1997 the Republic of Slovenia signed an agreement establishing an association between Slovenia and the European Union - The Europe Agreement (Ur. l. RS-MP, št. 13/97 - Ur. l. RS št. 44/97). The Europe Agreement stipulates frameworks and conditions for Slovenia's gradual integration into the EU. One of the foundations of the agreement is contained in Articles 70 and 71, which state that Slovenia will gradually harmonise its legislation with that of the EU. This is one of the provisions, which are being implemented very intensively and are of key importance for the approximation process.

The MESP has a long-time experience in the harmonisation of environmental protection legislation. Already in 1989 it published a White Paper which lays down its orientations concerning the modification of the legislation, albeit within the political, economic and legal frameworks of the former Socialist Federal Republic of Yugoslavia and the socio-political system of the time. The orientations were unambiguous (adaptation to European legislation), since the EU legislation at that time was advanced with regard to environmental protection. The signs of self-isolation were already evident (dumping, etc.) and would intensify if we had not decided to harmonise the environmental protection legislation with that of the EU. The very first legal document concerning environmental protection adopted in independent Slovenia (Environmental Protection Act) was in compliance with certain key EU environmental protection directives. With independence and the actual decision to join the EU, this approach became irreversible and all-embracing. The all-encompassing nature of accession has first become evident at the terminological level - it is no longer a process of harmonisation of environmental (and other) legislation, but a process of total transposition and implementation of EU legislation.

To assist Slovenia in the process of harmonising the legislation with that of the EU, the European Commission has prepared a White Paper listing the legal documents which are most important with regard to free movement of goods, capital and services and which must be adopted as quickly as possible by the national legal system.

Only a few of the listed documents relate to environmental protection. This field is more extensively covered by the legislation not included in the White Paper, which forms the legal system of the EU or

110 Setting-up of a database on toxic substances, harmful substances and pathogenic micro-organisms and its coordination with the database on other hazardous substances – including wastes.

the *acquis communautaire*. It has soon become evident that accession to the EU will require the transposition of the entire EU legislation, not only of the legal documents contained in the White Paper. The legislation from the White Paper is certainly a priority, but upon the accession to the EU all EU legislation will have to be transposed into national law and implemented.

In addition to the more or less institutionalised structures, whose task is to harmonise the legislation, each individual ministry has a particularly important task as the body responsible for legislative projects. Analysis of the legal documents from the White Paper and other legal documents governing the environment, and of their concordance with domestic legislation is being carried out at the MESP. Tables of concordance are being drawn up for individual legal provisions. The tables will help us to determine the priorities and draw up a legislative programme and to assess the concordance while drawing up regulations. They will also serve as a basis for the fulfilment of the conditions for full membership to the EU, as specified in the said Articles of the Europe Agreement. The principal work of the MESP is the everyday drawing-up of individual regulations, which have to contain in their entirety the requirements of the corresponding EU legal documents.

7.5 Economic Aspects of Environmental Protection

The remediation of large pollution sources, causing main environmental and health problems, is closely linked to privatisation and the transition to a market economy[111]. In addition to the classic problems relating to the remediation of old trouble spots[112], two groups of tasks will be particularly important:

- ensuring the functioning of public services[113];
- searching for the best ways to encourage “win-win” solutions and solutions in accordance with the principle of good management to reduce emissions of all types, which would be the result of the tendency of economic sector to reduce costs.

On the basis of international comparisons[114] it has been determined that Slovenia is the country with the least developed market instruments in the field of environmental protection, not just in comparison with the EU but also with the Central and East European countries. The main characteristics of the situation are:

- of the whole range of possible economic instruments, only taxation for burdening the environment with wastewaters and taxation for polluting the air with CO_2 emissions (CO_2 tax) have been introduced; if the company responsible for burdening water submits an investment programme for projects aimed at the reduction of burdening, it is entitled to tax deduction in the amount of investment; the CO_2 tax is a revenue of the integral budget;
- the situation concerning voluntary instruments is somewhat better, especially in the environmental management of companies[115].

Of other problems the following should be emphasised:

- the prices of public utility services are still not formed in the manner established in the EU, although with the decree on price formation the rigid administrative setting of prices is no longer applied;

111 The immediate investments in preservation of health vary from area to area; in some places it is a matter of replacing coal with gas or of providing better air filters (areas with excesively polluted air), while elsewhere it might involve pre-tretment of industrial waste waters (areas with a seriously threatened groundwater) and sometimes waste management, particularly the management of toxic, hazardous and radioactive waste. Priority investments are also specific for each area, for example the construction of waste water treatment plants and facilities for the reduction of air emissions in order to conserve rare biotopes, coastal regions or tourist reserves.

112 Priorities are and will be determined for investments or assistance (tax reliefs, partial subsidising of investments, favourable loans, etc.) with regard to the situation in the area. In the economic field these are mainly large industrial complexes such as ironworks, smelteries, mines, the basic chemical industry, textile and paper industries and other industries which emit large quantities of substances into the air, water and soil.

113 Particularly drinking water supply, collection and treatment of waste waters, management of urban waste and the keeping of records on the consequences of dumping toxic, hazardous and radioactive wastes.

114 PHARE task force TA to the MEPP; Dr Kwiatkowsky: The Environmental Development Fund of the Republic of Slovenia

115 In 1995 and 1996 the Slovenian Institute of Quality and Metrology coordinated a pilot project for the introduction of an Environmental Management System (EMS). Slovenia was the first of the Central and East European countries to acquire the ISO 14001 standard.

- there is no stabilised systemic source of funding relating to pollution;
- the internalisation of external costs of pollution is too slow;
- environmental accounting is not yet operational;
- the Environmental Protection Development Fund of the Republic of Slovenia is financially weak.

The consequences of this situation are:
- restructuring in the sectors of production and public and personal consumption in favour of reducing the burden on the environment is too slow;
- the economic sector does not have clearly defined long-term conditions of management, which prevents the gradual adaptation of the economy to the new requirements; approximately 70% of the Slovenian economy is export oriented and clarity of the conditions of management concerning environmental protection is for the majority of companies a condition for survival on developed markets**116**;
- without liberalisation of the prices of natural resources (e.g. water and energy) it is practically impossible to use what is in world practice the most powerful lever for the more rational use of natural resources and energy.

Under the NEAP economic instruments play a dual role. They a source of funds for the implementation of environmental protection programmes and a motivation for all environmental protection entities in with regard to the enforcement of the principle of good management. In this way economic instruments replace the rigid levers of regulatory environmental protection, which is more successful but considerably less effective and above all does not guarantee sustainable development.

Economic instruments ensure the inclusion of environmental costs in the business costs of economic entities[117]**. The system of economic incentives has to be designed in such a way that it encourages manufacturers and consumers to use resources in a more "environmentally successful" manner. The application of economic instruments represents a source of revenue which can be rationally used to cover the costs of environmental protection**[118]**.**

The long-term orientations concerning this segment of environmental protection policy are:
- environmental protection expenses will be treated as investments;
- local communities will have more autonomy;
- market instruments will preferentially be aimed at the change in the final consumption structure taking into account environmental protection;
- direct participation in decision making on development projects will be guaranteed;
- the State will gradually increase the funds for the remediation of large pollution sources in its possession.

In problem solving we differentiate between two areas**119** with regard to the instruments applied: the economic (industrial) area of the private sector; and the sector of public and state-owned companies, including public utility services and large state systems such as railways which will not be privatised in the near future.

Economic (industrial) sector. The main goal is to guarantee clear conditions of management, at least for the medium term. Priority will be given to the introduction of the following instruments:
- enforcement of increased charges for emissions of individual pollutants, at least to a level comparable with that of the EU;

116 These problems will get worse and will be solved in parallel with the processes of harmonisation.

117 The EC Environmental Action Programme specifies the use of fiscal instruments as a priority approach to the integration of the economic and environmental aspects of economic development in the entire life cycle of a product. It also promotes the idea that environment-friendly products should be a comparative advantage of all new-age economies.

118 Economic instruments for the protection of the environment must be applied so that they guarantee the observance of EU standards (in particular the provisions of Articles 9-12, 30-36, 92-93, 95, 99, 100a, 130r and 130s of the Treaty of Rome); the recommendations of the European Commission laid down in the document "Communication to the Commission Policy Making and Management"; and the provisions of the World Trade Organisation (the principles of free trade, non-discrimination of factors of economy).

119 This division is necessary because of the different approaches and instruments necessary for solving priority environmental protection problems in the two areas.

- gradual increase in the prices of specific energy feedstocks and raw materials (progressive taxation of energy feedstocks with comparatively high emissions and uniform taxation of natural non-renewable resources)[120];
- liberalisation of prices for water consumption, discharging wastewater and of waste management services;
- differentiation of tax rates for different fuels (higher taxes on fuels with greater CO_2 emissions);
- abolition of subsidies for coal and intensive agriculture (compensations for price discrepancies, subsidies for seeds, subsidies for investments in current production, guaranteed purchase or State credits for the wheat harvest, the lowest rate of sales tax for agricultural machinery and for pesticides and artificial fertilisers);
- introduction of subsidies for organic farming; specific tax reliefs for the introduction of energy-efficient technologies and for highly profitable investments in environment-friendly equipment; other reliefs for the support of "win-win" solutions - e.g. the efficient use of energy, the introduction of low-emission technologies, etc.;
- introduction of state guarantees or securities for infrastructure projects;
- provision of a successful method for the use of financial resources[121] which is acceptable to the state and to companies and of a procedure for managing the ecological reservations (funds companies have reserved for environmental protection).

The sector of public and state-owned companies, including public utility services, operates within the system of public finances in the broad sense. Additional financing in this sector will have to be provided through funds collected from polluters, which will restitute the costs of environmental protection through:

- the Environmental Protection Development Fund[122] (expansion of the systemic resources of the fund will be necessary; the fund should take over the banking service of granting subsidies, which otherwise remain the exclusive responsibility of the MESP; the fund will adapt criteria for all forms of assistance according to the NEAP);
- the integral budget in the form of subsidies or grants (technical implementation can take place through the Environmental Protection Development Fund);
- taxes used directly to reduce emissions into the environment (by a method envisaged in the decree on the water pollution tax or a similar one);
- increased prices of public utility services[123];
- tax reliefs for individual products and/or services, which rather than being collected in the integral budget are collected and used directly to reduce emissions (indirect financing of non-profit segments organised as concessions);
- financing of actions and/or services on the basis of a deposit and refund instrument[124] for pollution not yet caused;

The priority goals until 2003 with regard to the economic aspects of the environment are:

- to encourage the increase in economic sources for investments in environmental protection projects and in budget expenditure and in this way indirectly reduce pollution;
- to evaluate natural resources with a view of estimating national wealth;
- to develop and introduce indicators for renewable resources;
- to promote the introduction of tax reliefs for investments in environmental protection projects;
- to develop and apply environmental accounting;
- to introduce a system of deposits and refunds in relation to the system of taxation (cars, packaging, car tyres, etc.)

120 Which in practice means the introduction of an "environmental tax" in accordance with Article 10 (Paragraph 4) of the EPA.
121 The financial potential of "ecological reservations" is DEM 435 million over the next 3-7 years (taking into account the just over 100 companies with "ecological reservations" approved by the MESP on the basis of rehabilitation programmes).
122 The conditions described under the indent "Eco-Fund"
123 Details described under the indent "Prices of public utility services". Gradual liberalisation of the prices of public utility services requires the simultaneous enforcement of a system of public utility service standards.
124 Considering the encouraging results of foreign practice, the gradual introduction of deposit and refund as a successful instrument in the field of mass consumption is reasonable, since it includes all the consumers of those products to which the application of the instrument relates (e.g. packaging, unusable and harmful remains of products, etc.).

7.6 Public Environmental Protection Services

Owing to the complexity of environmental protection, problems concerning particular environmental components should be addressed by individual sectors. There is no need for all activities to be organised as public environmental protection services, even though they assume the environmental protection tasks in individual sectors (industry, mining, energy sector, agriculture, forestry, transport and tourism). The same applies to the institutional support provided for environmental protection policy and administrative structures at the national, regional and local level. Research and spatial planning, which is closely connected with environmental protection, are no exceptions.

The NEAP does not discuss the environmental protection problems and measures which should be a constituent part of individual sectoral programmes and does not regulate the public utility services which fall within the competence of these sectors. Within the sectors themselves, it is decided which activities will be performed as public services.

Energy sector (district heating, gas pipeline network, etc.), agriculture, forestry and transport are the main sectors which operate through public utility services. Public utilities are normally included in public environmental protection services at the local level.

The public utility sector comprises the following: maintenance of the functional and operational capacity of public utility systems; the economies of scale and business capacity of local communities to ensure public utility services; higher level co-operation (inter-municipal or regional); and register of *public utility facilit*ies.

The basic problems are:

- often neither regular nor substantial maintenance of public utility systems are provided; there are several reasons for this: public utility services price freeze in 1992, the badly thought-out reform of local government in this sector and the uncontrolled privatisation of most profitable former public utility companies;
- because of unsolved relationships between various levels and entities, the dynamics of investments in public utility facilities is threatened; this is the consequence of the local government reform carried out without prior analysis of the ability to operate in the public utility sector and without precise definition of the responsibilities and duties of the communities; demarcation between local and national public services is not clear; the absence of such services makes further development impossible;
- problems related to the register of public utility facilities are becoming more and more pressing; this register is the basis for making decisions on the maintenance, management and administration of public utility facilities; public utility facilities are the basic infrastructure necessary for solving environmental problems related to the entire sphere of public utility services, i.e. to the entire population[125].

The problems listed above will worsen over the next few years if no effective solutions are offered soon[126]. Problems will mainly appear at the local level. They will then quickly and easily spread to the regional and national level and will acquire, in addition to the narrow sanitary/hygiene and environmental dimensions, a political dimension. The consequences are hard to predict. The country can be put into a “dumping position”[127] even by the failure to provide environmental data. This could also result from the unregulated situation in the whole public utility sphere.

The basic goal is to ensure the achieving of public utility or environmental standards which guarantee a transition to the EU. The executive goals are:

125 According to the decision of the Geodesy Administration of the Republic of Slovenia, since 1 January 1995 the register of public utility facilities is no longer the official record kept by its branch offices at administrative units. After 1 January 1995 this function should have been taken over by local communities, though expert assessments suggest that they will not be qualified to carry out this task for at least five years, because of a lack of personnel and equipment.

126 The number of problems similar to the waste dumping in the Radovljica municipality will continue to increase, not just in the area of waste but in all other areas of public utility services related to environmental protection.

127 See the chapter on the environmental protection information systems

- *to ensure the functional and operational capacity of public utility systems* by issuing implementing regulations on: minimum standards of maintaining and ensuring the functional capability of public utility facilities; the calculation and use of depreciation funds for these facilities and for transferring the responsibility for forming prices of public utility products and services to local communities;
- *to ensure that the economies of scale and business capacity of local communities to provide public utility services is taken into account*; this will be achieved through the issuance of a normative act on financial and other state aid in the case of amalgamation into larger supply systems and through the designation of wider regions of public utility services in the national spatial plan;
- *to establish a register of public utility facilities*; this is related to the amendment to the Act on the Register of Public Utility Facilities[128] and to the issuance of a decree on the harmonisation of register data with the actual situation.

7.7 Measures for Enforcing the Principle of Integration

Status and problems. Since Slovenia become independent in 1991, parliament has adopted many different acts of a developmental nature (national programmes, special development laws, strategic orientations and strategies). The fact is that acts are not in mutual concordance with regard to environmental protection requirements. Neither do they all take into account the adopted aims of Agenda 21.

According to Environmental Protection Act, the NEAP is designed for a 10-year period and is harmonised with national programmes and plans concerning other fields. The NEAP consistently follows and adopts the aims of the Strategy for Economic Development of Slovenia. Those goals which are not contrary to the NEAP have been selected from the already adopted long-term sectoral goals.

The problem of harmonising individual development acts is one that affects the entire national administration, not only the drawing-up of the NEAP. Inconsistency between the programmes can have various consequences, which are reflected either in the reduced effect of available resources or in the mutual threatening of the substance of activities, or are expressed at the political level, which as a rule leads to the deepening of disproportions because of objectively necessarily enforced solutions.

It is only possible to solve this problem in a long term by enforcing the harmonised programming of the development plans of sectors with the necessary institutional changes at the national administration level. To achieve this goal it is necessary:
- to ensure efficiency of the Sustainable Development Council;
- to revise sectoral programmes with regard to the requirements of the Environmental Protection Act and assumed international obligations;
- to draw up strategies for individual environmental protection fields and the utilisation of natural resources (air, waste, noise, water, etc.);
- to introduce a system of monitoring of the implementation of specific and sectoral programmes.

7.8 Education and Training

Slovenia has a relatively long tradition in raising public awareness in relation to nature and the environment. Certain influential non-governmental organisations which have included these tasks in their programmes have played an important role: the Slovenian Mountaineering Society (in the 19th century), the Museum Society of Slovenia and the Natural History Society of Slovenia (between the Wars), the Scout Association of Slovenia, the Association of Environmental Protection Societies (after World War II) and a great many movements and societies from the 1980s onwards. Nevertheless, despite this wealth of activity, these factors have never united to adopt a common approach to the raising of environmental public awareness.

128 Act on the Register of Public Utility Facilities – Zakon o katastru komunalnih naprav (Ur. l. SRS, št. 26/74)

Slovenia's education system is well organised and structured. It includes environmental education at nearly all levels. Unfortunately, general education is still too limited. It should induce changes in behaviour patterns and include information which is the basis for an active participation of the individual in the formulation of environmental policy. Not enough emphasis is placed on the critical approach to problems and the simultaneous search for solutions, and too much on the mere identification of problems and useless criticism. At higher education levels students of law, economy, administration and interdisciplinary environmental studies do not receive enough environmental education. This causes a problem in the educational process itself (lack of personnel), in the national administration, public companies (public utility services, etc.) and the economic sector. This is another reason that problems arise during the co-ordination of programmes, information and all activities relating to environmental education and training.

Donors in the West actively support all forms of environmental education[129], primarily of course, in the interest of Western countries (employment of their experts) and with long-term aims (reduction of unfair competition of Central and East European producers and reduction of direct emissions of pollutants from Central and East European countries into the countries of the EU). The problems are long-term and mainly related to the changing of life patterns and acceptance of the fact that environmental pollution is the result of human activities. Trends in environmental education and training are more or less positive, but a problem may develop if too much information of all sorts is available and if the described problems are prolonged. After the modernisation of the primary school system, environmental education, which today forms a part of the curriculum of various subjects, will become an optional subject. At all education levels and in companies and institutions, more attention will have to be devoted to the integral aspect of environmental education.

The long-term goal is environmental education which will enable students to acquire knowledge, skills and an environmental awareness throughout their education, from primary school to university.

Measures for achieving these goals are shown in Table 14.

Table 14 Short-term measures concerning education and training

MEASURE	DEADLINE	NEEDED FUNDS	BODY RESPONSIBLE	POSSIBLE SOURCES OF FUNDING
Review of environmental themes in textbooks and the drawing-up of environmental studies programmes	1999	-[130]	MES	budget, PHARE
Support to the implementation of education and training programmes	continuous	-	MES, NEI, MESP	budget, PHARE
Promotion of the participation of experts in the education process	continuous	-	MES, NEI	budget, PHARE
Programme for training specialists in deficient fields	continuous	-	MESP, MES, MH, MST	budget
Introduction of education programmes as a basis for the implementation of individual environmental protection instruments (e.g. ISO 14001)	continuous	-	MESP, CCI, MEA	budget

MES - Ministry of Education and Sport
NEI - National Education Institute
MH - Ministry of Health
MST - Ministry of Science and Technology
CCI - Chamber of Commerce and Industry
MEA - Ministry of Economic Affairs

129 Opportunities for such transfer of knowledge include the TEMPUS programme, the Regional Environmental Centre in Budapest, the Phare programme, UNEP programmes, Foundation for Environmental Education in Europe (FEEE) and a range of other possibilities.

130 This measure can be carried out within the framework of regular activities and additional funds are not necessary.

7.9 Environmental Awareness and Participation of the Public

It is very important that the general public participates in the formulation of environmental protection policy, if we want to follow the principles of sustainable development. Individuals, groups and organisations have to be acquainted with ecological and development decisions, especially those which affect their communities, and have to participate in their adoption. In order to make mature decisions, access has to be provided to all relevant information concerning the environment and development.

An important indicator of the environmental awareness of society are non-governmental organisations, which have been operating both in Slovenia and abroad for a number of years and which are an important factor in the enforcement of environmental protection policy.

One of the conditions for the successful implementation of the NEAP is to establish a communication with the public. Such communication should not only comprise the presentation and explanation of the government's environmental protection policy, but should become its constituent part. Important social changes dictated by sustainable development require the support and co-operation of the general public. Communication is regular and includes informing of the public (press releases, press conferences, interviews, etc.) and a range of other activities (regular and occasional publications, organisation of public events, etc.). Interested public can participate in the drawing-up of general legal acts and strategic/planning documents.

The principal goals are:
- to develop methods of raising awareness and of training suitable for all social groups, which is a condition for the development of environmental and ethical awareness, the development of values and a responsible attitude towards the environment;
- to provide the interested public with simple access to information and establish publicly accessible databases;
- to establish permanent communication channels with all potential partners;
- to increase public responsibility for the enforcement of sustainable development through active public participation in the institutional environmental protection management and thus divide responsibility among all active entities of society (national authorities, local authorities, interest groups, NGOs, local businesses and the local economy, scientific and research institutions, financial institutions and development funds ...).

Table 15 Short-term measures concerning the raising of environmental awareness and participation of the public

MEASURE	DEADLINE	NEEDED FUNDS	BODY RESPONSIBLE	POSSIBLE SOURCES OF FUNDING
Provision of information on the environment (Internet, bulletin on the environment and spatial planning, annual reports of the MESP)	continuous	additional funds not necessary	MESP	budget
Drawing-up of a programme for the establishment of an environmental library and information service	1999	2	MESP	budget
Promotion of the issuing of popular and specialist publications for the general public and particular target groups	continuous	additional funds not necessary	MESP	budget
Introduction of a programme for additional training in environmental protection for journalists and editors	2000	2	MESP	budget
Promotion of environmental campaigns to raise awareness and of incentives designed to change the consumption patterns in accordance with the principles of sustainability	continuous	2/year	MESP, consumers protection organisations, NGOs	budget

Drawing-up of a programme for the co-operation and financing of NGOs	1999	-	MESP, NGOs	budget

7.10 International Co-operation

Slovenia's problems and tasks concerning international co-operation are to some extent similar to those in neighbouring countries and to some extent they are a reflection of Slovenia's special features and its political and economic heritage. When defining the goals of and implementing international environmental protection policy, it is important that we recognise and respect the specific nature of conditions in Slovenia, so that we can ensure that our interests are realised. Special circumstances or specific national interests should not and cannot be an excuse for deficiencies or failure to meet assumed international obligations.

By signing the Europe Agreement, Slovenia accepted the foundations of EU environmental protection policy and committed itself to set up instruments for its enforcement. In view of this, active monitoring of the adoption of new environmental protection requirements within the EU and the incorporation of these requirements into the Slovenian legal system are necessary. Upgrading of the institutional system to put these requirements into practice is also needed.

Slovenia has to find a proper place in the international community through:
- consistent fulfilment of the financial and substantial obligations on the basis of the membership to or participation in international integrations;
- ratification of relevant international treaties concerning environmental and nature protection and the protection of international waters, as soon as possible;
- monitoring of, and if possible, participation in the drawing-up of new international treaties concerning environmental protection or sustainable development;
- incorporation of the principles of sustainable development into the foreign policy strategy;
- strengthening of co-operation with neighbours in border regions and joint solving of environmental problems with neighbouring and other countries, where necessary.

Full membership to the EU is Slovenia's main short-term foreign policy goal and one which guarantees the country a suitable place in the free exchange of goods, services and knowledge within European countries. Such position demands from Slovenia (in addition to harmonised environmental protection regulations and standards) to play an active role in international community and in the global solving of the current and prevention of future environmental problems. Slovenia's human and financial resources are extremely limited in comparison to the world. Nevertheless, Slovenia should carefully follow events in the international community and actively participate in those environmental protection activities for which it has human and financial resources available.

Efforts need to be made to ensure that environmental protection achievements of Slovenia are recognised in the international community and that Slovenian experts and institutions are included in the international exchange of knowledge and experience. Until Slovenia becomes a member of OECD, we should take the opportunity to include Slovenia's representatives in the activity of the working groups of the OECD's Environment Policy Committee (EPOC), where they can establish themselves as reliable and useful participants.

In a few years Slovenia will have concluded its period of transition into a developed country. Thereby it will no longer be entitled to various forms of development assistance from abroad. Slovenia will become more and more involved in providing financial and other forms of assistance to developing countries. One of the important steps which will gradually place Slovenia alongside other developed countries in the international community and in this way promote it as a competent partner in the process of ensuring sustainable development in the world, is the contribution to the GEF in 1998. In order to maintain and strengthen this orientation, it is necessary to ensure that the development and foreign policy of Slovenia take into account the aspects of sustainable development.

Slovenia's geographic position and economic ties with Europe are a powerful factor in determining the priority goals of its foreign policy in the field of environmental protection. Direct co-operation of local

communities of neighbouring countries in the border regions can produce many concrete results. The most appropriate level for this sort of direct co-operation is the regional level. In order to provide the regions of neighbouring countries with a suitable partner, it would be necessary to consider ad hoc integration of interested Slovenian municipalities. The regionalisation of Slovenia and the establishment of a (self-)government level as a link between municipalities and the State will undoubtedly contribute to the effectiveness of Slovenia's participation in international integrations of this type.

Slovenia is primarily orientated towards solving the environmental problems at home and in co-operation with neighbouring regions and countries. Nevertheless, it should plan its global activities, particularly in relation to developing countries. Many of these countries are the weak links in the world chain of environmental problems, on the other hand though, they might significantly alter the global distribution of economic and political power in the coming decades.

Slovenia could become an active link between the EU and former Yugoslav republics in the area of environmental protection activities. It is in the interest of both Slovenia and other participating countries that it fulfils this role as effectively as possible. Therefore Slovenia has to revive and improve those connections which in the opinion of future partners have been fruitful and promising. Such co-operation should be encouraged in the area of scientific research and in business. State bodies should above all play the role of catalysts in this process.

Within the global division of responsibilities Slovenia's priority development tasks concerning sustainable development are:

- to ensure that environmental protection will be taken into account to the same extent as other factors that define Slovenia's development its foreign policy;
- to ensure the assertion of its interests in the common foreign policy of the EU and the maintenance of balance between European and global aspects in international co-operation in the field of environmental protection;
- active participation in international instruments for assisting developing countries, particularly International Development Assistance (IDA), the Global Environment Facility (GEF) and relevant instruments of other organisations or instruments based on international treaties;
- to ensure that our experience is promoted in the international community where it is valuable for other countries and regions of the world (the Alpine and coast regions, conservation of biological diversity, etc.);
- to promote creativity in the upgrading of legal system for the protection of the environment and nature and, if necessary, establish mechanisms whose requirements will exceed international obligations and expectations (this could also induce similar development in other countries);
- to strengthen bilateral co-operation in environmental protection activities and to promote mutual assistance between countries where the state of the environment and environmental problems are most comparable to those of Slovenia; special attention has to be given to the strengthening of co-operation in the protection and development of the northern Adriatic and to the gradual expansion of this co-operation to other Adriatic countries;
- to assert within the common foreign policy of the EU the advantage Slovenia has in understanding the state of environmental protection in former Yugoslav republics; to encourage the participation of those countries in European integrations and to help them to acquire assistance from current international sources.

8. INTEGRATION OF ENVIRONMENTAL PROTECTION FACTORS

Co-operation within and between the individual levels of administration is essential for a balanced development. Co-operation between the authorities and target groups and co-operation with other countries should not be neglected. Authorities at various levels have always worked together and co-operated with the private sector.

In order to effectively integrate environmental considerations into all areas of sectoral policies (including: spatial planning, housing, technology, market and prices, energy sector, science, transport,

fiscal policy, agriculture, judicial and executive branch of power, education, industry, etc.), we have to promote co-operation at all levels.

Sustainable development has to be ensured at all levels. Local authorities are the first to notice environmental problems and are the closest to the citizens, who are most interested in the solving of the problems. People are one of the key factors causing changes in lifestyle, manufacturing, consumption and settlement patterns. General opinion in European countries is that cities are the largest units where the process of re-establishing the destroyed balances in urban architecture and the social, economic and political system concerning natural resources and the environment should start. the cities are at the same time the smallest unit which enables us to solve problems in an integrated, comprehensive and sustainable manner.

Municipalities and municipal administrations in Slovenia play an important role in the management of public utilities and local public environmental protection services. Spatial planning is one area where municipalities have the greatest decision-making power. It is particularly important that municipalities co-operate in solving environmental problems. Currently there is no regional administration, although it would be needed for solving certain environmental problems (e.g. waste management, water protection and supply), therefore it is of great importance that municipalities co-operate in addressing common problems. The introduction of a regional level of administration will result in decentralisation and transferral of responsibilities for solving environmental problems from the national to the regional level.

In Slovenia municipalities in general have inadequate organisation and staff structure, although there are great differences between individual municipalities. In the majority of municipalities environmental protection is the responsibility of environmental protection departments or offices, though in several municipalities this area is covered by the mayor or secretary. Four municipalities have founded an environmental protection institute. In the majority (60%) of municipalities environmental protection is the responsibility of a person who also performs other functions, while only 14% of municipalities have one or more employees working exclusively in the field of the environment. In 26% of municipalities there is no one employed in this field at all. A third of all municipalities plans to create new positions in this field. Independent environmental protection inspection services exist in 16% of municipalities. It has been established that the educational structure of municipal employees is not the most suitable for the field of environmental protection. The reason for such situation is most probably a lack of personnel and to a lesser extent a lack of funds.

Only a few municipalities have applied an active environmental protection policy and they continued to do so after the reform of local self-government. Municipal policy is generally restricted to the construction of local (public utility) infrastructure. Mainly small and scarcely populated municipalities concentrate on issues that are most important for their inhabitants (water, energy, accessibility). Remediation of the consequences of people living and working in a certain area is more pronounced in urban areas. When it was realised that serious and complex problems can not be solved partially and by individual municipalities and that the search for environmentally sound systemic solutions and large investments in the environmental protection can not be dealt with at the local level, the local policy developed further. Consequently the first steps have been made towards successful co-operation at the local level in the areas or municipalities where environmental problems are above average.

Inter-municipal co-operation in the field of environmental protection is fairly limited. Just under a fifth of municipalities does not co-operate with other municipalities, or if they do, the co-operation is most frequently restricted to one or two other municipalities. There are cases where municipalities co-operate with municipalities across the border but not with the neighbouring municipalities in Slovenia. New municipalities often do not co-operate with the municipality which was the centre of the former municipality. Approximately 15% of Slovenian municipalities co-operate with municipalities in other countries (mostly transboundary co-operation with Austria, Italy and Hungary). A quarter of municipalities co-operates with non-governmental organisations, although many municipalities are not familiar with non-governmental organisations operating in their area[131].

131 Data taken from: Breda Ogorelec: Varstvo okolja v slovenskih občinah - predstavitev stanja, Umanotera 1997

Municipalities have to adopt their own environmental protection programmes and provide their own share of funds to supplement the incentives and other forms of the State Aid. Continuous monitoring of the drawing-up and implementation of local programmes will be of key importance for us to achieve the goals. Implementation of environmental programmes will have to be ensured and the reasons for the lack of co-operation at higher levels will have to be eliminated.

Problems of environmental protection usually exceed the local (municipal) level. The main deficiency of administrative structure is the absence of a second level of administration, in other words a regional level. Examples are the protection of drinking water, waste disposal sites, wastewater treatment plants, etc. Local politicians usually support the negative views of their voters and are often unwilling to give support to environmentally sound regional projects for their own, frequently selfish reasons[132].

It is reasonable, and indeed necessary, to carry out the tasks shared by several municipalities at the regional level. In the case of a total lack of agreement, the implementation of tasks at the regional level can be ordered by the State. Many municipalities are small, inefficient, incapable or unwilling to take a comprehensive approach to environmental protection, therefore the future regional authority will have to take over, in whole or in part, the obligations of municipalities in this area, particularly in small municipalities. In other words, municipalities will have to transfer to the regional level those tasks which they can not are incapable of or unwilling to carry out.

9. FINANCING OF THE NEAP

Traditional view that the implementation of environmental programmes is an expense which poor countries cannot afford is now out of date. The NEAP is based on the assumption that protection of the environment is a condition for and driving force of undisturbed development and one of the conditions for accession to the EU.

Difficulties we will face in the implementation of the NEAP will be related to finances, personnel and institutions. It is true however that the crisis of transition can be an opportunity for development. Entering the EU single market will require a modernisation of production and management in nearly all sectors.

9.1 Costs of the Implementation of the NEAP

It is not possible to estimate the total costs of the implementation of the NEAP:
- the NEAP will be implemented through segmented sectoral programmes where tasks and resources will be precisely defined;
- owing to a lack of data costs at the level of individual polluters can not be estimated.

The estimated costs of the implementation of NEAP measures (Table 16) are **SIT 263.51 billion.** This estimate takes into account only measures planned in the NEAP for the next **five years**. The dynamics of cost distribution by years is linear; **approximately SIT 52 billion (1.5% GDP) a year is envisaged** for the implementation of the measures mentioned. It is expected that nearly 85% of the funds earmarked for the implementation of the measures will be needed in the fields of water protection and waste management; 11% in the field of air protection; almost 4% for the conservation of biodiversity; and less than 1% for other fields (Picture 10). The main source of the funds will be the public sector, which is expected to cover 77% of the total cost. The rest will be covered by the private sector (Table 17, Picture 11).

132 Germany is a good example of how to solve such problems: municipalities have to form regional joint committees and carry out such tasks together. These joint activities are usually supported by national or provincial funds.

Table 16 The review of foreseen costs of implementation of the NEAP by subject areas in the period 1999-2003 in SIT million

Year	**WATER**	**WASTE**	**BIODIVERSITY**	**AIR**	**SOIL**	**NOISE**	**RADIATION**	**RISKS**	**MEASURES**	Total
1999	27 122	17 570	2 095	6 047	49	50	56	58	142	53 189
2000	27 002	17 520	2 095	6 021	49	11	40	58	94	52 890
2001	26 974	17 520	2 071	5 975	28	9	10	9	2	52 598
2002	26 974	17 520	2 093	5 945	28	9	10	5		52 584
2003	26 974	17 520	1 809	5 895	28	8	12	5		52 251
Total	**135 046**	**87 650**	**10 163**	**29 883**	**182**	**87**	**128**	**135**	**238**	263 512

Picture 10: Estimated costs of the implementation of the NEAP by subject areas in the 1999-2003 period

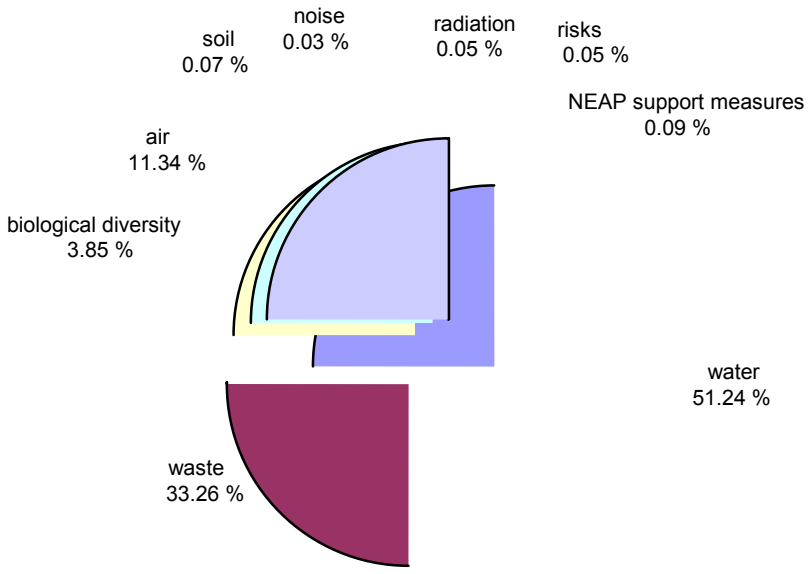
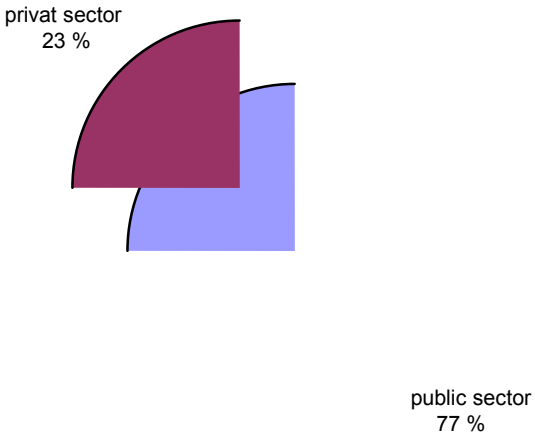


Table 17 Distribution of foreseen costs of implementation of the NEAP between the public and private sector by individual subject areas

Subject area	**Public sector**	**Private sector**
Water	132 796	2 250
Waste	59 650	28 000
Biodiversity	10 163	-
Air	468	29 415

Soil	182	-
Noise	87	-
Radiation	128	-
Risks	135	-
Supporting measures	238	
Total	**203 847**	**59 665**

Picture 11: Distribution of forseen costs of implementation of the NEAP between the public and private sector



Costs of approximation to the EU can be determined more precisely. These costs are estimated at around SIT 506 billion (EUR 2723 million)(Table 18), where the largest share of funds is intended for water protection and waste management, which are two of the three priority areas of the NEAP.

Table 18 Cost estimate of approximation to EU environmental legislation by individual subject areas

Areas	**Cost estimate in SIT millions (EUR millions)**	**Percentage**
Horizontal measures	1 860 (10)	0.37%
Air quality	44 826 (241)	8.85%
Waste management	207 948 (1 118)	41.06%
Water protection	220 038 (1 183)	43.44%
Nature protection	22 320 (120)	4.41%
Control of emissions in industry and reduction of risks	9 300 (50)	1.84%

Chemicals and GMOs	0 (0)	0.00%
Nuclear safety	186 (1)	0.04%
Total	506 478 (2 723)	100.01%

Source: Development of a Costing Assessment for the Slovenian Environmental Approximation Strategy, 1998

9.2 Sources of Funds

9.2.1 Implementation of the Polluter Pays Principle

A polluter covers the total costs arising from environmental burden, in accordance with regulations. The costs must not be underestimated so as to generate a profit for the polluter at the expense of the community or the environment[133].

In order to promote the reduction of environmental burden and with a view to ensuring the use of less harmful alternatives, an ecological tax may be prescribed with regard to the content of environmentally harmful component in a raw material, energy feedstock or product; with regard to the harmfulness of their use or the harmfulness of operation, equipment or service; or with respect to the waste generation[134].

9.2.2 Financial Resources[135]

Possible financial resources for the implementation of the NEAP programmes are:

1. **Long-term ecological reservations** – funds that companies have reserved in accordance with the Act on the Ownership Transformation of Companies[136] for solving environmental problems are important for the achievement of environmental protection goals. The MESP has approved 112 such ecological reservations by companies, which in their opening balances disclosed long-term reservations for investments in environmental protection in the amount of SIT 26.2 billion (DEM 435 million). Remediation programmes vary with regard to the management of ecological reservations. In accordance with the legislation in force ecological reservations or funds for solving environmental problems have to be used by the end of 2003.

2. **Loans from the Environmental Protection Development Fund** (non-commercial loans according to the criteria of selected priorities in the NEAP, subsidising of the interest rate, deferment of payment).

3. **Long-term resources or mechanisms:**
   - loans from multilateral creditors (IBRD, EBRD, EIB);
   - bonds of local communities or the State;
   - B.O.T.[137].

4. **Non-reimbursable EU funds** for associate countries:
   - Phare: 70% for investment projects, 30% for the strengthening of the institutional system;
   - EU Cohesion Funds, which are only available to EU Member States (water protection, construction of infrastructure)
   - EU Structural Funds, which are only available to EU Member States (projects concerning the integration of economy and the environment).

5. **State budget funds:**
   - funds for the implementation of the tasks performed by spending units;
   - funds intended for the construction of public utility infrastructure;
   - funds for the participation in projects co-financed by Phare.

133 Article 10 of the EPA
134 Article 10 of the EPA
135 A financial resource means funds allocated for a specific purpose. An economic resource operates indirectly (e.g. taxation).
136 Act on the Ownership Transformation of Companies – Zakon o lastninskem preoblikovanju podjetij (Ur. l. RS, št. 55/92, 7/93)
137 BOT (build-operate-transfer) - foreign investments through concessions, particularly in the areas of waste water treatment, waste management and district heating - guarantee the quality of services and the most cost-effective option.

It is impossible to predict the share of funds in the national budget or the budgets of local communities for a period of ten years. On the basis of the current situation it is possible to estimate that the population will bear part of the costs of implementation of the NEAP through higher prices of public utility services. It should be emphasised that current prices of waste removal, collection and treatment of wastewater and drinking water supply are not sufficient for achieving the goals of the NEAP.

1. **Direct foreign investments**. Most frequently for the modernisation of production; to create commercially interesting conditions for investors, who should invest in heavy industry, which is the most critical with regard to the environmental burden.

2. **Loans from commercial banks**:
   - management of the loan portfolio of the Environmental Protection Development Fund (assumption of credit risk), if this is in accordance with the policy of the fund;
   - opening of credit lines for loans from multilateral creditors.

3. **Global Environment Facility (GEF):**
   for the reduction of greenhouse gas emissions; the protection of biodiversity; reduction of ozone-depleting substances; the development and improved quality of transboundary water bodies.

4. **Non-reimbursable funds** from donors.

5. **Private capital**, particularly in the public service sector.

6. **Subsidies** are not recommended as a source[138].

In addition to the planned budget funds, other funds will be needed to achieve the goals of the NEAP. Sources of these funds will be mainly municipal budgets; loans from Environmental Protection Development Fund and private sector; and foreign financial resources (loans from multilateral financial institutions and funds from foreign grant programmes).

The planned implementation costs are highest in the field of water protection and waste management, therefore water pollution and waste disposal tax will be an important financial resource for the construction of infrastructure. The taxes will be introduced in January 2000. If a taxable person submits an investment programme, he is in accordance with the current legislation exempt from tax, therefore the listed estimates are merely preliminary. With regard to the stated, in the next five years companies will invest more in water protection infrastructure in order to be entitled to tax deduction, which will result in lower budget expenditure. Similar trend may be expected in waste management when the tax on the amount of the disposed waste is introduced. In the initial period it is reasonable to expect that more budget funds will be needed. Later on the tax on the waste disposal will become an important source of funds for investment projects.

The following should be taken into account:
- wages and costs of employees of the MESP and its bodies are not included in the planned budget expenditures;
- when municipal budgets were defined as possible sources for the co-finacing of the NEAP, it was estimated that municipalities will cover 20% of the costs
- additional source of funds is payments received for public utility services (the price of public utility services includes capital costs); the share of the source is hard to define, because the MESP is not responsible for pricing of public utility services;
- to approve the utilisation of the ECO-Fund loans the agreement of the Ministry of Finance is needed, therefore the allocation of the funds listed below is uncertain; so far not even the half of the available loans were utilised owing to the borrowing limit for local communities stipulated by law.

138 The high risk of purchasing oversized installations. Furthermore they have a destimulative effect on efficient use.

The review of the planned costs of the implementation of the NEAP and possible financial resources by environmental protection sectors for the period 1999-2003 are shown below. The shares of the planned financial resources are:

- budget funds: 22%
- wastewater tax and waste disposal tax: 33%
- municipal budgets: 18%
- foreign funds: 15%
- Eco-Fund loans: 4%

It should be emphasised that, in accordance with the goals defined in the NEAP, the MESP is drawing up sectoral action programmes. The programmes will include a detailed structure of financial resources needed for the implementation. The review of the planned costs of the implementation of the NEAP and possible financial resources are shown in Tables 19 to 24.

Table 19: Planned costs of the implementation of the NEAP in the field of water protection in the period 1999–2003 and possible financial resources in SIT million

YEAR	COSTS	FINANCIAL RESOURCES				
	Public sector	State budget (MESP only)*	Water pollution tax	Municipal budgets	Foreign funds	loans from Eco-Fund
1999	26 556	1 058	7 600	5 300	1 500	2 000
2000	26 560	1 653	9 670	5 300	4 000	2 000
2001	26 560	2 182	11 700	5 300	4 000	2 000
2002	26 560	2 454	13 750	5 300	4 000	2 000
2003	26 560	2 800	15 700	5 300	4 000	2 000
Total	**132 796**	**10 147**	**58 420**	**26 500**	**17 500**	**10 000**

** in addition to the listed funds, the funds of other spending units (Ministry of Transport and Communications; Ministry of Agriculture, Forestry and Food) are needed for the implementation of the measures*

Note: Private sector costs in the field of water protection have been estimated on the basis of the estimated costs of the implementation of the EU legislation in the relevant field, but not all private sector funds are included. Detailed review of the necessary investments is not available.

Table 20: Planned costs of the implementation of the NEAP in the field of waste management in the period 1999–2003 and possible financial resources in SIT million

YEAR	COSTS	FINANCIAL RESOURCES				
	Public sector	State budget (MESP only)*	Waste disposal tax	Municipal budgets	Foreign funds	loans from Eco-Fund

1999	11 930	426.8		2 390		1 000
2000	11 930	624.3	6 400	2 390	3 000	1 000
2001	11 930	917.3	6 400	2 390	3 000	1 000
2002	11 930	1 216.7	6 400	2 390	3 000	1 000
2003	11 930	1 500	6 400	2 390	3 000	1 000
Total	**59 650**	**4 685.1**	**25 600**	**11 950**	**12 000**	**5 000**

** in addition to the MESP funds, the funds of other spending units (Ministry of Economic Affairs; Ministry of Agriculture, Forestry and Food) are planned*
Note: The estimated private sector costs in the field of waste management amount to SIT 28 billion

Table 21: Planned costs of the implementation of the NEAP in the field of biological diversity in the period 1999–2003 and possible financial resources in SIT million

YEAR	COSTS	FINANCIAL RESOURCES	
	Public sector	**State budget (MESP only)***	**Foreign funds**
1999	2 095	399.8	
2000	2 095	1 202	500
2001	2 071	1 230	500
2002	2 093	1 360	500
2003	1 809	1 450	500
Total	**10 163**	**5 641.8**	**2 000**

** in addition to the MESP funds, the funds of other spending units (Ministry of Agriculture, Forestry and Food) are planned*
Note: In the field of biological diversity no private sector costs are foreseen

Table 22: Planned costs of the implementation of the NEAP in the field of air protection in the period 1999–2003 and possible financial resources in SIT million

YEAR	COSTS	FINANCIAL RESOURCES	
	Public sector	**State budget (MESP only)***	**Foreign funds**
1999	108	27.6	-
2000	90	41.5	1 000
2001	90	56.5	1 000
2002	90	70.3	1 000

2003	90	90	1 000
Total	**468**	**285.9**	**4 000**

** in addition to the listed funds, the funds of other spending units (Ministry of Economic Affairs) are needed for the realisation of the goals*
Note: The estimated private sector costs in the field of air protection amount to SIT 29.4 billion

Table 23: Planned costs of the implementation of the NEAP in the field of soil protection in the period 1999–2003 and possible financial resources in SIT million

YEAR	COSTS	FINANCIAL RESOURCES	
	Public sector	**State budget (MESP only)***	**Foreign funds**
1999	49	10	
2000	49	11	
2001	28	10	10
2002	28	10	
2003	28	10	
Total	**182**	**51**	**10**

** in addition to the listed funds, the funds of other spending units (Ministry of Agriculture, Forestry and Food) are needed for the implementation of the measures*
Note: In the field of soil protection no private sector costs are foreseen

Table 24: Planned costs of the implementation of the NEAP in the field of risks in the period 1999–2003 and possible financial resources in SIT million

YEAR	COSTS	FINANCIAL RESOURCES	
	Public sector	**State budget (MESP only)***	**Foreign funds**
1999	58	-	
2000	58	-	
2001	9	4	50
2002	5	10	
2003	5	12	
Total	**135**	**26**	**50**

** in addition to the listed funds, the funds of other spending units (Ministry of Health, Ministry of Science and Technology) are needed for the implementation of the measures*

Note: In the field of risks no private sector costs are foreseen.

The estimated costs of the implementation of the planned measures until 2003 exceed the currently identified available resources. Therefore additional resources will have to be provided in the process of the implementation of the NEAP of or the implementation of the measures will have to be postponed or rescheduled.

10. Monitoring of the implementation of the NEAP

In order to monitor the implementation of the NEAP, we have to complete the institutional strengthening and set up a uniform national information system, which will include all data and information from all fields discussed in the NEAP.

Every report on the state of the environment provides a review of the implementation of the tasks defined in the NEAP. The review is based on system of indicators developed for this purpose. The measures necessary for the adaptation to new conditions are taken on the basis of findings.

The MESP shall examine the NEAP and supplement it with a detailed programme of activities for the period 2003-2008 and submit it to the National Assembly by the end of 2002 at the latest.

The Minister for the Environment and Spatial Planning forms a special group, which reports to him every six months. The report is the basis for measures taken in the case of significant deviation from the implementation of the NEAP.

The MESP informs the Environmental Protection Council of the Republic of Slovenia about its findings.

11. ANNEXES

Annex 1 ***Emission taxes and fines in Central and East European countries***

	Bulgaria	Czech Republic	Slovakia	Estonia	Hungary	Latvia	Lithuania	Poland	Romania	Slovenia
Air pollution										
• Emission standards	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
• Permits	no	yes	yes	yes	yes	yes	yes	yes	yes	no
• Emission charges (number of substances)	no/yes*/(6-7)	yes (approx. 125)	yes (approx. 125)	yes (approx. 150)	no	yes	yes	yes (more than 60)	no	no
• Method of enforcement	fines, criminal accountability	monitoring, fines, criminal accountability	monitoring, fines, criminal accountability	monitoring, fines	fines	monitoring, fines	monitoring, fines	monitoring, fines, closure of plant	monitoring, fines, prosecution	monitoring
Water pollution										
• Wastewater discharge permits	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
• Charges for discharging (number of pollutants)	no/yes*/	yes	yes	yes (8)	no	yes (30)	yes (30)	yes	yes (11)	yes
• Method of enforcement	fines, criminal accountability	monitoring, fines, criminal accountability	monitoring, fines, criminal accountability	monitoring, fines	closure of plant, fines	monitoring, closure of plant, criminal accountability	yes, discharge tax	monitoring, fines, closure of plant	monitoring, closure of plant	monitoring, fines, closure of plant
Solid waste										
• Waste disposal permits	no/yes*/	no, planning	no, planning	yes	yes	yes	yes	yes	no, waste register	no, planning
• Charges for disposal	no/yes?	yes	yes	yes, also incentives	no	yes, hazardous	yes, tax for disposal	yes (152 substances)	no	no
• Method of enforcement	monitoring, fines, criminal accountability	penalties	penalties	penalties, criminal accountability	penalties	fines, closure of plant	checking, fines	checking, fines	fines, criminal accountability	checking, fines
Payments to Eco-Fund	yes	yes	yes							
• directly			yes		yes	yes		yes	no	no
• indirectly		yes		yes	yes					no

*/ introduction of charges was provided for in the environmental protection act of 1991

Annex 2: ***List of abbreviations***

ACPDR *Administration of the Republic of Slovenia for Civil Protection and Disaster Relief*
APN *Administration of the Republic of Slovenia for the Protection of Nature*
BATNEEC *Best Available Technologies Not Entailing Excessive Costs*
CCI *Chamber of Commerce and Industry of Slovenia*
CFC *Chlorofluorocarbons*
CITES *Convention on International Trade in Endangered Species of Wild Fauna and Flora*
CLRTAP *Convention on Long-Range Transboundary Air Pollution*
DISAE *Development of Implementation Strategies for Approximation in Environment*
EEA *European Environment Agency*
EMS *Environmental Management Systems*
EPIS *Environmental Protection Information System*
EU *European Union*
GDP *Gross Domestic Product*
GEF *Global Environment Facility*
GMO *Genetically modified organism*
HCFC *Hydrochlorofluorocarbons*
HFC *Hydrofluorocarbons*
HLRW *High-level radioactive waste*
HMI *MESP's Hydrometeorological Institute of the Republic of Slovenia*
IND *Industry*
IPPC *Integrated Pollution Prevention and Control*
IUCN *The World Conservation Union*
LC *Local community*
LIRW *Low- and intermediate-level radioactive waste*
MAFF *Ministry of Agriculture, Forestry and Food*
MC *Ministry of Culture*
MD *Ministry of Defence*
MEA *Ministry of Economic Affairs*
MESP *Ministry of the Environment and spatial planning*
MERD *Ministry of Economic Relations and Development*
MES *Ministry of Education and Sport*
MFA *Ministry of Foreign Affairs*
MH *Ministry of Health*
MI *Ministry of Interior*
MSBT *Ministry of Small Business and Tourism*
MST *Ministry of Science and Technology*
MTC *Ministry of Transport and Communications*
NEAP *National Environmental Action Programme*
NEI *National Education Institute*
NGO *Non-governmental organisation*
NIMBY *Not In My Backyard*
NIMET *Not In My Election Time*
NOx *Nitric oxides*
NSA *Nuclear Safety Administration*
ODS *Ozone-depleting substances*
PFC *Perfluorocarbons*
POP *Persistent organic pollutants (PCBs, dioxins, some pesticides, etc.)*
PPP *Polluter pays principle*
SF_6 *Sulphur hexafluoride*
SO_2 *Sulphur dioxide*
SWOT *Strengths, Weaknesses, Opportunities and Threats - Analysis of the voluntary and legislative approach*
TPP *Thermal Power Plant*
TRP *Target Research Programmes*
VOC *Volatile organic compounds*
WHO *World Health Organisation*
WTP *Wastewater treatment plant*

WWF *World Wide Fund for Nature*

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President of the National Assembly of the Republic of Slovenia
Janez Podobnik