# THE CROATIAN PARLIAMENT

3962

Pursuant to Article 80 of the Constitution of the Republic of Croatia and Article 151, paragraph 1 of the Nature Protection Act (Official Gazette 70/05), at its session on 28 November 2008, the Croatian Parliament adopted the following

# STRATEGY AND ACTION PLAN FOR THE PROTECTION OF BIOLOGICAL AND LANDSCAPE DIVERSITY OF THE REPUBLIC OF CROATIA



## 1. INTRODUCTION

### 1.1 Basis for adoption of the Strategy for the Protection of Biological and Landscape Diversity of the Republic of Croatia

#### LEGAL BASIS

The Strategy and Action Plan for the Protection of Biological and Landscape Diversity of the Republic of Croatia is the fundamental document for nature protection, laying down long-term objectives and guidelines for the conservation of biological and landscape diversity and protected natural values, and methods for implementation thereof, in accordance with the overall economic, social and cultural development of the Republic of Croatia.

The obligation to prepare the Strategy and Action Plan for the Protection of Biological and Landscape Diversity (hereinafter: the Strategy) is prescribed by Article 151 of the Nature Protection Act (OG 70/05). Pursuant to Article 151, paragraph 1 of the Nature Protection Act, the Strategy is adopted by the Croatian Parliament.

Pursuant to Article 152, paragraph 2 of the Nature Protection Act, the Strategy contains:

- general strategic objectives;
- guidelines for the conservation of landscape, ecological systems, habitat types, wild taxa and indigenous domesticated taxa;
- guidelines for protected natural values;
- guidelines for research and monitoring the state of the natural environment;
- guidelines for the incorporation of nature protection measures into other sectors;
- guidelines for the legislative and institutional framework;

- guidelines for education aimed at promoting and conserving biological and landscape diversity;

- guidelines for informing the general public and for public participation in decision-making processes concerning the nature;

- action plans for implementation of the guidelines, outlining priorities and possible funding sources;

- methods of fulfilling international obligations in the area of nature protection;

- cartographic representation of the spatial distribution of measures for the conservation of biological and landscape diversity and protection of natural values.

The Nature Protection Act prescribes the obligation to analyse the objectives and guidelines defined by the Strategy, and the implementation of action plans every five years, whereupon the Strategy will be revised where necessary.

The Strategy is prepared on the basis of the Report on the State of the Natural Environment and Nature Protection in the Republic of Croatia, which contains information on the state of landscape, ecological systems, habitat types, wild taxa and indigenous domesticated taxa. The Report gives an analysis of threats, causes of threats and protection issues, and information on the impacts of exploitation of natural resources on biological and landscape diversity, on the impacts of certain projects on nature, and assessment of implemented measures for conservation of biological and landscape diversity and protected natural values. The report outlines the analysis of implementation of the Strategy and other documents concerning nature protection, evaluation of supervision, information on the use of financial resources intended for nature protection, assessment of the need for preparation of new documents or amendments to the existing documents, and other information of importance for the protection and conservation of nature.

Pursuant to Article 153, paragraph 3 of the Nature Protection Act, the Proposal for the Report on the State of the Natural Environment and Nature Protection is prepared by the State Institute for Nature Protection (SINP) and approved by the Ministry of Culture.

1.2 Convention on Biological Diversity

Pursuant to Article 6 of the Convention on Biological Diversity (Act on Ratification of the Convention of Biological Diversity, OG-IT 6/96), preparation of the Strategy is obligatory for all countries that are parties to the Convention.

The Convention on Biological Diversity (CBD) is a globally accepted fundamental document for the protection of biological diversity, establishing the conservation of biological diversity as an underlying international principle in the field of nature protection and joint obligation of mankind. It was adopted in Rio de Janeiro in 1992 at the United Nations Conference on the

Environment and Development. In the Republic of Croatia, the Convention entered into force on 7 October 1996.

The Convention on Biological Diversity defines biological diversity, or biodiversity, as the diversity of living organisms, which includes:

- diversity within species;
- diversity among species, and
- diversity of ecological systems.

Biodiversity is not limited to species of plants, animals, fungi and microorganisms, as many species are further divided into subspecies, varieties and different genetic populations. Therefore biodiversity also includes genetic diversity within species, habitats and ecosystems.

The importance of biodiversity is manifested in the interdependence of all living organisms and their balanced activity, as a key to the well-being of the planet as a whole.

The signatory parties undertook to achieve the three objectives of the Convention:

1. conservation of overall biodiversity;
2. sustainable use of biodiversity components;
3. fair and uniform distribution of benefits ensuing from the utilisation of genetic sources.

In order to be able to implement these objectives, the parties to the Convention should develop, in accordance with their own circumstances and possibilities, national strategies, plans and programmes for the protection and sustainable utilisation of biodiversity or to accept the existing strategies, plans or programmes for those purposes.

On the basis of this obligation, the Pan-European Strategy for Protection of Biological and Landscape Diversity was adopted in 1995 for Europe. This extended the scope of the Convention to landscapes, taking into account the specific situation in Europe, where little pristine nature remains and the majority of the landscape has been altered through anthropogenic activities to such an extent that it is impossible to examine biological and landscape diversity separately.

As a result of the aforementioned obligations, in 1999 the Republic of Croatia adopted the Strategy and Action Plan for the Protection of Biological and Landscape Diversity (OG 81/99), which for the first time systematically defined and planned nature protection activities. Based on a detailed analysis of the threat to biological and landscape diversity, a number of guidelines and action plans defining the activities necessary for implementation of the Convention have been adopted.

In preparing this Strategy, the Ministry of Culture (MC) found it necessary to take into account the most recent guidelines of the ninth meeting of the Conference of the Parties to the Convention on Biological Diversity (COP 9) held in Bonn from 19 to 30 May 2008, under the motto "Biological Diversity – the Basis of Our Life". On that occasion, representatives of the 191 countries that are parties to the Convention stated that between 100 and 1000 times as many plant and animal taxa are currently vanishing from Earth due to human activities as compared to the number of taxa that would disappear as part of natural processes, without human impacts. Loss of these species reduces availability of genetic resources in plant and animal organisms, and thereby reduces the security of food supply for mankind, and the capacity of ecosystems to perform basic functions upon which human life depends, such as maintaining the vitality of aquatic ecosystems, access to drinking water, prevention of soil erosion and mitigating the consequences of global warming. New guidelines for the development of protected area networks were prepared and investments by donor countries announced, primarily aimed at reducing the loss of biodiversity in tropical forests to 2012. Preparation of new rules for access to and distribution of benefits from the world's rich genetic heritage was agreed, with emphasis placed on the great responsibility of mankind and the parties to the Convention to achieve the aim of reducing the loss of biodiversity at the global level by the year 2010.

1.3 EU Accession

In the light of the accession of the Republic of Croatia to the EU, the obligation to adopt the Strategy is envisaged by the 2008 National Programme for the Accession of the Republic of Croatia to the European Union and is scheduled for the 3rd quarter 2008.

Given the substantial changes in the concept of nature protection, resulting from the establishment of a new legislative and institutional nature protection framework, primarily due to the accession to international conventions and agreements in the field of nature protection, the process of accession to the European Union and alignment of the legislation with relevant EU directives and regulations – Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (hereinafter: Habitats Directive), Council Directive 79/409/EEC on the conservation of wild birds (hereinafter: Birds Directive), CITES regulations and other relevant legislation, the need has arisen not only to revise the 1999 Strategy, but to consider the strategic objectives and guidelines on a completely new basis.

1.4 Overview of the state of biological and landscape diversity and the state of the nature protection system in the Republic of Croatia

In the period from 2000 to 2008, significant changes occurred in the area of nature protection in the Republic of Croatia. To a great extent, these are in line with the guidelines envisaged by the Strategy as the underlying nature protection document.

The most significant turning point for the development of the nature protection system in the reporting period was marked by activities pertaining to preparations of the Republic of Croatia for accession to the European Union, particularly following receipt of the favourable European Commission Opinion (Avis) on the application of Croatia for membership of the European Union in April 2004. This laid down the guidelines for further development of the nature protection sector in the Republic of Croatia in order to meet the European Union's standards.

In the light of the accession of the Republic of Croatia to the EU, in the period from 2004 to 2006, numerous activities were intensified in the field of nature protection, in particular: continuation of the process of alignment of the Croatian legislation with the *acquis communautaire*; continuation of the systematic process of inventorying the components of biodiversity in Croatia, which resulted in the publication of Red Lists of threatened fungal, plant and animal species and Red Books for specific groups of plants and animals; preparation of the habitat map; development of the central nature protection information system; designation of ecological network of the Republic of Croatia, and preparations for the designation of international ecologically important sites – the NATURA 2000 network.

Among the achievements in the period from 2000 to 2008, the following should be singled out:

- institutional strengthening at the state and county/local level – raising nature protection activities to the level of the Ministry and establishment of the Nature Protection Directorate, establishment of the State Institute for Nature Protection (SINP) as the central expert institution for nature protection, intensification of the procedures for establishment and start of operation of county institutions for the management of protected natural resources (currently 20 in total);

- administrative strengthening at all levels – MC, SINP, public institutions of national parks, nature parks (PINP/ PINAP) and public institutions for management of protected areas at the county level (PIC);

- accession, ratification and implementation of all international agreements in the area of nature protection (total of 16 conventions, protocols and agreements);

- establishment of the national legislative framework in the area of nature protection, which has largely been brought into line with the *acquis communautaire* (two nature protection acts adopted in 2003 and 2005, and 13 implementing regulations prepared pursuant to the 2005 Act and aligned with the *acquis*;

- establishment of the national legislative framework in the area of use of genetically modified organisms, which was also to a large extent aligned with the *acquis*;

- establishment of a systematic process of inventorying the components of biodiversity of Croatia, which resulted in the publication of Red Lists of threatened fungal, plant and animal species and Red Books for certain groups of plants and animals;

- preparation of a habitat map;

- successful implementation of a large number of international projects financed from different sources, including EU funds (LIFE III, CARDS, PHARE), which contributed to materialization of the abovementioned activities (KEC, PAMS (stage I-III), CRO-NEN, CRO-WOLF, Institutional strengthening of SINP, Institutional strengthening and implementation of the NATURA 2000 ecological network in Croatia, etc.).

For the purpose of preparation of the Strategy, the Report on the State of the Natural Environment and Nature Protection (hereinafter: the Report) has been drawn up and presents updated information and an overview of activities pertaining to the protection of biological and landscape diversity for the period 2000-2007, along with guidelines for the subsequent period. The proposed Report was prepared by the State Institute for Nature Protection and, pursuant to the Nature Protection Act, approved by the Ministry of Culture. The Report is submitted to the Croatian Parliament for adoption.

The Report contains information on the state of the natural environment and gives an analysis of the threat and protection guidelines, provides information on and evaluation of the exploitation of natural resources and impact of projects on nature, gives an overview of the state and assessment of legislative and institutional framework for nature protection, and assessment of the implementation of action plans as defined by the 1999 Strategy.

Upon examination of the current state, the causes of threat, the issues in the protection of biological and landscape diversity in Croatia, and the progress achieved in relation to the 1999 Strategy, it has been established that the Republic of Croatia continues to possesses vast natural wealth and diversity and a high level of quality and conservation of biological and landscape diversity, particularly in the context of Western and Central Europe.

However, there is a prevailing trend towards the loss of biological and landscape diversity, which is globally caused by the following reasons:

- excessive exploitation of natural resources;

- introduction of alien species into ecological systems;

- construction of infrastructure, which leads to habitat loss and fragmentation (roads, power plants, water management structures, etc.);

- agricultural activities (melioration, expansion of agricultural lands or neglect of grassland surfaces);

- environmental pollution (soil, water, air);

- urbanisation;

- global climate change.

The situation in Croatia is specific as there is still insufficient information on biodiversity, which creates difficulties in defining and implementing protection measures.

In comparing the current state of the nature protection sector with other European countries, it has been established that Croatia has succeeded in keeping pace with the European legislation and practice, though additional efforts should be directed towards the implementation of action plans. More efforts need to be invested by strengthening the institutional framework and earmarking substantial funds from state and county budgets for nature protection activities.

Pursuant to the organisation of the state administration bodies from 2000, nature protection activities have been raised to the ministry level through the establishment of the Nature Protection Directorate. In the course of 2000, the process of developing a new legislative framework was initiated. For the first time, this legislative framework perceives nature as the overall biological and landscape diversity that enjoys protection throughout the entire territory of the Republic of Croatia, including protected natural values (areas and species), and natural values exploited in different industries (agriculture, forestry, fisheries, hunting, construction, transportation, energy industry, etc.). With this concept, nature protection has become an integral activity aimed at harmonising the exploitation of natural resources with the concept of sustainable development. The Nature Protection Act, based on this concept, was adopted in September 2003 (OG 162/03). The new Nature Protection Act (OG 70/05), enacted in May 2005, also transposes the said concept. The only important difference lies in the removal of provisions relating to use of genetically modified organisms (GMOs) to a separate Act on Genetically Modified Organisms (OG 70/05) and in the reduced number of implementing regulations for the purpose of more efficient implementation of the Act.

Within the framework of legislative activities, it is important to point out that in the period from 2000 to 2003, the Republic of Croatia became a signatory to the majority of international conventions in the field of nature protection, and thereby made a commitment to their effective implementation.

In addition to adoption of the nature protection concept, as outlined by the Convention on Biological Diversity and other ratified conventions, the provisions of other relevant EU legislation in the field of nature conservation have also been transposed into the Nature Protection Act.

With regard to institutional strengthening of the nature protection sector, significant progress was achieved with the establishment of the SINP, which started operation in September 2003.

The priorities in the forthcoming five-year period are closely related to the process of accession of the Republic of Croatia to the European Union and, as regards nature protection, these will relate to full alignment of the legislation, including establishment of implementing mechanisms and adoption of a proposal for the NATURA 2000 network.

A detailed overview of the state of biological and landscape diversity and state of the nature protection system in the Republic of Croatia is provided in the relevant chapters of the Report and later in this Strategy.

1.5 Methods of work on the Strategy and adoption procedure

The SINP compiled the proposed Report on the State of the Natural Environment for the period 2000-2007. Pursuant to the Report, the Ministry started the procedure for preparation of the new Strategy and Action Plan for the Protection of Biological and Landscape Diversity.

The 1999 Strategy did not address geological diversity, or geodiversity, i.e. the protection of inanimate nature, in an integral manner. The Nature Protection Act regulates the system of

protection and integral conservation of nature and its values, which, in addition to biological and landscape diversity, includes geodiversity, i.e. minerals, dripstones and fossils. Therefore, this document also addresses the issue of protection of geodiversity in a separate chapter.

With the aim of analysing implementation of the former Strategy and determining the strategic objectives, guidelines and priority action plans, by virtue of a Decision of the Ministry of Culture from 2006, members of the following 10 working groups were appointed:

1. Working group for species, habitats, landscapes, minerals, dripstones and fossils;

2. Working group for protected areas;

3. Working group for physical planning and nature impact assessment;

4. Working group for agriculture (including GMOs) and fisheries;

5. Working group for forestry and hunting;

6. Working group for water management;

7. Working group for tourism;

8. Working group for transport, energy and mining;

9. Working group for education, informing and participation of the general public;

10. Working group for the legislative and institutional framework.

The working groups comprise representatives of competent state administration bodies, professional institutions, public institutions for management of protected areas, inspection services, scientific institutions, the economic sector and non-governmental organisations (the list of members of the working groups is provided on page 154).

The intention behind including a wide circle of participants in the preparation of the Strategy was to ensure an integrated approach to the issue of nature protection, thus creating the prerequisites for incorporation of biodiversity determinants into all relevant sectors.

The working groups started their work in July 2006. However, submission of the Strategy for public consultation and to the adoption procedure was delayed until October 2007 with the proclamation of the ecological network of the Republic of Croatia (Regulation on proclamation of the ecological network, OG 109/07).

With the entry of this Regulation into force, the prerequisites were created for an integral and systematic protection of species and habitats, including those outside protected areas, the integration of protection measures and sustainable use of nature into all relevant sectoral and intersectoral regulations, plans, programmes and strategies, compatibility of nature protection in the Republic of Croatia with that of developed European and world countries, and the inclusion

of the Republic of Croatia in European integration processes and for easier implementation and fulfilment of the present and future obligations ensuing therefrom.

The Report upon which this Strategy is based includes an overview of the situation until the end of 2007. The Strategy examines the situation until the end of June 2008, thereby covering the changes to the institutional, legislative and implementing framework for nature protection that occurred following the proclamation of the ecological network of the Republic of Croatia, and following enactment of a large number of new regulations by mid-2008.

Between 30 June and 3 September 2008, the Final Draft of the Strategy was made public on the Ministry of Culture website for the purpose of collection of comments, proposals and opinions of public concerned. Also, since 30 June 2008, the Proposed Report on the State of the Natural Environment has been available on the SINP website.

A public presentation of the Final Draft of the Strategy of the Republic of Croatia and of the Proposed Report was held on 3 September 2008.

The working groups took into consideration all received comments and finalised the text of individual chapters, objectives, guidelines and action plans. Subsequently, the Ministry of Culture defined the Final Draft of the Strategy and submitted it to competent state administration bodies for comments prior to its submission to parliamentary procedure.

## 2. STRATEGY PRINCIPLES AND GENERAL STRATEGIC OBJECTIVES

The fundamental principles upon which the Strategy and Action Plan for the Protection of Biological and Landscape Diversity are based are as follows:

- the Republic of Croatia is aware that overall biological, landscape and geological diversity represent its underlying value and main resource for further development;

- it is the aim of the Republic of Croatia to conserve and promote the existing biological and landscape diversity within the country, and attempt to recover a part of lost taxa and habitats, where this is possible and justified;

- the Republic of Croatia will develop all appropriate measures for defining, conserving and promoting the existing biological and landscape diversity;

- the national legislation will ensure that the measures for conservation and promotion of overall biodiversity are incorporated into all economic activities that use or have impact on biological resources;

- the Republic of Croatia will systematically extend efforts to protect biological, landscape and geological diversity from the national to the regional and local levels;

- the Republic of Croatia will continuously harmonise its efforts in the field of protection of biological and landscape diversity with relevant international activities, taking account of the fact that the national biological and landscape diversity is a unique and irrecoverable part of the overall global diversity;

- the Republic of Croatia will continue to take all necessary activities that lead to complete transposition and implementation of EU directives and regulations governing the area of protection of wild taxa and natural habitats.

GENERAL STRATEGIC OBJECTIVES

This Strategy identifies the following general strategic objectives:

1. conserve overall biological, landscape and geological diversity as an underlying value and potential for further development of the Republic of Croatia;

2. meet all obligations arising from the process of integration into the European Union and alignment of the national legislation with the relevant EU directives and regulations (Habitats Directive, Birds Directive, CITES Regulations);

3. fulfil the obligations arising from international treaties in the field of nature protection, biosafety, access to information, etc.;

4. ensure integral nature protection through co-operation with other sectors;

5. establish and evaluate the state of the biological, landscape and geological diversity, set up a nature protection information system with a database connected to the state's information system;

6. encourage promotion of institutional and non-institutional ways to educate the public about biodiversity, and improve public participation in decision-making processes;

7. develop legislation implementation mechanisms by strengthening legislative and institutional capacities, education, development of scientific resources, information, and the development of funding mechanisms.



## 3. PROTECTION OF BIOLOGICAL DIVERSITY

### 3.1 *In situ* protection

#### 3.1.1 Protected areas

The Nature Protection Act provides for special protection of particularly valuable parts of animate and inanimate nature. The Act regulates the method of designation of protection status, management, exploitation and supervision of certain protection categories, and the method of termination of protection status if the characteristics on account of which a certain area has been

designated a protected area no longer exist. The Act lays down nine categories of protected areas (Table 1).

In order to ensure protection of threatened and particularly valuable area in a short time period, a preventive protection instrument has been introduced. For the duration of preventive protection, which may last for a maximum of three years, all provisions of the Nature Protection Act apply to the area under preventive protection.

Table 1: Protected areas (including areas under preventive protection). Source: Registry of Protected Natural Values as at 23 June 2008, PA – protected areas, AUPP – areas under preventive protection, TPA – total protected areas.

| Category | Number | | | Land ($km^2$) | Sea ($km^2$) | Total ($km^2$) |
|---|---|---|---|---|---|---|
| | PA | AUPP | TPA | | | |
| Strict reserve | 2 | 0 | 2 | 23.95 | 0 | 23.95 |
| National park | 8 | 0 | 8 | 742.60 | 218.75 | 96 135 |
| Special reserve | 79 | 4 | 83 | 323.49 | 529.85 | 853.34 |
| Nature park | 11 | 0 | 11 | 4 063.15 | 179.00 | 4 242.15 |
| Regional park | 0 | 2 | 2 | 1 478.44 | 121.47 | 1 599.91 |
| Monument of nature | 116 | 0 | 116 | 2.46 | 0 | 2.46 |
| Important landscape | 78 | 1 | 79 | 880.75 | 0 | 880.75 |
| Forest park | 35 | 1 | 36 | 88.99 | 0 | 88.99 |
| Monument of park architecture | 121 | 1 | 122 | 9.56 | 0 | 9.56 |
| TOTAL | 450 | 9 | 459 | 7 613.39 | 1 049.07 | 8 662.46 |
| Within protected areas | | | | 1 205.15 | | 1 205.15 |
| TOTAL | | | | 6 408.24 | 1 049.07 | 7 457.31 |
| Percentage share of protected areas of the total area of the Republic of Croatia | | | | 11.32% | 3.38% | 8.51% |

Protected areas, including areas under preventive protection, covered an area of 7 457.31 km² in June 2008, including 11.32% of land area, 3.38% of territorial sea or 8.51% of the total area of the Republic of Croatia (Table 1). Nine areas under preventive protection cover an area of 2 130.00 km² or 2.43% of the total area of the Republic of Croatia.

Spatial organisation, the manner of use, physical planning and protection in a national park and nature park is regulated by the spatial plan for the special-feature areas. Spatial plans have been adopted for Brijuni National Park, Mljet National Park, Kornati National Park, Paklenica National Park, Risnjak National Park, Kopački Rit Nature Park and Učka Nature Park. Spatial plans for the special-feature areas for Medvednica Nature Park and Lonjsko Polje Nature Park have been developed and are in the process of adoption. Krka National Park and Plitvice Lakes National Park have valid spatial plans, but due to certain identified shortcomings, new spatial

plans are in preparation. Spatial plans are being developed for the remaining national parks and nature parks.

Pursuant to the provisions of the Nature Protection Act, strict reserves, national parks, special reserves, nature parks, regional parks and important landscapes are managed in accordance with the management plan, which is adopted for a period of ten years. Management plans have been developed, with the assistance of an international donation, and adopted for Paklenica National Park, Plitvice Lakes National Park, Risnjak National Park, North Velebit National Park and Velebit Nature Park. Adoption of management plans for other national parks and nature parks is planned by the end of 2010. Management plans for Učka Nature Park, Žumberak–Samoborsko Gorje Nature Park, Lonjsko Polje Nature Park and Kopački Rit Nature Park are in the final preparation stages. Within the framework of international projects, draft plans have also been developed for two special reserves (Đurđevački Pijesci (Đurđevac Sands) and Cret Dubravica (Dubravica Bog)). It is necessary to start development of management plans for the remaining protected areas.

As a result of intensified work on inventorying the total biological and geological diversity and preparation of the NATURA 2000 ecological network, new valuable areas have been identified and their protection will be a matter of concern in the forthcoming period.

In 2007, the Lonjsko Polje Nature Park applied as a candidate for entry to UNESCO's World Heritage List as a mixed site, i.e. an area of world natural and cultural heritage. Designation of the area of the Mura and Drava Rivers as a biosphere reserve under the MAB Programme is in progress.

Since some protected areas have over time lost the values on account of which they were proclaimed as protected, and the boundaries of some areas were not precisely defined at the time of proclamation, the Nature Protection Directorate of the Ministry of Culture and the SINP are conducting a review of the Register of Protected Natural Values, which will result in the termination of protection status, change of boundaries or category of protected areas.

For the purpose of efficient management, urgent digitalisation of all protected areas and upgrading of the appropriate geographical information system is necessary.

In 2005, work on the standardisation of protected areas management was intensified in order to define the minimum common management standard for the protected areas. To this effect, the Ministry established the following priorities: 1. improve management planning; 2. define visual identity of parks; and 3. establish a GIS database. It is necessary to continue this work.

In the previous period, the majority of public institutions of national parks and nature parks conducted scientific research with the aim of inventorying biodiversity, particularly in areas relevant for development of the NATURA 2000 network. Great efforts have also been devoted to the development of educational programmes and visitor infrastructure. A number of information points, reception centres and educational trails were organized, and intensive activities are being undertaken to equip visitor centres.

With a view to improving the fire-fighting system, the first telemetric station with infrared and video control for early detection of fire was installed in 2006 at the Crni Vrh peak on Mt. Velebit in Paklenica National Park. The proposed national programme for the establishment of a comprehensive fire control system in national parks and nature parks of the Republic of Croatia was prepared for the period 2006-2008. Landmine clearance in protected areas was continued in co-operation with the Croatian Mine Action Centre through the financial support of the Principality of Monaco.

There is a constant need for strengthening of staff capacities, and the education of employees at institutions in charge of nature protection and for new staff recruitment. By June 2008, all the counties, with the exception of the City of Zagreb, had established public institutions for management of protected areas and/or other protected natural values, and the majority have already started operations. The need has been identified for systematic work with regional government and self-government units, to allow them to assume the obligations imposed upon regional authorities by law.

Ordinances on the internal order of protected areas are either in preparation or in the process of alignment with the Nature Protection Act.

For effective protection of species, habitats and landscapes of protected areas, it is necessary to define the priorities for the purchase of land in certain protected areas and, in co-operation with stakeholders, to devise compensation mechanisms for limited use.

STRATEGIC OBJECTIVE

Continue development of the system of protected areas, efficiently manage protected areas, increase the total area under protection and promote active participation of the public concerned

Strategic guidelines

3.1.1.1 Prepare the fundamental documents for protected area management

3.1.1.2 Digitalize boundaries and continue the review of existing protected areas

3.1.1.3 Evaluate, categorize and legally protect particular areas

3.1.1.4 Ensure involvement of the public concerned

3.1.1.5 Improve the protected area management system

3.1.1.6 Resolve property-related relations and disputes, and increase the share of state-owned land within protected areas

Action plans

3.1.1.1.1 Develop and adopt management plans for the remaining national parks and nature parks

3.1.1.1.2 Develop and adopt management plans for other areas protected in the categories of strict reserve, special reserve, regional park and important landscape

3.1.1.1.3 Develop and adopt spatial plans for those national parks and nature parks without such plans or for which plans are under review

3.1.1.2.1 Complete the review of existing protected areas

3.1.1.2.2 Based on the priorities established by the review, make amendments to the Act on the Proclamation of National Parks and Nature Parks, carry out the legal designation procedure, and enter the areas in the land registers

3.1.1.2.3 Digitalize the boundaries of other protected areas and, pursuant to the results of the review, draft amendments to the official documents concerning the designation, carry out the legal designation procedure, and enter the areas in the land registers

3.1.1.3.1 Set up an expert working group to classify each protected area into one of the IUCN categories, according to the new IUCN guidelines

3.1.1.3.2 Proclaim the Neretva Delta Nature Park

3.1.1.3.3 Conduct an expert assessment of and provide legal protection for the following areas: the Elaphite Islands, the Mrežnica River, Bjelolasica, Hrvatsko Zagorje, Lička Plješivica, Čičarija, the Dinara and Kamešnica Massif, the Island of Cres, the area of Obruč and Paklen, the Una River Canyon, the Mirna River, the Upper Kupa River, the complete course of the Cetina and Snježnica Rivers.

3.1.1.3.4 Conduct an expert assessment of and provide legal protection for other areas of valuable biological, landscape and/or geological diversity

3.1.1.3.5 Draft an integral plan for the nomination of sites for specific international designations (UNESCO World Heritage, UNESCO MAB, Ramsar; European Diploma of Protected Areas, UNESCO GEO Park)

3.1.1.3.6 Finalize the designation procedure for the Mura-Drava Biosphere Reserve

3.1.1.3.7 Complete the candidacy process for the UNESCO World Heritage List of protected areas that are currently included in the List of proposals (Mt. Velebit, Kornati National Park, Telaščica Nature Park and Lonjsko Polje Nature Park) and consider the possibility of proposing new areas

3.1.1.3.8 Conduct an expert assessment of the areas of Vransko Lake Nature Park, Ličko Polje and Ogulin-Plaški area for the purpose of candidacy for inclusion in the List of wetlands of international importance of the Convention on Wetlands of International Importance, Especially as Waterfowl Habitat (Ramsar Convention)

3.1.1.3.9 Conduct an expert assessment of the areas of Mljet National Park, Kornati National Park, Telaščica Nature Park and Lastovo Archipelago Nature Park for candidacy for inclusion in the List of specially protected areas of the Mediterranean, forming part of the Protocol Concerning Specially Protected Areas of the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (Barcelona Convention)

3.1.1.4.1 Enable systematic participation of the public concerned in the proclamation process for new protected areas and in the process of developing documents concerning the management of protected areas through a clearly defined consultation process

3.1.1.4.2 Consolidate all databases on protected areas into a unified nature protection information system available to the public concerned and connect it with the Environmental Information System (EIS)

3.1.1.4.3 Make the Registry of Protected Natural Values publicly available on the Ministry of Culture website

3.1.1.5.1 Continue the standardisation of reports and official documents of national parks and nature parks

3.1.1.5.2 Strengthen personnel capacities of line and supervisory services of public institutions

3.1.1.5.3 Provide education and professional training and improvement for the employees of public institutions

3.1.1.5.4 Establish a uniform ticket charging system in national parks and nature parks

3.1.1.5.5 Establish educational/presentation centres and other educational facilities in national parks and nature parks

3.1.1.5.6 Establish educational/presentation centres and other educational facilities in other protected areas

3.1.1.5.7 Continue implementation of the National Programme for the Establishment of an Integral Fire Control System in national parks and nature parks

3.1.1.5.8 Continue landmine clearance activities in protected areas, primarily national parks and nature parks

3.1.1.6.1 Carry out consultations with the competent authorities and other stakeholders in the respective areas and begin the resolution of property-related relations and disputes in respect of national parks and nature parks

3.1.1.6.2 Draw up a list of priorities and begin the purchase of land in strict reserves, national parks, special reserves and nature parks

3.1.2 Protection of ecosystems and habitats

The Republic of Croatia is characterised by a great diversity of habitats in all its areas, lowland, mountainous and coastal. The wealth of geomorphologic forms, both above and below ground, allow for a three-dimensional distribution of habitats, thus further contributing to habitat richness. It is extremely rare to find such a diversity of habitats in a country with such a small area as Croatia. Many habitat types are specific to Croatia, such as the underground karst habitats or plant communities of rocks and screes.

The Nature Protection Act defines a habitat as the unique functional unit of an ecosystem, defined by its geographical, biotic and abiotic features. All habitats of a given type constitute a single habitat type.

Habitat types are described in the habitat classification systems. Several habitat classification systems have been developed in Europe. The CORINE classification was developed by the European Union and is used in the implementation of the Habitats Directive. This classification was extended to the whole of Europe as the Palearctic Habitat Classification and later, the EUNIS Classification was developed.

Like other European countries, Croatia has developed its National Habitat Classification (NHC) in order to emphasize the habitat diversity of its territory and certain specific characteristics, such as habitats related to marine environments, underground and karst areas. By means of a key for conversion of one habitat classification into another, it is possible to convert the national classification into any European standard.

The Croatian National Habitat Classification defines the following main habitat classes, with each divided into four levels of habitat types:

A. inland surface water and wetland habitats;

B. inland unvegetated and sparsely vegetated habitats;

C. grassland, bogs, fens and tall forb habitats;

D. scrub habitats;

E. forest habitats;

F. coastal habitats;

G. marine habitats;

H. underground habitats;

I. cultivated non-forested land and habitats with weeds and ruderal vegetation;

J. constructed and industrial habitats;

K. habitat complexes.

The map of habitat types is the foundation for the process of development of the ecological network. In Croatia, all habitat types larger than 9 hectares have been mapped using satellite images on a scale of 1:100 000. This map has enabled the analysis of distribution and coverage of habitat types in Croatia.

A number of habitat types in Croatia are considered threatened. It is the objective of nature protection to conserve all threatened and rare habitat types in a favourable conservation status. For such habitat types, a functional network of the sites containing these types must be preserved. This is made possible through the establishment of an ecological network. To establish such a network, habitats are mapped, their threat status is analysed and necessary protection measures are defined. The Habitats Directive requires that a functional network of important sites be established for threatened habitat types of the European Union. This network is called NATURA 2000.

The Ordinance on habitat types, habitats map, threatened and rare habitat types and habitat type conservation measures was adopted in January 2006 (OG 07/06). It lists all the habitat types protected under the Habitats Directive, Resolution no. 4 (1996) of the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention), and those threatened at the national level. General conservation measures have been prescribed, while specific protection measures should be elaborated and incorporated into spatial plans, sector management plans and certain projects. These measures are issued by the Ministry of Culture through nature protection requirements and the competent authority for development of the plan or project must submit a request in line with the Nature Protection Act.

STRATEGIC OBJECTIVE

Ensure long-term conservation of threatened and rare habitat types

Strategic guidelines

3.1.2.1 Create the prerequisites for more effective implementation of the Ordinance on habitat types, habitats map, threatened and rare habitat types and habitat type conservation measures

3.1.2.2 Scientifically establish the threat status of certain habitat types in Croatia and develop specific measures for their protection

3.1.2.3 Create the prerequisites for protection of habitats threatened at the national and European level

Action plans

3.1.2.1.1 Map terrestrial habitats on a scale of 1:25 000 or in greater detail in the areas within the Croatian National Ecological Network (CRO-NEN) and the NATURA 2000 network

3.1.2.1.2 Map marine habitats in marine areas under the jurisdiction of the Republic of Croatia

3.1.2.1.3 Conduct periodical reviews of the National Habitat Classification of the Republic of Croatia

3.1.2.2.1 Prepare the Red List and Red Book of habitat types of the Republic of Croatia

3.1.2.2.2 Develop specific measures for the protection of rare and threatened habitat types

3.1.2.3.1 Inventory and map threatened and rare habitat types and the habitat types listed in Annex I to the Habitats Directive that are important for the establishment of the NATURA 2000 network

3.1.2.3.2 Define the important areas for conservation of the habitat types listed in Annex I to the Habitats Directive, and important areas for conservation of those habitat types proposed by the Republic of Croatia for inclusion in the amendments to Annex I, and ensure their inclusion in Croatia's proposed NATURA 2000 network

3.1.2.3.3 Implement protection and monitor the state of threatened and rare habitat types and habitat types listed in Annex I to the Habitats Directive, including habitats proposed by Croatia for inclusion in amendments to Annex I

3.1.2.3.4 Implement active protection of bogs and fens

3.1.2.3.5 Incorporate schemes focused on the protection of species and habitats in protected areas into the Agricultural and Environment Protection Programme

3.1.2.3.6 Evaluate grasslands and formulate a proposal for conservation of specific sites along with management measures

3.1.2.3.7 Establish and implement protection of habitats on islands hosting endemic taxa and/or on nesting sites, resting places during migration, sand beaches, ponds and springs

3.1.2.3.8 Provide incentives to private owners for implementation of measures for conservation of threatened species

3.1.2.3.9 Include the local population in the implementation of habitat protection activities (removal of overgrowing vegetation, mowing, grazing, etc.)

3.1.2.3.10 Develop, on an expert and scientific basis, specific measures for the conservation of threatened habitat types and ensure their incorporation into all natural resource management plans and physical planning documents

3.1.2.3.11 Compile protocols for determining favourable conservation status for the habitats listed in Annex I to the Habitats Directive

3.1.3 Croatian National Ecological Network and the NATURA 2000 network

Establishment of the National Ecological Network is prescribed by the Nature Protection Act. Pursuant to the Act, the National Ecological Network (NEN) is defined as a system of interconnected or spatially close ecologically important areas having a balanced biogeographical spread, thus significantly contributing to the preservation of the natural balance and biodiversity. Such a network should include international and national ecologically important areas (international conventions, relevant EU Directives, national Red Lists of threatened species and habitats).

In 2005, the SINP completed the project "Establishment of the Croatian National Ecological Network" (CRO-NEN) as a part of the Pan-European Ecological Network and EU NATURA 2000 network, which was co-financed by the LIFE III fund. The project resulted in the development of the Proposal of the ecological network as the basis for the Regulation on proclamation of the ecological network. Data collection continued throughout 2006, funded by the state budget and through Phase II of the Emerald Network project. In 2007, the SINP created the technical basis for preparation of the Regulation on proclamation of the ecological network, which was adopted at the end of October 2007. Furthermore, the Ordinance on nature impact assessment (OG 89/07) was adopted in August 2007, imposing the obligation to assess the acceptability of any project which alone or in combination with other projects may have significant impact on the areas of the ecological network. For more accurate alignment of the provisions of the Nature Protection Act, in the part regulating the issue of the nature impact assessment of projects, with the Habitats Directive, work on amendments to the Act started in April 2008. Consequently, it will be necessary to modify the Ordinance on nature impact assessment. By virtue of the Regulation, the SINP and the State Geodetic Directorate are responsible for drawing the boundaries of the ecological network area on the Croatian Base Map on a scale of 1:5 000, and, where necessary, supplementing it with orthophoto (aerial photo) images and/or the cadastre plan.

The CRO-NEN covers 47% of the land and 39% of the marine territory of the Republic of Croatia, and includes two corridors: the corridor for sea turtles and the corridor Palagruža-Lastovo-Pelješac (important bird migration area).

The Regulation covers areas important for the protection of threatened wild taxa and habitat types at the national and international level, including potential sites of the NATURA 2000 network.

NATURA 2000 is the ecological network of the European Union that comprises sites important for the conservation of threatened species and habitat types. This programme, which constitutes the foundation for nature protection in the European Union, is based on the Birds and Habitats Directive. Through the designation of Special Areas of Conservation (SAC), each Member State contributes to the establishment of the NATURA 2000 ecological network. In compliance with the Birds Directive, Special Protection Areas (SPA) are designated for the protection of particular bird species.

The protection mechanisms for the NATURA 2000 network include the adoption of management plans and nature impact assessment of any plan or project which alone or in combination with other plans or projects may have a significant impact on the conservation objectives of a given NATURA 2000 site. Monitoring the status of qualification species and habitats is obligatory for NATURA 2000 sites.

Implementation of the PHARE 2005 funded project "Institutional building and implementation of NATURA 2000 in Croatia" started in January 2008. The main objective of the project is to support Croatian institutions in the process of accession to the European Union through the implementation of the Habitats and Birds Directive. The project envisages an extensive consultation process in order to finalize the Proposal of the NATURA 2000 ecological network as prepared by the SINP, and to define the Final Proposal based on the results of the consultation process.

STRATEGIC OBJECTIVE

Continue and complete designation of Special Conservation Areas (SCA) for threatened and rare taxa and habitat types within the CRO-NEN and NATURA 2000 network and define protection and management measures for such areas

Strategic guidelines

3.1.3.1 Ensure conservation of all components and the integrity of the CRO-NEN and NATURA 2000 network

3.1.3.2 Ensure financial mechanisms for implementation of conservation measures for the CRO-NEN and NATURA 2000 network

Action plans

3.1.3.1.1 Finalize the NATURA 2000 proposal for the Republic of Croatia and carry out consultations with all relevant stakeholders at the national and local level

3.1.3.1.2 Define the boundaries of the ecological network and NATURA 2000 network on the Croatian Base Map on a scale of 1:5 000 and, where necessary, supplement it with orthophoto (aerial photo) images and/or the cadastre plan

3.1.3.1.3 Draft and implement management plans for the ecological network and NATURA 2000 sites

3.1.3.1.4 Introduce systematic monitoring of the situation in areas of the ecological network, with special emphasis on monitoring the status of qualification species and habitats in specific NATURA 2000 areas, in co-operation with all relevant stakeholders

3.1.3.1.5 Conduct a nature impact assessment for each plan or project which alone or in combination with other plans or projects could have a significant impact on conservation objectives and/or the integrity of certain sites within the ecological network or NATURA 2000

3.1.3.2.1 Provide incentives for implementation of conservation measures (agriculture, forestry, fisheries) for private land-owners and land-users in the ecological network and NATURA 2000 areas within the framework of the Agricultural and Environment Protection Programme

3.1.3.2.2 Secure financial resources for the implementation of conservation measures in areas of the ecological network whose management is entrusted to the county public institutions

3.1.4 Protection and conservation of wild taxa

Due to its specific geographical position, the Republic of Croatia is one of the richest European countries in terms of biodiversity. It is situated on the dividing line between several biogeographic regions and therefore has characteristic ecological, climatic and geomorphologic conditions. The great diversity of land, marine and underground habitats has resulted in a wealth of species and sub-species, including a significant number of endemics.

The number of known species in Croatia is around 32 000, though the estimated number is far higher – from 50 000 to over 100 000. This is an exceptionally high number for a relatively small country.

Over the past five years, 199 new taxa of terrestrial invertebrates, 205 taxa of freshwater invertebrates and 20 taxa of marine invertebrates have been described in Croatia. In 2005, an endemic fish species new to science was discovered and described in the small Norin River in the Neretva Delta area. By the year 2007, two more species of this genus were discovered in the Jadova River and Prološko Blato, respectively. This indicates that the true biodiversity is even greater than the existing data present.

One of the reasons for the large number of endemics in Croatia, and especially tertiary relics, is the fact that this area was not greatly affected by glaciation. The main centres for endemism of flora are the Velebit and Biokovo mountains, while endemic fauna is most represented in underground habitats (cave invertebrates, the olm), on the islands (lizards, snails) and in the karst rivers of the Adriatic drainage basin (minnows and gobies).

Croatia contains significant populations of many species that are threatened at the European level. These are connected to large preserved areas of their characteristic habitats. Vast mountain beech and fir forests are the habitats of large populations of three large carnivores inhabiting the Croatian territory (bear, wolf and lynx). Wetland complexes with alluvial forests are important nesting, wintering and migration sites for European waterfowl and for wetland birds nesting in forests, such as the white-tailed eagle, black stork and lesser spotted eagle. The wealth of marine biodiversity, in combination with the immense diversity of islands and cliffs with endemic life forms, gives the Croatian coastal area international significance.

Despite the high level of conservation of nature in Croatia, many of its components are threatened. Based on the evaluation of the threat to the analysed plant, fungal and animal groups (vertebrates, butterflies, dragonflies, underground fauna, corals, ground beetles, stoneflies, vascular flora and fungi), the Red Lists of threatened species to date includes 2 235 threatened taxa. The most highly threatened are the freshwater fishes, followed by reptiles, amphibians and birds. All these taxa are protected by the Ordinance on protection and strict protection of wild taxa (OG 07/06). This Ordinance distinguishes two levels of protection of wild taxa – protected and strictly protected wild taxa. Strictly protected wild taxa may not be used in any way (picked,

collected, caught, kept, killed, etc.) or disturbed, unless explicitly permitted under the Nature Protection Act (research, education, repopulation, reintroduction, etc.), subject to approval issued by the Nature Protection Directorate of the Ministry of Culture. Protected wild taxa may be used in such manner as not to put in danger their populations at the national or local level. Such a manner of protection is in line with the relevant international agreements, such as the Bern Convention, and with the relevant EU legislation, i.e. the Habitats Directive and Birds Directive.

The most significant threat to wild species is habitat loss and degradation, partly as a consequence of conversion of natural habitats into development or agricultural land or construction of roads and other traffic corridors, which often leads to habitat fragmentation. Wild taxa are also threatened by excessive exploitation in hunting, fishing and forestry, by the introduction of allochthonous species. Toxic substances, intensive agriculture, water, soil and air pollution, and some tourist trades are also of great concern.

STRATEGIC OBJECTIVE

Conserve and improve the existing diversity of wild taxa and recover a part of lost taxa where this is possible and justified. Ensure sustainable use of plant, fungal and animal taxa

Strategic guidelines

3.1.4.1 Ensure favourable status of threatened taxa in the Republic of Croatia and the taxa listed in Annexes II, IV and V of the Habitats Directive and in Annex I of the Birds Directive, which are important for establishment of the NATURA 2000 network

3.1.4.2 Determine the exact distribution and status of the species proposed by the Republic of Croatia for inclusion in the amendments to the Habitats Directive

3.1.4.3 Establish, on a scientific basis, the threat status of unprocessed groups of wild taxa and ensure protection of threatened, endemic and relict taxa

3.1.4.4 Continue establishment of the national wild taxa monitoring system

3.1.4.5 Continue establishment of the nature protection information system that will include information on wild taxa

3.1.4.6 Active implementation of protection of migratory species

3.1.4.7 Manage large carnivore populations at the national and international level

3.1.4.8 Improve the system of providing care and custody for injured, poisoned, sick or confiscated strictly protected wild animals

3.1.4.9 Co-operate with all relevant stakeholders in resolving the issue of placing poisons in nature and their improper use

Action plans

3.1.4.1.1 Inventory and map the taxa listed in Annexes II and IV of the Habitats Directive and Annex I of the Birds Directive, which are important for establishment of the NATURA 2000 network

3.1.4.1.2 Designate Special Conservation Areas of the taxa listed in Annex II of the Habitats Directive and Annex I of the Birds Directive, and for the taxa proposed by the Republic of Croatia for inclusion in amendments to Annex II, and ensure their inclusion in the Croatian proposal of NATURA 2000 network

3.1.4.1.3 Prepare protocols for designation of favourable conservation status of the species listed in Annex I of the Birds Directive and Annexes II, IV and V of the Habitats Directive

3.1.4.1.4 Draft and implement action plans for the taxa important for the establishment of the NATURA 2000 network

3.1.4.2.1 Research and inventory species that are proposed by the Republic of Croatia for inclusion in the amendments to Annexes of the Habitats Directive

3.1.4.3.1 Compile Red Lists of unprocessed groups on the basis of scientific data

3.1.4.3.2 Compile Red Books of unprocessed groups on the basis of scientific data

3.1.4.3.3 Draft and implement action plans for the protection of threatened taxa pursuant to IUCN criteria (CR – critically endangered, EN – endangered, VU – vulnerable)

3.1.4.3.4 Draft and implement action plans for the protection of endangered endemic and relict species

3.1.4.4.1 Monitor the state of threatened taxa in the Republic of Croatia and the taxa listed in Annexes II, IV and V of the Habitats Directive and Annex I of the Birds Directive

3.1.4.5.1 Establish and maintain an information system of collected data on wild taxa

3.1.4.6.1 Draft and implement action plans for the protection of migratory species protected under international conventions

3.1.4.7.1 Implement and revise wolf and lynx management plans

3.1.4.7.2 Implement and revise bear management plan

3.1.4.7.3 Establish cross-border co-operation with Bosnia and Herzegovina and strengthen co-operation with Slovenia with regard to dealing with and managing large carnivores

3.1.4.8.1 Develop procedures in the event of discovery of injured, sick, poisoned or killed strictly protected animals

3.1.4.8.2 Improve co-operation with authorised centres and continue financing the provision of care and custody for injured, poisoned, sick or confiscated wild animals that are strictly protected

3.1.4.8.3 Co-operate with relevant sectors with regard to resolving the issue of provision of care and custody for wild animals

3.1.4.9.1 Provide education and build public awareness of the issue of placing poisons in nature, their improper use and their impact on wild taxa and habitats

3.1.5 Protection and conservation of domesticated taxa

Domesticated taxa and ancient plant varieties are also part of the biodiversity of Croatia. In Croatia, there is still not an integral list of indigenous plant varieties and, as such, no insight into their status. There is a register of indigenous animal breeds bred in Croatia and their threat status has been assessed at the national level in accordance with the FAO classification.

Protection of domesticated breeds and old plant varieties falls within the competence of different state administration bodies and is governed by rules and regulations relating to nature protection, cattle breeding, veterinary medicine, animal welfare, seed production, etc. The Nature Protection Act has only recently introduced the category of protected indigenous domesticated taxa for endangered inherited plant taxa or animal breeds that have developed as a result of traditional breeding and forms part of the natural heritage. Conservation of endangered indigenous domesticated taxa is implemented through co-operation among the competent authorities in charge of nature protection, agriculture and animal husbandry, and their breeding is encouraged through financial incentives and benefits provided by the competent authority in charge of agriculture and animal husbandry.

STRATEGIC OBJECTIVE

Conserve and promote the existing diversity of indigenous domesticated animal breeds and cultivated plant varieties using all suitable conservation methods (*in situ*, *ex situ*, *inter situ*)

Strategic guidelines

3.1.5.1 Ensure conservation of critically endangered indigenous domesticated breeds and varieties

3.1.5.2 Improve the system of incentives for breeding and exploitation of indigenous domesticated taxa

3.1.5.3 Encourage use of indigenous domesticated taxa for maintenance and improvement of the status of threatened habitat types

Action plans

3.1.5.1.1 Draft and implement conservation programmes for critically endangered indigenous domesticated breeds and varieties

3.1.5.2.1 Develop a programme of incentives for use of indigenous domesticated taxa for the purpose of improvement of threat status of threatened habitat types within the framework of the Agricultural and Environment Protection Programme

3.1.5.3.1 Encourage *in-situ* breeding and the keeping of indigenous domesticated breeds and varieties for the purpose of maintaining threatened habitat types

3.2 *Ex-situ* protection

*Ex-situ* protection refers to the conservation of biodiversity components outside their natural habitats. Such measures are particularly important for very rare and threatened species that are threatened with extinction, therefore it is important to conserve or even propagate their genes for the purpose of repopulating natural habitats. Plant genes can be conserved in the form of seeds or tissue cultures, whereas animal genes can be conserved in the form of a gene library, where deeply frozen genomes are stored. Another method is keeping and breeding or cultivation of certain plant and animal species in zoological and botanical gardens. Conservation of the gene fund of specific species of forest trees and natural stands is carried out by means of various *ex-situ* methods.

Conservation of indigenous plant varieties is sporadic and most activities are based on *ex-situ* methods. The Faculty of Agronomy of the University of Zagreb has initiated the Croatian Plant Gene Bank project (CPGB). All over the world, zoological gardens play an important role in *ex-situ* conservation of rare animal species. The Zagreb Zoo is included in the European Endangered Species Programme (EEP), which co-ordinates breeding of specific endangered species with the assistance of the International Species Information System (ISIS). Although these primarily include non-native species, inclusion in this project is important for protection of biodiversity at the global level.

For the purpose of protection of the most threatened indigenous cultivated plants varieties and domestic animals breeds, the state should introduce incentive measures to ensure the breeding and cultivation of such taxa by many more farmers, under expert and scientific supervision.

STRATEGIC OBJECTIVE

Conserve biodiversity components outside their natural habitats

Strategic guidelines

3.2.1 Implement *ex-situ* protection of the most threatened indigenous and endemic taxa and indigenous domesticated taxa

Action plans

3.2.1.1 Develop *ex-situ* protection programmes for the most threatened indigenous and endemic plant and animal taxa

3.2.1.2 Develop *ex-situ* protection programmes for the most threatened indigenous domesticated taxa

3.2.1.3 Establish a uniform system of keeping wild taxa genes

3.2.1.4 Establish a gene bank for threatened indigenous domesticated taxa

3.2.1.5 Organize the systematic storage of genetically proved specimens of endemic taxa in the collections of museums and other institutions

3.3 Elimination of invasive species

Invasive alien species are the one of the leading causes of threat to biodiversity on a global scale, second only to direct habitat destruction. Apart from an adverse impact on biodiversity, invasive species can also have an adverse impact on human life and health and cause serious economic damage.

As in other European countries, Croatia is facing many problems with invasive alien species (IAS). The oldest known problem dates back to 1910, when 11 individuals of the Indian mongoose (*Herpestes javanicus auropunctatus*) were introduced to the island of Mljet in order to reduce the population of poisonous snakes. Over a 20-year period, the introduced animals eliminated all the snakes on the island and began attacking other small wild animals, migratory birds and domestic animals.

There are numerous invasive alien species that have a significant and negative impact on Croatian biodiversity. These are, primarily, the alien species of green algae in the Adriatic Sea, *Caulerpa taxifolia* and *Caulerpa racemosa*. During the 20$^{th}$ century, 16 allochthonous fish species were introduced to the rivers of the Danube and Adriatic Basins. These species cause substantial damage to the native ichthyofauna, and the rivers of the Adriatic Basin, rich in endemic fish species, are extremely threatened in this regard. Apart from the introduced species, over the past 15 years, the spread of Ponto-Caspian species of goby along the Danube River upstream from the Black Sea has been recorded. These species are the river goby (*Neogobius fluviatilis*), round goby (*Neogobius melanostomus*) and Kessler's goby (*Neogobius kesslerii*), which are also present in the Croatian part of the Danube River likely compete for habitat and food with the native goby species.

Another species that must be mentioned are the clam *Dressenia polymorpha* and the crayfish *Orconectes limosus*, carrier of the crayfish plague. Invasive species on the islands pose a particular problem due to the increased sensitivity of island ecosystems stemming from their geographic isolation. The Mediterranean form of black rat *Rattus rattus* and the Italian lizard *Podarcis sicula campestris* have a strong, negative impact on the native island fauna.

Allochthonous game species, deliberately introduced to hunting grounds, both on the islands and mainland, represent a serious problem. Apart from being in competition with domesticated animals, they are also in competition with indigenous wild animals, and are often carriers of new types of pests, which have a negative impact on indigenous populations. Allochthonous game on

the islands destroys island habitats, contributes to reduction in biodiversity and loss of traditional agriculture and extensive cattle breeding. Allochthonous game is also the main reason for placing poison in nature on the islands. Some examples include wild boar (*Sus scrofa*), whose populations are out of control on the islands in Kvarner Bay, thus inflicting losses to the economy and changing the natural island ecosystems, mouflon (*Ovis aries musimon*) on Pelješac Peninsula, which destroy traditional grape plantations because of the lack of natural pastures, barbary sheep (*Ammotragus lervia*), introduced to the area of Mt. Mosor, introduction of nutria (*Myocastor coypus*) at the estuary of the Mirna River, etc.

Invasive plant species also pose a threat. The common ragweed (*Ambrosia artemisifolia*) has spread through ruderal habitats, displacing autochthonous weed and ruderal species and, due to its massive pollen production, is one of the greatest allergens in Europe. Another example is false indigo (*Amorpha fruticosa*), deliberately introduced because of its honey-bearing properties, and which today is spreading rapidly through the humid grasslands in lowland areas. A serious threat is also posed by the tree of heaven (*Ailanthus altissima*), which is rapidly spreading across islands and displacing indigenous flora.

A section concerning allochthonous flora of Croatia (including invasive species) has also been developed within the Flora Croatica Database. A list of neophyte taxa of the Croatian vascular flora, and the habitat types that host these species, has also been compiled.

The legislation governing this problem area is the Nature Protection Act, and provisions relating to alien and invasive species are also incorporated into other sectoral regulations. The Hunting Act (OG 140/05) and the Islands Act (OG 34/99, 149/99, 32/02, 33/06) regulate the introduction of alien game species, whereas the Marine Fisheries Act and Freshwater Fisheries Act regulate breeding and introduction of alien marine and freshwater fish species. The Animal Protection Act (OG 135/06) prohibits the abandonment of pets, thereby further preventing the introduction of alien species into nature.

Over the past twenty years, a great threat has been posed by ballast water as the main cause of introduction of invasive alien species into aquatic ecosystems, particularly marine ecosystems. The central state administration body in charge of maritime affairs is responsible for the resolution of this issue at the national level. As a result of its activities, the Ordinance on management and supervision of ballast water (OG 55/07, 38/08) was adopted in 2007 pursuant to the Maritime Code (OG 181/04).

STRATEGIC OBJECTIVE

Prevent the introduction of invasive alien species into nature in the Republic of Croatia and continue resolving the issues of existing invasive species

Strategic guidelines

3.3.1 Establish the existing situation with regard to alien and invasive species, assess their impact, define and carry out activities that would contribute to the elimination or weakening of such negative impacts

3.3.2 Undertake necessary activities towards the prevention of introduction of new invasive alien species

3.3.3 Systematically monitor the distribution of invasive species in Croatia

Action plans

3.3.1.1 Develop and implement the National Strategy on invasive alien species

3.3.1.2 Establish the existing situation with regard to alien and invasive species, list and map their distributions

3.3.1.3 Implement elimination programmes for alien and invasive species

3.3.1.4 Scientifically determine the population count of introduced game on the islands, develop and implement elimination programmes

3.3.1.5 Promote research of invasive algae species in order to devise methods of control and lessening of their impact on the biodiversity of the Adriatic Sea

3.3.2.1 Conduct continuous public education on invasive species

3.3.2.2 Ensure co-operation with other sectors with the aim of preventing the introduction of alien species into nature

3.3.3.1 Develop and implement programmes on the systematic monitoring of invasive species distributions in Croatia

3.3.3.2 Monitor the distribution of invasive species that are indicators of climatic change

4. LANDSCAPE CONSERVATION

Following European landscape conservation trends, Croatia has also initiated activities towards promoting the importance of landscape values. Although the protection of landscapes has been ongoing for a number of years, it has mainly been reduced to normative measures, whereby protection has been provided only to specially protected and registered areas of natural and cultural heritage, areas proposed for protection in spatial plans and to protection measures defined in the Environmental Impact Assessment procedure for projects for which this procedure is obligatory. The division of the competences and lack of co-ordination on the part of three main departments (physical planning, nature protection and cultural heritage) has not contributed to a complete perception of the issue of landscape conservation. The present intention is to evaluate and conserve the landscape throughout the entire territory of Croatia, both urban and suburban, and rural and natural landscapes.

The Republic of Croatia is a signatory to the European Landscape Convention (Florence, 2000), which entered into force on 1 March 2004. Under the Convention, Croatia undertook the obligation of implementing landscape conservation through landscape protection, management

and planning instruments. One of the main activities towards achievement of this goal is development of the Landscape Basis of Croatia, which will identify the characteristics and state of landscapes, establish their specific properties and carry out their classification.

STRATEGIC OBJECTIVE

Ensure landscape conservation through landscape protection, management and planning instruments that are based on identification and the state of landscape characteristics and on the completed process of landscape inventorying and classification

Strategic guidelines

4.1 Systematically approach landscape conservation through intersectoral co-operation

4.2 Gain insight into the landscape values of Croatia through identification, typology and scientific and expert evaluation of the landscape

4.3 Ensure implementation of the European Landscape Convention and the Landscape Basis of Croatia

Action plans

4.1.1 Set up the National Landscape Committee

4.1.2 Adopt a national programme for implementation of the European Landscape Convention

4.2.1 Create the Landscape Basis of Croatia through co-operation among relevant sectors (physical planning, nature protection, environmental protection, cultural heritage protection, transport, forestry, agriculture, water management, mining, energy, education and science, etc.)

4.3.1 Implement the Landscape Basis of Croatia through co-operation among relevant sectors (physical planning, nature protection, environment protection, cultural heritage protection, transport, forestry, agriculture, water management, mining, energy, education and science, etc.)

4.3.2 Promote activities aimed at raising awareness, training and education in the field of landscape conservation

5. PROTECTION OF GEOLOGICAL DIVERSITY

The 1999 Strategy and Action Plan for the Protection of Biological and Landscape Diversity did not fully address the protection of geological diversity, or geodiversity, i.e. inanimate nature of the Republic of Croatia. Instead, the Strategy only addressed this in part through general and special strategic objectives or action plans, mainly through landscape conservation and protection of ecosystems and habitats. As such, the protection of geodiversity was not covered as a separate chapter in the Report on the State of the Natural Environment for the period 2000-2007. As the Nature Protection Act regulates the system of protection and integral conservation of nature and

its values, which includes geological diversity in addition to biological and landscape diversity, this chapter deals with the issues of the protection of geodiversity.

The inanimate nature of the Republic of Croatia, i.e. geological and geomorphological heritage (geoheritage) is valuable, rich and diverse. The special value of our geoheritage is a great diversity over a relatively small area.

Certain parts of the geoheritage are visible and accessible on the ground surface or underground, whereas other parts are discovered incidentally, either during excavation works when building or reconstructing infrastructure or other structures, or during the research and exploitation of mineral raw materials.

Geoheritage is an important facility of landscape and is also the foundation or geotope that ensures, through its diversity, habitats for plant, fungal and animal species (vegetation of rock creeps and shifting sands, cave and pit animals, etc.).

The degradation and destruction of geoheritage, either through natural processes or anthropogenic activities, causes a permanent change in the appearance of the landscape, a reduction in geodiversity or reduction in landscape and biological diversity.

Geological and geomorphological phenomena and structures, in particular those in karst areas, are very attractive in terms of tourism. Discoveries of deep pits and caves (depth of over 1000 metres) have attracted many local and foreign speleologists and other researchers.

Croatia has a long tradition of geoheritage protection. The Cave Protection Act was enacted as far back as 1900, and the first geological (Rupnica–Voćin) and paleontological monuments of nature were proclaimed as early as 1948. However, protection of this heritage to date has been sporadic and without a specific protection concept.

Protection and conservation of geoheritage of the Republic of Croatia is predominantly regulated by the provisions of the Nature Protection Act and by certain provisions of the Act on the Protection and Conservation of Cultural Assets (OG 69/99, 151/03, 157/03) and Museums Act (OG 142/98) (*ex-situ* protection).

A total of 51 geo-structures/geo-sites in 12 counties have been protected thus far pursuant to the Nature Protection Act. Of these, 45 structures/sites are protected as monuments of nature and six are protected as special reserves (of which one site is under preventive protection). This constitutes approximately 11% of the total number of protected sites of the Republic of Croatia. It must be emphasized that this is not the final state of protected geoheritage, as a significant number of structures or sites enjoy legal protection due to their location within other areas that are protected on the basis of other natural features and values.

Certain parts of geoheritage are very valuable structures and/or sites, not only of local or European, but also of global importance (the site of fossil remains of Neanderthal man Hušnjakovo–Krapina and Vindija–Donja Voča, skeleton findings and fossil footprints of Cretaceous dinosaurs in Istria and easily accessible and deep karst pits, caves and lakes, such as Lukina jama–Trojama pit system, Red Lake, etc.).

As regards geoheritage sites that are not covered by the said protection methods, those situated in sparsely populated areas and/or outside main communication routes are best preserved, while the most threatened are those in urban areas and their immediate vicinity.

Karst, the world's most fragile ecosystem, is the least explored part of Croatia's geoheritage, though its state of conservation is still satisfactory.

Many valuable geoheritage areas on southern Mt. Velebit, in northern Dalmatia, certain parts of Lika, Kordun, Banija and Slavonia contain landmines, and landmine clearance is a very slow and expensive process.

As certain areas of geological and geomorphological heritage are habitats for plant and animal species, foundations for different forms of construction, exploitation of mineral raw materials and other natural resources, tourist exploitation and the like, the issue of protection of this heritage is associated with almost all areas of human activity.

The main issues in the protection and conservation of geodiversity or geoheritage of the Republic of Croatia are insufficient awareness of their value and importance, and its non-renewability (can be easily damaged and destroyed and therefore lost permanently).

The UNESCO World Heritage List does not include geoheritage structures and/or sites of exceptional and universal importance. Therefore the International Union of Geological Sciences (IUGS) and UNESCO initiated the geoheritage protection project "Geosites Inventory and Database" and the UNESCO Geopark.

For more effective protection and conservation of geoheritage, it is necessary to promptly amend legal regulations and strengthen staff capacities or complete organisational units in charge of the protection of inanimate nature. It is also necessary to intensify expert and scientific research activities and media promotion of geoheritage, and to ensure long-term support to the general public and institutions in the protection of geoheritage. Furthermore, it is necessary to supervise the processes, actions and activities that jeopardize geodiversity and ensure mechanisms for the conservation and protection of geoheritage.

STRATEGIC OBJECTIVE

Conserve geodiversity or geotopes as one of the prerequisites for the conservation of biological and landscape diversity, and conserve the non-renewable geomorphological and geological heritage of the Republic of Croatia *in situ* and *ex situ*

Strategic guidelines

5.1 Apply national and international instruments to systematically protect, conserve and promote existing geodiversity

5.2 Develop partnership with other sectors for the purpose of researching, protecting, conserving and promoting geodiversity or use of geoheritage

5.3 Develop an appropriate legislative and institutional framework and strengthen staff capacities of nature protection services that deal with the protection of inanimate nature of the Republic of Croatia

5.4 Raise the level of information and education about the value and importance of geodiversity, and increase public awareness regarding the protection and conservation of geoheritage

Action plans

5.1.1 Set up the National Committee for the protection of geodiversity and geoconservation, and develop national guidelines for inventorying, evaluation and classification of geoheritage

5.1.2 Inventory and evaluate geodiversity, and create a database and program for monitoring its state

5.1.3 Impose a legal obligation to map geodiversity as an integral part of physical planning documents and natural resource exploitation/management plans

5.1.4 Inventory speleological structures and develop the National Speleological Cadastre

5.1.5 Develop a preventive protection programme for unique and/or threatened geoheritage

5.1.6 Identify areas for the European or global geoparks network

5.1.7 Include geoheritage in the tourism offer of the Republic of Croatia and promote geotourism

5.1.8 Interpret geodiversity through all available means (popular scientific and educational publications, “geosouvenirs”, presentation centres, museums, etc.)

5.1.9 Inventory and evaluate geostructures/sites and compile the National List and Atlas of geostructures/sites

5.1.10 Review geostructures/sites protected by law or the relevant part of the Register of protected natural values

5.1.11 Create the technical basis for or provide explanations for the protection of specific geostructures/sites, and adopt legal acts on their preventive or permanent protection

5.1.12 Nominate geostructures/sites for inclusion to European or world cultural and natural heritage lists

5.1.13 Develop guidelines for documenting findings of rocks, minerals and fossils

5.1.14 Inventory and evaluate all types of rocks, minerals and fossils *in situ* and *ex situ*, and draft the National Programme on legal protection of specific types and/or findings

5.1.15 Compile the National List and Atlas of all types of rocks, minerals and fossils

5.1.16 Create the technical basis and provide legal protection for specific types of rocks, minerals and fossils *in situ* and *ex situ*

5.1.17 Continue to support project financing activities for conservation of geodiversity and promotion of geotourism through international and domestic funds

5.2.1 Introduce requirements and measures for protection of geodiversity or geoheritage into the relevant sectoral documents (physical planning documents and natural resource exploitation/management plans)

5.2.2 In the process of environment impact assessment of investment ventures, establish whether there is a need for conservation and protection of certain parts of geodiversity or geoheritage

5.2.3 Accelerate the process of landmine clearance in valuable geoheritage areas

5.2.4 Strengthen co-operation with scientific institutions, scientific/professional institutions, educational institutions, non-governmental organisations, tourism associations and local/regional governments for the purpose of more effective protection and conservation of geodiversity or geoheritage

5.3.1 Strengthen institutional and staff capacities of organisational units for the protection and conservation of inanimate nature at all levels

5.3.2 Align legislation in the field of nature protection with culture-related legislation, and incorporate provisions on geodiversity or geoheritage into other relevant sectoral legislation

5.4.1 Implement education of representatives of local government and regional self-government, tourism associations, state administration employees (customs, police) and others on the importance and value of non-renewable geoheritage

5.4.2 Implement professional development for employees of the Ministry of Culture, public institutions entrusted with the management of protected natural values and the SINP on effective protection and conservation of geoheritage

## 6. SUSTAINABLE USE OF NATURAL RESOURCES

### 6.1 Agriculture

Agriculture is the activity with great direct and indirect impacts on biodiversity. Throughout history, large natural areas have been converted into agricultural land by clearing forests or draining wetlands. Such practices were particularly common throughout Europe, where virtually no natural habitats remain.

However, extensive use of agricultural land (meadows, pasture grounds, small hedged plough-fields) also has a positive impact, by significantly enriching biodiversity. The greatest number of species is associated with the extensive use of grasslands, which in terms of nature protection are regarded as very valuable semi-natural habitats.

Areas without the prospect of intensive agriculture development have experienced massive population emigration and the abandonment of meadows, pasture grounds and small plough-fields. This has led to the overgrowth of these areas, with a tendency towards the aggressive spread of forest vegetation, which represents a natural permanent stage in Croatia. Such a process has been particularly common over the past fifteen years, and has threatened the existence of numerous grasslands and a number of the dependent plant and animal species.

Apart from being threatened by loss of appropriate habitats, species tied to agricultural lands are often threatened by the use of chemical plant protection agents and mineral fertilizers.

With regard to the impact of agriculture on biodiversity, a new problem arose after the year 1990 with the introduction of genetically modified crops into the environment. Over a period of a decade, these crops have spread globally and, to a significant extent, have threatened the existing genetic diversity of agricultural domesticated taxa, and the natural biodiversity of the area into which they were introduced. Officially, there are still no genetically modified crops in the Republic of Croatia. However, it is only a matter of time as to when these will appear, given the high probability of unintentional introduction, difficulties in exercising control and given the EU practice, which already allows the introduction of a certain number of genetically modified crops into the environment.

The data of the Central Bureau of Statistics indicate a constant decreasing trend as regards agricultural land area. The difference between the statistical data, based on land registered as agricultural land in the cadastre and actual situation, has arisen due to the abandonment and overgrowth of a large proportion of agricultural land, and as a result of losses on the account of building land and infrastructure facilities.

The new perception of the actual situation is significantly changed by various estimates based on a unit of area of agricultural land, such as the estimated use of plant protection agents and mineral fertilizers, which has turned out to be much higher than previously estimated.

Currently one-fourth of the total arable land has either been left fallow or is unused. In the mountainous and coastal areas, more than one-half of the agricultural land is not regularly cultivated. The primary reasons for this are due to the landmines that are laid over a considerable area of land and intensive population emigration from these areas.

STRATEGIC OBJECTIVE

Conserve biodiversity on agricultural land surfaces through sustainable management

Strategic guidelines

6.1.1 Continue co-operation between the competent authorities in charge of nature protection and those in charge of agriculture with regard to the adoption and implementation of the Agricultural and Environment Protection Programme

6.1.2 Conserve sites hosting representative threatened habitat types within the CRO-NEN and NATURA 2000 network

6.1.3 Maintain a favourable water regime, including high levels of groundwater in areas of bogs and fens, wet grasslands and tall forbs habitats

6.1.4 Decrease the trend of the loss of land surfaces and diversity of near-natural and semi-natural grasslands as valuable anthropogenic habitats which are very rich in biodiversity

6.1.5 Promote ecological agriculture and other forms of agriculture that contribute to the conservation of biodiversity, and assist producers in promotion and market penetration

6.1.6 In agricultural areas, encourage conservation of biological taxa important for the habitat type, and ensure that alien species and genetically modified organisms are not introduced into nature

6.1.7 Educate agricultural producers on the importance of conservation of biodiversity in agricultural practice

6.1.8 In agricultural production, use protective agents and mineral fertilizers in a sustainable manner

6.1.9 Ensure implementation of nature protection measures in the field of agriculture

Action plans

6.1.1.1 Develop and implement the Agricultural and Environment Protection Programme, which promotes management that contributes to the conservation of biodiversity and the CRO-NEN or NATURA 2000 network

6.1.2.1 Adopt management measures/plans for the CRO-NEN and NATURA 2000 network areas

6.1.3.1 When planning locations for hydromelioration projects, give priority to the re-cultivation of existing neglected agricultural land

6.1.4.1 Promote grassland management through grazing and mowing regimes adapted to the habitat type

6.1.4.2 Promote extensive cattle breeding in highland, mountainous, island and coastal areas

6.1.4.3 Conduct research of characteristic grassland communities for each phytogeographic area

6.1.4.4 Prevent the conversion of agricultural land, in particular meadows and pasture grounds, into woodland or building land

6.1.5.1 Incorporate measures for maintaining and promoting traditional forms of farming into protected area management plans

6.1.6.1 Ensure co-operation with other sectors with the aim of preventing introduction of alien species and genetically modified organisms into nature

6.1.7.1 Include agricultural producers in educational programmes on the importance of conservation of biodiversity in agricultural practices

6.1.8.1 Reduce the use of pesticides, particularly those with a broad-spectrum, in favour of selective pesticides, and promote the use of biological methods

6.1.8.2 Improve supervision and implement education about the use of chemical agents in agriculture

6.1.9.1 Incorporate nature protection measures and requirements, and ecological network conservation guidelines into agricultural management plans

6.1.9.2 Incorporate biodiversity conservation measures into the Agricultural Land Disposal Programme

6.1.9.3 In the agricultural land consolidation process, wherever possible, ensure the implementation of conservation measures for natural and semi-natural habitats, especially along the edges of large monocultural areas, along roads, pathways and canals

6.2 Forestry

Due to the geographical position of the Republic of Croatia, on the dividing line between the Euro-Siberian/North-American and Mediterranean vegetation region, there is an exceptional diversity of habitats. According to the National Habitat Classification, 105 forest communities and some 4 500 plant species and sub-species have been recorded.

In the territory of Central Europe, forests are the ecosystems with the highest species richness. Forest complexes often exhibit patches of numerous habitats, which considerably increase their overall biodiversity (watercourses, springs, ponds, bogs, fens, forest edges, forest glades, old trees, dry trees, rotten trees, etc.). The number of threatened forest species in Europe is continually on the rise. Dry and fallen trees, which contribute to biodiversity, are extracted from exploited forests.

Forests in Croatia fulfil an economic, ecological and social function and are managed in a lasting manner, thus maintaining the naturalness and stability of the forest ecosystem. Croatia is one of few European countries whose forests, in terms of tree composition, are almost completely natural (95%). The combination of natural conditions and traditionally sound forestry

management practices and science has ensured the high biological and landscape diversity of our forests.

The total area of forests and woodlands in Croatia is 2 688 687 hectares, covering 47.5% of the Croatian land territory. Of this area, 2 106 917 hectares (78%) are state-owned, and 581 770 hectares (22%) are privately owned. State-owned forests are under management of the Croatian Forests (Hrvatske šume d.o.o. - HŠ) company. Since 2006, the Forestry Advisory Service (FAS) has been responsible for the improvement of management of the forests in private ownership.

According to the Forests Act (OG 140/05), forests in the Republic of Croatia are managed on the basis of forest management plans. These lay down the requirements for the proper use of forests and forest land and projects in those areas, the required scope of forest cultivation and protection, the possible degree to which forests may be used, and requirements for management of fauna. The Nature Protection Act stipulates that all forest management plans on the territory of the Republic of Croatia must incorporate nature protection requirements and measures as imposed by the Nature Protection Directorate of the Ministry of Culture, in accordance with the technical bases compiled by the SINP.

Inclusion of nature protection guidelines in the management of Croatian forest resources is also required by the implementation principles of the Forest Stewardship Council (FSC) forest management certificate, awarded to Croatian Forests for the entire area under its management. According to the definition of the FSC, the certificate means that a forest is managed in accordance with strict ecological, social and economic standards. The period of validity of the certificate (including the extension on 17 October 2007), covers the period from 17 October 2002 to 16 October 2012, and is subject to annual review.

Forest areas important for species and habitat types threatened at the national and/or international level are included in the ecological network and will form an integral part of the proposal for the Croatian part of the European NATURA 2000 ecological network. Since many forest certification principles overlap with the principles of the ecological network and the NATURA 2000 network, the process of development and implementation of management plans in forested areas of the ecological network forests will be much easier in comparison with other sectors. In this regard, co-operation with experts and line services in the field of forestry has already been established. A proportion of state-owned forests is permanently exempted from management, mainly those in inaccessible areas and those serving for protection of land, waters, building and other property settlements (protective forests under the Forests Act), forests and parts of forests for production of forest seeds, forests within protected areas that are protected under the Nature Protection Act, and forests intended for scientific research, teaching or defence purposes of the Republic of Croatia (special-purpose forests). Forests in areas still polluted by landmines are not yet under management. All forests in strict reserves, national parks and special forest vegetation reserves are exempted from management by virtue of the Nature Protection Act, and forests within protected areas are subject to the forest ecosystem protection programme, which is developed and adopted as an integral part of the protected area management plan.

The species that are most sensitive to forest management are those that are in any way related to old (hollow) or fallen (overturned) trees, primarily those of a specific taxon of micro-organisms,

fungi, arthropods, bats and birds. Some forest species are nowadays classified as threatened due to the loss of such habitats.

STRATEGIC OBJECTIVE

Conserve the existing biodiversity of forests and ensure sustainable exploitation of this biological resource through incorporation of biodiversity protection measures and ensure co-operation between the forestry and nature protection sectors

6.2.1 Use and manage forests on the principle of conserving biodiversity components of forest ecosystems, with the focus on protected areas, ecological network areas and future NATURA 2000 areas

6.2.2 Monitor the state of forest ecosystems in protected areas, ecological network areas and future NATURA 2000 areas

6.2.3 Resolve the issue of landmines in forested areas

6.2.4 Improve co-operation among relevant sectors at the national and international levels in connection with the implementation of the NATURA 2000 programme and conservation of biodiversity

Action plans

6.2.1.1 Develop protection programmes for forest ecosystems in protected areas, where economic exploitation of natural resources is not permitted

6.2.1.2 Develop a catalogue of measures for maintaining the integrity of forest ecosystems as habitats for fauna in areas of the ecological network and future NATURA 2000 areas

6.2.2.1 Develop programmes for monitoring the state of forest ecosystems in future NATURA 2000 areas

6.2.2.2 Establish the impact of chemical, biological and biotechnical agents for plant protection on forest ecosystems, based on the example of three nature parks

6.2.2.3 Monitor the state of lowland alluvial forests

6.2.2.4 Monitor the level of damage to forests in the Gorski Kotar area

6.2.3.1 Continue landmine clearance in forested areas within protected areas, primarily in national parks and nature parks

6.2.4.1 Organise professional gatherings with participation of all relevant professions with regard to forest exploitation and management

6.3 Hunting

Hunting grounds in the Republic of Croatia cover an area of 5 508 518 hectares. This excludes protected natural areas in which hunting is forbidden by virtue of special provisions, the sea and fish farms with coastal land which serves for use of fish farms, nurseries, fruit and vine plantations intended for intensive production, and pasture grounds if these are fenced to prevent the natural migration of game, mined areas and a safety belt up to 100 m wide, and other areas where hunting is forbidden by virtue of the legal act on designation of their use.

On lands where hunting grounds are not established, the land owner or legal or natural person using the land in question is responsible for the protection of game.

As many as 1 060 hunting grounds are established in Croatia, of which 315 grounds are state-owned and 745 grounds are common. In 2008, a total of 51 308 hunters and 926 trainees were registered.

Game management on hunting grounds is pursuant to ten-year planning documents (hunting management documents or game breeding programme), whereas game management outside hunting grounds is pursuant to the game protection programme.

The brown bear is managed pursuant to the brown bear management plan in the Republic of Croatia and the resulting Action management plans for respective years. Protection of wolf and lynx, which are not regarded as game under the Hunting Act (OG 140/05), but are strictly protected species under the Nature Protection Act, is provided pursuant to management plans as follows: the Lynx Management Plan for Croatia and the Wolf Management Plan for Croatia. Management plans for large carnivores lay down the conservation guidelines for these species, including, *inter alia*, appropriate adaptations to hunting management. The existing problems should be resolved through implementation of these plans, whereby great responsibility lies with hunters who spend plenty of time in nature and have good insight into the true situation in the field.

The Nature Protection Act stipulates that hunting management documents, game breeding programmes and game protection programmes must incorporate nature protection requirements and measures adopted by the Nature Protection Directorate of the Ministry of Culture in accordance with technical bases prepared by the SINP, whereby prerequisites are created for adapting hunting to nature protection. The Nature Protection Act also imposes the prohibition of the introduction of alien species into nature. Exemptions may be granted only after a risk assessment of the introduction into nature is carried out.

Excessive supplemental feeding of certain game species (wild boar), for exclusively economic intentions, contributes in biological terms to the disturbance of the natural balance, as a higher concentration is created than the habitat capacity for this game in the hunting grounds.

Based on results of surveys completed by authorised persons enjoying hunting rights, certain analyses of the distribution areas of large carnivores have been made. These data show that in

three hunting years (2002–2005), the total number of game increased in all counties in the area of wolf distribution.

There is no particular systematic monitoring of certain species included in the lists of hunting species within the framework of the Bern Convention, the Birds Directive and the Habitats Directive.

The Republic of Croatia is a party to the Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA). The Action Plan was adopted within the framework of this Agreement, whereby the parties undertook to gradually reduce and cease the use of lead shot pellets and ensure their replacement with steel shot pellets when hunting waterfowl on wetlands and other shallow water surfaces. The Republic of Croatia is yet to commence activities towards implementation of this Action Plan.

STRATEGIC OBJECTIVE

Conserve the existing biodiversity of fauna and ensure sustainable use of this biological resource through incorporation of biodiversity measures and ensure co-operation between the hunting and nature protection sectors

Strategic guidelines

6.3.1 Implement the programme for scientifically based determination of game population counts, and establish a monitoring system

6.3.2 Monitor the state of game in protected areas where hunting activities are not permitted

6.3.3 Improve co-operation among relevant sectors at the national and international levels with regard to implementation of the NATURA 2000 programme and biodiversity conservation

6.3.4 Improve the work of and co-operation between the inspection authorities responsible for the hunting sector and the nature protection sector

6.3.5 Develop fauna management plans for species with a stricter protection regime pursuant to European Union Directives

6.3.6 Evaluate the status of allochthonous game on the islands and mainland, and begin resolution of this issue

6.3.7 Protect waterfowl and their habitats against the use of lead shot pellets

Action plans

6.3.1.1 Scientifically establish game population counts in areas with a strong presence of large carnivores, and determine a favourable relationship between the game count and the large carnivore count

6.3.1.2 Establish justification for supplemental feeding and game feeding, and the impact on the natural balance in areas with a strong presence of large carnivores

6.3.2.1 Develop game protection programmes in the protected areas where hunting activities are not permitted

6.3.3.1 Organise professional gatherings and seminars with the participation of representatives of all relevant professional fields

6.3.4.1 Organise professional gatherings and seminars with the participation of representatives of competent inspection authorities

6.3.5.1 Develop a management plan for the rock partridge (*Alectoris graeca*)

6.3.6.1 Draw up the report on the status of allochthonous game on the islands and mainland and work out a plan for its removal, and commence implementation of the plan on the northern Adriatic islands

6.3.7.1 Develop an activity plan for the gradual reduction of use of lead shot pellets and their replacement with steel shot pellets on wetlands and other shallow water surfaces, including a timetable, distribution of responsibilities among competent authorities and sources of funding

6.3.7.2 Adapt the use of hunting weapons and shot by stipulating the obligation to use steel shot pellets instead of lead when hunting waterfowl

6.4 Freshwater fisheries

Freshwater fisheries implies the management of the fish inhabiting fresh (inland) waters, and comprise fishing, stocking, aquaculture, protection of fishes and their habitats.

In economic terms, commercial freshwater fisheries are less relevant than marine fisheries, and are related to the Danube Basin and a part of the Sava River watercourse.

The management of freshwater fishes is entrusted to authorised persons enjoying fishing rights, i.e. natural or legal persons who have participated in a public tendering procedure and received a decision on granting fishing rights for a specific fishing zone, and who have entered into a contract with the Ministry of Agriculture, Fisheries and Rural Development for a 20-year period. Fish stock management is economically based, and created by authorised scientific and research institutions, and on the annual management plans of authorised persons enjoying fishing rights.

Freshwater aquaculture is largely associated with numerous carp fishponds in lowland areas of Croatia. Over the past ten years, the exploitation area and production intensity of carp fishponds has shown a decreasing trend; meanwhile, the number, area and production of trout fishponds has been increasing. The decrease in the number of carp fishponds directly affects the biodiversity and protection of waterfowl for which the spacious fishponds under semi-intensive or extensive management represent extremely valuable surrogate wetland habitats. Termination of the

production in fishponds leads to rapid overgrowth of shallow water surfaces and the overgrowth and disappearance of open water surfaces, which are both habitats and sources of food for many piscivorous waterfowl. Under international conventions, the Republic of Croatia is obliged to protect threatened and rare waterfowl and their habitats. For the purpose of their protection, a proposal has been made to introduce additional premiums, payable per hectare of fishpond, for those fish-farming trades that commit to production methods that are in line with nature protection principles.

Fishing, breeding and protection of freshwater fishes are regulated by the Freshwater Fisheries Act (OG 49/05). Certain freshwater fish species are strictly protected under the Nature Protection Act, while fishing species are included in the list of protected species. As in other industries associated with exploitation of natural resources, the Act stipulates that nature protection measures and requirements must be incorporated into fishing management documents. The Act also prohibits the introduction of alien species into near-natural and natural waters, and the transferral of such species from fishponds to other humid habitats.

In 2002, the Croatian Parliament adopted the Agricultural and Fisheries Strategy of the Republic of Croatia (OG 89/02). The general objective of this Strategy is to preserve and develop self-sustaining Croatian freshwater fisheries, whose production will satisfy Croatian needs, and to preserve and develop real foreign demand, complying with market and ecological rules.

STRATEGIC OBJECTIVE

Conserve and, where possible and appropriate, re-establish the natural biodiversity of terrestrial waters to the greatest extent possible

Strategic guidelines

6.4.1 Strengthen biodiversity conservation measures in regulations and documents in the field of freshwater fisheries

6.4.2 Prevent the introduction of alien species into open waters, particularly those in the Adriatic Basin, and commence their removal

6.4.3 Enable the existence of semi-intensive and/or extensive breeding in carp fishponds as a prerequisite for maintenance of their ornithological value

Action plans

6.4.1.1 Incorporate biodiversity conservation measures into regulations and documents in the field of freshwater fisheries

6.4.2.1 Develop and carry out a pilot project to remove alien fish species in a karst river (e.g. pike in the Cetina River or Gacka River)

6.4.3.1 Develop a programme for stimulating extensive/semi-intensive carp production in fishponds important for the nature protection

## 6.5 Marine fisheries

Pursuant to the Marine Fisheries Act (OG 46/07, 48/05), marine fisheries implies the use and management of renewable biological resources of the sea, which includes protection, fishing and breeding of fishes and other marine organisms. In line with the said Act, fishing is divided into commercial fishing – the activity of catching and collecting for the purpose of generating profit; substinence fishing – catching of fish and other marine organisms for personal needs only; sport fishing – catching of fish and other marine organisms for the purpose of pursuing sporting activities, and recreational fishing – catching of fish and other marine organisms for recreational purposes.

As a general rule, commercial fishing can be further divided into coastal fishing, which mainly takes place in the narrow belt along the coast, and deep-sea fishing.

Fishing is carried out by means of numerous kinds of fishing gear. Nowadays, over 50 kinds of fishing gear are in use, having outstanding synergetic, cumulative and competitive effects. In the course of fishing, the catch often consists of a great number of species. For example, over 200 species can be found in a trawler's catch, while catches by means of coastal fishing gear can contain around 120 species, of which almost half are of commercial interest.

The majority of the fish populations in the Adriatic Sea are unique in biological terms. However, in economic terms, they can be divided between the fleets of different countries, and therefore co-operation among all fishing participants is necessary for long-term sustainable exploitation of renewable biological resources. Of the total number of the recorded fish species and sub-species in the Adriatic Sea, at present 120 species have greater or lesser economic importance.

Of the total area of the Adriatic Sea amounting to 135 000 km², the fishing area of the sea of the Republic of Croatia accounts for 55 360 km². The marine fishing area in the Republic of Croatia is divided into 11 fishing zones. The marine areas of the Brijuni National Park, Kornati National Park, Krka National Park, Mljet National Park, Telaščica Nature Park and the Lastovo Archipelago Nature Park are not included in the marine fishing area of the Republic of Croatia. Fishing in the said protected areas is regulated by the provisions of an ordinance on internal order.

Fishing can lead to the accidental catch of certain strictly protected species, such as sea turtles and dolphins. The results of monitoring of dolphin mortality from 1990 to 2008 showed that the natural death rate of dolphins was equivalent to that of dolphin deaths caused by human activities, primarily resulting from entanglement in fishing nets.

STRATEGIC OBJECTIVE

Ensure sustainable management of biological resources in the Adriatic Sea, taking account of the need to conserve threatened marine species and habitat types

Strategic guidelines

6.5.1 Use of biological resources of the Adriatic Sea is based on sustainable management principles

6.5.2 With the aim of conserving marine biodiversity, incorporate protection requirements and measures into plans/programmes related to marine fisheries, and into spatial plans where these relate to use of the sea and coastal areas

6.5.3 Focus scientific/research programmes and projects on the exploration of specific, valuable, economically important and exploited, vulnerable, inadequately known and threatened communities, taxa and habitats

Action plans

6.5.1.1 Estimate the capacity of marine ecosystems for mariculture

6.5.1.2 Estimate available biological reserves for fishing and optimum permitted exploitation levels

6.5.2.1 Establish the distribution of marine habitats important for conservation of biodiversity and relevant areas that should be protected

6.5.2.2 Incorporate nature protection measures and requirements into the programme documents in the field of marine fisheries

6.5.3.1 Define the intensity of the impact of cage fish farming on benthic biocenoses and develop measures to reduction impacts

6.5.3.2 Continue permanent monitoring of the status of pelagic and benthic communities in the Croatian part of the Adriatic Sea

6.5.3.3 Educate fishermen and ensure their inclusion in the system of monitoring strictly protected species, in particular sea turtles, dolphins, Mediterranean monk seals, sharks

6.5.3.4 Explore and evaluate marine areas under the jurisdiction of the Republic of Croatia in relation to the NATURA 2000 network

6.5.3.5 Investigate the possibility of establishing protected fishing areas as additional tools for the sustainable management of fishing stocks

## 6.6 Genetically modified organisms

In the period since the adoption of the 1999 Strategy and Action Plan for the Protection of Biological and Landscape Diversity of the Republic of Croatia, the issue of use of genetically modified organisms has become a significant topic.

Significant progress has been achieved through the legal regulation of this issue, though this process is still ongoing. Due to the complex division of competences over different aspects of the use of GMOs, establishment of a functional system of implementation of the legislation will be complicated. Prior to adoption of initial key legal acts regulating the use of genetically modified organisms, and due to growing public interest, in 1998 the Croatian Parliament adopted the Decision on establishment of the Bioethical Committee. By virtue of the said decision, the Government of the Republic of Croatia established the Committee in 1999 within the Ministry of Agriculture and Forestry. In September 2000, Croatia signed the Protocol on Biosafety under the Convention on Biological Diversity, which was ratified by the Croatian Parliament in May 2002. Implementation of the Protocol on Biosafety falls within the competence of the Nature Protection Directorate of the Ministry of Culture. Pursuant to the provisions of the Protocol, a central focal point has been appointed for the Protocol and the Biosafety Clearing-House (BCH) mechanism for the exchange of information in the area of biosafety and GMO-related issues

Following a long period of a legal vacuum concerning the use of GMOs, de facto in which a moratorium was in place, though without a legislative basis, two key legal acts were adopted in 2003, thereby regulating this field and implementing the relevant acts of the European Union: the Nature Protection Act and the Food Act (OG 46/07).

For the purpose of more effective implementation of the legislation, the section of the Nature Protection Act pertaining to GMO was removed and revised, and a new separate Act on Genetically Modified Organisms was enacted (OG 70/05). By virtue of this Act, the central and co-ordinating authority for the performance of GMO-related technical tasks is the Ministry of Health and Social Welfare (MHSW). Pursuant to the Act on Genetically Modified Organisms and the Food Act, this Ministry is also responsible for placement on the market of GMOs and/or products containing and/or consisting of or originating from GMOs, which are used as food or animal feed. Pursuant to the provisions of the Act on Genetically Modified Organisms, the MHSW is also responsible for use of GMOs or products containing and/or consisting of or originating from GMOs in the cosmetics industry, pharmaceutical industry and human healthcare. The Ministry of Science, Education and Sports is responsible for use of GMOs in closed systems, whereas the Ministry of Culture is responsible for the deliberate introduction of GMOs into the environment. The use of GMOs as reproduction material in agriculture and veterinary medicine, as medications in veterinary practice and as plant protection agents in agriculture falls within the competence of the Ministry of Agriculture, Fisheries and Rural Development. The Ministry of Regional Development, Forestry and Water Management is responsible for use of GMOs as reproduction material and as plant protection agents in forestry.

Efficient control of the use of GMOs requires that all subordinate regulation be adopted pursuant to the Act on Genetically Modified Organisms and also requires the establishment of the Council for Genetically Modified Organisms. The Council will appoint the Committee for Contained Use of GMOs and the Committee for Introduction of GMOs into the Environment. So far, all

implementing regulations in the field of contained use of GMOs and deliberate release of GMOs into the environment, and a proportion of the legislation concerning the placement of GMOs on the market, have been adopted. Organisational units in charge of GMO-related issues have been set up at the competent ministries, though additional training is required for employees and the competent inspection services.

For effective implementation of the Act on Genetically Modified Organisms and the Protocol on Biosafety, it is necessary to establish a national BCH mechanism for the exchange of information on biosafety, and, as an integral part thereof, a single website at the national level containing all necessary information on the national legislation, the Protocol itself, competent authorities, projects, activities and other relevant information.

STRATEGIC OBJECTIVE

Ensure incorporation of biodiversity measures into all activities related to the contained use, release into the environment, placing on the market and cross-border transport of genetically modified organisms (GMOs), by applying the precautionary principle

Strategic guidelines

6.6.1 Establish a comprehensive legislative and institutional control system for the use of GMOs

6.6.2 Establish and maintain the national BCH mechanism (biosafety clearing-house mechanism)

6.6.3 Provide continuous training for employees of competent institutions, inspection services and the general public

Action plans

6.6.1.1 Completely align the legislation of the Republic of Croatia in the field of use of GMOs with EU directives and the Protocol on Biosafety

6.6.1.2 Continuously implement decisions and guidelines of the Protocol on Biosafety

6.6.1.3 Establish a working institutional framework pursuant to the legislation

6.6.1.4 Establish a network of authorised laboratories for GMO

6.6.2.1 Ensure technical, programme and administrative support for the establishment of a functional national BCH mechanism

6.6.2.2 Redesign and modernise the existing biosafety website (GMO website), link the website with the national BHC mechanism and continue compiling and entering all necessary information

6.6.3.1 Promote public participation in the decision-making process on GMO related issues

6.6.3.2 Develop and implement staff strengthening and training programmes for the competent institutions and inspection services

6.7 Water management

Water management activities can have a significant influence on the conservation and promotion of biological and landscape diversity in the Republic of Croatia. Maintenance of watercourses and other waters includes: construction, technical and economic maintenance of regulation and protective water structures and water structures for melioration drainage, technical and economic maintenance of watercourses and water resources, and other works which enable free water flows and their exploitation for a specific purpose. The Class I water system comprises interstate waters, coastal waters, other large watercourses and flood waters of greater power. The total length of rivers, watercourses, channels and torrents with the accompanying regulation and protective water structures is 10 203 km, of which 2 252 km relates to protective embankments and 63 pumping stations. All other waters are included within the Class II water system.

In the concept of integrated river basin management, which forms the foundation for a contemporary approach to integrated water management, the protection of biological and landscape diversity is a key segment. As such, it is an important component of both the EU and national legislation, and of the practices in this sector. The Republic of Croatia, as a party to the Convention on Wetlands of International Importance, Especially as Waterfowl Habitat (Ramsar Convention), undertakes measures aimed at conserving wetland habitats.

Water management activities can have a significant impact on biological and landscape diversity, especially on protected natural values or ecologically important areas (sites within the CRO-NEN). The incorporation of nature protection requirements and measures, and ecological network conservation guidelines into water area management plans at the time of their adoption, and in the preparation and execution of projects and activities in the field of water management is prescribed by the Nature Protection Act, the Regulation on proclamation of the ecological network and the Ordinance on nature impact assessment.

Impacts on biological and landscape diversity are most often related to the management of drainage basins, flood protection works and measures, removal of alluvial deposits, maintenance and construction of waterways, and the construction of reservoirs and hydropower facilities.

Certain water management projects, such as construction of structures to stabilise river banks, lining river banks with stone, intersecting river meanders and backwaters, etc., may cause termination of certain natural processes following changes to the watercourse or the termination of flooding of the surrounding floodplain areas. The said projects are primarily for the purpose of flood protection for urban complexes or land along the watercourse sections that is economically exploited. The cumulative effects of the planned activities must be fully considered through the development of water area management plans and conceptual solutions for water basin management.

Given the positive role of natural retentions (e.g. Odransko Polje, Lonjsko Polje and Mokro Polje, some fishponds, etc.) and the importance of their conservation in terms of protection against

floods, the payment of water charges is a financial burden to public institution budgets, due to the conservation activities carried out by those institutions.

The extraction of alluvial deposits can lead to a faster deepening of the riverbed and lowering of the water level and all the association negative processes. Often, this can cause direct threat to or loss of valuable river spit habitats and protected taxa.

The maintenance and organisation of waterways includes activities that can adversely affect biological and landscape diversity (e.g. deepening and regulation of riverbeds), thereby destroying or threatening the habitats of plant and animal taxa.

Construction of new waterways or reorganisation of existing ones for the purpose of reclassification into a higher class may create barriers to animal movement, disturb ground water regimes and loss of alluvial areas. Waterways may facilitate the introduction and spread of alien species, enable the spread of water pollution and impair the landscape value of the area.

Technical waterway maintenance activities may also affect biological and landscape diversity, protected natural values or ecologically important areas (in sites of the CRO-NEN). Therefore, the Nature Protection Act, the Regulation on proclamation of the ecological network and the Ordinance on nature impact assessment require that nature protection requirements and measures, and the ecological network conservation guidelines be incorporated into technical maintenance plans at the time of their adoption.

Hydropower plants and reservoirs on waters and aquatic ecosystems can have multiple impacts. These may create changes to water regimes, and reductions in the quantity of alluvial deposits, which can lead to erosion and deepening of the riverbed downstream (Drava River, Sava River, etc.). Reservoirs may flood valuable natural and semi-natural areas, while dams may present obstacles for the migration of fishes and other organisms. In karst areas, construction of hydropower structures involves the construction of tunnels and the redirection of waters between karst drainage basins, which may disturb the ground water regime in a broader area.

Amelioration drainage and irrigation can affect the natural water regime. In the past, many natural areas, wetlands in particular, have been lost as a result of various amelioration projects. Even today, any change to the system can impact the survival of aquatic and wetland ecosystems.

Waste water also impacts both biological and landscape diversity. The level of connection to the public sewerage system of 40% is still inadequate, and a certain amount of untreated waste water is released directly into the environment. Point source contamination related to industrial production and tourism also has a significant impact, especially along the Adriatic coast. Dispersed contamination relates to chemical agents and fertilizers used in agriculture, erosion of contaminated soil, run off from urban areas, roads, unmanaged landfills and consequences of war. There is the possibility of a negative impact of this contamination on sensitive wetland and aquatic habitats, and on karst and subterranean ecosystems.

STRATEGIC OBJECTIVE

Through co-operation with the water management sector, conserve biological and landscape diversity of aquatic ecosystems, in particular threatened wet and wetland habitats, and karst habitats

Strategic guidelines

6.7.1 In the process of water exploitation and management, and maintenance of waterways, apply the principles of conservation for components of biological, geological and landscape diversity of aquatic ecosystems, with an emphasis on protected areas, ecological network sites and future NATURA 2000 areas

6.7.2 Prevent disruption to river ecosystems caused by excessive extraction of alluvial deposits from river beds

6.7.3 Ensure the existence of river ecosystems during the creation of waterway development plans

6.7.4 Implement protection against floods through a system of natural retentions and conservation of natural floodplain areas, to the greatest extent possible

6.7.5 When planning hydromelioration works, take account of the conservation of biodiversity

6.7.6 Consider the possibility of implementing joint programmes of the nature protection and water management sectors in protected areas

6.7.7 Strengthen co-operation between the legal water inspection service and nature protection inspection service in the implementation of nature protection requirements and measures in the field of water management

6.7.8 Strengthen the institutional framework of the water management sector and nature protection sector with regard to protection of aquatic habitats, and in particular wetland habitats

Action plans

6.7.1.1 Develop water management plans and concept solutions for the maintenance of drainage basins, and incorporate nature protection requirements and measures therein

6.7.1.2 Adopt management plans for the protected areas and ecological network sites including aquatic ecosystems

6.7.1.3 Conduct strategic environment impact assessments and nature impact assessments of water area management plans and individual projects and activities as part of water management activities, with the exception of technical maintenance projects and activities necessary for protection against floods pursuant to the National Flood Protection Plan (OG 08/97, 32/97, 93/99, 188/03, 152/05 and 28/06) adopted by the Government of the Republic of Croatia

6.7.2.1 Prevent excessive and unjustified extraction of alluvial deposits from river beds and, in particular, sand spits

6.7.3.1 Ensure co-operation between the nature protection sector and river navigation sector in the preparation of waterway development plans

6.7.3.2 Conduct an analysis of the biodiversity of river ecosystems and lay down nature protection requirements in the course of preparation of river navigation development plans

6.7.4.1 Conduct an analysis of possible new natural retentions for flood protection, and put these into operation

6.7.5.1 Hold regular meetings and maintain communication among the competent institutions (competent authorities for water management and nature protection) in connection with annual plans for the execution of hydromelioration works

6.7.5.2 Prior to planning hydromelioration works, conduct an impact analysis of the works on the biodiversity of the area in question

6.7.6.1 Promote development and implementation of joint annual work programmes of public institutions for protected area management and of the company Croatian Waters (Hrvatske vode) in protected areas

6.7.7.1 Prepare an agreement on co-operation between the legal water inspection service and the nature protection inspection service

6.7.8.1 Organise professional gatherings and seminars, and professional training of line services of the water management and nature protection sectors

## 6.8 Tourism

Tourism is one of the most important driving forces of economic development in the Republic of Croatia. Over the past ten years, tourism has brought significant revenues, enabled the revitalisation of many rural areas of our country and promotion of protected areas, especially national parks and nature parks.

Meanwhile, negative effects of tourism have also been recorded, both in Croatia and globally. The significant increase and development of tourism capacities and activities, and a high concentration of people often pose a threat to valuable habitats and sensitive ecosystems, and the plant and animal species within. The Croatian tourism development strategy recognizes that Croatia has exceptionally diverse and conserved natural tourism potential, and its protection is essential in order to have a long-term contribution to tourism development. This suggests the need for a detailed analysis of the impact of tourism on certain areas, specific plant and animal species, their habitats, and entire ecosystems.

The impacts of tourism on the coast, islands, sea and protected areas must be analysed separately. Intensive and unplanned construction works in the coastal area and on the islands has already significantly degraded the landscape identity and biodiversity of many valuable areas from the biological and landscape perspective. The addition of gravel to beaches, the construction of breakwaters and sport/recreational boat harbours has already caused irreversible damage to the habitats of many species with far-reaching consequences for the survival of integral natural ecosystems in coastal areas. The Croatian coastal and islands are still oriented towards mass tourism, which increases pressures on protected areas, in particular national parks and nature parks, which are located in the vicinity of the coastal area and on the islands.

An uncontrolled number of visitors and disregard for spatial capacities may have a dramatic impact on the biological and landscape diversity in these areas. Therefore it is extremely important to establish a system and develop a methodology for estimating tourist capacities, and an accompanying monitoring system in order to ensure strict management of tourist circulation. An appropriate approach to establishment of such system would not only reduce negative impacts, but would also improve capacities of prominent areas and positively impact the origin of negative impacts. Within the framework of different educational programmes and interpretation methods, all aspects of natural and cultural values of the protected areas should be presented to visitors, so that they can modify their behaviour and reduce negative impacts.

Sustainable tourism and eco-tourism are regarded as ideal frameworks for tourism development. The concept of eco-tourism in some way includes all types of tourism, and is based on the sustainability of tourism as a human activity in an area that has a minimal impact on changes to the immediate or broader environment. Although eco-tourism, in quantitative terms, does not have an important role in tourism operations, it offers an opportunity for the year-round generation of income and increases the employment rate in areas where it takes place. Due to its geographical position, exceptionally favourable climatic conditions and conserved biological and landscape diversity, Croatia has an enormous potential for the development of eco-tourism. Therefore it is necessary to define its development strategy and its systematic development as a recognizable segment of the tourism offer of our country.

The development of tourism in Croatia has led to an increase in the number of visitors in protected areas. Over the past seven years, a significant increase in the number of visitors has been recorded in all national parks, with the highest numbers recorded in the Plitvice Lakes and Krka National Parks.

The increasingly strong tourism promotion of the natural and cultural values of the Republic of Croatia has created an attractive identity of the country and led to growing visitor interest. Promotional activities have also created opportunities for education of a relatively large number of people about the importance of nature protection and conservation. Each year, the national parks and nature parks expand the tourism and educational offer for their visitors. All parks offer the possibility of professionally guided visitor tours and organisation of trips to particularly interesting and attractive sites. In recent years, the number of educational trails has increased significantly, with approximately twenty educational trails in the national and nature parks today.

The increase in the number of visitors to national and nature parks has generated increased revenues, which in turns allows for the allocation of a significant portion of these funds to nature

protection activities. National and nature parks use these funds in the construction of infrastructure, research, monitoring, etc. A moderate increase in the development of eco-tourism can be seen in many protected areas. Consequently, although tourism development poses a potential threat to protected areas, it also generates revenues, benefits for the local community and increases public awareness of the importance of nature protection and conservation.

STRATEGIC OBJECTIVE

Given the great importance of tourism as an industry in the Republic of Croatia and also taking account of its negative impacts, promote development of sustainable tourism and eco-tourism

Strategic guidelines

6.8.1 Increase the importance of nature protection at all levels of the tourism sector

6.8.2 Develop tourism that is acceptable for the protection of biodiversity in protected areas and ecological network areas

6.8.3 Educate visitors, through visitor educational centres in protected areas, about natural values and the importance of conserving protected areas

Action plans

6.8.1.1 Establish regular co-operation with the tourism sector at the local, regional and national levels

6.8.1.2 Incorporate measures and guidelines for the protection of biological and landscape diversity into strategies, laws, regulations, programmes and plans at all levels of the tourism sector

6.8.1.3 Incorporate measures and guidelines for the protection of biological and landscape diversity into the master tourism plans for individual counties

6.8.1.4 Protect biological and landscape diversity from the negative impacts of tourism on the coast, islands and sea through physical planning documents and other plans and programmes

6.8.1.5 Prior to planning any construction project and/or improvement of tourism infrastructure that might have a significant impact on an ecologically important area or protected natural value, but is not included in the environmental impact assessment, conduct a nature impact assessment of the project

6.8.1.6 Plan tourism infrastructure and facilities outside biologically valuable areas

6.8.1.7 Create a development plan for eco-tourism and identify potentially important areas for the development of eco-tourism

6.8.2.1 Define methods and criteria for establishment visiting, sightseeing and recreation zones, i.e. tourism in protected areas

6.8.2.2 Identify sensitive areas and define guidelines and frameworks for tourism activities in protected areas and ecological network areas, with special emphasis on sensitive areas where tourism activities are traditionally pursued

6.8.2.3 Develop and establish a system for monitoring visitor numbers and visitor impacts on protected areas

6.8.2.4 Carry out pilot projects for the development of eco-tourism in certain protected areas and ecological network areas

6.8.2.5 Analyse the existing visiting and sightseeing models in protected areas within the management plan

6.8.2.6 Develop guidelines for the management of tourism activities in protected areas within the management plans

6.8.2.7 Define methods and ways for determining visitor capacities of protected areas within the management plan

6.8.2.8 Establish standards and criteria for the development of eco-tourism in protected areas

6.8.3.1 Develop an action plan for visitor education in protected areas within the management plan

6.8.3.2 Develop an action plan for nature interpretation in protected areas within the management plan

6.8.3.3 Develop an action plan for the establishment of a guide service in protected areas within the management plan

6.9 Transport

The transport sector is becoming one of the economic sectors that is undergoing the most rapid and extensive development. All forms of transport – road, railway, air, marine and river transport – affect the components of biodiversity. The existing transport infrastructure, including 2 726 km of railways, around 30 000 km of roads (motorways, expressways and local roads), waterways, and seven airports, have a direct influence on the habitats through which they pass.

The main negative impacts of traffic communications are direct habitat loss and fragmentation, which leads to fragmentation of populations, loss of habitat quality, noise and light disturbances, pollution caused by different agents, habitat exposure to new undesirable influences, accidents involving wildlife attempting to cross roads or railway tracks and the associated risk to drivers and their passengers. Habitat fragmentation has been identified as one of the most important causes of the decline of biodiversity in Europe. Over the past ten years, hundreds of kilometres of

new motorways have been built in Croatia, connecting inland areas with the northern and southern coastal belt, while passing through Gorski Kotar, Lika and Dalmatia and intersecting the habitats of different groups of animals. Intensive motorway construction may have greatly affected large carnivores, which require a large range and are particularly sensitive to large infrastructure projects. In recent years, an increased rate of large carnivore mortality on traffic communications has been recorded: wolves are more often killed in accidents on local roads, whereas bears are often involved in accidents on motorways and railway tracks.

More than 300 km of motorways have been or are being built through large carnivore habitats, specifically from Karlovac to Rijeka, and from Bosiljevo and Split to Dubrovnik. The network of motorways causes fragmentation of large carnivore habitats in four separate areas, which to a large extent results in their spatial redistribution. Although these roads impact habitat quality and the possibility of migration for all animals, in theory, adequate throughput has been ensured due to the number and length of passage facilities across motorways for wild animals. During the construction of motorways, in the period from 1998 to the end of 2007, nine "green bridges" or wildlife crossings were built over tunnels and under viaducts.

Apart from habitat fragmentation, poorly installed fencing along motorways poses another problem (e.g. inadequate wire fence along the motorways, which enables wildlife crossing under or over the fence) and presents a threat to both animals and humans in terms of traffic safety.

Motorway permeability for wildlife is monitored in co-operation with the company Croatian Roads (Hrvatske ceste) and experts from the Faculty of Veterinary Medicine of the University of Zagreb. In 2002, a study was developed which included guidelines for wildlife crossing corridors. The Ordinance on wildlife crossings (OG 05/07) was adopted in early 2007. This Ordinance imposes protection measures, identifies persons who are obliged to provide protection, and prescribes the method of maintenance of wildlife crossings across public roads, other communications or structures crossing the known migration routes of wildlife.

Birds are also frequently killed in accidents on traffic communications. This is a minor issue for some species, while for others, it can be one important factor of the decrease in their population size in a given area (e.g. in case of nightjar, little owl and barn owl). River transport can also have a great negative impact on waterfowl, which are among the most threatened species in Croatia, as the organisation and maintenance of waterways implies the degradation of river habitats (e.g. destruction of sand spits, river channelling, embankments, etc.), and of the wetland habitats that are inseparably tied to these rivers.

Amphibians are also among the animal species affected by transport influences, as they are often killed in accidents on traffic communications during migration. Although this problem has not been addressed at the national level, individual campaigns by non-governmental organisations have resulted in the inclusion of a special warning sign indicating amphibian crossing points has been in the relevant legislation.

STRATEGIC OBJECTIVE

Reduce the impact of transport infrastructure on wild taxa and natural habitats

Strategic guidelines

6.9.1 Systematically monitor the impact of roads, railways and other communications on taxa and habitats

6.9.2 Ensure permeability of constructed and planned roads for wildlife in order to enable daily movements and seasonal migration

Action plans

6.9.1.1 Prior to commencement of road construction works, conduct an environment impact assessment or nature impact assessment procedure, and monitor impacts

6.9.1.2 Define the protocol for monitoring road impacts on species and habitats through co-operation between the transport and nature protection sectors

6.9.1.3 Analyse plans for construction of new roads in co-operation with competent experts (experts for large carnivores, ornithologists, herpetologists, ecologists, etc.)

6.9.1.4 Evaluate the potential impact of waterways on threatened bird species inhabiting wetland and aquatic habitats

6.9.1.5 Continue activities of the Commission for monitoring large carnivore populations

6.9.2.1 Ensure and/or build wildlife crossings at all locations where necessary for ensuring habitat continuity

6.9.2.2 Supervise permeability of constructed roads

6.10 Energy

The energy sector has a significant influence on biological and landscape diversity. Currently, 35 845 700 thousand $m^3$ of water is used for the production of electricity every year, of which 97.4% originates from watercourses, 2.2% from storage reservoirs, and the remainder from other sources. Due to the current energy crisis, environment pollution and climate change issues that are largely related to the use of energy sources, there is an increasing global trend towards shifting away from conventional energy production forms to new renewable energy sources, such as wind power, solar power, geothermal power and biomass.

As the same trends prevail in Croatia, it is necessary for the country to become more oriented towards the introduction of renewable energy sources that do not produce greenhouse gases. However, controversial issues have also arisen with regard to impact of renewable energy sources on biodiversity.

In the Republic of Croatia, a legislative framework regulating the field of renewable energy sources has been established. As regards electricity consumption, the target has been set to ensure

that 5.8% of the energy supply is from renewable sources by 2010, without taking into account large hydroelectric plants. Another target is to increase the share to 15% by 2020, which is in line with EU trends. The legislative framework provides for incentive measures, including, *inter alia*, the obligatory purchase of electricity produced from renewable sources and incentive feed-in tariffs. A register of projects is kept at the Ministry of the Economy, Labour and Entrepreneurship, showing that there is an increase in the number of applications for construction of wind farms with a total power of 1 200 MW.

From the strategic point of view, it is necessary to develop such systems in the energy sector that will enable and encourage energy savings or reduced energy consumption. This includes incentives for more efficient systems for energy production, transmission and consumption.

Preparation of the Master Energy Efficiency Plan and the National Action Plan for Energy Efficiency is underway, and plans are in place to enact a special Energy Efficiency Act.

Wind farms

At present, wind farms in Croatia produce around 20 MW of energy, with production of 300 MW expected by 2010. On the other hand, the increasing number of wind farms presents a potential threat to certain bird species and bats.

Wind farms may have a negative impact on birds, which are either killed in direct collision with generator blades or their habitat quality is altered (noise, disturbance, habitat fragmentation because of construction of access roads, etc.).

Potential negative impacts of wind farms on bats include habitat loss, crosscutting of migration corridors, disorientation of bats in flight due to ultrasound emissions, and bat fatalities resulting from direct collision with wind generator blades. Recent research has revealed cases of bat mortality caused by lung barotrauma as a result of a sudden drop in air pressure in the vicinity of spinning wind generator blades.

Throughout Europe and worldwide, greater attention is being paid to this issue in an attempt to minimise the potential negative impacts.

Potential negative impacts of wind farms on birds and bats largely depend on the conditions in place at each individual location, and so a careful choice of locations for wind farms is of the utmost importance. To date, the selection of potential locations for wind farms in Croatia has mainly been based on the wind potential of specific locations, and no account has been taken of the cumulative effects of installation of a substantial number of wind farms in a certain area. In most cases, wind farm plans envisage installation on mountain ridges or immediately below. These areas are important for birds of prey, particularly those which use gliding as a flying method (e.g. eagles, griffon vultures) because of the specific conditions in place there (e.g. thermal conditions). In addition, mountain ridges, underneath which there are road or railway tunnels, constitute valuable wildlife crossing corridors, and animals are disturbed by the operation and noise of wind farms and access roads. According to the Ordinance on wildlife crossings, such construction is not permitted.

Environmental impact studies should include a comprehensive analysis of the potential impacts of wind farm construction on birds, bats and all other species affected by the construction and operation of wind farms.

Hydropower plants

The construction of hydropower plants and storage reservoirs significantly contributes to the alteration of the natural flows of rivers, which has a negative impact on a number of habitats and related communities. In their drainage basins, rivers support a complex of different aquatic and wetland habitats having unique dynamics (from river flow and river banks, through wetland habitats and wet meadows to alluvial forests). As such, the conservation of natural river flow is a prerequisite for conserving the diversity of these habitats and the diversity of the plant and animal species within. It is necessary to conduct a strategic environmental impact assessment and nature impact assessment of the programmes and plans for implementation of the energy development strategy (in progress) in order to establish which of the planned hydropower plants will have a strong negative impact on the species and habitats in the ecological network area.

The requirement of an environmental impact assessment procedure and nature impact assessment has been prescribed in the hydropower plant construction planning process.

Three hydropower plants on the Drava River, the HP Varaždin, HP Čakovec and HP Dubrava, were the first to receive ISO 9001 and ISO 14001 certificates. This certification (in particular ISO 14001 standard) should also be obtained for the remaining hydropower plants in Croatia.

Power transmission lines

Numerous studies have shown that overhead power transmission lines present a serious threat to many bird species which are killed either in direct collision with the wires themselves or as a result of electric shock (electrocution).

As the power line network becomes increasingly dense over time, the risk of bird fatalities on power lines and negative impacts on threatened bird populations increase. Nowadays, for many bird species (storks, cranes, eagles, griffon vultures, horned owl), fatal bird accidents due to electric shock represent one of the major causes of threat to populations. At the Seventh Meeting of member states that are signatories to the Convention on the Conservation of Migratory Species of Wild Animals (CMS) held in Bonn in 2002, a resolution addressing this issue was adopted (Resolution 7.4: Electrocution of Migratory Birds). This Resolution imposes an obligation upon signatory countries to take various measures to minimise bird fatalities due to electrocution. Pursuant to this, the Nature Protection Act has imposed measures for the protection of birds against electrocution.

When planning the construction of new lines, it is very important to conduct a high-quality environment impact study, and give a realistic assessment of the negative impacts of a planned project on bird populations and incorporate protection measures where necessary. The same issues should be taken into account at the time of replacement of worn-out lines.

Biofuels

In recent years, discussions on biofuels have been held at all levels and within different sectors, however, the conclusions and decisions adopted under the Convention on Biological Diversity are relevant for biodiversity. The scientific body set up within the framework of the Convention has examined and determined the "positive and negative impacts of biofuels on biodiversity over their entire life cycle from production to end use". Biofuels include various products of plant and animal origin and municipal waste. Although advocates of biofuel argue strongly in its favour as a clean energy source, opponents claim that biofuels pose a threat to biodiversity and suggest that the growth of crops for the production of biofuels can create greater greenhouse emissions than their impact on the reduction of greenhouse emissions (e.g. bioethanol from corn). Furthermore, the growth of certain cultures (e.g. rapeseed, corn) and use of agricultural land for the production of biofuel means a reduction in farmland traditionally used for food production. Genetically modified crops are often used for the production of biofuel, thereby introducing alien species, which is completely unacceptable for the conservation of biodiversity. There is also an increased use of chemical agents to spur growth and crop production. As new technologies are developed and the use of biofuels is increased, it is necessary to develop and implement a certification system that enables tracing the origin of raw materials (GMO, IAS) for biofuels, and control of the sustainable use of natural resources (forests, crops). Adoption of a separate Biofuels Act is planned by the end of 2008.

Isolated systems

The conditions in protected natural areas are ideal for the implementation of pilot projects on the use of renewable energy sources and replacement of conventional energy sources through installation of solar collectors, use of biomass and small windmills, especially for the power supply of climbers' lodgings, houses and shelters, telemetric fire-fighting stations, park administration buildings and other infrastructure. Some facilities are not connected to the electrical distribution network, either because it has not been built in the vicinity or because the installation of poles for the electricity distribution network is not permitted, and therefore must use generators driven by fossil fuels, which presents problems.

STRATEGIC OBJECTIVE

Use of energy sources with the minimal potential impact on biodiversity

Strategic guidelines

6.10.1 Base exploitation and management activities in the energy sector upon the principles of conservation of components of biological and landscape diversity, with special emphasis on protected areas, ecological network areas and future NATURA 2000 areas

Action plans

6.10.1.1 Prior to development of plans and programmes within the framework of the energy development strategy, conduct a nature impact assessment as part of the strategic environmental impact assessment

6.10.1.2 Continue to incorporate nature protection requirements and measures, and ecological network conservation guidelines when planning locations of power supply/distribution facilities in spatial plans

6.10.1.3 Strengthen the principles of conservation of biological and landscape diversity in the course of development of the environmental impact study in relation to the potential impact of construction of power plants and other energy supply/distribution facilities on overall biological and landscape diversity, particularly in the ecological network area

6.10.1.4 When designating sites for wind farms, avoid ornithological reserves, flight corridors and areas important as gathering places of a large number of birds during migration

6.10.1.5 When designating sites for wind farms, avoid nationally or regionally important habitats and corridors for the seasonal and/or daily migrations of bats

6.10.1.6 When planning and building wind farms, and in the course of their operation, implement bird and bat protection measures

6.10.1.7 Define the protocol for monitoring the impact of wind farms on species and habitats through co-operation between the energy and nature protection sectors

6.10.1.8 Develop an action plan for monitoring birds of prey in the Central Dalmatia area in order to establish the cumulative impact of planned wind farms on their populations

6.10.1.9 Apply technical solutions in the course of construction of overhead power transmission lines and replacement of worn-out electricity poles and lines within the existing network in order to minimise bird mortality (collisions, electrocution)

6.10.1.10 Conduct the certification process for all hydropower plants in the Republic of Croatia

6.10.1.11 Conduct pilot projects on the use of renewable energy sources in protected areas

6.11 Mining

The territory of the Republic of Croatia has an extremely high diversity of rocks, which form the foundation for developed exploitation of various mineral raw materials. Pursuant to the Mining Act, mineral riches are resources of national interest for the Republic of Croatia, they enjoy particular state protection and are exploited under the conditions and in the manner stipulated by the said Act. Mineral riches, which are the property of the Republic of Croatia, are deemed to be

all organic and inorganic mineral raw materials in solid, liquid or gaseous state in their original beds, deposits, tip heaps, slag or natural solutions.

Mineral raw materials are divided into the following groups:

1. energy-producing mineral raw materials;

2. mineral raw materials for the manufacture of metals and their alloys;

3. non-metal mineral raw materials;

4. architectural/construction stone;

5. all types of salt and saline waters;

6. mineral and geothermal waters;

7. technical/construction stone, construction sand and gravel, and brick clay.

The exploitation of mineral raw materials is deemed to be extraction from a deposit and refinement of mineral raw materials. In terms of nature protection, exploitation of the group of mineral raw materials that includes technical/construction stone, construction sand, gravel and brick clay has the greatest negative impact on both landscape and biological diversity. This primarily relates to opencast mining – quarries, gravel pits, clay pits and sand pits.

Exploitation of solid mineral raw materials takes place at a total of 584 approved fields (the average exploitation field has an area of 34 hectares), covering a total area of approximately 21 877 hectares, or accounting for 0.38% of the total land area of the Republic of Croatia. The greatest number of fields (86) have been approved in Split-Dalmatia County and occupy 0.68% of the county land area. From the statistical perspective, mineral raw material exploitation fields do not cover a large area of Croatia, but given the manner in which raw materials are obtained, they have a significant impact on nature, specifically on biological and landscape diversity. Any opencast mining, oil or gas field or any other project related to exploitation of mineral raw materials, regardless of the high environmental protection standards applied also has negative impacts, and the most significant of which is the change of the original appearance of the landscape.

Furthermore, the fragmentation of rock massifs, whereby overlying sediments are removed (fertile soil, forests, meadows, etc.) and mineral substance extracted, directly affects biodiversity conservation. There is little to no devastation of fertile soil or forests in the process of exploitation of liquid and gaseous energy sources. Existing open pit surfaces are the result of past exploitations. A number of “quarries”, “gravel pits”, “clay pits” and other “mining structures” have been opened in accordance with the needs of the construction trade, however, there were no environment-friendly reclamation or maintenance programmes, as no attention has been paid to restructuring and reclassification of excavated areas.

A total of 92 open pits were recorded during a review of the active and inactive open-cast mines in protected areas (nature parks, national parks and important landscape).

Table 2: Overview of active and inactive open-cast mines in protected areas (source: Report – Supervision of exploitation of mineral raw materials in protected areas, SIO, MEPPPC, July 2003)

| Protection category | Name | No. of recorded pits |
|---|---|---|
| 1. National park | Plitvice Lakes | 14 |
| | Risnjak | 2 |
| | North Velebit | 1 |
| | Papuk | 10 |
| | Medvednica | 14 |
| 2. Nature park | Žumberak-Samoborsko gorje | 23 |
| | Učka | 12 |
| | Velebit | 14 |
| | Saplunara - Mljet | 1 |
| 3. Protected landscape | Kalnik | 1 |
| TOTAL | | 92 |

These pits include a large number of abandoned quarries for which the legal successor has not been identified, whereas a number are owned by the company Croatian Forests (Hrvatske šume). The majority are not recorded as exploitation sites within the meaning of the Mining Act and the previous practice was not in accordance with the rules of the mining profession, which caused serious devastation of the area. These sites represent “open wounds” and erosion hotbeds. For these reasons, it is difficult to transform them into acceptable-purpose facilities and as such they are often used for illegal exploitation.

STRATEGIC OBJECTIVE

Ensure sustainable exploitation of mineral raw materials by incorporating biological and landscape diversity conservation measures and through co-operation between the mining and nature protection sectors

Strategic guidelines

6.11.1 Improve co-operation between relevant sectors at the national and local level with regard to planned and sustainable use of mineral riches, while observing biodiversity conservation measures

6.11.2 Plan exploitation with parallel area reclamation, and reclamation or reclassification of all abandoned (unreclaimed) pits

6.11.3 Improve co-operation between the mining and nature inspection sectors

Action plans

6.11.1.1 Organise professional gatherings and seminars and ensure participation of representatives of all relevant sectors

6.11.1.2 Organise professional gatherings and seminars and ensure participation of representatives of competent inspection authorities

6.11.1.3 Incorporate nature protection measures and requirements into legislation and documents in the field of mining

6.11.1.4 Initiate the development of a cadastre of all mines and pits (both legal and illegal) in protected areas and ecological network areas by the competent government authority in charge of mining activities

6.11.2.1 Initiate development and implementation of a pilot project on the reclamation of abandoned pits in a nature park

6.11.2.2 Impose the obligation to ensure successive biological and technical reclamation, insist on a clear specification of purpose of exploitation fields following pit closure, and designate the time limit for completion of pit reclamation within protected areas and the ecological network

6.11.3.1 Organise joint supervision of all pits in protected areas, keep records and establish the terms for continuous on-site control

# 7. LEGISLATIVE AND INSTITUTIONAL FRAMEWORK

## 7.1 Legislative framework

The protection and conservation of all natural values of the Republic of Croatia is guaranteed by the Constitution of the Republic of Croatia. The legislative framework of nature protection comprises the Nature Protection Act, promulgated in May 2005, and implementing regulations adopted pursuant to the Act. The Ministry of Culture is the competent authority responsible for implementation of the Act. By virtue of the prescribed subordinate regulations, the Nature Protection Act is aligned, on an ongoing basis, with the relevant directives and regulations of the environmental *acquis*, which relate to protection of natural habitats, wild flora and fauna, protection of birds, and protection of wild flora and fauna by regulating trade in this field. In the period from 2005 to 2007, a total of 13 implementing regulations were adopted pursuant to the Nature Protection Act, of which eight were adopted for the purpose of alignment with EU directives and regulations. Among the adopted regulations, it is necessary to emphasize those establishing the system of ecologically important areas in the Republic of Croatia (ecological network) and defining the procedure for assessment of acceptability of plans, programmes and projects for areas included within the ecological network. Alignment of the legislation in the area of nature protection will be completed by adoption of the Regulation on internationally important ecological areas (NATURA 2000) by the date of accession of the Republic of Croatia to the European Union. In the period from 2000 to 2007, the Republic of Croatia became a party to all international agreements in the area of nature protection and conservation of biological and landscape diversity. In the same period, the sectoral legislation (in the field of forestry, agriculture, veterinary medicine, hunting, water management, environmental protection, etc.) was continuously aligned with the principles of the Convention on Biological Diversity and the requirements of the environmental *acquis*.

Conservation of biological and genetic diversity is also achieved through implementation of the Act on Genetically Modified Organisms (GMOs) and implementing regulations adopted thereunder. The central state administration bodies responsible for healthcare, nature protection, agriculture and science are responsible for implementation of this Act. This Act is also continuously aligned with relevant environmental *acquis*, specifically the directives regulating the intentional introduction of GMOs into the environment and contained use of GMOs in closed systems. In the period from 2005 to 2007, eight implementing regulations were adopted pursuant to the Act on Genetically Modified Organisms.

STRATEGIC OBJECTIVE

Complete and update the national legislation and align the sectoral legislation to ensure the effective implementation of the Convention on Biological Diversity in the Republic of Croatia

Strategic guidelines

7.1.1 Fully align the national legislation in the area of nature protection and sectoral legislation with the EU legislation

7.1.2 Fully align the national legislation in the area of use of GMOs with the relevant legislation of the European Union and the Protocol on Biosafety

7.1.3 Establish additional financial mechanisms in the area of nature protection

Action plans

7.1.1.1 Prepare and adopt all remaining implementing regulations envisaged by the Nature Protection Act, and amendments to existing regulations

7.1.1.2 Continue the process of legislation alignment in the field of environmental protection, physical planning, agriculture, marine and freshwater fisheries, animal protection, forestry, hunting, water management, mining, energy, transport, tourism and other relevant areas, insofar as it relates to nature protection and conservation of biodiversity, with the provisions of the Nature Protection Act, Convention on Biological Diversity and relevant EU directives.

7.1.2.1 Urge the competent departments/authorities to enact all remaining implementing regulations related to use of GMOs for the purpose of alignment with relevant legislation of the European Union and the Protocol on Biosafety

7.1.3.1 Adopt legislation on financial mechanisms in the area of nature protection (act on a nature protection foundation)

7.2 Institutional framework

In 2000, the administrative body responsible for nature protection and biological and landscape diversity in the Republic of Croatia was promoted to the ministerial level for the first time. The Nature Protection Directorate was established within the then Ministry of Environmental Protection and Physical Planning and, after reorganisation of the state administration bodies in 2004, it became an integral part of the Ministry of Culture. Five departments were set up within the Nature Protection Directorate: the Department for Biological Diversity, the Department for Protected Areas, the Department for Sustainable Use of Natural Resources, the Department for Strategic Planning in Nature Protection and European Integration and the Department for Inspection and Legal Affairs in Nature Protection.

In the course of 2002, a professional institution, the State Institute for Nature Protection (SINP) was established for the purpose of compiling and processing data, and other professional tasks in the area of nature protection. The SINP started operations in September 2003. Four departments have been set up within the SINP: the Department for Wild and Domesticated Taxa and Habitats, the Department for Nature Impact Assessment, the Department for Protected Areas and the Department for Landscapes.

Public institutions for the management of all national parks (8) and nature parks (11) have been established and are operational. Significant improvement has been achieved in the management of protected areas at the county and local levels. Twenty (of 21 in total) public institutions for management of protected areas and/or other protected natural values have been established at the

county level, and eight public institutions for management of protected natural values have been established at the local level.

In June 2008, the Inspection Directorate was set up.

The Plan for establishment of necessary administrative capacities at the national, regional and local levels and determination of required financial resources for application of environmental *acquis* outlined the need for administrative and institutional strengthening in the nature protection sector for the period to 2009. The practice showed the need for strengthening of the professional institution (SINP) and nature protection inspection, as well as of the central state administration body responsible for nature protection activities (MC). There is also a continuous need for strengthening of both line and supervision services at the national, regional and local level. In the context of regionalisation, it is particularly important to strengthen administrative county bodies, which, pursuant to the Nature Protection Act, have taken over the employees and environmental protection tasks from the State Administration Office, and thereby the nature protection tasks are performed by the same employees.

Transfer of nature protection tasks from the State Administration Office to administrative county bodies will be achieved by virtue of amendments to the Nature Protection Act planned for 2008.

STRATEGIC OBJECTIVE

Establish an integral institutional framework for the protection of biological and landscape diversity at the national and county levels

Strategic guidelines

7.2.1 Strengthen administrative capacities of all services responsible for nature protection activities

7.2.2 Strengthen institutional capacities of competent authorities in charge of nature protection

7.2.3 Establish an integral and recognizable nature protection system

7.2.4 Promote co-operation with non-governmental organisations

7.2.5 Develop financial mechanisms for institutional strengthening

Action plans

7.2.1.1 Improve organisation of the Nature Protection Directorate of the Ministry of Culture and all public institutions for the purpose of more efficient performance of activities related to the assessment of the impact of plans, programmes and projects on the ecological network, and more efficient implementation of international conventions in the area of nature protection

7.2.2.1 Develop a training programme for the employees of the State Administration Office or administrative bodies in the counties for the purpose of implementation of the Nature Protection Act, and conduct training

7.2.2.2 Develop a training programme for employees of the nature protection inspection service, phytosanitary inspection, border veterinary inspection, customs and police authorities for implementation of regulations in the area of cross-border movement of and trade in protected species, and conduct training on an ongoing basis

7.2.2.3 Develop a training programme for employees of the competent ministries and competent inspection services for implementation of the Act on Genetically Modified Organisms

7.2.3.1 Set up the national website for nature protection

7.2.4.1 Secure higher allocations from the state budget for biodiversity conservation projects and financing of long-term programmes of non-governmental organisations in accordance with the Strategy

7.2.4.2 Establish mechanisms for entering into partnerships with non-governmental organisations in rendering services in the area of nature protection (education, inventorying, monitoring, communication and other services)

7.2.4.3 Enable the timely inclusion of relevant representatives of non-governmental organisations in development of strategic documents and legal acts related to nature protection

7.2.5.1 Establish the Nature Protection Foundation

7.2.5.2 Establish a financial solidarity system for national parks and nature parks

## 8. COMMON ISSUES

### 8.1 Inventorying and monitoring

Under the Nature Protection Act, the SINP is responsible for inventorying and monitoring the status of biodiversity components. Upon establishment and commencement of the operation of the SINP in 2003, the process of collection of information was institutionalised, whereby prerequisites were created for the creation of the central database within the nature protection information system.

In the period between the adoption of the Strategy and the end of 2007, Red Lists and Red Books were prepared for a certain number of endangered taxa, while others are currently in preparation. Given the lack of information that was noticed, emphasis has been put on financing projects to inventory and monitor the status of endangered taxa and habitats. It is necessary to include a large number of experts in inventorying and monitoring of biodiversity in order to meet the European investigation standard.

Within the framework of projects carried out by the SINP in the period from 2004 to 2007, manuals were developed for inventorying and monitoring the status of flora and habitats, and marine habitats. These manuals are the first step towards standardisation of the data collection methodology as a basis for establishing systematic monitoring.

The Croatian Environment Agency (CEA) is the central information body for co-ordination of reporting and reporting to the European Commission on implementation of specific environmental protection regulations. On behalf of the Republic of Croatia, the Agency is responsible for submission of prescribed reports to the European Environment Agency (EEA) in accordance with the requirements of the European Environment Information and Observation Network (EIONET). The information submitted by the CEA includes data on protected areas for the Common Database on Designated Areas (CDDA), which is compiled in co-operation with the Nature Protection Directorate of the Ministry of Culture and the SINP.

Pursuant to the Environment Protection Act, the CEA is obliged to establish, in co-operation with other state administration bodies and other institutions, an Environmental Information System (EIS). Pursuant to the Regulation on the Environmental Information System (OG 68/08), the EIS represents a series of interconnected electronic databases and sources of data on the state of environment, strains on certain environmental components, pressures on the environment, spatial characteristics and other information important for monitoring the state of the environment at the national level.

For the purpose of establishment of a comparable data collection and processing system based on indicators, in 2006, the CEA launched a project aimed at creation of the National List of Indicators, which is still in progress. Proposals of national indicators were made taking into account the biodiversity conservation indicators defined by the Convention on Biological Diversity and the European Commission (SEBI 2010—Streamlining the European Biodiversity Indicators), but also taking into consideration the need of the Government of the Republic of Croatia for the necessary data for sound planning of environmental and nature protection policy aimed at sustainable development. Pursuant to the Environmental Protection Act (OG 110/07), the CEA is obliged to draw up the National List of Indicators on the basis of special regulations and international treaties, taking into account specific requirements of the country with regard to environmental protection. The National List of Indicators is a list of indicators prescribing the time schedule for data collection, the format, source and method of data flow, and is published in the Official Gazette for a period of two years.

The CEA is currently co-ordinating the preparation of the lists of indicators. In order to ensure complete conformity of the lists of indicators with the actual situation and in order to satisfy the need for establishment of the necessary information flow to calculate the indicators, a number of professional institutions, referential centres for specific thematic areas, state administration bodies and other institutions which collect data have been involved in the preparation of the lists.

The definition of indicators for biodiversity is the task of the competent ministry, the Ministry of Culture, and the referential professional institution for collection of data on biodiversity in the Republic of Croatia, the SINP. Further activities of the CEA with regard to collection of data necessary for calculation and presentation of indicators will be planned and carried out pursuant to the National List of Indicators.

STRATEGIC OBJECTIVE

Inventorying and ensuring systematic monitoring of the state of all components of biological, landscape and geological diversity

Strategic guidelines

8.1.1 Conduct inventorying and monitor the status of components of biological, landscape and geological diversity

8.1.2 Continue establishing the national system for monitoring the status of components of biological, landscape and geological diversity

8.1.3 Improve the nature protection information system

8.1.4 Monitor the impacts of climate change on biodiversity

8.1.5 Urge the scientific community to conduct national studies for the purpose of inventorying, determining distribution of species and habitat types, and population sizes

8.1.6 In the course of monitoring biodiversity status, use the list of indicators

Action plans

8.1.1.1 Continue research and monitoring of the status of threatened habitats and populations

8.1.1.2 Continue research and monitoring of the status of all components of nature in protected areas

8.1.1.3 Carry out continuous explorations of new sites important for the conservation of geodiversity

8.1.1.4 Carry out continuous explorations of unexplored groups and/or taxa, and taxa and habitats important for establishment of the NATURA 2000 network

8.1.1.5 Promote research activities that will contribute to the establishment of improved measures for nature protection

8.1.2.1 Continue development and promotion of the manual for inventorying and monitoring the status of species and habitats, develop partnerships and provide support to organisations and individuals participating in the process of inventorying and monitoring of status

8.1.3.1 Continue establishment of the information system for nature protection

8.1.3.2 Maintain and update databases on biodiversity

8.1.3.3 Create and update a central database on killed and injured strictly protected animals

8.1.4.1 Develop a monitoring programme and establish monitoring of the impacts of climate change on biodiversity

8.1.4.2 Monitor incidence and distribution of species sensitive to temperature changes as a European indicator of the state of biodiversity

8.1.5.1 Encourage changes in legal criteria for advancement in scientific/educational and scientific professions in terms of evaluation of professional work in inventorying and evaluation of biodiversity components

8.1.5.2 In evaluation of projects financed by the state budget, take consideration of the criterion of the need for inventorying and monitoring of the status of national biodiversity

8.1.6.1 Develop the list of indicators for monitoring the state of biodiversity

## 8.2 Education

Education and informing of the public are two important instruments in the promotion and conservation of biological, landscape and geological diversity. Articles 12 and 13 of the Convention on Biological Diversity, the World Summit on Sustainable Development (WSSD), the UN Decade of Education for Sustainable Development initiative and the national legislation, the Nature Protection Act and Environmental Protection Act, have recognised the importance of education and informing of the public as a key element in conservation of biological, landscape and geological diversity. Education is the first step in the process of social change – it leads to understanding of biological, landscape and geological diversity and thereby to a change in public attitude and behaviour. In other words, it leads to the assumption of responsibility and involvement in the protection of that diversity.

Education in the area of nature protection is not yet a priority, though younger generations should take over the responsibility for nature protection in the future. Although co-operation is very good at the level of professional organisations, co-operation at the level of state administration bodies responsible for education and nature protection should be improved. This very co-operation is vital for adoption of a strategy on education about nature protection and for the introduction of appropriate amendments to the existing school curricula. Although professional thematic conferences are held annually for employees in the education sector, inadequate attention is paid to professional training for nature protection. In order to stimulate interest in nature protection and to understand the need for its conservation, the existing school curricula should be amended to include field classes, and an emphasis should be placed on education about natural values that are located in the area of the respective elementary and secondary schools. The next step would be active involvement in the monitoring of specific plant, fungal and animal species or habitats, and geological sites, such as the GLOBE programme, which was launched with a view to monitoring physical and chemical parameters of the atmosphere.

STRATEGIC OBJECTIVE

Promote and develop all institutional and non-institutional forms of education on the protection of biological, landscape and geological diversity for all citizens

Strategic guidelines

8.2.1 Improve understanding, importance and foster inclusion of the concept of biological, landscape and geological diversity and its protection and conservation at all levels of the school system

8.2.2 Promote institutional and non-institutional education about biological, landscape and geological diversity and its protection and conservation

8.2.3 Enable and encourage professional training and science education of employees touching upon nature protection issues within their sphere of activity

8.2.4 Strengthen co-operation among state administration bodies, professional and scientific institutions, educational institutions and non-governmental organisations for the purpose of education in the field of nature protection

Action plans

8.2.1.1 Encourage a review of the curricula related to biological, landscape and geological diversity, its protection and conservation, in terms of modernisation, taking a concrete problem-centred approach and promotion of field work

8.2.1.2 Make provisions for the facilities and materials in all educational institutions related to biological, landscape and geological diversity, addressing the need and methods for its protection, and on the benefits of biodiversity, particularly with regard to human health and the quality of living

8.2.1.3 Co-operate with county offices for education and culture as key operational units co-ordinating the implementation of educational programmes and projects on the protection and conservation of biodiversity

8.2.2.1 Encourage inclusion of programmes on biological, landscape and geological diversity into undergraduate study of all teachers' colleges

8.2.2.2 Encourage inclusion of topics on the importance of biological, landscape and geological diversity into the regular professional training programmes for biology teachers and other professions, and for school headmasters

8.2.2.3 Encourage development of interdisciplinary undergraduate and postgraduate studies related to the conservation of biological, landscape and geological diversity, their management and development of new technologies

8.2.2.4 Promote institutional and non-institutional programmes, projects and activities with the aim of providing education on the protection of biological, landscape and geological diversity and sustainable use thereof

8.2.2.5 Upgrade the existing interpretation programmes of public institutions for the management of protected natural values, zoological gardens, botanical gardens, museums, etc. to include the concepts of biological, landscape and geological diversity

8.2.3.1 Enable and conduct education of employees of public institutions for the management of protected natural values

8.2.3.2 Work on establishment of a national centre for education of employees of the nature protection services

8.2.4.1 Incorporate the principles of protection and conservation of biological, landscape and geological diversity into the education and qualification system and into the practices of the forestry, hunting, agriculture, fisheries, water management, mining, physical planning and biotechnology sectors, and all other professions and activities that are pursued, directly or indirectly, in nature

8.3 Public information and participation

The media plays an important role in the protection of biological, landscape and geological diversity. By providing information to the general public, it can create public support, pressure or engagement.

There is a global trend towards an increase in the share of electronic communications, and this potential should also be used for the purposes of public education, information and participation in the protection of biological, landscape and geological diversity.

Information about the state of biological, landscape and geological diversity and availability of this information is the basic prerequisite for raising awareness of the public and target groups about biodiversity. To that effect, support should be given to the development of technical, scientific and technological co-operation with domestic and international institutions for the purpose of protection of biological, landscape and geological diversity and sustainable use of its components.

Legal prerequisites have been created for public involvement in the decision-making process concerning protection of nature and the environment. However, the general public should be additionally encouraged to get involved in public inspection procedures and public discussions.

Implementation and full functioning of the biodiversity Clearing House Mechanism (CHM) will contribute to achievement of this objective.

Non-governmental organisations are important agents in communication of the biodiversity concept, and can include the general public in processes aimed at protection of biological, landscape and geological diversity.

The general public and target groups are informed about the protection of biological and landscape diversity through various nature protection projects or as part of celebration of significant dates, such as the Nature Protection Day, Planet Earth Day, World Wetlands Day, the promotion of new specialist publications, occasional thematic round tables, press conferences, etc.

As regards media coverage, nature protection is receiving more attention. Daily papers cover events related to these issues, most often in form of short news clips, although in recent years several new, specialised magazines addressing nature protection issues have emerged on the market.

The Republic of Croatia is a party to the Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention). The obligation of public information and inclusion in the decision-making process is regulated by the Nature Protection Act, Environmental Protection Act and the Physical Planning and Building Act (OG 76/07), whereas the procedures for the general public participation are regulated by the accompanying ordinances and regulations.

STRATEGIC OBJECTIVE

Ensure informing of the public about, and its participation in, the matters related to the protection of biological and landscape diversity

Strategic guidelines

8.3.1 Promote and improve the quality of education and public awareness on biological, landscape and geological diversity, and intensify public involvement in decision-making processes

8.3.2 Establish the mechanisms for the international, regional and national exchange of information about biological, landscape and geological diversity, and protection and conservation activities

8.3.3 Support non-governmental organisations in their nature protection and promotion activities

8.3.4 Encourage participation of mass media in public education, informing and involvement on issues of the protection of biological, landscape and geological diversity

8.3.5 Encourage volunteerism and other forms of non-institutional education and public social engagement in the protection of biodiversity

Action plans

8.3.1.1 Stimulate financing of actions that improve the quality of education and public awareness on biological, landscape and geological diversity and encourage public participation in the decision-making process

8.3.2.1 Inform the public in a systematic and consistent manner of the existing institutional framework, rights and duties of citizens, and of the possibilities for the general public to participate in decision-making processes and procedures related to the issues of protection and conservation of biological, landscape and geological diversity

8.3.2.2 Develop the information system for the biodiversity of Croatia

8.3.2.3 Develop the biodiversity Clearing House Mechanism

8.3.3.1 Improve financing mechanisms for non-governmental organisation projects that support promotion and public informing on the theme of biological, landscape and geological diversity

8.3.3.2 Encourage co-operation amongst civil society organisations, the public and economic sectors

8.3.4.1 Continue promoting media coverage of the events celebrating important dates for nature and environmental protection

8.3.4.2 Ensure regular communication with the media and establish a permanent partnership for the purpose of more extensive coverage of topics related to the protection of biological and landscape diversity

8.3.4.3 Organise an annual workshop for media representatives, the Ministry of Culture, SINP, public institutions and non-governmental organisations

8.3.5.1 Develop the volunteer network and different volunteer programmes (inventorying, monitoring, education, etc.)

## 8.4 Spatial planning

Upon its entry into force, the new Physical Planning and Building Act (OG 76/07) superseded the Physical Planning Act (OG 30/94, 68/98, 61/00, 32/02, 100/04, 128/04) and the Regulation on restructuring and protection of the protected coastal marine area, which was adopted with the very aim of protecting the areas suffering the greatest devastation. The provisions of the said Regulation, which envisaged restrictions to projects in those areas, have been incorporated into the new Physical Planning and Building Act and are binding for both new and the existing spatial plans of more immediate and wider areas. The new Act and physical planning documents lay down a purposeful organisation, use and purpose of the area, and benchmarks and guidelines for restructuring and protection of the national territory and county areas, the area of the City of Zagreb, and the areas of cities, towns and municipalities. Physical planning documents are issued at the national level (Spatial Development Strategy, Physical Planning Programme of the Republic of Croatia and a part of spatial plans of the areas characterized by distinctive features), and in the form of spatial plans at the regional (spatial plan of a county or the City of Zagreb, and a share of spatial plans of areas characterized by distinctive features) and local levels (spatial development plan for major cities, spatial development plan for a town or municipality, urban development plan and detailed development plan). With regard to their purpose, they are classified as strategic physical planning documents (Spatial Development Strategy, Physical Planning Programme of the Republic of Croatia and spatial plans of the areas characterized by distinctive features, spatial plan of a county or the City of Zagreb, spatial development plan for major cities, spatial development plan for r a town or municipality) and implementing physical planning documents (urban development plan and detailed development plan).

Despite the legislation in force, over the past decade the Republic of Croatia has seen intensive use and unselective “occupation” of rural and coastal areas (entrepreneurial zones, military or testing sites, apartment settlements, wind farm sites, golf courses, large areas intended for tourism-related construction in the coastal area, etc.). Therefore it is important, more than ever before, to protect nature, not only in the form of representative protection (threatened species, vulnerable habitats and/or corridors, categorised protected areas), but also in the form of protection of certain natural spatial complexes.

Apart from a handful of general protection instruments (e.g. new protected area candidates), the current generation of county spatial plans (adopted in the period from 2000 to 2004) does not contain any other (serious) instruments of protection and conservation of biological and landscape values of an area. This is partly the consequence of lack of information about the biological and landscape values of the area, but also of lack of sensitivity on the part of the creator of physical planning documents towards including a scientific expert in the spatial plan development team. Spatial plans are dominantly dedicated to constructed environments, and not natural ones, they are mainly concentrated on infrastructure, recreation, tourism, buildings, economic development and transport. Very rarely are measures imposed with a view to protecting an integral area against inappropriate development (e.g. excessive number of quarries, oversized entrepreneurial and tourism zones, etc.). Such spatial plans determine the use/purpose of the area and constitute the basis for the course of development.

The Physical Planning and Building Act and the Environmental Protection Act stipulate that spatial plans for special-feature areas must be developed for protected areas (especially national

parks and nature parks). All national parks, with the exception of the North Velebit National Park, and the Učka and Kopački Rit Nature Parks have valid spatial plans, while the development of spatial plans for other national and nature parks is in progress.

The obligation to issue nature protection requirements and measures and incorporate them into physical planning documents was already imposed by the 2003 Nature Protection Act. In respect of physical planning documents that cover protected areas, the Act imposes the obligation to obtain the prior approval of the competent Ministry in charge of nature protection activities as a precondition for their adoption. Application of the said provisions of the Nature Protection Act began as late as in September 2004, upon completion of organisational chart and staffing process at the line ministry for nature protection (Ministry of Environmental Protection and Physical Planning and later the Ministry of Culture) and at the newly established SINP. Since that time, nature protection conditions and measures are regularly defined and incorporated into physical planning documents, which are subject to approval.

The new Nature Protection Act entered into force in June 2005 and imposes the obligation upon the party responsible for plan development to issue the nature protection requirements and measures, and the obligation to obtain prior approval in the process of adoption of the spatial plans covering a protected area.

Upon entry into force of the Ordinance on habitat types, habitat map, threatened and rare habitat types and habitat types conservation measures in January 2006, and of the Regulation on proclamation of the ecological network in October 2007, in the process of defining the nature protection requirements and measures, the Ministry obtains data from the SINP as to the presence of threatened and rare habitat types in the area within the plan scope, proposed measures for their conservation, information as to whether the plan covers an area included in the CRO-NEN or representing a potential NATURA 2000 site. It also obtains information about wild taxa and their threat and protection status (Ordinance on designation of wild taxa as protected and strictly protected taxa of January 2006). The information obtained from the SINP is incorporated into the nature protection requirements and measures of the Ministry and are submitted to the party responsible for plan development along with other information relating to the nature protection area, which are necessary for the plan development.

STRATEGIC OBJECTIVE

Adoption of spatial plans of the areas characterized by distinctive features for all national parks and nature parks, evaluation of the area from the nature protection standpoint, incorporation of nature protection requirements and measures, and information resulting from evaluation of the area, into physical planning documents

Strategic guidelines

8.4.1 Carry out evaluation of the area (at the level of the counties and the City of Zagreb) in terms of nature protection or conservation and improvement of threatened and protected species populations, threatened and rare habitat types and conservation of landscape values, and define priorities related to planned designation of new protected areas

8.4.2 Adopt the remaining spatial plans for the areas characterized by distinctive features (and/or amendments to existing plans) for all national parks and nature parks

8.4.3 Establish the correlation between spatial plans for the areas characterized by distinctive features and management plans for national parks and nature parks with regard to plan content

8.4.4 Conduct training of regional and local governments for the implementation and application of the provisions of physical planning documents and issuance of approval for projects in the area, particularly with respect to the new evaluation of county areas, protected areas and the ecological network

8.4.5 Improve implementation and supervision of nature protection measures and requirements that are incorporated into spatial plans

8.4.6 Improve the level of public awareness of biological, geological and landscape diversity and the importance of conservation of the area, and encourage public participation in the development and adoption of spatial plans

Action plans

8.4.1.1 Impose the obligation to create technical bases related to nature protection for the purpose of development of physical planning documents

8.4.1.2 Specify the procedure for issuance of authorisations and draw up a list of persons authorised for creation of technical bases for the purpose of development of physical planning documents

8.4.1.3 Carry out evaluation of the area (at the level of the counties and the City of Zagreb) in terms of nature protection and incorporate the information obtained this way into physical planning documents (existing plans and plans being developed)

8.4.1.4 Produce catalogues of measures/nature protection protocols for the main activities and sectors: physical planning, agriculture, fisheries, forestry, hunting, energy, transport, water management, mining, tourism, etc., with the aim of incorporating these as obligatory elements into the implementation plans of the said sectors

8.4.2.1 Develop and adopt the remaining spatial plans for the areas characterized by distinctive features (and/or amendments to existing plans) for national parks and nature parks

8.4.3.1 Harmonise the contents and scope of spatial plans for the areas characterized by distinctive features with that of management plans for national parks and nature parks (in order to avoid overlapping or for the purpose of determining priorities, etc.)

8.4.3.2 Improve co-ordination between the authorities responsible for nature protection, environmental protection and physical planning

8.4.4.1 Conduct training of regional and local governments for the implementation and application of the provisions of physical planning documents and issuance of authorisations for the exploitation of natural resources and for projects in the area, particularly with regard to the importance of conservation of biological and landscape diversity, new evaluation of county areas, protected areas and the ecological network

8.4.5.1 Strengthen co-operation among the services in charge of nature protection inspection, urban planning inspection and building inspection

8.4.6.1 Promote activities on informing the public and the inclusion of the public, professional and scientific institutions, and non-governmental organisations in the field of protection of biological, geological and landscape diversity in the processes of preparation and adoption of physical planning documents

8.4.6.2 Evaluate, in a transparent and professional manner, public opinion, comments and proposals concerning the proposed spatial plans

## 8.5 Nature impact assessment

The 2003 Environmental Protection Act imposed the obligation to assess the impact of any project on nature. Under the Act, the Minister was responsible for prescribing, by virtue of an ordinance, the contents, time limit and the method of the nature impact assessment of any project, the manner of informing the public and the method of calculation of a security deposit for elimination of consequences to nature. However, the aforementioned ordinance was not adopted, and so the nature impact assessment of projects was not carried out.

The new Nature Protection Act of 2005 also imposes the obligation to conduct a nature impact assessment for projects which are not covered by the environmental impact assessment requirement and which alone or in combination with other projects may have a significant impact on an ecologically important area or protected natural value. This Act also provides for enactment of an ordinance prescribing the contents, time limit and the method of assessment of impacts on nature, the manner of public informing and the method of calculation of a security deposit for elimination of possible consequences to nature. The said ordinance is issued by the Minister subject to approval of the head of the central state administration body responsible for environmental protection tasks. The Act does not impose the obligation to conduct nature impact assessments for plans and programmes.

The Ordinance on nature impact assessment was adopted in July 2007 with the approval of the Ministry of Environmental Protection, Physical Planning and Construction,; however, it was not applied prior to the adoption of the Regulation on the proclamation of the ecological network. The said Ordinance imposes the obligation to assess the impacts of natural resource exploitation plans on nature through the existing instruments of the Nature Protection Act (nature protection requirements and measures, and prior approval).

In order to fully align the Nature Protection Act with the Habitats Directive and to prescribe a detailed procedure for the method of and the need for conducting the nature impact assessment, the Act on Amendments to the Nature Protection Act is being prepared. These amendments will prescribe in detail the stages of the nature impact assessment as follows: screening, main assessment with assessment of suitable alternatives, definition of prevailing public interest, and compensation requirements.

The Environmental Protection Act ensures integral conservation of the quality of the environment, conservation of natural communities, rational use of natural energy sources and energy in the most favourable way for the environment as the basic requirement for sound and sustainable development. The Act also specifies the environmental protection objectives, including: protection of flora and fauna, protection of biological and landscape diversity, conservation of ecological stability, sustainable exploitation of natural resources without major damages and threats to the natural environment, protection and improvement of the quality of individual environmental components, improvement of the disturbed natural balance and reestablishment of its ability to regenerate, improvement of the state of the environment and making provisions for a sound environment, etc.

One of the instruments for environmental protection under the Environmental Protection Act is an environmental impact assessment of any project, which investigates all possible direct and indirect impacts of projects on soil, water, sea, air, forests, climate, human health, flora and fauna, landscape, material property and cultural heritage, and also taking account of their mutual relations. The environmental impact assessment is carried out as preparation for the intended project or prior to the issuance of the location permit or other legal act approving the project. The Regulation on environmental impact assessment specifies the types of projects subjected to the environmental impact assessment, the manner in which the environmental impact assessment is carried out, the method of evaluation of the need for the environmental impact assessment and the method of work of the commission. For projects for which both the environmental impact assessment and the nature impact assessment are obligatory, the procedure for the nature impact assessment (pursuant to Article 36 of the Nature Protection Act) is carried out as an integrated procedure. The request for the environmental impact assessment always contains the relevant legal act issued within the procedure for the nature impact assessment – screening (certificate of project acceptability or opinion about the obligation to carry out the main assessment procedure). The main assessment procedure is then carried out as part of the environment impact assessment procedure and, prior to issuance of a decision, the competent authority must submit the commission’s opinion on the acceptability of the project to the competent authority responsible for nature protection.

The strategic environmental assessment of any plan or programme is an instrument for implementation of environmental protection, and it represents a novelty in relation to the former Environmental Protection Act. It assesses potentially significant impacts on the environment that may occur in the course of implementation of a plan or programme and allows for the adoption of relevant decisions on acceptance of a plan or programme on the basis of the information on potentially significant impacts. The strategic environmental assessment is carried out in the course of preparation of a draft proposal for a plan or programme prior to finalization of the proposal and its submission to the adoption procedure. The manner in which the strategic environmental assessment is carried out is prescribed by the Regulation on strategic environmental assessment of plans and programmes. For plans and programmes for which both the strategic environmental assessment of a plan or programme and the nature impact assessment are obligatory, the nature impact assessment procedure is carried out as an integrated procedure. In that case, the decision on implementation of the strategic assessment procedure must also contain an opinion about the obligation to carry out the main assessment procedure. The main assessment procedure is then carried out as part of the environmental impact assessment procedure.

STRATEGIC OBJECTIVE

Establishment of the instrument for the nature impact assessment of projects, plans and programmes

Strategic guidelines

8.5.1 Establish the mechanisms and the system for implementation of the nature impact assessment

8.5.2 Strengthen the principles of protection of biological, landscape and geological diversity within the environmental impact assessment procedure

8.5.3 Train regional and local governments for implementation of the nature impact assessment

8.5.4 Improve the level of public awareness of the importance of the nature impact assessment, the ecological network and the international ecological network NATURA 2000

Action plans

8.5.1.1 Adopt amendments to the Nature Protection Act related to the nature impact assessment of projects, plans and programmes

8.5.1.2 Adopt a new Ordinance on nature impact assessment that will be aligned with the amendments to the Nature Protection Act

8.5.1.3 Specify the procedure for issuance of authorisations and draw up a list of persons authorised for preparation of the nature impact assessments

8.5.1.4 Adopt the Regulation on the international ecological network NATURA 2000

8.5.2.1 Conduct a comprehensive analysis of the biological, landscape and geological diversity segment within the environmental impact procedure and strategic environmental impact procedure

8.5.3.1 Conduct training of regional and local governments and other stakeholders with a view to making them capable of implementing the regulations concerning the nature impact assessment as an independent procedure, and as part of the environmental impact assessment and strategic environmental assessment

8.5.4.1 Prepare and ensure availability of informative and educational materials about the nature impact assessment, the ecological network and the international ecological network NATURA 2000

# 9. STRATEGY IMPLEMENTATION

## 9.1 Monitoring and evaluation of Strategy implementation

The Strategy and Action Plan for the Protection of Biological and Landscape Diversity outlines a number of strategic guidelines and action plans. They delineate the required actions; however, it is difficult to forecast the possibility of their implementation. Therefore the action plans are classified according to priorities. The priority action plans (PR) should be implemented within the shortest possible time, short-term action plans (ST) within five years, medium-term action plans (MT) within ten years, and the long-term ones (LT) within a period of 20 years. One of the instruments for monitoring and evaluating implementation of the Strategy is the Report on the State of the Natural Environment, which is prepared for the purpose of an analysis of the implementation, assessment of implementing measures, assessment of the completed supervision and use of financial resources for nature protection, assessment of the use of financial resources and evaluation of the need for revision of the strategy, but also provides other relevant information.

The Report should provide assessment of the Strategy implementation through assessment of the state of biodiversity, which should be based on the National List of Indicators for biodiversity. Creation of the National List of Indicators is co-ordinated by the Croatian Environment Agency.

Furthermore, it is necessary to develop an additional set of indicators, primarily indicators for the impact on biological, landscape and geological diversity, and other indicators for monitoring financing activities and implementation of the measures envisaged by the Strategy.

When planning the state budget for a certain year, it is necessary to take account of the priority action plans under the Strategy for that particular year.

The authorities responsible for implementation of Action Plans under this Strategy are the competent authorities of the central state administration, primarily the Ministry of Culture, which

is responsible for nature protection, and the State Institute for Nature Protection, public institutions for management of protected natural values and regional and local governments.

The Action Plans must be implemented in co-operation with a wide circle of stakeholders, above all with scientific and professional institutions, institutes, legal entities managing natural resources and associations, and with the involvement of the general public.

The authority responsible for the implementation of the Strategy is the Ministry of Culture, which co-ordinates further activities and performs administrative and organisational tasks for the purpose of implementation of the Strategy.

STRATEGIC OBJECTIVE

Ensure effective implementation of the Strategy

Strategic guidelines

9.1.1 Take necessary steps for continuous monitoring of Strategy implementation

9.1.2 Give priority to financing the projects relevant for Strategy implementation

Action plans

9.1.1.1 Adopt the National List of Indicators for biodiversity

9.1.1.2 Define other indicators for monitoring the Strategy implementation

9.1.2.1 When planning the state budget for a certain year, ensure financing of the priority Action Plans under the Strategy for that particular year

9.1.2.2 Enter into agreements between different sectors stipulating that project financing contests must give priority to those projects that contribute towards implementation of the Strategy, especially in the field of science

9.2 Financial mechanisms for Strategy implementation

Since the adoption of the Strategy in 1999, it is evident that significant improvement has been made towards strengthening the financial mechanisms for nature protection. With regard to the nature protection system as a whole, the state budget continues to be the primary source of financing.

With the aim of supporting the nature protection activities and programmes of non-governmental organisations, in 2006, the Ministry started to award funds through the public tender procedure. As such, it is expected that the level of funds allocated for this purpose will increase in the future.

A certain proportion of funds are set aside from county, city and municipal budgets for the purpose of management of protected areas (through the activities of the state/county/local public institutions) and for financing of other nature protection projects.

Substantial funds for nature protection activities at the national and/or regional level are also secured through various international projects financed by international funds, governments/programmes of individual European countries and the EU pre-accession programmes. Given the importance attached by the EU to the protection of biological and landscape diversity, a significant inflow of funds from these sources is expected.

For the purpose of securing additional funds for financing of projects, programmes and similar activities related to conservation, sustainable use, protection and improvement of the environment, the Environmental Protection and Energy Efficiency Fund was established in 2004. Establishment of the Fund represents significant progress in the method of financing nature protection activities, as a proportion of the funds is earmarked for financing projects and programmes for the protection and conservation of biological and landscape diversity. It is expected that the level of funds allocated by the Fund for biological and landscape diversity protection projects will be gradually increased.

The Nature Protection Act provides for a system of financial incentives for management that observes and implements measures for the conservation of biological and landscape diversity. As this mechanism is necessary for successful management of the ecological network areas, i.e. the future Croatian part of the EU NATURA 2000 ecological network, a system of incentives should be established through special regulations as soon as possible. The best results in this area are expected from the Agricultural and Environment Protection Programme.

Virtually all the public institutions managing national parks and nature parks have their own sources of income through ticket sales, tourism and catering activities, concession authorisations, sale of souvenirs, promotional materials and other services. A considerable proportion of this income is generated by those national parks and nature parks with well-developed tourism and catering activities, and a large number of visitors.

The corporate sector is only beginning to get involved in the protection of biological and landscape diversity. The concept of socially responsible management should, to a large extent, be extended to nature protection through the sponsoring of concrete actions. Those entities that directly use or have a direct impact on natural resources should be obligated to earmark a certain amount of funds for nature protection.

The systematic control of financial resources set aside from different sources for nature protection activities is difficult, due to the dispersion and heterogeneity of institutions and stakeholders involved in nature protection projects.

In addition to special-purpose funds, all participants in the process of implementation of the Strategy will secure a proportion of funds within the scope of their regular activities, depending on their participation in specific action plans.

STRATEGIC OBJECTIVE

Ensure financial mechanisms for effective implementation of the Strategy

Strategic guidelines

9.2.1 Ensure financing of the Strategy implementation within the budget of the respective state administration body

9.2.2 Ensure funding of nature protection activities from non-budgetary sources

Action plans

9.2.1.1 When planning the state budget for a certain year, ensure financing of the priority action plans under the Strategy for that particular year

9.2.1.2 Strengthen the capacities of the Ministry of Culture for in order to plan financing of nature protection activities

9.2.1.3 Further elaborate the criteria and methodology for allocation of funds through the public tender procedure for nature protection programmes, taking into account the priorities under the Strategy

9.2.1.4 Elaborate the system of financial incentives for management that observes and implements measures for conservation of biological and landscape diversity within the framework of the future Agricultural and Environment Protection Programme.

9.2.2.1 Strengthen the capacities at the Ministry of Culture, State Institute for Nature Protection and public institutions for the purpose of preparation and implementation of projects financed by foreign funds, in particular EU funds

9.2.2.2 Increase the share of financing of nature protection projects by the Environmental Protection and Energy Efficiency Fund

9.2.2.3 Promote financing of nature protection projects within the concept of socially responsible management

## 10. OVERVIEW OF ACTION PLANS

| No. | Action plans | Competent authority | Potential implementing authorities | Urgency | Possible funding sources | Correlation with other actions |
|---|---|---|---|---|---|---|
| 3. Protection of biodiversity | | | | | | |
| 3.1 *In situ* protection | | | | | | |
| 3.1.1 Protected areas | | | | | | |
| 3.1.1.1 Prepare the fundamental documents for protected area management | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 3.1.1.1.1 | Develop and adopt management plans for the remaining national parks and nature parks | PI NP/NAP | PI NP/NAP, SINP, MC | PR! | IF, SB | 6.7.1.2 |
| 3.1.1.1.2 | Develop and adopt management plans for other areas protected in the categories of strict reserve, special reserve, regional park and important landscape | PIC | PIC, SINP, MC | ST | IF, CB | 3.1.3.1.3<br>6.7.1.2 |
| 3.1.1.1.3 | Develop and adopt spatial plans for those national parks and nature parks without such plans of for which plans are under review | MEPPPC | MEPPC, SINP, PI NP/NAP, MC | PR! | SB | 8.4.2.1<br>8.4.3.1 |
| 3.1.1.2 Digitalize boundaries and continue the review of existing protected areas | | | | | | |
| 3.1.1.2.1 | Complete the review of existing protected areas | MC | SINP, MC, PI NP/NAP, PIC | PR! | SB | |
| 3.1.1.2.2 | Based on priorities established by the review, make amendments to the Act on the Proclamation of National Parks and Nature Parks, carry out the legal proclamation procedure and enter the areas in the land registers | MC | SINP, MC, PI NP/NAP | PR! | IF, SB | |
| 3.1.1.2.3 | Digitalize the boundaries of other protected areas and, pursuant to the results of the review, draft amendments to the official documents concerning the designation, carry out the legal designation procedure and enter the areas in the land registers | SINP, MC | SINP, MC, PIC | MT | IF, SB, CB | 3.1.3.1.2 |
| 3.1.1.3 Evaluate, categorize and legally protect particular areas | | | | | | |
| 3.1.1.3.1 | Set up an expert working group to classify each protected area into one of the IUCN categories according to the new IUCN guidelines | SINP | SINP, MC, PI, SI | ST | SB | |
| 3.1.1.3.2 | Proclaim the Neretva Delta | MC | MC, SINP | PR! | SB | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Nature Park | | | | | |
| 3.1.1.3.3 | Conduct an expert assessment and provide legal protection for the following areas: Elaphite Islands, Mrežnica River, Bjelolasica, Hrvatsko Zagorje, Lička Plješivica, Čičarija, the Dinara and Kamešnica Massif, the Island of Cres, the area of Obruč and Paklen, the Una River Canyon, the Mirna River, the Upper Kupa River, the complete course of the Cetina and Snježnica Rivers | SINP | SINP, PIC, MC, public concerned | LT | CB, SB, IF | |
| 3.1.1.3.4 | Conduct an expert assessment and provide legal protection for other areas of valuable biological, landscape and/or geological diversity | SINP | SINP, MC, PIC, public concerned | LT | CB, SB, IF | 5.1.5<br>5.1.11<br>5.1.12 |
| 3.1.1.3.5 | Draft an integral plan for the nomination of sites for specific international designations (UNESCO World Heritage, UNESCO MAB, Ramsar, European Diploma of Protected Areas, UNESCO Geopark) | MC | MC, SINP, PI | ST | SB | 5.1.6<br>5.1.11<br>5.1.12 |
| 3.1.1.3.6 | Finalize the designation procedure for the Mura-Drava Biosphere Reserve | MC | SINP, MC, PIC | PR! | IF, SB, CB | |
| 3.1.1.3.7 | Complete the candidacy process for the UNESCO World Heritage List of protected areas that are currently included in the List of proposals (Mt. Velebit, Kornati National Park, Telaščica Nature Park and Lonjsko Polje Nature Park), and consider the possibility of proposing new areas | MC | MC, SINP, PI | MT | SB, IF | |
| 3.1.1.3.8 | Conduct an expert evaluation | MC | MC, SINP, PI | MT | IF, PI | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | of the areas of Vransko Lake Nature Park, Ličko Polje and Ogulin - Plaški area for the purpose of candidacy for inclusion in the List of wetlands of international importance of the Convention on Wetlands of International Importance, Especially as Waterfowl Habitat (Ramsar Convention) | | PN, PIC | | OI, CB, SB | |
| 3.1.1.3.9 | Conduct an expert assessment of the areas of Mljet National Park, Kornati National Park, Telaščica Nature Park and Lastovo Archipelago Nature Park for candidacy for inclusion in the List of specially protected areas of the Mediterranean, forming part of the Protocol Concerning Mediterranean Specially Protected Areas (SPA Protocol) to the Barcelona Convention | MC | MC, SINP, PI NP/NAP | MT | SB, IF, PI OI | |
| 3.1.1.4 Ensure involvement of the public concerned | | | | | | |
| 3.1.1.4.1 | Enable systematic participation of the public concerned in the designation process of new protected areas and in the process of developing documents concerning the management of protected areas through a clearly defined consultation process | PI | PI NP/NAP, PIC, SINP, MC | PR! | SB, IF, CB, PI OI | 8.3.3.2 |
| 3.1.1.4.2 | Consolidate all databases on protected areas into a unified Nature Protection Information System made accessible to the public concerned and connect it with the Environmental Information System (EIS) | SINP | SINP, MC, PI NP/NAP, PIC, CEA | PR! | SB, IF, CB, PI OI | 3.1.4.5.1<br>8.1.3.1<br>8.1.3.2<br>8.3.2.2<br>8.3.2.3 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | | 8.3.3.2 |
| 3.1.1.4.3 | Make the Register of Protected Natural Values publically available on the Ministry of Culture website | MC | MC | PR! | SB | 5.1.10<br>7.2.3.1<br>8.3.3.2 |
| 3.1.1.5 Improve the protected area management system | | | | | | |
| 3.1.1.5.1 | Continue the standardisation of reports and official documents of national parks and nature parks | MC | MC, SINP, PI NP/NAP | PR! | | |
| 3.1.1.5.2 | Strengthen personnel capacities of line and supervisory services of public institutions | MC | MC, counties, PI | PR! | CB, SB, PI OI | 5.3.1<br>7.2.1.1 |
| 3.1.1.5.3 | Provide education and professional training and development for the employees of public institutions | MC | MC, SINP, PI | ST | SB, CB, IF, PI OI | 5.4.2<br>7.2.2.1<br>8.2.3.1 |
| 3.1.1.5.4 | Establish a uniform ticket charging system at national parks and nature parks | MC | MC, PI NP/NAP | PR! | PI OI, SB | 6.8.2.3 |
| 3.1.1.5.5 | Establish educational/presentation centres and other educational facilities in national parks and nature parks | PI NP/NAP | PI NP/NAP, SINP, MC | ST | SB, IF, PI OI | 5.1.8<br>6.8.3.2 |
| 3.1.1.5.6 | Establish educational/presentation centres and other educational facilities in other protected areas | PIC | PIC, SINP, MC | MT | CB, IF, PI OI | 5.1.8<br>6.8.3.2 |
| 3.1.1.5.7 | Continue implementation of the National Programme for the Establishment of an Integral Fire Control System in national parks and nature parks | MC | PI NP/NAP, MC, LGSG, FA | PR! | SB, CB, PI OI | |
| 3.1.1.5.8 | Continue landmine clearance activities in protected areas, primarily national parks and nature parks | CROMAC | CROMAC, PI, SAB | ST | IF, SB | 5.2.3<br>6.2.3.1 |
| 3.1.1.6 Resolve property-related relations and disputes, and increase the share of state-owned land | | | | | | |

within protected areas

| | | | | | | |
|---|---|---|---|---|---|---|
| 3.1.1.6.1 | Carry out consultations with the competent authorities and other stakeholders in the respective areas and begin the resolution of property-related relations and disputes in respect of national and nature parks | PI NP/NAP | PI NP/NAP, SAB, MC | ST | PI OI | |
| 3.1.1.6.2 | Draw up a list of priorities and begin the purchase of land in strict reserves, national parks, special reserves and nature parks | MC | MC, SINP, PI NP/NAP, PIC | ST | SB, PI OI, CB | 7.1.3.1<br>7.2.5.1<br>7.2.5.2 |

3.1.2 Protection of ecosystems and habitats

3.1.2.1 Create the prerequisites for more effective implementation of the Ordinance on habitat types, habitats map, threatened and rare habitat types and habitat type conservation measures

| | | | | | | |
|---|---|---|---|---|---|---|
| 3.1.2.1.1 | Map terrestrial habitats on a scale of 1:25 000 or smaller in the areas within the CRO-NEN and the NATURA 2000 network | SINP | MC, SINP, EA | MT | SB, IF | 3.1.3.1.2 |
| 3.1.2.1.2 | Map marine habitats in marine areas under Croatian jurisdiction | SINP | MC, SINP, EA | MT | SB, IF | 3.1.3.1.2<br>6.5.2.1 |
| 3.1.2.1.3 | Conduct periodical reviews of the National Habitat Classification of the Republic of Croatia | SINP | MC, SINP, EA | LT | SB, IF | |

3.1.2.2 Scientifically establish the threat status of certain habitat types in Croatia and develop specific measures for their protection

| | | | | | | |
|---|---|---|---|---|---|---|
| 3.1.2.2.1 | Prepare the Red List and Red Book of habitat types in Croatia | SINP | SINP, EA | PR! | SB | 6.5.2.1<br>3.1.2.3.6<br>3.1.2.3.10 |
| 3.1.2.2.2 | Develop specific measures for the protection of rare and threatened habitat types | SINP | SINP, EA | ST-MT | SB, CB, IF | 5.2.1<br>6.1.2.1<br>6.1.9.1 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | | 6.1.9.2<br>6.8.1.2<br>6.8.1.3<br>6.10.1.2<br>6.11.1.3<br>8.4.1.4 |

3.1.2.3 Create the prerequisites for protection of habitats threatened at the national and European level

| | | | | | | |
|---|---|---|---|---|---|---|
| 3.1.2.3.1 | Inventory and map threatened and rare habitat types and the habitat types set out in Annex I of the Habitats Directive that are important for the establishment of the NATURA 2000 network | SINP | SINP, EA, PI | PR! | SB, IF, CB | 8.1.1.4 |
| 3.1.2.3.2 | Define the important areas for conservation of the habitat types set out in Annex I of the Habitats Directive, and important areas for conservation of those habitat types proposed by Croatia for inclusion in the amendments to Annex I, and ensure their inclusion in Croatia's proposal for the NATURA 2000 network | SINP | SINP, EA, PI | PR! | SB, IF, CB | 3.1.3.1.1 |
| 3.1.2.3.3 | Implement protection and monitor the state of threatened and rare habitat types and habitat types listed in Annex I of the Habitats Directive, including habitats proposed by Croatia for inclusion in amendments to Annex I | SINP | PI, SINP, NGO | MT | SB, IF, CB | 3.1.2.3.4<br>3.1.2.3.7<br>3.1.5.3.1<br>6.2.2.3<br>8.1.2.1 |
| 3.1.2.3.4 | Implement active protection of bogs and fens | PI | SINP, PI, LC, NGO | PR! | IF, SB, CB | 3.1.2.3.3<br>3.1.2.3.9 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 3.1.2.3.5 | Incorporate schemes focused on the protection of species and habitats in protected areas into the Agricultural and Environment Protection Programme | SINP | PI, NGO, SINP | MT | IF, SB | 3.1.3.2.1<br>3.1.5.2.1<br>6.1.1.1<br>9.2.1.4 |
| 3.1.2.3.6 | Evaluate grasslands and formulate a proposal for conservation of specific sites along with management measures | SINP | SINP, EA, PI | ST-MT | IF, SB | 3.1.2.2.2<br>6.1.2.1<br>6.1.4.1<br>6.1.4.2<br>6.1.4.3<br>6.1.4.4<br>6.1.5.1<br>6.1.9.1 |
| 3.1.2.3.7 | Establish and implement protection of habitats on islands hosting endemic taxa and/or on nesting sites, resting places during migration, sand spits, ponds and springs | PI | PI, MC, SINP, NGO | PR! | SB, IF | 3.1.2.3.3 |
| 3.1.2.3.8 | Provide incentives to private owners for implementation of measures for conservation of threatened species | MAFRD | MAFRD, MRDFWM, counties, MC | MT | SB, CB | 6.1.4.1<br>6.1.4.2<br>6.4.3.1<br>3.1.2.3.4 |
| 3.1.2.3.9 | Include the local population in the implementation of habitat protection activities (removal of overgrowing vegetation, mowing, grazing, etc.) | PI | PI, LC, NGO | MT | SB, CB | 3.1.3.2.1<br>3.1.5.2.1<br>6.1.1.1<br>9.2.1.4 |
| 3.1.2.3.10 | Develop, on an expert and scientific basis, specific | SINP | MC, SINP, MRDFWM, | LT | SB | 3.1.2.2.2 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | measures for the conservation of threatened habitat types and ensure their incorporation into all natural resource management plans and physical planning documents | | MAFRD, MEPPPC, MSTI, MT | | | 3.1.2.3.6<br>5.2.1<br>6.1.2.1<br>6.1.5.1<br>6.1.9.1<br>6.1.9.2<br>6.7.1.2<br>6.8.1.2<br>6.8.1.3<br>6.10.1.2<br>6.11.1.3 |
| 3.1.2.3.11 | Compile protocols for determining favourable conservation status for the habitats listed in Annex I of the Habitats Directive | SINP | MC, SINP | PR! | SB, IF | |
| 3.1.3 CRO-NEN and the NATURA 2000 network | | | | | | |
| 3.1.3.1 Ensure conservation of all components and the integrity of the CRO-NEN and NATURA 2000 network | | | | | | |
| 3.1.3.1.1 | Finalize the NATURA 2000 proposal for Croatia and carry out consultations with all relevant stakeholders at the national and local level | MC | MC, SINP | PR! | SB, IF | 3.1.2.3.2<br>6.5.3.4 |
| 3.1.3.1.2 | Define the boundaries of the ecological network and NATURA 2000 network on the Croatian Base Map on a scale 1: 5 000 and, where necessary, supplement it with orthophoto (aerial photo) images and/or the cadastre plan | SINP | SINP, SGD | ST | SB, IF | 3.1.1.2.3<br>3.1.2.1.1<br>3.1.2.1.2 |
| 3.1.3.1.3 | Draft and implement management plans for the | PI | PI, SINP, EA, NGO, MC | ST-LT | SB, CB, IF | 3.1.1.1.2 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | ecological network and NATURA 2000 sites | | | | | 6.1.2.1 |
| 3.1.3.1.4 | Introduce systematic monitoring of the situation in the areas of the ecological network, with special emphasis on monitoring the status of qualification species and habitats in specific NATURA 2000 areas, in co-operation with all relevant stakeholders | SINP | SINP | ST | SB | 3.1.4.4.1<br>3.3.3.1<br>6.2.2.1<br>6.2.2.3<br>8.1.1.1 |
| 3.1.3.1.5 | Conduct a nature impact and acceptability assessment for each plan or project which alone or in combination with other plans or projects could have a significant impact on conservation objectives and/or the integrity of certain sites within the ecological network or NATURA 2000 network | MC | MC, SINP, LGSG | ST | SB, CB | 8.3.2 |
| 3.1.3.2 Ensure financial mechanisms for implementation of conservation measures for the CRO-NEN and NATURA 2000 network | | | | | | |
| 3.1.3.2.1 | Provide incentives for the implementation of conservation measures (agriculture, forestry, fisheries) for private land-owners and land-users in the ecological network and NATURA 2000 areas within the framework of the Agricultural and Environment Protection Programme | MAFRD | MAFRD, MRDFWM | ST | SB, IF | 3.1.2.3.5<br>3.1.5.2.1<br>6.1.1.1<br>6.4.3.1<br>9.2.1.4 |
| 3.1.3.2.2 | Secure financial resources for the implementation of conservation measures in the areas of the ecological network whose management is entrusted to the county public institutions | PIC | counties | ST | CB, IF | |
| 3.1.4 Protection and conservation of wild taxa | | | | | | |

3.1.4.1 Ensure favourable status of threatened taxa in Croatia and the taxa listed in Annexes II, IV and V of the Birds Directive, which are important for establishment of the NATURA 2000 network

| | | | | | | |
|---|---|---|---|---|---|---|
| 3.1.4.1.1 | Inventory and map the taxa listed in Annexes II and IV of the Habitats Directive and in Annex I of the Birds Directive, which are important for establishment of the NATURA 2000 network | SINP | SINP, MC, EA | PR! | SB, IF | 8.1.1.1<br>8.1.1.2<br>8.1.1.4 |
| 3.1.4.1.2 | Designate Special Conservation Areas of the taxa listed in Annex II of the Habitats Directive and Annex I of the Birds Directive, and for the taxa proposed by Croatia for inclusion in amendments to Annex II, and ensure their inclusion in the Croatian proposal of the NATURA 2000 network | SINP | SINP, MC, EA | PR! | SB, IF | |
| 3.1.4.1.3 | Prepare protocols for designation of favourable conservation status of the species listed in Annex I of the Birds Directive and Annexes II, IV and V of the Habitats Directive | SINP | MC, SINP, EA | PR! | SB, IF | |
| 3.1.4.1.4 | Draft and implement action plans for the taxa important for establishment of the NATURA 2000 network | SINP | SINP, MC | ST | IF, SB | |

3.1.4.2 Determine the exact distribution and status of the species proposed by Croatia for inclusion in the amendments to the Habitats Directive

| | | | | | | |
|---|---|---|---|---|---|---|
| 3.1.4.2.1 | Research and inventory species that are proposed by Croatia for inclusion in the amendments to Annexes of the Habitats Directive | SINP | SINP, SI, EA | PR! | IF, SB | 8.1.1.1<br>8.1.1.2 |

3.1.4.3 Scientifically establish the threat status of unprocessed groups of wild taxa and ensure protection of threatened, endemic and relict taxa

| | | | | | | |
|---|---|---|---|---|---|---|
| 3.1.4.3.1 | Compile Red Lists of unprocessed groups on the basis of scientific data | SINP | MC, SINP | ST | SB | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 3.1.4.3.2 | Compile Red Books of unprocessed groups on the basis of scientific data | SINP | MC, SINP | ST | SB | |
| 3.1.4.3.3 | Draft and implement action plans for the protection of threatened taxa pursuant to IUCN criteria (CR – critically endangered, EN - endangered, VU - vulnerable) | SINP | SINP, MC, EA, NGO, PI | LT | IF, SB, CB, PI OI, OF | |
| 3.1.4.3.4 | Draft and implement action plans for the protection of endangered endemic and relict species | SINP | EA, MC, SINP, NGO, PI | MT | IF, SB, CB, PI OI , OF | |
| 3.1.4.4 Continue establishment of the national wild taxa monitoring system | | | | | | |
| 3.1.4.4.1 | Monitor the state of threatened taxa in Croatia and the taxa listed in Annexes II, IV and V of the Habitats Directive and Annex I of the Birds Directive | SINP | EA, SINP, PI, NGO | LT-MT | SB, IF, CB, PI OI | 3.1.3.1.4<br>8.1.1.1<br>8.1.2.1 |
| 3.1.4.5 Continue establishment of the nature protection information system that will include information on wild taxa | | | | | | |
| 3.1.4.5.1 | Establish and maintain an information system of collected data on wild taxa | SINP | SINP, EA | ST-MT | IF, SB | 3.1.1.4.2<br>8.1.3.1<br>8.1.3.2 |
| 3.1.4.6 Active implementation of protection of migratory species | | | | | | |
| 3.1.4.6.1 | Draft and implement action plans for the protection of migratory species protected under international conventions | SINP | SINP, MC, EA, NGO, PI | MT-LR | IF, SB, CB | |
| 3.1.4.7 Manage large carnivore populations at the national and international level | | | | | | |
| 3.1.4.7.1 | Implement and revise wolf and lynx management plans | MC | MC, SINP, MRDFWM, FVM, EA | LT | IF, SB | |
| 3.1.4.7.2 | Implement and revise the bear management plan | MRDFWM | MC, SINP, MRDFWM, FVM | LT | IF, SB | |
| 3.1.4.7.3 | Establish cross-border co-operation with BiH and strengthen co-operation with Slovenia with regard to | MC | MC, MRDFWM, SINP, FVM, EA | ST-MT | SB, IF | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | dealing with and managing large carnivores | | | | | |

3.1.4.8 Improve the system of providing care and custody for injured, poisoned, sick or confiscated strictly protected wild animals

| | | | | | | |
|---|---|---|---|---|---|---|
| 3.1.4.8.1 | Develop procedures in the event of discovery of injured, sick, poisoned or killed strictly protected animals | MC | EA, MC<br>SINP, NGO, MAFRD | PR! | SB | 6.9.1.3<br>8.1.3.3 |
| 3.1.4.8.2 | Improve co-operation with authorised centres and continue financing the provision of care and custody for injured, poisoned, sick or confiscated wild animals that are strictly protected | MC | MC, NGO, SINP, EA | ST-MT | SB, CB, IF | 7.2.4.1<br>9.1.2.1 |
| 3.1.4.8.3 | Co-operate with relevant sectors with regard to resolving the issue of provision of care and custody for wild animals | MC | MC, MAFRD | ST-MT | | |

3.1.4.9 Co-operate with all relevant stakeholders in resolving the issue of placing poisons in nature and their improper use

| | | | | | | |
|---|---|---|---|---|---|---|
| 3.1.4.9.1 | Provide education and build public awareness of the issue of placing poisons in nature, their improper use and their impact on wild taxa and habitats | MC | MC, MAFRD, MRDFWM, MI, NGO, SI, EA | ST | SB, CB, OF, IF | |

3.1.5 Protection and conservation of domesticated taxa

3.1.5.1 Ensure conservation of critically endangered indigenous domesticated breeds and varieties

| | | | | | | |
|---|---|---|---|---|---|---|
| 3.1.5.1.1 | Draft and implement conservation programmes for critically endangered indigenous domesticated breeds and varieties | MAFRD | MAFRD, MC, SINP, PI, NGO<br>CLSC, CRA | MT | IF, SB, CB | |

3.1.5.2 Improve the system of incentives for breeding and exploitation of indigenous domesticated taxa

| | | | | | | |
|---|---|---|---|---|---|---|
| 3.1.5.2.1 | Develop a programme of incentives for use of indigenous domesticated taxa for the purpose of improvement of threat status of threatened habitat types within the framework of the | MAFRD | MAFRD, SINP, MC, EA | LT | SB, IF | 3.1.2.3.5<br>3.1.3.2.1<br>6.1.1.1 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Agricultural and Environment Protection Programme | | | | | 6.1.4.2<br>9.2.1.4 |

3.1.5.3 Encourage use of indigenous domesticated taxa for maintenance and improvement of the status of threatened habitat types

| | | | | | | |
|---|---|---|---|---|---|---|
| 3.1.5.3.1 | Encourage *in situ* breeding and the keeping of indigenous domesticated breeds and varieties for the purpose of maintaining threatened habitat types | MAFRD | MAFRD, MC, SINP, PI | LT | SB | 3.1.2.3.3<br>6.1.4.1 |

3.2 *Ex situ* protection

3.2.1 Implement *ex situ* protection of the most threatened indigenous and endemic taxa and indigenous domesticated taxa

| | | | | | |
|---|---|---|---|---|---|
| 3.2.1.1 | Develop *ex situ* protection programmes for the most threatened indigenous and endemic plant and animal taxa | SINP | BG, ZOO, SINP, SI | LT | IF, CB, SB, OF |
| 3.2.1.2 | Develop *ex situ* protection programmes for the most threatened indigenous domesticated taxa | MAFRD | CLSC, SI, ZOO, BG | LT | IF, CB, SB, OF |
| 3.2.1.3 | Establish a uniform system of keeping wild taxa genes | SI | SI | LT | SB |
| 3.2.1.4 | Establish a gene bank for threatened indigenous domesticated taxa | MAFRD | MAFRD, CLSC, SI | LT | SB, IF |
| 3.2.1.5 | Organize the systematic storage of genetically proven specimens of endemic taxa in the collections of museums and other institutions | SI | SI, SINP | ST-MT | IF, SB |

3.3 Elimination of invasive species

3.3.1 Establish the existing situation with regard to alien and invasive species, assess their impact, define and carry out activities that would contribute to the elimination or weakening of such negative impacts

| | | | | | |
|---|---|---|---|---|---|
| 3.3.1.1 | Develop and implement the National Strategy on invasive alien species | MC | MC, EA, SINP, SI, PI, NGO, HA | PR! | SB, IF, CB, OF |
| 3.3.1.2 | Establish the existing situation with regard to alien and invasive species, and list and map their distributions | SINP | SINP, EA, MC, SI, NGO, PI | PR! | SB, CB, IF |

| | | | | | | |
|---|---|---|---|---|---|---|
| 3.3.1.3 | Implement elimination programmes for alien and invasive species | MC, SINP | PI, NGO, MHSW, MSTI, EA, SI, MEPPPC, HA, LC | MT | IF, SB, CB, PI OI | 6.4.2.1 |
| 3.3.1.4 | Scientifically determine the population count of introduced game on the islands, develop and implement elimination programmes | SINP | MRDFWM, SINP, MC, SI, EA, MDRC, MI, HA | PR! | IF, SB, CB | 6.3.6.1 |
| 3.3.1.5 | Promote research of invasive algae species in order to devise methods of control and lessening of their impact on the biodiversity of the Adriatic Sea | MC, SINP | MC, SINP, MSTI, MEPPPC, SI, NGO, EA | PR! | IF, SB, CB, OF | |
| 3.3.2 Undertake necessary activities towards the prevention of introduction of new invasive alien species | | | | | | |
| 3.3.2.1 | Conduct continuous public education on invasive species | MC | PI, MC, SINP, NGO, EA, SI, MRDFWM, MAFRD, MHSW | PR! | SB, IF, CB, PI OI, OF | 8.2.1.2<br>8.2.1.3<br>8.3.1.1 |
| 3.3.2.2 | Ensure co-operation with other sectors with the aim of preventing the introduction of alien species into nature | MC | SAB | ST-MT | | |
| 3.3.3 Systematically monitor the distribution of invasive species in Croatia | | | | | | |
| 3.3.3.1 | Develop and implement programmes on the systematic monitoring of invasive species distributions in Croatia | SINP | PI, MC, SINP, NGO, EA, SI, MRDFWM, MAFRD, MHSW, LC | ST-MT | IF, SB, CB, OF, PI OI | 3.1.3.1.4<br>8.1.1.1<br>8.1.4.1 |
| 3.3.3.2 | Monitor the distribution of invasive species that are indicators of climate change | SINP | SINP, PI, NGO, EA, SI, MEPPPC, LC | ST-MT | IF, SB, CB, OF, PI OI | 8.1.4.1<br>8.1.4.2 |
| 4. Landscape conservation | | | | | | |
| 4.1 Systematically approach landscape conservation through intersectoral co-operation | | | | | | |
| 4.1.1 | Set up the National Landscape Committee | MC | MC, MEPPPC, SINP, EA, SI | PR! | SB | |
| 4.1.2 | Adopt a national programme for implementation of the | MC | MC, MEPPPC, | PR! | SB | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | European Landscape Convention | | SINP, EA, SI | | | |

4.2 Gain insight into the landscape values of Croatia through identification, typology and scientific and expert evaluation of the landscape

| | | | | | | |
|---|---|---|---|---|---|---|
| 4.2.1 | Create the Landscape Basis of Croatia through co-operation among relevant sectors (physical planning, nature protection, environment protection, cultural heritage protection, transport, forestry, agriculture, water management, mining, energy, education and science, etc.) | MC | MC, MEPPPC, MRDFWM, MAFRD, MELE, MSES, SINP, CPPI, EA | PR! | CB, SB, IF | |

4.3 Ensure implementation of the European Landscape Convention and the Landscape Basis of Croatia

| | | | | | | |
|---|---|---|---|---|---|---|
| 4.3.1 | Implement the Landscape Basis of Croatia through co-operation among relevant sectors (physical planning, nature protection, environmental protection, cultural heritage protection, transport, forestry, agriculture, water management, mining, energy, education and science, etc.) | MC | MC, MEPPPC, MRDFWM, MAFRD, MELE, MSES | ST | SB | |
| 4.3.2 | Promote activities aimed at raising awareness, training and education in the field of landscape conservation | MC | MC, MEPPPC, MSES, SINP | ST | SB | 8.2.2.1<br>8.2.2.2<br>8.2.2.3<br>8.2.2.4<br>8.2.2.5 |

5. Geodiversity protection

5.1 Apply national and international instruments to systematically protect, conserve and promote the existing geodiversity

| | | | | | | |
|---|---|---|---|---|---|---|
| 5.1.1 | Set up the National Committee for the protection of geodiversity and geoconservation, and develop national guidelines for | MC | MC, SINP, EA | PR! | SB | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | inventorying, evaluation and classification of geoheritage | | | | | |
| 5.1.2 | Inventory and evaluate geodiversity, and create a database and program for monitoring its state | MC | MC, SINP, EA | ST | SB, CB, MB, IF | 8.1.1.2 |
| 5.1.3 | Impose a legal obligation to map geodiversity as an integral part of physical planning documents and natural resource exploitation/management plans | MC | MC, MEPPPC, MELE, MAFRD, MRDFWM, SINP, EA | PR! | SB, CB, IF | 8.4.1.1<br>8.4.1.3 |
| 5.1.4 | Inventory speleological structures and develop the National Speleological Cadastre | MC, SINP | PI, SINP, EA, NGO | ST | SB, CB | 8.1.1.3<br>8.1.1.4 |
| 5.1.5 | Develop a preventive protection programme for unique and/or threatened geoheritage | MC | MC, SINP, PI | PR! | SB, CB, IF | 3.1.1.3.4 |
| 5.1.6 | Identify areas for the European or global geoparks network | MC, SINP | MC, SINP, PI, EA | ST-MT | SB, CB, IF | 3.1.1.3.4<br>6.8.1.7 |
| 5.1.7 | Include geoheritage in the Croatian tourism offer and promote geotourism | MC, MT | MC, PI, MT, TA | PR! | SB, CB, MB, OF | 3.1.1.3.5<br>6.8.1.7 |
| 5.1.8 | Interpret geodiversity through all available means (popular scientific and educational publications, "geosouvenirs", presentation centres, museums, etc.) | MC, SINP, MT | MC, PI, MT, TA, SINP | PR!-ST | SB, IF, CB, OF | 3.1.1.5.5<br>3.1.1.5.6<br>6.8.3.2<br>6.8.3.3 |
| 5.1.9 | Inventory and evaluate geostructures/sites and compile the National List and Atlas of geostructures/sites | MC | MC, SINP, EA | PR! | SB, CB, IF | 8.1.1.2<br>8.1.1.3 |
| 5.1.10 | Review geostructures/sites protected by law or the relevant part of the Register of Protected Natural Values | MC | MC, SINP, EA | PR! | SB, CB, IF | 3.1.1.4.3 |
| 5.1.11 | Create the technical basis for or provide explanations for | MC, SINP | MC, SINP, EA | PR! | SB | 3.1.1.3.4 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | the protection of specific geostructures/sites and adopt legal acts on their preventive or permanent protection | | | | | 3.1.1.3.5 |
| 5.1.12 | Nominate geostructures/sites for inclusion to European or world cultural and natural heritage lists | MC | MC, SINP, EA | ST | SB, CB, IF | 3.1.1.3.4<br>3.1.1.3.5 |
| 5.1.13 | Develop guidelines for documenting findings of rocks, minerals and fossils | MC | MC, SINP, EA | PR! | SB | |
| 5.1.14 | Inventory and evaluate all types of rocks, minerals and fossils *in situ* and *ex situ*, and draft the National Programme on legal protection of specific types and/or findings | MC | MC, SINP, EA | PR!-ST | SB | 8.1.1.3 |
| 5.1.15 | Compile the National List and Atlas of all types of rocks, minerals and fossils | MC | MC, SINP, EA | PR! | SB | |
| 5.1.16 | Create the technical basis and provide legal protection for specific types of rocks, minerals and fossils *in situ* and *ex situ* | MC, SINP | MC, SINP, EA | ST | SB, IF, OF | |
| 5.1.17 | Continue to support project financing activities for conservation of geodiversity and promotion of geotourism through international and domestic funds | MC, MSES, MT | MC, MSES, MT | PR! | SB, CB, IF, OF | 7.2.4.1 |
| 5.2 Develop partnerships with other sectors for the purpose of researching, protecting, conserving and promoting geodiversity or the use of geoheritage | | | | | | |
| 5.2.1 | Introduce requirements and measures for protection of geodiversity or geoheritage into the relevant sectoral documents (physical planning documents and natural resource exploitation/management plans) | MC | MEPPPC, MELE, MAFRD, MRDFWM | PR!-ST | SB | 3.1.2.2.2<br>3.1.2.3.10<br>8.4.1.4 |
| 5.2.2 | In the environmental impact assessment process of | MC, MEPPPC | MC, MEPPPC | PR! | OF | 8.5.2.1 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | investment ventures, establish whether there is a need for conservation and protection of certain parts of geodiversity or geoheritage | | | | | |
| 5.2.3 | Accelerate the process of landmine clearance in valuable geoheritage areas | MC, CROMAC | MC, CROMAC, PI | PR! | SB, CB, IF, OF | 3.1.1.5.8 |
| 5.2.4 | Strengthen co-operation with scientific institutions, scientific/professional institutions, educational institutions, non-governmental organisations, tourism associations and local/regional governments for the purpose of more effective protection and conservation of geodiversity and geoheritage | MC | MC, SI, NGO, TA, LGSG | MT | | 8.3.1.1<br>8.3.3.2 |
| 5.3 Develop an appropriate legislative and institutional framework and strengthen staff capacities of nature protection services that deal with the protection of inanimate nature of Croatia | | | | | | |
| 5.3.1 | Strengthen institutional and staff capacities of organisational units for the protection and conservation of inanimate nature at all levels | MC, SINP | MC, SINP, PI, counties | PR!-ST | SB | 3.1.1.5.2<br>7.2.1.1<br>7.2.2.1 |
| 5.3.2 | Align legislation in the field of nature protection with culture-related legislation, and incorporate provisions on geodiversity or geoheritage into other relevant sectoral legislation | MC | MC, PI, SINP, MEPPPC, MELE, MAFRD, MRDFWM | PR!-MT | SB | 7.1.1.2 |
| 5.4 Raise the level of information and education about the value and importance of geodiversity, and increase public awareness regarding the protection and conservation of geoheritage | | | | | | |
| 5.4.1 | Implement education of representatives of local government and regional self-government, tourism associations, state administration employees (customs, police) and others on the importance and value | MC, MSES | MC, SINP, MT, MI, CD, MSES | PR! | SB, IF | 7.2.2.1 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | of non-renewable geoheritage | | | | | |
| 5.4.2 | Implement professional development for employees of the Ministry of Culture, public institutions entrusted with the management of protected natural values and the SINP on effective protection and conservation of geoheritage | MC | SINP, MC | PR! | SB, IF | 3.1.1.5.3<br>7.2.2.1<br>8.2.3.1 |

6. Sustainable use of natural resources

6.1 Agriculture

6.1.1 Continue co-operation between the competent authorities in charge of nature protection and those in charge of agriculture with regard to the adoption and implementation of the Agricultural and Environment Protection Programme

| | | | | | | |
|---|---|---|---|---|---|---|
| 6.1.1.1 | Develop and implement the Agricultural and Environment Protection Programme, which promotes management that contributes to the conservation of biodiversity and the ecological network or NATURA 2000 network | MAFRD | MAFRD, MC, SINP | PR! | SB, IF | 3.1.2.3.5<br>3.1.3.2.1<br>3.1.5.2.1<br>9.2.1.4 |

6.1.2 Conserve sites hosting representative threatened habitat types within the ecological network and NATURA 2000 network

| | | | | | | |
|---|---|---|---|---|---|---|
| 6.1.2.1 | Adopt management measures/plans for the ecological network and NATURA 2000 network areas | SINP | MC, SINP, PI, EA, NGO | ST - LT | SB, CB, IF | 3.1.2.3.6<br>3.1.3.1.3<br>6.1.5.1 |

6.1.3 Maintain a favourable water regime, including high levels of groundwater in areas of bogs and fens, wet grasslands and tall forbs habitats

| | | | | | | |
|---|---|---|---|---|---|---|
| 6.1.3.1 | When planning locations for hydro-melioration projects, give priority to the recultivation of existing neglected agricultural land | MAFRD | MAFRD | PR! | | |

6.1.4 Decrease the trend of the loss of land surfaces and diversity of near-natural and semi-natural grasslands as valuable anthropogenic habitats which are very rich in biodiversity

| | | | | | | |
|---|---|---|---|---|---|---|
| 6.1.4.1 | Promote grassland management through grazing and mowing regimes adapted to the habitat type | MAFRD | MAFRD, MC, PI, LGSG | ST - LT | IF, SB, CB, PI OI | 3.1.2.3.6<br>3.1.2.3.8 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | | 3.1.5.3.1 |
| 6.1.4.2 | Promote extensive cattle breeding in highland, mountainous, island and coastal areas | MAFRD | MAFRD, MC, PI, LGSG | ST - LT | IF, SB, CB, PI OI | 3.1.2.3.6<br>3.1.2.3.8<br>3.1.5.2.1 |
| 6.1.4.3 | Conduct research of characteristic grassland communities for each phyto-geographic area | SINP | SINP, SI, EA | MT | SB, IF | 3.1.2.3.6<br>8.1.1.1 |
| 6.1.4.4 | Prevent the conversion of agricultural land, in particular meadows and pasture grounds, into woodland or building land | MAFRD | MAFRD, MC | PR! | | 3.1.2.3.6 |

6.1.5 Promote ecological agriculture and other forms of agriculture that contribute to conservation of biodiversity, and assist producers in promotion and market penetration

| | | | | | | |
|---|---|---|---|---|---|---|
| 6.1.5.1 | Incorporate measures for maintaining and promoting traditional forms of farming into protected area management plans | MC | MAFRD, MC, SINP, PI | ST - MT | SB, CB | 6.1.2.1<br>3.1.2.3.6<br>3.1.2.2.2<br>8.4.1.4 |

6.1.6 In agricultural areas, encourage conservation of biological taxa important for the habitat type, and ensure that alien species and genetically modified organisms are not introduced into nature

| | | | | | | |
|---|---|---|---|---|---|---|
| 6.1.6.1 | Ensure co-operation with other sectors with the aim of preventing introduction of alien species and genetically modified organisms into nature | MC | MC, MAFRD, MRDFWM, MHSW, MSES | MT | | 6.6.1.2 |

6.1.7 Educate agricultural producers on the importance of conservation of biodiversity in agricultural practice

| | | | | | | |
|---|---|---|---|---|---|---|
| 6.1.7.1 | Include agricultural producers in educational programmes on the importance of conservation of biodiversity in agricultural practices | MAFRD | SINP, MC, MAFRD | PR! | SB, IF | 8.2.4.1 |

6.1.8 In agricultural production, promote the sustainable use of protective agents and mineral fertilizers

| | | | | | | |
|---|---|---|---|---|---|---|
| 6.1.8.1 | Reduce the use of pesticides, particularly those with a | MAFRD | MAFRD | PR! | SB | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | broad-spectrum, in favour of selective pesticides and promote the use of biological methods | | | | | |
| 6.1.8.2 | Improve supervision and implement education about the use of chemical agents in agriculture | MAFRD | MAFRD, MC, AAS | MT | SB, IF | |
| 6.1.9 Ensure implementation of nature protection measures in the field of agriculture | | | | | | |
| 6.1.9.1 | Incorporate nature protection measures and requirements, and ecological network conservation guidelines into agricultural management plans | MC | MC, SINP, MAFRD | ST-MT | | 3.1.2.3.6<br>3.1.2.3.10<br>8.4.1.4 |
| 6.1.9.2 | Incorporate biodiversity conservation measures into the Agricultural Land Disposal Programme | MC | MC, SINP, MAFRD | ST-MT | | 8.4.1.4 |
| 6.1.9.3 | In the agricultural land consolidation process, wherever possible, ensure the implementation of conservation measures for natural and semi-natural habitats, especially along the edges of large monocultural areas, along roads, pathways and canals | MAFRD | MAFRD, MC, SINP | PR! | SB | |
| 6.2 Forestry | | | | | | |
| 6.2.1 Exploit and manage forests on the principle of conserving biodiversity components of forest ecosystems, with the focus on protected areas, ecological network areas and future NATURA 2000 areas | | | | | | |
| 6.2.1.1 | Develop protection programmes for forest ecosystems in protected areas, where economic exploitation of natural resources is not permitted | MC | MC, SINP, PI NP/NAP, PIC, MRDFWM, SI, HŠ, EA | PR! | SB, CB, IF | |
| 6.2.1.2 | Develop a catalogue of measures for maintaining the integrity of forest ecosystems as habitats for fauna in areas of the ecological network and | MC | MRDFWM, MC, SINP, HŠ, SI, FAS, EA | LT | SB | 3.1.3.1 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | future NATURA 2000 network | | | | | |

6.2.2 Monitor the state of forest ecosystems in protected areas, ecological network areas and future NATURA 2000 areas

| | | | | | | |
|---|---|---|---|---|---|---|
| 6.2.2.1 | Develop programmes for monitoring the state of forest ecosystems in future NATURA 2000 areas | SINP | SINP, SI, PI, MRDFWM, HŠ, FAS, EA | MT | SB, CB, IF | 3.1.3.1.4 |
| 6.2.2.2 | Establish the impact of chemical, biological and biotechnical agents for plant protection on forest ecosystems, based on the example of three nature parks | MRDFWM | MRDFWM, MC, HŠ, SI, PINAP, FAS, EA | LT | SB, IF | |
| 6.2.2.3 | Monitor the state of lowland alluvial forests | MRDFWM | MRDFWM, SI, HŠ, FAS, EA | MT | SB, IF | 3.1.2.3.3 |
| 6.2.2.4 | Monitor the level of damage to forests in the Gorski Kotar area | MRDFWM | MRDFWM, SI, MC, HŠ, PI, FAS | MT | SB, IF | 3.1.2.3.3 |

6.2.3 Resolve the issue of landmines in forested areas

| | | | | | | |
|---|---|---|---|---|---|---|
| 6.2.3.1 | Continue landmine clearance in forested areas within protected areas, primarily in national parks and nature parks | CROMAC | MC, PI, MRDFWM, CROMAC, HŠ | PR! | SB, IF | 3.1.1.5.8 |

6.2.4 Improve co-operation among relevant sectors at the national and international levels in connection with the implementation of the NATURA 2000 programme and conservation of biodiversity

| | | | | | | |
|---|---|---|---|---|---|---|
| 6.2.4.1 | Organise professional gatherings with participation of all relevant professions with regard to forest exploitation and management | MC | MC, MRDFWM, SINP, SI, PI, HŠ, FAS | PR! | SB, IF | 8.3.4.2 |

6.3 Hunting

6.3.1 Implement the programme for scientifically based determination of game population counts, and establish a monitoring system

| | | | | | | |
|---|---|---|---|---|---|---|
| 6.3.1.1 | Scientifically establish game population counts in areas with a strong presence of large carnivores, and determine a favourable relationship between the game count and the large | SINP | MRDFWM , SINP, HŠ, SI, EA | PR! | SB, IF, CB | 3.1.4.7 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | carnivore count | | | | | |
| 6.3.1.2 | Establish justification for game feeding and supplemental feeding, and the impact on the natural balance in areas with a strong presence of large carnivores | MRDFWM | MRDFWM , SINP, HŠ, SI, EA | MT | SB | 3.1.4.7 |

6.3.2 Monitor the state of game in protected areas where hunting activities are not permitted

| | | | | | | |
|---|---|---|---|---|---|---|
| 6.3.2.1 | Develop game protection programmes in protected areas where hunting activities are not permitted | MRDFWM | PI, MC, MRDFWM, SINP | PR! | SB, IF | |

6.3.3 Improve co-operation among relevant sectors at the national and international level with regard to implementation of the NATURA 2000 programme and biodiversity conservation

| | | | | | | |
|---|---|---|---|---|---|---|
| 6.3.3.1 | Organise professional gatherings and seminars with the participation of representatives of all relevant professional fields | MC | MC, MRDFWM, SINP, HA | PR! | SB, IF | 8.3.4.2 |

6.3.4 Improve the work of and co-operation between the inspection authorities responsible for the hunting sector and the nature protection sector

| | | | | | | |
|---|---|---|---|---|---|---|
| 6.3.4.1 | Organise professional gatherings and seminars with the participation of representatives of competent inspection authorities | MC | MRDFWM, MC | PR! | SB | 7.2.2.1 |

6.3.5 Develop fauna management plans for species with a stricter protection regime pursuant to European Union Directives

| | | | | | | |
|---|---|---|---|---|---|---|
| 6.3.5.1 | Develop a management plan for the rock partridge (*Alectoris graeca*) | MRDFWM | MRDFWM, IO CASA | PR! | SB | |

6.3.6 Evaluate the status of allochthonous game on the islands and mainland, and begin resolution of this issue

| | | | | | | |
|---|---|---|---|---|---|---|
| 6.3.6.1 | Draw up the report on the status of allochthonous game on the islands and mainland and work out a plan for its removal, and commence implementation of the plan on the northern Adriatic islands | MRDFWM, MC | MRDFWM, MC, SINP, SI, EA, HA | PR! | SB, CB | 3.3.1.4 |

6.3.7 Protect waterfowl and their habitats against the use of lead shot pellets

| | | | | | | |
|---|---|---|---|---|---|---|
| 6.3.7.1 | Develop an activity plan for the gradual reduction of the | MC, MRDFWM | MC, MRDFWM, | ST-MT | SB | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | use of lead shot pellets and their replacement with steel shot pellets on wetlands and other shallow water surfaces, including a timetable, distribution of responsibilities among competent authorities and sources of funding | | HA, IO CASA | | | |
| 6.3.7.2 | Adapt the use of hunting weapons and shot by stipulating the obligation to use steel shot pellets instead of lead when hunting waterfowl | MC, MRDFWM | MC, MRDFWM, HA, IO CASA | ST-MT | | |

6.4 Freshwater fisheries

6.4.1. Strengthen biodiversity conservation measures in regulations and documents in the field of freshwater fisheries

| | | | | | | |
|---|---|---|---|---|---|---|
| 6.4.1.1 | Incorporate biodiversity conservation measures into regulations and documents in the field of freshwater fisheries | MC | MC, MAFRD, SINP | ST | | 7.1.1.2 |

6.4.2 Prevent the introduction of alien species into open waters, particularly those in the Adriatic Basin, and commence their removal

| | | | | | | |
|---|---|---|---|---|---|---|
| 6.4.2.1 | Develop and carry out a pilot project on the removal of alien fish species in a karst river (e.g. pike in the Cetina River or Gacka River) | SINP | SINP, SI, SAB, NGO | ST | IF, SB | 3.3.1.3 |

6.4.3 Enable the existence of semi-intensive and/or extensive breeding in carp fishponds as a prerequisite for maintenance of their ornithological value

| | | | | | | |
|---|---|---|---|---|---|---|
| 6.4.3.1 | Develop a programme for stimulating extensive/semi-intensive carp production in fishponds important for the nature protection | MAFRD | MAFRD, MC, SINP | PR! | SB | 3.1.2.3.8<br>3.1.3.2.1 |

6.5 Marine fisheries

6.5.1 Use biological resources of the Adriatic Sea on the basis of the principles of sustainable management

| | | | | | | |
|---|---|---|---|---|---|---|
| 6.5.1.1 | Estimate the capacity of marine ecosystems for mariculture | MAFRD | MAFRD, SI | ST | SB, IF | 8.1.1.5 |
| 6.5.1.2 | Estimate the available | MAFRD | MAFRD, SI | ST | SB, IF | 8.1.1.5 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | biological reserves for fishing and optimum permitted exploitation levels | | | | | |

6.5.2 With the aim of conserving marine biodiversity, incorporate protection requirements and measures into the plans/programmes related to marine fisheries, and into spatial plans where these relate to use of the sea and coastal areas

| | | | | | | |
|---|---|---|---|---|---|---|
| 6.5.2.1 | Establish the distribution of marine habitats important for conservation of biodiversity and relevant areas that should be protected | SINP | SINP, SI, MC, NGO, EA | ST | SB, IF, CB | 3.1.2.1.2<br>3.1.2.2.1 |
| 6.5.2.2 | Incorporate nature protection measures and requirements into the programme documents in the field of marine fisheries | MC | MC, MAFRD, SINP | PR! | SB | 7.1.1.2 |

6.5.3 Focus scientific/research programmes and projects towards the exploration of specific, valuable, economically important and exploited, vulnerable, inadequately known and threatened communities, taxa and habitats

| | | | | | | |
|---|---|---|---|---|---|---|
| 6.5.3.1 | Define the intensity of the impact of cage fish farming on benthic biocenoses, and develop measures to reduce impacts | MAFRD | SI, MAFRD | ST | SB | 8.1.1.5 |
| 6.5.3.2 | Continue permanent monitoring of the status of pelagic and benthic communities in the Croatian part of the Adriatic Sea | MAFRD | SI, MAFRD | MT | SB | 8.1.1.1<br>8.1.1.5 |
| 6.5.3.3 | Educate fishermen and ensure their inclusion in the system of monitoring strictly protected species, in particular sea turtles, dolphins, Mediterranean monk seals, sharks | SINP | SINP, SI, NGO, LC | ST | SB, IF, CB | 8.2.4.1 |
| 6.5.3.4 | Explore and evaluate marine areas under Croatian jurisdiction in relation to the NATURA 2000 network | SINP | SI, SINP, NGO, EA | PR! | SB, IF, CB | 3.1.3.1.1 |
| 6.5.3.5 | Investigate the possibility of establishing protected fishing areas as additional tools for the sustainable management | SINP | SI, SINP, MAFRD | MT | SB, IF | |

of fishing stocks

6.6 Genetically modified organisms

6.6.1 Establish a comprehensive legislative and institutional control system for the use of GMOs

| | | | | | | |
|---|---|---|---|---|---|---|
| 6.6.1.1 | Fully align the legislation of the Republic of Croatia in the field of use of GMOs with EU directives and the Protocol on Biosafety | MHSW | MHSW, MC, MAFRD, MRDFWM, MSES | PR! | | 7.1.2.1 |
| 6.6.1.2 | Continuously implement decisions and guidelines of the Protocol on Biosafety | MC | MHSW, MC, MAFRD, MRDFWM, MSES | MT | IF, SB | 6.1.6.1 |
| 6.6.1.3 | Establish a working institutional framework pursuant to the legislation | MHSW | MHSW, MC, MAFRD, MRDFWM, MSES | MT | IF, SB | 7.2.2.3 |
| 6.6.1.4 | Establish a network of authorised laboratories for GMO | MHSW | MHSW, MAFRD | ST | SB | |

6.6.2 Establish and maintain the national BCH mechanism (biosafety clearing house mechanism)

| | | | | | | |
|---|---|---|---|---|---|---|
| 6.6.2.1. | Ensure technical, programme and administrative support for the establishment of a functional national BCH mechanism | MC | MHSW, MC, MAFRD, MRDFWM, MSES | PR! | IF, SB | |
| 6.6.2.2 | Redesign and modernise the existing biosafety website (GMO website), and link the website to the national BHC mechanism and continue compiling and entering all necessary pieces of information | MC | MHSW, MC, MAFRD, MRDFWM, MSES | ST | IF, SB | |

6.6.3 Provide continuous training for employees of competent institutions, inspection services and the general public

| | | | | | | |
|---|---|---|---|---|---|---|
| 6.6.3.1 | Promote public participation in the decision-making process on GMO-related issues | MHSW | MHSW, MC, MAFRD, MRDFWM, MSES | PR! | SB | 8.3.1.1 |
| 6.6.3.2 | Develop and implement staff strengthening and training programmes for the competent institutions and inspection services | MHSW | MHSW, MC, MAFRD, MRDFWM, MSES | PR! | IF, SB | 7.2.2.3 |

6.7 Water management

6.7.1 In the process of water exploitation and management, and maintenance of waterways, apply the principles of conservation for components of biological, geological and landscape diversity of aquatic ecosystems, with an emphasis on protected areas, ecological network sites and future NATURA 2000 areas

| | | | | | | |
|---|---|---|---|---|---|---|
| 6.7.1.1 | Develop water management plans and concept solutions for renovation and the maintenance of drainage basins, and incorporate nature protection requirements and measures therein | MRDFWM | HV, MRDFWM, MC | ST | SB, IF | 3.1.2.3.10 |
| 6.7.1.2 | Adopt management plans for the protected areas and ecological network sites including aquatic ecosystems | MC | MC, LGSG, PI | PR! | SB, CB, IF | 3.1.1.1.1<br>3.1.1.1.2<br>3.1.2.3.10 |
| 6.7.1.3 | Conduct strategic environmental impact assessments and nature impact assessments for water area management plans and individual projects and activities as part of water management activities, with the exception of technical maintenance projects and activities necessary for protection against floods pursuant to the National Flood Protection Plan (OG 8/97, 32/97, 93/99, 188/03, 152/05 and 28/06) adopted by the Government of the Republic of Croatia | MEPPPC, MC | MEPPPC, MC, SINP, LGSG | PR - LT | SB, CB, OF | 8.5.2.1 |

6.7.2 Prevent disruption to river ecosystems caused by excessive extraction of alluvial deposits from river beds

| | | | | | | |
|---|---|---|---|---|---|---|
| 6.7.2.1 | Prevent excessive and unjustified extraction of alluvial deposits from river beds and, in particular, sandspits | MC | MC, MRDFWM, HV | PR! | SB | |

6.7.3 Ensure the existence of river ecosystems during the creation of waterway development plans

| | | | | | | |
|---|---|---|---|---|---|---|
| 6.7.3.1 | Ensure co-operation between | MC | MC, MSTI, | PR! | | 8.3.3.2 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | the nature protection sector and the river navigation sector in the process of preparation of waterway development plans | | AIW, SINP | | | |
| 6.7.3.2 | Conduct an analysis of the biodiversity of river ecosystems and lay down nature protection requirements in the course of preparation of river navigation development plans | MC, SINP | MC, MSTI, AIW, SINP | ST | SB, IF | 8.5.2.1 |

6.7.4 Implement protection against floods through a system of natural retentions and conservation of natural floodplain areas, to the greatest extent possible

| | | | | | | |
|---|---|---|---|---|---|---|
| 6.7.4.1 | Conduct an analysis of possible new natural retentions for protection against floods, and put these into operation | MRDFWM | MC, MRDFWM, HV, SINP | PR! | SB | |

6.7.5 When planning hydromelioration works, take account of the conservation of biodiversity

| | | | | | | |
|---|---|---|---|---|---|---|
| 6.7.5.1 | Hold regular meetings and maintain communication among the competent institutions (competent authorities for water management and nature protection) in connection with annual plans for the execution of hydromelioration works | MC | MC, MRDFWM, HV, SINP | PR! | SB | |
| 6.7.5.2 | Prior to planning hydro-melioration works, conduct an analysis of the impact of the works on biodiversity of the area in question | HV | MC, MRDFWM, HV, SINP | PR! | SB | |

6.7.6 Consider the possibility of implementing joint programmes of the nature protection and water management sectors in protected areas

| | | | | | | |
|---|---|---|---|---|---|---|
| 6.7.6.1 | Promote development and implementation of joint annual work programmes of public institutions for protected area management and of the company Croatian Waters in protected areas | HV, PI | MC, MRDFWM, PI, HV, SINP | PR! | SB | |

6.7.7 Strengthen co-operation between the legal water inspection service and nature protection inspection service in the implementation of nature protection requirements and measures in the field of water management

| | | | | | | |
|---|---|---|---|---|---|---|
| 6.7.7.1 | Prepare an agreement on co-operation between the legal water inspection service and the nature protection inspection service | MC | MRDFWM, MC | PR! | SB | |

6.7.8 Strengthen the institutional framework of the water management sector and nature protection sector with regard to protection of aquatic habitats, and in particular wetland habitats

| | | | | | | |
|---|---|---|---|---|---|---|
| 6.7.8.1 | Organise professional gatherings and seminars, and professional training of line services of the water management and nature protection sectors | MC, MRDFWM | MC, MRDFWM, HV, SINP | ST | SB, IF | |

6.8 Tourism

6.8.1 Increase the importance of nature protection at all levels in the tourism sector

| | | | | | | |
|---|---|---|---|---|---|---|
| 6.8.1.1 | Establish regular co-operation with the tourism sector at the local, regional and national levels | TA | MC, MT, SAB, LGSG, TA, CCE, NGO | ST-LT | SB, CB | 8.3.4.2 |
| 6.8.1.2 | Incorporate measures and guidelines for the protection of biological and landscape diversity into strategies, laws, regulations, programmes and plans at all levels of the tourism sector | MT, MC | MC, MT, SINP, SAB, LGSG, TA, NGO | ST-LT | SB, CB | 7.1.1.2<br>8.4.1.4 |
| 6.8.1.3 | Incorporate measures and guidelines for the protection of biological and landscape diversity into county tourism master plans | MT, MC | MC, MT, SINP, SAB, LGSG, TA, NGO | ST | SB, CB | 3.1.2.3.10 |
| 6.8.1.4 | Protect biological and landscape diversity from the negative impacts of tourism on the coast, islands and sea through physical planning documents and other plans and programmes | MEPPPC | MC, SAB, SINP, MEPPPC | ST-LT | SB | 8.4.1.3 |
| 6.8.1.5 | Prior to planning any construction project and/or improvement of tourism | MC | MC, SINP | ST-LT | OF | 8.5.2.1 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | infrastructure that might have a significant impact on an ecologically important area or protected natural value, but is not included in the environmental impact assessment, conduct a nature impact assessment of the project | | | | | 3.1.2.3.1<br>3.1.3.1.3<br>3.1.3.1.5 |
| 6.8.1.6 | Plan tourism infrastructure and facilities outside biologically valuable areas | MT | MT, MEPPPC, MC, LGSG | ST-LT | SB | |
| 6.8.1.7 | Create a development plan for eco-tourism and identify potentially important areas for the development of eco-tourism | MT, MC | MT, MAFRD, MC | ST-LT | SB | 5.1.6<br>5.1.7 |
| 6.8.2 Develop tourism that is acceptable for the protection of biodiversity in protected areas and ecological network areas | | | | | | |
| 6.8.2.1 | Define methods and criteria for establishment of visiting, sightseeing and recreation zones, i.e. tourism in protected areas | PI | PI, MC, SINP, SI, MEPPPC | PR! | SB, IF | 3.1.1.1.1<br>3.1.1.1.2<br>3.1.1.1.3 |
| 6.8.2.2 | Identify sensitive areas and define guidelines and frameworks for tourism activities in protected areas and ecological network areas, with special emphasis on sensitive areas where tourism activities are traditionally pursued | PI | PI, MC, SINP, SI, MEPPPC | PR! | SB, IF | 3.1.1.1.1<br>3.1.1.1.2<br>3.1.1.1.3 |
| 6.8.2.3 | Develop and establish a system for monitoring visitor numbers and visitor impacts on protected areas | MC | PI, MC, SINP, SI | PR! | SB, IF | 3.1.1.1 |
| 6.8.2.4 | Carry out pilot projects for the development of ecotourism in certain protected areas and ecological network areas | MAFRD, MT | MT, MC, MAFRD | ST-LT | IF, SB | |
| 6.8.2.5 | Analyse the existing visiting and sightseeing models in protected areas within the | MC, SINP | PI, MC, SINP, SI | PR! | SB, IF | 3.1.1.1.1 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | management plan | | | | | 3.1.1.1.2 |
| 6.8.2.6 | Develop guidelines for the management of tourism activities in protected areas within the management plans | PI | PI, MC, SINP, SI | PR! | SB, IF | 3.1.1.1.3<br>3.1.1.1.1<br>3.1.1.1.2<br>3.1.1.1.3 |
| 6.8.2.7 | Define methods and ways for determining visitor capacities of protected areas within the management plan | PI | PI, MC, SINP, SI | PR! | SB, IF | 3.1.1.1.1<br>3.1.1.1.2<br>3.1.1.1.3 |
| 6.8.2.8 | Establish standards and criteria for the development of ecotourism in protected areas | MC | MC, MT, MAFRD, MRDFWM, SINP, SI, MEPPPC | MT | SB, IF | 3.1.1.1 |

6.8.3 Educate visitors, through visitor educational centres in protected areas, about natural values and the importance of conserving protected areas

| | | | | | | |
|---|---|---|---|---|---|---|
| 6.8.3.1 | Develop the action plan for visitor education in protected areas within the management plan | PI | PI, MC, SINP, SI | PR! | SB, IF | 3.1.1.5.4<br>3.1.1.5.5<br>3.1.1.5.6 |
| 6.8.3.2 | Develop the action plan for nature interpretation in protected areas within the management plan | PI | PI, MC, SINP, SI | PR! | SB, IF | 3.1.1.5.5<br>3.1.1.5.6 |
| 6.8.3.3 | Develop the action plan for establishment of a guide service in protected areas within the management plan | MC | PI, MC, SINP, SI | PR! | SB, IF | 5.1.8<br>5.1.8 |

6.9 Transport

6.9.1 Systematically monitor the impact of roads, railways and other communications on species taxa and habitats

| | | | | | | |
|---|---|---|---|---|---|---|
| 6.9.1.1 | Prior to commencement of road construction works, conduct an environmental impact assessment procedure and/or nature impact assessment, and monitor impacts | MSTI, MEPPPC, MC | MSTI, MEPPPC, MC, SINP, SI, EA | PR! | SB, OF | 3.1.4.8 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 6.9.1.2 | Define the protocol for monitoring road impacts on species and habitats through co-operation between the transport and nature protection sectors | MSTI, MC | MSTI, MC, MEPPPC, SINP, SI, EA | ST | SB, IF | 3.1.4.8 |
| 6.9.1.3 | Analyse plans for construction of new roads in co-operation with competent experts (experts for large carnivores, ornithologists, herpetologists, ecologists, etc.) | MSTI, MEPPPC, MC | MSTI, MEPPPC, MC, SI, EA | PR! | SB, OF | 3.1.4.7 |
| 6.9.1.4 | Evaluate the potential impact of waterways on threatened bird species inhabiting wetland and aquatic habitats | MC | MC, SINP, IO CASA, SI, EA | PR! | SB, CB, IF, OF | 6.7.1.3<br>6.7.3.2<br>6.7.3.2 |
| 6.9.1.5 | Continue activities of the Commission for monitoring large carnivore populations | MC | MC, SINP, MAFRD, MRDFWM, FVM, EA | PR! | SB | 3.1.4.7 |

6.9.2 Ensure permeability of constructed and planned roads for wildlife in order to enable daily movements and seasonal migration

| | | | | | | |
|---|---|---|---|---|---|---|
| 6.9.2.1 | Ensure and/or build wildlife crossings at all locations where this is necessary for ensuring habitat continuity | MSTI, MEPPPC | MSTI, MEPPPC, MC, SI, EA | PR! - ST | OF, SB | |
| 6.9.2.2 | Supervise permeability of constructed roads | MC | MC, SI, EA | PR! - ST | OF, SB | 8.1.3.3 |

6.10 Energy

6.10.1 Base exploitation and management activities in the energy sector upon the principles of conservation of components of biological and landscape diversity, with special emphasis on protected areas, ecological network areas and future NATURA 2000 areas

| | | | | | | |
|---|---|---|---|---|---|---|
| 6.10.1.1 | Prior to development of plans and programmes within the framework of the energy development strategy, conduct a nature impact assessment as part of the strategic environmental impact assessment | MELE | MELE, MC, MEPPPC | PR! | IF, SB, OF | 8.5.2.1 |
| 6.10.1.2 | Continue to incorporate nature protection | MC | MEPPPC, MC | PR! | OF | 3.1.2.2.2 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | requirements and measures, and ecological network conservation guidelines when planning locations of power supply/distribution facilities in spatial plans | | | | | 3.1.2.3.10<br>8.4.1.4 |
| 6.10.1.3 | Strengthen the principles of conservation of biological and landscape diversity in the course of development of the environmental impact study in relation to the potential impact of construction of power plants and other energy supply/distribution facilities on overall biological and landscape diversity, particularly in the ecological network area | MC | MEPPPC, MC | PR! | SB, OF | 8.5.2.1 |
| 6.10.1.4 | When designating sites for wind farms, avoid ornithological reserves, flight corridors and areas important as gathering places of a large number of birds during migration | MEPPPC | MEPPPC, MC, EA | PR! | | |
| 6.10.1.5 | When designating sites for wind farms, avoid nationally or regionally important habitats and corridors for the seasonal and/or daily migration of bats | MEPPPC | MEPPPC, MC, EA | PR! | | |
| 6.10.1.6 | When planning and building wind farms, and in the course of their operation, implement bird and bat protection measures | MEPPPC | MEPPPC, MC | PR! | SB, OF | |
| 6.10.1.7 | Define the protocol for monitoring the impact of wind farms on species and habitats through co-operation between the energy and nature protection sectors | MC | MC, MELE, MEPPPC, SINP, SI, EA | PR! | SB, IF | |
| 6.10.1.8 | Develop the action plan for monitoring birds of prey in | MC | MC, SINP, SI, EA | PR! | SB, IF | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | the Central Dalmatia area in order to establish the cumulative impact of planned wind farms on their populations | | | | | |
| 6.10.1.9 | Apply technical solutions in the course of construction of overhead power transmission lines and replacement of worn-out electricity poles and lines within the existing network in order to minimise bird mortality (collisions, electrocution) | MEPPPC | MEPPPC, MC, MELE | PR! | OF | |
| 6.10.1.10 | Conduct the certification process for all hydropower plants in Croatia | MELE | MELE, HEP | PR! | IF, OF | |
| 6.10.1.11 | Conduct pilot projects on the use of renewable energy sources in protected areas | PI NP/NAP, MELE | PI PN/NP, MELE, MC, EA | MT | IF, SB, OF | |
| 6.11 Mining | | | | | | |
| 6.11.1 Improve co-operation between relevant sectors at the national and local level with regard to planned and sustainable use of mineral riches, while observing biodiversity conservation measures | | | | | | |
| 6.11.1.1 | Organise professional gatherings and seminars and ensure participation of representatives of all relevant sectors | MC | MC, SIO, MELE | LT | SB, IF | |
| 6.11.1.2 | Organise professional gatherings and seminars and ensure participation of representatives of competent inspection authorities | MC | MC, SIO | LT | SB, IF | 8.2.3.1 |
| 6.11.1.3 | Incorporate nature protection measures and requirements into legislation and documents in the field of mining | MC | MC, MELE | PR! | SB | 8.4.1.4 |
| 6.11.1.4 | Initiate the development of a cadastre of all mines and pits (both legal and illegal) in protected areas and ecological network areas by the competent government | MC | MC, SIO, MELE | PR! | SB, CB, IF | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | authority in charge of mining activities | | | | | |

6.11.2 Plan exploitation with parallel area reclamation, and reclamation or reclassification of all abandoned (unreclaimed) pits

| | | | | | | |
|---|---|---|---|---|---|---|
| 6.11.2.1 | Initiate development and implementation of a pilot project on reclamation of abandoned pits in a nature park | MC | MC, MELE, SIO, PI PN | LT | SB, OF, IF | |
| 6.11.2.2 | Impose the obligation to ensure successive biological and technical reclamation, insist on a clear specification of purpose of exploitation fields following pit closure, and set the deadline for completion of pit reclamation within protected areas and the ecological network | MC | MC, MELE | PR! | SB | |

6.11.3 Improve co-operation between the mining and nature inspection sectors

| | | | | | | |
|---|---|---|---|---|---|---|
| 6.11.3.1 | Organise joint supervision of all pits in protected areas, keep records and establish the terms for continuous on-site control | MC | MC, SIO, PI | PR! | SB | |

7. Legislative and institutional framework

7.1 Legislative framework

7.1.1 Fully align the national legislation in the area of nature protection and sectoral legislation with EU legislation

| | | | | | | |
|---|---|---|---|---|---|---|
| 7.1.1.1 | Prepare and adopt all remaining implementing regulations envisaged by the Nature Protection Act, and amendments to existing regulation | MC | MC | PR! | SB | 8.5.1.2 |
| 7.1.1.2 | Continue the process of legislative alignment in the field of environmental protection, physical planning, agriculture, marine and freshwater fisheries, animal protection, forestry, hunting, water management, mining, energy, transport, tourism | SAB | SAB | PR! | SB | 5.3.2<br>6.4.1.1<br>6.5.2.2<br>6.8.1.2<br>8.5.1.1 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | and other relevant areas, insofar as it relates to nature protection and conservation of biodiversity, with the provisions of the Nature Protection Act, Convention on Biological Diversity and relevant EU directives | | | | | |

7.1.2 Fully align the national legislation in the area of use of GMOs with relevant legislation of the European Union and the provisions of the Protocol on Biosafety

| | | | | | | |
|---|---|---|---|---|---|---|
| 7.1.2.1 | Urge the competent departments/authorities to enact all remaining implementing regulations related to use of GMOs for the purpose of alignment with relevant legislation of the European Union and the provisions of the Protocol on Biosafety | MHSW | MHSW, MC, MAFRD, MRDFWM, MSES | PR! | SB | 6.6.1.1 |

7.1.3 Establish additional financial mechanisms in the area of nature protection

| | | | | | | |
|---|---|---|---|---|---|---|
| 7.1.3.1 | Adopt legislation on financial mechanisms in the area of nature protection (Nature Protection Foundation Act) | MC | MC | MT | SB | 3.1.1.6.2<br>7.2.4.1<br>7.2.5.1<br>7.2.5.2 |

7.2 Institutional framework

7.2.1 Strengthen administrative capacities of all services responsible for nature protection activities

| | | | | | | |
|---|---|---|---|---|---|---|
| 7.2.1.1 | Improve organisation of the Nature Protection Directorate of the Ministry of Culture and all public institutions for the purpose of more efficient performance of the activities related to the assessment of acceptability of plans, programmes and projects to the ecological network, and more efficient implementation of international conventions in the area of nature protection | MC, PI | MC, PI | PR! | SB, CB | 3.1.1.5.2<br>5.3.1 |

7.2.2 Strengthen institutional capacities of competent authorities in charge of nature protection

| | | | | | | |
|---|---|---|---|---|---|---|
| 7.2.2.1 | Develop a training programme for the employees of the State Administration Office or administrative bodies in the counties for the purpose of implementation of the Nature Protection Act, and conduct training | MC | MC | PR! | SB, CB, IF | 5.3.1<br>5.4.2<br>6.3.4.1<br>7.2.2.1<br>8.2.3.1<br>8.4.4.1 |
| 7.2.2.2 | Develop a training programme for employees of the nature protection inspection service, phytosanitary inspection, border veterinary inspection, customs and police authorities for implementation of regulations in the area of cross-border movement of and trade in protected species, and conduct training on an ongoing basis | MC | MC<br>MAFRD<br>CA, MF<br>MI | ST | SB, IF | 8.2.3.1 |
| 7.2.2.3 | Develop a training programme for employees of the competent ministries and competent inspection services for implementation of the Act on Genetically Modified Organisms | MHSW | MHSW, MC, MAFRD, MRDFWM, MSES | ST | SB, IF | 6.6.1.3<br>6.6.3.1 |
| 7.2.3 Establish an integral and recognizable nature protection system | | | | | | |
| 7.2.3.1 | Set up the national website for nature protection | MC | MC | PR! | SB, IF | 3.1.1.4.3 |
| 7.2.4 Promote co-operation with non-governmental organisations | | | | | | |
| 7.2.4.1 | Secure higher allocations from the state budget for biodiversity conservation projects and financing of long-term programmes of non-governmental organisations in accordance with the Strategy | MC | MC | ST | SB | 3.1.4.8.2<br>7.1.3.1<br>8.1.5.2<br>8.3.1.1 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | | 9.1.2.1<br>9.1.2.2<br>9.2.1.3 |
| 7.2.4.2 | Establish mechanisms for entering into partnerships with NGOs in rendering services in the area of nature protection (education, inventorying, monitoring, communication and other services) | MC | MC, SINP, PI | ST | | 3.1.4.8.2<br>8.3.3.1<br>8.3.3.2 |
| 7.2.4.3 | Enable the timely inclusion of relevant representatives of NGOs in development of strategic documents and legal acts related to nature protection | MC | MC | PR! | | 8.3.2.1<br>8.3.3.2<br>8.4.6.1<br>8.4.6.2 |
| 7.2.5 Develop financial mechanisms for institutional strengthening | | | | | | |
| 7.2.5.1 | Establish the Nature Protection Foundation | MC | MC | MT | SB | 3.1.1.6.2<br>7.1.3.1 |
| 7.2.5.2 | Establish a financial solidarity system for national parks and nature parks | PI NP/NAP | PI NP/NAP | MT | | 3.1.1.6.2<br>7.1.3.1 |
| 8. Common issues | | | | | | |
| 8.1 Inventorying and monitoring status | | | | | | |
| 8.1.1 Inventory and monitor the status of components of biological, landscape and geological diversity | | | | | | |
| 8.1.1.1 | Continue research and monitoring of the status of threatened habitats and populations | SINP | SINP, SI, EA, NGO, PI | PR! | SB, IF, CB, OF | 3.1.3.1.4<br>3.1.4.1.1<br>3.1.4.2.1<br>3.1.4.4.1 |
| 8.1.1.2 | Continue research and monitoring of the status of all | SINP | SINP, SI, EA, NGO, PI | PR! | SB, IF, CB, OF | 6.1.4.3<br>6.5.3.2<br>3.1.4.1.1 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | components of nature in protected areas | | | | PI OI | 3.1.4.2.1<br>5.1.2<br>5.1.9 |
| 8.1.1.3 | Carry out continuous explorations of new sites important for the conservation of geodiversity | MC | SINP, MC, SI, EA, NGO, PI | ST - LT | SB, IF, CB, OF PI OI | 5.1.4<br>5.1.9<br>5.1.14 |
| 8.1.1.4 | Carry out continuous explorations of unexplored groups and/or taxa and habitats important for establishment of the NATURA 2000 network | SINP | SINP, SI, EA, NGO, PI | PR! | IF, SB, CB, OF, PI OI | 3.1.2.3.1<br>3.1.4.1.1<br>5.1.4 |
| 8.1.1.5 | Promote research activities that will contribute to the establishment of improved measures for nature protection | MC | MC, SINP, PI | ST | SB, CB, IF, PI OI | 6.5.1.1<br>6.5.1.2<br>6.5.3.1<br>6.5.3.2 |
| 8.1.2 Continue establishment of the national system for monitoring the status of components of biological, landscape and geological diversity | | | | | | |
| 8.1.2.1 | Continue development and promotion of the manual for inventorying and monitoring of the status of species and habitats, develop partnerships and provide support to organisations and individuals participating in the process of inventorying and monitoring of status | SINP | SINP, SI, NGO, EA, MC | PR! | IF, SB | 3.1.2.3.3<br>3.1.4.4.1 |
| 8.1.3 Improve the nature protection information system | | | | | | |
| 8.1.3.1 | Continue establishment of the nature protection information system | MC | SINP, MC, EA | MT | SB, IF | 3.1.1.4.2<br>3.1.4.5.1 |
| 8.1.3.2 | Maintain and update databases on biodiversity | SINP, CEA | SINP, EA, NGO, MC, SI, PI, CEA | ST-MT | SB, IF | 3.1.4.5.1 |
| 8.1.3.3 | Create and update a central database on killed and | MC, SINP | MC, SINP, NGO, SI, EA | MT | SB, IF | 3.1.4.8.1 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | injured strictly protected animals | | | | | 6.9.2.2 |

8.1.4 Monitor the impact of climate change on biodiversity

| | | | | | | |
|---|---|---|---|---|---|---|
| 8.1.4.1 | Develop a monitoring programme and establish monitoring of the impact of climate change on biodiversity | SINP | SINP, MEPPPC, SI, EA | ST | SB, IF | 3.3.3.1<br>3.3.3.2 |
| 8.1.4.2 | Monitor incidence and distribution of species sensitive to temperature changes as a European indicator of the state of biodiversity | SINP | SINP, SI, NGO, EA | ST-MT | SB, IF, OF | 3.3.3.2 |

8.1.5 Urge the scientific community to conduct national research for the purpose of inventorying, determining distribution of species and habitat types, and population sizes

| | | | | | | |
|---|---|---|---|---|---|---|
| 8.1.5.1 | Encourage changes in legal criteria for advancement in scientific/educational and scientific professions in terms of evaluation of professional work in inventorying and evaluation of biodiversity components | MC | SI, MSES, MC, SINP | MT | | 9.1.2.2<br>9.2.1.3 |
| 8.1.5.2 | In evaluation of projects financed by the state budget, take consideration of the criterion of the need for inventorying and monitoring of the status of national biodiversity | MSES | MSES, MC, SINP, SI | MT | | 7.2.4.1<br>9.1.2.1 |

8.1.6 In the course of monitoring biodiversity status, use the list of indicators

| | | | | | | |
|---|---|---|---|---|---|---|
| 8.1.6.1 | Develop the National List of Indicators for monitoring the state of biodiversity | CEA | CEA, MC, SINP | PR! | SB | 9.1.1.1 |

8.2 Education

8.2.1 Improve understanding, importance and foster inclusion of the concept of biological, landscape and geological diversity and its protection and conservation at all levels of the school system

| | | | | | | |
|---|---|---|---|---|---|---|
| 8.2.1.1 | Encourage review of curricula related to biological, landscape and geological diversity, its protection and conservation, | MC, SINP | MC, SINP, MSES, ETTA, PI, SI, ZOO, BG | PR! | SB | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | in terms of modernisation, taking a concrete problem-centred approach and promotion of field work | | | | | |
| 8.2.1.2 | Make provisions for the facilities and materials in all educational institutions related to biological, landscape and geological diversity, addressing the need and method for its protection methods, and on the benefits of biodiversity, particularly with regard to human health and quality of living | SINP, MC | MC, SINP, MSES, ETTA, PI, SI, ZOO, BG | PR! | SB, IF, OF | 3.3.2.1 |
| 8.2.1.3 | Co-operate with county offices for education and culture as key operational units co-ordinating the implementation of educational programmes and projects on the protection and conservation of biodiversity | SINP, MC | MSES, ETTA, SI, MC, SINP, PI, NGO | ST - MT | SB, CB, IF | 3.3.2.1 |
| 8.2.2 Promote institutional and non-institutional education about biological, landscape and geological diversity and its protection and conservation | | | | | | |
| 8.2.2.1 | Encourage inclusion of programmes on biological, landscape and geological diversity into undergraduate study of all teachers' colleges | MC, SINP | MSES, ETTA, SI, MC, SINP | PR! | SB | 4.3.2 |
| 8.2.2.2 | Encourage inclusion of topics on the importance of biological, landscape and geological diversity into regular professional training programmes for biology teachers and other professions, and for school headmasters | MC, SINP | MSES, ETTA, SI, MC, SINP | PR! | SB | 4.3.2 |
| 8.2.2.3 | Encourage development of interdisciplinary undergraduate and postgraduate studies related to the conservation of biological, landscape and | MC, SINP | MSES, ETTA, SI, MC, SINP | PR! | SB | 4.3.2 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | geological diversity, their management and development of new technologies | | | | | |
| 8.2.2.4 | Promote institutional and non-institutional programmes, projects and activities with the aim of providing education on the protection of biological, landscape and geological diversity and sustainable use thereof | MC, SINP | MSES, ETTA, SI, MC, SINP | ST-MT | SB, CB | 4.3.2 |
| 8.2.2.5 | Upgrade the existing interpretative programs of public institutions for the management of protected natural values, zoological gardens, botanical gardens, museums, etc. to include the concepts of biological, landscape and geological diversity | SINP | MC, SINP, PI | ST-LT | SB, IF | 4.3.2<br>5.1.4<br>6.8.3.1<br>6.8.3.2<br>6.8.3.3 |
| 8.2.3 Enable and encourage professional training and science education of employees touching upon nature protection issues within their sphere of activity | | | | | | |
| 8.2.3.1 | Enable and conduct education of employees of public institutions for the management of protected natural values | MC, SINP | MSES, SI, MC, SINP, PI, NGO | ST-MT | SB, IF | 3.1.1.5.3<br>5.4.2<br>6.11.1.2<br>7.2.2.1<br>7.2.2.2<br>8.4.5.1 |
| 8.2.3.2 | Work on establishment of a national centre for education of employees of the nature protection services | SINP | MC, SINP, PI, SI | ST-MT | SB, CB | |
| 8.2.4 Strengthen co-operation among state administration bodies, professional and scientific institutions, educational institutions and non-governmental organisations for the purpose of education in the field of nature protection | | | | | | |
| 8.2.4.1 | Incorporate the principles of protection and conservation | MC, SINP | MSES, SI, MC, SINP, PI, | ST-LT | SB | 6.1.7.1 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | of biological, landscape and geological diversity into the education and qualification system and into the practices of the forestry, hunting, agriculture, fisheries, water management, mining, physical planning and biotechnology sectors, and all other professions and activities that are pursued, directly or indirectly, in nature | | NGO | | | 6.5.3.3<br>8.4.3.2 |

8.3 Public information and participation

8.3.1 Promote and improve the quality of education and public awareness on biological, landscape and geological diversity, and intensify public involvement in decision-making processes

| | | | | | | |
|---|---|---|---|---|---|---|
| 8.3.1.1 | Stimulate financing of actions that improve the quality of education and public awareness on biological, landscape and geological diversity and encourage public in decision-making processes | MC | MC, SINP, PI | ST-MT | SB, CB | 3.3.2.1<br>5.2.4<br>6.6.3.2<br>7.2.4.1<br>8.4.6.1<br>8.5.4.1<br>9.1.2.1 |

8.3.2 Establish the mechanisms for the international, regional and national exchange of information about biological, landscape and geological diversity, and protection and conservation activities

| | | | | | | |
|---|---|---|---|---|---|---|
| 8.3.2.1 | Inform the public in a systematic and consistent manner of the existing institutional framework, rights and duties of citizens, and of the possibilities for the general public to participate in decision-making processes and procedures related to the issues of protection and conservation of biological, landscape and geological diversity | MC | MC, SINP, SAB, NGO | ST-LT | SB, IF, CB | 7.2.4.3<br>8.4.61<br>8.4.6.2 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | | 3.1.1.4.2 |
| 8.3.2.2 | Develop a biodiversity information system for Croatia | MC, SINP | SINP, MC, PI, CEA, NGO | PR! | SB, IF | 3.1.4.5.1<br>8.1.3.1<br>8.1.3.2 |
| 8.3.2.3 | Develop the biodiversity Clearing House Mechanism | MC, SINP | SINP, MC, PI, NGO | PR! | SB, IF | 3.1.1.4.2<br>3.1.4.5.1<br>8.1.3.1<br>8.3.2.2 |
| 8.3.3 Support non-governmental organisations in their nature protection and promotion activities | | | | | | |
| 8.3.3.1 | Improve financing mechanisms for the projects of non-governmental organizations that support the promotion and public informing on the theme of biological, landscape and geological diversity | MC | MC, SINP, PI | PR! | SB, CB, OF, IF | 7.2.4.1<br>7.2.4.2<br>9.1.2.1 |
| 8.3.3.2 | Encourage co-operation amongst civil society organisations, the public and economic sectors | MC | SINP, MC, PI, NGO, MM | ST | SB, CB, OF, IF | 3.1.1.4.1<br>3.1.1.4.2<br>3.1.1.4.3<br>5.2.4<br>6.2.4.1<br>6.3.3.1<br>6.7.3.1<br>6.8.1.1<br>7.2.4.2<br>7.2.4.3 |
| 8.3.4 Encourage participation of mass media in public education, informing and involvement on issues of the protection of biological, landscape and geological diversity | | | | | | |
| 8.3.4.1 | Continue promoting media | MC, SINP | SINP, MC, PI, | LT | SB, CB, | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | coverage of events celebrating important dates for nature and environment protection | | NGO, MM | | OF, IF | |
| 8.3.4.2 | Ensure regular communication with the media and establish a permanent partnership for the purpose of more extensive coverage of topics related to the protection of biological and landscape diversity | MC, SINP | MC, SINP, MM, PI, NGO | ST-MT | SB, CB, OF | |
| 8.3.4.3 | Organise an annual workshop for media representatives, the Ministry of Culture, the State Institute for Nature Protection, public institutions and non-governmental organisations | SINP | SINP, MC, PI, NGO, MM | ST | SB, CB, OF | |

8.3.5 Encourage volunteerism and other forms of non-institutional education and public social engagement in the protection of biodiversity

| | | | | | | |
|---|---|---|---|---|---|---|
| 8.3.5.1 | Develop the volunteer network and different volunteer programmes (inventorying, monitoring, education, etc.) | SINP | SINP, PI, MC, MM | MT | SB, CB, IF | |

8.4 Physical planning

8.4.1 Carry out evaluation of the area (at the level of the counties and the City of Zagreb) in terms of nature protection or conservation and improvement of threatened and protected species populations, threatened and rare habitat types and conservation of landscape values, and define priorities related to planned designation of new protected areas

| | | | | | | |
|---|---|---|---|---|---|---|
| 8.4.1.1 | Impose the obligation to create technical bases related to nature protection for the purpose of development of physical planning documents | MC | MC, MEPPPC | MT | SB | 5.1.3 |
| 8.4.1.2 | Specify the procedure for issuance of authorisations and draw up a list of persons authorised for creation of technical bases for the purpose of development of physical planning documents | MC | MC, MEPPPC | MT | SB | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 8.4.1.3 | Carry out evaluation of the area (at the level of the counties and the City of Zagreb) in terms of nature protection and incorporate the information obtained this way into physical planning documents (existing plans and plans being developed) | MC | MC, MEPPPC, EA | ST-MT | SB, CB | 5.1.3<br>6.8.1.4 |
| 8.4.1.4 | Produce catalogues of measures/nature protection protocols for the main activities and sectors: physical planning, agriculture, fisheries, forestry, hunting, energy, transport, water management, mining, tourism, etc. with the aim of incorporating these as obligatory elements into the implementing plans of the said sectors | MC | MC, SINP | PR! | SB | 5.2.1<br>6.1.5.1<br>6.1.9.1<br>6.1.9.2<br>6.8.1.2<br>6.10.1.2<br>6.11.1.3 |

8.4.2 Adopt the remaining spatial plans for the areas characterized by distinctive features (and/or amendments to existing plans) for all national parks and nature parks

| | | | | | | |
|---|---|---|---|---|---|---|
| 8.4.2.1 | Develop and adopt the remaining spatial plans for the areas characterized by distinctive features (and/or amendments to existing plans) for national parks and nature parks | MEPPPC | MC, MEPPPC | PR! | SB, PI OI, IF | 3.1.1.1.3 |

8.4.3 Establish the correlation between spatial plans for the areas characterized by distinctive features and management plans for national parks and nature parks with regard to plan content

| | | | | | | |
|---|---|---|---|---|---|---|
| 8.4.3.1 | Harmonise the contents and scope of spatial plans for the areas characterized by distinctive features with that of management plans for national parks and nature parks (in order to avoid overlapping or for the purpose of determining priorities, etc.) | MC | MC, MEPPPC, SINP | PR! | SB | 3.1.1.1.3 |
| 8.4.3.2 | Improve co-ordination between the authorities | MC | MC, | ST | SB | 8.2.4.1 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | responsible for nature protection, environmental protection and physical planning | | MEPPPC | | | |

8.4.4 Conduct training of regional and local governments for the implementation and application of the provisions of physical planning documents and issuance of approval for projects in the area, particularly with respect to the new evaluation of county areas, protected areas and the ecological network

| | | | | | | |
|---|---|---|---|---|---|---|
| 8.4.4.1 | Conduct training of regional and local governments for the implementation and application of the provisions of physical planning documents and issuance of authorisations for the exploitation of natural resources and for projects in the area, particularly with regard to the importance of conservation of biological and landscape diversity, new evaluation of county areas, protected areas and the ecological network | MC | MC, MEPPPC SAB | ST-MT | SB, CB | 7.2.2.1 |

8.4.5 Improve implementation and supervision of nature protection measures and requirements that are incorporated into spatial plans

| | | | | | | |
|---|---|---|---|---|---|---|
| 8.4.5.1 | Strengthen co-operation among the services in charge of nature protection inspection, urban planning inspection and building inspection | MEPPPC | MC, MEPPPC SAB, PIC | MT | SB, IF | 8.2.3.1 |

8.4.6 Improve the level of public awareness of biological, geological and landscape diversity and the importance of conservation of the area, and encourage public participation in the development and adoption of spatial plans

| | | | | | | |
|---|---|---|---|---|---|---|
| 8.4.6.1 | Promote activities on informing the public and inclusion of the public, professional and scientific institutions, and non-governmental organisations in the field of protection of biological, geological and landscape diversity in the processes of preparation and | MEPPPC | MC, MEPPPC NGO | ST-MT | SB, IF | 7.2.4.3 8.3.2.1 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | adoption of physical planning documents | | | | | |
| 8.4.6.2 | Evaluate, in a transparent and professional manner, public opinions, comments and proposals concerning the proposed spatial plans | MEPPPC | MC, MEPPPC, EA | ST | SB | 7.2.4.3<br>8.3.2.1 |
| 8.5 Nature impact assessment | | | | | | |
| 8.5.1 Establish the mechanisms and the system for implementation of the nature impact assessment | | | | | | |
| 8.5.1.1 | Adopt amendments to the Nature Protection Act related to the nature impact assessment of projects, plans and programmes | MC | MC<br>SINP<br>PIC | ST | SB, CB, IF | 7.1.1.2 |
| 8.5.1.2 | Adopt a new Ordinance on nature impact assessment that will be aligned with the amendments to the Nature Protection Act | MC | MC,<br>SINP, PIC | ST | SB, CB, IF | 7.1.1.1 |
| 8.5.1.3 | Specify the procedure for issuance of authorisations and draw up a list of persons authorised for preparation of the studies on the acceptability of projects to nature | MEPPPC | MEPPPC, MC | ST | SB, IF | |
| 8.5.1.4 | Adopt the Regulation on the international ecological network NATURA 2000 | MC | MC, SINP | MT | SB, IF | 3.1.3.1 |
| 8.5.2 Strengthen the principles of protection of biological, landscape and geological diversity within the environmental impact assessment procedure | | | | | | |
| 8.5.2.1 | Conduct a comprehensive analysis of the biological, landscape and geological diversity segment within the environmental impact procedure and strategic environmental impact procedure | MEPPPC | MC,<br>MEPPPC, EA | ST | SB, OF | 5.2.2<br>6.7.1.3<br>6.7.3.2<br>6.8.1.3<br>6.10.1.1 |
| 8.5.3 Train regional and local governments for implementation of the procedure of nature impact assessment | | | | | | |
| 8.5.3.1 | Conduct training of regional and local governments and | MC | MC, | ST | SB, CB, IF | 7.2.2 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | other stakeholders with a view to making them capable of implementing the regulations concerning the nature impact assessment as an independent procedure, and as part of the environmental impact assessment and strategic environmental impact assessment | | SINP | | | |
| 8.5.4 Improve the level of public awareness of the importance of the nature impact assessment, the ecological network and the international ecological network NATURA 2000 | | | | | | |
| 8.5.4.1 | Prepare and ensure availability of informative and educational materials about the nature impact assessment, about the ecological network and the international ecological network NATURA 2000 | MC | MC, SINP | MT | SB, IF | 8.3.1.1 |
| 9. Strategy implementation | | | | | | |
| 9.1 Monitoring and evaluation of the Strategy implementation | | | | | | |
| 9.1.1 Take necessary steps for continuous monitoring of the Strategy implementation | | | | | | |
| 9.1.1.1 | Adopt the National List of Indicators for biodiversity | CEA | CEA, MC, SINP | PR! | SB | 8.1.6.1 |
| 9.1.1.2 | Define other indicators for monitoring the Strategy implementation | MC | MC, SAB | ST | | |
| 9.1.2 Give priority to financing of projects relevant for the Strategy implementation | | | | | | |
| 9.1.2.1 | When planning the state budget for a certain year, ensure financing of the priority action plans under the Strategy for that particular year | MC | SAB | PR! | SB | 3.1.4.8.2<br>7.2.4.1<br>8.1.5.2<br>8.3.3.1<br>8.3.3.1<br>9.2.1.1 |
| 9.1.2.2 | Enter into agreements between different sectors stipulating that project | MC | SAB | PR! | SB | 7.2.4.1<br>8.1.5.1 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | financing contests must give priority to those projects that contribute towards implementation of the Strategy, especially in the field of science | | | | | |

9.2 Financial mechanisms for Strategy implementation

9.2.1 Ensure financing of the Strategy implementation by and within the limits of the budget of the respective state administration body

| | | | | | | |
|---|---|---|---|---|---|---|
| 9.2.1.1 | When planning the state budget for a certain year, ensure financing of the priority action plans under the Strategy for that particular year | MC | SAB | PR! | SB | 7.2.4.1<br>9.1.2.1 |
| 9.2.1.2 | Strengthen the capacities of the Ministry of Culture in order to plan the financing of nature protection activities | MC | MC | PR! | SB | 9.2.2.1 |
| 9.2.1.3 | Further elaborate the criteria and methodology for allocation of funds through the public tender procedure for nature protection programmes, taking into account the priorities under the Strategy | MC | MC, SINP | ST | | 7.2.4.1<br>8.1.5.1 |
| 9.2.1.4 | Elaborate the system of financial incentives for management that observes and implements measures for conservation of biological and landscape diversity within the framework of the future Agricultural and Environment Protection Programme | MAFRD | MAFRD, MC, EA | ST | SB, IF | 3.1.2.3.5<br>3.1.3.2.1<br>3.1.5.2.1<br>6.1.1.1 |

9.2.2 Ensure funding of nature protection activities from non-budgetary sources

| | | | | | | |
|---|---|---|---|---|---|---|
| 9.2.2.1 | Strengthen the capacities at the Ministry of Culture, State Institute for Nature Protection and public institutions for the purpose of preparation and implementation of projects | MC | MC, SINP, PI, CODEF | ST | SB, IF | 9.2.1.2 |

| | | | | |
|---|---|---|---|---|
| | financed by foreign funds, in particular EU funds | | | |
| 9.2.2.2 | Increase the share of financing of nature protection projects by the Environmental Protection and Energy Efficiency Fund | MC | MC, EPEEF | ST |
| 9.2.2.3 | Promote financing of nature protection projects within the concept of socially responsible management | MC | MC, business entities | ST |

11. FINAL PROVISIONS

As of the date of adoption of this Strategy, the Strategy and Action Plan for the Protection of Biological and Landscape Diversity of the Republic of Croatia (Official Gazette 81/99) shall cease to have effect.

The Strategy and Action Plan for the Protection of Biological and Landscape Diversity of the Republic of Croatia shall be published in the Official Gazette.

Class: 351-02/08-01/04

Zagreb, 28 November 2008

THE CROATIAN PARLIAMENT

The President of the Croatian Parliament

Luka Bebić, m.p.

ABBREVIATIONS USED IN THE STRATEGY

AAS – Agricultural Advisory Service

AEPP - Agricultural and Environment Protection Programme

AEWA – The Agreement on the Conservation of African-Eurasian Migratory Waterbirds

AIW – Agency for Inland Waterways

BCH – Biosafety Clearing House

BG – botanical gardens

BMC – Basic Map of Croatia

CA – Customs Administration

CARDS – Community Assistance for Reconstruction, Development and Stabilization

CB – county budget

CCE – Croatian Chamber of Economy

CLSC – Croatian Livestock Selection Centre

CDDA – Common Database on Designated Areas

CEA – Croatian Environment Agency

CGI – Croatian Geological Institute

CITES – Convention on International Trade in Endangered Species of Wild Flora and Fauna

CMA – Croatian Mountaineering Association

CMS – Convention on Migratory Species

CNHM – Croatian Natural History Museum

CODEF – Central Office for Development Strategy and Coordination of EU Funds

CPGB - Croatian Plant Gene Bank

CPPI – county physical planning institutes

CROMAC – Croatian Mine Action Centre

CRO-NEN – The project for establishment of the Croatian National Ecological Network as part of the Pan-European Ecological Network and EU network NATURA 2000

CRO-WOLF – The project "Conservation and Management of Wolves in Croatia"

CRA – cattle-raising associations

CSF – Croatian Speleological Federation

EA – external associates

EC – European directives

EEA – European Environmental Agency

EEP – European Endangered Species Programme

EIONET – European Environment Information and Observation Network

EN – ecological network

EPEEF – Environment Protection and Energy Efficiency Fund

EIS – Environmental Information System

ETTA – Education and Teacher Training Agency

EUNIS – European Nature Information System

FA – fire-fighting associations

FAO – Food and Agriculture Organisation

FCS – Favourable conservation status

FMGPE – Faculty of Mining, Geology and Petroleum Engineering

FS – Faculty of Science

FSC – Forest Stewardship Council

FVM – Faculty of Veterinary Medicine

GMO – genetically modified organism

HA – hunting associations

HAC – Hrvatske autoceste (Croatian Motorways)

HEP – Hrvatska elektroprivreda d.d. (Croatian Electric)

HPP – hydro-power plant

HŠ – Hrvatske šume d.o.o. (Croatian Forests)

HV – Hrvatske vode d.o.o. (Croatian Waters)

HŽ – Hrvatske željeznice d.d. (Croatian Railways)

IAS – invasive alien species

IF – international funds

IO CASA –Institute for Ornithology of the Croatian Academy of Sciences and Arts

ISIS – International Species Information System

IUGS – International Union of Geological Sciences

KEC – Karst Ecosystems Conservation

LC – local community

LGSG – local government and self-government

LIFE III – LIFE - Third Countries Programme

LT – long-term

MAB – Man and the Biosphere (UNESCO programme)

MAFRD – Ministry of Agriculture, Fisheries and Rural Development

MB – municipal budget

MC – Ministry of Culture

MD – Ministry of Defence

MELE – Ministry of the Economy, Labour and Entrepreneurship

MEPPPC – Ministry of Environmental Protection, Physical Planning and Construction

MF – Ministry of Finance

MFAEI – Ministry of Foreign Affairs and European Integration

MHSW – Ministry of Health and Social Welfare

MI – Ministry of the Interior

MM – mass media

MRDFWM – Ministry of Regional Development, Forestry and Water Management

MSES – Ministry of Science, Education and Sports

MSTI – Ministry of the Sea, Transport and Infrastructure

MT – medium-term

MT – Ministry of Tourism

NGO – non-governmental organisation

NHC – National Habitat Classification

NP – national park

NPA – Nature Protection Act

OF – operating funds

PA – protected areas

PAMS – Protected Area Management System

PHARE – (Fr.) Pologne et Hongrie – Aide à Restructuration Économique

PI – public institutions for the management of protected natural values

PI OI – public institutions' own income

PIC – public institutions for the management of protected areas at the county level

PINP – public institutions of national parks

PINAP – public institutions of nature parks

NAP – nature park

PR! – priority

SAB – state administration bodies

SAC – Special Areas of Conservation

SB – state budget

SEBI – Streamlining the European Biodiversity Indicators

SFS – Sporting and Fishing Society

SGD – State Geodetic Directorate

SI – scientific institutions

SINP – State Institute for Nature Protection

SIO – State Inspectorate of the Republic of Croatia

SPA – Special Protection Areas

SPA Protocol – Protocol on Special Protection Areas and Biodiversity in the Mediterranean

ST – short-term

TA – tourism associations

UN – United Nations

UNESCO – United Nations Educational, Scientific and Cultural Organisation

WSSD – World Summit on Sustainable Development

ZOO – zoological gardens