

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

REPUBLIC of C R O A T I A

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I.

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II.

General

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

- It is evaluated that the IPF / IFF proposals for the action in the national context encourage and speed up collecting and sorting of information on fundamental forestry acts from the national to production level (laws, amendments, strategies, plans etc.). The termination of drafting the *National Forestry Policy and Strategy* (July 2003), and its approval by the Croatian Government, as well as the procedure of certifying state forests (about 2,000,000 ha) are two most important achievements during the last year. The Croatian forestry has created conditions which were recognised as being above the average and it has obtained the FSC certificate. This confirms that the forestry management is economically sustainable, socially responsible and ecologically acceptable.
- The restructuring of the *Croatian Forests Ltd.* company (Hrvatske šume d.o.o.) which manages about 80% of state forest land and produces about 90% of all wood assortments in Croatia, is a lasting task that has to be conducted parallelly with the above mentioned tasks. The most important result last year was the transformation of the above mentioned company from a public company to a company with limited liability.
- In the report's supplement, different viewpoints have been set forth, as well as the problems related to drafting of the report, mostly caused by differences in approaches to forestry, rich historical heritage and too large number of elaborated topics.

(B) *Development and implementation of your national forest programme or similar national policy framework for forests*

- Considering the commitment of the Republic of Croatia to join the EU, the evaluation of the implementation of regulations and the adoption of conclusions on the need of further modification of legal frameworks have been speeded up, because of the observed difficulties in the implementation of key provisions and the harmonisation with the accepted international arrangements and undertaken obligations, notably of the laws on forests, evaluation of wood and non-wood values of forest and research.
- The conclusion on the need of speedy modification of necessary legal frameworks for forests and forestry, the implementation of key provisions and the harmonisation with international agreements contributed to the acceptance, by the Croatian Government (*Official Gazette* of the Republic of Croatia No. 120/03) of the *National Forestry Policy and Strategy* (NFPS). This document speeds up the adoption of the new Forestry Act and accompanying laws, regulations and directives on forest management and the evaluation of wood and non-wood values of forest. By this document, the Croatian Government has established long-term goals in this field. In this, the starting point was the current situation, a list of goals was drafted, as well as the contents, proposals, principles and modes of work regarding sustainable forest management and its biodiversity, thereby establishing the policy of the Croatian forestry. All tasks were classified in three time periods in order to define activity related to drafting of implementation documents.

- In accordance with its policy, the Republic of Croatia is constantly present on the international forestry scene and has signed or signed and ratified the majority of agreements and conventions which either directly or indirectly affect forest management.
- The list of major agreements and conventions includes:
 - Convention on biological diversity (CBD)
 - Convention on long-range transboundary air pollution
 - Convention on international trade in endangered species of wild flora and fauna
 - Convention on wetlands of international importance, especially as waterfowl habitats
 - International convention on plant protection
 - Kyoto protocol
 - Resolutions and General declarations of four Ministerial conferences on the protection of forests in Europe
 - Convention on the conservation of European wildlife and natural habitats
 - EEC directive 79/409 on bird protection in Europe
 - EEC directive 92/43 on the protection of habitats of wild animal and plant species in Europe with the commitment to the establishment of ecological networks Natura 2000.

Implementation of resolutions and conventions which are primarily concerned with the forest protection and the protection of other plant and animal life, as well as the harmonisation of regulations and institutions with the corresponding ones in the European Union and developed countries, even before the creation of this strategy, are high priority tasks defined not only by this document.

- By signing and ratifying these international agreements, The Republic of Croatia has confirmed its commitment to sustainable management of all forests and a shift away from the traditional concept of sustainable timber production and to giving equal importance to the environmental and social values of forests. The certificate that the Republic of Croatia has received from the Forest Stewardship Council (FSC) for 2,000,000 ha of forests under the management of the *Croatian Forests Ltd.* is evidence of the commitment of the Republic of Croatia to sustainable management of its forest resources. The process of the creation of state forest certification standards is ongoing.

(C) Mechanism or initiatives to facilitate stakeholder participation, including indigenous and local communities, in forest planning, decision-making and/or forest management

- From the Croatian viewpoint, the most important incentive and support of IPF / IFF is in drafting proposals to include third parties which are somehow related to forests to all mentioned tasks: local communities from the territory rich in forests, local population and non-governmental organisations which take care of sustainable forest management and biodiversity of forest eco-systems. After discussion, incentives, amendments, different point of views etc. have been included into the final version of the NFPS and were adopted by the Croatian Government in July 2003.

1 Social and cultural aspects of forests

1.1 *Fair and equitable sharing of the benefits arising from the utilisation of forest genetic resources*

- (a) Within a combined ecological-social group of forest influences, forest serves as a gene-pool protection, it ensures great biological diversity and many other goods. From the viewpoint of general nature protection, the impact of forests on the region they occupy in the Republic of Croatia where they cover about 43.5% of the mainland area and a little more than 0.5 m³/per capita, is huge.
- (b) The Forest and Hunting Division of the Ministry of Agriculture and Forestry is responsible for forest protection, *conservation of gene pools*, forest seed husbandry and nursery production. This Division is further divided in two Departments: the first is responsible for forest management and hunting, and the second as mentioned above.

1.1.1 / IFF 56 j

- The promotion of the ownership rights and their compensation regarding forest genetic resources is a complex and a long-lasting process. The current situation will be illustrated by numerous facts on specificities of Croatian forests and forestry. This task is a lasting one, and it is especially bounding with regard to passing laws, amendments and adopting other legislation. It is also an inter-agency task seeking global answers.

1.2 *The role of women in sustainable forest management*

1.2.1 / IFF 56m

- *The Croatian Forests Ltd* which manages state forests employs women on many work posts suitable for them (nursery and seed production – on cone and seed processing line and silvicultural work) and they rarely occupy management positions. During the last decade, only few women have been forest stations administrators, and they did not assume senior positions. They are especially efficient in ecological service, forest management, promotion of cooperation with the international community, fire-fighting activities, tasks of devising biodiversity and sustainable management, and less often in production, in forest administration or management boards.

1.2.1 / IFF 56n

- Both activities require energy and an energy source. From this point of view, it is interesting to evaluate the role of wood in households, whether it is for cooking, heating, warm water etc. In the middle of the last century in Croatia, wood accounted for about 50% of all energy demand, and today, it has decreased to about 8%. First the electrification and then development of gas network, mostly in cities and towns, and later partly in rural area as well, replaced wood as energy source. However, it needs to be noted that even today, private forests mostly yield firewood (about 53%, or 12% of firewood produced by state forests), largely intended for rural households. The largest part of firewood is still used as split wood, and an insignificant amount is used fragmented, in form of phyto-substances, the so called biomass (woodchips, chopped straw) or briquette and pellets. Apart from several attempts to transfer knowledge on more rational use of woods for cooking, heating or heating of water (except for declaratory explanation for renewable energy sources, what form of heating plants is suitable for villages and smaller towns to resolve heating of buildings and obtaining of hot water), there have been no real progress in adopting energy strategies, as it is not possible without a legislation to support it and its various uses for the need of households, especially having in mind the advantages of such approach.

1.2.1 / IFF 66

- There is no available data on whether the local population, and women in particular, have obtained any privileges, awards or recognition for their contribution to the forest management knowledge. On the contrary, such granting of awards in the *Croatian Forests Ltd.* is specified by the Book of Rules (for detail see ch. 2 regarding the explanation for the creation of TFRK).
- In two cases, recognition was given to an individual and to the Croatian Forests Ltd. company for their contribution to the technical culture: (i) to an individual for his life work in the field of introducing new procedures in regular production and its mechanisation, and in transition from industrial wood to firewood, from wood of 1 m to several meter long wood, thus transferring traditional rural work to forest practice; (ii) annual state award for technical culture was given for the contest among forest workers, and to all workers, engineers and other employees on promoting safe work in relation to sustainable forest management (contest, exhibitions, workshops, symposiums).
- NFPS requires the employment of local population in rural area, of both women and men, occasional or permanent, *as a measure to protect their rights and privileges in relation to local forest land and the preservation of forest biological resources.*

1.3 Enhanced role of indigenous and local communities in sustainable forest management

1.3.1 / IPF 17a

- Considering that the state is the majority owner of forests, the Forest Act and the Articles of Incorporation of the *Croatian Forests Ltd.*, as well as other provisions, clearly define terms for submitting reports, work control (internal and external control), respect of international commitments, as well as behaviour in specific circumstances (hunting concession or concession regarding land).

1.3.2 / IPF 17f

- NFPS (*National Forestry Policy and Strategy*) controls the implementation of its decision through the Group for Monitoring the Implementation of National Forestry Policy and Strategy. The Group is appointed by the Minister of Agriculture and Forestry and is responsible for submitting an annual report regarding the implementation of the strategy.
- Legal framework that will facilitate efficient implementation of the strategy (NFPS) must encourage careful elaboration of systems, including private and community forest management systems, with a view to planning, implementing, monitoring and evaluating national forest programmes that identify and involve forest owners and local communities in meaningful decision-making regarding the management of state forest lands in their proximity, while supplementing provisions for the implementation of the strategy. Drafting and revision of laws to be prepared for public participation should be encouraged through non-governmental organisations (NGOs). Provisions for monitoring should be included in legislation; the possibility of forests or forest land concession and selling of state forest land should be eliminated; laws should regulate that the surface of forest areas has to remain unchanged or be increased.
- E.g. about 16,000 ha of surface of forest areas that were lost due to road construction should be replaced by new forests on non-forest land.

1.3.3 / IPF 29c

- In theory, the formulated policy is an opportunity to reconcile conflicts arising from different land use claims during the preparation of physical plans. In practice, this has not taken place yet. During implementation, each competent body operates autonomously. For instance, *the Croatian Forests Ltd.*

is in charge of forest management, the Ministry of Agriculture and Forestry is in charge of, among other, forests and forest land, while local government bodies provide construction sites with the necessary infrastructure, etc. The strategies foresee modification of authorities, at least in some fields of activities created by political decisions.

1.3.4 / IPF 77f

- Despite the relatively small average holding and its fragmentation, private forests have the potential to contribute more to forest values, especially in terms of processing and marketing of wood and non-wood forest products. Some remedial measures and actions may improve the situation, such as the incentive *for the establishment of owner associations*, introduction of *government subventions* for management of private forest, etc.
- In cooperation between a Croatian scientist and FAO experts, a study on small scale forests and small forest owners in Croatia in 2002/2003 was made. It confirms the current situation concerning private forests in Croatia. It notes that the forest cover is 0.57 ha per capita, that rural population makes only 31% of the population, that agricultural population makes 9% of the overall population, that there are almost 600 000 forest owners with the general forest surface 0.77 ha/owner, that the number of plots is about 1,200,000 and the plot size is 0.38 ha/plot. This data and possible differences in data referred to by other authors arise from different definitions used (forest surface etc.). Only 24% of small forest by private owners is covered by unique economic base of the Republic of Croatia. The growing stock of private forests is less than half in comparison to state forests and differs considerably in lowlands, mountainous or Mediterranean forests. The share of private forests differs significantly in these three regions: about 52% of private forests is in the Pannonian lowlands, about 11% is in mountainous area, and about 37% in the Mediterranean area. Although the size of holdings by private owners is quite small, they are usually divided into two separate plots. Over 50% of cutting wood in private woods serves as firewood.
- There is one owners association on the territory of Medvednica (near Zagreb, capital of the Republic of Croatia) which includes 384 owners who own 231 ha (average 0.6 ha/owner; the smallest partition is 0.07 ha and the largest is 3.5 ha), and it can serve as a useful model and proof that such associations may indeed function. Namely, the current format and regulatory requirements for sustainable forest management plans are based on large management units and are not suitable for small average private owner holding.
- NFPS stimulates the *enlargement of private forest plots* and associations of private owners with the *simplification of management plans* for private forests and *securing funds* for their implementation. By providing additional services, technical guidelines and facilitation of associations of private owners will be enabled.

1.3.5 / IPF 131b

- In several cases, developed countries have assisted the realisation of certain projects, such as: Japan has financially supported the preparation of the *Coastal Forestry Construction and Protection Project*, along with the loan given by the World Bank; Holland has financially supported the certification of state forests, and is now assisting the elaboration of standards for forest certification; FAO is providing its experts for the elaboration of studies, further assistance is expected in the organisation of a more efficient system of fire-fighting in the open, such as forest fire etc. All of the above is to enable the sustainable management of forest ecosystems.

1.3.6 / IFF 56f

- NPFS defines activities regarding conservation of forest resources through the application of ecologically, economically and ergonomically acceptable procedures and through utilisation of other, non-timber products as having the utmost priority which, in accordance with strategic orientation outlined in this document, will have a growing role in the sector.
- Apart from external and rather costly solutions, the Ministry of Science and Technology, within the *Hitra* and *Razum* programmes, has supported several forest technology projects of elaborating of local equipment such as devices for splitting wood, middle and large articulated tractors etc. which are ecologically friendly (for instance, third generation middle skidder will use bio-fuel, all lubrication will be done with bio-oils, tractor management will be ergonomically advanced, etc.). Private forest undertakers, most often the local population actively participate in this, notably in verification of local industry solutions.

1.3.7 / IFF 66

- It is customary that local population, both men and women, work in state forests as permanent workers or are employed for a definite period of time (seasonal work). NPFS supports such approach, notably with reference to female work in the forests (collecting seeds such as masts, manual seed planting, protection of shoots). Unfortunately, forest owners in Croatia do not do any significant work regarding the management of their own forests where they could acquire certain knowledge on their sustainable management.

1.3.8 / IFF 115d

- Throughout history, there have been many changes with regard to forest ownership in Croatia. The current ownership situation was mostly created after the Second World War (the ratio between state and private ownership is approximately 4/5 : 1/5). In terms of history, forest ownership could be traced back in some parts of Croatia to the Roman Empire, whether as part of regular provinces or under military administration. For forests and their ownership, the next significant event was when the Croatia was divided to the part under *civil administration* (under the Croatian Parliament) and *Vojna Krajina* (Croatian Military Border) directly administered by Vienna, i.e. the Habsbourg monarchy. In the civil part of Croatia, peasants were serfs, and forests belonged to the nobility to whom peasants paid (by money or work) the usufruct of their forests. Inhabitants of Vojna Krajina were free and forests belonged to the crown, while the usufruct (grazing, timbering...) was paid by serving military service in the border-guard service. There were also other differences in the part of Croatia under the Venetian rule and on the territory of the Dubrovnik Republic. The 19th century was significant for the development of treatment of forests. In the part under civil authority, forests and other land were divided among peasants or remained in the hands of landowners (without the institute of usufruct). In Vojna Krajina, border guards and their heirs divided forests and other land among themselves or gave it to the state. There remained a common land, included in about 1,200 land communities covering about 220,000 ha of forests. Border guards were allocated about 350,000 ha of forests, while a smaller area with more valuable forests was allocated to the state. Then, 10 property communities (centres of the then regiments) were established. In 1922, regiment communities were nationalised by increasing the state owned forests to about 44.5% of the forest area at that time. After the Second World War, the nationalisation was resumed and state forests increased to 81% of all Croatian forests. The settlement of newly created ownership relations was rather complicated and long lasting process. Just before the Second World War, there existed various forms of forest ownership: state forests, community and village forests, forest by land communities, property forests, church forests, forests owned by societies and associations, by banks and companies and by private owners (about 24,3%). Apart from nationalisation, the reason for small number of privately owned forests probably lies in the agricultural reform of large forest holdings owned by the nobility, ethnic Germans and others which were nationalised after the World War Two. Now the problem is even

more complex, due to claims by owner's heirs and because of the cadastre and land registry is not updated and modernised.

1.3.9 / IFF 121b

- In terms of sociology, forests increase tourist traffic with its non-wood goods and services.
- Adequate attention to collection and reporting on the use of a broad range non-wood products and services is very important for rural and local communities because it is a strategic objective for achieving good quality of Croatian tourism. The focus should be on the development of special aspects of tourist offer, especially health, rural and hunting tourism, all closely linked to non-timber forest products and resources.
- After the adoption of the Nature Protection Act (1994), and the approval of collecting of autochthonous plants for commercial purposes, evidence on collected sorts and quantities has been conducted since 2001.

1.4 Common Item: Monitoring, assessment and reporting on social data

1.4.1 / IFF 121b

- The question is partly replied in the previous item.

1.4.2. / IFF 129a

- As reported in the *National Report to the Third Session of the UNFF* (February, 13, 2003), the Republic of Croatia was included, with its project, in the international programme for calculating and mapping critical burden, in 1997. The reason for initiating research on the territory of Gorski Kotar was because 70% of its area is covered with forests and has the largest percentage of drying up of fir-trees (the area the most at risk). The next area of calculations was the environs of Zagreb, and forest ecosystems of north-western Croatia. In 2003, work was continued on four quadrants of standard EMEP network. The covered surface of 4,4% of forest ecosystems did not change. Reports continue to be forwarded to the *Coordination Center for Effects (CCE)*.
- The overall sociological and economic data are not available for the observed area. However, lately, there has been a significant breakthrough in these regions to the eco-tourist market with diversified offer in which non-timber values come to the fore. One study on a small sample (216 forest owners of lowland forests), with the assistance of FAO experts established that a *typical forest owner* is more than 60 years old, that he or she is a farmer or retired, that he or she completed primary education only, that he or she does not wish to sell his or her forest, that he or she does not wish to purchase other forests, that he or she keeps his or her forest as a special possession, that he or she is not interested in forest management, that he or she is barely engaged in forest, does not think about sustainable forest management, that he or she thinks in short terms and locally, that he or she does not wish to invest money or work into his or her forest, that he or she does not use the potential of his or her own forest, that he or she is sceptical when it comes to becoming a member of forest owners association. The majority of persons surveyed lives 1 – 5 km from his or her forest, while a smaller number of younger owners live much further away, in cities.

1.5 Common Item: Promoting public participation

1.5.1 / IPF 89h

- The incentive for reaching agreements on exercising privileges is primarily conducted between state forests and local population; many forest roads provides access from villages to larger city centres,

waterworks and electrification were made, tourist offer was developed etc. The priority is also to raise awareness on non-timber values of forests and the need of its sustainable management and the preservation of biodiversity.

1.6 Common Item: Social aspects addressed in national forest programmes

1.6.1 / IFF 122b

- NFPS supports and promotes measures for *ensuring sustainable management* in private forests (priority III).
- NFPS supports and promotes measures for stimulating *private entrepreneurship* in the forestry sector as a basis for sustainable forest management.
- It is important to recognise the role of private sector in creating forest products and services. This role may require support within a framework of guidelines (hunting as a part of the organised tourism in terms of VAT), so as to secure land tenure, to help ensure improved forest management and sustained production of a wide range of goods and services.
- Croatia has a long hunting tradition as part of our national cultural heritage. Natural and well preserved site conditions represent a rich, stable resource favourable for hunting management development as a part of private sector activity.
- In spite of various conditions for hunting, it varies from one region to another throughout the Republic of Croatia. Game species and hunting infrastructure should be significantly advanced.
- By its programmes and work, the City of Zagreb (City Office for Agriculture and Forestry) encourages in many ways the advancement of private forests by elaborating studies, touring private forests with a view to elaborating guidelines for their promotion, by organising frequent contacts with private forest owners to familiarise them with their rights, commitments and possibilities of purposeful management, by creating financial preconditions for the realisation of proposed programmes, by including the local population in forest works (seed collection, silvicultural works), by providing education on forest fires, by evaluating the degree of risk from fire, by elaborating specific programmes for arranging certain parts of forests into parks, by preparing manuals for forest owners, by organising lectures for local population etc.

1.6.2 / IFF 122d

- The development and implementation of policies designed for the promotion of sustainable production of other non-wood forest goods and services, e.g. mushrooms, forest fruits, honey, medicinal plants, foliage, wild flowers, etc., can be a valuable source of revenue for local communities and population. It is particularly important to sort out this situation, as the Croatian legislation in this area has not been fully established yet. But, it is necessary to ensure benefits from the commercialisation of non-wood forest goods and services, so that they may contribute to improved forest management and to equitable distribution among the population protecting and managing them. Sustainable forest management also must embrace the management of these products.
- It needs to be noted that the white truffle, collected in Istria near Buje, traditionally collected in Istrian forests, has entered into the *Guinness World Records* 2004. With a view to popularisation of general benefits of forests in both urban and rural areas, various events are organised such as Chestnuts Days,

Grazing Maps are prepared, exhibitions of mushrooms are organised in order to educate and promote the use of secondary forest products etc.

- The development of local industries centred around non-timber forest products will assist in the stabilisation of rural communities.

1.6.3 / IFF 129d

- Tourist region within forests or near them is always environmentally critical area. Despite the fact that Croatian forests and forest land with their natural beauties are suitable for tourist offer, their benefits have not been sufficiently used to date. In raising awareness on the ecological, social, cultural and economic roles of forests, the following is required: (a) increase the understanding on the value of sustainable forest management, (b) increase the level of hunting and other infrastructure, (c) be able to compete with services offered by countries with well developed markets, (d) 22% VAT (Value added tax) for hunting services must be levelled with organised tourism (as an export product, VAT is 0%, it does not apply), (e) elaborate a study to evaluate tourism potential of forest ecosystems, (f) develop market for forest tourism attractions, (g) incorporate forest ecosystems potential in tourism development plans as forest management plans, (h) develop rural employment through stimulation of forestry related trade, (i) utilisation of forestry facilities by local institutions, (j) undertake a national inventory of hunting resources, (k) demine hunting grounds and associated infrastructure, (l) provide game-keeper service, (m) include hunting tourism into the offer of tourist agencies, (n) organise hunting tourism services in line with organised tourism, (o) elaboration of cadastre for hunting grounds, (p) undertake a national inventory of non-timber forest and forest land products, etc. (for details, see NFPS).

1.6.4 / IFF 140a

- The Croatian Government has approved NFPS and has thus also approved the description of the situation with financing of research and development in forestry. It is stated that funds from the budget have been decreased for this purpose, while at the same time, possibilities on international financing have not been sufficiently explored. This is explained by language barriers, as well as by inexperience in submitting applications for projects and seeking financial support. The latter came to the fore in the realisation of projects by the Croatian Government, supported by the credit of the World Bank in Coastal Forestry Construction and Protection Projects.
- Apart from several completed projects, the application for assistance of FAO in raising the level of protection against forest fires is underway, within the FAO's *Technical Cooperation Programme*. The project is called the National Strategy for Forest Fire Protection, Reforestation of Burnt Forest Areas and Education of Local Community.
- The Ministry of Agriculture and Forestry, within its middle term plan 2004 – 2006 for seeking international assistance has addressed EU members for bilateral cooperation. Several of the proposed topics for the two proposed projects are as follows: settling the overlapping of authority between the government administration and companies managing state forests, insufficient cooperation among bodies competent for forestry and hunting, lack of expert personnel in the government administration, the separation of the Inspection Service from the Ministry, work on legal frameworks of administration with clear definition of powers and roles, further harmonisation with the EU acquis, advancement of cooperation with local administration and self-government, creation of a unique data basis, education of government administration officials etc.

1.6.5 / IFF 144

- With reference to what has been reported in item 1.6.4 in NFPS, several problems in establishing such cooperation have been stated.
- Governmental NFPS is an instrument to support forest programmes and to integrate forest-related aspects in programmes aimed at poverty alleviation, and to promote environmental awareness.
- By Government's decision, NFPS has stated the following priorities: (i) identification and securing of funds from the budget for co-financing of participation in international projects; (ii) identification of possibilities to participate in international exchange programmes and their promotion; (iii) increase of possibilities for the implementation of commitments undertaken under international conventions and resolutions; (iv) creation of a data basis of international projects on forestry, etc.

2 Traditional forest related knowledge (TFRK)

2.1 Advance use of TFRK for SFM (Sustainable forest management)

- For understanding the level of traditional forest related knowledge (TFRK) and the participation of local people and local communities who possess TFRK, it is important to know state and private forests in Croatia. Namely, privately owned forests account for 461,137 ha or 19% of the total forest area and about 12% of allowable cut (average growing stock is about 82 m³/ha). There is about 600,000 owners and the average size of the property is 0.86 ha. In practice, with some exceptions, private forests remain essentially unmanaged.
- Almost all of TFRK of local population *has roots in periodical work in state forests*. Due to the high degree of fragmentation of private forests plots and their small amount of growing stock, the lack of silvicultural skills and forestry tradition, insufficient number of owner associations, and the fact that the majority of these forests is degraded, and that many owners reside in the cities and not near forests, it is not possible to guarantee access to TFRK.
- Despite the fragmented nature and relatively small surface of the average holding, private forests have the potential to contribute to increased wood production and non-timber forest products.
- State forests managed by the *Croatian Forests Ltd. (Hrvatske šume d.o.o.)* may positively contribute to rural development, while supporting local population, local communities, other inhabitants of forests, small-scale forest owners and forest-dependent people.

2.1.1 / IPF 40a

- By adopting the Law on the Ratification of the Convention on Biological Diversity (*Official Gazette* of the Republic of Croatia No. 6/96), its principles are built in other laws, book of rules, regulations and strategies. Since it concerns an interdisciplinary issue, the Ministry of Agriculture and Forestry cooperates with other government bodies, notably with the State Intellectual Property Office (recognition of TFRK), and all those who deal with biodiversity and possibly with the traditional knowledge related to forests or other ecosystems. In forestry, provisions of the Convention on Biological Diversity are always related to sustainable forest management, as only sustainability may preserve biodiversity. The current Croatian problem is how to renew burnt forest area, how to replace forest territory occupied by infrastructure facilities (transmission lines, roads, oil pipelines, gas pipelines etc.) by unafforested territory and to grow forest ecosystems as a replacement.

2.1.2 / IPF 40b

- Since forestry in the Republic of Croatia is mostly taking place within the activities of the *Croatian Forests Ltd.* which manages over 80% of the Croatian forest area and partly a significant part of private forests, it is here that TFRK is recognised. This knowledge is most easily displayed, evidenced and applied in forest offices and forest administrations which predominantly employ local population or at least people originating from the local area. However, many secondary forest products such as resin, charcoal, lime, shingle etc. do not have a place on the market anymore, but are being preserved for special manifestations so as not to be forgotten, or are used exceptionally (Ethno-Museum covered with shingle etc.).

2.1.3 / IPF 40g

- There are no available data on seeking assistance from international organisations such as partners in maintaining cooperation with TFRK holders.

2.1.4 / IPF 40h

- In order to maintain state forests, local population is included in activities and is employed mostly for temporary and seasonal work in forestry, silvicultural operations (thinning, etc.) and nursery, as well as for cleaning and forest regulations after felling etc. By this, previous conclusion of work contracts for similar jobs was replaced. However, this new solution is debatable from the point of view of both the contractor and the client.
- In its Regulations Book on Inventive Activities (22 December 1999), the *Croatian Forests Ltd.* has specified rights and commitments related to inventions, technical advancement, rationalisations etc. which may be part of TFRK. Apart from employees, it also specifies similar rights of other organisations and individuals having certain knowledge which may be used inventively in forestry. The Book of Rules includes forestry, all its fields, as well as new ones which may benefit the company. Those whose yield is significantly high are given a compensation.

2.1.5 / IPF 40i

- The basic forest organisation unit – forest office is responsible for cooperation with local administration and self-government, for activities related to traditional mode of life in forest, work in the forest, as well as innovation and acquiring of working skills. This is best achieved when local forest workers participate in the education of new young workers. However, even if there is no formal establishment of technology centres in Croatia, several forest administration offices started verifying traditional or new procedures, techniques, protection equipment, modes of gathering information etc. owing to those who have traditional knowledge related to forests and forestry.

2.1.6 / IPF 40j

- Rare are examples of knowledge in Croatian forest procedures, mode of work, tools, machines, protection equipment etc. created in one place by one person. New procedures were often complemented in distanced forest administrations; somewhere they were accepted, elsewhere they were rejected.
- For instance, in drafting the *Regulations on the Occupational Safety* in Croatia, in 1986, part of forest administrations wanted to reject chain saw spur (spikes) as unnecessary for safe sawing of wood, while others thought that they are necessary for sawing of wood or logging (to cut to length), and more rarely for delimiting (cutting of branches). In early '70s, part of the Croatian forestry began to mainly forwarding timber from clearcutting area to auxiliary storage place by forwarders or tractor with trailers or semi-trailers, while others rejected it and continued to work mostly with skidders. In '90s, they gradually began to equally accept skidding of timber as a replacement for its extraction of wood one end suspended, or cableways which were used in the '50s for mountain or lowland forests for hauling timber and removing it from forest, and have gradually disappeared, while in the '90, they were introduced by undertakers and only one administration as an exception. In the meantime, they were occasionally borrowed from the Republic of Slovenia to their operators and engineers in mountain forests.
- In the '70s began a replacement of the processing of industrial, pulpwood, tannin wood and other wood such as fuelwood 1m long, with wood processed in forest in larger sizes (2 – 6 m), which was dispatched in this form to end users, just as it used to be shortened and split or chopped up in rural areas for one's own needs and used at home to a desired size. Such use was enabled by the mechanisation of wood hauling by smaller tractors and the use of cranes for piling up of wood to auxiliary storage place. This modification caused a change in the mode of felling and processing and the return to a group work known as brigade work, and now known as fractal (holon) production.

2.1.7 / IPF 40k

- Part of TFRK, although to a smaller extent, was included in scientific programs financed directly by the Croatian forestry. It was mostly the knowledge related to the non-wood forest products and generally useful functions of forests.
- The cause of not dealing with the knowledge of the local population which worked on forest jobs for generations probably lies in the curricula of various forest schools and universities. The link between the past and the present has been lost. It is only by the renewal of culturological approach of education and studies that the attention of teachers and professors will be drawn, among other, for the value of TFRK as well.

2.1.8 / IPF 40l

- (a) In two sections (forestry and timber technology) of the only Forest Faculty in Croatia, about 100 students are enrolled each year and they will begin working at the end of the first decade in the 21st century and will retire in the middle of the century. Non-inclusion of TFRK in their education will be a significant drawback later on in the practice, especially in relation to forest and forestry for local population living in forest regions. Therefore, this knowledge is to be introduced in programmes for the existing generations wishing to obtain authorisation to work in forestry and in its fields.
- (b) The *Croatian Forests Ltd.* are authorised to provide education and training of forest workers and TFRK is to be included in their programmes.
- (c) The education for specific purposes and for crises is given at fire-fighting universities and schools for civil protection, as well as at specialised universities or in three-year schools. They too need to include insights from the traditional knowledge related to forests and forestry in their curricula.
- (d) Unfortunately, there is often a lack of cooperation among the ministries, educational institutions and other institutions on updating of programmes, not only of TFRK, but of other areas as well such as training for team and research work and international cooperation (visiting lecturers), IT education, and literacy, harmonisation with the forestry development programs in the EU and with the *European Credit Transfer System* and other.

2.1.9 / IPF 40m

- The Ministry of Agriculture and Forestry and its Forestry Administration shall propose the publication of the enlarged report of the Croatian version of the UNFF-4, so that the widest circle of forest and non-forest experts, and even politicians, gets familiarised, in an acceptable way, with the amendments and international commitments undertaken by the Republic of Croatia. In this, the focus will be on TFRK and other forgotten insights inherited from the previous generations. Thus, they will at least alleviate constant returning to the community of goats and forest (apart from exceptions), to pioneer sorts such as Aleppo pine, black pine, alder, birch etc. in the renovation of forest soil and its preparation for growing more valuable woods. Formerly, those who turned forest into agricultural land by fire were praised, while today it is the other way around: monuments are erected to those who manage forests in a sustainable way and thus preserve biodiversity of forest ecosystem. Therefore, to plant olives on burnt forest soil means to invalidate the profession, as well as TFRK.

2.1.10 / IPF 40n

- The NFPS suggest to make an inventory of delineated forest land after mapping, as an assistance in establishing forest holdings, as well as in planning and management partnerships.

- The Croatian state *project of updating land registers and cadastres* will probably help in delineating forest land and other lands, so that owners may claim the rights and obligations arising from their ownership. In addition to the loan from the World bank and funds from the Croatian state budget, the project is also financed by donations of the Cards Programme of the European Commission (5 million €).

2.1.11 / IFF 75

- By the adoption of the Law on the Ratification of the Convention on Biological Diversity, the Republic of Croatia has become party to the Convention with all pertaining rights and obligations. The report such as the UNFF-4 assists in defining and encouraging many tasks arising from the Convention. Working groups which participated in drafting of this report are part of this contribution and dissemination of insights on its values.

2.2 *Develop intellectual property rights for TFRK and promote equitable benefit sharing*

2.2.1 / IPF 40c

- The Ministry of Agriculture and Forestry has requested assistance from the State Intellectual Property Office as a government body dealing with all forms of protection of intellectual and other property.

2.2.2 / IPF 40d

- The *Croatian Forests Ltd.* manages 4/5 of the Croatian forest land and realises 9/10 of allowable cut. In its management programmes, development incentives, participation in various actions of local communities, it always includes TFRK in its programmes and elevates the survival, in terms of culture, of people who depend on the forest (support of local, as well as regional, cultural and art societies, assisting of voluntary organisations etc.).

2.2.3 / IPF 40f

- The Croatian forestry has no significant experience in the legalisation of traditional knowledge and practice stemming from organised forestry, but only seeks ways to award and recognise it and to exercise privileges. The *Book of Rules on Inventive Activities* are valid for all inhabitants of Croatia if they promote work in forestry.

2.2.4 / IPF 40o

- Examples of other states and international understanding of TFRK may assist Croatia in its development and the inclusion of TFRK in the legal system of validation of traditional knowledge referring to forests and forestry.

2.2.5 / IPF 40p

- The report is forwarded, together with reports by the IFF and IPF to the State Intellectual Property Office with the request for cooperation in establishing a pilot study.

2.2.6 / IPF 40q

- The compilation of international instruments may largely assist in establishing national legal framework of protection of TFRK, and adopting a proposal for equitable indemnification.

2.2.7 / IPF 40r

- No other information is available than that previously stated.

2.2.8 / IFF 74a

- The application of efficient measures for the recognition, respect, protection and maintenance of traditional knowledge on forest related management, including its biological value within recognised rights, best shows the situation in the Croatian forests (see granting of FSC certificates for about 2 million ha of state forests).

2.2.9 / IFF 74b

- Although the recognition of rights to traditional knowledge under the Convention on Biodiversity resolves legal framework for intellectual property, in case of access to genetic resources, access and transfer of technologies for preservation and sustainable use of biodiversity, and handling of biotechnological projects and division of benefits, approval of other bodies is to be sought as well, such as the Ethic Commission in Croatia. This unfortunately sometimes leads to sluggish implementation as new areas are insufficiently known.

2.2.10 / IFF 74c

- No data are available on the part of international cooperation with forest genetic resources (there is some experience regarding problems with genetically modified food, input of bacteria for discovering explosives etc, but not with forest genetic resources).

2.2.11 / IFF 74d

- With reference to the point 8(j) of the Law on the Ratification of the Convention on Biodiversity, Croatia has not sought any assistance from relevant international organisations.

2.3. Means of implementation

2.3.1 / IPF 17g

- As an economic activity, the Croatian forestry is active in a developing country, a country in transition. Since the middle of the last century, it significantly contributes to the transfer of mechanised procedures to forest production from developed countries within its capacities. Many solutions were adapted to its specificities, whether it be the mode of management, environmental conditions etc. In the '60s, the forestry adapted agricultural tractors for skidding of wood and replaced animal traction. In 1968, articulated tractors (skidders) as the first real forest tractors began to be used. Since 1971, forwarders were used in lowland forests for wood hauling; in the '80s, it partly developed a line of machines for producing combustible forest biomass. For further progress, it encourages private entrepreneurship (cable-ways, splitting machines points) or rents harvesters from other countries (Scandinavian countries) or larger movable (transferable) cable-ways (from Slovenia) for testing etc.
- In the '80s of the last century, the Croatian forestry began working on its own forest tractors, a heavier one weighting about 7 t was intended for hauling of woods (pulling force of winch rope about 80 kN), and the other was an articulated tractor, weighting about 4 t, intended for extraction thinner wood from lines of trees (pulling force of winch rope is 40 kN). Both tractors were created by forest experts, and were adapted for work in the forest with the knowledge acquired in extractions of woods, the most expensive phase in wood processing.

2.4. Common items

2.4.1 / IPF 40e

- The Croatian national legislation makes no provision for TFRK, notably for local population living in the regions rich in forest; most often it is achieved by their employment in an activity or through entrepreneurship participation in production process. There is a closer connection to forest owners, as

they are legally bound by regulations when elaborating their economic foundations, establishing allowable cut, etc.

- Although item 2.3.1 illustrates two examples of the creation of complex technical machines stemming from TFRK, as well as from local environment, it was not government's incentive. Maybe something changed in their future when the production was renewed in this century, as the lighter tractor was created in two versions in two different locations: one was supported by the local community and the Croatian forestry, while the other was more distanced from forestry, but was supported within the system of the Government technological project for new products, as stated in item 2(d) of Forest Principles.

3 Scientific forest related knowledge (SFRK)

3.1 *Functional interaction between science and policy*

- The goal of the *National Forestry Policy and Strategy* (NFPS) was to increase the contribution to national economy of sustainable management, use and comprehensive protection of forest resources and biodiversity, application of research results, by respect of international standards and undertaken commitments and by respect of local community rights.

3.1.1 / IFF 96 c

- In adopting NFPS, Croatian scientific institutions were involved such as the Academy of Forestry sciences, the Faculty of Forestry, the Forestry Research Institute and other institutions. Similarly, future harmonisation of acts and regulations will include assessment groups which are to assist in the harmonisation of this field of interest, by comparing regulations of the Croatian forestry with international forestry regulations and guidelines adopted by UN, EU, FAO, IUFRO etc.
- The relation between forestry and politics is often much more complex at local level when it comes to resolving current problems of the local population which is largely dependent of forests (building of infrastructure, joint facilities, road connection with other localities etc.)

3.1.2 / IFF 98b

- Important links between forestry sciences and policy, as well as international cooperation were established during monitoring of drying up of forests. For instance, as a result of monitoring health of Croatian forests in 2001 and 2002, a slight decrease of forest damage was noted. Further, the Croatian Government's *Coastal Forestry Construction and Protection Project*, included many important activities related to fire protection, supply of fire-fighting and other equipment, construction of forest roads in order to make access to forests if they are caught by fire, education of personnel, construction of infrastructure for reforestation (nursery) etc.

3.2 *Setting research priorities and filling knowledge gaps*

- Priority research of NFPS includes the fields which ensure sustainable management and biodiversity such as:
 - (a) national inventory of forest habitats
 - (b) research of karst management due to high exposure to fires, small economic value of wood and important role in tourism
 - (c) seeking ways for mine clearing of approximately 12 % of forests and forest land which are still inaccessible due to the contamination of land mines
 - (d) seeking ways to achieve stability of forest ecosystems while increasing production potential, notably because of drying of forests, inappropriate management of private forests, burnt forest lands etc.
 - (e) seeking mechanised procedures for obtaining wood less harmful for the environment, notably when felling, hauling and silvicultural treatment; current technology used in forests relies on traditional methods and machinery, especially in forest silviculture.

3.2.1 / IPF 46g

- It is particularly important for the Republic of Croatia to specify what sort of vegetation will be used in reforestations that have been burnt, as the largest part of such surfaces is located in the coastal area whose soil is rocky and dry and whose purpose is not to obtain wood, but to obtain non-wood

products, and whose values refer more to the landscape, climate, water protection, anti-erosion etc. In the continental part of Croatia, seeking appropriate sorts primarily relates to degraded habitats where attempts are made, by using pioneer sorts, to restore to the soil characteristic suitable for elevation of more valuable sorts in the form of forests *Spermatophyta* (forest of seeding origin).

- Due to uncertainties and different assessments, the selection of tree sorts to be used for reforestation of burnt surfaces is very important. Some argue that sorts used have no economic significance, that they are more prone to catch fire, which is partly true (this partly refers to the fact that the fire engulfs all sorts: forest trees, vineyards, orchards, mostly olive-groves). However, more valuable sorts are not able to survive on arid burnt soil and this primarily refers to Holm oak (s.c. evergreen oak) and Pubescent oak in the Croatian coastal area. This is the reason why conifers are usually planted (Aleppo pine, black ash). Worse than planting pioneer forest sorts is when forest land is planted with any agricultural sort, such as olives, without taking care of sustainable management and especially about reversion on the past biological diversity. Due to all of the above, a lot of work is yet to be done on harmonising laws and regulations.
- There are only two historical examples when foresters and local population are involved in the selection and methods for afforestation of lands in critical areas:
 - (i) The first example refers to the Mediterranean area. The year 2003 was the 125th anniversary of the beginning of work of the *Royal Monitoring for Afforestation of Karst of the Military Frontier - Inspectorate for Afforestation of Karst, Bare Land and Flood Control in Senj* (1878 – 2003). Perpetual work of this institution lasted for 64 years on the territory over 50,000 ha. In this case, it has been recorded how many cultivated plants and seedlings were planted, what was produced in their own nurseries, how large was the reforested area, how large were filling up blanks (surfaces, number of seedlings per sorts), how many kilograms of seeds were used for sowing, what felling works were done (resurrection, cleaning, thinning), what was the length of fenced in forests and sanified floods etc. Only for the sanation of flood area of Senjska Draga, a series of walls and buildings was constructed, thousands of cubic meters of rocks were built in, and a series of 26 different kinds of works were done. This served not only to stop floods which were reaching the town of Senj, but the landscape was also changed by afforestation, as well as the water regime, as 25 new sources appeared in this area. All of this was done in late 19th and early 20th century: *everything was done as it is noted and all that is noted has been done*. However, the beginnings of forestry in Croatia go further back in the history. Forest management in Croatia was legalised by Empress Maria Theresa in 1769. In 1765, the first forestry office began working in Krasno (and has been working relentlessly for 238 years). In 1762, the same Empress forbid the export of oak-wood for shipbuilding;
 - (ii) The second example is from continental Croatia. Today's special reserve *Durdevacki peski* is located in Podravina near the Drava river. This part occupies the surface under this name of about 700 ha, and the total surface of the area is 2500 ha. At the time of Military Frontier, quick sand was located here and was owned by state treasury. The first works on afforestation of sand began in 1891 by planting Scots pine and black pine in the form of a narrow windscreen belt. The ownership kept on changing and the largest part of surface came under the ownership of Đurdevac community. One part of sand was not tied up, and one part was tied with grass. Sand was eliminated in phases: (a) by levelling of soil, (b) by calming the soil; (c) by planting locust; (d) by replacing locust with pine. Today, the reserve is known by its hunting grounds.In the middle of the last century, there were attempts to tap resin, to plant spruce trees, poplar-trees and ailanthu. In access area, gleditsia was planted as a protection from cattle intrusion. Local population called them *bloody sand*. Some parts were proclaimed forest parks. Similar examples may be found elsewhere on the territory of Croatia. These two cases were cited as an example of how specific circumstances were overcome, and how the participation of local population may be decisive

for sustainable forest management, its preservation, reforestation and protection, as well as for renovation of biodiversity.

3.2.2 / IPF 94 a(i)

- Cooperation with international organisations was often encouraged by personal efforts of foresters and scientists or by scientists from other countries interested in our forest ecosystem. Each year, some Faculties from Central Europe bring their students and give lectures at the Forestry Faculty in Zagreb (floodplain forests, Mediterranean forests). As may be seen from the above mentioned examples, such cooperation began in accordance with IFF's and IPF's instructions by the Ministry of Agriculture and Forestry and in cooperation with the *Croatian Forests Ltd*.

3.2.3 IPF / 94b

- As to the gaps in knowledge on climatic changes and elimination of desertification of forest land, NFPS did not cover desertification issues, but deals with problems of climatic changes and commitments that Croatia has undertaken by signing the Montreal Protocol and the Kyoto Protocol. The *First National Report of the Republic of Croatia to the UN Framework Convention on Climate Change* (UNFCCC) accounts this in detail for economic fields, forestry included. As a group result for Croatian forests, a yearly figure (s.c. abyss) for carbon dioxide (CO₂) of –6505 Gg-per year is stated. Since this calculation is unknown, these values will probably change with new insights. The Ministry of Agriculture and Forestry has stated the following (November 2003): (i) since 2001, the Republic of Croatia has been participating in the activities under Annex 4 and 5 of the Convention (northern Mediterranean) and Central and Eastern Europe; (ii) This is not a separate problem in the Republic of Croatia, but certain measures are related to the establishment of sustainable development in dried areas; (iii) the Croatian Government has established the National Commission for the Implementation of the Convention; the Commission is currently defining the National Action Plan (NAP); (iv) special recommendations, measures etc. related to forests are yet to be established. Knowledge gaps will probably have to be filled upon the adoption of the NAP.

3.2.4 / IPF 94 d

- The majority of forest research is taking place in forests and forest land. Only a smaller part of research is taking place in laboratories, such as testing characteristics of wood, soil etc. Considering the mode of adopting the programme of research and after proposals given by Croatian foresters and their immediate participation in research, the majority of results may be applied in the practice. The same goes for work means, protection and safety equipment etc.
 - (a) The largest part of research is arranged within five-year programmes with the Forestry Faculty in Zagreb, the Forestry Research Institute in Jastrebarsko, the Institute for Adriatic Cultures and Improvement of Karst in Split, the Academy of Forestry Sciences, and the Centre for Scientific Work of the Croatian Academy of Sciences and Arts in Vinkovci, and the smaller part with other scientific institutions. Over 50 doctors of sciences and even more of masters of sciences, along with science novices and engineers participate in the research.
 - (b) There are two main sources of financing scientific research: (a) the Ministry of Science and Technology of the Republic of Croatia, (b) *Croatian Forests Ltd*, from the funds of UGBFF (*Utilizing Generally Beneficial Forest Function*); (c) Ministry of Agriculture and Forestry, for special requirements of their work and international cooperation.

3.2.5 / IPF 104c

- NFPS calls on the overall economic validation of forest resources and delineation between agricultural and forest land.

- The problems of assessing values of forests, especially when they start to degrade, dry up or erode, are a point of dispute among many experts (primarily foresters, ecologists and economists). It may only be established that monetary assessment of products from natural environment is very uncertain. Therefore, it is not possible to talk of exact assessment of natural resources. Certainly, the largest part of assessment takes into consideration general usefulness of forests, which is the most difficult to assess in terms of monetary value, as there is still no demand and supply market for them. Another issue is whether to include the value of land in the budget as well. Nevertheless, there is a need to assess forest land and all actions are undertaken pursuant to current regulations (Amended Book of Rules on Forest Management). Thus, the problem of assessing forest land which is occupied by power-transmission lines, roads, oil pipelines, gas networks and other infrastructure is partly removed. However, the final value of assessment by points is made by owner of state forests, i.e. the Croatian Government and its members in the Management Board of the *Croatian Forests Ltd*.

3.2.6 / IPF 50b

- More significant participation in international projects is restricted by relatively small funds. Apart from participating in projects conducted by IUFRO and FAO, only individual researchers participate or have participated in COST research projects of the European Forestry Institute, mostly by receiving a personal invitation by these institutions.
- The report for 2002 states data on the participation of the Republic of Croatia in the work of several international programmes.

3.2.7 / IFF 96d

- Apart from several research projects with regional character or research conducted by institutions, there are no available data for state level.

3.2.8 IFF / 96a

- Research by SFM is included in five year plans of research of the *Croatian Forests Ltd*, and are arranged with the Faculty and institutions of the Republic of Croatia. Research priorities are set by research deadlines (one to five years), and by funds allocated to researchers. Many research projects have the obligation to apply the results in the practice.

3.2.9 IFF 98a

- For five research areas, NFPS has set priorities and has designated those in charge of research implementation; the common goal is optimal management with all forest resources in cooperation with stakeholders.

- (a) To preserve and promote habitat stability, forest health and productive capacity of stands: – to establish criteria and methods for the assessment of habitats and their preservation; – to establish criteria for decision-making related to forest management; – to establish criteria for functional forest categorisation; – to provide financial support for adequate silviculture in clearly defined forest categories; – to support certification of forest management and timber products and the elaboration of National Standards (all these activities are the I priority); – to draft an inventory of current habitat conditions (based on GIS and defined criteria) and to establish sample plots to monitor changes in habitat condition; – support measures for improving seed husbandry and nursery production; – to improve stand structure by introducing rare autochthonous species (II priority).
- (b) To implement 4-E (ecological, ergonomic, economic, energetic) preferential technologies in forestry: – establishment of appropriate evaluation of 4E technologies in forestry; – support measures to provide the required training for the implementation of 4E technologies; – development of work

techniques and safety at work by capacity building, evaluation, verification and licensing of those who participate in the production process (I priority); – to develop financial incentives to support the implementation of environmentally friendly technologies (i.e. bio-oils, cable railways, helicopters) (II priority).

- (c) To improve management system of karst region: – sustainable utilisation of productive capacity of stands and the implementation of appropriate silviculture; – the establishment of criteria for multipurpose utilisation of space, forests and forest soil; – support measures for the improvement of fire prevention and suppression and civil protection (I priority); – areas designated for forest management activities to be clearly delineated by physical plans; – improvement of afforestation methods in karst regions; – identification of unused forest land favourable for tourist projects (II priority).
- (d) To include mine clearing of forest areas into regular management: – in co-ordination with the Croatian Mine Clearance Centre, mine clearing priorities and demining methods in forests and forest land were decided; – development of financing models for mine clearance in forests and forest land; – training of staff engaged in mine clearing forest and forest land (I priority).
- (e) To utilise biomass as primary energy source: – undertake an inventory of unused biomass as potential energy source (I priority); – identification of unused land, selection of the most favourable species and technology for the establishment of plantations; – in co-operation with other sectors, defining and achieving incentives for biomass based on the implementation of the Kyoto Protocol; – utilisation of biomass as a principal energy source in forest areas (II priority).

3.2.10 / IFF 97d

- Research donations have been given to the Republic of Croatia for the preparation of the project co-financed by the International Bank (Japan), two donations were given by Holland (elaboration of national forestry strategy and certification of majority of Croatian forests), several donations were given for mine clearing and partly for research of the procedure for discovering mines, verification of the usefulness of mine clearing, advantages of techniques and protection equipment used when working on afforested land etc.

3.3 Promote efficient sharing of information and strengthen networks

3.3.1 / IPF 58b(vii)

- The Forestry Act adopted in 1990 (*Official Gazette* No. 52/90) and its Amendments (*Official Gazette* No. 5/91, 9/91, 61/91, 14/93, 26/93, 76/93, 33/97 and 13/02), as well as its Book of Rules, decrees and other acts such as the Articles of Association, determines the obligation of the Management Board to report regularly on the work of the company to the Croatian Parliament, at least once a year. Middle-term and long-term development plans for forestry, as well changes in the status of the company are submitted to the Croatian Parliament for approval. This relates to state forests which make about 81 % of surface of forest land, without or without land, and 88 % of the total wood stock of Croatian woods. Annual report on conducting affairs, conditions of forest, important problems regarding their sustainable management, respect of domestic laws and of internationally accepted conventions, resolutions and protocols, becomes public after the Croatian Government and the Parliament have accepted them. There is a series of free reports available to the public in the form of various publications, chronicles, periodical magazines, publication of results of financed scientific researches etc.
- Previous information contains other important information related to commitments arising from the Forestry Act, such as setting general goals and organisation of public intervention in the forestry sector and established financial mechanisms which include: (i) obligation of all forest owners to invest 15 % (uneven-aged forests) to 20 % (even-aged forests), and 15 % in the karst area of the revenue from wood sales for simple biological reproduction (preparation works for reforestation of

stands, sowing, planting of forest seeds and seedlings, cleaning of stands, reforestation and tending of young growth, selection and marking of trees for felling, protection of forests, cutting and maintaining the strips, , making of forest management plans and programmes – Book of Rules on Forest Management (*Official Gazette* No. 11/97), and additional 3 % for extended biological reproduction (afforestation of forest land, conversion of coppice forests and degraded forests to high forests (Spermatophyta), management of the lower level of forests which are degrading, construction of forest roads, purchase of forests and forest land – Book of Rules on Forest Management, *Official Gazette* No. 11/97), and (ii) obligation for all commercial and industrial companies in Croatia to pay 0.07 % of their revenue to the *Croatian Forests Ltd.*, which in turn will invest it into advancement of forests, protection of forest general benefits, reforestation of degraded forests in the karst areas (or drying up of forests or burnt forests), restoration of other degraded forests and forests research.

3.3.2 IPF / 94a(ii)

- During the last several decades, Croatian research organisations have been undertaking a joint (global) programme of research every five years, and submit detailed annual reports with the results for the last year (see 3.3.3.)

3.3.3 IPF / 94a(iv)

- In mid-‘60s, the Croatian forestry began to be financed by relevant Ministries, in an organised way of forestry organizations, for its scientific work and forestry practice. In mid-‘70s, research was extended to all sectors of forestry (including exploitation of forests, forestry mechanisation, forest roads construction, etc.), and soon global organisation of this work began. For each five year period, a unique programme of research for all institutions, researchers and the third parties (institutions outside forestry) was adopted. The methods of publicising results were developed parallelly with the development of typography, information technology and thus made it available to end users, and exchange with world scientists was enabled.

3.3.4 / IFF 97c

- As required by research orderer, results are published in local papers. Adapted research results are publicised in foreign magazines, numerous anthologies, monographs etc. A smaller part appears on web pages of institutions and magazines.

3.3.5 / IFF 98c

- Through their institutions, Croatian researches are members of IUFRO. According to their field of specialisation, they cooperate in various research projects and some even in the establishment of global information system. It is a long term task in which terminology issues and general definitions of terms are to be decided on.

3.4 *Means of implementation*

3.4.1 / IPF 94 a(iv)

- NFPS evaluates that necessary funds for activities under the first priority will amount to 3,5 – 4 mil. USD during a period of four years. One of the benefits of this programme is employment in rural areas. International donations are foreseen as well.

3.4.2 / IPF 94c

IPF's initiative is supported.

3.4.3 / IFF 96b

- It may be seen from the stated examples that the Republic of Croatia is attempting to find additional funds for financing the planned research.

3.4.4 / IFF 97a

- Although the main source of financing of research is Croatian forestry, and to a lesser extent the Ministry of Science and Technology, as well as direct contracting, a smaller amount of funds is secured from abroad.

3.4.5 IFF 97b

- Although financial sources are always insufficient for comprehensive interdisciplinary field such as forestry, notably when dealing with bio-technical scientific field, setting priority fields, whether it is those that make certain profit, or those that satisfy human social, cultural, environment and other needs, helps to promote, at least partly, its economic side, its permanence and even to sustain significant biodiversity. Part of the programme is financed directly by stakeholders in forestry, from tourism, education, private undertakers etc. However, we must not forget that about 80 % of employees work on forest exploitation, that revenues from this part of forestry are nearly 80 %, and that over 80 % of injuries at work take place in this field of forestry. A significant shift was made when the Ministry of Science and Technology began financing technology projects. While two local tractors are currently being constructed for working in Croatian forests, the practice and science working jointly in an attempt to devise a product appropriate for both forest and men who handle it. Attention is given to ergonomic and ecological components built in the tractors which are made with high technology.

3.5. Common items

3.5.1 / IPF 17e

- In addition to financing scientific work in forestry through the budget of the Republic of Croatia, currently conducted by the Ministry of Science and Technology, since 1965, the Croatian forestry, organised in some form (as a business community, association of forest economies or as a unique public or trade limited company), has been contracting with scientific institutions a unique programme for scientific and research work every 5 years. The programme for 2001 – 2005 is the 9th time this type of cooperation has been agreed. The Faculty of Forestry, University of Zagreb and the Forestry Research Institute, Jastrebarsko are two principal scientific organisations which sign the agreement with the *Croatian forestry Ltd*, and include in its programme the majority of fields pertaining to forestry. Such unique multidisciplinary approach is monitored each year through provisional or final reports, publications, published tests or transfer of knowledge into practice.
- Currently, the following projects have been agreed on: **(1) *Protection and Advancement of the Production of Biomass in Support of Multiple Roles and Functions of Forests*** with three subprojects and 51 tasks at the Faculty of Forestry, and 4 subprojects and 46 tasks with the Forestry Research Institute; **(2) *Exploitation and Management of Resources in Forestry*** with 3 subprojects and 21 tasks at the Faculty of Forestry and 1 subproject and 2 tasks at the Forestry Research Institute. The project is coordinated by its coordinator and subprojects by their heads, while tasks are performed by assigned researchers of the said institutions. For each task, a research field is determined, the task is explained and a list of in-house and external associates from the country and from abroad, mostly from Europe, but from other continents as well, is provided. Associates include collaborators and members of the Academy of Forestry Sciences in Croatia, members of other expert academies and the Croatian Academy of Sciences and Arts, renowned European institutions and Faculties, while the most numerous associates for projects are Croatian foresters. A significant number of researchers are from other Croatian institutions and faculties, state bureaux, associations etc.

- The *Croatian Forests* Ltd. contracts separate research or transfer of knowledge and insights with groups of researchers, institutions etc, for instance when resolving specific problems such as standardisation of forest products, working tools, protection equipment, certifications and standards. Funds are provided for five year period for scientific and research work in the amount of over 2 million €

4 Monitoring, assessment and reporting, and concepts, terminology and definitions

4.1 *Collection and dissemination of national information on forests*

4.1.1/ IPF 46b

- It may be seen from the previously stated facts that current monitoring is constantly being compared to previous experiences on forest ecosystems, and their possible influence on desertification, along with other factors. Problems with draught arise in the coastal area, but may also cause drying up of planted seedlings, and unsuccessful sowing in continental area. Urban forestry resolves these problems by watering larger surfaces, as well as by a saving system called “drop by drop”. Such systems are not frequently used for renovation of natural habitats after unsuccessful natural afforestation in case of dry summer period.

4.1.2 / IPF 89b

- At the end of the last decade, the Minister of Agriculture and Forestry resolved one part of this problem concerning the evaluation of forest resources by adopting the Amendments to the Regulations on Forest Management. The latter regulates that in case forest land is excluded, compensation is to be paid and actions are specified to ensure their sustainable management. Forest statistics are compiled in all segments of regular economic activities, as well as in crisis situations such as fire in the open. In addition to registering its activities within silvicultural operations, an important segment is following up the production and exploitation of expensive work tools (tractors, trucks, cable-ways, chain saws etc.).

4.1.3 / IFF 17a

- Croatian Forestry has a developed system of statistical monitoring of management, conservation and sustainable development of all forms of forests for its needs and is partly harmonised with international systems. However, the largest problem is that forest system is not harmonised with the local ones when it comes to monitoring events. For instance, forestry only monitors *external fires* which cover forest and agricultural land, while the Ministry of the Interior also follows indoor fires. The Central Bureau of Statistics presents GDP and similar data for agriculture, hunting and forestry as joint data, while in other cases, for instance, information on quantities of exports and imports, it divides agriculture, hunting and forestry to two segments: i) agriculture, hunting and the related services, and ii) forestry, felling and the related services. It is obvious that separate presentation of felling is not usual, as timber industry is normally divided to (a) felling, (b) wood hauling and (c) transport of wood to end users etc, while hunting largely takes place in forest land.

4.1.4/ IFF 17b

- Information related to reforestation, monitoring and reporting on the progress and application of sustainable forest management is available to stakeholders, the Government and the public at the Internet, as well as in public papers or internal bulletins, thus informing the public, politicians, businessmen and other groups on forest work, sustainable forest management, sustaining of biodiversity and the creation of timber and non-timber forest values and goods.

4.2 *Improved and streamlined international reporting and information systems on forests*

4.2.1/ 89d

- Preparation of plans for global Forest Resources Assessments (FRA) (establishment of values of timber and non-timber forest values) is a project worthy of attention. It also includes the harmonisation of relevant criteria and indicators for sustainable forest management. Foundations have

been established with global FRA in 2000 and the assessment of forest values is yet to be implemented, step by step, in each country and its regions.

4.2.2/ IPF 89e

- This is to be welcomed!

4.2.3 / IPF 115e

- Aware of the difficulties that the Croatian foresters have to deal with in promoting forestry principles in their every day activities, from the fact that fires engulf both trees and soil, and that both need to be renovated in order to regain the lost biodiversity, to the fact that natural and semi-natural forests are to be distinguished, the attempt to eliminate prejudice on the path of developing criteria and indicators, as well as the acceptance of forestry principle is a difficult and demanding task.

4.2.4 / IPF 78a

- Although point 78a of IPF is an invitation to international stakeholders for the development and promotion of an efficient system which would include important elements of forestry, from efficient development to technology transfer, the development of information system in Croatia is still underway and not yet completed.

4.2.5 / IPF 78b

- There are many forms of assistance provided by developed countries in interpretation and dissemination of information on management, protection and sustainable development of all types of forest, such as reports like this one, meetings between Central European directors of state forests, active work in organisations such as IUFRO, FAO, ISTVS, IEA, ILO, as both the most relevant data, as well as less relevant data are to be gathered.

4.2.6 / IPF 78c

- This is to be welcomed!

4.2.7 / IPF 89g

- Overlapping of information leading to confusion and uncertainty on the real nature of data (see point 4.1.3)

4.2.8 / IFF 18

- The Republic of Croatia closely cooperates and exchanges information with Central European countries, first of all with Austria and Germany (notably with the Federal State of Bavaria) and their official bodies and organisations and consult them, among other, on the modes of gathering and processing information. The Croatian forestry system, without upgrading, has about 170 forestry offices, about 600 district rangers and several sister companies, the system thus being complex and sometimes sluggish.

4.2.9 / IFF 19a

- In order to gather and link all national information concerning NFPS, it is suggested to establish a service for non-wood products, especially on protected forest land, and in special purpose forests.
- The development of harmonised, cost-efficient comprehensive way of gathering forest information, to ensure various authentic data, is a demanding task. The most difficult task is to establish and to form criteria and indicators for sustainable forest management and environment, for social and economic purposes, as well as for non-wood products and services. In this task, the Croatian forestry is attempting to encourage itself.

4.2.10 / IFF 30d

- The follow-up of financial trends is closely related to numerous regulations on state monetary policy and is subject to wide control which ensures relatively stable informing necessary for drafting plans and making decisions. However, the increasing transparency in money transactions is to be encouraged.

4.2.11 / IFF 142c

- It is beyond doubt that speedy gathering of information contributes to sustainable forest management and has social, culturological, economic and other consequences.

4.3 *Concepts, terminology and definitions*

4.3.1 / IPF 58a

- Although the Panel invites FAO, along with relevant organisations and countries to help in clear defining of *low forest cover*, this may only be achieved by consensus among various proposals. For instance, in Croatian forestry, apart from *high forests/spermatophyta* and *coppice*, all the rest is different *degraded forests* of various forms: *maquies*, *garrigues* and *brush wood*. Are *low forests* synonymous of *degraded forests*?

4.3.2 / IPF 89f

- This is to be welcomed!

4.3.3 / IPF 115d

- There are attempts in Croatia to translate dictionaries or some of its chapters and to make them available to the public interested in forestry (e.g. *Lexicon Silvestre*, part 1: Forestry Dictionary with definitions, 1998, 365 p.). In various forest segments, there are only attempts to define forestry terminology for more specific fields of work. One of the largest enterprises is the publication of the work of Ž. Borzan, *Book of Trees and Underbrush*, Zagreb 2001, 485 p.

4.3.4 / IFF 89

- The Republic of Croatia is not a member of the IUCN, but plans to submit an application for membership in the near future. The definitions of categories of protected areas in the newly adopted Law on Environment Protection (*Official Gazette* of the Republic of Croatia No. 162/03) are harmonised with provisions in the IUCN, only names and types differ in order to adjust to Croatian circumstances.
- Croatian categories of protected areas are strict reserves, national parks, special reserves, nature parks, regional parks, natural monuments, significant landscapes, park forests and architectural monument parks. Approximately 10 % of the Croatian territory is under some sort of protection. In addition to areas, various sorts, minerals and fossils are protected as well.
- The Nature Protection Division with the Ministry of Environmental Protection and Physical Planning (MEPPP), is responsible for all protected areas. Forests within national parks are managed by the National Parks Service. Nature parks are managed by forestry company which complies with the conditions for nature protection incorporated in management programs issued by the MEPPP.
- During public consultation on NFPS, a concern was expressed regarding the criteria used for the establishment of protected areas. Policy aim is to establish protected areas and their management regime on the basis of clear criteria and in accordance with international standards.

- The main concern in this field in Croatia is overlapping of responsibilities of the Ministry of Agriculture and Forestry, the Ministry of the Economy, and the *Croatian Forests* Ltd. The influence of forestry administrations on forests management and physical planning is weak. There is a lack of co-ordination with other administrations at national and local levels.
- There is a concern among the forestry regarding the transition of forestry and hunting inspection to the State Inspectorate. Normal practice is that the state supervision remains within the scope of the ministry responsible for forestry and hunting.
- National strategy encourages the establishment of a state service for different categories of protected areas.
- This data is somewhat different when other criteria of division of protected areas are used, such as the criteria used in studies made by FAO experts. One such report states that there are 324 protected areas of 450,000 ha, classified in 8 categories (strict reserve, national park, nature park, special reserve [forest: 32], park forest, significant landscape, natural monument and architectural park monument). Only one part of protected areas is covered by forests.

4.3.5 / IFF 122a

- Coastal forests have found themselves in specific circumstances, as they are located in intensive tourist area or near them. The basic role of these forest ecosystems is to develop tourism through non-wood forest products and services. It is necessary to promote policies to increase the demand for non-wood forest services, through sustainable forest management. The development of continental tourism is to be equally applied at the coastal forest area. This is a reason for adapting and harmonising regulations with the requirements for the incorporation of forest ecosystem into the development of tourism. Only harmonised measures may govern the relationship between tourism development and forest ecosystems management.
- The creation of an appropriate legal framework for the development of non-timber forest products and forest land products implies that two tasks are to be solved: (i) to adopt provisions which facilitate the development and utilisation of non-timber forest values; (ii) to co-ordinate supervision regarding the implementation of regulations related to the utilisation of non-timber resources and values.
- The development of health tourism, rural and hunting tourism is to focus on the increasing demand for non-wood forest products and services, through sustainable forest management, especially in eco-tourism and in tourism focused on forests and forest related activities.
- Hunting has been organised in 310 state hunting grounds and 700 joint hunting units at about 75 % of the surface of the Croatian land.

4.4 Means of implementation

4.4.1 / IFF 17e

- When a party is interested in dissemination of information and insights on forest, examples may be provided for such actions (hunting, natural values of sustaining biodiversity etc.)

4.4.2 / IFF 19b

- The largest part of activities takes place at the incentive of the *Croatian Forests* Ltd. An intensive cooperation and exchange of information takes place with Austria and Germany, while exchange with the Scandinavian countries refers mostly to technology and its influence on sustainable forest management.

4.4.3 / IFF 17a

- Information, at the national level, on management, protection and sustainable development of Croatian forests may be found at web site www.hrsume.hr and are thus made available at international level as well. Further, information is given in short resumes, chronicles, occasional publications, monographs, a magazine for the popularisation of Croatian forests etc. Some of the publications are printed in English as well.

5 Criteria and indicators of sustainable forest management

5.1 *Develop, test and implement criteria and indicators at national, subnational and operational levels*

- Pursuant to Forestry Act, NFPS adopts starting criteria for ensuring lasting management and preservation of biodiversity: (i) selling of state owned forests or forest lands to third parties or granting concession(s) for management of these resources are prohibited; (ii) it is strategically important for the long-term development of forestry that state assets remain in the property of the Government.
- Efficiency and rationalisation of forestry administration as a basis for sustainable forest management may improve the co-operation between state administration bodies.
- Return of forestry and hunting inspection to the Ministry of Agriculture and Forestry is a base for sustainable forestry.

5.1.1 / IPF 17 d

- Since the EU has no particularly large forest legislation, the Republic of Croatia continues to develop its own guidelines and regulations relating to forest reproduction material, protection of forests, assessment of the influence of forests on environment and vice versa, making inventory of forests, by incorporating conditions which ensure sustainable forest management and its lasting biodiversity.

5.1.2 / IPF 17d

- This is most likely a future task or process (and not a basic principle). No information available.

5.1.3 / IPF 89 a

- Sustainable forest management is possible after delineation between forest land and any other type of land (agricultural, urban, construction) and total economic assessment of forest resources.

5.1.4 / IPF 115a

- NFPS specifically requires the establishment of the Chamber of Forestry to regulate issuing of licences, professionalism in forestry and its fields. Except the establishment of the Chamber of Forestry for issuing licences, it is necessary to define requirements and criteria for licensing forestry contractors and other contractors.
- Further, since the exploitation of forest by-products or forest services is not regulated, this area will be specified by law on the principle of sustainability.
- Croatian policy takes into consideration that as a specific transition country, we need to strengthen forest keeper service, to give it increased authority for the prevention of illegal activities in forestry which would be a guarantee and a basis for successful sustainable forest management.

5.1.5 / IPF 115b

- The said principles are tried to be incorporated in drafting of any forestry program in Croatia. This is a complex task for each level of forestry system. Even for a country with about 2.5 mil ha of forest land, it is difficult to define the same criteria and indicators for all circumstances.

5.1.6 / IPF 115 c

- Lowering of criteria and indicators with its implementation to their lowest operational level in a management unit (Croatia has about 950 management units) means to question tradition and its current principles of forestry when elaborating management system or management programme for forests in karst area. Goals are numerous: sustainability of biodiversity, productivity of ecosystems, retention of the capacity for regeneration, invariability of vital ecosystem. In this, economic, ecological and social tasks are fulfilled at both local and higher levels, as well as on a global level so as to avoid damage in any neighbouring ecosystem. The introduction of working methods (technologies), as stated in NFPS, is related to this. Most frequently, attempts are made to sustain or establish mixed forests which are important for biodiversity. The said document specifies allowable cut of an economic unit. However, if at a particular moment there is no interest in market economy for specified allowable cut, are attempts to achieve it worth while? This issue will have to be resolved in the future. Another issue is what needs to be done in emergency and crisis situations, such as strong winds, breaking of ice, drying of woods etc. Assistance of international consultants will have to be engaged in order to resolve similar issues.

5.1.7 / IFF 17d

- Although international support and assistance are expected for specifying criteria and indicators for sustainable forest management, the largest part of work is to be done by national forestry. It is important to accept working guidelines and to organise efficient creation of criteria and indicators adapted to our circumstances.

5.2 *Promote the use of criteria and indicators at regional and global levels*

5.2.1 / IPF 115d

- An example of general definition from NFPS: *The aim of protection and preservation of biodiversity as well as sustainable management of forest resources is to eliminate the possibility of their degradation, while preserving their potential for current and future generations.*

5.3 *Further develop biodiversity indicators*

5.3.1 / IPF 115f

- Work on determining various criteria and indicators of biodiversity is only at its very beginnings, although the *Convention* has been approved and ratified. Efficiency in this area will probably increase once the restructuring of the *Croatian Forests Ltd*, which manages Croatian state forests, is terminated.

5.4 *Means of implementation*

5.4.1 / IPF 115c

- The same applies as stated in point 5.1.5. Any kind of international assistance in determining guidelines is very much welcomed for our transition economy and for speeding economic growth.

5.5 *Common items*

5.5.1 / IPF 115a

- Large variety of Croatian forests, from continental and lowlands to mountainous and Mediterranean forests, requires different approach, depending on specific circumstances. Almost any proposal will have to be verified on the ground.

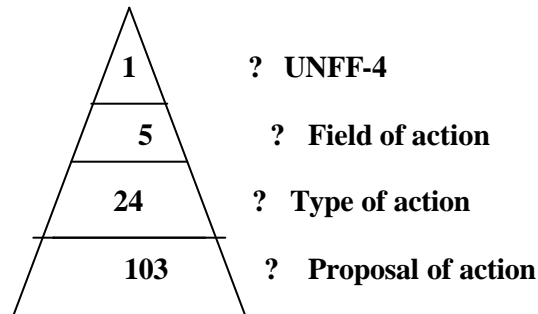
5.5.2 / IPF 115b

- Criteria and indicators for sustainable forest management are incorporated in forest management plan which divides areas into management units, and the latter are further divided into departments and divisions.

III.

1. *Some remarks in connection with the National Reports of the Republic of Croatia*

- This pyramid, is an integral part of this report and consists of four levels:



- The following are the features of the topic of this report (i) large heterogeneousness, (ii) larger number of overlaps, (iii) partial repetition, (iv) larger number of initiatives from UNFF international organisations, developed countries and developing countries, etc.
- Except for the need for repetition, if all questions should be answered, part of the answer is only declaratory as it aligns with the activity and competency of UNFF.
- Of course these questions and topics are universal with the pretension to envelope a greater number of possible, actual questions of every country, and due to this, it can be limiting when concerning certain countries.
- All that is mentioned required the cooperation of a greater number of experts and considerable more time than was available.

(i) *Social and cultural aspects of forests*

- The main topics of the first section: ? the benefits of using *genetic resources*, ? the role of *women* in sustainable forest management, ? the realisation of *women's rights* and their role of using wood as a energy source, ? *the employment* of the local population in forestry, ? *the role* of the local community in sustainable forest management, ? the recognition and respect for *traditional rights* of the local population, ? working out *a system of management* and the cooperation of all participants who live with the forest, ? *politics* of the preservation of property (forests), ? *the support for the local community* from international organisations, ? the participation of the community in and around the *forestry market*, and also in secondary *by-products* of the forest, ? the development of environmentally-friendly technology, ? in all situations it is important to realise the needs of the local community, ? must provide attention to the collection and usage of *non-wood products from the forest*, ? collection, reporting and spreading of *information* of previous activities, ? special cooperation regarding forests in critical environs, ? inclusion of forestry programs with socially relevant elements, ? recognition of the role of the *private sector* in forest manufacturing, ? advancement of an ecological and cultural level before any activities concerning the sustainable development of forests, ? invitations from *Forums* regarding the support from international factors of the above-mentioned topics and tasks.
- In the gaining of intellectual rights for the use of the forest's genetic resources, the Republic of Croatia has legislation, that is looked after by the Government body for intellectual ownership and the Ministry of Agriculture and Forestry. The participation of women in forestry and its activities make

up over 50 % of the Croatian population and it is important to view this through a number of characteristics of Croatian forestry, that is, from the aspect of ownership, historical inheritance, type of activity by forest activities, etc. (exploitation of forests, silvicultural, forest management regulations, protection of forests, nursery production). Due to the nature of work, women are employed in a large or equal number of jobs as men, in all areas except in the exploitation of forests and forest management of state-owned forests. The local population, especially women, find temporary work in state-owned forests in seasonal jobs. Otherwise the cooperation and the recognition of traditional rights of the local population come with many regulations and are regularly disputed due to a conflict in interest. The politics of property rights is still a long way from being solved, especially regarding the acquirement of prerequisites for the specification of ownership rights. The indigenous population whose consciousness regarding non-wood values of the forest and the development of other activities of various types for eco-tourism in Croatian forests is increasing. Unfortunately in the forests near tourist areas, the forest environs are experiencing critical conditions, which brings about many problems. The social and economic position of the population related in some way to the forests, can be significantly changed for the better through political attitudes and decisions.

(ii) *Traditional forest related knowledge (TFRK)*

- Some topics of the second section: ? participation of the local population with traditional forest related knowledge (TFRK) along with sustainable forest management (SFM), ? the promotion of an understanding of TFRK in the supplementation of CBD, ? the promotion of internationally acceptable understanding of TFRK, ? the promotion of partnership of landowners with TFRK and others regarding TFRK for SFM, ? the development of new mechanisms in the support of TFRK, ? archiving and contemplation of the application of TFRK, ? promotion of research in the area of TFRK, ? fair rewards for TFRK, and the determination of the advantages and disadvantages of using TFRK, ? in cooperation with those with TFRK to conduct the digitalisation of maps and land registries, ? an invitation for the participation of the local population in the maintenance of CBD, ? the re-establishment of the relationship between TFRK and intellectual ownership, ? demand for institutional and legislative frameworks for the protection and up-keep of TFRK, ? taking into consideration the cultural integrity regarding the protection of TFRK, ? the inclusion, recognition, rewards and financial support, etc. in the application of TFRK, ? the creation of a dependability study concerning TFRK and its total protection and applicability, ? the creation of a compilation of international and domestic legislation regarding TFRK, ? the establishment of the origin of procedures from TFRK, where it is necessary to insure adequate development mechanisms, ? consideration of forest genetic resources for the purpose of protection, ? taking into consideration TFRK before the transfer of technology.
- In specific past and current conditions, it is important to firstly mention in a study *what is traditional forest related knowledge (TFRK)*. Only then will we be able, for specific Croatian conditions, to give meaning to an appropriate program for its development, benefit creation, etc. There is no debate that the whole idea related to TFRK was created for 'some other' forestry and is difficult to apply to Croatian conditions, maybe because parts of the population of Croatia are too closely tied with the forests across generations. One thing is certain, forests and forestry have taken care of the cultural identity of the local population. It is probable that due to the mechanisation of the wood harvesting development in the last 50 years many changes have occurred: in silvicultural and similar activities, the participation of the local population as a workforce, and also the exploitation of forests by private entrepreneurs is more and more frequent. Regarding other benefits of forests, this is mainly dependent on the relationship of local government and self-government and forest offices management.

(iii) *Scientific forest related knowledge (SFRK)*

- The main topics regarding SFRK: ? integration of SFRK with politics, ? establishment of research needs and priorities for the purpose of supporting SFM, ? promotion of research for the problem of desertification, ? establishment of an entire research system for global interdisciplinary research, ? special invitation for the support of applicable tree species in the regeneration of arid and semi-arid lands, ? an international research facility in cooperation with government and non-government bodies which encourages the quicker development of instructions for the development of priorities, > need for the connection with practical tasks of forest management, >enablement of global research, >acceptable ways of spreading information and technology, >mobilisation of finance resource, ? ? promotion of the conventions with the purpose of filling knowledge gaps, ? research and checks to be completed *on-site*, ? encouragement for the research of valuing forests with criteria and indicators of special interest to each country, ? encouragement of international cooperation on monitoring atmospheric causes of the drying of forests, ? strengthening of forest research with clearly formulated policies, programs and strategies, ? encouragement of the inclusion of public research institutions and the private sector in research, ? efficient spreading of information, ? initiative for the Forest Act to regulate the research and IT work, ? encourage efforts towards global research, ? cooperate with international associations on the creation of a global forestry information system, ? strengthen the demand for funds for research work.
- Scientific research work in Croatia has been financed mostly by the forestry for the last 43 years, although the applicable ministries also contributed funds from the budget, not including the direct negotiation of associations and individuals with forest management. Other than the categorisation of research tasks, it is very important to have a global approach (unique program for the whole country) and interdisciplinarity, of course by insuring funds and the publication of results. However, there is the obvious problem with the distribution of the scope of research, thus the financial means; the least is invested in the research of parts of the forestries operations where the largest profit is realised and therefore it is here that the largest savings and rationalisation can occur, also a level of protection of workers is most needed here (harvesting). The significant publishing activity of the state forests is helped by scientists, universities, an institute and, of course, Croatian Forests. It is worth mentioning that experts (graduates of forest engineering) and scientists to a large extent originate from areas where they have managed forests for centuries in harmony with economic principles and it is often the case that they are employed there in the area that they were born. That certainly secures a significant amount of participation by the public concerning forests, their plans and programs for management.

(iv) *Criteria and indicators of sustainable forest management*

- Some topics regarding C&I SFM: ? gaining information related to SFM, ? past experience and trends with forestry and the influence on the present, ? estimation initiatives for forest resources and statistical data concerning forests, ? preparation of national information for the management, protection and development of all types of forests, ? recommendations and demand from FAO to create global estimates of forest resources in cooperation with commonalities, ? an invitation to developers and participants from a higher level to help in the interpretation and spreading of information concerning the viability of development, protection of forests and management, ? an information system that allows for the advancement of sustainable forest management, ? internationally accepted definitions of key terminology that are important to SFM, ? increasing the level of international understanding by using definitions, ? categories for protected areas, ? promotion of the demand for growth policies for wood and non-wood products of the forest.

- National information is discussed in the report and in the Annex. Maybe it is harder to discuss the international exchange of information as there are numerous obstacles for the follow up - Internet follow ups have considerably increased and all the information that is not available is inaccessible due to the price of its attainment. Encouraging the definition of key ideas on a global level is a large contribution to the understanding between experts and scientists. All these international accomplishments should be followed and translated into ones native language with the creation of a professional language. This report has also faced challenges in creating certain definitions and initiating a debate concerning international suggestions for these definitions and their usage for Croatian conditions.

(v) ***Monitoring, assessment and reporting, and concepts, terminology and definitions***

- Important topics for instruction for action ? criteria and indicators for sustainable management included in the national program, ? sustainable forest management as a basis for all work in and with forests, ? integrating favourable criteria for sustainable forest management, especially before estimating national forests, ? before all the above mentioned, it is important to take into consideration specific national conditions, ? criteria and indicators should be tied in to the economic unit, ? usage and understanding of criteria on a global level regarding the understanding of concepts, terms and definitions, ? indicators for biodiversity should be coordinated with the existing forestry criteria and indicators, ? technical and financial assistance is supported in countries that are not included in the process of coordination of criteria and indicators, ? insuring the participation of the public, ? besides the putting in motion and implementation of criteria and indicators it is important to insure practical checks.
- The problem of criteria and indicators (C&I) is important for all professions, the closer to the bio-area the harder, where it is not easy to define measurable quantities, easily definable and comparable, along with reliability and acceptable inaccuracy of measurement if it is done by an experiment. The reliability of number values depends on the accuracy of brought about decisions. These problems should be made priority in scientific research work. Both criteria and indicators are very complex and of a variable size concerning the addition of concepts to sustainable management, the protection of bio-diversity and the environment.

2. Some important insights regarding this report

- a) An important insight is, that in spite of the acceptance and taking into account of the international obligations taken over on various levels, a big task remains in adapting to Croatian specific situations in forest management, and opposing to the influences into the basis of sustainable development and bio-diversity.
- b) It is important to mention the regional differences of Croatian forests. That is, parts of forests are multifunctional, but with various levels of protection (over 10 % of all forests), with a production function or societal/ tourist needs (coast and coastal areas).
- c) The second important characteristic of Croatian forests is the part concerning ownership and wood resources: state-owned forests account for 81 % of Croatian forest land with wood resources of around 220 m³/ha which are relatively well-kept, around 95 % (semi-)natural forests, while private forests account for 19 % of forest land with around 82 m³/ha which is mainly uncultivated.
- d) As in many other transitional countries, but not only there, the historical role of forestry, foresters and forests are judged differently; usually the essence is not understood of the largest 'factory' of many goods in the world, so their importance is not valued: the role and value of forests, the importance of

forestry as an economic branch which insures their sustainable survival, and foresters which care for the biological diversity and the acquisition of wood and many other forest goods which are renewable.

- e) Instead of a positive view of this economic branch, it is often looked upon with incredulity; a well-known public misunderstanding that immediately associates forestry with *wood cutting and game hunting*. As a reminder, the reasons are similar, that negative public attitude (not taking into account the level of education of individuals), induced one of the oldest world occupational associations IUFRO, that at the XXI. Congress in Kuala Lumpur, Malaysia, to replace one word in the title: *International Union of Forestry Research Organizations* from 2000 to the *International Union of Forest Research Organizations*! It is questionable whether the fact that the term **forestry** (economic branch) is replaced with a word from an eco-system **forest**, will change the relationship of the public towards forestry, and inside IUFRO. Most importantly, a credible transfer of the meaning and sense from English into any other language, for example Croatian, is difficult if not at times impossible. The worse case scenario is the acceptance of a word or phrase from another language with a direct translation (so-called calque) or worse still, the adaptation of foreign words in one's own language, and there are also word combinations, foreign words and words that became international. This all leads to misunderstandings among not only experts from various areas, but also within the profession.
- f) The urban population wants more and more forest management, in order *to offer more societal and environmental benefits*, but without taking into consideration the likelihood of the reduction in the production of industrial, firewood or any other type of wood. These demands ask for forest management that is more and more in line with environmental sustenance, which has been achieved in many state-owned Croatian forests, in spite of many prior external disasters for forests (political, war).
- g) The above is valid especially for the coastal areas of Croatia, where tourism is beginning to offer eco-tourist elements in forest eco-systems, although it is not wise to generalise that in all such areas, places, and local communities that this is the case (numerous fires caused by carelessness, the relationship of the local population during such fire disasters, etc.). It is worth noting that in parts of Croatia, pressure is growing to further secure the non-market benefit of forests without taking into consideration the reduction of renewable products or valuable raw material.
- h) Due to the above-mentioned *it is worth fighting for a new image* and forestry which forms part of forest management and forest experts along with forest workers and forest keepers which have not so easy environmental conditions, perform their jobs of sustainable forest management as well as the care for the biodiversity of the forest's eco-systems. Croatia has become one of the countries in the world, with the largest percentage of forests, which have been awarded a FSC certificate, for not ceasing to preserve (semi-)natural forests which account for around 5 % of culture and plantation, etc. The forestry science and professionals, together with the local population which takes part in forest work, take good care of the future growth which will be left to their successors.
- i) Cooperation with many non-government ecological and similar associations, greatly assists with the public's attitude, the level of information, as well as the behaviour of the individual when in contact with the forest.

3. Some characteristics of this report UNFF-4

Based on experience with working on the previous report for UNFF, an attempt was made to take a different approach when acquiring data, its classification and the written copy of this report. First of all, an editor's committee was defined:

- *Editors-in-chief:* Assistant Minister Ivica Grbac, PhD and the Head of Management of Forestry and Hunting Ivan Ištok B.Sc.Eng.
- *Editor's advisor* in the Ministry of Agriculture and Forestry, Delfa Radoš, B.Sc.Eng.
- *Executive editor* Stanislav Sever, PhD (retired prof).
- *Members* of ministries, universities, institutes, non-government associations, councils, scientists and experts.

Upon the investigation of these topics for every individual question or group of questions, well-known experts were contacted from the applicable areas. If they were willing to cooperate, the answers to these questions, were then mainly given in *written form*. Editorial staff then prepared answers to questions from the instruction. In this way a number of explanations were given, at times with unavoidable repetition caused by the matter itself, but also the questions from the instruction. Some of the participants worked on the previous report. In total, in some way on this report more participants cooperated than on the previous report, which is positive for the population's understanding of the work of UNFF. Participants were chosen based on the fact that they were *really interested in the subject matter*. Incompleteness of some answers is the result of the current economic situation, which is unavoidably linked with forestry.

Experience with the preparation of this report, has shown *that the anticipated time period for this report was too short*, as the participants also have full time jobs and this work was mainly voluntary. What made things more difficult, was that many experts *do not have international regulations at their disposal*, which includes the one's that the Republic of Croatia accepted as obligatory. A *central database* of all such documents, should be made available to all interested parties, for example, in the Ministry of Agriculture and Forestry, and this would in turn significantly help with the preparation of many domestic laws, regulations and similar reports. Of course, the price of such usage and attainment should not be the same as national or international norms.