

**National Report to the Fifth Session of the
United Nations Forum on Forests**

REPUBLIC of CROATIA

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List of abbreviations and names of organisations and institutions

AFS – Academy of Forest Sciences Zagreb
C&I – Criteria and Indicators
CASA – Croatian Academy of Science and Art
CBD – Convention on Biology Diversity
CCD – Convention to Combat Desertification
CF – Chamber of Forestry
CF Ltd. – “Croatian Forests” Ltd.
CLRTAP – Convention on Long-range Transboundary Air Pollution
COST – European Cooperation in the Field of Scientific and Technical Research
CPC – Cleaner Production Centre
CPCBD – Conference of the Parties to the Convention on Biological Diversity
CPs – Conference of the Parties
CRO-NEN – Croatian National Ecological Net
CROSOTER – Croatian Soils and Terrain Digital Base
EC – European Commission
ECNC – European Center for Nature Protection
EDBinCCE – European Data Base in CCE
EFI – European Forest Institute
EMEP – European Co-operative Programme for the Monitoring and Evaluation of the Long-range Transmission of Air Pollutants
EMEP – European Monitoring and Evaluation Programme
EU – European Union
FAO – Food and Agriculture Organisation of the United Nations
FDofMAFWM – Forestry Department of MAFWM
FF(UZ) – Faculty of Forestry (University of Zagreb)
FL – Forest Law
FP – Forest Principles
FRA – Forest Resources Assessment
FRI – Forestry Research Institute, Jastrebarsko
FSC – Forest Stewardship Council
FSC P&C – Forest Stewardship Council Principles and Criteria
GIS – Geographic Information Systems
GovRC – Government of Republic of Croatia
GPS – Geographic Position Systems
ICP Forests – International Cooperative Programme on the Assessment and Monitoring of Air Pollution Effects on Forests
ICP Mapping & Modelling – ICP Mapping & Modelling of Critical Load and Levels and Air Pollution Effects, Risk and Trends
IFF – Intergovernmental Forum on Forests
IPA – Important Plant Area
IPF – Intergovernmental Panel on Forests
ITTA – International Tropical Timber Agreement
ITTO – International Tropical Timber Organisation
IUCN – The World Conservation Union
IUFRO – International Union of Forest Research Organisations
LAP – Law on Air Protection
LEP – Law on Environmental Protection / Landscape Ecological Plans
LFP – Law on Fire Protection
LFPM – Law on Forest Planting Material
LH – Law on Hunting
LPN – Law on Nature Protection
LPP – Law on Physical Planning
LRAFL – Law on Replacements and Amendments to the Law on Forests

LRTAP – Convention on Long-range Transboundary Air Pollution
LW – Law on Water
MAFWM – Ministry of Agriculture, Forestry and Water Management
MAP – Mediterranean Action Plan
MCPFE – Ministerial Conference on the Protection of Forests in Europe
ME – Ministry of Economy
MEPPP – Ministry of Environmental Protection and Physical Planning
MSES – Ministry of Science, Education and Sport
N.A. – Non-available
NBSP – National Biodiversity Strategy Plan
NCFE – Non-commercial forest functions
NEAP – National Environmental Action Plan
NES – National Environmental Strategy
NFPS – National Forest Policy and Strategy
NFPs – National Forest Programmes
NGOs – Non-Governmental Organisation
NPD – Nature Protection Division
NSAP – National Sustainable Active Plan
OG – *Official Gazette*
OIKON Ltd – Institute for applied ecology
Pan-European C&I – Pan-European Criteria and Indicators
RC – Republic of Croatia
REC – Regional Environmental Centre
SBforNP – State Bureau for Nature Protection
SBIB – State Bureau for Intellectual Property
SFM – Sustainable Forest Management
SI – State Inspectorate
SOTER – World Soils and Terrain Digital Data Base
SSMB – Steady State Mass Balance Method
TCP – Technical Cooperation Programme
TFRK – Traditional Forest-related Knowledge
UN – United Nations
UNCCD – United Nations Convention to Combat Desertification
UNCTAD – United Nations Conference on Trade and Development
UNECE – United Nations Economic Commission for Europe
UNEP – United Nations Environment Programme
UNFCCC – United Nations Framework Convention on Climate Change
VAT – Value-added tax
VDMCPFE – Vienna Declaration from Ministerial Conference on the Protection of Forests in Europe
WIPO – World Intellectual Property Organisation
WSSD – World Summit on Sustainable Development
WTO – World Trade Organisation

II. Progress and issues related to implementation of IPF/IFF proposals for Action

General

1. Please provide additional or new information on initiatives taken or lessons learned since 1997 further to the information on forests included in your national reports to UNFF 2, UNFF 3 and UNFF 4, the Commission on Sustainable Development, and other international instruments and organisations on the following points:

• assessment (including the relevance, priority, status of implementation, planned actions) of the IPF/IFF proposals for action in the national context

Both proposals, IPF and IFF, have helped Croatia to understand wholly and systematically the status of the Croatian forestry, and to take a series of necessary measures for its improvement. Besides increasing the levels of specialist skills in managing forests, providing their sustainable development, and biological diversity, the participation in the process of writing the voluntary national report for the implementation of IPF/IFF action proposal with UNFF sessions has also helped in making decisions on a number of other events, e.g.:

- Restructuring Croatian national forest management (CF Ltd.);
- Consolidation with the laws and regulations of EU while making preparations for the beginning of the accession talks upon receiving the *avis* and the commencement date for membership talks;
- Summit of work group experts and institutions for the preparation of the voluntary report;
- Extension of the discussion on forest management to the non-forestry experts that are professionally connected with this branch of economy;
- Transfer of information on world trends in forest management to those who are interested in Croatia;
- Public promotion of the significance of forest resources including forest non-wood values.

Among various obligations of Croatia in the process of accessing EU, i.e. of implementing the Agreement on Stabilisation and Joining, is the establishment of ecological network. This presents the implementation of the EU legislative – The Directive on the Protection of Nature Habitats and Wildlife Flora and Fauna. Within this task, EU members must determine the regions that are important for the European endangered species and habitats as part of the EU Environmental Network NATURA 2000.

It is worth emphasising that the implementation of the IPF/IFF proposal will certainly help in the national context of consolidating forestry institutions with local population and communities for common promotion of forest ecosystems. It should also be added that, together with the UNFF proposals 14, a widened program on biological diversity of forests from CBD (Convention on Biological Diversity), and the Vienna declaration MCPFE, present a set of incentives for national action in forestry. Considering the fact that so far two voluntary reports have been sent (UNFF 3-4), the report will contain the data referring to the questions from UNFF 2, together with the supplements of new data for UNFF 3-4. The unabridged work variant of this report in Croatian language supplemented with a list of used sources, either written, or available on the internet pages (publications, works, laws, regulations, directives, etc.) will be made available to all interested, who are asked for their comments, suggestions, participation, etc.

• development and implementation of your national forest programme or similar national policy framework for forests

National forest programme (NFPs *National Forest Programmes*) is based on the conclusion of the Croatian Government (GovRC) titled National Forest Policy and Strategy (NFPS) of July 2003. Based on NFPS and LRAFL (Law on changes and amendments to the Law on Forests) a procedure was initiated for renewing the Law on Forests, as well as a number of other regulations, orders, statutes and

acts on forests, forest management, organisation in forestry, etc. With the commenced preparations for the European Union accession talks (March 2005), Croatia has begun a new period of synergetic activity in forestry with many participants of the talks, particularly in terms of adjustment of Croatian laws and regulations to the ones in EU. As there is here a special emphasis on environmental protection, the responsibility of the forestry for the situation at national level is best illustrated by the fact that 43.5 % of Croatian territory is forestland, either covered with forests, or bare land. Hence the many new tasks of the ministry and its Forestry Department (FD – Forestry Department of MAFWM).

In order to realise the set targets, various government sectors, and the representatives of entrepreneurs and forest owners are attempting to promote the accepted standpoints, particularly the ones on the following: protection and rehabilitation of forests, fire protection, regeneration of forests after natural disasters (fire, windfall, snow) detecting and clearing mines from remaining mined forests. This also includes just reimbursements to indigenous people for their contribution to forest conservation by supporting local forest industry, fuelwood supply, occasional employment in seasonal jobs, etc. Such widely encompassed activities of numerous programmes and tasks normally lead to different, i.e. divided opinions and interests among the process participants, government, or non-government representatives, forest owners, or users of wood and non-wood forest products. There is no doubt that each of the groups has its special economic interests, which are frequently opposed to the ecological and other requirements. However, it must be taken into consideration that the owner of 80 % Croatian forests and forestlands is a certain form of state ownership (management forests, or forests under some type of protection), while the remaining part is privately owned. Since January 1 2002, Croatian management forests have been managed in the name of Croatian Government, by *Croatian Forests Ltd*, a trade company (The company acted as *Public Enterprise Inc.* from January 1 1991 until April 2002). Considering both forests and their sustainable development, it is essential to be acquainted with the business activity of this company. E.g., after a long period, in 2003 the company ended the year with a financial loss, so that it was facing non-liquidity. In the same year two new companies were established within *Croatian Forests Ltd*: *CF Tours Ltd* and *CF Consult Ltd*. Besides financial rationalisation, the 2004 Plan entails continued restructuring of the firm, as stated in the official report of 2003 and the beginning of 2004. However, wood processing is the direct opposite of this; the private sector participates in forest industry more significantly than in forestry, which is almost entirely privatised. On the other hand, it must be pointed out that the proportion of free enterprise in forest activities within forestry, particularly in forest exploitation and some silvicultural and protective operations (e.g. wood product transportation) reach a proportion of up to 80%.

- **international cooperation, including development and implementation of partnerships**

Through many co-operative forms, Croatian forestry is linked with international co-operation, some kind of globalisation, which partly means an acceptance of the forest policy. This particularly applies to the connection with regional associations of Central Europe, with which it shared the same state since the beginning of organised work on forestry system in 18th century. Besides historical facts, the reasons for this are the similarities of the forest ecosystems, management and forest rehabilitation methods, and the application of the sustainable management and bio-diversity principles. The same significance is given to the collaboration at national level, e.g. within the framework of MCPFE, and the non-government organisations, such as IUFRO and others.

Ministerial Conference on the Protection of Forests in Europe (MCPFE)

With the exception of the first, Croatia took part in all other conferences of MCPFE, and accepted all resolutions, initiatives and forms of regional collaboration. Since every such meeting has been the continuation of the sustainable forestry policy, it has always meant the confirmation and promotion of Croatian own policy. Every single conference marked a transfer of the international forestry policy into regional frames.

Forestry and environmental protection within the European Union

The years 2004 and 2005 will mark many confirmations, as well as changes of the Croatian forestry policy, particularly in view of the non-commercial forest functions, the many benefits that do not find place on the market in the way wood products do. Although things are changing with, say, the sale of certain rights to other countries in terms of the Kyoto Protocol, the awareness of the functions like water, erosion and wind protection, the values of the landscape and other properties will increasingly be considered within the systems such as EU.

A special attention is given to the monitoring of Croatian forests with environmental interactions at the level of a regulatory frame focused on the forests in EU. Croatian forestry will accept the diversity of the EU legislative, and will improve the present status, primarily in terms of air pollution, forest fires, sustenance of bio-diversity, climatic impacts, carbon dioxide, soil protection, etc. The to date minor collaboration in some EU projects (e.g. COST), and the thematic conferences as joined members, marked many values of such type of participation.

International Union of Forest Research Organisation (IUFRO)

Among the oldest non-government world organisations in the last fifty years, IUFRO has also played a significant role in promoting forestry and forest values in Croatia. With its complex structure of current regions, IUFRO has enabled Croatian scientists to collaborate and to exchange, report and promote many significant achievements.

Academy of Forestry Sciences (AFS)

An independent society of forestry and wood-technological scientists, the Academy has published some major books on Croatian forestry in the eight years of its foundation. It has participated and managed elaborates on the delicate issues of environmental protection, such as the impacts of oil pipelines upon the forest ecosystems, the yet undetected mines in such ecosystems, and the basic legislative that determines the development and future guidelines of the forestry policy. The Academy has become a significant factor in forestry. With its collaboration with the similar foreign organisations, it promotes international collaboration, stimulating, or organising conferences for the exchange of current issues on forests and forestry.

The following are the instances of the international collaboration, two of the government regulative system, and another two of the non-government associations. A part of the remaining significant collaboration is given with basic data:

- Participation of three Croatian representatives in the UNECE bodies – Timber Committee, European Forestry Commission, Joint FAO/UNECE Working Party on Forest Economics and Statistics.
- Republic of Croatia is one of thirty-four country members of COST. Croatian forestry and wood-technological scientists have taken part in some completed projects, in those that are currently being carried out, and others that are in the phase of preparation. Croatian scientists took part in the following two projects completed in 2004: *Advances in the Drying of Wood* and *High performance in wood coating*.
- FRA – Forest Resources Assessment, FAO, Forestry Department, Global Forest Resources Assessment update 2005 <CROATIA>, Country Report, December 2004, a report by seven scientists and experts.
- International Scientific Symposium *Anti-erosive and water-protective role of the forest and methods of its preservation and improvement*, IUFRO 8.01.00 Ecosystems, 8.01.08 Floodplain forest ecosystems; Academy of Forest Sciences Zagreb; Faculty of Forestry and Wood Technology – Mendel University of Agriculture and Forestry Brno; Faculty of Forestry – University of Zagreb, Summaries, page 40.

- PIN-MATRA, Research on Dinaride karst fields, started in 2004, Croatian Nature Museum and Royal Dutch Society for Nature Protection (financed by Dutch Government); continued in 2005.
 - CROSOTER – Croatian digital databank of soil and land based on the features of SOTER databank for soil and land.
 - MAP – Mediterranean action plan for the protection of the Mediterranean, UNEP programme. Croatia participates with 0.97 % of total resources for programme financing.
 - Croatian Botanical Society supported by Regional Environmental Centre translated the handbook by Anderson, S. (2002): *Identifying Important Plant Areas*. Plantlife International etc.
- **mechanisms or initiatives to facilitate stakeholder participation, including indigenous and local communities, in forest sector planning, decision-making and/or forest management.**

Mechanisms and initiatives for including third persons from Croatia, or other countries, into forest planning, organising, managing, and realising ideas have been particularly emphasised in the last decade. Like in any such action, the inclusion of indigenous people and local community into active participants can already be regarded as a rule.

An essential support to the establishment of similar participating mechanisms and the inclusion of experts who are not professionally linked with forestry was enabled by the National Forest Programmes and the government act on National Forest Policy and Strategy. The founding of a national council of forestry as a supreme specialist body would certainly advance the adjustment mechanisms for third party inclusion in divided situations, as seen, e.g. during forest certification, evaluation of work and protection means, etc. The council would surely have to involve participants from forest industry, environmental associations, etc. Considering the regional diversity of forests and forestry tasks in Croatia, regional programmes with detailed diversity description should have to be made on the basis of national programmes. E.g. lowland forests of Slavonia, mountain forests of Gorski Kotar (forest cover about 70 %), and the coastal Mediterranean forests. A multi-sector and a multi-discipline council for each such region would help to create efficient mechanisms for dealing with the issues and for promoting local participation in sustainable forest management.

Implementation of the IPF/IFF proposals for action related to thematic issues of UNFF 2

Please provide information on: activities undertaken since 1997, progress made, constraints encountered, lessons learned, and issues that have emerged, as well as relevant information related to means of implementation (financing, transfer of environmentally sound technologies, and capacity building) related to the following elements:

Combating deforestation and forest degradation

2. preparing diagnostic studies to analyse historical and underlying causes of deforestation and forest degradation, including processes outside the forest sector

All studies on assessment of the causes for deforestation and forest degradation mainly encompass the factors outside forestry. Only a small proportion of these studies deal with forestry, a branch of economy dealing with the protection, tending and growing of forests for its conservation, extension, and production of wood and non-wood goods. When the causes are in forestry, we have extraordinary circumstances, e.g. unsuccessful regeneration, fire-caused forest loss, windfall, ice, etc. Among the causes coming from outside forestry, which have the highest proportion of all causes, two historically different periods should be distinguished: the times when the parts of today's Croatia were under foreign domination (Venice, Turkish Empire, Austro-Hungarian Monarchy, etc.). There is no reliable evidence on deforestation by a third party. In those times, too, wood was a demanded product. The wooden pilots on which Venice is lying were brought from Croatia. Today the stone from Croatian quarries is transported on ships to the city on pilots to accomplish the same task. Indigenous

population conquered forestland for agriculture, such as olive tree yards, vineyards, etc., but also to provide pastures for cattle breeding.

Unlike the period of doubtful estimates, it is obvious that in the first and second Yugoslavia the exploitation of Croatian forests was dictated by political and other reasons. Thus in the 1920th law regulations determined the allowed clear cuts over areas up to 500 ha. The cuts for the export of prevalingly Croatian forest products after World War II were for providing financial means for restoring the country, its industrialisation, etc. (around 80 % of the exported timber came from Croatian forests, mainly above the allowed felling volume). In spite of this, the indicators of forest coverage, growing stock, increment, and other main forest status indices classify Croatia among the European countries with considerable forest resources.

In 2003, an area of 25,700 ha was burnt. Half of it is private forest and agricultural areas. Flora degradation and initial erosion are the threats to such land. MAFWM brought a programme for revitalisation of the burnt areas to turn them into productive land. The programme was accepted by GovRC, which appointed MSFWM, CF Ltd, and the regional self-management to prepare and realise the reclaiming of the burnt areas.

With the main part of the degraded forests and bare land located upon karst areas, the research on karst ecosystems is continually given the significance they deserve (e.g. during Homeland War, the Institute “*Ruder Boškovic*” was financed for their programme titled *Bio-geographic division, mapping and development of the Croatian Karst Ecosystems*). In 2004 Karst Institute was founded in Gospić, the central municipality of Lika and the Lika-Senj County, for the research of the karst phenomenon, which entails karst forest degradation, and bare land left after deforestation. The research would draw attention to these issues, and improve the situation for the purpose of restoring the destroyed ecosystems, and achieving many beneficial forest values, biological diversity, and sustainable forest management. Blessed with large reserves of drinking water, this region has protected areas in a proportion of 30 %. About one half of the whole Croatian territory is karst. Reaching down to the sea and encompassing the coastland, it will also affect tourism development by the status of its ecosystems. The purpose of karst research is linked with the economic development of the karst area. Named *Karst Centre* for now, it will gradually grow into an institute. The established *Karst Council* will discuss the projects.

A special circumstance of Croatian forests is the fact that there are areas with mines or those suspected to be contaminated with mines left from the Homeland War of 1995. The parts of forestlands, either forested, or not, wherever battles were fought, include the possibility of hiding unexploded ammunition, even bombs. All state forests are mapped with marks of suspect areas, and separately for traffic infrastructure (forest skidding tracks, roads, and facilities). Since mined areas were inaccessible, such forests have remained inaccessible to any kind of work, which in many cases led to their degradation. In some places silvicultural operations were not carried out, mainly thinning; forest management was discontinued, the felling volume remained unachieved, damage caused to game is considerable, regeneration, both natural and artificial, was not carried out, etc. The scientific project of the Academy of Forest Sciences in founding (2005) should investigate the degree of mine-caused forest degradation. The first study of “*Croatian Forests*” Inc. *Zagreb* of 1997 is a document containing figures and maps as data on the hidden mines in the forestlands then managed by the public enterprise CF. These data reveal that 12 % of the total area managed by the enterprise (around 2,440 km²) is mined; the mined area contains a growing stock of 23,447,154 m³, with a prescribed felling volume of 4,893,233 m³ (around 10 % of the felling volume determined by the region’s Felling Plan). The same study says that 8.5 % (over 1,200 km) of forest roads are mined, while there are no data on forest skidding roads and lanes. The data do not contain the estimates on the mine status of private forests. “*Croatian Forests*” Inc. brought also the “Programme on preparing and implementation of mine-clearing” from facilities, forests and forestlands managed by ‘CF’ Inc. Government institutions were informed on the program, and it was consolidated with the Law on mine clearing (1966). The replacements and amendments of the Law on Mine Clearing were brought in 1998 and 2000. At the same time, about 13,000 km² of area were estimated as undermined. It was then that a priority list with

eight classes of land type and function. The list classifies national parks with number four; land areas under protection of cultural heritage is classified with number five, while management forests received the seventh, the last but one position of priority. The suggestion of the national mine-clearing programme in Croatia of the year 2000 establishes a new initial evaluation of 4,500 km² of the totally undermined area. The assessment of mine-contaminated state forests of 1997 did not change officially. It is followed by the proposal of the National programme for mine-clearing activity for the period 2005-2009 of October 2004. It is based on new knowledge and the fact that the market organisation model of mine clearing firms prevailed (49 firms are licensed for the job), and that the financial base and technical level increased. More sophisticated detecting methods have been introduced. Standards have been made, or are being made, including the standardisation of the mine-clearing machines, the use of guides and dogs, protective equipment, equipment for detection, and norms of humanitarian mine clearing. The new methodology determines 1,174 km² (2.08 % of land area) of mine-suspicious area. This figure contains 633.4 km² of forests, fire lanes and riding cuts (54 % of the whole mine-suspicious area of the Republic of Croatia, with another 131.9 km² of maquis and karst (11.2 %). This means that 65% of the whole forestland is un dermined (probably with one part of forest pastures separated by meadows). It should be mentioned that the mine-suspicious area is divided into three classes, the areas to be cleared (26%), the areas to be investigated (71%), and the areas used at one's personal risk (3%).

3. formulating and implementing national policies and strategies, through an open and participatory process, for addressing the underlying causes of deforestation

In Croatia, deforestation cannot be discussed in terms of its causes/remedy in the literal sense. Forest loss is primarily linked with forest fires on the coast, much less with those in inland areas. Policies and strategies determine how the forest ecosystem should be rehabilitated in the burnt areas. Along with the local communities, the aid is supplied by the state. The policy is mainly focused on preventive activities, the establishment of fast locating system, and successful fire fighting.

If forest degradation takes place, caused either by fire, or other reasons, the loss must be compensated by growing new forests, in order to make up for the lost ecological forest function. This is a lawful obligation of the forest owner/forest manager. "Hrvatske šume" (CF Ltd.) manages around 80% of Croatian national forests, and must accordingly obey this obligation. Due to the most extensive burnt areas of the year 2003, in January 2004 Croatian Government accepted the Programme for rehabilitation of forest and agricultural areas (together around 17,500 ha) on the islands and coast. The rehabilitation programme includes clearing of burnt areas and roads, biological regeneration (return into initial condition, or regeneration of the habitats by planting pioneer species), and the supply of budget means for co-financing the activities (up to 50 %), as well as the means from the counties, the units of local and regional self-management, i.e. owners/end-users. *The Law on replacements and amendments of the Statute on implementation of the model of capital investments into agriculture, fishing and forestry* does not seem to include any instance of capital investment into forest production in its detailed specification, although the title clearly formulates this. In early 2004, Croatian government and the Ministry department made decisions on raising vineyards and olive groves upon forestlands, with parallel obligation of compensatory reforestation of non-forested woodlands. The conversion relates principally to the non-covered woodlands and the land with degradation forms of forest stands. The question is whether it is worth to convert woodlands into agriculture, with so much of the neglected agricultural area. There is certainly a more natural way – tilling the neglected agricultural land, and, supported by capital investments, gradually returning the degraded forests into former valuable Mediterranean mixed forests. This is the way it is going to be done in early 2005 as related to the agricultural land and the replacements/amendments of the Law on Agricultural Land.

Worth mentioning are the many activities of the non-government environmental societies, Croatian Army, banks, schools, car importer representatives, etc., in reforestation of burnt areas, for the rehabilitation of the most complex ecosystems and biological diversity. The considerations on preventing forest fires by, say, keeping goats in young forests, only lead to forest destruction. Any

forms of uncontrolled extensive cattle breeding, grazing, browse, acorn collecting, etc. in the natural forest ecosystems is opposed to the management and conservation of forests.

Along with the instalment of the common telephone number for cases of natural disaster (112), scientific research efforts should be made for building a system for long-distance forest fire detection at early stages to alarm fire brigades, particularly in the protected areas.

4. raising awareness of the importance of issues related to deforestation and forest degradation and the multiple values of forests

Raising the awareness of the importance of removing the critical conditions for possible deforestation, primarily by fire, is a significant lasting activity both of forestry and Croatian Government, along with many environmental associations. It should be noted that there is an essential difference between the different causes of forest fires. In undeveloped countries, this is the method of clearing land for other purposes. In Croatia, the causes are mainly carelessness of the rural population, and sometimes irresponsible, or deliberate ignition of open fire. Degraded forests should be converted into higher silvicultural forms by capital investments, at first in the coastal areas and islands, because of the multiple values of forests, and much less for timber exploitation.

Forest conservation and protection of unique types of forest and fragile ecosystems

5. creating or expanding protected areas to safeguard forest and related ecosystems and their full range of values and, developing and applying criteria and methodologies for assessing the conditions and management effectiveness in protected forest areas

Croatian ecosystems have been protected to various degrees for more than five decades. In most cases, such protection encompassed a considerable part of forests and woodlands. The regimes of care in such cases are demanding and particularly supervised by the responsible ministry departments and the state institute. The highest form of protection are the national parks, eight of them for now, and the ten nature parks. Together with other forms of conservation, the proportion of the protected area is 11 % of the Croatian land area. The protection started at the end of 19th century by founding societies for the management of the valuable areas, beginning with the Plitvice Lakes. This early type of protection, and the occasional ones during the first half of 20th century started to change through the Law on the Protection of Cultural Heritage and Natural Rarities of 1945. This initiated a systematic work on the protection of forests and the related ecosystems in Croatia. The task of the national institutions is to protect plant and animal species, areas, etc. The former fifty-year-long non-institutional care for nature, the forest ecosystems included, acquired around the middle of the 20th century an institutional form, which further changed depending on circumstances and possibilities until the end of the century. According to what is pointed out under Item II.1.3. (*International Cooperation*), by becoming a candidate for EU membership after signing the Agreement on Stabilisation and Membership, and by receiving the date of the beginning of the talks, the protection of the environment, including the protection of forests and woodlands, has become a significant condition in the talks and the requirement for following the EU respective standards. In 1979, thirty years after it was proclaimed national park, the Plitvice Lakes, the first Croatian national park, was put on the UNESCO List of world nature heritage.

Besides national parks, forest vegetation reserves, park forests, and strict reserves are also exempt from economic use, altogether 3 % of Croatian forests. Nature park forests and the forests of protected landscapes are normally managed, though under special conditions of nature protection. The Law on forests of 1990 classified the forests in terms of management, protection (anti-erosive, protective forest settlements, water reservoirs, etc.), and special purposes (forests and forest parts registered as seed areas; special rarities for their natural beauty, or historical significance; scientific research areas, and forests designated for recreation). Statistically, the proportion of the national park forests of the land area is 64.4 % of the total Croatian territory, while the respective proportion of nature parks is 61.3 %. This means that, except for the 3 % of the forests exempted from regular management, almost

12 % of the valuable nature park forests are under special management regime. The following will best show how big these forest areas are: total Croatian land area is 56,538 km²; area under forest cover is 19,788km² (35 %); forest land covered by forests, different forms of degraded forests and bare land cover an area of 24,580 km² (43.5 %). Eight university graduated forestry engineers currently supervise the national park forests; another nine take care of nature parks. There are some suggestion to turn two nature parks into national parks. In addition, some other protected nature areas (0.93 %) are under special protection. They have not been proclaimed as such by the Croatian parliament, but by the decision of each respective county. Such areas include strict and special reserves (botanical, geo-morphological, hydrological, paleontological, rare tree specimens, tree groups), and park landscape monuments (arboretum, botanical garden, park, individual trees, and tree groups). All these forms of protection encompass individual trees, tree groups, and forest departments. Worth mentioning is the extensive protection of 44 plant species, 567 animal species, 130 fungi, all European birds, and much of the sea flora and fauna.

The programme Natura 2000 is a detailed guide of criteria and targets in the choice of protected areas. It is the object of consideration in all new enterprises. In protected areas, where there is a particular form of forest management, such as in other management forests, the system of licensing entrepreneurs is being promoted, together with the used working equipment. The building of the *corridors* between the *core areas* protected by *buffer zones* is an important task, especially at the time of building the significant road infrastructure. This process of creating the ecological network is a precondition of the conservation of our natural heritage, and the prevention of splitting the areas into ecologically unconnected islands. All activities upon the protected areas containing considerable proportions of forests and their complex ecosystems must strictly respect the biodiversity. At the competition of 2002, EC chose one of the three proposed MEPPP projects for the co-financing fund LIFE-III. The project consists of establishing the national ecological network (CRO-NEN) as part of the all-European ecological network and the NATURA 2000 network (the co-financing is around 0.375 million €). Besides the cooperation with the Croatian State Bureau for Nature Protection (the project leader since 2004 when the Ministry of Culture took over the authority over nature protection), the firm OIKON Ltd. ECNC also took part in the project. An important component of the project is the establishment of the national programme of monitoring the biological diversity. An important constituent of the project is the collection and processing of the data, followed by mapping and analysis and the making of the database. CRO-NEN otherwise contains eight project tasks.

Within the programme LIFE III, the EU is financing, among others, the protection of the wolf population in Croatia with €0.42 million. EU is also financing the Corine data file of the Croatia forest coverage by satellite photography interpretation with around €0.5 million.

Since most of the protected areas are those that contain both forests and tourist visiting areas (the national park of Plitvice Lakes is yearly visited by up to ¾ million visitors), the organisation of reception, guiding, information, and educational instruction are all important tasks. Based on the Convention on biological diversity for the purpose of nature protection, Croatia also systematically and at long terms monitors the status of the chosen species and habitats. This activity is particularly significant when it goes for the protected and endangered species, habitats, or areas, when there is a possibility of introducing invasive non-autochthonous species into the sea, onto the islands, and when man directly affects the biological diversity, e.g. by converting woodlands into agricultural land.

Although the Republic of Croatia is not the member of the IUCN, three Croatian non-government associations (Eurocoast Croatia, Croatian Biological Society, and Croatian Society of Natural Sciences) are the members of the IUCN (*The World Conservation Union*). Worth mentioning is that IUCN presents a bridge between governments, non-government associations, local communities, and the private sector within the framework of encouraging forest conservation and land management. IUCN collaborates in many programmes with WWF.

6. developing and implementing partnership mechanisms to engage forest owners, private sector, indigenous people and local communities in the planning and management of forest conservation areas and developing and implementing a range of innovative mechanisms for financing and encouraging forest conservation

CF Ltd. is the trade company that manages around 80 % of the national forests. After its conversion from a public enterprise into a trade company (the state remained forest owner), CF Ltd has been developing partnership relations and mechanisms with entrepreneurs, forest owner private sector, indigenous people, or local communities. These mechanisms differ from the ones of the twelve-year long public enterprise, which managed national forests in the name of the state. This particularly relates to the development of the mechanisms and forest conservation regulations, ranging from the choice of protection measures for all involved, to the choice of work means, etc., all for the purpose of respecting the strict ecological and ergonomic requirements in carrying out forest works. In doing this, it is important to ensure sustainable development and management through three guidelines – economic, social, and ecological, respecting the biological diversity of forest ecosystems. However, many mechanisms should be tested in practice, because simple imitation of other countries always ended in failure. Among the attempts of a successful organisation was the establishment of daughter firms, e.g. “Hrvatske šume” Tours Ltd., or Consult Ltd. One part of the jobs, say hunting, or developing of tourist-recreation activities, was transferred to another firm together with forestry consulting jobs. With its activity on the whole national territory, CF Ltd basically works in rural areas, where there is a long-term connection of the people with the forest, regardless of the ownership. One part of the activities is directed toward forest acquisition for the purpose of consolidating production units. Likewise, forests are sold, i.e. rented or given as concessions. Environmental protection in all these cases is encouraged by local environmental societies, giving warning about possible danger for the biological diversity, water conservation, soil loss, erosion, etc.

Lessons learned: based on the experience of the countries participating in the IPF/IFF programme, CF Ltd. started the development of the proposal for the Statute on the licence for carrying out forest works. This procedure would enable the indigenous people and entrepreneurs the acquisition of the licences for carrying out forest works, ensure the certification of work means, work protection equipment, safe work conditions, etc.

7. giving high priority in national forest programs to the rehabilitation and sustainable management of forests and trees in environmentally critical areas, recognising the linkage between forest protection and sustainable development and improving the co-ordination among such policies and programmes

The complex forestry activities in concordance with the IPF/IFF proposals are especially highlighted in the critical areas exposed to the natural disasters or another form of forest destruction – fires, flood, erosion, encroaching into environmentally susceptible areas (roads, oil and gas pipelines, transmission lines, etc.). Forest borderlines – the ones between the lowland floodplain forests and the ones at the upper limit of tree growth – are the critical areas where forest vegetation cover is maintained by the choice of species [e.g. narrowleaf ash (*Fraxinus angustifolia*) in flood and swamp terrain, and mountain pine (*Pinus montana*) at the top borderline of forest growth], silvicultural and other procedures for conservation of forest soil, regulation of the water regime, etc.

However, the even more important task is the conservation of the most precious forests of pedunculate oak, sessile oak, beech stands, and conifers – the resources of the high-quality technical timber. Even the management methods are adjusted to the requirements of the critical areas. In the mountain regions it is thus possible to apply only the selection management system, while the lowland and hillside forests are mainly covered by even-aged forests. In all these cases, the work should take into consideration the fact that forests are also areas of recreation, open to the public both in continental

areas and along the coast. This certainly affects forests, as man's behaviour is not always suitable and friendly to the present ecosystems.

Rehabilitation and conservation strategies for countries with low forest cover

8. expanding forested area, establishing and managing plantations to enhance production of forest goods and services, while avoiding the replacement of natural ecosystems, and recognising the role of imports in satisfying the needs for forest products and services

9. promoting the regeneration and rehabilitation of degraded forest areas including through partnerships and building capacities to promote effective participation in decision making, and development and transfer of environmentally sound technologies

10. improving the efficiency of international Cupertino to support the management, conservation and sustainable development of all types of forests and building capacity to monitor forest resources

Related to items 8, 9, and 10, Croatian forests and forestry can be discussed as local, individual cases. Croatia is not a country with low forest cover. The forest proportion is 0.51 ha *per capita*, which is close to the global average. However, along the coast there are no significant management forest areas. Instead, there are many different forms of degraded forests, such as the forests of pubescent oak and white hornbeam. One part of these forests contain garigues, scrubwood, maquis, bushes, and degraded coppice (around 50 % of all Mediterranean forests), while another part of the woodland has reached the ultimate form of naked karst, or stony land. Efforts are being focused on the rehabilitation of woodlands and the regeneration of the most precious forest forms. Due to many burnt areas and the repeated fire-caused forest loss, the rehabilitation should commence in many cases by planting the pioneer species, such as Aleppo pine, in order to develop suitable habitat for the more valuable species as holly oak (*Quercus Ilex*) and some black pines.

Rehabilitation and restoration of degraded lands and promotion of natural and planted forests

11. promoting the creation of new forest resources through plantations and recognising their role in rehabilitation of degraded lands and forests in environmentally critical areas

The proportion of plantations and forest planting, the raising of forest cultures in Croatia is low in Croatia, below 5 %. It is usually in the form of tree plantations along rivers, mainly as the those of poplars, willows, alders, or another species, all in relatively short rotations of thirty years. Tree planting upon karst areas can only exceptionally support the rehabilitation of degraded lands, particularly the abandoned agricultural or burnt areas containing fertile soil. Attempts have been made by raising energy plantations with 5-year rotations, for the production of chipped phyto-substance as secondary fuel.

12. promoting policies to meet increasing demand for wood and non-wood forest products and services, through sustainable forest management.

Although only timber products were required from the forests in recent history, by the end of the last century the attitude toward other values and benefits began to be changed considerably. Globalisation and regional associations, which vertically achieve world agreements, have changed the awareness and consciousness about the general forest benefits. Croatian legislation of the 1990ies prescribed that all firms and other legal bodies that perform economic activities, except for those that manage forests, pay reimbursements for the generally beneficial forest functions. This compensation in the amount of 0.07 % of the income was paid to a special account and was assigned for the restricted purposes, primarily for forest rehabilitation and the related uses.

The growth of the produced and marketed timber in the form of technical assortments is limited by the present management plans, the forest accessibility by primary and secondary forest roads, and also by the accessibility in terms of mine contamination, or suspected mines in the forest area. All these are the reasons for calculating the felling volume as one half of the increment, which will not be changed essentially. This is also the reason for importing a part of the required timber – both exotic species and the autochthonous ones.

In addition, member States may wish to refer to the resolutions of UNFF relevant to the above elements, i.e. resolution 2/2 A paras. 1. -7., 2/2 B paras. 1. -6., 2/2 C paras.1.-3, 2/2 D paras. 1. 4., respectively, and provide information on the implementation of these resolutions, or their contribution to facilitating the implementation of IPF/IFF Proposals for Action.

Implementation of the IPF/IFF proposals for action related to thematic issues of UNFF 3

Please refer to your national report if appropriate, or provide new or updated information on: activities undertaken since 1997, progress made, constraints encountered, lessons learned, and issues that have emerged, as well as relevant information related to means of implementation (financing, transfer of environmentally sound technologies, and capacity-building) to support the following actions:

Economic aspects of forests, including trade

13. valuation of forest goods and services (this may include, among other things, the development and use of new valuation methodologies, valuation of a wider range of goods and services, and policy decisions that reflect a more comprehensive assessment of forest values)

After World War II, a new category, named “social property”, was established by nationalisation of many private goods including forests. It did not relate to any trade. The valuation of forest goods and services mainly related to political decisions, rather than the economic ones. As regards Croatia, there are some specific features to be considered. The forest areas that should be returned to the known private owners of the time before World War II have a proportion of 24 %. The Church claims 1.8 % of the total forest area, while other owners do not have any significant proportion, since the most ownership transition happened mainly after World War I. However, many specific features caused by historical events have until today left some open issues. There have thus been no answers to the question what to do with former land communities, property municipalities, and the forests belonging to different societies, institutes, banks, firms, etc.

When discussing a forest, it is always necessary to consider forestland. Are the two – forest stand and forest land – common goods? Further on, sustainability, protective forest value, aesthetic features, social, political, cultural, and religious features are additional issues to deal with. All this is a system of values, a part of nature’s blessing. It requires work on the one hand, and acquisition on the other. However, nature itself should be encouraged. This then entails the known costs expressed as the value of the works such as forest amelioration, protection, rehabilitation, etc. The following are some instances of the valuation of forest goods and services in the Republic of Croatia:

- Since forest is a complex ecosystem, hunting as its constituent part becomes a market value, which can be valued.
- Valuation should also encompass other measurable forest values, such as absorption of CO₂, and the storage of C, the proportion of which is 50 % of wood content. Since the Kyoto Protocol this has certainly become a market value, which is attempted to be objectified and evaluated.
- It should be considered in many cases whether there are substitutes for forest values of same or similar properties. If so, the valuation will still be affected by social factors in terms of, say, recreation forest values, landscape beauty, which is significant in tourism, customs of indigenous people, current economic trends, population of the given area, etc. The use of many of these values

has been compensated for from a part of the income from non-forest economy as a flat rate (see Item 12).

- Croatian forestry pays reimbursements for water (streams) – an absurd factor involved in the assessment of the forest values. Forests are the most valuable safeguards of water and its storage. Instead of reforesting bare land, the ministry of water resources charges forestry for the best service forest is doing throughout its lifetime.
- In case that forests should be valued as to the infrastructural facilities of common interest upon forestland, a method established by the *Statute on replacements and amendments of the Statute on forest management* was used from 1997 until (with later amendments) 2003, as well as the *Statute on the criteria for evaluation of the nationalised agricultural land, forests and forestlands* of 1998.
- Within the consolidation with the EU guidelines, the *new Law on classification of unprocessed timber* regulates the measurement and classification according to the species and quality of unprocessed wood (2004). The value is established by the product of the price unit for the species and quality of the wood assortment and its measured volume/mass.
- CF Ltd. meets the ecological criteria for their products, such as wild plants and medicinal plants, wild berries, fungi, biologically produced honey, etc. In accordance with the assessment of the protection of biological forest diversity, CF Ltd required and received the licence for carrying out expert supervision of the ecologically sound agricultural production (2003).
- The Institute of Croatian Tourism did a research on the ambient value of coastal forests, which is mainly valued through tourism. It was confirmed that Mediterranean forests were a part of the tourism products, that they are regarded by tourists as one of three most significant factors, and that tourists are willing to pay higher accommodation prices within the landscape with preserved forests.
- Croatian government made a decision (2002) on passing a regulation on direct supervision of the prices of unprocessed timber: logs for veneer and peeling; sawmill logs, railway sleepers, and firewood.
- In a similar way, the replacements and amendments of the Law on Forests of 2004 cancelled the ban on the exploitation of clay, sand, gravel, and stone from forestlands. This separates the exploitation of mineral raw materials from the prohibition of devastation, deforestation, and clear cut of forests, classifying it as a category of acquiring the right of using a forest or forestland.

14. the amount, scope, or quality of market data and information for wood and non-wood forest products and their substitutes

The official statistics of the Republic of Croatia is a data source on wood and non-wood forest products, but not on the non-commercial forest benefits. A study was made in collaboration with many subjects, such as the CF main office, several ministries, agencies and similar institutions. It was more difficult to find data for the substitutes, e.g. polymer materials, since this branch of economy has been devastated over the last fifteen years. The data on exploitation and processing of wood are obtained from the industrial processing of wood and the production of pulp and paper. The data on hunting were found with the CF Ltd. and the Croatian Hunting Association.

Valuable data on environmental protection are available with the Agency for Environmental Protection established in 2002 by the decision of the Croatian government. The agency collects, comprises and processes data on the environment. The data on logging and wood industry are transferred to the UNECE. The certification of all Croatian national forests has increased the profits on the market of the certified wood products. This fact has not been stated.

15. use of economic and policy instruments to facilitate progress toward sustainable forest management (these may include improved tax policies and forest revenue collection systems)

The principle of sustainable forest management has been incorporated in the forestry policy and legislative, and implemented in all programmes and plans. Sustainability relates to economic, social

and ecological effects as three basic factors. They will be introduced to all the lower levels of the trade company which manages the national forests, the 4/5 of all Croatian forests, and around 85 % of all produced wood assortments. The ongoing restructuring of the firm will facilitate the process. The accession of RC into WTO, and the EU accession talks will alleviate some non-market dictation of the wood product prices and the manner of wood sale. This would encourage sustainable management. Efforts are made for the reduction of logs and sawmill timber export, and the encouragement of the export of wood products of higher processing levels.

CF Ltd. manages Croatian forests through their sixteen secondary-level forest management offices, 169 forestry units, and seventeen work units of third level. Around 600 forest districts managed by forestry units are the areas upon which biological diversity of forest ecosystems must be sustained.

Private forest owners in Croatia possess today less than 19 % of all forests (around 460,000 ha of forestland), around 12.5 % of growing stock, slightly above 80 m³/ha of the mean growing stock. Due to the fragmentation of private forestlands (around 600,000 forest owners), an average property area is 0.75 ha, and the forests are devastated and left with a damaged structure. The national forest service takes care of their management, silvicultural work, protection, afforestation, and felling assignment. Private forest owners only seldom establish associations. There is hardly any sustainable management of private forests. The owners are often satisfied with a single yield of growing stock, as a solution of their current problems. However, this does not apply to Gorski Kotar, the best-forested Croatian region, and some other exceptions in other parts of the country. Local communities, counties and the capital city of Zagreb encourage the improvement of the private forest status in their areas.

Forest management plans are the basic specialist regulations for forest work. They are made by CF Ltd., and confirmed by MAFWM. A single forest management area makes the realisation of the sustainable management in Croatia feasible. District plans are subject to revision every ten years. Such long-term forest management in terms of area and time safeguard wood and non-wood goods, as well as the non-commercial forest services.

16. efforts to reduce negative impacts of trade

There are no data for Croatia. There are efforts to eliminate negative impacts of market and trade by public bidding of all technical assortments placed on the market and by long-term contracts with domestic wood-industry firms.

17. participation in forest certification and labelling schemes and work toward mutual recognition and comparability of such schemes

In late 1990ies, CF Ltd. acquired FSC, a group system for the certification of the forests managed by the company, with parallel issuing on national level to reach its own national standards of forest certification based on international principles and criteria (FSC P&C, PanEuropean C&I – PEFC). In 2002 CF received the FSC *Certificate of Registration*. with the licence for using the FSC logo on their products (sawmill logs and veneer logs, technical roundwood, pulpwood and firewood) in accordance with FSC rules. This is the confirmation of management by strict ecological, social and economic standards. The certificate is a continuing process of behaviour in forest management by strictly respecting environmental, social and economic regulations, a permanent attitude, which includes most of the IPF/IFF proposals. The level of information is raised through lectures, announcements, and five workshops already held. The donation of the government of the Kingdom of Netherlands, with the financial means from the WWF/World Bank Alliance, enabled the making of the national norms for forest certification. Further promotion of the environmentally responsible, socially beneficial, and economically sustainable forest management.

18. efforts to reduce illegal trade (exports from or imports into your country) in wood or non-wood forest products. Please indicate achievements made, lessons learned, and constraints encountered, and planned initiatives.

Due to the negligible imports of forest wood assortments into Croatia, which cannot be said for final products, worth mentioning are only probable illegal exports of logs and sawmill timber, and some illegal cuts in private forests for personal needs. Illegal cuts and exports of timber from Croatia devastated one part of valuable forests on the Croatian territory occupied between 1991 and 1995.

The talks with the EU in 2005 will certainly entail consultations on the issues involving wood and non-wood products, and the EU export-import quota. The current status of the unsettled market in Europe, with illegal exports at dump prices, does not suit Croatian forestry.

Forest health and productivity

19. If damage to forests from air pollution is a significant problem in your country, please provide information on recent national strategies or programmes to minimise damaging air pollution. Please indicate if your country is involved in any international co-operation efforts aimed at strengthening scientific knowledge, increasing information access or reducing the impacts of long-range air pollution on forests, as well as your views on the role of enhanced co-operation at the regional and international levels to facilitate such work.

Arriving from neighbouring countries, or across them, to Croatian forests, acid rains based on nitrogen and sulphur compounds have been a significant reason for concern for several decades. Since 1990, the pollution coming from domestic industry, chemical processing, etc. has been reduced considerably owing to the termination of many production plants.

Continually since 1987, Croatia has participated in the international co-operative programme for the assessment and monitoring of the damaging impacts of air pollution on forests (ICP Forests). Considering the variability and diversity of forest ecosystems, their spatial distribution, structure and silvicultural methods, monitoring is carried out at two levels. Level I is related to the basic plots with 16 km × 16 km networks; Level II concerns bio-indicating plots with 4 km × 4 km large networks. The assessed degree of forest damage is close to the one assessed in Europe.

The notification on succession has made Croatia a party of the Convention on the long-range transmission of air pollution (LRTAP) and the Protocol of the Convention on unified monitoring and assessing the long-range transmission of pollutants in Europe (EMEP protocol).

By accepting the National Environmental Plan (2001), and within the framework of the National Conservation Strategy (2002), Croatia set long-term targets on the reduction of pollutant emissions. Along with the obligations of earlier protocols (reduction of the emissions of sulphur, heavy metals, and organic pollutants; the prevention of acidification, eutrophication, and ground ozone, etc.) the Kyoto Protocol introduced new obligations. Several projects have started with MEPPP, e.g. calculation and mapping of the critical impacts of acid constituents from the atmosphere upon Croatian forest ecosystems (ICP Mapping & Modelling), illustrated on the case of Gorski Kotar, Zagreb region, etc. Mapping has so far encompassed four squares of the EMEP network. Forest is regarded here as receptors for the calculation of critical impacts. All these data are sent to the European database CCE. The national network for permanent monitoring of air quality is an obligation imposed by the LRTAP convention of the respective programme EMEP. For understanding the emissions and absorption of the glasshouse gases, Croatia is included in the international programme IEA Bioenergy – Task 38 „GHG Emission Balances of Bioenergy Systems“. The National Inventory Report of Croatia coincides with LUCF Sector Good Practice Guidance Institute EKONER. The last report refers to the period 1990 – 2002. In the “measureless” scenario, the carbon binding is at an annual level of $8.07 \cdot 10^6$ t CO₂. Afforestation possibility for 330,000 ha of productive non-covered forestland is a chance for an absorption of around $2.2 \cdot 10^6$ t CO₂. However, discussion on

methodology as on starting point 1990 is still going on within the convention. This is also the reason for the fact that the signed Kyoto Protocol 1999 has as yet not been ratified. Croatian appeals at 10th UNFCCC 2004 Conference were rejected, and the talks are continuing.

As to the health of Croatian forests, the most critical is the one of fir stands. The dieback of this species is alarming, particularly in Gorski Kotar. However, the dieback of oak forests, primarily pedunculate oak, is the consequence of other factors, e.g. the many hydro-technical operations, the development of the road infrastructure, and the cutting and barring the natural groundwater streams, etc. There are certainly other causes, such as windfall, ice-break, and other natural disasters that cause forest loss and degradation.

The introduction of the “environmental tax” and the establishment of the Fund for Conservation and Energy Efficiency (2004) have created financial resources for intensive investments into the amelioration of waste disposal areas and the increase of energy efficiency with all positive effects for the environment. This at first does not include the wild waste dump areas, which are commonly found in the forest and forestland. Around 2/3 of the means are assigned for cleaning the waste disposal areas. Since the proportion of the biomass is basic for the recyclable energy resources, further progress in environmental care is expected by the reduction of fossil fuel use.

Maintaining forest cover to meet present and future needs

20. Please indicate progress made and lessons learned in efforts to harmonise or to make compatible policy frameworks in your country (e.g. national forest programme or a similar policy framework for forests, biodiversity strategies and action plans, national action plans to combat desertification, etc.) that collectively address the full range of forest values.

Many relevant factors traditionally participate in designing a compatible political framework of strategy and forestry programme: participants of forestry activities, local communities, political/administrative social segments, and many non-government environmental societies. Many conflicts are solved within the oldest professional society, the Croatian Forestry Society and its journal *Šumarski list*, which has started its 129th year of continuous life. The basic economic framework is the documents that define the management unit plans, and the management programme for karst forests. The doubts related to the successfulness of implementation of biological diversity conservation are worth mentioning. E.g. as related to the conservation of mixed forests, too short rotations of the main management species, excessive use of chemical substances, insufficient care for the tree species of lesser economic significance, the acceptance of the known procedures for soil protection by choosing suitable techniques for particular jobs, convenient choice of fuels (bio-decomposing ones), etc. The forest management plan for the whole area of Croatian forests was first made in 1996, also presenting a document on forest inventory. It contains a projection of forest management in the whole country, regardless of market factors.

Unfortunately, the legislative framework is insufficient for dealing with subordinate forest products. However, the regulations are supplemented in co-operation with several ministries, e.g. on collecting wild plants and medicinal herbs for commercial purposes. Records on collected species and their quantities have also been established.

21. Please provide information on recent efforts to assess long-term trends in national supply and demand for wood, non-wood forest products and services and whether your country’s national forest programme or similar policy framework for forests takes into consideration future needs for forest goods and services. Please provide views on how enhanced co-operation at the regional and international levels, including through UNFF, could further facilitate implementation of the IPF/IFF proposals for action

For an assessment of the long-term demands and trends for wood and non-wood forest products, Croatia can supply all timber for its wood industry and the manufacture of boards, pulp, and paper from its own forests, by providing recycling of additional raw materials. In terms of non-wood

products in the widest sense, their permanent promotion should be ensured both as to its production and quality.

Other non-wood forms of wood products should be regarded as nature gifts that require intensive scientific and practical attention. The future sense of the *Forum on Forests* is most probably connected with this topic.

In addition, member States may wish to refer to the resolutions of UNFF relevant to the above elements, i.e. resolutions 3/1 paras. 1.-12., 3/2 paras. 1.-7., 3/3 paras. 1.-13, respectively, and provide information on the implementation of these resolutions or their contribution to facilitating the implementation of IPF/IFF Proposals for Action.

Implementation of the IPF/IFF proposals for action related to thematic issues of UNFF 4

Please refer to your national report if appropriate, or provide new or update provide information on: activities undertaken since 1997, progress made, constraints encountered, lessons learned, and issues that have emerged, as well as relevant information related to means of implementation (financing, transfer of environmentally sound technologies, and capacity-building) related to the following elements:

Social and cultural aspects of forests

22. promoting the fair and equitable sharing of the benefits arising from the utilisation of forest genetic resources and addressing the issue of intellectual property rights, including the identification of the origins of forest genetic resources, taking into account work undertaken by the Convention on Biological Diversity and other international agreements

There are no reliable reasons for regulating the intellectual property rights on genetic resources of forest trees. Local communities (counties, cities) distribute forest seedlings to private individuals who are interested in the rehabilitation, or growing of forests. Incentives and activities for the conservation and protection of the Croatian forest genetic pool are important in terms of conserving the biological diversity, and the prevention of species extinction. The legislative on forest protection, the conservation of the genetic pool, forest seed/seedling production, cares for the autochthonous species. The supervision of the implementation of the regulations is the task of the Ministry of agriculture, forestry and water management, i.e. its Forestry Management Department. The law on marks of the geographic origin, and the marks of the product/services authenticity will facilitate the mapping of forest seed plantations and stands. The protection of the new species by realising the rights on intellectual ownership has been achieved for several forest tree species (e.g. willow and poplar)

23. strengthening the role of women in sustainable forest management, including through capacity building and greater participation in community-based forest management

The trade company CF Ltd., which manages national forests, employs women in many suitable jobs, both in practical work, or supervision, though quite rarely at managing posts. There are no data on the benefits, awards, or similar acknowledgements for the contribution to the knowledge of forest management at a higher level. This does not relate to the CF staff, where a statute regulates such credits. NFPS requires employment of local people in rural areas, both men and women at similar proportions, for occasional work or regular employment, as a measure of preserving their rights and benefits as to the local forest area and the conservation of the biological diversity of forests.

24. integrating local and indigenous communities in sustainable forest management programmes, particularly as regards (a) recognition and respect of the customary and traditional rights and privileges of indigenous and local communities, (b) participation in decision making regarding the management of forests, (c) the attainment of secure land tenure arrangements,

(d) capacity building and technology transfer for sustainable forest management directed at indigenous and local communities

Local population and communities mainly takes place in offering wood that has remained after logging and hauling wood assortments, e.g. firewood, or poles used in agricultural activities, etc. Along with practical activities for afforestation by financing forest tree seedlings from local communities, the Centre of Sustainable Development of Rural Areas holds workshops, e.g. *Participation of the Public in Sustainable Forest Management*.

Traditional forest-related knowledge – TFRK

25. inventorying, cataloguing, and applying traditional forest related knowledge for sustainable forest management and promoting research on TFRK with the involvement of the knowledge holders

Understanding of the traditional forest related knowledge, and the involvement of indigenous people and communities with TFRK, it is important to know national and private forests in Croatia (see Item 15). In reality, with some exceptions, private forests have been left unmanaged. In most cases, forestry criteria are not applied to them. Despite their fragmentation and relatively small area of the average forest property, private forests have potentials for the contribution to higher offer of wood and non-wood products in Croatia.

The Trade Company CF Ltd. manages national forests, which have the potentials for positive impacts upon the development of villages.

With the acceptance of the *Law on the Confirmation of the Convention on Biological Diversity*, its principles are being incorporated into laws, statutes, regulations, and strategies. Since this is an interdisciplinary issue, the Ministry of Agriculture, Forestry and Water Management co-operates with other national bodies, particularly with the *National Institute of Intellectual Property* (the acknowledgement of TFRK), and all who deal with biological diversity and possible traditional forest related knowledge or other ecosystems.

There have been no available data on required aid from international organisations for partnership in maintenance of co-operation with the promoters of TFRK.

26. supporting the application of intellectual property rights and/or other protection regimes for traditional forest related knowledge, and the fair and equitable sharing of benefits arising from the use of traditional forest related knowledge, innovations and practices

A way of supporting the national forests, the inclusion of indigenous people into activities and making agreements on temporary work by carrying out occasional, mainly seasonal jobs with CF Ltd., according to the *Statute on Inventive Activities* (1999), regulated the rights and obligations connected with inventions, technical promotions, rationalisations, etc. This could relate to TFRK.

A basic organisational forest unit – the forestry management unit is the most common bearer of collaboration with local management and self-management. Accordingly, this refers to the traditional ways of life near forest, forest work, innovations and acquisitions of work skills. This is best used in the participation of the local forest workers in training new, young workers.

Croatian forest procedures, work methods, tools, machines, protection devices, etc. only rarely originated from one single place. A new method was often applied simultaneously in distant forest management areas, and was accepted in one place, or rejected in another.

One small part of TFRK is included into scientific programmes financed directly by Croatian forestry. This primarily relates to the knowledge connected to the “subordinate” forest products and the generally beneficial forest functions.

The reason why indigenous people who have worked in forests for generations, are excluded from the forest related knowledge is probably connected with the plans and programmes of different levels of forestry schools and academies. The link between history and the present time is lost. A restoration of cultural approach to education and studies should attract the creators and performers of the teaching process, who should, among others, be also informed on the value of TFRK.

- Traditional knowledge connected with forests and forestry related to biology, ecology, technology, and culture at equal proportions should be included into curricula and training programmes at different educational levels and for different purposes.
 - (a) One hundred students enter annually the studies at two university courses (forestry and wood technology) with the only Forestry Faculty in Croatia. After graduation, they will start their years of service by the end of the first decade of 21st century, and terminate them by retiring around the middle of the century. Unless TFRK (*traditional forest related knowledge*) is included into their education, they will be faced with practical drawbacks, especially in confrontation with indigenous people in forested regions. The present generations should be trained in terms of TFRK in view of acquiring licences for forest work related to specific jobs.
 - (b) CF Ltd. is registered for education and training of forest workers, and as such must introduce TFRK into their programmes.
 - (c) Education and training for special events, such as critical situations, are carried out in schools for fire fighting and civil defence, and in university specialist three-year courses. These, too, must include traditional knowledge connected with forest and forestry into their curricula.
 - (d) Among other issues, there is insufficient co-operation with respective ministries, school institutes, and other institutions related to curricula renewal related to TFRK and other fields (e.g. team research work and international collaboration with foreign lecturers, etc.), education in information literacy, adjustment to the programmes of forestry development within EU, and inclusion into the *European Credit Transfer System*.

By accepting the *Law on accepting the Convention on Biodiversity (CBD)*, Croatia has become a party of the Convention (CPs) with all rights and obligations. The report like UNFF 5 helps in clearing and encouraging many issuing tasks of the Convention.

Scientific forest-related knowledge

27. disseminating scientific knowledge to all interested parties, including through new and innovative ways, and strengthening capacity and mobilising funding for national and regional research institutions and networks

The establishment of *National Forestry Policy and Strategy (NFPS)*, focused entirely on the increase of the contribution to national economy by sustainable management, use and all-encompassing conservation of forest resources and biodiversity through the application of research results, the respecting of international standards and accepted obligations, and the acceptance of the local community rights.

The passing of the *National forestry policy and strategy* included the highest Croatian scientific institutions such as the Academy of Forestry Sciences, Forestry Faculty, Forestry Institute, and others. In the same way, all future adjustments of laws, acts, and other regulations will be accompanied by specialist valuating groups to support the adjustments, or management of the fields of common interest, by comparing and adjusting the regulations related to Croatian forestry with the world legislative, i.e. by accepting the guidelines of UN, FAO, IUFRO, etc.

The projects with neighbouring countries will help in extending the knowledge to a wider circle of participants. Such was also the project named *Study on anthropogenetic pollution after the war and conservation measures in Plitvice National Park and the Bihac area in the state-border region with Bosnia&Hercegovina* (a project with EU).

28. enhancing interaction between scientific research and policy processes, including priority setting of research, addressing of knowledge gaps and using scientific knowledge to support decision-making

The interaction between scientific research and policy processes related to forest dieback, including international co-operation, is significant. E.g., the monitoring of the forest health in 2001 and 2002 established a mild forest damage, while the national project named *Protection and rehabilitation of coastal forests* credited by the World Bank involved numerous significant components related to fire protection. This includes the acquisition of fire fighting equipment, forest road building for fire-susceptible forestlands accessibility, staff training, forest rehabilitation infrastructure, e.g. forest nurseries, etc.

According to the Forest Law of 1990 (NN 52/90), its replacements and amendments (NN 5/91, 9/91, 61/91, 14/93, 26/93, 76/93, 29/94, 33/97, 76/99, 8/00, 13/02, 100/04, and 160/04), statutes, regulations, and other acts based on it, primarily the Statute of CF Ltd., the Management Board is obliged to issue regular reports on the work of the firm to the Croatian Sabor (parliament), at least once in a year. The parliament will also be submitted the proposal of the long-term and middle term forestry development plans, and the status changes of the company. Financial reports are submitted quarterly. This, of course, refers to the national forests, the 81 % of all forest areas, both covered and non-covered, and to around 88 % of the whole Croatian growing stock. The annual reports on business, forest status, essential sustainable management issues, the obeying of Croatian laws and the international conventions, resolutions, protocols, etc. are publicised upon being accepted by the Croatian Government, i.e. the Croatian Sabor. There are many forms of free reports that are accessible to the public, e.g. annals, periodicals, publications of the results of sponsored scientific research, etc.

This also includes other information related to the obligations entailed by the Forest Law, e.g. the general targets and the organisation of public activity of the forestry as branch of economy, with money flows including the following: (i) forest owner obligation of paying 15 % (uneven-aged forests) to 20 % (even-aged forests), and 15 % in karst areas, of the revenues from wood sale, as a contribution to financing *simple biological reproduction* (preparatory work on forest stand regeneration; sowing and planting of forest seeds and seedlings; stand tending; rehabilitation and care for degraded stands; choice and assignment of trees for felling; forest protection, digging and maintenance of forest lanes; making management plans and programmes, etc. – *Statute on forest management*, NN 11/97). An additional 3 % for *extended biological reproduction* (afforestation of non-covered forestlands; conversion of coppices and degraded forests into seed forests; management of the deteriorating lower forest layers forest roads,); (ii) all industrial commercial companies in Croatia pay 0.07 % of the revenues as the reimbursement to CF Ltd. for investment into forest(ry) promotion and the conservation of the non-commercial goods, or forest functions, including the rehabilitation of degraded forests in karst areas, the rehabilitation of the forests damaged by any form of deterioration (forest dieback, forest fire, etc.), and forest research.

Having become IUFRO members through of their institutions, Croatian scientists collaborate in research projects. Some of them also work on the establishment of the global information system, a long-term job, which entails the issues of terminology and the generally accepted definitions of specialist terms.

Monitoring, assessment and reporting, concepts, terminology and definitions

29. improving information on national forest resources, making the information widely available, assisting other countries in their related efforts

As explained above, the current supervision is permanently compared to former experience in forest ecosystems, and, combined with other factors, its possible impacts in desertification. Drought issues are emerging in coastal regions, though they are the causes of planting and sowing failures in

continental parts. Urban forestry makes efforts for solving these problems by watering large areas and also by implementing the saving *drop by drop* system. Such systems are less used in regenerating, or supplementing the natural habitats after unsuccessful natural reforestation in case of summer droughts.

Croatian forestry has developed a system of statistical monitoring of the economy, conservation and sustainable development of all forest types for its own needs. It is only partly adjusted to the international systems. However, a bigger problem is the disharmony among the forestry systems in terms of monitoring the same events. The information related to the rehabilitation, supervision, and reporting on the promotion and implementation of sustainable forest management is available to all interested groups, the government and the public through Internet, public media, and the available internet press. Information certainly plays a significant role in bringing closer the public, politicians, economists, etc. to the forestry work on sustainable management, conservation of biological diversity, and the realisation of wood and non-wood forest values and goods.

Criteria and indicators of sustainable forest management

30. developing and using criteria and indicators of sustainable forest management (at national level and/or subnational level and for policy, planning, management and/or monitoring purposes), and participating in regional and/or international C&I processes

The preparations for improved and advanced international reporting and information systems in forestry, and a possible global forest resources assessment (*Forest Resources Assessment – FRA*), with the assessment of wood value and non-wood forest values, are a commendable enterprise. With added consolidation of the relevant criteria and indicators (C&I) for sustainable forest management (SFM), this is a huge undertaking in terms of Croatian foresters' experience.

We are perfectly aware of the difficulties encountered by Croatian foresters in promoting forestry principles in many daily activities and issues. These entail the understanding that forest fire is the *burning of tree and soil*, which entails the rehabilitation of both in order to restore the lost biological diversity. They further entail the differentiation of natural and semi-natural forests, the fight against prejudices, false decisions, etc. on the way toward developing criteria and indicators (C&I), as well as acceptance of forest(ry) principles (FP).

Many forms of assistance offered by developed countries support the interpretation and dissemination of relevant management related information, protection and sustainable development of all forest types. E.g. there are reports like this for UNFF; meetings of national forest directors of Central European countries; practical work in organisations such as IUFRO, FAO, ISTVS, IEA, and ILO. Besides routine information, every such meeting requires the collection of some new data.

The Republic of Croatia closely co-operates and exchanges information with Central European countries, primarily Austria and Germany (particularly the Federal State of Bavaria), and their official bodies and organisations. The consulting includes, among others, the methods of collection and synthesising information.

In order to reach the communication of the national information related to the *National Forestry Policy and Strategy*, the establishment of a service for non-wood products is suggested, particularly for conserved forestlands, the forests for special purposes. The development of harmonised, cost-suitable all-encompassing method of collecting and coinciding forest information is a demanding task, requiring timely achievement of various required data. The most difficult part at this is to assess and undoubtedly present the criteria and indicators (C&I) for SFM and the environment, social and economic purposes, as well as non-wood products and services. This work is also self-encouraging for Croatian forestry.

The monitoring of financial flows is closely connected with many regulations of the national monetary policy. It is subject to a wide supervision, which ensures a relatively stable information

inevitable for making plans and decisions. However, further efforts should be made for higher transparency in the sphere of monetary affairs.

The advantage of the system for data collecting undoubtedly promotes sustainable forest management, together with social, cultural, economic and many other benefits. In terms of defining social criteria and indicators for sustainable forest management, the assistance of the ILO in designing the activity of forest inspection is significant. Standard typology of the EEA indicators is used likewise. It is based on the DPSIR system (Driving Forces – Pressures – State – Impact – Response). The purpose of this is better understanding of ecological issues in forest ecosystems.

In addition, member States may wish to refer to the resolutions and decision of UNFF relevant to the above elements, i.e. resolutions 2/2 E paras. 1.-4., 4/1 paras. 1.-16., 4/2 paras. 1.-8., 4/3 paras. 1.-18, respectively, and provide information on the implementation of these resolutions or their contribution to facilitating the implementation of IPF/IFF Proposals for Action.

III. Preparation of the Report

31. Describe the process of preparing this report, including which government agencies and stakeholder groups were involved, and the extent to which they contributed. Provide information on successes, challenges and lessons learned in the preparation of this report.

Upon studying the topics of each particular issue, or issue groups, we contacted respectable authorities for particular fields, and discussed the given questions. We received, as a rule, *written answers*. The editor's team prepared final answers using the received papers. A series of explanations was thus obtained, with occasional inevitable overlapping caused by the particular topic and the question contained in the instructions. One part of the collaborating team worked on the preceding reports. Owing to the described procedure, we came to collaborators who were *really interested in the given issues*. Incomplete answers are the result of the general status of the economy, which inevitably reflects upon forestry. The experience with preparing the report showed that *the estimated time is significantly too short*, since the participants are employed in regular jobs, or were prevented by other obligations.

Many international regulations were not available to most experts, even the ones accepted as obligatory by Croatia. *The central database* of all such documents that would be available to all interested, e.g. in MAFWM, would significantly help in preparation of many domestic laws, regulations, or similar reports. The costs of using, or purchasing, should not be an obstacle, as is the case with national/international standards.

The Ministry of Agriculture, Forestry and Water Management with its Forestry Direction will propose the publication of the Croatian version of the extended UNFF 5 report, the amendments and many international obligations, with the purpose of informing a wide circle of forestry and non-forestry experts and even politicians. This will highlight the significance of TFRK and other “forgotten” inherited knowledge of former generations. This will at least alleviate constant comebacks to, say, the community of goats and forests (with worthy exceptions), or the task of the pioneer species such as Aleppo pine and black pine, alder, birch, etc. in the rehabilitation of forest soil and its preparation for more valuable forests. Indeed, there were times when monuments were erected to those who converted forests into agricultural land by burning them. We today raise monuments to those who manage forest sustainably for the conservation of the biological diversity of the forest ecosystem. Therefore is the raising of olive trees upon burnt forestland a devaluation of both the forestry profession and TFRK. A TV inquiry involving 3,400 viewers investigated, which is more significant for Croatia, environmental issues, or the co-operation with the Hag Court (as a pre-condition for accession into EU). The answers revealed the public opinion – 87 % of the asked consider environmental problems more significant for Croatia, while the remaining 13 % think that the preconditions for accession talks were essential