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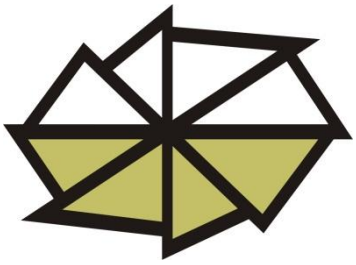
Forest Law and Environmental Legislation

Legal Aspects of European Forest Sustainable Development

Proceedings of the 12th International Symposium Cyprus

Editors
Rastislav Šulek, Peter Herbst and Franz Schmithüsen



Faculty of Forestry, Department of Forest Economics and Management
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IMPRESSUM

Rastislav Šulek, Peter Herbst, Franz Schmithüsen (Editors)

Legal Aspects of European Forest Sustainable Development

Proceedings of the 12th International Symposium, Cyprus

The authors are fully responsible for the content of their articles included in the proceedings

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PREFACE

6.13.00 – this used to be the numerical code standing for forest law and environmental legislation, not only within IUFRO (International Union of Forest Research Organizations (cf. www.iufro.org)) but far beyond that. Now that code has been changed to 9.06.00 – the substance, however, remained untouched.

IUFRO research group 9.06.00 has been operating world-wide over decades now to collect, evaluate and document, disseminate and also critically analyse developments in forest law and environmental legislation, with special emphasis on Central and Eastern European countries, not only, but in particular such with economies in transition. This within the unit's general and foremost objective, i. e. to foster exchange of information amongst researchers and practitioners active in the domain of forest law and environmental legislation, and to permanently review the state of the subject, thereby setting priorities concerning research and practice. There is a huge amount of publications published by this research group, and each of them proves how this unit meets its high standards (cf http://www.iufro.org/science/divisions/division-9/90000/90600/publications/). Thanks to the many lawyers amongst that group, it has also been highly successful in accomplishing the scientific transfer between traditional forestry communities and legal circles. The group's work distinctively contributed to ease long-standing deadlocks, by connecting policy and law in research and in real life as well as in policy and law design and foremost in policy and law implementation.

Starting from 1998, the former IUFRO 6.13.00, now 9.06.00 has regularly been organising workshops to discuss legal aspects of European forest sustainable development in a non-formal and thus highly productive way. The 1st International Symposium on (then) "Experiences with new forest and environmental laws in European countries with economies in transition" was held in Ossiach, Austria in June, 1998. This meeting was followed by the 2nd symposium on the same topic, again in Ossiach, Austria in October 1999 (with presentation of its main results during the XXIst IUFRO World Congress in Kuala Lumpur, Malaysia, in August 2000). The 3rd International Symposium was held in Jundola, Bulgaria in June, 2001, followed by meetings in Jaunmokas, Latvia in August, 2002, then in Zidlochovice, Czech Republic (May 2003), and after that follow-up symposia took place in Poiana Brasov, Romania, in June 2004; in Zlatibor Mt., Serbia, in May 2005; in Istanbul, Turkey, in May 2006; in Zikatar, Armenia, in June 2007; in Sarajevo, Bosnia-Herzegovina, in May 2008; as well as in Zvolen (Slovakia) in May 2009, and now in Lemesos (Cyprus) for the 12th Symposium on "Legal Aspects of European Forest Sustainable Development", in May/June 2010.

On the occasion of their 12th International Symposium on “Legal Aspects of European Forest Sustainable Development”, IUFRO 9.06.00 entered uncharted territory, twice: Besides being the first ever scientific congress on the island of Cyprus covering such forestry topics, this meeting - unlike most other such meetings on European level, which usually are organized by scientific and/or state institutions - was hosted by a grass-root organisation, Cyprus’ largest farmers’ association, Panagrotikos.

Forty-one researchers and practitioners originating from eighteen different countries met in Lemesos/Cyprus (31 May – 3 June, 2010) and used this opportunity to get acquainted, involved and familiar with the new legal situation not only in European forests, but, profiting from the presence of participants from across the world, also Cameroon, Japan and Iran.

The participants were surprised to experience the long-standing tradition of sustainable forestry on the host island, which combined with the amenities of the Mediterranean Sea helped to create the very right atmosphere for that meeting of experts reviewing the state of forest laws and environmental legislation.

This time, the main focus was on the role of forests, the goals of forest management and the objectives of public policies addressing sustainable forest management.

Specifically, issues like legal aspects of different types of forest land tenure, legal regulations of forest management plans as a tool for sustainable forest management, the status of compensation of forest owners for ownership restrictions in the public or private interest, legal and Institutional status of national parks as tool for sustainable forest management, as well as the legal and institutional framework for recreation and environmental markets for forest enterprises were analysed and discussed by international and local participants.

The symposium was kindly hosted by Panagrotikos Sydesmos of Cyprus and supported by the respective governmental agencies and all institutions involved in the management of the local forests and natural environment of the Republic of Cyprus, as well as the Swiss Federal Institute of Technology, Switzerland. The meeting was organized by Nektarios Karios and his staff at Panagrotikos, as well as Peter Herbst (IUFRO 6.13.00). The high relevance of this meeting was emphasised by the attendance and active participation of the Leader of the Democratic Rally of Cyprus, Mr. Nicos Anastasiades, as well as the Minister of Agriculture, Natural Resources and Environment of Cpyrus, Mr. Demetris Eliades.

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You are welcome to visit *http://www.iufro.org/science/divisions/division-9/90000/90600/* for more information, or directly contact the coordinator via email, <*HP@net4you.at*>.

Peter Herbst
Coordinator
IUFRO Forest Law and Environmental Legislation, 9.06.00

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Implementation of the classification system of forest habitats in accordance with the 'Natura2000' standards in the Georgian Legislation

***Maia Akhalkatsi* [*], *Mariam Kimeridze* [**]**

Abstract

Georgia is made up of two separate mountain systems: the Greater Caucasus lying between the Black and Caspian Seas; and the Lesser Caucasus, which runs parallel to the greater range. Two thirds of the country's territory (69700km²) is mountainous. One third of it is covered by forests, 70% of which are mountain forests spread from lower montane belt up to the treeline ecotone. The classification of forest plant communities was done by A. Dolukhanov (1989). However, the different methodology used by European and Soviet schools caused differences in nomenclature. Natura2000 habitat directives based on CORINE biotope classification system developed legislative basis for conservation of natural habitats in EU. To join this system it was necessary to conduct inventory and develop new schema of habitat types according to Natura2000 standards in Georgia. We have undertaken an attempt to classify Georgian forest area to the habitat types and have achieved the following results. 18 forest habitat types are identified to belong to the biogeographical region - Forests of Temperate Europe. Beech forest is represented by 7 types. 2 of which are characterized only for Georgia. 5 of 6 habitat types belonging to Mediterranean deciduous forests are typical only for the Caucasus.

1. Introduction

Georgia is located in the Caucasus region, which is among the planet's 25 most diverse and endangered hotspots designated as conservation priorities because the Caucasus is a region of remarkably rich vegetation with a very high level of endemism (Myers et al., 2000). Georgia has an extremely varied topography and climate that produce a mosaic of habitat types ranging from see level up to alpine vegetation near the snowline; and, from warm, humid lowlands at the Black See to dry, continental areas in the Eastern Georgia covered by forests of different kinds, steppes, and semi-deserts. 4,400 species of vascular plants, including 380 endemic species, occur in Georgia's 69,700 kilometres[2] (Nakhutsrishvili, 1999).

The Caucasian mountain region is made up of three separate mountain systems (the Greater and Lesser Caucasus and Talysh mountains) and the lowlands of the Transcaucasian depression located between Black and Caspian Sees (Neidze, 2003). Georgian territory covers parts of the Greater Caucasus mountain range, Transcaucasian depression and the Lesser Caucasus Mountains, which run parallel to the greater range, at a distance averaging about 100 kilometres south, between 40º and 47º latitude east, and 42º and 44º longitude north. Two thirds of the country is mountainous with an average height of 1,200 m.a.s.l., with highest peaks of Mount Shkhara (5,184 m.a.s.l.) at the Western Greater Caucasus and Mount Didi Abuli (3,301 m.a.s.l.) in the Lesser Caucasus.

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The core of the Great Caucasus mountain range is composed of Precambrian and Paleozoic crystalline rocks, mostly granites and gneiss. The mountains of the southern macroslope are made of Jurassic and Triassic slates, sandstones, allevrolites, argellites, massive limestone and tuffs (Romanika, 1977). The Lesser Caucasus at Javakheti Plateau is composed of Upper Cretaceous and Tertiary igneous rocks including lavas and shallow intrusive rocks such as andesite, basalt and dolerite (Klopotovski, 1950).

The soils of the southern macroslope of the Great Caucasus mountain range belong to the Western Transcaucasian Mountain Province (Ivanova et al, 1963). Within the lower vertical zone (up to 300-500 m above sea level), either mountain zheltozems or gray forest soils predominate. Higher, up to 1800-2000 m, the soils belong to the brown mountain-forests acid non-podzolized type. Most soils within the forest belt correspond to either Inceptisols or Ultisols. The Lesser Caucasus including Javakheti, Tsalka-Dmanisi and Erusheti uplands is covered with the mountain chernozems (which are formed at altitudes from 1200-2200m) and meadow chernozem-like soils. In highlands they are replaced by mountain-meadow soils. Besides, the alluvial soils, redzinas, brown as well as the meadow-brown soils occur here, with the predominance of brown forest type of soil in the mountain forest belt (Neidze, 2003).

Climate is temperate but fluctuates by elevation, that varies from 0 to 5184 m (air temperature is changed on the average of 0.65 °C per 100 m altitude); and by regions from humid western Georgia to arid zones in the Eastern Iori Plateau (annual precipitation varies from 1500-2000 and up to 4500 millimetres in the western, Kolkhic part to 600-1000 mm in drier parts of eastern and southern regions; Neidze, 2003).

One third of the Georgian territory is covered by forests, 70% of which are mountain forests spread from lower montane belt up to the treeline ecotone. The Caucasus forests have one of the highest levels of endemism in the temperate world (Kvachakidze, 2001). 23 percent of vascular plants are endemic to the region. According to Dolukhanov (2010) the Caucasus forest belt can be subdivided into three major elevation zones: broad-leaved forests (50-900 m), coniferous forests (900-1700 m), and high mountain krummholz forests (1700-2000 m). The overstory is frequently dominated by beech, hornbeam, chestnut, oak, and fir.

Georgian vegetation is well studied by Georgian botanists (Grossheim et al., 1928; Ketskhoveli, 1959; Dolukhanov, 1989, 2010; Nakhutsrishvili, 1999, Kvachakidze, 2001, 2009). The classification of forest plant communities was done by A. Dolukhanov (1989). However, the different methodology used by European and Soviet schools caused differences in nomenclature. Natura2000 habitat directives based on CORINE biotope classification system developed legislative basis for conservation of natural habitats in EU. To join this system it was necessary to conduct inventory and develop new schema of habitat types according to Natura2000 standards in Georgia. We have undertaken an attempt to classify Georgian forest area to the habitat types.

2. Materials and Methods

The classification of forest habitats of Georgia is based on the Interpretation Manual of European Union Habitats - EUR27. The "Habitats" Directive (Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora, O.J. L206) is a Community legislative instrument in the field of nature conservation that establishes a common framework for the conservation of wild animal and plant species and natural habitats of Community importance; it provides for the creation of a network of special areas of conservation, called 'Natura2000'.

The Directive is developed on the bases of CORINE biotope classification (1989, 1991) determining codes and habitat types of Europe, in particular involving the division of the latter into sub-types. According to Interpretation Manual habitat classification is based on plant community types. This information is obtained from literature data of botanists working in Georgia since 18th century (Grossheim et al., 1928; Ketskhoveli, 1959; Dolukhanov, 1989, 2010; Nakhutsrishvili, 1999, Kvachakidze, 2001, 2009; etc.).

The description of each habitat types is composed by sections: 1) General description of distribution area and environmental conditions; 2) Species of plants including dominant, rare and endemic species; 3) Corresponding categories in other countries of Europe; 4) Associated habitats, which occupy adjacent territories; 5) Bibliography.

3. Results

24 forest habitat types are identified for Georgia (Table 1). 18 belong to the biogeographical region - Forests of Temperate Europe. 6 habitat types belong to Mediterranean deciduous forests.

The main difference from the European habitats is existence of different dominant species of the plant community. Species composition on generic level is very similar, but on species level the Caucasus differs from European vegetation. There are species, which are related with European species but are endemics for the Caucasus: *Abies nordmanniana, Picea orientalis, Pinus kochiana, Fagus orientalis, Quercus iberica, Betula litwinowii,* etc.

Beech forest group is represented by 7 habitat types. 2 of them: (1) Beech forests with Kolkhic understory (***Fageta fruticosa colchica***); and (2) Beech forests without understory (***Fageta sine fruticosa***) are characterized only for Georgia. 4 other habitats differ from European related habitat types (Table 1): 1) Dark-coniferous forest (***Piceeta orientale-Abieta nordmanniana)***; 2) Pine forest ***(Pinus kochiana)***; 3) Yew forest ***(Taxus baccata)***; 4) Hornbeam forest ***(Carpinus caucasica)***. 5 habitat types of the Mediterranean deciduous forests are typical only for the Caucasus (Table 1).

Most outstanding and typical only for Caucasus and namely Georgia are the following forest habitats:

3.1 Beech forests with Kolkhic understory (*Fageta fruticosa colchica*)

The existence of the dense understory differentiates the beech forest of Georgia from the one in the rest of Europe. The beech forest with the Kolkhic understory (Fig.1) is the composing part of the ecoregion of Kolkhic mixed broad leaved forest. It is widespread in west Georgia on Northern-western slopes of Great Caucasus and the Ajara-Imereti Range. The climate is moist with about 2500 mm of annual precipitation. In South Kolkhic forests of this type start from the sea coast. In the Northern part it does so at the 200 meters above the sea level and reaches about 2250 meters. As a result, the type of vegetation significantly differs. There are several sub-types. Sometimes sub-types are mixed with each other, which makes their classification difficult.

Kolkhic forests are extremely rich in terms of flora. They contain relict species of the tertiary period – fern, *Hymenophyllum tunbrigense,* arboreal plants - *Fagus orientalis, Castanea sativa, Zelkova carpinifolia, Pterocarya fraxinifolia, Diospyros lotus, Taxus baccata.* Species mixed with the beech tree are: *Abies nordmanniana, Picea orientalis, Pinus kochiana, Quercus imeretina, Q. hartwissiana, Acer laetum, Carpinus caucasica, Tilia begoniifolia, Ficus carica, Pyrus caucasica, Malus orientalis, Staphylea colchica, S. pinnata* etc. The

following bushes create the understory in the beech forest - *Laurocerasus officinalis, Rhododendron panticum, R. ungernii, Ruscus panticus, R. colchicus, Ilex colchica, Daphne pontica, Epigaea gaultherioides, Vaccinium arctostaphylos, Viburnum orientale* and *Buxus colchica.* The following lianas can be found - *Hedera colchica, Dioscorea caucasica, Tamus communis, Periploca graeca*. Ferns - *Matteuccia struthiopteris, Athyrium filix-femina, Polypodium vulgare, Phyllitis scolopendrium, Pteris cretica,* etc. The following are worth-mentioning from the grass cover - *Asperula odorata, Calamintha grandiflora, Festuca drymeja, Salvia glutinosa, Viola alba.*

Figure 1

Source: Author

6 sub-types and 14 plant communities are described:

1) Beech forest with the Pontic Rhododendron understory - *Fageta rhododendrosa (Rhododendron ponticum, R. ungernii)* for the typical Kolkhic forest. The understory with *Rhododendron ponticum* can be found in almost all forest massifs of west Georgian forests. It is rare in east Georgia and can be found in Baniskhevi, Kvabliani and Nedzvistskali gorges. The average annual precipitation amount in the scope of its distribution amounts to 1400 mm. The area of its distribution starts from the sea coast and ends at 1950 meters above the sea level. In the mountains of high level of moisture in Guria and Ajara it can reach the height of 2100-2200 meters. It grows both in flat open places and heavily inclined slopes. It gives preference to Northern exposition slopes but in the circumstances of high level of moisture grows in the place of southern exposition. It does not like depressed relief with high level of moisture and badly drained soil. **Two types of communities are given:** 1.1) Typical beech with Pontic Rhododendron understory (*Fageta rhododendrosa typical*), which is widespread at the altitude of 400-1700 meters above the sea level. The annual amount of precipitation is 1700-2500 mm. Pontic Rhododendron cover is extremely dense. Other common plants are

Trachystemon orientalis, Buxus colchica, Rubus spp. 1.2) Beech forest with the understory (*Fageta rhododendrosa ungernii*) of Ungern Rhododendron (*Rhododendron ungernii*), which is a relict and local endemic. It can be found in the conditions of high moisture. Annual average precipitation in these places reaches 3000 mm. Small populations can be found in the seaside mountains of Ajara in the upper part of the gorge – Bartskhana, Chakvistskali, Koronistskali and Kintrishi. They are also common at the upper stream of other rivers of Kolkhis – Bzhuzha, Natanebi, Bakhvistskali and Supsa.

2) Beech forest with the laurel *(Laurocerasus officinalis)* understory *Fageta laurocerasosa* similar to Pontic Rhododendron is common in the conditions of high level of moisture, where the amount of average annual precipitation amounts to 2000 mm. The amplitude of vertical spreading varies between 700 and 2000 meters. Different from Pontic Rhododendron, laurel grows well on limestone and well-illuminated slopes of the south. Besides Kolkheti, it is common in the form of small populations far from the areal. For example, in east Georgia it is widespread in the Alazani basin and river Ilto gorge. Existence of such a widely disseminated areal of distribution is related to ornithochoria, since birds feed on its fruit and disseminate seeds on large distances. Different from Pontic Rhododendron, in the laurel understory the grassy cover - *Sanicula europaea, Asperula odorata, Viola alba, V. reichenbachiana, Dentaria bulbifera, Calamintha grandiflora, Salvia glutinosa, Geranium gracile,* etc. ferns - *Dryopteris filix-mas, D. carthusiana, D. assimilis, Polystichum braunii* are better developed. **Three types of communities are observed:** 2.1) Typical beech forest with laurel *(Laurocerasus officinalis)* understory (*Fageta laurocerasosa typica)* is widespread in the places where annual amount of precipitation does not exceed 1700 mm. 2.2) Beech forest with the understory (*Fageta ilicitoso-laurocerasosa*) of holly (*Ilex colchica*) and laurel *(Laurocerasus officinalis)* can be found on limestone mountains in Abkhasia and Samegrelo – on mountain massifs of Kvira, Migaria and Askhi. 2.3) Beech forest with the mountain fescue (*Festuca drymeja*) cover and laurel understory (*Fageta festucoso-laurocerasosa*) are described only in two places. The first is in the tract of mountain Kvira, in the upper part of the karstic limestone macroslope with the inclination of 28º at the altitude of 1780 meters. The second one is on the same mountain at the 1700 meters on the southern slope of 30 º inclination. In the first place the forest is represented only by the beech whereas in the second one *Acer trautveterii* is also mixed.

3) Beech forest with the Kolkhic butcher's broom *(Ruscus colchicus)* understory *Fageta ruscosa* is quite rare. However, the butcher's broom itself is characteristic to quite many various communities. But it is a small type of a plant and, therefore, is less visible. It is common in large quantities when other species of Kolkhic understory are excluded from communities due to certain circumstances. That's why the existence of the understory of only butcher's broom is the indicator of the reduction of those conditions that are essential for the existence of the Kolkhic type understory.

4) Beech forest with the typical understory (*Fageta magnovacciniosa*) of Caucasian blueberry (*Vaccinium arctostaphylos*). It is most widely distributed in Kolkheti. In East Georgia it is common in the Lagodekhi region. **Two types of communities are differentiated:** 4.1) beech forest with the typical understory of Caucasian blackberry (*Fageta magnovacciniosa Typical*). It is common in West Georgia, distributed in the middle and upper zones of the forest at the altitude of 900-2150 meters. In East Georgia it is common in the Lagodekhi reserve and extends to the Zakatala reserve on the territory of Azerbaijan. Besides *Vaccinium arctostaphylos,* the understory is created by Kolkhic Ivy - *Hedera colchica* (west Georgia), or *H. pastuchowii (*East Georgia*),* Blackberry - *Rubus* spp., mountain blueberry – *Vaccinium myrtillus,* fern - *Gymnocarpium dryopteris,* grass cover – *Festuca drymeja, Paris incompleta, Oxalis acetosella,* these species are rare species -

Trachystemon orientalis, Neottia nidus-avis, Monotropa uniflora. 4.2) beech forest with the cover of mountain fescue (*Festuca drymeja*) and Caucasian blueberry understory (*Fagetum festucoso-magnovacciniosa*) are common on the slopes of the Southern exposition, in the upper zone of the forest (900-1500 m). The understory is sparse. Besides Caucasian blueberry, azalea (*Rhododendron luteum*) is represented. The following dominate in the grass cover - *Solidago virgaurea, Gentiana schistocalyx, Calamintha grandiflora, Oxalis acetosella, alamagrostis arundinacea.*

5) Beech forest with azalea *(Rhododendron luteum)* understory (*Fageta azaleoza*) is less dependent on moisture conditions and frequently found on dry southern slopes as well. As usual, besides the beech forest it grows in oak-hornbeam forests. **Three types of plant communities are described:** 5.1) beech forest with the azalea (*Fageta azaleosa media*) understory of the middle zone of the forest is common in mountain massifs of west Georgia with the average annual precipitation of 800-1500 mm. Characteristic landscape is the southern slope with the embossed relief of average inclination. Hornbeam, Georgian oak and Caucasian maple (*Acer velutinum*) are mixed with the beech. Species of the understory are: *Festuca drymeja, Rubus* spp., *Vicia crocea, Trachystemon orientalis.* 5.2) Beech forest with azalea (*Fageta azaleosa superior*) is mainly common at the height of 1700-1900 meters. The spruce (*Picea orientalis*) is also mixed with the beech. 5.3) East Georgian beech forest with the azalea understory (*Fageta azaleosa iberica*) is widespread in Aragvi gorge, the upper current area of R. Iori and R. Alazani and mountains of the left side of the R. Alazani valley. It grows on slopes of different exposition having the embossed relief, at the height from 1000-1700 meters, or even higher in some places.

6) Beech forest with Oriental Viburnum *(Viburnum orientale)* understory - *Fageta viburnosa* is characterized by a small synecological areal of distribution. The Oriental Viburnum forms the understory mainly in the beech forest. It rarely occurs in the fir-forest or other types of forests. From different forms of the Kolkhic type understory it holds the most moistened location. It can be common outside Kolkheti in the upper streams of rivers Aragvi and Alazani. The area of its distributed varies between 900 and 1900 meters. It mostly grows on the slopes of northern exposition of little hillside or flat open space. It can not be found on the slope of more than 25º of inclination. Oriental Viburnum is the Kolkhic relict. Its close relative species *Viburnum acerifolium* grows in the eastern part of the USA. **Three communities are differentiated:** 6.1) Beech forest with the typical understory of Oriental Viburnum (*Fageta viburnosa typica*) grows in the middle zone of the forest of west Georgia, 1100-1600 meters above the sea level. It is more common on slopes of small and middle inclination of the Great Caucasus. Besides it, Caucasian blueberry and laurel grow in the understory. From other plants blackberry, box, *Trachystemon orientalis, Dentaria bulbifera, Paris incomplete,* etc. dominate. 6.2) Beech forest with blackberry-Viburnum understory (*Fageta ruboso-viburnosa*) is common in Kokheti forests and extreme east of the area of its distributed, Aragvi gorge. Together with the beech, the maples (*Acer platanoides, A. pseudoplatanus, A. trautvetteri*) can be found, from bushes – blackberry, Caucasian blueberry, holly, nut (*Corylus avellana*), elder (*Sambucus nigra*) and ferns - *Dryopteris filix-mas, Athirium filix-femina*. 6.3) beech forest of the upper forest zone with the Viburnum understory (*Fageta viburnosa superior*) can be found only in West Georgia at the elevation above 1700 meters and is rare. There are the following species that are characteristic to the upper zone of the forest and drier biotopes: *Calamagrostis arundinacea, Gentiana schistocalyx, Oxalis acetosella, Gymnocarpium dryopteris, Festuca drymeja, Asperula odorata, Cardamine pectinata, Neottia nidus-avis, Epilobium montanum,* etc.

3.2 Kolkhic broad-leaved mixed forest

Kolkhic broad-leaved mixed forest is mainly distributed in west Georgia, non-marshy lowland places and lower zone of the forest. It holds the eastern slopes of Ajara-Imereti range and northern-western part of the Great Caucasus. The boundary of vertical distribution is from 200 to 1000-2000 meters above the sea level. However, in the southern part of Kolkheti it goes down to almost the sea level. Yellow, brown and red soil of the forest can be found in the area of its distribution. Characteristic climatic feature is high humidity. Annual average precipitation in such types of a forest amounts to 2500 mm. Such a high index of moisture is mainly characteristic to narrow gorges, where the annual precipitation is almost always equal and the temperature is moderate. Kolkheti forest differs from other broad-leaved forests by the ever-green understory with special composition of species. It contains many relict mesophytic species of the Caucasus. It is especially represented by tertiary relicts. Among them the poikilohydric living relict, fern - *Hymenophyllum tunbrigense* is worth noting. It grows in Southern Kolkheti. Overall in such a type of a forest 50 coniferous/evergreen and 80 herbaceous species are described. 6 dominant tree species are distinguished, that create syntaxons of various composition – chestnut (*Castanea sativa*), beech (*Fagus orientalis*), Imereti oak (*Quercus imeretina*), Kolkhic oak (*Q. hartwissiana*), Alder (*Alnus barbata*) and hornbeam (*Carpinus caucasica*).

From hard-wood plants the following are common: Zelkova (*Zelkova carpintfolia*), Georgian oak (*Q. iberica*), elm (*Ulmus glabra, U. elliptica*), maple (*Acer laetum*), Norway maple (*Acer platanoides*), wire-but (*Pterocarya fraxinifolia*), lime (*Tilia begoniifolia*), maple (*Acer campestre*), willow (*Salix micans, S. pantosericea*), Caucasian wild pear (*Pyrus caucasica*), apple (*Malus orientalis*), *Diospyros lotus*, ash (*Fraxinus excelsior*), pine (*Pinus kochiana*) and Yew (*Taxus baccata*).

From ever-green bushes the following are worth noting: *Rhododendron ponticum, Laurus nobilis, Ruscus colchicus, R. ponticus, Daphne pontica, Ilex colchica, Rhododendron ungernii, Epigaea gaultherioides* and *Buxus colchica*. From deciduous bushes the following can be encountered: relict *Vaccinium arctostaphylos, Staphylea colchica, Viburnum orientale, Philadelphus caucasicus, Euonymus leiophloea, Hypericum xylosteifolium, Swida australis, Corylus avellana, Frangula alnus, Mespilus germanica, Rubus caucasicus, Crataegus microphylla,* etc. Ferns are represented by *Matteuccia struthioptenis, Athyrium filix-femina, Blechnum spicant, Dryopteris affinis,* etc. The epiphytic ferns are represented by *Polypodium serratum.* On cliff grow: *Phyllitis scolopendrium, Pteris cretica,* etc. Lianas are widely represented and create an impenetrable plant cover, especially, in forests. Widely distributed species are: Kolkhic ivy (*Hedera colchica*), Tamus (*Tamus communis*) and silk-vine (*Periploca graeca*), hops (*Humulus lupulus*), prickly ivy (*Smilax excelsa*) and clematis (*Clematis vitalba, C. viticella*). In Abkhazia there are Caucasian Dioscorea (*Dioscorea caucasica*), wild vine (*Vitis vinifera* ssp. *sylvestris*) and American *V. labrusca*; characteristic species also are epiphytic lichen old man's beard (*Usnea barbata*) and mosses (from Neckeraceae family).

The following representatives of herbaceous plants are common: *Brachypodium sylvaticum, Oplismenus undulatifolius, Cardamine impatiens, Oxalis corniculata, Fragaria vesca, Lapsana intermedia, Brunnera macrophylla, Clinopodium vulgare, Arthraxon langsdorffii, Salvia glutinosa, Veronica officinalis, Viola alba.* Invasive species are: Northern-American *Baccharis halimifolia,* Pan-tropical *Paspalum paspaloides, Andropogon virginicus,* etc.

8 sub-types are determined: 1) beech-chestnut forest (*Fagus orientalis - Castanea sativa;*) is a moist forest, widespread on slightly declined slopes, clay soil; **2)** Hornbeam-chestnut forest

(*Carpinus caucasica - Castanea sativa*); **3)** beech-chestnut-hornbeam forest (*Carpinus caucasica - Fagus orientalis-Castanea sativa*); **4)** Beech – alder -chestnut-hornbeam forest (*Alnus barbata - Carpinus caucasica - Fagus orientalis - Castanea sativa*) can be found in moit, slightly inclined locations of the northern slope. **5)** Hornbeam forest with oak (*Carpinus caucasica -Quercus harwissiana*) is found in Abkhazia on the terrace up to 30 meters above the sea level; **6)** Imereti oak and hornbeam riparian forest (*Quercus imeretina-Carpinus caucasica)* grows along moist narrow gorges. **7)** Kolkhic broad-leaved mixed forest with boxwood (*Buxus colchica*) understory is found in limestone places. **8)** Kolkhic broad-leaved mixed forest with Pontic Rhododendron (*Rhododendron ponticum*) understory is found in Ajara at the altitude of 960-1060 meters in the Koronistskali river gorge. Characteristic features are: *Epigaea gaulterioides, Ilex colchica, Betula medwedewii, Quercus pontica, Vaccinium arctostaphyllos, Viburnum orientale, Rhododendron luteum, R. ponticum, R. ungernii.*

3.3 Zelkova forest (Zelkova carpinifolia)

Zelkova (*Zelkova carpinifolia*) is the tertiary relict. Its area of general distribution is Kolkheti and Lenkorani in Azerbaijan. In the form of refugium on small territories it is found in Kakheti and Karabakh. Monodominant forest of Zelkova is extremely rare. Such a forest is preserved in Akhmeta region, Babaneuli reserve. Zelkova stand is found in Akhmeta region in several places – Pichkhovani, Laliskuri and Argokhi. Forests occur on foothills of the mountains, slopes of various expositions at the altitude of 430-500 meters. In west Georgia Zelkova forest occupies lower places. The upper margin of its distribution is 750 meters. However, in Karabakh and Lenkoran it can be found at the altitude of up to 1700 meters. In Kolkheti Zelkova forest is mixed with other deciduous plants - *Q. imeretina, Q. iberica, Q. hartwissiana, Carpinus caucasica, C. orientalis.*

There are 2 sub-types and 11 plant communities:

1) Zelkova – hornbeam and oak forests - *Zelkova-Carpineto-Quercetum*, are characteristic to west Georgia. The following communities are differentiated: 1.1) Zelkova forest with Imereti oak, *Zelkoveto-Querceta (Quercus imeretina)*; 1.2) Zelkova forest with oak and Kolkhic butcher's broom, *Zelkoveto-Querceta ruscosa (Ruscus colchicus)*; 1.3) Zelkova forest with oak and false-brome cover, *Zelkoveto-Querceta brachypodiosa (Brachypodium sylvaticum)*; 1.4) Zelkova forest with oak and azalea, *Zelkoveto-Querceta rhododendrosa (Rhododendron luteum)*; 1.5) Zelkova forest with oak and sedge cover, *Zelkoveto-Querceta juncosa (Juncus effusus)*; 1.6) Zelkova forest with oak and hornbeam, *Zelkoveto-Querceto carpinosa (Carpinus caucasica).*

2) Zelkova and oriental hornbeam forest - *Zelkova carpinifolia - Carpinus orientalis*, is characteristic to east Georgia. The following communities are observed: 2.1) Zelkova and Jerusalem thorn forest, *Zelkoveta Paliureto (Paliurus spina-christi)*; 2.2. Zelkova forest with astragal, *Zelkoveta astragalosa (Astragalus brachycarpus)*; 2.3. Zelkova forest with oriental hornbeam, *Zelkoveto-Carpineta (Carpinus orientalis)*; 2.4. Zelkova forest with hawthorn and bog cranesbill, *Zelkoveto-Crataegeta (Crataegus pentagyna) geraniosa (Geranium palustre)*; 2.5. Zelkova forest with nut and wild basil, *Juglandeto-Zelkoveta clinopodiosa (Clinopodium vulgare).*

3.4 Arid open woodlands

Arid open woodlands consist of xerophyte arboreal plants that do not create a closed canopy in upper layer and has xerophytic herbal cover (Fig.2). It is distributed in fragmented forms,

between the steppe and semi-desert vegetation in the arid zone of east Georgia. Annual precipitation amounts to 550 mm. It is preserved in its original form in Vashlovani reserve. Dominant species are: mastic (*Pistacia mutica*), species of juniper (*Juniperus polycarpos, J. foetidisima, J. rufescens*), hackberry (*Celtis caucasica, C. glabrata*), species of willow-leaved pear (*Pyrus salicifolia*), sumach (*Cotynus coggygria*), cattle-herder's cherry (*Prunus incana*), jasmine (*Jasminum fruticans*), black buckthorn (*Rhamnus palasii*), spiraea (*Spiraea crenata*). Thuja (*Biota orientals)* has been planted in v. Alani at the Shiraki forester's summer house and became naturalized.

Figure 2

Source: Author

4 sub-types are identified:

1) Dry open woodland with mastic (*Pistacia mutica*). The open woodland formed by the mastic is worth noting. It is associated with the habitat of Iori river flood plane forest. Mastic trees are frequently at a long distance from each other and sometimes grow big size (10.5 meters high, 0.5 diameter). Associated species of the mastic tree are: elm (*Ulmus carpinifolia*), black buckthorn (*Rhamnus pallasii*) and Georgian oak (*Quercus iberica*). In the second type of the forest there are mastic, hackberry (*Celtis australis*), berberis (*Berberis vulgaris*), black buckthorn (*Rhamnus pallasii*), oleaster (*Elaeagnus angustifolia*), willow-leaved pear (*Pyrus salicifolia*), Jerusalem thorn (*Paliurus spina-christi*) and sumach (*Cotinus coggygria*). From shrubs there are *Atraphaxis spinosa, Reaumuria alternifolia.* The mastic open woodland is also found in Kvemo Kartli, gorge of the river Khrami, on slopes between vv. Asureti and Sadakhlo. Here the following species dominate *Pistacia mutica, Acer ibericum, Celtis caucasica.*

2) Dry open woodland with juniper species (*Juniperus* spp.). The juniper is distributed in Southern Kiziki in the form of small stands, on slopes of northern exposition of Vashlovani reserve, on Zilchi Mountain, southern slopes of Falanthuki Range. It can also be found in Mtskheta surroundings, near Shio-Mgvime, Karsani, etc. Species that form Juniper communities are - *Juniperus foetidissima, J. oblonga, J. polycarpos, J. rufescens, Ephedra procera, Rhamnus palasii, Colutea orientalis, Jasminum fruticans, Prunus microcarpa, Atraphaxis spinosa, Cynosurus cristatus, Silene cyri, Teucreum polium, Campanula hohenackeri, Centaurea ovina, Stachys fruticulosa.*

3) Dry open woodland with willow-leaved pear species (*Pyrus* spp.). Dominant species are: *Pyrus salicifolia* and *P. georgica.* Endemic species are: *P. ketzkhovelii* and *P. demetrii*. *P. takhtadziani* and *P. georgica* grow in Sagarejo region, near village Khashmi. From other species *Paliurus spina-christi, Berberis vulgaris, Rosa canina,* etc. are worth noting. Endemic *P. eldarica* is found by A. Grossheim only in Azerbaijan, Samukhi region (Eliar-ougli). *P. fedorovii* is the endeme found in the surroundings of village Gldani and village Mukhrani. *P. oxyprion* can be found in Dedoplistskaro region in the Lekistskali ravine. *Celtis caucasica, Punica granatum, Rosa* spp., *Tamarix ramosissima* also grow in this place. Rare endemic species *P. sakhokiana* is found only in Dedoplistskaro region, on the Black Mountain. The stands are more dense than *P.* that of *P. salicifolia,* on the northern slope, in the depression. The understory made of Jerusalem-thorn and oriental hornbeam is developed here. In Ateni village surroundings, on mountain Unagira grow *P. salicifolia* var. *angustifolia.*

4) Dry open woodland with hackberry species (*Celtis* spp.) is developed on the Black Mountain, big and small Zilchi, their slopes and canyons. Dominant species are: hackberry (*Celtis australis, C. caucasica*) and mastic. The species that add to them are: tamarisk (*Tamarix ramosissima),* oleaster, willow-leaved pear, Georgian maple (*Acer ibericum*), juniper (*Juniperus rufescens*).

3.5 Sub-alpine birch krummholz

The treeline on moist slopes of the northern exposition of the Great and Minor Caucasus is formed by the sub-alpine forest of birch elfin trees at the altitude of 2400-2500 meters. However, separate trees are common at the altitude of up to 2550 meters. Inclination of slopes does not exceed 10-25º that determines stable cover of snow during winter. The mountain brown soil is characteristic, mainly on volcanic rock layers with the humus layer of 10-20 cm thick. The forest of this type is found in the Central Great Caucasus. Namely, Kazbegi region as well as in the Minor Caucasus. For example, on Tskhratskaro pass above Bakuriani. It is as well common on northern slopes of Shavsheti and Erusheti ranges. In this type of habitat the border of the forest is lowered by 200-400 meters as a result of anthropogenic impact, which is caused by excessive grazing and cutting of trees. However, as a result of recent global warming and decrease of grazing, the slopes where the birch grove had to be present earlier were repeatedly reforested. Those forests on the Great Caucasus that are considered to be the so-called "forests of the church" and where grazing and cutting has not taken place for ages, are well preserved.

Above 1800 meters up to 2300 meters tall birch trees with closed canopy form forest occupied the slopes of northern exposition (Fig.3). The timberline is situated at the altitude of 2400-2500 meters where 2-3 meter tall elfin birch and mountain ashes (*Sorbus caucasigena*) are found and Caucasian evergreen Rhododendron (*Rhododendron caucasicum*) and other evergreen shrubs are introduced as understory. The treeline reaches 2550 meters where only dwarf trees of the birch grow among Caucasian evergreen Rhododendron shrubs.

Characteristic species are: *Betula litwinowii, B. raddeana, B. pendula, Sorbus caucasigena, Salix caprea, S. kazbegensis, Rhododendron caucasicum, Vaccinium myrtillus, V. uliginosum, V. vitis-idaea, Daphne glomerata, D. mezereum, Anemone fasciculata, Polygonatum verticillatum, Swertia iberica, Festuca drymeja, Calamagrostis arundinacea, Dolichorrhiza renifolia, D. caucasica, Cicerbita racemosa.*

Figure 3

Source: Author

4. Discussion

The aim to develop habitat classification in countries of European continent based on the standards of the EUR27 version of the Interpretation Manual includes descriptions of new habitats, which are characteristics to concrete countries. These new habitat types should be accepted by the Commission and to be added to Annex I.

Georgia is a country with very diverse habitat types. The habitat classification was done recently (Akhalkatsi, 2009). Many forest habitat types are identical to the habitats, which are already included in the Annex I of the Interpretation Manual v. EUR27. However, some habitat types are candidates to be included in the Annex I as new habitat types.

The new habitats, which to our opinion should be included in Annex I are: 1) Beech forests with Kolkhic understory (*Fageta fruticosa colchica*); 2) Kolhketi broad-leaved mixed forest; 3) Zelkova forest (*Zelkova carpinifolia*); 4) Arid open woodlands; and, 5) Sub-alpine birch krummholz.

There are habitats, which are identical to related European habitats by species composition on generic level, but species are different. The similarity between European and Caucasian plant species is mainly congeneric and not conspecific. Therefore, some habitats, which are similar

to the European habitat types should be considered as sub-types: 1) Beech forests without understory (*Fageta sine fruticosa*); 2) Dark-coniferous forest *(Piceeta orientale-Abieta nordmanniana)*; 3) Pine forest *(Pinus kochiana)*; 4) Yew forest *(Taxus baccata)*; 5) Hornbeam forest *(Carpinus caucasica)*; 6) Boxwood Forest (*Buxus colchica*).

As sensitive habitats might be considered 1) Beech forests with Kolkhic understory (*Fageta fruticosa colchica*); 2) Kolhketi broad-leaved mixed forest; 3) Bog woodland *Tilio-Acerion* forests of slopes, screes and ravines; 4) Alluvial forests; 5) Alluvial forest with Adler trees - *Alnus glutinosa* and ash tree - *Fraxinus excelsior* (*Alno-Pandion, Alnion incanae, Salicion albae*); 6) Riparian mixed forests; 7) Yew forest *(Taxus baccata*); 8) Zelkova forest (*Zelkova carpinifolia*); 9) Boxwood Forest (*Buxus colchica*); 10) Sub-alpine birch krummholz.

These conclusions could be considered as recommendations of the national experts to the commission to add them to Annex I.

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Figure legends:

Fig. 1. Beech forests with Kolkhic understory (*Fageta fruticosa colchica*), Mt. Khvamli, Tsageri distr., Lechkhumi, Georgia.

Fig.2. Arid open woodlands with mastic (*Pistacia mutica*) and species of juniper (*Juniperus polycarpos, J. foetidisima, J. rufescens*), Vashlovani reserve, Dedoflistskero distr., Kakheti, Georgia.

Fig.3. Sub-alpine birch krummholz at elevation 2100-2350 m at the northern exposed macroslope of Mt. Kazbegi, the Central Greater Caucasus, Kazbegi distr., Georgia.

Table 1. List of forest habitat types in Georgia. The code is developed on the base Interpretation Manual of European Union Habitats - EUR27. Palaeoarctic classification (Pall. Class.) corresponds to CORINE biotope classification (1989, 1991). 'None' is indicated for 11 habitat types, which are absent in the list of habitat types of Europe. Sub-types and plant community types are determined for some habitats.

N	Code	Pall. Class.	Habitat types	Sub-types	Community types
I	***91.***		***Forests of temperate Europe***		
1	9110GE	41.11	*Luzulo-Fagetum* beech forests	0	1
2	9120GE	41.12	Beech forests with *Ilex* and sometimes also *Taxus* in the shrub layer (*Fageta taxceto-ilicitosa*)	4	4
3	9130GE	41.13	*Asperulo-Fagetum* beech forests	2	2
4	9140GE	41.15	Subalpine beech woods with *Acer* spp.	0	1
5	9150GE	41.16	Limestone beech forests (*Cephalanthero-Fagion*)	3	3
6	91FCGE	none	Beech forests with Kolkhic understory (*Fageta fruticosa colchica*)	6	14
7	91SFGE	none	Beech forests without understory (*Fageta sine fruticosa*)	5	8
8	9160GE	41.24	Oak or oak-hornbeam forests (*Quercitum -Carpinion betuli*)	6	13
9	9180GE *	41.4	*Tilio-Acerion* forests of slopes, screes and ravines	0	1
10	91D0 *	44.A1 /44.A4	Bog woodland	0	1
11	91E0 *		Alluvial forests	0	1
12	91E0*	44.3, 44.2 44.13	Alluvial forest with Adler trees - *Alnus glutinosa* and ash tree - *Fraxinus excelsior* (*Alno-Pandion, Alnion incanae, Salicion albae*)	2	2
13	91F0GE	44.4	Riparian mixed forests	0	1
14	91I0	41.7A	Xero-thermophyte oak forest	0	1
15	91PAGE	none	Dark-coniferous forest *(Piceeta orientale-Abieta nordmanniana)*	2	14
16	91PKGE	none	Pine forest *(Pinus kochiana)*	4	17
17	91TBGE	none	Yew forest *(Taxus baccata)*		
18	91CBGE	none	Hornbeam forest *(Carpinus caucasica)*	2	8
II.	***92.***		***Mediterranean deciduous forests***		
1	9260CSGE	41.9	Chestnut forest	7	7
2	92ZCGE	none	Zelkova forest (*Zelkova carpinifolia*)	2	11
3	92BCGE	none	Boxwood Forest (*Buxus colchica*)	0	1
4	9BCGE	none	Kolhketi broad-leaved mixed forest	8	8
5	9AOWGE	none	Arid open woodlands	4	4
6	9BFGE	none	Sub-alpine birch krummholz	0	1

Note: * marks sensitive habitats, which are included in the Annex I of Natura2000 manual.

Political Aspect of Renewable Energy: Perception by Deputies in the Parliament of Serbia towards Forestry as a Source of Renewable Energy

Danko Aleksic [*]

Abstract

Apart of its numerous ecological, economical and social functions, forests represent a source of wood as renewable energy source (RES). In the Republic of Serbia, biomass is the most important RES with the potential of 2,4 MTOE1, which represents 63% of the total potential of RES in Serbia. One of the preconditions to increase utilization of RES is to provide wide political support for all actions to be done in that field. In modern democratic societies, political parties are a kind of transmission between citizens and the state. Through the political parties citizens delegate their representatives to local, provincial and state assemblies. Every Member of Parliament (MP) of the Republic of Serbia has a right to propose laws and to pose a parliamentary question to a particular Minister or the Government as whole, meaning that every MP has a "power" to arise a discussion on variety of political issues, having a possibility to shape political agenda, which could be very important for including RES topics in it.

For that reason it was important to examine MPs' perception and assessment on RES issues including forestry within. This paper is based on the master thesis, defended in April 2009. Goal of the conducted research was to explore the present level of RES utilization in Serbia, political and legislative framework in that field as well as knowledge and opinions of MP on this topic.

Key words: renewable energy, forestry, the National Assembly, political support

1. Introduction

During the civilization development, especially in the industrialization period, fossil fuels2 took the place of the most important and the widest utilized energy sources. Nowadays, situation is the same. But using of fossil fuels at today's rate invariably leads to their final exhaustion. Besides that, using of fossil fuels causes pollution of the environment, especially air, because of the emission of CO_2, which causes temperature rising and climate changes on global level (*Green House Effect*).

Considering the mentioned, in many countries policy of environmental protection and decrease of CO_2 emission has been introduced. One of the ways to meet this goal is to increase using of RES. Besides the undisputable ecological importance, RES[3] have a strategic importance for countries dependent on import of fossil fuels, like the Republic of Serbia is.

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[1] MTOE – million tones of oil equivalent (1 tone of oil equivalent = 41.860 MJ)

[2] Coal, oil, natural gas, etc. – rank among MINES, nonrenewable and exhaustible natural resources.

[3] As could be seen in the Table 1, wind, solar and hydro energy belong to the group of Inexhaustible sources, not to the Renewable subgroup of Exhaustible ones. But in this research, abbreviation RES will be used in colloquial way, including wind, geothermal, solar, hydro, biomass etc. i.e. all alternative sources of energy.

RES issues are of the highest importance for forestry sector, because apart of its numerous ecological, economical and social functions, forests represent a source of wood as RES. Present situation in Serbia regarding biomass utilization is characterized by:

- household utilization in rural areas is still dominant, classic fire wood is mainly used;
- combusting in open fireboxes or in a low energy efficiency stoves;
- biomass left after skidding mostly stays in the forests, completely unused;
- no electricity production from biomass;
- no municipality heating systems (1 demo project and 1 feasibility study, conducted by Serbian Energy Efficiency Agency - SEEA);
- low level of private forest owners organization.

On of the preconditions to increase the utilization of RES is to provide wide political support for all actions to be done in that field. Considering the fact that Republic of Serbia is a country with economy in transition, there are a lot of unsolved and open political questions in the society so RES are not on the political agenda as much as in developed countries.

Both position and opposition are materialized in shape of political parties so it is not overestimation to claim that political parties are basic pillar of the democracy. In countries with stabile democracy political parties are intersected with other democratic institutions: parties define structure and content of the decisions of Parliament; activities of Government depend on the will of party (or coalition) on power; personal combination of elections participants is defined by parties; results of elections also depend on balance of power between parties (Goati, V., 2007).

Inclusively, members of the Parliament elected by democratic elections are legitimized represents of the citizens. According to the Article 107 of the Constitution[4], every deputy has a right to propose laws. Deputies also have a possibility to pose a parliamentary question[5] to a particular Minister or the Government as whole. Therefore, every deputy in the Parliament has a "power" to arise a discussion on variety of political issues, having a possibility to shape political agenda.

2. Background of the research

2.1 Structure and present utilization of RES in Serbia

Estimated potential[6] of RES in the Republic of Serbia is around 4 MTOE[7]. Considering the fact that annual energy production in Serbia in 2007 was 8,79 MTOE, it could be easily calculated that around half of primary energy in Serbia could be produced from renewable sources.[8]

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[4] "A right to propose laws, other regulations and general acts shall belong to every deputy, the Government, assemblies of autonomous provinces or at least 30,000 voters." (2000/a; Article 107.)

[5] "Any Deputy shall be entitled to pose a parliamentary question, relating to an issue from their purview, to a particular Minister or to the Government as a whole." (2005/c; Article 198.)

[6] Studies analyzing potentials of RES in Serbia are very rare, so majority of information are based on estimations.

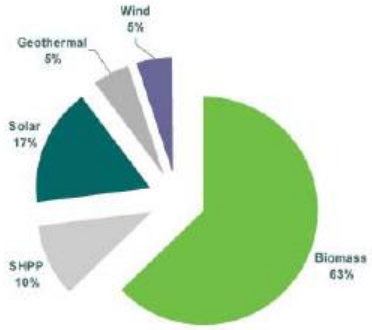
[7] MTOE – million tones of oil equivalent (1 tone of oil equivalent = 41860 MJ)

[8] Ministry of Energy and Mining of the Republic of Serbia – www.mem.sr.gov.yu

But annual energy production from RES in Serbia is around 0,86 MTOE, which means that only 18% of the potential has been utilized[9]! Share of some particular RES in the total RES potential for the Republic of Serbia is shown in the **Graph 1**.

Graph 1: Share of Some RES in the Total Potential for the Republic of Serbia

	Potentials (Mtoe)
Biomass	2.40
SHPP	0.40
Solar	0.64
Geothermal	0.20
Wind	0.19
TOTAL	3.83



Source: Ministry of Mining and Energy of the Republic of Serbia

As it could be seen in the Graph 1, biomass is the most important RES for Serbia with the potential of 63% i.e. 2,4 MTOE. From this amount, 1,4 MTOE is related to agriculture biomass and 1 MTOE is related to wood biomass. Following the geographical configuration of Serbia, wood biomass is of the higher importance in the southern part of the country with the high percent of forest coverage, while agriculture biomass is of the higher importance in the northern part where agriculture production is intensive and percentage value of forest coverage is very low.

Biomass could be used in many different ways, but for Serbia, the most perspective utilization of biomass would be[10]:

- Space heating in households and buildings using biomass pellets and briquettes,
- Production of electricity,
- Co-firing or total replacement in district heating plants firing crude oil or coal in south Serbia, where the natural gas is not available yet.

According to the same source, the most important barrier for increasing of biomass utilization in Serbia is low prize of electricity, so there is no motivation to install biomass boilers. Also, there is no developed market for biomass fuel and biomass utilization facilities.

With the potential of 0,64 MTOE i.e. 17% of the total RES potential, solar energy is the second of importance RES in Serbia. Average yearly insolation in Serbia is 1400 kWh/m^2, which is 40% higher than European average. The solar potential increases from the north to the south of the country.

Potential of Small Hydro Power Plants (SHPP) in Serbia is 0,4 MTOE, which is around 10% of total RES potential. In the Republic of Serbia, there are 856 locations identified for

[9] Ministry of Energy and Mining of the Republic of Serbia

[10] Ministry of Energy and Mining of the Republic of Serbia

construction of SHPP[11]. Potential of SHPP is higher in the southern part of Serbia, which is the mountain region with numerous rivers.

Potential of geothermal energy in Serbia is estimated on 0,2 MTOE, which is the share of 5% of total RES potential. Location with geothermal activities are scattered all around country.

Estimated potential of wind energy in Serbia is 0,19 MTOE, which is around 5% of total RES potential. The highest potential of wind energy is in the eastern part of Serbia.

2.2 Role and Structure of the National Assembly

According to the Article 98 of the ***Constitution of the Republic of Serbia***[12], the National Assembly shall be the supreme representative body and holder of constitutional and legislative power in the Republic of Serbia (2006/*a*).

Article 100 of the Constitution indicates that the National Assembly shall consist of 250 deputies, who are elected on direct elections by secret ballot, in accordance with the Law. In the National Assembly, equality and representation of different genders and members of national minorities shall be provided, in accordance with Law (2006/*a*).

According to the Article 107 of the Constitution, a right to propose laws, other regulations and general acts shall belong to every deputy, the Government, assemblies of autonomous provinces or at least 30,000 voters (2006/*a*).

Elections for Deputies to the National Assembly of the Republic of Serbia were held on May the 11th 2008. Total number of 22 coalition and parties proposed their electoral lists, and according to the results of the elections, 8 of them gained deputy mandates in the National Assembly.

National Assembly of the Republic of Serbia is unicameral. The basic elements of the Assembly's organization are:

- 1 President (Speaker),
- 6 Vice-Presidents,
- 250 Seats i.e. Deputies,
- 10 Parliamentary i.e. Deputies' Groups[13], 1 Independent Deputy,
- 21 Political parties in total,
- 30 Committees.

Due to the results of Elections for Deputies to the National Assembly of the Republic of Serbia held in May 2008., present structure of the National Assembly of Serbia considering Parliamentary Groups and Political Parties is illustrated in the **Table 1**.

[11] Cadastre of SHPP; Energoprojekt Company, 1987.

[12] Proclaimed in November the 8th 2006, after it had been approved on referendum.

[13] A Deputies' Group shall comprise Deputies of a political party, other political organization, or group of citizens, that has at least five (5) Deputies. A Deputies' Group of at least five (5) members may also be established by the association of Deputies belonging to several political parties, other political organizations, or groups of citizens that have less than five (5) Deputies each. (2005/c, Article 23.)

Table 1: Structure of the National Assembly of Serbia Considering Parliamentary Groups and Political Parties

No.	Parliamentary Group	Political Party	No. of Seats	
1.	G17+	G17+	21	24
		Together for Kragujevac (ZZK)	2	
		Non-partisan	1	
2.	Democratic Party of Serbia – Vojislav Kostunica	Democratic Party of Serbia	21	21
3.	For European Serbia	Democratic Party	64	78
		Serbian Renewal Movement	4	
		League of Social Democrats of Vojvodina	5	
		Democratic League of Croats in Vojvodina	1	
		Sandzak Democratic Party	4	
4.	Liberal Democratic Party	Liberal Democratic Party	11	12
		Social Democratic Union	1	
5.	Minorities	Alliance of Vojvodina Hungarians	4	7
		Social Liberal Party of Sandzak	1	
		Party for Democratic Action	1	
		Bosniaks Democratic Party of Sandzak	1	
6.	Go Ahead Serbia[14]	Serbian Progressive Party[15]	21	21
7.	New Serbia	New Serbia	9	9
8.	Party of United Pensioners of Serbia - PUPS	Party of United Pensioners of Serbia	5	5
9.	Socialistic Party of Serbia – Integral Serbia	Socialistic Party of Serbia	11	15
		United Serbia	3	
		Movement of Veterans of Serbia	1	
10.	Serbian Radical Party[16]	Serbian Radical Party	57	57
11.	Independent Deputy	Christian Democratic Party of Serbia	1	1

Source: Author, based on official data from web-site of the National Assembly of the Republic of Serbia

Present allocation of political parties by Parliamentary Groups is not analogous to their allocation on electoral lists compiled for the purpose of the Elections held in May 2008. Some political parties took part in the Elections independently, but afterwards they become a part of some Parliamentary Group. Also, some political parties participated the Elections as a part of coalition, but afterwards they established their own Parliamentary Group.

[14] This Parliamentary Group was established by 21 ex-members of Serbian Radical Party Parliamentary Group.

[15] Founded in October 2008. after dissidence within Serbian Radical Party, thereafter it didn't take part in Elections held in May 2008., so legitimacy of it's deputies is often controversial.

[16] In Elections held in May 2008., this party originally won 78 seats in the National Assembly.

3. Methods of the research

Organization of the research process could be divided into 3 main phases: preparatory phase, data gathering phase and data processing phase.

Primary data collection through a written survey was realized during January/February 2009. Quantitative methodology in the form of closed-questions[17] questionnaire was used. Questionnaire was written in Serbian language, consisting of 20 questions.

Total number of 250 questionnaires was distributed to the Deputies by relevant service of the Parliament. Questionnaires were not pre-tested because of time limitations imposed by the Secretary (the author was obliged to complete the whole research within three weeks) as well as very complicated administrative procedure of establishing contact to Parliamentarian Groups and Deputies.

Table 2: Survey Design Table

Target population	Deputies in the National Assembly of the Republic of Serbia = 250 deputies
Purpose of the survey	Obtaining data about awareness and activities of Deputies and their parties in the field of RES
Sample size	250 (full sample)
Questionnaire characteristics	20 questions: - 17 closed-ended; - 3 partially open.
Questionnaire format	A4; 4 pages
Topics covered	- general information about Deputy, - knowledge about RES in general, its potentials in Serbia and related legislation, - activities of Deputy and her/his party towards RES promotion.
Fieldwork period	January/February 2009.
Duration of the fieldwork period	3 weeks
Response rate	20,8%

Source: Author

Except the Serbian Radical Party, which officially rejected to take part in the research, there were no any other official negative reactions of the Parliamentarian groups.

4. Results of the research

Political parties' programs and data regarding its structure collected in the phase of primary data collection were analyzed in order to identify RES issues in the programs and presence of RES and environment related subunits (committees, councils, etc.) within their structures. Results are showed in the **Table 3**. It should be emphasized that some parties, especially small ones gathering minorities and with headquarters outside of Belgrade, do not have web-site or available data about program and structure, so were not included in the Table.

[17] Only three questions were partially open in order to find out what is the Deputies association on RES, what are the RES promotion activities in which their party and they personally took part in?

Table 3: Analysis of the Program and Structure of Parliamentarian Political Parties

	RES in the Party's program	Party's Committee dealing with RES (energy)	Party's Committee dealing with environment
G17 Plus	yes	yes	Yes
Together for Kragujevac	no	no	No
Democratic Party of Serbia	yes	no	No
Democratic Party	no	yes	Yes
Serbian Renewal Movement	no	no	No
League of Social Democrats of Vojvodina	yes	no	No
Democratic League of Croats in Vojvodina	yes	no	No
Liberal Democratic Party	no	no	Yes
Alliance of Vojvidina Hungarians	no	no	No
Serbian Progresive Party	no	no	No
New Serbia	no	yes	No
Party of United Pensioners of Serbia	no	no	No
Socialistic Party of Serbia	no	no	No
Integral Serbia	no	no	No
Movement of Serbian Veterans	no	no	No
Serbian Radical Party	no	no	No

Source: Author

As it could be seen from the Table 3, high majority of the parliamentarian parties do not deal with RES issues in their programs. Only four of the parties have RES explicitly mentioned in the political program. Same situation is regarding subunits within the party's structure dealing with RES and environmental issues. There are only 3 parties having RES and environmental related committees within the structure.

According to the gained results, there is no clear tendency of predominance of left or right winged political parties towards RES issues.

As it has already been mentioned, total number of 250 questionnaires were distributed to the Deputies. Response rate was 20,8% i.e. 52 questionnaires were filled in and sent back by the Deputies.

Almost the half of the respondents belongs to the For European Serbia Parliamentary Group, which is the basic pillar of the coalition on power. What is very indicative is that both the Parliamentary Groups of the parties which consider themselves as bearers of extremely right[18] and left winged[19] ideas were not interested to take part in the research. Response rate of 20,8% is considered by the author as a very low, indicating the fact that Deputies are not too much interested in the RES field, what is also confirmed by the fact that questionnaire was short and not time-consuming with given time of three weeks to be filled in. Undoubtedly, those Parliamentary Groups whose Deputies were not interested to take part in the research could be considered as not interested in RES. Surprisingly, no one Deputy of Liberal Democratic Party, which represents it as a bearer of modern and European values, didn't take part in the research. Indicatively, majority of right winged parties didn't take part in the research. Among them, Serbian Radical Party official refused to participate. So, it could be concluded that right orientated parties in Serbia are not interested in RES. But contrary, not one Deputy of Socialistic Party of Serbia, which is a bearer of left winged ideas, didn't participate in the survey. Therefore, any kind of conclusion about party's interest in RES based on party's assortment within the left or right political winged is not relevant in case of Serbia.

Eventhough they had been working in the highest legislature institution in the State during the energy crisis occurred at the end of the last year, majority of the Deputies are not familiar with energy related legislation. That fact supports the findings that they don't value RES or general energy issues as of high importance. Also, "not sure" could be valued as "no", because it is impossible that one does not know if he/she is more-less familiar with some issue.

Deputies are aware that Republic of Serbia is a country depended on imported energy sources. Asked if they have ever heard for renewable energy sources, 96% of the respondents answered that they have.

This result shows that Deputies are aware of the term RES. But in order to test their real knowledge and attitudes, within the same question they were asked to specify some sources of energy which they consider as renewable one. Results are presented in the **Table 4**. Table of specified sources of energy considered by the respondent as renewable ones makes us familiar with the fact that eventhough it has the lowest potential of all RES in Serbia, WIND is the first association of majority of the Deputies regarding RES. Biomass, RES with the highest potential in Serbia, is specified by 28,8% of the respondents. But that was given as a general answer, with no specification if they think about agriculture or forest biomass. It should be emphasized that only 5,8% of the respondents specified forests as a RES. This is very indicative, suggests that forestry profession is not promoted enough in a modern manner.

[18] Serbian Radical Party; Go Ahead Serbia

[19] Socialistic Party of Serbia

Table 4: Specification of Sources of Energy Considered by the Respondent as Renewable.

Answer(s)	Frequency of the answer	Percentage of the respondents
Wind	30	57,6
Solar	27	51,9
Biomass	15	28,8
Hydro	14	26,9
Biogas	8	15,4
Waste	5	9,6
Forest	3	5,8
Small Hydro Power plants	2	3,8
Tide	1	1,9
Bio-diesel	1	1,9
Not able to answer	9	17,3

Source: Author

Afterwards, Deputies were asked to choose 5 among 11 offered priorities in sense of state and national interests of the Republic of Serbia and evaluate them with grades 1 to 5, where 1 is the highest and 5 is the lowest grade. Priorities were generated by the author mainly based on actual political issues in the country. Offered priorities are showed in the **Table 5**.

Table 5: Priorities Offered to Being Evaluated in the Q 10

No.	Priority
1.	Defending integrity of the country's territory
2.	Actions against criminal
3.	Actions against corruption
4.	Increasing of living standard of the citizens
5.	Membership in the EU
6.	Membership in the North Atlantic Treaty Organization (NATO)
7.	Decreasing unemployment rate
8.	Increasing of RES utilization
9.	Increasing of investments in the environmental field
10.	Privatization of public enterprises
11.	Cooperation with ICTY

Source: Author

Indicatively, only 5,6% of the respondents included it among the top five chosen priorities! Furthermore, majority of those who have even included increasing of RES utilization into their priorities consider it as a very low priority. The highest percentage of respondents stated "increasing of living standard", followed by "decreasing of unemployment rate" among priorities. Considering passing through transition period, social issues will be dominant in period to come for the all political actors in Serbia.

Deputies were asked about their and activities of the political party they belong to in the field of RES promotion. Harmoniously, 100% of the respondents claimed that their political party supports RES utilization in its program**.** But this is not confirmed by the parties' program analysis, because there are only four parties dealing with RES in the program.

Also, half of the respondents claim that their political party has taken part in RES promotion related activities. But in extension of the question, 35% of those who answered positively were not able to specify what kind of activity that was, which shows that their "yes" answer is only an assumption. Also, 40% of respondents which were not sure if their party had taken part in RES promotion activities show that they were not familiar with activities of the party they belong to!

Similar to previous question, 43% of the respondents claim that they have participated in RES promotion related activity personally but 36% of those who answered positively were not able to specify what kind of activity that was, so those positive answers could be understood as assumptions only.

Through the research two hypotheses have been tested:

Hypothesis 1*:* Parliamentarian political parties in Serbia don't deal with RES in their political programs, and do not conduct activities directed towards RES promotion;

Hypothesis 2*:* Majority of the Deputies in the National Assembly of Serbia is not familiar with the RES issues and don't value it as of high importance.

Regarding Hypothesis 1, it could be concluded that only few Serbian parliamentarian parties deal with RES in their programs but real activities in the field of RES promotion are not considerable and could be qualified as very weak.

Regarding Hypothesis 2, majority of the Deputies are familiar with term RES as well as with Serbian dependency on energy sources import and inadequate utilization of RES in Serbia. But despite that, only 5,6% of the respondents included increasing of RES utilization among the top five Serbian priorities. Furthermore, 44,4% of those who have even included increasing of RES utilization into their priorities consider it as a very low priority. It should be underlined that no one Deputy evaluates it as very high priority. As a conclusion, majority of the Deputies are familiar with RES issues but they don't value it as an issue of the high importance.

5. Discussion and Conclusions

RES have a strategic importance for countries dependent on import of fossil fuels, like the Republic of Serbia is. RES potential in Serbia is not big enough to eliminate all current energy problems. But it can reduce import dependence and provide local energy stability as well. Share of RES in the total energy production in the Republic of Serbia is 18%. According to the potential, that means that RES are not adequately utilized. Among RES interesting for Serbia, biomass has the biggest energy potential. Therefore, RES issues are of the highest importance for forestry sector, because apart of its numerous ecological, economical and social functions, forests represent a very important source of wood as a domestic RES. Increase the forest surface from current 27,3% to 41,4% until 2015. has been planed by *Area Plan of the Republic of Serbia,* which will considerably increase production of wood and its importance as energy resource as well.

According to author's up to now experience in dealing with RES issues in Serbia, among present problems in RES utilization are: (i) low electricity prize, investments in RES facilities

are still not profitable; (ii) lack of activities in RES promotion; (iii) lack of stimulation mechanisms for RES utilization from the side of the state; (iv) uncompleted legislation acts; (v) low level of awareness; (vi) lack of knowledge and inter-institutional cooperation (Who's job this is?).

One of the biggest shortcomings is the lack of precise information about RES potentials. All data available are based on estimations, so specified amount fluctuate a lot depending on source.

One of preconditions for increasing of RES utilization is providing of wide political support for the actions in that field that includes tolerance and compliance with the suggested concept of as many interest groups as possible.

Primarily data gathering phase was conducted by using closed-question questionnaire consisting of 20 questions. The fact that questionnaires were official distributed to the Deputies is strength of the research by itself, considering the fact how complicated was to provide all the permissions. Shortcoming of the research was the fact that face to face contact was not established. It was obvious from some answers that the question had not been understood, and direct conversation provides possibility for clarification of the question. But also, we should be aware of the fact that Deputies are not so easy to be reached, so it would be very unrealistic if someone would have expected to conduct interviews to them. Other shortcoming was caused by the Assembly Secretary Service by giving time limitations for completing the research – pre-testing of questionnaire was not conducted.

Following the gained results, there is no clear tendency of predominance of left or right winged political parties towards RES issues. But it should be emphasized that Serbian Radical Party, extremely right one, officially refused to take part in the research.

Response rate of 20,8% is considered by the author as very low. Minorities are definitely very interested in improving the overall position of the people in their minority's community. RES projects are mostly localized ones, bringing benefits to local communities firstly, so that could be the reason for the Group's second position regarding relative response rate.

From starting position that taking part in the survey means that Deputy is interested in RES issues, some secondary finding show us that the most interested in RES are Deputies between 40 to 50 years old, Faculty educated and with less that 1 year of parliamentary experience. But considering the fact that there are no those kinds of data available for all members of parliament (as a "population") to be compared with in order to show is this only a picture of the structure of the parliament according to those criteria, author thinks that those kind of conclusions are not relevant.

Finally, the author would like to underline the fact that this research is among initial ones in the field of political aspect of RES in Serbia observed through the perception of the parliamentarian Deputies, designed to give introductory insight in the problem. Taking into consideration the fact that RES are "hot topic" nowadays, as well as its multidisciplinary character, possibilities for the further researches are considerable. It would be very illustrative to compare those results with the results of some similar researches from EU countries, in case they had been done. Also, considering the fact that local self-government has important competences, it would be useful to conduct similar researches in municipal assemblies, starting from Belgrade as a capital to the undeveloped municipalities in the southern part of the country, and then compare the results.

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[20] Used version was an official translation in Serbian.

EU Regulations on Tropical Timber and their Potential Impacts in the Congo Basin Region

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Abstract

In the framework of the definition of general policies and legislations of its Member States, the EU has enacted two types of regulations which can apply to the tropical wood imports in its domestic markets: the EU CITES regulation and the FLEGT/VPA instruments. This paper reviews both regulation systems to assess some potential impacts they could have on the countries of Congo Basin region. The paper shows that States of Congo Basin region could experience contrasted impacts: hence the need to recommend more synergies among the contracting Parties for minimizing some negatives effects.

1. Introduction

The European Union (EU) is the main trading partner of tropical countries in general and the African, Caribbean and Pacific (ACP) Group of States in particular. In effect, since signing in 1957 of partnership agreements that were extended and intensified by the Yaoundé Agreements (1963 and 1969) which were replaced by the Lomé Convention (1975), Europe established a privileged partnership with developing countries. Within the spirit of the "founding fathers" of the European Union, the building of Europe was inseparable from an active and original development assistance policy. In effect, the setting up of the European Development Fund (EDF) was accompanied by an asymmetrical system of non-reciprocal trade preferences, as well as commodity agreements (sugar, banana, rum...), which gave preferential access to the European market at prices higher than world market prices. The Lomé Agreement system based on budget and trade support and development assistance gradually fell apart and became incompatible with World Trade Organization (WTO) rules. The Cotonou Agreement of June 2000 led to a complete breakdown in relations between Europe and the ACP Group as it transformed the development agreement (Lomé) into a framework for the development of free-trade by asserting the preeminence of trade instead of development.

Trade in forest products plays a key role in such trade flows (Wardle & Michie, 1999), although the emergence of Asia in general and China in particular, seems to weaken the privileged position of the European Union (EU) regarding trade in forest products with developing countries (IUCN, 2009; Kaplinsky et *al*. 2010). However, the EU remains the primary destination of tropical timber exported by the Congo Basin countries (Eba'a Atyi *et al*. 2009). This trend is visible at a time when the international community as a whole and the European Union in particular have, in the guise of fighting against illegal logging, climate change and global warming, decided to reduce the curve for tropical forest deforestation and degradation through the implementation of forest governance improvement programme (FLEGT). The Forest Law Enforcement, Governance and Trade (FLEGT) process initiated by the EU seeks to encourage the signing of voluntary partnership agreements (VPA) with

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tropical timber exporting countries. At the same time, EU member countries plan to henceforth implement the CoP 8 decision relating to the inclusion of some tropical forest species like *Pericopsis elata* in Appendix II to CITES. These legal changes adopted by the EU may have different impacts on the timber producing countries of Central Africa.

The purpose of this paper is to carry out an analytical review (*A priori approach*) of EU regulations on tropical timber to identify the potential impacts they may have on the tropical timber producing countries of the Central African sub-region also known as the Congo Basin. The first part of the paper reviews the two main instruments adopted by the EU on tropical forests. The second part analyses the different potential impacts of such instruments on the Congo Basin countries.

2. EU regulations and policies on tropical timber

The EU CITES regulations and the FLEGT programme are the main instruments relating to tropical timber imports.

2.1 EU CITES regulations

CITES is implemented throughout the EU through a regulation that is directly applicable in each Member State. The regulations relating to the application of CITES in force in EU Member States include notably: (i) the Council Regulation (EC) No. 338/97 of 9 December 1996 on the protection of species of wild fauna and flora by regulating trade therein. This regulation has already been amended five times in view of the evolution of CITES through its decisions and resolutions adopted during the Conferences of the Parties. The various modifications of the EU community legislation seem to due to the need to constantly adapt the implementation of CITES. However, the main principles of this conventional instrument remain quite stable and constant. From this standpoint, Regulation (EC) No. 338/97 specifies from the outset that: "this Regulation shall apply in compliance with the objectives, principles and provisions" of CITES" *De facto and de jure*, the principles of conservation of species advocated by CITES (Chapter 1) are enshrined *lex latta* in the regulations in force in the EU; (ii) The implementing regulation mainly consists of the Commission Regulation (EC) No. 865/2006 of 4 May 2006 laying down detailed rules concerning the implementation of Council Regulation (EC) No. 338/97.

These two regulations constitute the framework applicable to all EU Member States regarding the international and national trade in wild fauna and flora. One may deduce the following major principles of CITES:

- Adoption of the list technique/annexes and issuance licenses and certificates;
- Adoption of prohibitions on international trade in certain species of wild fauna and flora threatened with extinction;
- Adoption of regulations on international trade in endangered species of wild fauna and flora;
- Adoption of controls on international trade in species of wild fauna and flora;
- Adoption of institutional mechanisms to implement the provisions of the CITES Convention, as well as the decisions and resolutions of the Conference of the Parties, through the continuous modification of the Community legislation on international trade in wild species.

First, it should be underscored that during the Conferences of the Parties to CITES, the position of EU member countries is represented by each of the Member States acting jointly within the framework of a position defined by the Council. As regards the specificities of the

EU CITES regulation, it should be indicated that although the said regional organization has adopted the list technique/annexes to the international trade in wild species, it nevertheless distinguishes itself by the fact that EU annexes are designated using letters of the alphabet: Appendix A; Appendix B; Appendix C; Appendix D. This is its specificity. According to Article 3 of Regulation (EC) No. 338/97, Appendix A represents: "(a) the species listed in Appendix I to the Convention for which the Member States have not entered a reservation; (b) any species which is, or may be, in demand for utilization in the Community or for international trade and which is either threatened with extinction or so rare that any level of trade would imperil the survival of the species; which is in a genus of which most of the species or which is a species of which most of the subspecies are listed in Appendix A".

Appendix B corresponds to: "(a) the species listed in Appendix II to the Convention, other than those listed in Annex A, for which the Member States have not entered a reservation; (b) the species listed in Appendix I to the Convention for which a reservation has been entered; (c) any other species not listed in Appendixes I or II to the Convention". For its part, Appendix C contains: "(a) the species listed in Appendix III to the Convention, other than those listed in Appendixes A or B, for which the Member States have not entered a reservation; (b) the species listed in Appendix II to the Convention for which a reservation has been entered". Appendix D makes reference to: "(a) species not listed in Appendixes A to C which are imported into the Community in such numbers as to warrant monitoring; (b) the species listed in Appendix III to the Convention for which a reservation has been entered".

The EU regulation lays down common conditions for the issuance, use and presentation of documents related to the import into EU countries, export or re-export out of the community of the species targeted by the said instrument. Such documents are, without prejudice to stricter measures that may be taken by Member States, valid for the entire EU community. The import of specimens of species is subject to an import permit issued by the management authority of the recipient Member State or to an import notification and the conduct of necessary checks. The Commission may, at any time, establish general import restrictions, or restrictions relating to certain countries of origin. On this basis, the Commission publishes, on a quarterly basis, a list of such restrictions in the Official Journal of the European Union. The export or re-export from the Community of specimens of the species is subject to an export permit or re-export certificate issued by a management authority of the Member State. The conduct of checks is also mandatory.

With regard to obligations, Member States must designate the customs offices at which the export formalities and checks for the species targeted by the regulation are completed. The list of such offices is published in the Official Journal of the European Communities. They should also designate management and scientific authorities with the responsibility for the implementation of the regulation. The list of such authorities is published in the Official Journal. Lastly, they should ensure compliance with the regulation and mete out sanctions to defaulters.

With regard to international trade in tropical timber, proposals for the inclusion of forest species in Appendix II were made during the eighth and ninth sessions of the Conference of the Parties (Wijnstekers, 2003). However, these proposals also led to discussion on rejection in view of stakes in trade in the forest species concerned (Sand, 1997; Ruis, 2001). The Preamble of Resolution 10.13 provides that amendment proposals for the inclusion of forest species should contain the maximum amount of biological and trade information on the taxon concerned and that such information can be obtained from international organizations that have expertise related to timber trade and/or forest management. The conference recognized

the need to clearly define the Parties and products mentioned in the interpretation of Appendixes I, II and III. Furthermore, Parties were requested to report adequately on their annual trade in timber and to use agreed units of measurement. The obligation to submit reports enables the Secretariat General of the convention to ensure monitoring and control (Sand, 2008).

The Conference of the Parties underscored the need to promote the sustainable management of various timber species from different tropical regions traded on the international market through the use of appropriate silvicultural techniques. In this way, Parties have created the Timber Working Group at CoP 9. Lastly, it was noted that that some forest species are threatened with extinction owing to overexploitation and international trade. Accordingly, Parties are encouraged to impose stricter domestic measures on any species included in the Appendices. Reflection on the situation of forest species within the framework of CITES continued during the twelfth Conference of the Parties. In this respect, Resolution 12.3 henceforth requires that permits and certificates be issued for species included in Appendices II and III with the annotation "designates logs, sawn wood and veneer sheets". It is worth indicating that for the specific case of trade in *Percopsis elata (Assamela)* species; only sawn wood is subject to harvesting-export quotas. Lastly, Resolution 14.4 is very important regarding woody forest species because it recommends and institutionalizes cooperation between the Executive Secretariat of CITES and ITTO concerning international trade in tropical timber species. In addition, the Conference welcomed the implementation of the "ITTO project to support capacity building in range States for the implementation of CITES timber listings and the uplifting of *Gonyxtylus Spp*., African Teak *(Pericopsis elata)* and Bigleaf Mahagony *(Swietenia macrophylla)* as an important tool for increasing cooperation between CITES and the ITTO".

2.2 Programme FLEGT of EU

Historically, the legal basis for the EU FLEGT Action Plan is the non-binding Council Resolution of 15 December 1998 on a Forestry Strategy for the European Union. In effect, this non-binding instrument defines the policy and legal basis for a new forest strategy within the European Union. The FLEGT Action Plan emerges as one of the main thrusts of the EU Forest Action Plan 2007 - 2011 adopted by the Council on 30 May 2005. The FLEGT Action Plan is an expression of policy commitments made by the European Union, its Member States and producer partner countries within the framework of the G8 Action Programme on Forests which has led to the organization in each region of ministerial conferences on the application of forest laws and regulations and governance, with World Bank support (EFI, 2009).

The overall objective of the EU FLEGT Action Plan is to reduce deforestation by ensuring that European companies buy wood only from producer (tropical) countries that comply with the ecological, social and economic requirements stipulated in their own forest legislations. The plan therefore seeks to develop and promote markets to ensure that only legally produced wood is imported into the EU by encouraging firms and consumers to pay the real cost of wood production in keeping with laws, rather than seeking only to obtain lower prices. In concrete terms, the EU is currently preparing bipartite agreements with countries that export tropical wood to its Member States. Although these partnership agreements are considered as "voluntary" for export countries, they commit the EU and signatory countries to contribute to the improvement of forest governance by (EFI 2009):

- establishing efficient systems for regulating forest practices;
- setting up systems for tracing wood and its by-products;

- issuing authorizations for wood exports to EU countries.

After signing the Voluntary Partnership Agreement (VPA/FLEGT), the two signatory parties have a period of time (transitional phase) to set up systems and tools to ensure the proper application of its different provisions. The time factor is very important because as a bipartite agreement between two subjects of international law, VPAs must comply with domestic procedures put in place for the ratification of similar international instruments, notably by tabling them before the national assembly, for the case of countries such as Congo, Ghana or Cameroon. Basically, the export authorization provided by VPAs is based on standards derived from the national laws and regulations of each partner producer country. Thus, agreements focus mainly on environmental protection, rules governing the harvesting of species, payment of fees and taxes, conditions for wood processing, standards for the transportation of products and local community rights.

However, it should be emphasized that strictly speaking VPAs do not constitute an international wood trade regime. Their objective is to combat illegal wood trade. Accordingly, they help reduce deforestation and protect some species threatened with extinction owing to overexploitation. The legal system of VPAs is still being developed. VPAs differ from one another as regards substance and procedure because their contents are based on diverse forest legislations, though the key principles of forest sustainability may be the same for all countries. Thus, they may also contribute to a kind of fragmentation of rules governing international wood trade. Thirdly, the actual impact of VPAs on the fight against illegal forest exploitation will be relative because, in line with principles of international law, a bipartite agreement does not have a direct effect on non-signatory countries (Daillier & Pellet 2002). In other words, the effect of VPAs on emerging non-signatory markets will be weak (case of tropical wood purchasing outside EU member countries). How can one verify the origin of tropical wood used in a piece of furniture imported by a European consumer from China? VPAs provisions do not seem to cover the full complexity of international trade caused by the globalization of the world economies and the real influence of transnational corporations on States today. Is it not necessary to broaden the scope of VPAs like that of global discussions led by WTO or other multilateral institutions? Lastly, compliance with forest legality appears as just one step in the long road to sustainable forest management. In this respect, legal standards are actually the minimum requirement for the road of forest sustainability (Cerutti et *al*. 2008). In effect, the verification of legality ensuing from FLEGT agreements alone may be inadequate whereas the desired objective is to ensure sustainability. In any case, VPAs can contribute indirectly to the fight against deforestation and forest degradation. However, there is need for such agreements to produce real positive impacts by reducing forest crimes.

3. Discussion on potential impacts in Central Africa countries

The two EU regulations are likely to produce positive impacts on the sustainable management of the forest resources of the Basin of Congo countries. Conversely, such effects could be harmful to the other economic sectors of the sub-region.

3.1 Prospects of EU regulations for the sustainable management of tropical forests

The two EU regulations analyzed in this paper suggest many prospects in terms of positive impacts on the sustainable management of tropical forests. First, the measures reviewed under the FLEGT Action Plan aim to make an effective contribution to the legality and sustainable use of natural resources through good governance support and implementation of legal and

regulatory measures at the local and national levels. Thus, FLEGT is based on four fundamental principles:

- Measures to combat illegal practices in the forest sector constitute an intermediate step towards sustainable forest management and will remain a long-term objective;
- FLEGT is not a standalone objective, but an integral part of overarching development policy goals that will help bring about sustainable forest management;
- Measures to promote FLEGT are in keeping with the international consensus on the shared responsibility of timber-producing and consumer countries for the sustainable and legal use of natural resources;
- FLEGT measures promote partners' own commitment to introducing and implementing reforms in forestry policy to promote good governance, combat corruption and underpin law enforcement.

Assumption of the EU is that legality can contribute to efforts to ensure sustainability through the implementation of the forest legislations in force provided they adequately reflect the three pillars of sustainable forest management: economic viability, social equity and environmental sustainability. The verification of the legality of tropical timber is regarded as a means to improve the management and conservation of tropical forests. This is based on the prospect that European purchase mechanisms will require in the long term that timber be harvested legally and sustainably.

For its part, the CITES regulations seek to establish upstream a set of control measures on the inventories, sylviculture and harvesting of listed forest species, and likely to be managed sustainably. These upstream control measures can guarantee the sustainability of CITES species and make them available for international trade. However, it is necessary, first of all, for producing-exporting countries to adopt domestic measures that effectively comply with the precaution principle guiding the implementation of the CITES Convention, and not to limit their actions downstream through administrative actions relating only to timber exports.

All principles that extol the virtues of sustainability through forest legality, instituted jointly by the FLEGT Action Plan and the EU CITES regulations, should have positive impacts on the natural resources of the Congo Basin countries. In effect, since the Rio Summit of 1992, most of States in Central Africa have adopted new legislations in line with the pillars of sustainable forest management (Assembe-Mvondo, 2009). Accordingly, these countries share the following innovative elements: obligation to manage production forests on the basis of a management plan; involvement of the local populations; increase in the surfaces of conservation forest; reduction in the negative impacts of logging; institutionalization of specific forestry tax legislation; institutionalization of control mechanisms and penalties, etc. The adoption of sustainable forest practices by the countries of this sub-region has increased the surfaces of forests being management, led to significant progress in FSC certification and the institutionalization of independent observation in the control and monitoring of forest exploitation (Eba'a Atyi et *al*. 2009). However, despite progress towards the sustainable management of forest resources, many problems relating to the governance of the forest sector continue persist: illegal exploitation; corruption; lack of knowledge on tropical forest biodiversity; insufficient resources; lack of transparency in transactions; computerization of part of the processing sector. As a result, the principles defended by the two EU regulations can contribute to efforts aimed at strengthening and even improving the actions taken at the national of sub-regional levels. Though, this is possible only if there is genuine ownership of CITES and FLEGT by Central African States as well as actors operating on the ground. In effect, several public policy reforms advocated through international cooperation, which are

good on paper, seem to have achieved little success due to inadequate ownership by the main beneficiaries (Cerutti & Fometé, 2008). Furthermore, international donors hardly honor their pledges to provide resources needed to support the adoption of policy innovations (Boisson de Chazournes, 1999; Sand, 1999). This breaking of pledges for financial and technical assistance through international cooperation also seems to partly justify the failure of some reforms proposed by external actors to African countries.

To try to pre-empt certain weaknesses in the FLEGT/VPA system, the EU has decided to supplement the current framework by adopting a special regulation on "Due Diligence". In effect, this future regulation is expected to help tropical timber importers to reduce the risks of illegality in their international transactions. From this standpoint, the regulation on "Due Diligence" in the FLEGT/VPA will impose on importers, the obligations of resources, results and accountability. Such a regulation is especially necessary as a case already exists in the United States dating back to 1900 (Lacey Act) which was reviewed in 2008 to adapt it to the current trends and include timber. In other words, the aim is to hold not only States, but also the true co-authors and major beneficiaries of economic crimes such as multinationals operating in this sector, accountable for illegal transactions. Lastly, the need for CITES and VPA certificates of legality for all imported timber do not seem to be viewed as a dual penalty/requirement imposed on producing countries and economic operators. Rather, one is being substituted for the other (CITES or VPA) during controls. Contrary to expectation, holders of private eco-labels will continue to be bound to justify the legality of their tropical timber imports. This can be interpreted as mistrust of traditional forms of forest certification which do not always seem to guarantee the legality of logging activities and international trade in timber.

3.2 Potential negative impacts of EU regulations on Congo Basin countries

Several remarks have been made about EU regulations likely to combat the illegal exploitation of tropical forests (Roda et *al*. 2007; Global Witness, 2008; Erixon & Hindley, 2009) despite some observers recognized that such programme remains the most ambitious set of measures adopted by the consumer countries (Brack, 2010). Although such remarks are critical, they are however general. This is why it is necessary in this paper to dwell on the specificities that could impede the emergence of an integrated political and economic entity in Central Africa. In effect, the implementation of EU regulations on international trade in tropical timber could have adverse effects on the open and fragile economies of the Congo Basin countries and the framework of legal rules in force in the sub-region.

The negotiations of FLEGT/VPA clauses are carried out in an unbalanced manner between an EU delegation representing the interests of the 27 Member States on the one hand, and representatives of a single timber producing country, on the other. Thus, there is a kind of formal imbalance in negotiations whereas two political and economic bodies similar in certain respects to that of the EU exist in Central Africa. In effect, there are two overlapping sub-regional organizations in this geographical area: the Central African Economic and Monetary Community (French acronym CEMAC) and the Economic Community of Central African States (ECCAS). In this sense, Gankou & Ntah (2009) have identified some hurdles of regional integration in Central Africa region namely: poor transport infrastructures; lack of economic complementary; rivalries between States; multiplicity of regional integration institutions; asymmetric between the richer coastal economics and the poor landlocked economics etc.

However, ACP States, including Central Africa countries have embarked with EU on a process of negotiation of the Economic Partnership Agreements (EPA), which should be concluded soon, with the creation of free trade areas. The current framework of these negotiations and the prospect for these free trade areas pose two major problems regarding the process of integration in Central Africa: i) the shape of EU-ACP's negotiation spaces does not match with that of the African Regional Communities; this makes more difficult the issue of the rationalization of the policies deriving from the treaties; ii) the prospect for a free trade zone with EU before the unification of Central Africa's market, and of the unification of the continent, would considerably weaken the relevance and the strategy of the ECCAS and of the African Union (AU). To fully play their part in setting up of common political and market zone, Central African countries have decided to form a block front within the framework of Economic Partnership Agreements (EPA) negotiations. Accordingly, the two organizations issued a Statement (CEMAC/ECCAS, 2006) to reaffirm that: "EPAs do not impede regional integration efforts, but serve as essential tools for the strengthening the ongoing processes". Furthermore, regarding forest management, Central Africa certainly has the most advanced institutional model of inter-State cooperation which hinges on the setting up of a specialized organization known as the Central African Forest Commission (COMIFAC), the Treaty on the Conservation and Sustainable Management of Forest Ecosystems in Central Africa adopted in Brazzaville in 2005 (Assembe-Mvondo, 2009), and additional legal protocols, namely a sub-regional Agreement on the control of forest exploitation (COMIFAC, 2008).[1] The last sub-regional legal instrument adopted in 2008 clearly states that the objective is to obtain a label to enable the traceability of "COMIFAC timber" products in the medium term.[2] It is this integrated sub-regional joint action that seems to be threatened by the asymmetrical model of negotiations proposed to the Congo Basin countries by the EU. Moreover, the level and framework of FLEGT/VPA negotiations are not in line with the principles and spirit of the Cotonou Agreement signed between the ACP Group and the EU. In effect, Economic Partnership Agreements (EPA) are being recommended in lieu of the former regime in place before 2000. Within the context of EPAs, the sub-regional geographical block constitutes the framework of negotiations as opposed to a single State *vis-à-vis* the powerful EU machine. From this viewpoint, Central African countries united under the dual CEMAC/ECCAS banner have been negotiating with the EU since 2008 alongside FLEGT/VPA conducted in an asymmetrical manner. In that connection, it was agreed during the signature of the stepping stone Agreement towards the EPA between the EU and Central Africa that Chapter 5 of the negotiations should focus on forest governance, trade and forest products (CCE, 2008). This implies the provision of assistance to strengthen regional integration, in particular the establishment of legal instruments governing COMIFAC. According to this instrument, Voluntary Partnership Agreements could be subject to individual or collective accession within the framework of FLEGT (CCE, 2008). These provisions, therefore, safeguard regional dynamics for the management of the Congo Basin forests that seem to be threatened by current negotiations spearheaded by the EU.

In concrete terms, the logic of asymmetrical negotiation may account for the violation of regional/community legal rules governing sustainable forest management. This may result in FLEGT/VPA and resulting certificates which are legal with regard to the national forest

[1] The Provision related 'COMIFAC Wood Label' is the Article 35 of the Agreement Protocol on Forestry Control in Central Africa.

[2] There is a potential conflict between this 'COMIFAC Wood Label' and the next VPA License. Can the COMIFAC Wood Label should be considered more superior than VPA License?

legislation of each timber producing State, but which will be illegal regarding legal rules governing COMIFAC. Consequently, negotiations and part of FLEGT/VPA contents would appear to be insensitive to the political and economic arrangements in the Central African sub-region. The assumption of the illegality of VPAs with regard to regional norms is the situation in which the Republic of Congo currently finds itself. It was the first in the sub-region to sign VPA in early 2009 without taking all the necessary precautions through the prior consideration of the Sub-regional Forest Control Agreement in the VPA mechanism before embarking on such a process which, beyond the national dimension, has visible effects with obvious consequences on the dynamics of the integration of the entire humid forest area (Sirica & Dold, 2009).[3] The regional dimension of the FLEGT/VPA with regard to the Congo Basin is even more necessary as in practice, timber harvested in countries like Congo (a large part of exports), the Central African Republic (all exports) and Gabon (a small part), transit through the communication channels of Cameroon[4] to the Douala Port before reaching international markets. The traceability of products in transit in a third country bound by a FLEGT agreement which set out to be bipartite is possible only if it is associated to such discussions from the outset, thus making it tripartite.

The approach of negotiations by regional poles inspired by EPAs should have logically served as a basis for FLEGT/VPA in order to make EU actions for the economic and commercial development of its African partners more credible. However, a sort of hasty implementation of an ideology advocating the superiority of institutional priorities viewed from Brussels seems to have prevailed over reason and principles of negotiation enacted during the Cotonou Agreements.[5] Regional integration is not imposed; it is built; it requires time, resources and approval of the people. Indeed, the EU ought to serve as an example for the emergence of a strong geographic entity in Central Africa from the political and economic standpoints, instead of contributing to weaken it. Any process of political and economic integration requires the establishment of a set of shared rules that should be respected by States Parties and third parties.

4. Conclusion

On the whole, the EU regulation relating to the international trade in tropical timber clearly contributes to efforts to combat growing illegal activities and deforestation throughout the world. From this standpoint, the EU CITES and FLEGT/VPA Action Plan can improve and strengthen the legal and technological arsenals of each of the Congo Basin countries in the fight against forest criminality and the quest for the sustainable forest management. Paradoxically, however, the processes of FLEGT/VPA negotiations may instead violate some sub-regional regulations governing forest exploitation and contribute *de jure* and *de facto,* to weaken the process of integration of a homogeneous political and economic block in Central Africa. This observation is contrary to the spirit and principles of the Cotonou Agreement between the ACP Group and the EU which recommended the signing of EPAs at sub-regional

[3] According Ms Chantal Mbedey Elombat, Coordinator of EPA Committee in MINEPAT (Cameroon), each VPA signatory country in Central Africa should be insured that such agreement does not violate the future EPA regional agreement, in *Cameroon Tribune* No 9375/5576.

[4] Cameroon itself has just signed with EU counterpart the VPA on 6th May 2010, but the provision of this agreement does not take in account the 'COMIFAC Wood Label' provision.

[5] Brussels position seems to be a sort of "*droit d'ingérence écologique*", for this theory see Cans. L'ingérence verte: assistance ou intervention? *Les Cahiers du Futur: Environnement-Développement* No 2 (1992).

level. It is therefore necessary to minimize such a risk by reorienting FLEGT/VPA negotiations according to the spirit and principles enshrined in the Cotonou Agreement.

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Results and Experiences in Development of New (Draft) Montenegrin Forest Law with Particular Attention to Private Forestry

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Abstract

Under this title the results and experiences in development of new (draft) Montenegrin forest law with particular attention to private forestry, gained in the period from September 2008 and May 2010, have been presented. Apart from the law development and public discussion process the following key forest legislation novelties were considered more in detail: (a) the way of inclusion and participation of stakeholders in forestry planning and decision making process; (b) a new public forestry service function model to be implemented by current Forest Administration / Service of Montenegro, in all forests, with its private forestry section which could be performed also by external, licensed private persons; (c) a new, integral forest development (district level) and management planning (forest management unit level) system, also introduced for all forests, regardless the ownership; (d) operational forestry-technical and administrative procedures in which the administrative barriers have partly been removed and deliberated, particularly by transferring the responsibility for issuing the proof of the timber origin to private sector; (e) separating the state forest management function and the concession management system into the one in the public and in the state interest; (f) retransferring of a part of the fee for the right of use of non-wood forest products, which arises from private forests, to national private forest owners' association; (g) introducing a common fee for providing the forest ecosystem services to society, such as biodiversity conservation, carbon balance and climate mitigation, forest soil, water and human infrastructure protection, to be paid by all legal entities which perform economic activities within the forest management regions, in the amount of 0.07% of their total annual turn-over; (h) introducing a public subsidy scheme for private forestry, based on the National forest policy and the EU Rural development scheme. It could be stated that the new (draft) forest law solutions belong to the most inclusive ones in the region in terms of deliberation and introduction of benefits to private forest owners and private forestry actors in general. However, certain signals from the key governmental institutions, which have actually not taken an active part in the draft forest law public discussion process, indicate that the level of inclusiveness as well as financial sustainability of the final forest law, which is expected to be adopted in autumn of 2010, may be expected as substantially lower.

Key words: development of new forest law, inclusive draft forest law, private forest sector support, Montenegro

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Legislative and institutional framework of alternative forest use and procedures

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The legislative framework of alternative use of forest resources in Armenia is regulated by the RA Forest Code, Law of the RA on Specially Protected Nature Areas and a set of by-laws. The laws and by-laws related to the alternative forest use are presented below.

1. Forest Code and Related By-laws

Forest Code of the RA, approved in 2006, contains a set of provisions related to secondary forest use.

The Forest Code defines harvesting of non-wood forest products as harvesting and removal of fruits, berries, nuts, mushrooms, edible and medicinal plants as well as technical raw materials (Article 3). The same Article defines forest cutting coupon as a document verifying the right of secondary forest use. It is issued by the branches of Hayantar SNCO and contains information on the area allocated, in particular location, size, utilization volume, terms and prices. The Article 38 of the Forest Code defines the types and main principles of secondary forest use. Particularly, it states, that harvesting of non-wood forest products, as well as installation of bee-hives, hay-making and grazing should be carried out on forest lands without causing damage to forest on the basis of forest use contract and forest coupon. Use of forest lands for the purpose of growing of agricultural cultures and establishment of plantations, can also be carried out on forest lands without causing damage to the forest on the basis of lease contract. The Article prohibits cutting trees, collection of rare, threatened and declining species registered in the Red Data Book of the Republic of Armenia as well as grazing in the areas allocated. The Provision No.3 of the same Article states, that the order of forest use in the state and community forests shall be determined by the authorized body of state management.

However, the respective regulation is not yet determined. The Regulation should define the peculiarities of registration and allocation, as well as formulation of secondary forest use, rules of implementation, including the quantity and location of bee-hives, harvesting of wild fruits and nuts, wild berries, and mushrooms, harvesting of medicinal plants and technical raw material, definition of forest user rights and responsibilities, forms of supervision by the authorised body. It is important, that the Regulation defines the limitations on the use of non-wood forest products for personal needs by various forms that will secure legal base for the separation of secondary forest use for personal needs.

The Article 41 of RA Forest Code defines general principles of forest use for cultural, health, sport, recreational and tourism purposes. It specially emphasises the protection of natural values of the areas used for the mentioned purposes. According to the Provision No.3 of the same Article, the order on the use of state and community forests for the mentioned purposes shall be determined by the authorized body of state management. However, like other cases, the order on the use of forest for recreational purposes is not yet determined. At present the

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forests are allocated according to the RA Government Decree No. 806, dated 24.05.07, on the "Definition of the order on the allocation of state forests and forest lands for use". However, the regulation doesn't have provisions on the details of the rights and responsibilities of citizens or entities applying for use, as well as forest use program and timetable of main activities.

It is desirable, that this process is regulated by a separate regulation, specified in the Forest Code. It has to include information on the forms of allocation of forests for cultural, health, sport, recreational and tourism purposes, terms of lease, personal data and professional qualification of applicants, detailed description of the area, requirements to forests and forest lands upon finalisation of leasing period, list and timetable of forestry and environmental measures, list and timetable of the activities carried out for cultural, health, sport, recreational and tourism purposes, as well as the order of calculation of damage and compensation of parties.

Article 42 of the Forest Code states, that the order of forest use in the forests of specially protected nature areas shall be determined by Forest Code and legislation of the Republic of Armenia on specially protected nature areas. (See Section 2. 3)

Article 44 of the Forest Code defines the right of citizens to be in the forests and use non-wood forest products observing fire safety rules in the forests, without causing damage to flora and fauna and violating forest legislation. However, neither the Forest Code nor any by-law defines the volume of collection of non-wood forest products for personal consumption, computation of the crop extracted from the forest and type of supervision. These issues need to be clarified.

The Forest Code defines that the forest management plan, aside from full evaluation of the running of forest economy and forest use, as well as measures to be implemented for the running of forest economy for the coming 10 years, also contains information on non-wood forest products (areal and current quantity), as well as decision on possibilities for the use of forest lands for cultural, health and recreational needs (Article 14, item h).

Article 60 of the Forest Code defines the cases of forest legislation infringement. Particularly, cases of forest legislation infringement are unauthorized collection of wild fruits, nuts, mushrooms, berries and others in those forest areas, where it is forbidden, as well as infringement of terms and ways of collection. However, implementation of supervision over these infringements is not possible, due to the absence of relevant regulation on the terms, types and peculiarities of collection.

The National Forest Program, approved by the Government Protocol Decree in 2005, foresees development of 34 legal acts in the field of forestry. Among them the following acts deal with legal issues of non-wood forest use:

1. Regulation on forest use of state forests
2. Regulation on the use of forests and forest lands of protection and production significance for cultural, health, sport and tourism purposes
3. Regulation on secondary forest use
4. Regulation on the use of state and community forests and forest lands of protection, production and special significance for hunting needs, use of fauna and organisation of supervision.
5. Regulation on accredited management of state forests
6. Regulation on community forest management
7. Regulation on leasing forest lands and forests

8. Regulation on implementation of inventory and monitoring of non-wood forest resources

The following regulations have been approved by the RA Government:

1. The Regulation on transferring state forests to community entities for accredited management without tender (RA Government Decree No.583-N, dated 04.07.2006).
2. The Regulation on allocation of state forests and forest lands for use (RA Government Decree No 806-N, dated 24.05.2007) that defines the order of allocating state forests and forest lands for use. According to it, forests are allocated for use with or without a tender on the basis of forest management plans in accordance with the RA Forest Code, other legal acts and current Regulation. The right for the use of forests and forest lands can be obtained by legal and physical persons.

Aside from the mentioned approved regulations, several draft regulations have been developed in the framework of FAO National Forest Program Foundation –Armenia cooperation during 2006-2007. Three of them deal with secondary forest use.

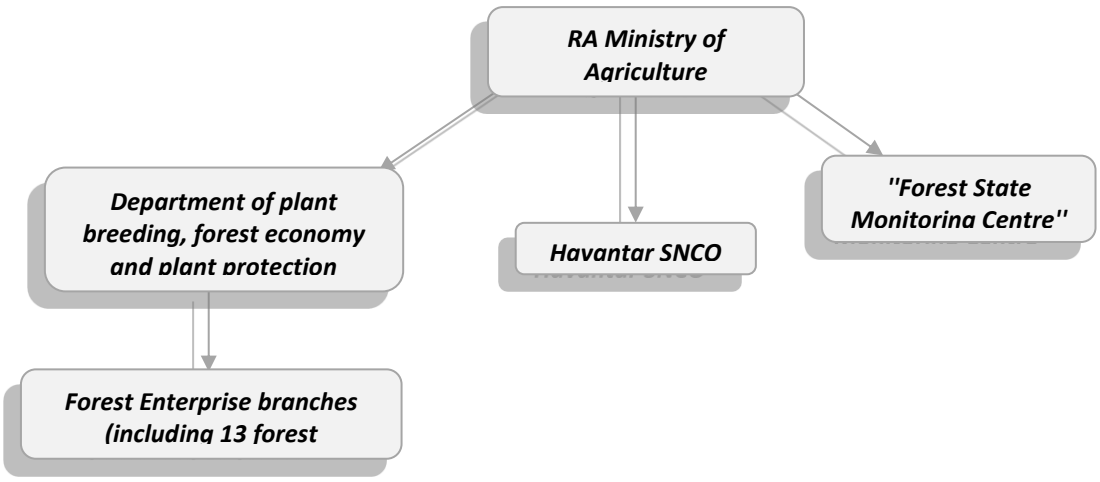
1. Draft regulation on secondary forest use in state and community forest lands.
2. Draft regulation on the use of state and community forests of protection and production significance for cultural, health, sport and tourism purposes.
3. Draft Regulation on forest use and forest preservation in the forests of production significance.

In summary, it should be stated that, though the RA Forest Code defines the main principles and provisions of secondary forest use, it is necessary to develop and approve respective by-laws, that will regulate the details of secondary forest use and secure the enforcement of forest legislation in the sphere of secondary forest use.

2. Institutional Framework of Forestry Sector and Procedure of Alternative Use

According to the RA Government Decree No 7, dated 15 January 2004, RA Ministry of Agriculture (MoA) is the authorised state management body in the sphere of forest conservation, protection, reproduction and use. MoA implements RA Government policy in the sphere of agriculture and forestry.

Scheme 1 Forest Entities in the Structure of RA MoA

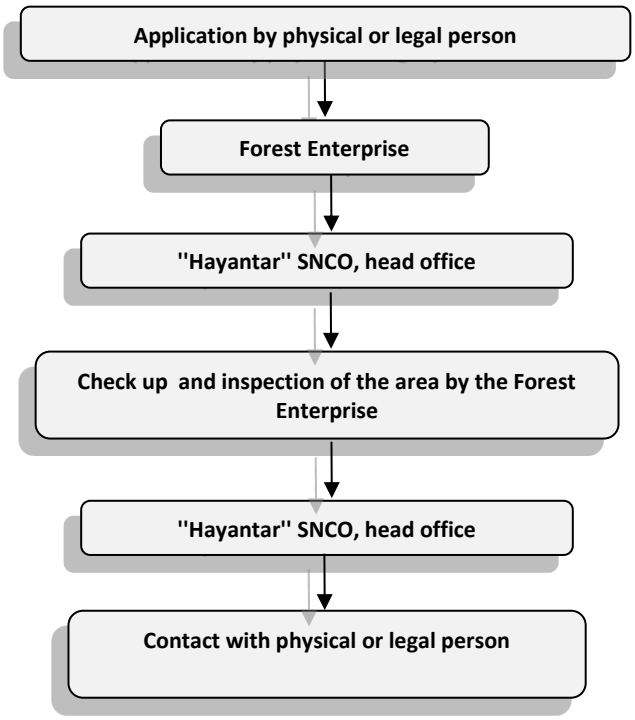


The main functions of "Hayantar" include implementation of state policy in the sphere of forest conservation, reproduction and use, provision of conservation, protection and effective use of forests

The current **procedure** for **short-term allocation** of forest areas for secondary forest use is the following; physical or legal person submits an application for certain type of forest use to the Forest Enterprise, addressed to General Director of "Hayantar" SNCO.

After reception the application is sent to “Hayantar” head office for inscription and is sent back to the respective Forest Enterprise. The Forest Enterprise carries out checking and inspection of the area and fills in the inspection Act to be submitted to “Hayantar” head office. Then, if “Hayantar” grants its “no objection”, the one-year lease contract is signed. (Scheme 2).

Scheme 2 Allocation of Short-term Lease



The areas cannot be leased for the collection of fruits, berries, mushrooms and other types of **non-wood forest products**; it is only allowed to apply secondary forest use in a certain area with a fee per kg set by ‘’Hayantar ‘’ SNCO. The nature use fees, set in the RA Government Decree No 864, dated 30 December 1998, do not correspond to current market prices and need to be reviewed. In the situation, when a certain fee is not set, each enterprise applies to the head office of “Hayantar” for the definition of the nature use fee.

Each forest management plan has a Section on non-wood forest use with a data on assessment of fruits and berries for given Forest Enterprise. The permissions for the collection of non wood forest products should be based on these data.

3. The Law on Specially Protected Nature Areas and related by-laws

The law o SPNAs (Approved 27.11.2006) regulates the legal basis of the state policy in the sphere of nature development, rehabilitation, conservation, reproduction and use of the specially protected natural areas of the Republic of Armenia as ecosystems, nature complexes

and individual objects of environmental, economic, social, scientific, educational, historical, cultural, aesthetic, health and recreational values.

The Article 25 of the Law on SPNAs states that the users of the SPNAs of the RA and their natural resources can be authorized state body (MoNP, RA), communities, as well as individuals and legal entities.

A separate Article (26) in the Law defines permitted types of use within the SPNAs of different categories.

So, in terms of secondary forest use, in state reserves only organization of cognitive tourism is permitted through the routes specified in the management plan, as well as haymaking and bee-keeping in the area of state reserve and plots specially allocated for these needs in accordance with the regulation by state authorised body.

In the reserve zones only organization of cognitive tourism is permitted through the routes specified in the management plan. Organisation of recreation, putting up tents in specially allocated places, organisation of cognitive tourism, as well as land leasing activities for recreational purposes and provision of consequent services are permitted within the recreation zone. Organisation of services and cognitive tourism for tourists and visitors, as well as use of mineral resources, water, flora and fauna in accordance to the RA legislation, land leasing for organisation of production not restricted by National Park conservation regime, organisation of agricultural production using ecological methods, etc are permitted within economic zones.

All the mentioned types of use should be implemented in accordance with the conservation regimes specified in Articles 16-20 of the Law on SPNAs. The objectives and peculiarities of conservation regime of the state sanctuaries are defined by their Charters and not by the Law on SPNAs (Article 18). It is also noteworthy, that most of the state sanctuaries of Armenia in the structure of "Hayantar" SNCO (13 Sanctuaries) do not have Charters, meaning that neither their conservation regimes and nor possible types of secondary forest use are specified.

Upon approval of the Law on SPNAs the list of 10 legal acts deriving from the Law was approved by the Prime Minister (No. 109A, dated 14 February, 2007). These Acts were to be prepared and approved according to the timetable in order to secure the enforcement of the Law on SPNAs. A part of them has been prepared and approved, but the RA Government Decree on "Defining the Order of the Use of SPNAs" is still in the process of development though it had to be submitted by 20th April, 2008.

Currently there are several regulations approved earlier that regulate legal relations of various types of uses within SPNAs (e.g. Regulation on licensing and contracting for the use of fauna objects, Regulation on land allocation and urban development within SPNAs and forest fund lands). There are some attempts to join several types of uses in one Regulation (at the stage of processing). It should, among other issues, define peculiarities of each type of use, methodology for calculation of recreational load and allowed volumes. It is foreseen to submit the regulation for the approval by the RA Government coming months.

In order to get permission for secondary forest use (**collection of non-wood forest products**) within respective zones of National Parks a citizen should apply to the National Park addressed to the head of the NP. The National Park area is being checked and inspected, and if there is no danger from environmental point of view, the National Park issues its “no objection” for the collection of non-wood forest products. Having the “No objection”, the citizen then applies to Bioresources Management Agency in order to get permission. The citizen, at the same time pays the fee set in the RA Government Decree and organizes the

collection. However, it should be mentioned, that a limited number of applications of this kind are submitted to BMA during a year.

In respect to the allowed quantities of non wood forest products to be collected, it is assumed, that annual allowable volumes should be assessed and reckoned for each National Park, and the permissions should be based on these assessments. However, the assessment is not always carried out.

Collision between new private forests and leasing of hunting lands: in search of harmony

Vitalie Gulca*

Abstract

The importance of wildlife conservation for poverty alleviation, rural development, biodiversity maintenance, and healthy forests has been recognized throughout the world. However, in deforested regions the highest priority and most difficult challenge are establishing new forests for wildlife use and other forest resources. This is a particularly difficult challenge in poor countries where we have limited natural resources and low income. For example, in Moldova, efforts to increase forest area and populations of wild ungulates have progressed very slowly because of many conflicts between local people, forest sector, hunting association, and leaseholders of hunting grounds. We highlight the potential value of converting private agricultural lands into forest lands and then giving priority to land owners or mayoralties to lease and manage these forests as hunting lands. We believe that accessibility of greater extent of ecosystem services for local people will improve their well-being and reduce pressure on forests destined for conservation. We further discuss the policy for including both public and private forest lands in one hunting unit area.

Key words: wildlife, private forests, hunting lands, afforestation

1. Introduction

According to the Wildlife Law and the Forest Code there are three principal authorities responsible for management and control of the hunting fund: first, the forest authority which wants to improve the hunting economy but does not have sufficient money to do this work; second, the environment authority which wants to protect wildlife without exploitation; and third, the local authorities wishing even nowadays to participate in privileged hunting as long ago. In consequence, agricultural lands as part of wildlife habitats are administered by local authorities and managed by the Society of Hunters and Fishermen while the central forest authority manages about 800 forest units from 0.5 ha to 1,500 ha spreading on the whole agricultural territory. But wildlife does not ask who the manager is and during the winter many species prefer forest habitats while during summer they prefer corn or other fields. The problem is much more complicated since agricultural lands are divided among a multitude of private owners not accepting wildlife damage to agricultural crops. The wildlife crisis can be attributed to a range of factors: poaching, out-of-date legislation, and lack of educated staff and capacity building. Investigations point out that wildlife management is in conflict with sustainable forest

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management, agriculture and livestock farming which constitute together the livelihood for most part of local population.

From other side too low forest percentage, high fragmented landscape with intensive erosion processes and dry climate only confirm the fact that forest cover plays a strategic ecological function for Republic of Moldova (Moldova) in terms of watershed protection, and soil conservation. According to the Law "With regard to natural resources" approved in 1997 year, national natural resources of Moldova are composed only from soils, forests, waters, wildlife, and mineral solid substance (clay, sand, and limestone). Many local scientists have the opinion that forests are on the critical stage of degradation that could become irreversible within next 10 - 15 years. From one hand because of severe budgetary constraints forest management efforts have been curtailed during last 20 years, while from other hand fuel crisis and pasturing reduced forest area. Only an estimated 35 per cent of fuel wood needs are met through official channels.

As Moldova has only 9,6% of the forests and all other potential lands for afforestation comprise community pastures and private agricultural lands it is evident the importance of private and community forests for the future. And we believe in this context, that if legislation concerning private forests should be more explicit and attractive for rural people many of them would afforest a part of their private lands at least for fuel and pasturing that consequently would leave the state forests for conservation and will increase the wildlife carrying capacity consequently.

According to Article 6 point (2) of the Forest Code (1996) private property rights over forests are admitted in the case of plantation, in lawful conditions, on the lands in private property, however the strategy for sustainable forest management (SFM) provides for transferring of all new forest plantations in the administration of forestry authorities. In our opinion, this duplicitous explanation to create private forests, only enlarge the abyss between society and state concerning to SFM. It would be the act of extravagance to plant personal land that in the future could be transferred to the state authorities. Consequently state owns degraded forests, rural people own eroded soils, and villages own poor pastures. In this context, from our point of view private forests is the corner stone both for the SFM and durable village development.

We suppose that overuse of land for pasture, turning out of seedlings, and illegal logging is consequences of wood insufficiency and bad pastures, both rooted in inadequate forest ownership. In the same time we are conscious that after entire land expropriation in the middle of last century and income cancellation in consequence of collapse of former Soviet Union, rural people lost the confidence in the land property rights and state representatives. As a result we believe that only trust in private forests passed down through the generations that private property rights will remain unimpaired can create good equilibrium and harmony in society concerning to SFM of Moldova.

We hypothesize in the end that particularly partial afforestation of community pastures and agricultural lands could solve the problems with illegal pasturing and logging, and increase in the same time the quality of existing state forests. As a third part of active population works abroad and because of this, in some cases agricultural crops remained unharvested, we estimate these lands as potential private forests and also hunting grounds of high carrying capacity.

2. Methods

In the modern world, increasing rates of resource use, population growth, and armed conflict have tended to magnify and complicate environmental problems that were already difficult to solve a century ago. Moreover, attempts to modify nature for the benefit of humankind have often had unintended consequences, especially in the disruption of natural equilibrium. Yet, at the same time, human ingenuity has been brought to bear in developing a new range of sophisticated and powerful techniques for solving environmental problems (Alexander, 2002). In order to investigate and accomplish this project we will review documents and literature (Soule, Orians, 2001; Ostrom, 1990; Day, 1995, 1998) relevant to the mentioned objectives in library or archives. The study is interdisciplinary and therefore qualitative and quantitative data will be linked. The qualitative data also will help the quantitative side of the study during design by aiding with conceptual development. Conservation biology in practice is designed to build strategic partnerships to bridge the gaps between conservation practice, theory, and policy and to help human solve the problems they have created (Soule, Orians, 2001).

3. Sustaining productivity of lands for wood and other goods

Located in the southeastern part of the European continent between Ukraine and Romania, Moldova has limited natural resources compared with other developing European countries such as Albania or Bosnia & Herzegovina. The lack of fossil fuels (natural gas, oil and coal) and mineral ores have resulted in a strong economical and political dependence on Russia and Ukraine. Agriculture has been the dominant land use over the last few centuries, and poor land practices has led the country with some of the richest soil in the world to now have a greatly diminished economy with few alternatives (Gulca, 2007a). This, in turn, jeopardises the security of Moldova. New alternative land use based on forest resources could diversify and greatly improve the economy. In Sweden for instance it was the development of mining, forest and hydroelectric industries from indigenous raw material that enabled Sweden to become a modern industrial nation. Developing a program for Moldova concentrated on sustaining productivity of lands for wood and other goods and services may provide a similar strategy that could greatly improve the economy of Moldova. This strategy must encourage farmers to invest money, land and time in aforestation of their private agricultural lands. Sustaining productivity of wood will lead simultaneously to restoration of whole spectrum of forest products as wood, pulp, bioenergy, mushrooms, game, medicinal herbs, berries, etc. However we are conscious that after entire land expropriation in the middle of last century rural people lost the confidence in the land property rights and state representatives. The actions, which created this breach were expropriations, chronic changing of the states, governments, moneys, with no compensation for the society (Gulca, 2007b).

There are numerous cultural, historical and political challenges that need to be overcome in order to develop a viable multifunctional forestry program in RM. We hypothesised that the forest use histories as reflected in ownership pattern and forest area affected the SFM. However, the opportunities are equally great as the challenges, and the development of a SFM for Moldova can result in economic independence, security, and social health for future generations. In this context would be useful the idea of "conservation through wise use", advanced by Theodore Roosevelt and Gifford Pinchot in 1910. According to Roosevelt's (Leopold, 1986) all these "outdoor" resources were recognised as one integral whole, their "conservation through wise use" was

recognised as public responsibility, and their private ownership as a public trust, while science was recognised as a tool for discharging that responsibility.

The timely science should be concentrated according to Per Pinstrup-Andersen (2008) on equilibrated increasing of productivity of water and soil resources (principal in Moldova), risk control concerning droughts, flooding and pest (often met in Moldova), diminishing of climate change consequences and adaptation. To meet the challenges of this new era, in which society aims to restore habitats for wildlife and maintain biodiversity as a primary objective of management, new principles are needed: cumulative effects, ecological dynamics, integration of ecology and planning (Krausman, 2002). These steps require international cooperation between managers and researchers both in areas where forest landscapes need to be restored and in areas which can provide knowledge and inspiration as reference areas where the fragmentation process has not advanced very far or even where it has not started (Angelstam, 1996).

In this context with a goal to apply some forest management models and practices from other countries to Moldova we would suggest a combination between patches of up to 0.1 ha on private land as in India, switched focus to farm and community forestry as in Philippines and increasing involvement of the private sector as in China. Of course the direction should be hold to Japan, Finland, Sweden and Norway models including proportion between private and public forests (Gulca, 2006a). Or, in southern Sweden, the primary idea in the 1930s was to increase the demand for wood and thus increase the value of the forests. A balance should be found at the local level; otherwise real sustainability may not be achieved Vanhanen (2005) cited by Gulca (2006b).

4. Management and legislation

In compliance with item 9 of "The regulation on game economy" as annex of the of Law on Animal Kingdom No. 439-XIII approved in 1995, wildlife management is performed by the State Forestry Agency "Moldsilva" (SFAM). The method, terms and limits of utilization of the hunting fund are established by a Ministry of Environment (ME) which is authorized to manage natural resources and to protect the environment. In compliance with item 81 of the same regulation, administration of the hunting economy and departmental control over activities of natural and juristic persons referring to protection, utilization and reproduction of the hunting fund, and development of sportive hunting, are handled by the SFAM. While according to item 82, state control over the hunting fund and supervision over enforcement of this regulation are handled by ME in collaboration with local public administration authorities. Also, by Article 11, item (2) of the Forest Code state administration of forest and hunting funds are performed by the Government, local public administration authorities, state forestry authorities, and other authorities are authorized for this purpose. Furthermore, concerning Article 4 of the Law on Animal Kingdom, state administration in the field of protection and utilization of resources of the animal kingdom are handled by government through the instrumentality of a central environmental authority, central agricultural authority, central forest authority, and local public administration authorities.

An attempt to ameliorate the situation was Governmental Decision No. 769 (1997) "On the approval of the provisional regulation regarding the leasing of hunting lands for demand of hunting economy in Moldova". In the situation of a lack of money, democratic but not organized transfers in society, inflation, and freedom to procure guns, the leasing method of hunting

management had the goal to protect and conserve game through the leaseholder of hunting lands. The rent payment was planned for the creation of state hunting farms and wildlife restoration and conservation. In December 1997, the Conception of development of the national hunting economy was approved. The main importance of this conception provided for two measures: the necessity of elaboration of the Game Law, and dividing of the hunting fund in hunting units with clear natural (or artificial) limits (Gulca, 1997). These important options for revival of the game economy have not yet been achieved until nowadays.

Moreover the "Law concerning the modification and completion of some legislative acts," promulgated in 2001, provides for management of hunting on open lands by the Society of Hunters and Fishers of Republic of Moldova (SHFRM) based on agreements signed with local authorities and with the approval of the ME. As a consequence, the agricultural lands as part of wildlife habitats are administered by local authorities and managed by SHFRM while the central forest authority manages the forest fund. But the wildlife does not ask who is manager, and in winter many species prefer the forest while in summer they prefer corn or other fields. In this situation it is impossible to assure efficient wildlife management on 1,000 to 3,000 hectares of forest split into 5 to 30 bodies without taking the surrounding agricultural lands into consideration. Same thing, nothing can be done in agricultural lands without the food and refuge supported by the forest. Hence it is unrealistic to promote in this context the intensive and efficient wildlife management with careful calculation of expenses and income. The problem is much more complicated, since agricultural lands are divided among a multitude of private owners who not accept wildlife damage to their agricultural crops. In that context we suggest to afforest private agricultural lands and then to lease them for hunting management by every landowner or the whole village, which means the community of the landowners. We want to argue our suggestion by fifth theorem of Aldo Leopold (1986, pp. 395), which said that only the landholder can practice game management cheaply.

The wildlife management system is generally similar to Byelorussian, Ukrainian and Russian one. The cornerstone of the problem is lack of division of the hunting fund into hunting farm units. This division was realized in Romania and Hungary during the middle 1950s, and now those countries have strong game economies, high quality of trophies and highly organized game populations. The situation in Siberia, which has large forests, is one case, but it is a completely different situation when we plead for a high game economy in hunting lands of Moldova, with small areas of forest (9.6%) spreading through agricultural lands (76%) and pastures (10%) and high human density. The denser the human population, the more intense the system of game management needed to supply the same proportion of people with hunting (first theorem of Aldo Leopold, 1986, pp. 394). Because the elite of hunters, and forest managers, and other chiefs in the Moldova, aspire to Russian-style legislation, it is interesting to show the opinion of Safonov (2003), Director of the Russian Scientific Research Institute for Game and Wild Farm. According to his opinion it is necessary to ascertain that the legislative bases and practices of wildlife management derive from scientific–theoretical concepts in the fields of ecology, economy and sociology. It is mistake and lacking in perspective to adhere strictly to the frame of a rigid state-centrist paradigm that has been shown to be a failure. Instead of years of debates about priorities by authorities, and political polemic concerning land rights it could be possible to make a comparative investigation to determine the advantages of one or another wildlife management system in different regions. Comparing British Columbia, forestry is the most important

economic sector while tourism is a growing economic engine. In January 1996, three leading provincial associations representing the forestry and tourism sectors in this region signed an agreement according to which the sectors recognised the mutuality of their interests in effective land-use planning, and the extent to which their activities are and can be complementary. Since the signature of such an agreement the two sectors have worked proactively on matters having impact on both of them, and have worked to address disputes between them promptly an effectively (Apsey et al., 1997).

5. Future tasks and problems

Wildlife has succumbed indelibly to prodigal exploitation of this territory during the last centuries. Pasturing practice after historical slash and burn farming now is still important in livestock husbandry. This human livelihood has been found to be one of main factors for shrinking wildlife habitats. Even nowadays pasturing is realised without taking into consideration season, state of vegetation and optimal number of livestock per hectare. Subsequent decreasing of pasture quality led to conquering of (20-30%) forests by livestock. This evident retiring of wildlife in favour of domestic animals is motivated in society, by bad pastures, dry climate, deficit of forage, and growing number of livestock. We think that afforestation of pastures and agricultural lands (almost all are private) could solve the problem with illegal pasturing and logging (Gulca, 2010) and extension of wild habitats.

The impressive number of laws, government decisions, technical instructions concerning forest and wildlife management were approved and are in the process of elaboration or adoption. Many international conventions were signed and many credits were and will be received. But the prognoses for a country with one of the lowest GDP per capita in the world are not so impressive. Or, Moldova is not Botswana or even Zambia with copper, cobalt, uranium, lead, zinc, silver, gold, and pit-coal. Although the goal of forestry authorities during the period 1977-1987 was to bring the forest of RM to 500 000 ha (15%), the same goal is stipulated in today strategies of forestry and biodiversity with a date limit of 2025 (Gulca, 2010). In this context is interesting the opinion of Caughley and Sinclair (1994) concerning non-policy and non-feasible policy which formed the actual state of wildlife in general. Non-policies according to these authors stipulate goals that are not clearly defined. In contrast to the relatively benign non-policy, the non-feasible policy can be damaging. Although it may give each interest group at least something of what they desire, sometimes the logical consequence is that two or more technical objectives are mutually incompatible. An example is provided by the Forestry Code according to which Art. 59, p. (1) states that “pasturing of horned cattle, horses, Caprinae, sheep and other domestic animals in the lands of forest estate and in the protection forest strips is prohibited” while Art. 59, p.(2) determines that “in exceptional cases pasturing of livestock, excepting caprinae and sheep, on the lands of forest estate is permitted”. So we have a double interpretation of pasturing problem even in the same article of the principal forest law.

A critical hypothesis of this study is that the property rights structure and state responsibilities are key factors in determining the perspectives of wildlife management. The choice between wildlife and livestock utilization will be taken depending on the ongoing processes and perspectives. A company “Ritm contemporan” which leased in 1997 a 1 000 ha of forest hunting grounds increased the number of wild boars in two years from 20 to 100 exemplars. As the state authority had not approved the quota before the beginning of the hunting season, the company could not

organise hunting tourism and consequently did not have any return on its investment. About 50 wild boars were killed by poison because during the autumn wild boars damaged corn crops on nearby private lands. The difficult economic situation, out-of-date legal regulations, inappropriate attitudes in hunting, and lack of educated staff and capacity building contribute largely to the poor state of hunting.

According to Caughley and Sinclair (1994) a wild population may be managed in one of four ways: 1 making it increase; 2 making it decrease; 3 harvest it for a continuing yield; 4 leave it alone but keep an eye on it. These are the only options available to the manager. Three decisions are needed: (i) what is the desired goal; (ii) which management option is therefore appropriate; and (iii) by what action is the management option best achieved? The first decision requires a judgment of value, the other two technical judgments. In Moldova, the main tasks of wildlife policy must be directed by the enhancement principle of general utility (judgment of value) of wildlife. Management option should depend on the actual case of natural reservation or hunting enterprise. The objectives of wildlife management should be precise and compliant to the principles of sustainable development. Important issues are financial support of hunting development; conditions for solving the questions of forest ownership; increase of game abundance and quality; adaptation of the abundance and structure of game in forest hunting grounds to intensive management, active protection of the populations of wildlife species; use of wild animal species in pharmacology and other branches of the economy. Thus we should develop restoration goals for wildlife in the light of both historic possibilities and current realities, (Morrison, 2002).

6. Discussion

In the majority of countries there have been notable changes in the structure of holdings during the last 15 years (Schmithüsen and Hirsch, 2010). For instance, privately owned area has increased in Ireland and Norway due to reforestation of marginal private agricultural and pasture land. In Ireland, an estimated 15,000 farmers have changed their land use from agriculture to forestry since 1990, thus being the main contributor to a 220,000 hectare increase since 1990. The countries in the Commonwealth of Independent States (CIS) accepted, only after long hesitation, the existence of privately owned lands. Until 2001, Russia, Armenia, Moldova, and Kyrgyzstan recognised only private forest property from newly created plantations on agricultural lands. CIS national forest legislation claims all forests as "common property of the people". However, this formulation has nothing to do with the classical definition of "common property" in scholarly literature on property rights (Bouriaud and Schmithüsen, 2005 cited by Schmithüsen and Hirsch, 2010). The CIS term clearly means that forestland and its standing timber are managed a State property. In the context of the main point of strategy of SFM in Moldova, to increase forest percentage until 15% (or to plant at least 150,000 ha) by newly created plantations on private agricultural and pasture land, we suggest for state to promote and support leasing of new forests for hunting management by every landowner or by entire village, which means by community of landowners and hunters. Taking in consideration that hunting constitutes a basic motivation for keeping or obtaining property, we believe that supporting of its integral part of the property right on forest land, will permit landholder to practice game management cheaper and in harmony with SFM. This problem deserves investigation in recent project of Game Law, because it will reduce demand in state investments and will promote conservation in attitude of the

people. Later as next step, game as real public good and trust could offer a possibility for districts to be in charge of game management.

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Ecological and economics aspects of the Law on Forests in the last two decades in Serbia

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Abstract

Forests, as a resource, have an important role in the economic development of Serbia. This paper provides an overview of the Laws on forests in the last two decades, with special emphasis on articles of the law and innovations that were introduced in each of them, which are important for forestry as industries. Analyzing the law, special attention is paid to economic and environmental aspects of forestry, with respect to the principles of forestry policy. It was important to determine the role of forestry in the economic development of Serbia, through the Forest Laws, which were necessary for the sector development and organization within the forestry sector. Each review is accompanied by commentary and analysis of the facts concerning the economic, social and environmental aspects of forestry.

Forests have significant ecological functions which include: protection of land against erosion, protection of headwaters of water supplies, shelterbelts, etc. The review of Laws presented in this paper shows clearly the presence of the commitment of using all elements of biodiversity, therefore also forests, in a way that enables their survival, regeneration and the enhancement their state. On the other hand this paper shows the review of the Forest Laws in the last two decades, with the especial attention which is devoted to articles of the Laws and innovations which are introduced in each of them, and which are important for the forestry as the economic sector. Each articles review of the Laws is followed by the comments and analysis of the facts considering economic and social characteristics.

Key words: Forest Laws, Economy, Ecology, Forestry

1. Introduction

Forests are good of general importance, because of their invaluable and numerous features and benefits for the entire society. Legislative regulations in the forestry sector should express the general level of understanding of the problems of forestry in the state, and thus to protect forests as part of the national natural wealth. Therefore, forestry appears as the subject of relatively extensive and complex legislation.

Forests have been identified as an important potential for the mitigation of climate change. For this reason, special attention is paid to protect forests, especially because of their complex ecological significance, which is understandable, from the simple fact that forests produce large amounts of oxygen in the atmosphere, and that they are also kind of air filter. For this reason, it is logical that the legal regulations related to forest focus, *inter alia*, to the protection and conservation of renewable resources.

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These are the main reasons to visualize and analyze legal decisions related to environmental aspects of forestry, with a tendency to determine the most important changes in relation to forests that have ecological character in the last two decades, to establish possible regularities in these changes and examine the possible causes of the adopted legal decisions and their consequences.

This paper presents the Laws on forests and their articles, with their comments, which reflect important aspects of forestry, presented by its economic and environmental component. Thereto, it is an attempt to follow some problems and legal solutions in the continuity from first to last observed law, in order to clearly comprehend the development aspect of legal solutions and relationship with other issues that require legal support (ecology, organization, ownership, etc.).

2. Laws on Forests and comments

2.1 General Law of Forests from 1989.

§1 - *"Forests as goods of general interest must be maintained, renewed and utilized in a way that will preserve their value and ensure durability and protection and permanent increase in growth and yield as well as their functions of general benefit".*

§3 - *"In order to ensure the protection of forests, rational utilization of forests and forest land, means for realizing reproduction of forests and other general interests forest-economy areas are formed."*

§4 - *"To provide the material and other conditions for protection, utilization and improvement of forests shall be established a social fund for forests.*

§ 7 - *"For management of socially-owned forests (...) public companies are established."*

§ 11 - *"Public enterprise is established for one or more forest-economic areas."*

§ 13 - *"Revenues of public companies are: funds obtained from forest management, achieved through the purchase or trade of forest products, providing services in forest management, means that the Fund allocates for the implementation of medium-term and annual program of the Fund for the promotion and protection of forest resources, funds provided by directly associating interested users' means".*

§14 - *"Public enterprise is obliged to provide professional and rational management of forests that have been entrusted to management, to implement protection measures, silviculture and exploitation of forests and improvement of general benefit functions of forests, which are established by laws, regulations and other general act".*

§20 - This article gives a detailed definition of forest-economic management plans, which aims to establish guidelines and objectives of forest management in accordance with natural and economic conditions.

§ 51 - *"Funds for the reproduction of forests, whose compulsory appropriation is established by federal law, shall be used for maintenance work on forest restoration and reconstruction of the forest, raising new forests and forest plantations and their care and protection ..."*

§ 53 - *"Fund: makes medium-term and annual program for the protection and improvement of forests, adopt a financial plan ..., determines the amount of fees that are a source of income of the Fund, establishes the criteria and conditions for the direction and allocation of the Fund, decides on the awarding of funds, monitors the implementation of the program works and control using the Fund".*

§56 - "*Funds' means are used for afforestation of waste land, melioration of degraded forests and thickets, the production of forest seeds and planting material, care, protection and maintenance of forest plantations. Maintenance and restoration of forests, construction of forest roads for the afforestation, melioration, care and protection of forest plantation and protection of forests from fire, for scientific study and research of importance to forestry*.

In this Law, the first few articles (§ 1-3) are similar, i.e. are the same as in the previously enacted laws. These articles are mostly describing the forest as well of general interest. They have to be restored and used in a way that will preserve its value, ensure durability and protection, as well as formation of forest-economic areas for better protection of forests. In this law, for the first time is mentioned the establishment of **Social Fund** for forests of Serbia, whose role is to provide material resources for financing activities in forestry sector. Also mentioned is the establishment of a **public enterprise** for forest management, whose role is to provide professional and rational management of forests that are entrusted to manage, and to implement measures for the protection, management and utilization. The establishment of public enterprises is of particular importance and with a strong social interest (with their establishment previous community forests were translated into national (state) property). Forests those are not included in forest areas are managed by commercial companies in the field of water resources, agriculture and similar industries.

In the part that refers to the means of silviculture, improvement and utilization of forests, there are several articles (§ 32-34), which emphasizes that the owner is obliged to carry out reforestation burned areas, the surface on which failed to juvenescence and reforestation, as well as areas where was illegally made clear cutting and deforestation. Owner is obliged to apply forest management measures and methods which applied in management in state forests. In this law are mentioned non-wood forest products (although the Law indicate them as a second forest products), which have, next to the wood, a significant role in forestry, and animal breeding, which is in accordance with the special forest-economic grounds and hunting-economic management plans.

Also, this Law determines the functions of the Fund for forests of Serbia and Funds' revenues are shown, which originate from the fees of cut timber, compensation for pollution and from means for the reproduction of forests (§ 54). It can be concluded that, with this law, the Fund is gaining importance, because its function became very important for financing activities in forestry.

Forest owners are obliged to take measures to protect forests from fire and other disasters, as well as plant diseases, pests, etc. Responsibilities of forest owners are emphasized in this law as well as their obligations regarding the preservation and care of forests (devastation, deforestation, clear cutting, gathering forest products, fire protection, etc.).

2.2 General Law of Forests from 1991.

§1 - *"The protection, promotion, use and management of forests and forest land and other potential noise is realized under the conditions and manner specified by this Law".*

§ 5 - *"For the rational enforcement of forest management, forest soils and other forests potentials in a certain territory, the forest areas are formed".*

§ 9 - *"Public enterprise for forest management of state-owned forest those are included in forest areas is established. Public Enterprise for Forest Management operates under the guise of: State Enterprise for Forest Management "Srbijašume".*

§10 – *"Activities of State Enterprise „Srbijašume" are*

1) the cultivation, maintenance and restoration of forests, reconstruction and melioration of degraded forests and thickets, the production of forest seeds and seedlings and raising new forests and forest plantations;

2) the production of forest assortments and the use of other forest products and their transport, use of forests for recreation, farming and hunting and other use of forests;

3) the design, construction and maintenance of forest roads, parks and green recreational areas and other facilities that serve forest management;

4) the compilation of programs, projects and forest management plans;…

10) the improvement and use of general-benefit functions of forests".

§21 - *"Forest area covers forests in the state and private property".*

§ 24 - *"Forests in state ownership, which are included in forest areas and national park forests are managed on the basis of general forest management plans and special forest management plans ... Forests in private ownership are managed on the basis of a general management plan and forest management program for private forests... Implementation of the forest management plans and program is provided by the annual performing forest management plan for state and annual performing forest management plan for private".*

§36 – This article specifies that users and owners are obligated to perform afforestation of burned areas, the surface on which failed to juvenescence and reforestation, as well as areas where the devastation, illegal clean cutting and deforestation and illegal cutting of rare species of trees were done, within and in the manner specified by the competent inspection body.

In this law, the name of forest-economic areas has been replaced by term **forest areas**. They are exclusively formed on the basis of geographic and natural conditions, in contrast to the forest-economic areas that could be formed on some other criteria. The new is that forest area and forest cover in state and private property. In this law we can see that there are 27 forest areas instead of the previous 16.

General (forests included in one forest area) and special forest management plans (one forest management unit) shall be established. Deadlines, tasks and data that have to be included in the grounds are clearly defined.

In this law is mentioned the establishment of public enterprises for forest management in state ownership, State Enterprise "Srbijašume". The main activities of the company are silviculture, maintenance and restoration of forests, production of forest assortments, use of other forest products, use of forests for recreation, cultivation and hunting etc. Also, one of the basic activities is compilation of programs, projects, and forests management plans, on the principle of sustainability. Financing companies is done by selling forest assortments, provision of services, compensation for cut forest, and the loans and from the Republic budget, etc.

Penalty provisions in the law are much more strict compared with the previous laws and prescribe much more limited restrictions on the owners of forests.

Regarding the income of the Fund for the forest, they come from multiple sources. Additional resources in relation to the previous law, are from one-time fee for the cleared forest, the Republic budget, fines imposed by this law, etc. (§ 57). In this way, the Fund for the forest becomes more important and has greater financial resources, which are invested in forestry.

2.3 New Law on Forests from 2010.

§ 3 – "*this law provides the conditions for sustainable forest management, as good of general interest, in the manner which will permanently maintain and improve their capacity of production, biological diversity, ability of renewal and vitality, that will ensure the fulfillment of economic, ecological and social functions of forests without damaging surrounding ecosystems*".

§ 6 – This article lists the functions of forests, which, according to this Law, can be economic and functions of general benefit. General-benefit functions, among other things, are general protection and

improvement of the environment, mitigation the negative effects of 'greenhouse effect', purifying polluted air and water, etc. Economic functions of forests are carried out with implementation of forest products and the valorization general-benefit functions of forests, in order to obtain revenues.

§ 15 – In this article states that on the territory of the Republic of Serbia forest monitoring is conducted. Monitoring is implemented by the Ministry or authority of the Autonomous Province, which may entrust to a scientific institution in the field of forestry. Monitoring is funded from the budget of the Republic and shall be conducted in accordance with internationally accepted methodology - the IPC methodology.

§ 17 - *"... Forest area is the geographical, natural and planned complex. (...) Forest area covers forests in all forms and all types of property, except forests in national parks".*

§ 19 - *"The Program of forestry development in the territory of the Republic of Serbia and the Forestry Development Program in the territory of the autonomous province are strategic planning document that establishes directions for development of forests and forestry with the action plan for their implementation".*

§ 42 – "*Forest owner is obliged to monitor the impact of biotic and abiotic factors on the health of forests and timely to take measures to protect forests and forest land*"

§ 49, paragraph 1 – "*Disposal of waste, toxic substances and other waste is prohibited in the forest, the forest land and at a distance less than 200 m from forest, as well as construction of facilities for their storage, processing or destruction*"

§ 73 - This section governs the establishment of associations of private forest owners. For the achievement, promotion and protection of common interests in forests, forest owners associations may be established in accordance with special regulations governing the association of citizens. The Association is obliged to implement measures for forest management established by program.

§ 75 – *"For consideration of professional issues, providing expert opinions and participate in the implementation of project tasks in the field of improvement of forests and forestry, the Minister, in accordance with regulations governing state administration, establishes a special working group - the Council of Forest by decision".*

§ 81 – *"For achieving the public interest and long-term goals based on the principles of sustainable forest management, (...) the Fund for the forest is established. Forest Fund is established for an indefinite time. Fund is administered by the Ministry."*

§ 97 - *"Works on care, silviculture and utilization of forests can be done by a legal entity or a registered contractor, that is registered to perform these activities in the Register of economic entities and meets the requirements in terms of equipment and professional staff".*

Law is divided into 13 sections. In the first chapter are given basic provisions (subject, purpose and application of law), and the meaning of certain expressions used in law. Article 7 says that the owner or user shall be obligated to enforce **forest protection** measures, to protect forests from erosion and degradation and to implement other measures prescribed by this Law. Second chapter governs the preservation of forests. Cutting of trees, destruction of young trees and collecting seeds of strictly protected and protected species of forest trees that are established by special regulations governing the protection of nature is especially arranged in this Law.

This Law also mentioned non-wood forest products, although they are again indicated as the other, second products. In Article 62 is said that the gathering of other forest products can be done with the permission of users or owners, in accordance with *the project of utilization of other forest products*. Next to this project, the Law also mentions *the project of using* ***other functions of forests.*** Project for the utilization of other forest products shall be for a period of five years, and projects using other functions of forests shall be for the period of duration of management

plans and programs, if they are private forests. Both types of projects must be consistent with the spatial plans. The user is obliged and owner can bring both projects.

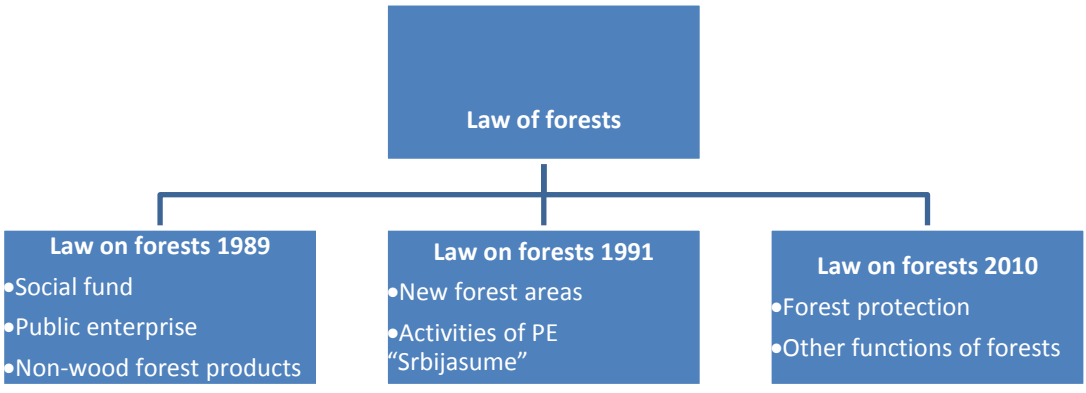
Program of Forestry development in the territory of the Republic of Serbia is adopted by the National Assembly of Serbia and the Assembly of the autonomous province for a period of ten years. Drafting of Forestry Development Program in Serbia is financed from the budget of the Republic of Serbia and budget of the autonomous province. Development programs are the main strategic planning documents setting out the directions of development of forests and forestry with the action plan for its implementation, which in particular include: condition of forest, objectives and measures for improving the situation, plan for the implementation of goals and measures, with the prescribed dynamics and financial resources necessary for their fulfillment.

The seventh chapter of the Law refers to the financing and fixed assets for carrying out the public interest. Sources of the Fund for forests are compensation for the use of forests and forest lands, compensation for the protection, use and improvement general-benefit functions of forests; budget of the Republic of Serbia; funds intended for rural development, environmental protection, protection of soil and water science and education, regional development and other funds, etc.

The provision of Article 91 Law stipulates the establishment of the Serbian Chamber of Forestry Engineers, in order to improve conditions for performing professional work in the field of forestry, protection of the general and particular interest in performing the duties in this area, the organization in providing services in these areas, and to achieving other goals. Chamber members are forestry engineers.

Penalty provisions have been regulated in XII chapter of the Law. Here are specified the economic offenses, and misdemeanors, as well as penalties for those offenses. Level of sanctions is in accordance with the provisions of the Law on economic crime and the Law on misdemeanors, as relevant in this field.

The law accepted numerous positive impacts of forests on the environment by taking into account public interest, the basic principles of 'sustainable forest management (development)', by issuing an obligation to all legal entities and citizens to contribute to the realization of numerous general-benefit and economic functions of forests.



Graph 1 Forest Laws in the last two decades with significant points

In the graph 1., it can be concluded that each law was specific on some problems in the field of ecologic or economic matter. For example: the most important questions due to Law of forests (1989) were: social fund, public enterprise and non-wood forest products.

3. Conclusions

In the **ecologic part** of the review of the laws there are elements of soil and water protection, shelterbelts, etc. Forest reserves also have the primary position of forests with priority functions i.e. with special characteristics. In all laws it can be observed it has been involved the obligation of using all elements of forest biodiversity on the basis of sustainable principles (the forest must be used due to the natural circumstances and potentials of environment, not to disturb balance in the nature). Owners of the forests have duties to conduct afforestation of the bare lands etc. in these laws it can be observed a lot of restrictive measures directed to forest protection (clear cutting, prohibition of cutting of rare tree species, collecting berries and plants, etc.). Public enterprise is enhanced to create office for forest protection, and Republic is enhanced to form forest inspection with its duties (control of cutting, etc.). For these laws it is very characteristic that there are no stimulating measures.

Almost all recent Laws define the term forest by the initial articles, as well as the obligations to forests, which have to be maintained, regenerated and harvested in such a way as to conserve their **multiple use function**. The legislator, pursuant to the obligations and duties of forest owners, has also established the restrictive measures in the form of distinct prohibitions intended to **forest protection**, which are reflected in the sphere of **ecological-protection functions** (prohibition of felling seed stands, clear cutting, tree girdling, damage to plantations, forest contamination, etc.).

The common characteristic of all analysed Laws is that almost all prescribed measures have a **restrictive character** (various types of prohibitions or strict definitions of the procedures related to forests). There are almost no Law articles with a **stimulation character**, which define the benefits to the performers of forest operations or in connection with them. This means that individual and social interests have to be linked, because all ecological gains from forests, and especially the significance and the purpose of the professional operations in forests, which also have the ecological aspect, can be recognized and defined clearly only by few persons outside the forestry profession. Forests have a significant place in **economic development** of Serbia. Analysing of the Laws, special attention is devoted to production aspect of forestry, with respect to principles of forest policy. Very important was to research: 1) the place of forestry in the economic development of Serbia, 2) Forest Laws, which were necessary to exist for the development of the sector and 3) organisation inside of the forestry sector.

In the analysis of Forest Laws, special attention was focused on the fields dealing with the relationship of forestry and wood industry, personnel policy, forest ownership, macroplanning in forestry, forestry financing, and the problems of secondary forest products. The problem of the **professional base** for the work of forest enterprises (estates) during the study historic period ranged from purely economic towards ecologically oriented. The **relationship of forestry and wood industry** was initially much more intensive, whereas it weakened after the Second World War and thus this aspect of economic activity gradually gained more significance. The issue of **forest ownership** was solved by recognising the private property, and also by introducing some

new categories of ownership. The focus was changed more towards the owners' obligations to forest, than to their rights of managing this type of property. Also, it is evident that the effect of the state on private forestry sector grows, both from biological-technical and from the organisational aspects. The question of **macroplanning in forestry** refers to state planning in this sector (pursuing forest policy), which was initially linked to general state plan documents, whereas later on the sector long-term plans were formed, which were in the subsequent phase transformed into Forestry Development Program, and in future National Forest Program should play this role. The issue of **secondary forest products** gained the significance not before the middle of the study period. Initially it meant the prohibition of collecting during a certain season etc., but later on the adopted decisions regulated also the other aspects of production (purchase, conditions of harvesting, etc.). **Forestry financing** was also imposed as an important aspect of the economic sector of forestry. During the study period, forestry had different sources of financing, which are analysed in detail.

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Compensations for Biodiversity Protection in Forests of Lithuania

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Abstract

This study focuses on the importance of protection and rational use of biological diversity in forests. It aims to present a summarized overview of the condition of biological diversity protection in the Lithuanian forests and the potential for related developments in this area for the future.

The first part of the study is a brief overview, based on research literature on the theoretical aspects of the role of the biological diversity and ecosystems in climate change. The second part of this work deals with the issues of legislation regarding the financial and compensatory mechanisms to forest owners and managers in relation to certain restrictions and limitations of their economic activities in forests for the protection of the public interest and the biological diversity in their forests. These considerations are been based on the information received from the national (Lithuanian) forestry authorities and institutions. The third part of this study deals with the practical application of these compensation and protection mechanisms, their efficiency and hindering problems to be solved.

This study shows that both on the national level and on the EU level, biodiversity protection in forests is been perceived as the most important measure for climate change regulation, and carbon volumes regulation functions, and that this importance is increasing. It is also obvious that there are still relatively few efficiently functioning mechanisms for compensation to forest owners in relation to biological diversity protection. It is been concluded, as the main issues, that there is a need for improvements to the financial support mechanisms for compensating the state forest owners and managers to enable them to more easily receive these compensations and to use them.

Key words: forests, biological diversity protection, compensation, forest owners

1. Introduction

The majority of plant, fungi, and animal species form and maintain suitable conditions for life existence on planet Earth (including the human beings). The biological diversity maintains the stability of the natural environment, and its ability to adapt to the changing environmental conditions. Nothing exists without a purpose in nature; all species are equally needed and important. For preserving the biological diversity, we need to know how species interact with each other, how the ecological systems are been formed, what influence the species have on the system, how and why the introduced species change the ecosystems. We know something about the number of species and their varieties, but we also need more information on the distribution of these species, composition of the ecological communities and ecological characteristics of the species, which those species try to maintain. In many parts of the world, the possibilities to

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research big systems are decreasing or even lost already, because many of the species become extinct rapidly without researching their interaction with other species. Natural areas also become extinct without researching their specifics. That is why it is of a crucial importance to preserve the existing species and ecosystems as long as it is possible to be able to collect as much knowledge as possible about the ecological processes – while we have the opportunities for this.

After a long and slow evolution of human beings, the whole of humanity had to undergo revolutionary technological and social changes. The ecosystems were been transformed into arable lands, pastures, people started planting forests and urbanizing a greater number of ecosystems, and the remaining ecosystems became much smaller and isolated from each other. We have described around 1.5 million species of life, but there are around 10 millions of species in our planet, we have little or no knowledge about their interrelations. That is why it is possible that the extinction of the species considered as not important or not yet known and researched by us can cause hardly predictable changes in nature with a potential for negative consequences.

There are many practical ways for preserving the biological diversity: it is possible to restore the populations of species under extinction, to restore the species where these species lived earlier, it is possible to try to eliminate the exotic species from the environment taken by them. It is also possible to try to restore the environment at the place from which the species were been displaced; it is possible to try to restore the productivity of the soil, the deterioration of which was caused by erosion. There are many methods to achieve this target, and all of them shall been directed to the preservation of the biological diversity.

Nowadays, societies around the world are very seriously concerned about the climate changes. Structural and functional changes of ecosystems have a serious impact on the interrelation of biosphere and climate systems. Their deterioration or disturbance causes a big increase in the emission of greenhouse gases. At the same time, protection of biological diversity and ecosystems as well as a sustainable usage of them can significantly contribute to the extenuation of climate changes and help humankind to adapt to these changes. It is not enough to facilitate the responsibilities of the states – all people shall undertake individual responsibilities for the future well-being, and not only for themselves, but for the future generations too. The role of biological diversity and ecosystems for the extenuation of climate change is not been sufficiently understood and not sufficiently assessed because biological diversity and ecosystems can help us solve numerous problems related to global environmental changes. Only the approach from the ecosystems point of view can help us to eliminate many causes and consequences of climate changes, to provide a substantial benefit for society and at the same time perform the function of society's welfare protection. The mutual relation of biological diversity and climate change has a special emphasis. This shows that the role of ecosystems for climate changing systems is been better understood; likewise, the issue of biological diversity protection is important in being able to control the climate changes. Without strong and flexible ecosystems, it will not be possible to stabilize or regulate the changes of climate systems. That is why the European Union motivates its member countries to undertake urgent actions for stopping the further deterioration of the biological diversity and degradation of ecosystems – this is been needed if we wish to have the opportunity to influence and to control the climate changes [1].

Forests are the only ecosystems where the volumes of carbon accumulated in plant biomass exceed the volumes of carbon in the soil. That is why even forest cutting has a very strong impact on the emission of carbon. Moreover, forests regulate the climate not by accumulating the carbon, but also by producing aerosol, which is necessary for the formation of clouds, and by regulating *albedo* – a relative value that indicates the percentage of how much the surface or

object reflects the rays. The components of biological diversity – such as the communities of animals, plants, and microorganisms - together with abiotic factors, form ecosystems and various environment protection functions, which are of vital importance to human beings. In the majority of cases, the benefit provided by the ecosystems depends on biological diversity management. For example, at natural ecosystems, not only carbon is collected and stored – there are various medical herbs. That is why the environment is been very closely related, both directly and indirectly, to the development of humankind, and affects its social, cultural, and even aesthetic aspects.

Based on the above, the conclusion is that the protection of the biological diversity, and its sustainable usage, makes up a compulsory condition in seeking to avoid an ecological crisis and to lessen the consequences of the current economical crisis. That is why humanity shall direct its development because of ecological capacities of the planet.

The climate change of the last century already had a substantial impact on forest ecosystems and this impact will even increase in the future. Trees accumulate carbon in their trunks by taking it from the forest soil flooring and the depth of the soil and this is how its accumulation is been reduced in these segments of ecosystems [12]. Forests not only protect and restore natural ecosystems, but they also reduce the rate of climate change by accumulating carbon and reducing its emission caused by degradation or extinction of ecosystems at the same time protecting us from the threats of climate change. If the regulatory functions of forests as carbon regulators deteriorate, carbon emission into the atmosphere may increase and it could cause climate changes [13]. It is regrettable that rather often, commercial forests, which are no less important for preserving the biological diversion, in many cases are not protected by international agreements and are cut in full.

In addition, it is namely the private forests, which can substantially decrease the climate changes and help humankind to adapt to inevitable changes. Only an ecosystem approach will protect the natural resources, including the land, soil, air, water and resources of vital importance. Moreover, this approach is cheap and is much more affordable for poorer communities. This is the main reason why it would be motivated and supported. For example, afforestation and planting of the natural species of trees seeking to increase forest areas can also increase accumulation and storage of carbon, could contribute for the protection against floods and maintain the adaptation of the biological diversity, clean air, and, at the same, decrease the consequences of climate changes.

This paper, analyzing the importance of biodiversity, is at the same a study of compensatory instruments for forest owners and managers for restrictions due to the protection of biological diversity. The broad goal in managing these forests is to mitigate against climate changes and to meet the needs of the public interest. This paper seeks to come up with proposals to be incorporated into the process of compensation not only of private forests owners but of state forests managers as well. It analyses the territorial distribution of biological diversity in Lithuanian forests and investigates the ways to compensate its protection. In this work comparative, documentary, historical analysis and generalization methods are been applied.

2. Biological diversity in the Republic of Lithuania

All of us know that plant and animal species are not been evenly distributed on the surface of the Earth. In some parts of the planet – there are more species; in some – less; in some – very little, and in some – none at all. The distribution of the species in all territories is not uniform. The species adapt to each other during a long time growing together in a certain territory and they form a chain with a strong resistance to various environmental impacts that is

why the species with a better genetic adaptation are more widespread. Due to this reason, it is of a crucial importance to preserve the biological diversity of species growing under natural conditions.

The biodiversity of Lithuania are been comprised of 16 380 animal species, 6 000 fungi species, 3 840 plant species, and 500 lichen species [11]. From these, there are 771 species belonging to rare species or species under extinction - that is why they are included into the "Red Book" of Lithuania as specially protected. Protected territories are defined for the purpose of preserving natural and cultural heritage complexes and subjects (values), biological diversity of the landscape and seeking to ensure the ecological balance of the landscape, balanced use of the natural resources and their restoration, to create conditions for educational tourism, scientific research, monitoring of the state of the nature and to propagate natural and cultural heritage territorial complexes and objects (values) [6].

As of January 1st, 2009, the National Network for Protected territories in Lithuania covered 968.1 thousand ha (14.8 %). The Network is made of 6 reservations (3 – natural, 2 – cultural), 257 state sanctuaries, 111 municipal sanctuaries, 770 protected natural heritage subjects, 3 recovery areas, 5 national parks, 30 regional parks, 1 biosphere reservation and 26 biosphere areas [11]. Forests made up more than half of the national parks territories (57 %), and forests covered 43 % of regional parks territories as well. That is why, bearing in mind the peculiarities of the economic activities in forests, certain specific requirements shall be applied for the protection of biological diversity.

Environment protection is one of the topical priorities of the European Union. Implementing the EU requirements for the protection of wild birds and their habitats, Lithuania established and develops a network of European importance for protected territories "Natura 2000" [2]. The Directives of the European Union on Environment Protection (Birds and Habitats Directive) are been based on two major provisions: the "Natura 2000" Network on Protected Territories and the Protection of Species at their Natural Habitats. These directives protect over 1000 species of animals and plants of significant importance to Europe and over 200 habitat types (forests, meadows, wetlands, etc.). At present, there are 25 000 "Natura 2000" territories defined in the European Union countries, which cover a bigger area than any single member country. The European Ecological Network "Natura 2000" – a common network of protected territories on the level of importance to the European Community, which is made up of habitats and important territories for bird protection devoted to the protection, maintenance, and, when needed, restoration of the natural habitat types, animal and plant species in the territory of the European Community. This network of protected territories is the biggest in the world and represents one of the most important achievements of the European Union's environmental policies.

The Lithuanian national protected territories or their parts can also be awarded with the status of the European Community special protected territories:

1. Territories important for the protection of habitats in which it is indented to maintain or to restore a proper protection level for natural habitats, to contribute to the creation of the European ecological network "Natura 2000";
2. Important territories for protection of birds where it is intended to preserve the natural habitats of birds, populations of wild bird species at their population habitats, to restore the extinct wild bird species biotopes and to preserve breeding, feeding, nutrition, rest and migration concentration places of the migrating birds.

In Lithuania, Territories of the European Community Importance for Habitat and Birds protection are been selected based on scientific research of habitat types and protected wild animals and plants population research. An institution authorized by the Government defines the

criteria upon which such areas are been selected for the establishment of protected territories. The territory protection regime for habitat protection is been defined because of territory planning documents, special maps and balanced instruments: preservation (conservation), prevention and valuation instruments, which define the impact of projects on those important territories. The General Regulations define the peculiarities the European Community Importance for Habitat and Birds protection for Territories Important to Habitat and Birds Protection approved by the Government of the Republic of Lithuania.

In territories important for bird protection, economic activities are banned, either restricted or limited – such activities, which can do harm to protected species of birds, their habitats, breeding, nutrition, feeding, rest and migration concentration areas. If the regime for protected territories important for habitats and birds protection does not ensure an appropriate state and condition of protected habitats and species, schemes for protected territories and protects or protection agreements with land, forest, and water bodies owners and managers are signed where additional preservation (protection) measures are set forth. In the European ecological Network "Natura 2000" territories, economic activities are either banned or limited – such activities that can have a negative impact on protected natural habitats, species habitats, for protected species of plants and animals. Only such activities are been allowed which ensure a proper state of such habitats and species. Such activities shall be carried out in strict consideration of the documents defining exact habitat types and species and (or) nature management plans [6].

The total number of "Natura 2000" territories as of Jan 1, 2009 in Lithuania, was 375, and their area, taking into consideration the overlaps of such territories, was 783.9 thousand ha. This is 12.0 % of the total area of the country [11].

Forests and their ecosystems in Lithuania started to form a very long time ago – around a million years ago. This process is happening now too, at the same time making a crucial impact on the variety of species, national landscape, and even the national self-awareness. Long years of occupation had a negative impact on the self-awareness of the people, especially on their respectful approach to nature and forests; however, forests are still very important to human society. On Jan 1, 2009, the forestland area of our country was 2150.3 thousand ha and made up 32.9 % of the whole territory of the country [11]. Forests are been divided into groups according to their functional purpose. Forestland areas, belonging to group I (reservations forests) made up 25.9 thousand ha, (i.e. 1.2 %), group II forests (special purpose forests) made up 262.4 thousand ha (12.2%), group III forests (protected forests) – 337.8 thousand ha (15.7 %), group IV forests (commercial forests) – 1524.2 thousand ha (70.9 %).

One of the major forestry-related targets of the European Union is the protection of the natural environment and forest heritage seeking to preserve the biological diversity, restoring the damaged forests, ensuring the role of forests and forestry in relation to the environment protection functions, adaptation to climate changes and reducing climate change impacts. It is obvious that only the establishment of protected territories can have a positive impact in the fight against climate change or deterioration of the biological diversity. These goals can only been achieved by having all ecosystems in a healthy state – both in protected and in non-protected territories. This is a process involving the participation of the whole society. That is why a requirement to protect species not only in protected, but also in non-protected territories, is already a big achievement [1].

In Lithuania, as in all of Europe, there are species under extinction, which live in old and drying trunks of trees, fallen trees, boles, and other places, which are necessary for such species to exist. That is why one of the most important goals of the Lithuanian forestry policies and its

implementation strategy [9] is: the stocktaking of natural forest and forests close to natural, further specification of their protection regime, establishment of new protected territories, preservation of the biological diversity, improvement of protection and stocktaking of rare plants and animal species, and plants and animals species under extinction. For this purpose, in Sweden, a concept of key forest habitats was been created and stocktaking of such habitats was made in Lithuania. Key forest habitat (KFH) is an undamaged forest area with a good probability of finding habitat types of rare, protected, endangered, or vulnerable species. For this purpose, 17.6 thousand of key forest habitats are been defined in Lithuania [11].

Forest ownership changes have significant importance to the protection of biodiversity in forests. The areas of private forests are increasing which causes inevitable legal problems related to limitations of commercial activities in forests because private forests owners, due to certain limitations of economic activities in protected forests, suffer certain losses. Of course, the same limitations and restrictions are been applied to state forests too.

3. Legal Acts implementing biologic diversity protection

The Republic of Lithuania ratified the Convention on Biological Diversity on June 3 1995 [14] at the same time recognizing the priceless value of the biological diversity and the importance of the preservation of ecosystems and habitats, especially in the country of their origin. The Convention sets forth that the preservation of biological diversity is the duty of all humankind, and each state shall be responsible for the usage and protection of the biological resources that are in the state. By ratifying the Convention on Biological Diversity, Lithuania took the obligation to prepare a study of the country's biological diversity, and a strategy and plan of actions for the implementation of the strategy. This was been done in 1997 [8]. This strategy and plan of actions was prepared for twenty years; however, many instruments were been defined just for five years. Moreover, that meant that after five years Lithuania had to prepare a new plan of action and this work was not been done yet. This plan of action also defined instruments for helping to avoid forest ecosystems degradation – a rational use of forests and forest recreation, forming and maintaining an optimum structure and its territorial arrangement.

The Republic of Lithuania consistently follows all obligations undertaken. Apart from the Biological Diversity Convention, our country also ratified Convention on Extinct Wild Fauna and Flora Species International Trade Convention on Endangered Wild Fauna and Flora Species Trade, European Wild Nature and Natural Environment Preservation Convention, Migrating World Animal Species Preservation Convention as well as other conventions and international agreements. Alongside the main laws of the Republic of Lithuania on biological diversity protection (Law on Environment Protection, Law on Environment Monitoring, Law on Forests, Law on Protected Territories, Law on Sea Environment Protection, Law on Hunting), our country also has several special legal Acts for ensuring the protection of biological diversity – laws on protection of wild plants, wild animals, protected animal, plant, and fungi species [7]. For the implementation of these laws, Lithuania has the Red Book (a book for registering rare and endangered species), protected territories are established and various protection programs were and are been implemented.

4. Payments for protection of biodiversity

On January 1st, 2009, forest lands of state significance covered 1065.0 thousand ha and made up 49.5 % of all forests of the country where private forests covered 783.7 thousand ha, and private forests together with the forests reserved for the restitution of property rights made up 50.5 % of all forests of the country [11]. State forest managers do not get any compensation, nor payments or tax benefits in relation to any environmental restrictions intended to ban or limit

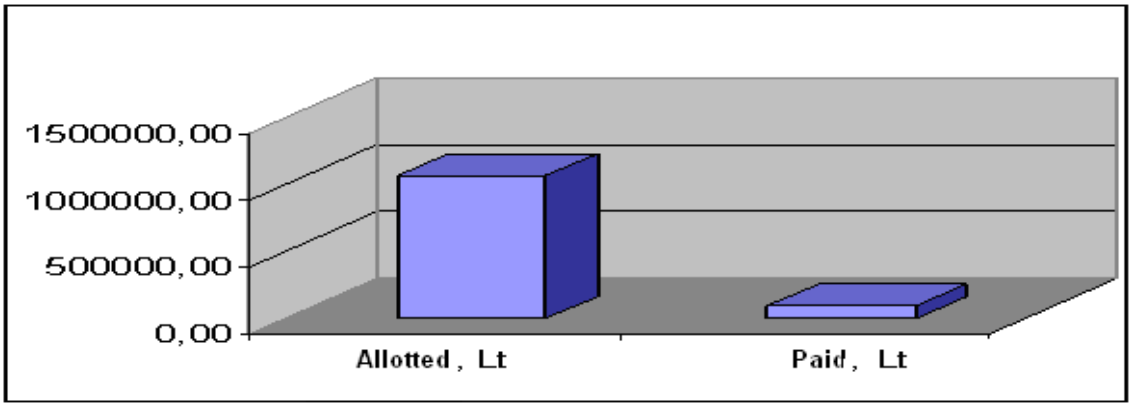
economic activities and the main motivation is that the state, actually, should not pay to itself. Such an approach is not correct because state forestry enterprises are state owned companies receiving profits from their activities, including those activities, which are been carried out in protected territories where the economic activities are much more limited and restricted; this demands more maintenance and care related expenses, and state forestry enterprises receive much profit due to this. As a result, state forestry enterprises which have certain restrictions or limitations in their territories related to the protection of biological diversity, face unequal competition conditions compared to those state forestry enterprises, which do not have such restrictions or limitations.

In a certain sense, private forest owners whose forests fall under environmental regulations, limitations and restrictions have better conditions for their economic activities. For example, on March 20, 2008 Minister of Agriculture signed Order NR. 3D-161 approving the instruments for Rural Development Plan for years 2007–2013, including **"Payments for Environmental Forest Protection"** and the rules for their implementation [3]. Its aim is to improve the preservation of a more natural forest environment and its protection and the development of forest owners' responsible approaches. Private forest owners by financial means are encouraged to apply economic activities in their forests in a more environmentally conscious manner and upon a voluntary basis, thus preserving the key forest habitats (KFH) (key forest habitat – a non-damaged forest area as defined under existing forest stockholding laws, that has rare, protected, vulnerable and endangered species). The aim is to preserve habitats of valuable species in private forests and to motivate owners not to use complete forest cutting methods and systems. Private forest owners are compensated for their losses and non-received revenues for a voluntary undertaking of environment protection restrictions and limitations not yet defined nor implemented under the legal acts.

Under this instrument, the following areas of activities are been supported:

- payments for non-execution of complete/full forest cuttings under identified KFH by compensating the revenues lost by 586.97 LTL/ha each year, for up to 7 years;
- payments for incomplete forest cuttings instead of possible complete/full forest cuttings each year, compensating 293.48 LTL/ha for up to 7 years until the last incomplete forest cutting for the revenues lost in relation to undertaken environmental restrictions.

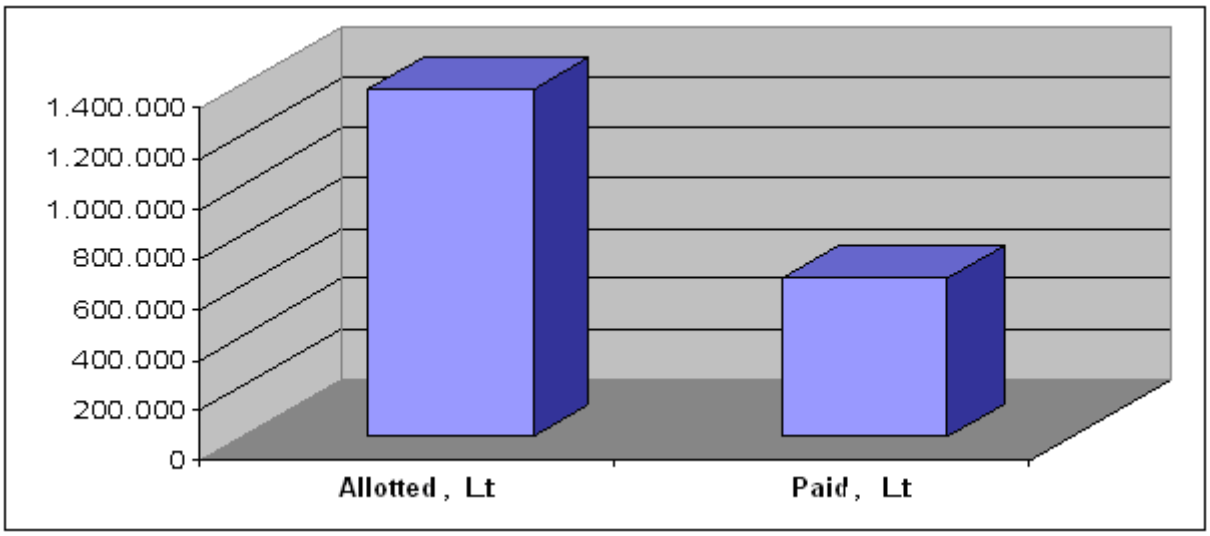
In 2007-2009, there were 61 applications submitted for environmental forestry activities payments and 1.055.886 Litas was allotted; however, for various reasons, only 46 agreements were signed and only 88.368 Litas was paid, and this equals only 8 % of all funds allocated for this instrument.



Picture 1: Payments for the instrument "Environmental Payments for Forest Owners", years 2007-2009

The instrument **"Support under "Natura 2000" At Forest Territories"** is been targeted to provide compensations in relation to economic activities restrictions at "Natura 2000" territories to compensate for the losses incurred and non-received revenues of forest owners. At the same time, it is contributing to the improvement of life quality in rural areas and the promotion of environmental consciousness and responsible approach of the population [5]. Under this instrument, the payments are been allotted only for those forest owners whose forestlands and whose forest ownerships are in the territory of "Natura 2000" and who follow mandatory restrictions or limitations defined by the laws and where such limitations or restrictions decrease their revenues or increase the costs of the economic activities. Payment amounts, when it is prohibited to carry out the major forest cuttings or when such cuttings are postponed until a later time, are 618 LTL/ha. The payment is been paid only when the wood reaches group IV age (commercial-economic purpose forest). In the case of forest cutting postponements, the payment is been made only for the period of such postponements. Moreover, the payment of 325 LTL/ha is only paid when the major forest cuttings are allowed, but they can only be carried out based on "per case" cuttings. The payment is been made only for the period from the first to the last cutting. The payment of 142 LTL/ha is made when at full/complete major forest cuttings, in the cutting areas, an additional number of green trees shall be left. When the tree area is of the age of thinning or older, and in the tree areas of 20 years and older it is prohibited to cut all dry and drying trees using sanitary cuttings, a payment of 169 LTL/ha is made.

During the years 2007-2009, the total allotted amount of support because of "Natura 2000" for forest territories was 1.380.554 Litas. Collection of the applications was very irregular: in 2007, 52 applications were been collected, in 2008, 150 applications, and in 2009, 236 applications were been collected. Despite the fact that the total amount of the collected applications was 438, only 269 applications were been approved and 630.149 litas, or 46 % of all funds allocated for this instrument, were paid.



Picture 2. Payments for the instrument "Support under "Natura 2000" At Forest territories", years 2007-2009

The Minister of Agriculture of the Republic of Lithuania, by Order of October 15, 2009, NR. 3D-755 approved simplified rules for the implementation of the Lithuanian Rural Support Program for 2007–2013 and its instrument **"Increase of Forests Economic Value"** together with its implementation rules [4]. The targets of activities of this instrument are to provide support to forest owners who invest in the increasing of the economic value of their forest ownerships and into modern and safe forest cutting, round wood, biofuel (wood fuel) production

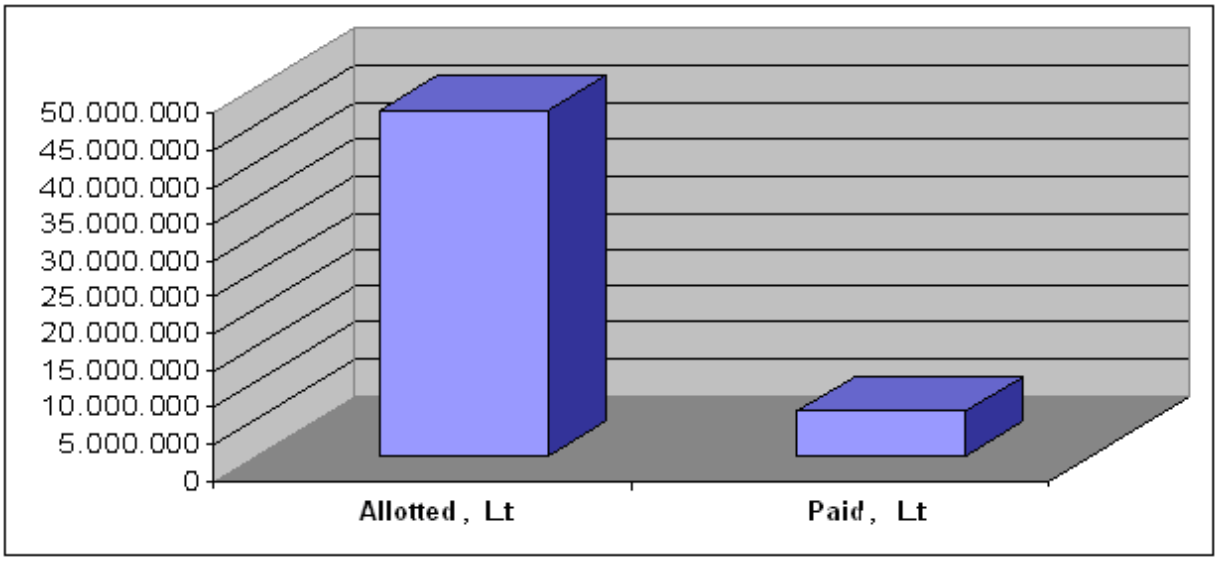
equipment and technologies. The following types of activities are been supported based on this instrument:

1. Changeover of young tree areas and bush areas of little economic value to increase their value and development of young tree areas. This support is not been provided for the planting of cut forest areas. Upon the area of activity of this instrument, up to 60 % of all project expenses are been financed where such expenses are related to the support to be allotted for farming in less favorable areas and in "Natura 2000" territories, and up to 50 % in forests in the remaining territories.

Forest cutting, round wood, biofuel (wood fuel) production modernization. Upon the area of activity of this instrument, up to 50 % of all project expenses are been financed.

Private forest owners and their associations as well as municipalities and their associations can apply for this support.

Collection of the applications was very irregular: in 2007, 45 applications were been collected, in 2008 – 18 applications, and in 2009 – 17 applications. Despite the fact that the total number of the collected applications was 81, only 39 applications were approved and 6.058.104 Litas was paid from a total of 16.405.350 Litas, what makes up only 13 % of the allotted funds.



Picture 3. Payments for the instrument "Increase of Forests Economic Value" in 2007-2009

The Government of the Republic of Lithuania on December 3, 2004 by Order NR. 1578 also approved **"Calculation and Payment Procedures Description for Compensations to Private Forest Owners and Managers Who Have Protected Territories Established in their Ownership, When the Status of the Territory is Changed, or when Restrictions are Defined which Actually Decrease the Revenues Received or Prohibit Previous Activities"** [10]. For such landowners and managers, compensation is paid, the calculation and payment procedures of which are defined the Government [6].

Private forest owners or managers seeking compensation for limitations or restrictions of economic activities for the forestland shall have a forest management project not older than 10 years, which shall contain data necessary for compensation calculation. The institution which

pays the compensations for private forest owners or managers may compensate the actual cost related to the updates of the existing projects or preparation of new projects, when the tree area is of the age of main forest cutting (or if the forest was of the main cutting age before the enforcement of the restrictions or limitations when the age was increased during the identification of such restrictions and limitations). The aforementioned costs shall also been compensated if there are no more than 10 years remaining for the forest before the main cutting age (or if the forest was of the main cutting age before the enforcement of the restrictions or limitations when the age was increased during the identification of such restrictions and limitations).

Compensation based on limitations and restrictions defined under this Description is been calculated on the current actual value of the lost revenues:

- as a single compensation – for the prohibition of carrying out the main forest cuttings or an established requirement to leave a certain part of mature liquidity wood uncut for ever by compensating the loss of revenues for liquidity timber which could have been received after the selling of such wood if there were no requirements or restrictions defined;
- as a compensation paid annually – for age increase of the forest of the main cutting, prohibition of the main full cutting or the reduction of the main full cutting area or width. The compensation is been calculated by these limitations on the basis of long-term deposits paid by commercial banks if such revenues were received for such deposits if they were put to such banks as money from the wood sold if there were no above mentioned restrictions or prohibitions. The number of years for such annual compensations shall be equal to the number of years of the postponement of timber cutting in mature tree areas.

Despite the fact that the above-mentioned Decision of the Government was adopted in 2004, the realistic number of persons who received this compensation and payment is only six persons and the amount of the payments is only **52 148** Litas in total. Such a situation happened because the compensation was only been paid in such cases when decisions for the establishment of new protected territories were adopted or when the status of the protected territories was changed. For forest owners with private forest holdings in earlier established protected territories, compensation for economic activities limitations or restrictions is not subject to payment despite the fact that the forests of these owners are sufficient for the needs of the society and the benefit and revenues received from such forests is smaller.

5. Conclusions

1. All components of the biological diversity in nature, such as communities of animals, plants and microorganisms, together with abiotic factors, form ecosystems and carry out various environment protection functions. That is why all species are equally important and equally needed. The Lithuanian biodiversity comprises of 16 380 animal species, 6 000 fungi species, 3 840 plant species, and 500 lichen species.
2. One of the ways to preserve the territorial units and subjects (values) of natural and cultural heritage, biological and landscape diversity, to ensure the ecological balance of the landscape, balanced and sustainable use of the natural resources and their renewal, to create conditions for knowledge tourism, scientific research and environment condition monitoring, propagation of natural and cultural heritage units and subjects (values) is to establish protected territories. The network of national protected territories in Lithuania covers 968.1 thousand ha or 14.8 % of the whole territory of the country.

3. The European Community level of importance protected territories joint network, “Natura 2000”, consisting of territories important to the habitats and territories important for the protection of birds is devoted to the protection, maintenance and, if needed, restoration of the natural habitat types, animal and plant species in the territory of the European Community. The total number of “Natura 2000” territories in Lithuania on January 1, 2009, was 375, and their area, considering overlaps of such territories, makes up 783.9 thousand ha. This made up 12.0 % of the country’s territory.
4. Forests and their ecosystems play a very important role in the protection of biological diversity. In Lithuania, forests cover 2150.3 thousand ha of the whole territory, i.e. around 32.9 %.
5. One of the major objectives of the Lithuanian forestry policy and its implementation strategy targets stocktaking of natural forests and forests close to natural, updating of their protection regime and establishment of new protected territories, preservation of biodiversity, improvement of stocktaking methods and protection of rare and endangered animal and plant species. There are 17.6 thousand key forest habitats defined in Lithuania.
6. State forestry enterprises which have protected territories defined in the state forests managed by them where certain restrictions or limitations are applied to economic activities in these forests and territories related to the protection of the biological diversity, receive lower revenues. Due to this reason they face unequal competition circumstances compared to the forestry enterprises without such limitations or restrictions.
7. Private forest owners are compensated for the incurred losses and lost revenues on the basis of the: Rural Development Plan for years 2007–2013, including “Payments for Environmental Forest Protection” Rural Development Plan of Lithuania of 2007–2013 implementation rules. The instrument ““Natura 2000” at Forest Territories” indented for compensation for economic activities restrictions and limitations for expenses incurred and lost revenues for forest owners whose forests are under “Natura 2000” territories. Rural Development Plan for the years 2007–2013 program “Increase of Forests Economic Value” implementation rules and “Calculation and payment procedures description of compensation to private forest owners and managers who have protected territories established in their ownership, when the status of the territory is changed or when restrictions are defined which actually decrease the revenues received or prohibit previous activities”, are serving as the compensation instruments as well.
8. Despite the fact that forest owners have possibilities to get compensations for economic activities restrictions or limitations at their forest ownerships, due to complicated bureaucratic conditions in 2007-2009, only from 8 to 46 per cent of the allotted funds were paid.
9. The legal Acts shall create equal conditions for competition between state forest owners having restrictions and limitations for economic activities in their forests in comparison to other state forest owners who do not have such restrictions or limitations.
10. There is a need to simplify payment procedures for private forest owners and to explain in a more detailed manner the benefits of such payments in relation to the improvement of the biological diversity protection in private forests.

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Legal and political framework of SMEs in the forestry sector: European union and western Balkan countries

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Abstract

Small and medium enterprises (SMEs) are the drivers of economic development, which make the backbone of economic development, entrepreneurship and market economy. In accordance with the fact that the economic development of the country is based on the affirmation of market economy and on the development of the SME sector, one of the basic objectives of economic policy is to improve economic environment of the system in order to provide more efficient support for entrepreneurship and SME sector. Speaking about the importance of small and medium enterprises in the forestry sector, their influence comes into play if the role of forestry in the economy of the country is considered, and if their potential to play a significant role in reviving the national economy and social stability of the state is emphasized. During the last two decades, there has been significant restructuring and privatization in the forestry sector in the countries of Southeast Europe. The result of all these changes is the creation of a large number of SMEs. New strategies, which promote the Government's objectives and provide guidelines on the development of a sector in a particular period, show, among other things, how important development of SMEs sector is. Main strategic documents in this field in Serbia are the Forestry Development Strategy of the Republic of Serbia and the Strategy for Development of Competitive and Innovative SMEs 2008-2013. Also, in Serbia there are series of laws that directly and indirectly related to the SME sector. The aim of this paper is to make comparisons, through analysis of specific legislative and strategic framework relating to the SME sector in forestry in Serbia, with national laws and strategies of selected Western Balkan and EU countries.

Key words: forestry, small and medium enterprises, forest legislative, forest policy

1. Introduction

Forests are one of Europe's most important renewable resources and provide multiple benefits to society and the economy. Emphasizing the economic significance of forestry, the increasing importance of the SMEs in forest sector must be noted. In line with that, the European Union has a major challenge ahead: *to reconcile its goal for economic growth with the imperative of*

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protecting the environment and enhancing the European social model (2005/b). The most important instruments for the implementation of these ideas, and overcoming these challenges are the Forestry Strategy and Forestry Legislation. The basic principle of the EU in the implementation of these documents is the full participation and cooperation of Member States. The majority of the Member States are at an early stage in the process of implementation of this instrument. Also, countries that seek membership of the European Union are working on adaptation of its Strategies and Legislations to Strategies and Legislations of the EU.

In this paper were analyzed the strategies, laws and national forestry programs in the selected countries of the European Union (Austria, Czech Republic, Slovenia, Bulgaria), the Western Balkans countries (Croatia, Montenegro, Macedonia, Bosnia and Herzegovina − both entities) and Serbia. For analysis are selected the countries of Central and Southeastern Europe which are by its natural and economic characteristics similar or comparable to forestry in Serbia. The aim of this paper is to make comparisons, through analysis of specific legislative and strategic framework relating to the SME sector in forestry in Serbia, with national laws and strategies of selected Western Balkan and EU countries.

With regards to previously mentioned increased interest in forest based SMEs, the main goal of the 4-year COST E30 action was to increase knowledge about problems and challenges of small-scale forest based enterprises in Europe. The main report of this action (Niskanen et al., 2007/a) deals with enterprises in forestry sector, options and challenges to SMEs in European wood product value chain and possibilities for its development. Also, there are other papers that provide information about factors affecting these sectors, main barriers and opportunities for sectors development as well as about its competitiveness and innovativeness (Niskanen et al., 2006, Niskanen et al., 2007/b, Parhizkar et al., 2010, Tykkä et al., 2010). Despite this, there are no significant papers and studies that concern legal framework of small and medium forest based enterprises in this region. Also, no studies, dealing with comparison of Western Balkans and EU legislative of SMEs in forestry, have been published yet. Main sources for research regarding this topic were national reports, strategic documents and legislative that regulates SMEs sector, as well as forestry sector.

2. SMEs in Forestry sector

The EU forest sector is characterized by a great diversity of forest types, extent of forest cover, ownership structure and socio-economic conditions. In total, forests and other wooded land occupy some 160 million ha or 35% of EU's land area (forest cover 44% of the land area of Europe). Of all biotopes in Europe, forests are home to the largest number of species on the continent and provide important environmental functions. Half of all European forests are predominantly coniferous, a quarter of them are predominantly broadleaved, and a quarter of them are mixed. The area of forest in Europe has increased by almost 13 million ha (an area roughly the size of Greece) in the past 15 years mainly due to planting of new forests and natural expansion of forests onto former agricultural land. Regarding forest ownership structure in EU, it should be pointed that about 40% are public forests, and 60% are private forests. It must be pointed that forest ownership data and trends vary widely across regions and countries (2005/a). Basic information about forest and ownership structure in EU and selected countries are given in the table 1.

Table 1: Basic data about forest and forest ownership structure

Europe / EU / Country	Forest area	Forest cover	State forests	Non-state forests
	ha	*%*	*%*	*%*
Europe	**1.015.000.000**	**44**	**50**	**50**
EU	**160.000.000**	**35**	**40**	**60**
Austria	3.960.000	47	16	84
Slovenia	1.185.145	58	26	74
Bulgaria	3.900.000	34	86	14
Czech Republic	2.651.209	34	61	39
Bosnia and Herzegovina	2.867.412	46	81	19
Croatia	2.688.687	47	78	22
Montenegro	743.609	54	67	33
Republic of Macedonia	955.228	38	90	10
Serbia	**2.252.400**	**29**	**53**	**47**

Source: Original

Forests provide a fundamental basis for ecologically, economically and socially sustainable development in all European countries. Recognizing its ecological, economic and social role, forests today provide many benefits. Emphasizing the economic significance, one must note the increasing importance of entrepreneurship and the SME sector in forestry. The role of enterprises and entrepreneurship is likely to increase in the future because of the limited possibilities to expand public sector activities in most European countries. During the last two decades, it has been significant restructuring of the forestry sector and privatization in the some countries of Europe and the result of all these changes is the creation of a large number of SMEs.

The EU is one of the largest producers, traders and consumers of forest products. Forestry and forest based and related industries employ about 3.4 million people, with an annual production value of about EUR 356 billion. Average annual timber production in the EU amounts almost 400 million m³, with only slightly over 60% of the annual forest growth being harvested (2008/b). The economic and social importance of forestry in rural areas are underestimated, as those working in forestry often are self-employed individuals or small enterprises and their activities are commonly coupled with those or economic sectors. On the other hand, general experience in managing the development of SMEs, their importance and impact on the growth of GDP and the number of employees indicate that the regional, republic and local level, strategic goal should be managing the development of this sector (the 20 million SMEs in the EU represent 99% of businesses)[1]. Forestry sector in Europe has followed worldwide trends with a decrease in the numbers of direct employees and a corresponding increase in the use of private sector SME's in the form of entrepreneurs (contractors) working in multi-functional forestry operations. In the forest sector, SMEs play a central role in the employment of people in local exploitation, processing, recreation and forest-based tourism activities.

[1] http://ec.europa.eu

3. Strategic framework

3.1 European Union level

The **EU Forestry Strategy** (Resolution on a Forestry Strategy for the EU) was adopted in 1998. Although several documents and publications[1] relevant to development and implementation of Forestry Strategy are passed and adopted since adoption of the Strategy until today, still there is no specific forest policy at the EU level. The Forestry Strategy provides a framework for forest-related actions in the EU, considering the existing EU legislation concerning the forests sector and the commitments made by the EU and its Member States in all relevant international processes. The European Forestry Strategy emphasizes the importance of the multifunctional role of forests and sustainable forest management (SFM) for the development of society. When talking about forest-based industry and relevant industries, it must be noticed that the Forestry Strategy clearly recognizes and highlights the importance of competitiveness of forest-based industry through support for SMEs and other action (the harmonization of legislation, research, statistics, etc.) under the EU industrial policy (1998).

The basic principles of the EU Forestry Strategy, which are important for implementation, are: concept of share the responsibility, concept of implementation of international commitments through national forest programmes and need to improve co-ordination and cooperation (1998).

The importance and central role of the SMEs in the EU economy has been recognized within the EU. All the actions supporting SMEs and entrepreneurship have a unique and comprehensive framework which is presented in the "Small Business Act for Europe" (SBA) (2008/a). It aims to improve the overall approach to entrepreneurship, to irreversibly anchor the "Think Small first" principle in policy making from regulation to public service, and to promote SMEs' growth by helping them tackle the remaining problems which hamper their development. The Commission adopted a report (2009/a) in 2009, which highlights the progress made in implementing the SBA, both at EU and national level. It is important to emphasize that this document refers at all to the entire SME sector, and it does not recognize the sector of forestry and wood-industry. In that sense, the possibility of the harmonization of these specific industries to this strategic document must be consider. Review of the "Small Business Act for Europe", adopted in 2011, gives an overview of progress made in the first two years of the SBA and sets new actions, which are needed to respond to challenges resulting from the economic crisis (2011/a).

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[1] Several important documents and publications:
(2003): Brochure: *"Sustainable Forestry and the European Union: Initiatives of the European Commission"*.
(2005/a): Commission Staff Working Document, *Annex to the: Communication on the implementation of the EU Forestry Strategy.*
(2005/b): *Communication from the Commission to the Council and the European Parliament* - Reporting on the implementation of the EU Forestry Strategy.
(2005/c): *Opinion of the European Economic and Social Committee on the Communication from the Commission to the Council and the European Parliament* – Reporting on the implementation of the EU Forestry Strategy.
(2006): Commission Staff Working Document, *Annex to the Communication on an EU Forest Action Plan.*
(2007): *"Study of the Effects of Globalization on the Economic Viability of EU Forestry"*.
(2008): Brochure: *"The EU Forest Action Plan 2007-2011"*, European Commission.

3.2 EU countries

For the sake of sustainable development and in order to develop forestry and SME sector, all EU Member States are working on making and development of strategic documents related to the mentioned areas. Here are analyzed two types of strategies: forestry strategies and strategies on SMEs. It should be pointed out that different countries have different solutions which are reflected through the various strategic documents. The table 2 gives an overview of the analyzed EU countries and strategies that have been adopted, and shows that Bulgaria and Slovenia adopted both of strategies. In Czech Republic, any of analyzed strategies are not adopted. Austria also has not adopted SMEs strategy or Forestry Strategy.

Table 2: Strategic frameworks in EU countries

EU / Country	Forest Strategy	SME Strategy
Austria	***** (Austrian Forest Dialog)	/
Bulgaria	√	√
Czech Republic	√	/
Slovenia	√	√

Source: Original

However, it is important to emphasize that, although there is no document called Forest Strategy in **Austria**, there is one very important, ongoing process, called Austrian Forest Dialog (Österreichischen Walddialog). This process was initiated by Federal Ministry of Agriculture, Forestry, Environment and Water Management in 2003. Objective of this Dialog is to secure and permanently improve the sustainable management, conservation and development of Austrian forests.

In **Bulgaria**, National Strategy for Sustainable Development of the Forest Sector (NSSDFS) in Bulgaria for period 2003-2013 was adopted in 2003 and had broad stakeholder support. The Strategy was revised in 2005 for the period 2006-2015 (2006/e). NSSDFS refers to forest-based sector, including forestry and wood industry and sets, as main objectives, sustainable development of forest sector in a market economy through multifunctional forest management and creation of conditions for ensuring sector development.

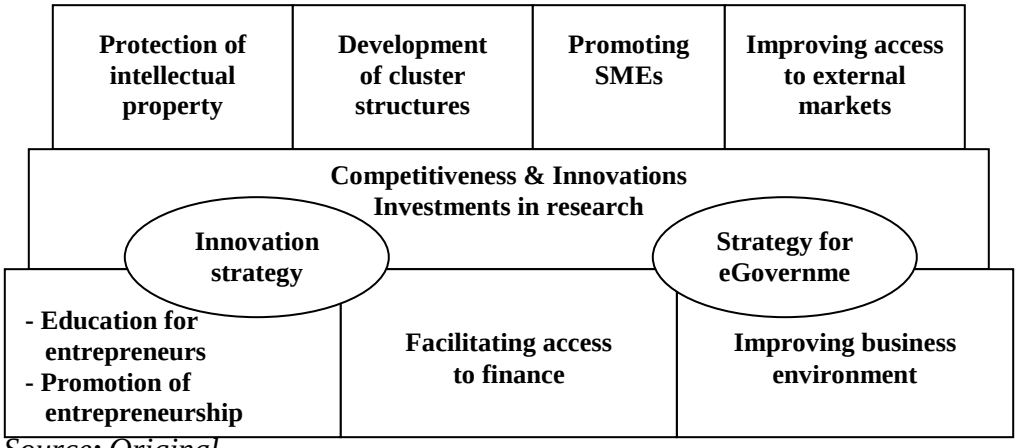
In 2008, Government of the Czech Republic ratified National Forest Programme for the period until 2013. The most important principles of NFP are sustainable forest management, motivation incentives on the part of the government forest policy to support public interests and the increasing responsibility of forest owners for their properties. The NFP does not mention term of small and medium-sized enterprises and there are no measures or key actions that directly support development of this forestry sector (2008/f).

In **Slovenia**, the forestry policy and strategy are defined in the Forest Development Programme of Slovenia (FDPS) (1996), which was adopted in 1996. In this document, main activities are based on Slovenian Forest Service, which is professional guidance on the development of forests, and has monitor and control functions. The Strategy for Conservation and Sustainable Development of Forests (1996), which is the main part of FDPS, is based on the Forest Act and existing European legislation in the field of forestry and protection of environment. The fundamental long-term objectives of the Strategy do not identify on significant way the sector of SMEs. Ministry of Agriculture, Forestry and Food has published Resolution on National Forest Programme, which is adopted by the National Assembly of the Republic of Slovenia in 2007.

This is "*a fundamental strategic document aimed at determining the national policy of sustainable development of forest management*" (2007). According to this document, main role has wood and paper industry, with small and medium-sized companies, which has increase incentives for the development of activities related to wood in rural areas. There are not mentioned small and medium-sized private companies in forestry.

In Diagram 1 are presented main goals of SMEs strategies in EU countries. Three fundamental areas that need to be active in the period during operation of the strategies and beyond are "entrepreneurship education and promotion of entrepreneurship", "facilitating access to finance" and "improving the business environment".

Diagram 1: SMEs Strategic framework in EU countries



Source: Original

On the second level are additional guidelines, which provide government support to business development - technological innovation, research and development and innovations in companies, etc. Priorities included in the third level are development of cluster structures, improving access to external markets, protecting intellectual property and promotion of SMEs with equity and debt instruments.

3.3 Western Balkans

Strategic documents regarding sustainable development, development of forestry and SME sector in Western Balkans play an equally important role as in the EU countries. It should be noted that these documents play an especially important role for WB countries due the process of joining and membership in the EU. The table 3 provides an overview of the strategies that are adopted in analyzed WB countries.

As shown in this table, the SME strategy was adopted in the Federation of Bosnia and Herzegovina, in Republic of Macedonia and in Serbia. Forestry Strategy was adopted in all countries, except Federation of B&H and Republic of Srpska.

However, Federal Ministry of Agriculture, Water Management and Forestry of **Federation of B&H** prepared a Draft Forestry Program (2010/a), which has not yet been adopted. Program explicitly refers to the SME sector in forestry, and to measures for their development, but processes one section that applies to private investment in the forestry sector and entrepreneurship, which is indirectly related to the SMEs in the forestry. Ministry of Agriculture,

Forestry and Water Management of **Republic of Srpska** proposed Forestry Development Strategy and this document is in the phase of public debate.

Strategy for Development of SMEs (2009/b) in **B&H**, which covers the period from 2009 to 2011, on non-significant way defines SMEs in all sectors of the economy, and in forestry. One of the major problems in B&H is a different interpretation and definition of the term SMEs. Very jagged scheme authorities dealing with the issues of SMEs is consequences of social and legal fragmentation of B&H.

Table 3: Strategic frameworks in WB countries

WB / Country	Forest Strategy	SME Strategy
Federation of B&H	/	√
Republic of Srpska	/	/
Croatia	√	/
Montenegro	√	/
Republic of Macedonia	√	√
Serbia	√	√

Source: Original

National Forestry Policy and Strategy (2003) in **Croatia** emphasizes the importance of support measures for the development of private forestry enterprises. Furthermore, this document stresses the importance of wood-industry sector and SMEs in the wood-industry, but also state that separate strategy for wood-industry development should be prepared.

Strategic document "Forests for the future of Montenegro"- National Forest Management Policies and Forest land (2008/c) in **Montenegro** clearly recognizes the importance of SMEs in the forestry and wood-industry and supports their development.

According to Strategy for Sustainable Development of Forestry in the **Republic of Macedonia** main goals in forest industry are "*creation a favorable legal, economic and institutional environment for effective and competitive forest industry and encouragement of the economical development and creation of employment possibilities*" (2006/f). National Development Strategy for SMEs (2002/d) of the Republic of Macedonia defines the broad policy framework for the development of the SME sector as well as measures that should be taken to overcome these challenges and foster growth and development of SMEs.

3.4 Serbia

In **Serbia**, the Ministry of Agriculture, Forestry and Water Management published Forestry Development Strategy (2006/b), which is adopted by Government in 2006. Main purpose of this document is to "*co-ordinate the general development goals of the forest sector of Serbia and define the measures for achieving the goals*". This document does not mention on significant way the importance and role of SMEs in the forestry. SMEs are mentioned in order to increase the contribution of the forestry sector in economic and social development of the Republic of Serbia, as one of the planned measures. This measure, which is defined in fulfillment of previous goals, and concerns the SMEs in the forestry, is "*support the establishment and development of SMEs for forestry operations and other activities in the forest sector*". In contrast to the forestry sector,

wood industry sector, and SMEs in the wood processing industry are specifically singled out in the strategy, with clearly defined and applicable measures for their improvement.

Strategy Development of Competitive and Innovative SMEs (2008-2013) is a strategic policy document for SMEs and entrepreneurship, which clearly defines the main priorities (2008/g). It is important to emphasize that there is no clearly expressed connection between this Strategy and SMEs in the forestry. The reason for this situation is that the Strategy is not clear harmonized according to the different economic sectors, including forestry. Therefore, there are no precisely defined measures of direct or indirect support to enterprises in the forestry.

4. Legislative framework

4.1 European Union level

It should be noted that EU does not have specifically legislation of forestry, because the laws on Forestry in EU are subject of the principle of subsidy. In the past 10 years, most European countries either adopted amendments to its laws, as is the case with the EU countries, or revised its forestry legislation, as is the case in transition countries. One of the basic principles of EU, and their experience, in changing and in the development of the draft forestry law has shown that the drafting of valid and enforceable laws requires full engagement of all stakeholders.

4.2 EU countries

In EU countries most of the Laws do not directly mention term of SMEs, but all of them provide basic conditions for SMEs development. In this paper are analyzed three different types of laws: Law on Forests, Company Law, and Law on SMEs. Special attention is directed to the Law on Forests and the Law on SMEs. It is analyzed do the laws mention and how they treat the development of entrepreneurship in the field of forestry.

In the table 4 are presented different laws that exist related to Forestry and SMEs in selected EU countries. It can be emphasized that all countries have basic laws in the field of forestry and enterprise, but only two countries, Bulgaria and Czech Republic have laws that are directly related to the SME sector.

Table 4: Legislative framework in EU countries

EU / Country	Law on Forests	Company Laws	Law on SMEs
Austria	√	√	/
Bulgaria	√	√	√
Czech Republic	√	√	√
Slovenia	√	√	/

Source: Original

Austria is a federal state and consists of 9 provinces (Länder). Legislative power in Austria was divided between the federal state government and province's authorities.

According to the Constitution of the Republic of Austria (Article 10, paragraph 1.10.) forestry is the responsibility of the federal government. In the field of forestry, currently is in force Law from the 1975, so-called Forstgesetz 1975, BGBl. No.440/1975 (1975). Recent amendments to this law occurred in 2007 (BGBl. I Nr. 55/2007).

In **Bulgaria**, first article of Bulgarian Law on Forests (1997) states that this Law governs relations concerning the ownership and management - management, reproduction, use and protection of forests and determines forests as national heritage. In Article 26, par. 2 of this Law states that private forest owners may entrust management of their forest in the state forest enterprise or private persons, which are registered to perform these activities. Forest management activities can be performed by individuals, which have diploma in forestry education (Article 39, par. 2 and Article 39a). Last amendments on this law occurred in 2009. No article in this law does specifically mention term small and medium-sized enterprises for management and/or utilization of forests.

In the **Czech Republic** is currently in force Law on Forests (1995) from 1995. In the first article of this Law is stated that *„purpose of this Act is to determine conditions for the preservation, tending and regeneration of forests as national riches forming an irreplaceable part of the environment, to enable the fulfillment of all their functions and to support sustainable forestry".* Article 37 of this Law refers to forest management. Among other things, in this article stays that each forest owner is obligated to carried out all forestry activities in collaboration with the forest manager, that can be an individual or legal person holding a license for such activities, issued by the relevant state administration body. Section six refers to the general conditions and special requirements, as well as obstacles for the issues of licenses. There is no article in this law that refers to small and medium enterprises in forestry sector. In 2002. Czech parliament adopted Act on the support of small and medium-sized enterprises (2002/a), as a part of general support to SMEs development. In the first Article is stated that "*this Act appoints the principles for the provision of business startup support and for the provision of support intended to reinforce the economic position of SMEs*". But, the third article of this Law states that it will not be applied to support provided for primary production in agriculture and forestry. In the forth section states that support may be provided as returnable loan, grant, financial donation, guarantee or as a credit with a reduced interest rate.

In **Slovenia**, Government was adopted Law on Forests (1993) in 1993. Law primarily defines rights and obligations of forest owners, with no mention of the term small and medium-sized enterprises and entrepreneurship in forestry. The main part of the Act is establishment of the Slovenian Forest Service (SFS) for planning, guidance on forest management and counseling. The guidelines and measures laid down in the forest management plans follow the general guidelines of the FDPS. The Companies Act (2006/a) of the Republic of Slovenia was adopted in April 2006 by the National Assembly of the Republic of Slovenia, and entered into force in May the same year. With this Law, Slovenia has achieved full harmonization with the Europe in the field of company law. Companies Act defines: "*the basic status corporation rules of the foundation and operations of companies, sole proprietors, related persons, subsidiaries of foreign companies and their status restructuring*". According to this Act, SME sector is not directly processed, but, it mentions obligations of small and medium-sized companies to state.

4.3 Western Balkan

Legal frameworks in the field of forestry and SMEs in WB countries play an equally important role as in the EU countries. In most countries of WB there is new legislation in these fields, which is in line with modern requirements that exist in the legislation of the EU states. Importance of the Law on Forests and the Law on SMEs is particularly pointed out.

In the table 5 are presented different laws related to Forestry and SMEs that exist in selected WB countries. It can be emphasize that all countries have basic laws in the field of forestry and enterprise, but only one country, Bosnia and Herzegovina, has law that is directly related to the SME sector.

Table 5: Legislative framework in WB countries

EU / Country	Law on Forests	Company Laws	Law on SMEs
Bosnia and Herzegovina	√	√	√
Croatia	√	√	√
Montenegro	√	√	/
Republic of Macedonia	√	√	/

Source: Original

In **Bosnia and Herzegovina** there is no specific legislation in the field of forestry at the state level, but it is specifically defined for the Federation B&H and for the Republic of Srpska.

In **Federation B&H,** Law on Forests was adopted in 2002 by the Parliament of the Federation B&H (2002/c). This Law was into force until 2009. After that, forestry sector was regulated by Regulation on forests. Forest Stewardship performing Cantonal Ministry thought Cantonal Directorate of Forests, and forest companies. Assemblies of all 10 cantons formed one forest company in the area of each canton, and cantonal minister of forestry operations contract transferred forest management activities for a period of five years. Work in the forestry sector can run only persons who trained to perform the appropriate tasks. It is necessary to note that the Federal Ministry of Agriculture, Water Management and Forestry prepared Draft Law on Forests in October 2011, which is still not adopted. The main difference compared to the previous law is that the new law, on the basis of Article 52 paragraph 4, defines that "*the owner of private forest with the contract, with compensation, transfer performance professional duties as defined by this Law, the cantonal Directorate of forests, or legal entity to perform professional duties in private forests"* (2011/c). Law on the stimulation of small businesses (2006/c) was adopted in 2006. This is certainly the most important legal document in the SME sector in FB&H. Under Article 1 "*this law regulates the planning, funding and implementation of security measures for the development of small economy, activities and measures of Government to encourage development of small business, supervision of law enforcement, sentencing and other issues related to encouraging development of small businesses in the Federation*". It is important to note that the law provides development of Small Business Development Program for the Federation, on proposal of the Federal Ministry of Development, Entrepreneurship and Crafts, which passed by the Government of the Federation.

In **Republic of Srpska**, Law on Forests (2008/d) was adopted in 2008. This law provided preconditions for the establishment of the Agency for forests. The Agency was established by the Government of the RS in February 2010, and officially began operating on 1st of April 2010. Forest Agency shall supervise and monitor the work carried out public company. On the basis of Article 37 of the Law on Forests "*jobs works in the forestry sector can perform companies and other entities that are registered for forest exploitation and service activities in forestry and who possess a license issued by the Ministry*". Law also provides preconditions for the organization of the association of contractors in the forestry. Law on Promotion of small and medium-sized enterprises (2008/e) was adopted in 2008. Under Article 1, *"this law defines the objectives and*

strategies for small and medium-sized enterprises, the main forms of incentive measures, given the implementation of the strategy, the establishment of agencies and funds with the aim of directing the development, restructuring and market adjustments for small and medium enterprises". The law provides for the use of different incentive funds by SMEs, for the procurement of equipment, introduction of quality standards, innovation, etc.

In **Croatia,** Law on Forests (2005/c) defines forest as good of interest to the state, which enjoy its special protection (Art. 2, par. 1). Article 50, par. 1, in section IX, which refers to conducting works in forests, states that works can be carried out exclusively by registered and licensed contractors and that professional activities can be conducted only by authorized engineers. Next paragraph states that the activities of licensing persons to perform work in the forestry sector as well as implementation of experts' exam for the authorized engineers is performed by Chamber of Forestry. The need for licensing is explained in the National forest policy and strategy. Government of Croatia was adopted Small Business Development Promotion Act (2002/b). This Act prescribes the basis for the implementation of economic policy incentives aimed at the development, restructuring and adjustment to the market economy and the establishment of the Croatian Agency for Small Enterprises.

In **Montenegro**, current Law on Forests (2010/c) was adopted in 2010. The law in a direct way links the forest sector with the SMEs sector. Forestry companies use the forests on the principle of the concession. Under Article 71 of this law, "*forests in state ownership may be provided for use on the basis of the concession contract concluded with a legal entity for a period of 5 to 30 years*". To use the forest, companies pay a fee (concession fee), under conditions that are defined by contract, with the amount of concession fee determined by the Government. In addition to other requirements that a company must meet, there is also the submission of surveys that will contain the basic directions and ways of forest management.

In **Macedonia**, Government was adopted Law on Forests (2009/c) in 2009. In Article 63 is stated that tree marking can be done by the licensed person. Also, Article 92 of this Law states that management activities in private forests can be performed by forest owners, associations of private forest owners and legal and private persons, who have a license to perform professional forest activities. The Company Law (2004) is almost the same as in all Western Balkan countries. The text of the Law does not mention on any site the term small and medium enterprises, but the concept of the Act refers that SMEs should be sought between economic companies that are organized as limited liability companies. It is very important to emphasize that the idea of entrepreneurship is embedded in the law, and as the definition of the company says, it is legally person who independently perform economic activity in order to gain profit. Law is focusing on forms of performing economic activities, and defines different numbers of forms of trade companies, depending on the country.

4.4 Serbia

In **Serbia**, previous Law on Forest (1991) was adopted in 1991. This law is largely obsolete and does not match the current needs of modern forestry. New Forest Law was adopted in 2010 by Parliament (2010/b). The main reason for the adoption of the law is certainly an unsatisfactory state of forest and urgent need to create legal preconditions for the improvement of the existing situation, as well as the multifunctional use of forest resources. This document specifically outlines the chapter conducting forestry. On the basis of Article 97 of new Law on Forests:

"*works of the protection, cultivation and use of forests may deals with the legal entity or entrepreneur who is registered for such activities in the Register of economic entities and that meet the requirements in terms of equipment and skilled personnel*". Basic requirement for private companies to work in the forestry is license. License to perform professional activities in forest management can get a person who has gained high education in the field of forestry and passed the state exam. Article 91 of the new Law on Forests proposals establishment of Chamber of Engineers in Forestry. The Chamber has the status of legal persons, and among other activities carried out and procedures for assignment and revocation of license. The law in this way greatly facilitates the development of entrepreneurship in forestry.

Company Law (2011/b) was adopted by the Parliament of the Republic of Serbia in 2011. Article 1 states that "*this law shall regulate the establishment of companies and entrepreneurs, management companies, the rights and obligations of the founders, partners, members and shareholders, linking and reorganization, termination and liquidation of businesses of companies*". This law is based on the different forms of business organizations, and how they perform, but nowhere explicitly mentions the SME sector.

Law on Accounting and Auditing (2006/d) was adopted by the Parliament of the Republic of Serbia in 2006. Under Article 1 "*the provisions of this law apply to companies, cooperatives, banks and other financial institutions ... as well as physical persons who carry out economic activities*". On the basis of Article 7 of this document "*legal entities, the purpose of this law, shall be classified in small, medium and large, depending on the average number of employees, annual revenues and asset value determined on the day of preparation of financial statements in the financial year*". The medium legal entities classified it legal entities that meet at least two of the following criteria:

- that the average number of employees in the year for which an annual report from 50 to 250;
- that the annual income of 2.5 million Euros to 10 million Euros in dinars;
- that the average value of business assets (at the beginning and end of financial year) from € 1,000,000 to € 5,000,000 in dinars.

Small entities are legal persons who have lower than the lowest amount in at least two indicators. Recent amendments to this law occurred in 2009 (2009/d).

5. Conclusions

In Europe, forestry and forest-based industry play multiple and very important role in the ecologically, economically and socially sustainable development. In accordance with aims and importance of sustainable development, multifunctional roles and especially economic significance of forestry, the same task in all European countries is creation, development and adoption of relevant legal documents. Strategic documents, relevant laws and Action Plans are main instruments for the development of this sector.

It is important to emphasize that forestry and forest-based industry are not equally developed in all parts of Europe. Therefore, analysis and comparison of legal and political framework of SMEs in forestry sector in EU, Western Balkans countries and Serbia were conducted. In the EU, forest policy is implemented by Member States. These policies have a clearly defined framework of

established ownership rights and a long history of national and regional laws and regulations based on long-term planning (Forestry Strategies).

Time-distance of making and adoption of previously mentioned documents shows that these processes require a certain period of time. Specific countries and theirs experience can better explain this statement. The examples of Slovenia and Bulgaria show that, on average, about 3 to 4 years have passed since the adoption of new strategies (that must be supported by new law) till the adoption of actions plans. After this period, it took additional 1 to 2 years to establish specific institutions (Agency, Chamber). This means that the period of creation strategies, laws and action plans for the implementation of strategic measures, lasted about 4 to 5 years.

In relation to the SMEs, business environment and conditions are rapidly changing. For this reason, it is necessary to constantly improve and change the regulations and measures related to the SME sector. Austria should be emphasized as a good example. There is one very important, ongoing process, called Austrian Forest Dialog (Österreichischen Walddialog). Austrian Forest Dialog is a dynamic process that is needed for promotion the forestry sector in the line with all problems, challenges and changes which meets every market-oriented economy.

All strategic documents of the EU and WB have recognized the importance of SMEs in the forestry and forest-based industry. However, in all these documents, emphasis is on the wood-industry, while the smaller space given to companies that activities are based on forestry (e.g. logging). It is important that the SME sector in forestry and its strategies and related laws are not only issue in forestry sector, but also part of entrepreneurship and enterprises. So there is multi-functional approach filled with a few different strategies, legislations and programs.

All analyzed Western Balkans countries (Bosnia and Herzegovina, Croatia, Montenegro, Republic of Macedonia and Serbia) are working on adaptation and harmonization of their strategies and legislations with EU legislative. Most of analyzed countries adopted forestry strategic documents in the near past (Croatia-2001, Serbia-2006, Republic of Macedonia-2006, Montenegro-2008) and Bosnia and Herzegovina are in the preparatory phase. Example of Croatia shows that forestry sector development is permanently in progress in this area. This country adopted forestry strategy in 2001, Forestry Law in 2005. Creation and adoption of important measures lasted about 5 years, as in the case of the EU Member States. This means that progress and development of the sector through new laws and institutions in the WB countries is expected in the coming period.

In Serbia, the Ministry of Agriculture, Forestry and Water Management published Forestry Development Strategy (2006/b), which is adopted by Government in 2006. New Forest Law (2010/b) was adopted in 2010 by Parliament. It can be concluded that since the establishment of a strategy have passed 4 years (as well as in Croatia). Following previous examples, beginning of impacts on the SME sector from institutions and measures envisaged by the new law should be expected in the next 2 to 3 years. Certainly, the new law shall provide a development that would be reflected through the continuous improvement measures and binding documents.

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Legal grounds of forest owners' cooperatives in Japan and their possibilities

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Abstract

Forest owners' cooperatives and the union of forest owners' cooperatives are the leading organization of Japanese private forestry. They have a hundred years of history and strong legal grounds. Under the downward trend of domestic forest sector, importance of forest owners' cooperatives has been increasing for decades. As designated in the Forestry Cooperatives Law in 1978, forest owners' cooperatives have been making great efforts to improve economic and social status of the members. In addition, they have been playing a central role of managing and protecting private forests in the locality. Many rural towns and villages over the country is suffering from aging of dwellers and depopulation problems today, and municipal governments expect for forest owners' cooperatives to help easing such situation. For example, there are forest owners' cooperatives which created long term forest management contracts with absentee forest owners, employ new forest workers of younger generations from urban areas, and try to develop other means for activating weakened local economy, such as forest recreation business or selling variety of forest byproducts. There are big potential possibilities for forest owners' cooperatives, and some of their ideas and activities might be universally applicable.

Key words: Absentee owner, forestry cooperative, forest law, green employment, private forest

1. Introduction

Blue ocean and green forest are the leading characteristics of the nature of Japan, which is composed by more than 6,800 islands located on the west edge of the Pacific. About 2/3 of the land surface is covered by dense forest; most of them are in temperate zone, but there are sub-boreal forest in Hokkaido and sub-tropical forest in the southern islands.

Forestry used to be a fundamental economic activity in rural part of the country as well as agriculture and fishery, but has been losing its status since 1970s. Although timber production volume was over 60 million m^3 in 1960s, it is as low as 18 million in recent years. Having a large amount of timber products and wood fiber import, self sufficient rate of wood in Japan is around 20%. The share of forestry in GDP is only 0.09% in 2007.

As shown in Table-1, within 25 million ha of its forest area, more than half of them are privately owned. Because of the false management of the national forest, over 80% of domestic timber production is from private and municipal forests in recent years. Under such circumstances, forest owners' cooperatives are the most important organization in Japanese forestry sector.

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Table 1 Forest ownership pattern in Japan (2007)

Ownership		Forest Area	
National		7,686,000 ha	30.6 %
Non-national	Private	14,535,000 ha	57.9 %
	Municipal	2,830,000 ha	11.3 %
	Others	46,000 ha	0.2 %
		17,411,000 ha	69.4 %
Total		25,097,000 ha	100.0 %

Source: Forestry Agency (2009) Forest and Forestry White Paper

Forest owners' cooperative has concrete legal grounds and more than 100 years of history. The national union of forest owners' cooperatives is unifying more than 700 individual cooperatives through 46 prefectural union of forest owners' cooperatives.

This paper aims to describe historical and legal grounds of forest owners' cooperative in Japan, and to discuss possibilities of such organization in different countries.

2. Historical development of forest owners' cooperatives

It was late 1860s that Japan turned its political direction from pre-modern feudal system into modern democratic system with a strong influence of Western countries: It was called the Meiji Restration. In order to avoid being colonized by the imperialistic European countries, Japan rushed to be industrialized herself. Overexploitation of forest resources and overdevelopment of mountains and hillsides devastated so many areas of the country, and natural disasters such as landslides and floods often damaged rural people during 1880s and 1890s.

To prevent natural disasters caused by human influences, the government created a series of important lows: River Law in 1896, Erosion Control Law in 1897, and Forest Law in 1897. These were the first nationwide legislations in order to control public activities for protecting natural environment. The main objective of the Forest Law was to protect forest resources. Regulations for forest utilization and penalty codes were established and a system of protection forests was introduced. Environmental quality of forested areas gradually kept up from severe degradation by these legislations.

The Forest Law was amended in 1907, and the idea of forest owners' cooperative was realized on it. In this first stage, forest owners' cooperatives were designed as single function organizations. There were four different forest owners' cooperatives at the time: practices cooperatives, silviculture cooperatives, forest road construction cooperatives, and forest protection cooperatives. To launch a cooperative, 2/3 of forest owners with 2/3 of the forest area in the local area were necessary to register, but once it established all the forest owners in the area must join the cooperative. The government intended to establish forest owners' cooperatives over the country in order to achieve the objectives of the Forest Law, which are to protect forest and to promote forest growth especially in private lands. Therefore, forest owners' cooperatives under this legislation were not the voluntary organizations of forest owners but the governmentally controlled organizations. Having such a characteristic, majority of the forest owners was not

interested in creating forest owners' cooperatives for a few decades after its legal establishment. There were only 565 cooperatives created in the first 20 years.

A drastic change came under a threatening situation in international relationships. As part of the wartime economic control, the Forest Law was amended in 1939, and structure of forest owners' cooperatives was totally reorganized. Under the new law, a forest owners' cooperative had to be established in each village or municipality, and all the forest owners must take part in it. Since 1941, forest owners' cooperatives forced to supply timber and fuel woods to the society. As a consequence, no less than 5,500 forest owners' cooperatives had established until the end of the World War II in 1945. During the war, unfortunately, forest owners' cooperatives became the commandeering organization served for military government and no forest owners could resist against being the member and supplying timber.

Another big change came in 1951. After the World War II, General Headquarters / Supreme Commander for the Allied Powers (GHQ/SCAP) occupied Japan for 7years. During the occupation, many foresters and specialists in related field from USA and other countries belonged at Forestry Division of Natural Resources Section (FD/NRS), and worked hard to reestablish forest legislation, forest policy, and forestry organizations. One of the major fruitful results is the new Forest Law in 1951. Nationwide forest planning system and reorganization of forest owners' cooperative were introduced by the law.

By the new Forest Law, forest owners' cooperative finally became a voluntary based cooperative of forest owners. Democratization of whole the society of Japan was the highest mission for GHQ/SCAP, so that to build a democratic organization for forest owners was the target for FD/NRS foresters even though they didn't have such an organization in their own country. Although almost all forest owners' cooperatives continued to be in the same name and with the same members as used to be, their objectives and unification rule with free participation were totally different from previous ones.

With the rapid economic growth in 1950s and 1960s, domestic timber production increased quickly. In order to catch up expanding public demand, national forest kept overcutting for years, and expectation for more production in private forests became higher at the same time. As shown later, the role of forest owners' cooperatives also expanded. In the consequences, the part of forest owners' cooperative in the Forest Law became independent and the Forestry Cooperative Law (Forest Owners' Cooperative Law) established in 1978.

3. Legal grounds of forest owners' cooperatives

Related to forest and forestry in Japan, there are a few very important legislations. Forest Law of 1951 and Basic Forest and Forestry Law of 2001 are the two major ones, and Forestry Cooperative Law is another important legislation.

There are two parallel purposes in the Forestry Cooperative Law. One is to improve economic and social status of forest owners, and the other is to improve the situation of forest resources. Article 1 of the law designates the purposes of the law as follows:

> *This law aims to improve economic and social status of forest owners, to sustain forest inventory and to raise timber productivity by means of facilitating*

cooperative organization of forest owners, and to contribute to the development of national economy.

It is interesting that the Forestry Cooperative Law focuses not only the benefits of forest owners but also the benefits of the general public. This feature of the forest owners' cooperative is the essential difference between forest owners' cooperatives and agricultural cooperatives in Japan. Importance of multiple functions that forests provide for the safety and quality of life is strongly emphasized in the law. As non-governmentally owned forests occupied around 70% of total forestland in the country, the government expects for forest owners' cooperatives to facilitate variety of public functions in non-governmental forests.

The law designates three types of forestry cooperatives in the Article 3: Forest owners' cooperative, production forest cooperative, and union of forest owners' cooperatives. A production forest cooperative is an organization of former communal forest which is collectively owned by original village households. There are 3,280 production forest cooperatives in 2007, and 345, 305 ha of forests with 255, 262 households belong to them. This is a special type of forestry cooperative based on joint ownership of local forest with history since feudal period.

A forest owners' cooperative is a cooperative of forest owners in a certain area in which their forests exists. This is the most popular type of forestry cooperative in Japan. There are 736 forest owners' cooperatives in 2007, and 11,088,228 ha of forests with 1,594,303 members belong to them. In addition to individual person, juridical person such as corporate and production forest cooperative can be a member of a forest owners' cooperative if they own forestland.

A union of forest owners' cooperatives is a unifying organization of forest owners' cooperatives. There are 46 prefectural unions in each prefecture except Osaka, and a national union in Tokyo. The reason of no prefectural union in Osaka is that there is only one forest owners' cooperative in Osaka which covers all the area of the prefecture.

The Forestry Cooperative Law mentions a simple objective of forest owners' cooperatives in the article 4 as follows:

Forest owners' cooperative, production forest cooperative, and union of forest owners' cooperatives are to serve directly for their members through their activities, and should not aim to earn profit.

In case a forest owners' cooperative gets surplus by its activity, it is encouraged to give dividends to the members. The amount of the money for dividends can be considered as a loss in the account by the law (Article 7). This is a strict regulation that forest owners' cooperatives have to be non-profit organizations, that is why they are able to be given subsidies from the government.

Activities allowed for forest owners' cooperatives are strictly regulated by the law. Article 9 of the law mentions necessary activities and possible activities as follows:

A forest owners' cooperative has to do all or a part of the following (necessary) activities: 1) Guidance of forest management for the members, 2) forest practices or management with entrustment by the members, 3) accepting trust of the members for forest management purposes, 4) pest control activities and related

facilities for forest protection, and 5) other activities related to above mentioned matters.

A forest owners' cooperative is able to do all or a part of the following (possible) activities in addition to the (necessary) activities mentioned in the previous clause: 1) Loan to members for helping forestry and other activities or living expenses, 2) supply goods and equipments to the members for forestry and other activities or living necessity, 3) transport, process, storage and sale of forest products and other materials of the members (including construction and sales of buildings and structures of forest products of the members, except things listed in the next item), 4) gathering, growing, transport, process, storage and sale of environmental plantation (for the purpose of improvement of the environment with using non-forest product trees and bamboos and their seedlings), 5) gathering and growing seeds and seedlings necessary for forestry activity of the members, forest road construction and other activities of the members, or common facilities for the use of the members, 6) facilities for collaborative forest practices and for promoting efficiency of forest works, 7) sale, rent, and exchange of land (including standing trees and bamboos on it) for the purpose of forestry of the member, 8) facilities for improving recreational function for the public recreational use in the forest of the members, 9) facilities for processing forest products and other materials (including production of edible mushrooms and others) by using labor force of the members, 10) making forest practice plans for the members, 11) facilities for mutual aid in forestry activity of the members, 12) facilities for the safety and the health in forestry works of the members, 13) facilities of the welfare program for the members, 14) education for the members to improve forestry skills and to increase knowledge about activities of cooperatives, and providing general information for the members, 15) establishing collective agreement for improving economic status of the members, and 16) other activities related to the above mentioned activities.

As shown above, although activities allowed for forest owners' cooperatives are regulated by the law, their discretion to choose activities is relatively large. It is not necessarily required to do activities directly related to forestry, but they can do out-of-forestry businesses such as recreational lodging or restaurant if such activities are to facilitate better living condition for the members of the cooperative. This is another interesting feature of forest owners' cooperatives in Japan.

4. Present status of forest owners' cooperatives

1) Trend of the consolidation

The government has been promoting consolidation of forest owners' cooperatives since 1950s. The number of forest owners' cooperatives was 5,289 in 1954, but it became 764 in 2008. However, as shown in Table-2, total number and total forest area of the members of forest owners' cooperatives have been quite stable for more than 50 years. Number of the members of

forest owners' cooperatives decreased about 118,000 from 1954 to 2008, but forest area belongs to the members increased about 1,350,000 ha during the same period.

Table 2 Trend of the basic data of forest owners' cooperatives in Japan (1954, 1981 and 2008)

Year	Number of forest owners' cooperatives	Number of the members	Forest area belongs to the members	Average forest area per cooperative	Rate of forest area belongs to the members
1954	5,289	1,712,898	9,739,929 ha	1,841 ha	69 %
1981	1,933	1,728,062	11,665,828 ha	6,035 ha	70 %
2008	736	1,594,303	11,088,228 ha	15,066 ha	65 %

Source: Forestry Agency (1954, 1981, 2008) Statistics of Forestry Cooperatives

Average forest area per cooperative has expanded extensively. It was 1,842 ha in 1954 but became 15,066 ha in 2008. To make sure the expansion of the size of forest owners' cooperatives, Table-3 indicates size classification of the cooperatives in 1954, 1981, and 2008. More than 90% of the cooperatives were smaller than 5,000ha of its forest area of the members in 1954. However portion of such small cooperatives decreased around 55% in 1981, and was less than 25% in 2008. Instead, cooperatives with forest area larger than 10,000ha became over 50% today. Governmental policy of promoting consolidation has successfully practiced.

Table 3 Size classification of forest owners' cooperatives in Japan (1954, 1981 and 2008)

Year	<1000ha	<3000ha	<5000ha	<10000ha	<20000ha	20000ha~	unknown	Total
1954	2,154	2,023	572	303	72		165	5,289
(%)	(40.7)	(38.2)	(10.8)	(5.7)	(1.4)		(3.1)	(100.0)
1981	694		379	494	273	64	29	1933
(%)	(35.9)		(19.6)	(25.6)	(14.1)	(3.3)	(1.5)	(100.0)
2008	174			170	202	188	2	736
(%)	(23.6)			(23.1)	(27.4)	(25.5)	(0.3)	(100.0)

Source: Forestry Agency (1954, 1981, 2008) Statistics of Forestry Cooperatives

There are several reasons for pursuing consolidation. First of all, scale of economy is to be mentioned. Because most of the private forest owners in Japan are small in scale, forest owners' cooperatives are established to accumulate forests with different owners for realizing scale of economy in many aspects of forestry activities. For example, in cases of making forest roads, planting seedlings, weeding, thinning, and harvesting timber, the larger the scale of activities, the better in terms of cost efficiency. Therefore, expanding its forest area with consolidating cooperatives is rational in market economy.

Under the shrinking situation of forest production, consolidation is more than necessary for securing enough quantity of business. Many of the forest owners' cooperatives employ forest workers, but it is getting harder to keep workers while timber production is decreasing. For securing jobs for forest workers are critical issues for most of the cooperatives, and consolidation is a solution for it.

In addition, expansion of capitals with consolidation makes the cooperative easy to introduce the latest forest machineries or sawmilling facilities as well as improving workers welfare.

Consolidation of municipality is another incentive for forest owners' cooperatives to consolidate. It is a strong governmental policy to reduce the number of municipality in recent years. The number of municipality was 3,229 in 1999, but is 1,727 in 2010. Because governmental subsidy for forest owners and creating local forest plans are important works of municipality, a municipality and the forest owners' cooperative in the locality are in close relation. Therefore, in many cases, with the consolidation of municipality, forest owners' cooperatives within it also consolidate together.

2) Businesses run by forest owners' cooperatives

A variety of forestry activities, which are allowed by the Forestry Cooperative Law, are done by forest owners' cooperatives. Especially, silvicultural practices are one of the most important contributions of the cooperatives for the members. Plantation, weeding, pruning, pre-commercial and commercial thinning, and final harvesting are the examples. According to the World Agricultural and Forestry Census in 2005, forest owners' cooperatives are playing a significant role in contracted forest practices in Japan. Forest owners' cooperatives occupied 61% of new plantation activities, 66% of tending activities such as weeding, 66% of thinning practices, and 16% of final harvest of all the contracted works in Japan.

Another important activity of forest owners' cooperatives is running log auction markets. Forest owners used to sell their trees as standing timber for loggers or sawmill companies in 1950s. Because most of small forest owners did not have enough information about stumpage and timber prices which are increasing under the economic boom, buyers tended to earn big money for the deal. Facing such a disadvantageous situation, forest owners' cooperatives or prefectural union of forest owners' cooperatives in many part of the country built log auction markets in their locality, and tried to add more value to the logs of the members. The number of log auction markets is decreasing gradually in recent years, but there still are 516 auction markets in 2006, including 74 run by forest owners' cooperatives.

Sawmills and other timber processing facilities are the other important business activities of forest owners' cooperatives. Contracting forest practices are one of the necessary activities of the forest owners' cooperatives, while running log auction market or sawmills are the possible activities as described in the Article 9 of the Forestry Cooperative Law. Objective of running such businesses is simple: to improve economic and social status of forest owners. Therefore in many cases, sawmills operated by forest owners' cooperatives are producing timber products by using unsold logs from their auction markets. It is a clever strategy for the cooperatives to sell higher valued logs to buyers who need such materials and to utilize lower valued logs by themselves. For such purpose, it is not necessary to introduce expensive new sawmill machines which is hard to get by local forest owners' cooperatives without enough spare money.

Forest byproducts also are another source of income for forest owners' cooperatives these days. Japanese people love to eat mushrooms, wild vegetables, and bamboo shoots. Those byproducts bring annual income for forest owners, and quite a few forest owners' cooperatives construct food processing factories and sell products to urban areas.

Forest recreation is another potential business of forest owners' cooperatives. Outdoor recreation including auto-camping became popular in 1990s and many forest owners' cooperatives tried to catch up the boom and to built picnic sites, camp sites, cottages, and lodges in their members forests. Not a few of them had shut down already because of profitability problem, but many of them are surviving and contributing the popularity of outdoor recreation.

3) Newly added responsible works

There are several newly added works of forest owners' cooperatives which are indispensable for the society. With the worsening situation of aging and depopulation in rural area, more and more private forests become unmanaged by the owner. In addition to the aging problem, absentee forest owner is another big problem. Local forest owners' cooperative is the only organization that can prevent giving up of forest management because of aging and absentee problems.

Long-term forest management contract is a key strategy against this problem. Forest owners tend to avoid entrusting their forest to anybody outside, because in most cases their forests are the inheritance from their ancestor. To keep family forest by own works has been the social norm in rural Japan. Exception is very large owners who leave the forest to forest managers they employ. Therefore, making a long-term forest management contract is not popular. However, it becomes hard for many households to manage their forests by themselves because of aging and absentee problems, and a wide area of forest is left unmanaged over the country. It is a social issue today, and appropriate forest management is desired.

In order to entrust the forest to others, reliability is necessary. Table-4 shows the result of a survey about to whom forest owners would like to entrust their forest management. As indicated on the table, forest owners' cooperative got a highest point. It is because forest owners' cooperative is the most reliable organization for forest owners to compare with other companies and organizations. There is a large potential for forest owners' cooperatives to expand long-term forest management contract with aged and absentee forest owners.

Table 4 Forest owners' opinion of possible choices on forest management contract

Possible counterpart of forest management contract	%
Forest owners' cooperative	82.5
Silviculture company	26.2
Forest volunteer group	11.0
Logging company	10.7
Individual forest owner	3.9
Others / No answer	13.0

Source: Forestry Agency (2009) Forest and Forestry White Paper

Green employment is another newly introduced project in forestry with public attention. It is a nationwide governmental project to promote young people to be in forestry works launched in 2003. To help support increasing forest workers, central government gives subsidy to forestry related organizations which employed new workers. In addition, a series of job training courses is provided up to three years in the project.

Forest owners' cooperatives are the major organizations that accept new workers with using this project. Before 2003, there were about 1,800 new workers getting into forestry every year, but after the green employment project launched in 2003, the number increased to 3,200 per year. Contribution of forest owners' cooperative for getting new forest workers is quite large. This project is very important not only for forest sector to increase workers but for society as a measure against unemployment of younger generation and also as contributing carbon sequestration by facilitating thinning in plantation softwood forests.

5. Discussions

Historically, a forest owners' cooperative in Japan was considered by local people as a 'gemeinschaft' of the community. Even though it was established by the Forest Law, forest owners did not think that the forest owners' cooperative was a purposive organization or 'gesellschaft'. This is because forests surrounding the village used to be a communal property and people utilized and managed their forest jointly. Therefore, after the privatization of forests in the Meiji Restoration, forest owners wanted the cooperative to improve forest health and inventory rather than improving economic and social status of themselves.

Most of the forest owners were farmers and forestry was not the main source of income. Therefore, in contrast of agricultural cooperatives, forest owners' cooperatives were not very important in terms of economic activity of the members. Under such circumstances, forest owners' cooperatives have been developed as a tool for the government to protect forestland and to control forest production. A characteristic of Japanese forest owners' cooperatives of semi-public organization is from such historical back grounds

Having two different characteristics of 'gemeinschaft' and semi-public organization, forest owners' cooperatives is able to play an important role for rural development. Usually, forest owners' cooperatives have intimate relationship to local municipal government, and are doing a variety of activities contributing for local society. For example, in case of long-term forest management contract with absentee forest owners, a forest owners' cooperative will get demographic information from municipal government and make a contact with absentee owners with the help of government officials. Because abandonment of forest management is a social problem, local government and the forest owners' cooperative are trying to deal with the problem hand in hand.

Forest owners' cooperatives continue to make an effort to improve working conditions of forest workers. Forestry works such as planting, weeding, thinning, and logging practices used to be paid by the piece. Even today, monthly salary is rare. However, to make working conditions better, some forest owners' cooperatives took the lead in adapting daily or monthly payment system instead of payment by the piece. In addition, forest owners' cooperatives introduced insurance for industrial accidents, pension, and other welfare programs for forestry workers. Diversification of business activity of leading forest owners' cooperatives makes them possible.

The national union of forest owners' cooperatives is doing unique advertisement of forestry. The union has a nationwide 5 minutes radio program every Sunday since 2007. A woman reporter goes around the country and visits forestry regions to interview rural people. She reports

interesting stories of the people and their activities related to forest and forestry. It is informative and fun for urban people to know living activities in rural mountainous areas.

The national union and prefectural unions are making great effort to recruit young urban people into forestry works with green employment. They hold explanatory meetings for forestry works in several different cities every year, and produce short training camps for beginners to experience forestry works. Such efforts could achieve the increase of new forestry workers in recent years as described in before. With having nationwide network of forest owners' cooperatives, the union can get a large amount of newest information about forestry. Advertisement and promotion of forestry are the most suitable role for the national union of forest owners' cooperatives so far.

The national union also is providing educational seminars for employees of individual forest owners' cooperatives. Especially, 'Training course for forest practices planners' sponsored by Forestry Agency is paid attention by people in forestry sector. This program is focusing on intensification and rationalization of forest practices in local areas. Transferring practical skills of leading forest owners' cooperatives to others is what the union is to do.

Web site of the national union is another strong tool for providing information about domestic forestry. It contains many interesting and useful materials such as programs above mentioned, catalogs of forestry equipments and machines, forest insurance, forest certification, statistical data on forestry, and the list of academic articles related to forest policy and forest sciences. It is convenient not only for forest owners and forestry professionals but for ordinary urban people who has interest in forest and forestry.

6. Conclusions: For developing forest owners' cooperatives

Based on the experiences of Japanese examples, the following conditions are worth considering to develop and to expand forest owners' cooperatives in other countries in which such organizations for private forest owners do not exist or weak.

At first, legal grounds are preferable. The government should consider the importance of such organization that contributes rural development with a variety of ways based on local community with forest. Specific subsidy to forest owners through forest owners' cooperatives is an interesting policy tool to control forestry activity at certain level of management.

Secondly, consultant function of forest owners' cooperatives is critically important for small forest owners. Forestry workforce and system of management contract are good business options for them. Not only gaining a bargaining power of standing timber, but logging operation and sawmilling facilities are important value adding measures that forest owners' cooperatives are able to provide for the forest owners.

Lastly, extension and information services are also important roles of forest owners' cooperatives and cooperation with local government is desirable. To acquire scientific information, newly developed technology, and policy changes are not easy for rural forest owners. Therefore it is beneficial for forest owners to get such information easily and periodically from the cooperative. Proper support for the members must be the most precious role of forest owners' cooperatives.

To do so, it is not necessary that forest owners' cooperatives are profit making firms. Non-profit 'gemeinschaft' like organization would be a desirable style of a local forest owners' cooperative.

Even though a forest legally belongs to a private person, it is a kind of 'commons' for the community or the society. Environmental functions of forests are social and cultural value for the people. Under such understandings, profitability from forest products may not a mere objective for forest owners and forest owners' cooperatives. In other words, society is responsible for an appropriate management of forests in any kind of ownerships. Forest owners' cooperatives must be a possible tool to pursuit the goal.

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International problems of sustainable forest management financing – state and opportunities

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In 2007, UN General Assembly adopted Non-Legally Binding Instrument on All Types of Forests (NLBI) reviewed by the seventh session of the UN Forum on Forests (UNFF) focused on enhancing the contribution of forestry in achievement of internationally agreed development goals and provide basis for national action and international cooperation. Question of increasing financial support to sustainable forest management and mobilizing additional resources acknowledged in this paper as one of four global objectives on forests along with prevention deforestation and forest degradation, improving quality of life of forest dependent peoples and increasing area of protected forests worldwide and other areas of sustainable managed forests.

It does not require explanation fact that sustainable forest management is less profitable than the use of extensive methods because SFM requires large investments and operating costs. Thus, for sustainable forest management it is needed external financing. Forest management can be self-supporting only on condition that all those who receive benefits, will also pay the appropriate price (or compensation) for what they get. In the absence of regulation by society or compensation for public goods, there are strong incentives for the use of extensive methods worldwide, leading to deforestation and forest degradation.

Let us consider the currently existing external sources of financing of forest management. Generally there are five main sources of forestry financing:

- ***Support at state level***. Problems in receiving state support for forestry suffer mainly countries with low forest cover, in other words countries for which forestry is not one of priority activity. Besides there is not only sustainable forest management requires government support but also a creating forest infrastructure.
- ***Private investment***. Private investment is a powerful source of financing, but in most cases without appropriate guarantees, it does not promote sustainable forest management, especially where this is necessary.
- ***Payment for ecosystem services***. This mechanism is new, but powerful enough. It include compensation for the loss of forestry production under creation of reserves, national parks and other protected areas, payment for biodiversity conservation, carbon sequestration, regulation of water resources, tourism, etc. The mechanism of payment for ecosystem services will work effectively only under the creation of appropriate legislative and institutional framework, enhancing awareness rising of necessity to implement this mechanism within the society and government structures. At present it is needed sufficient support for assessing the feasibility of mechanism, consolidation of information on the theory and practice of implementing of payments for ecosystem services with indication of successful stories. As an example, in framework of Kyoto Protocol according to the IPCC data it is registered now 12 CDM projects and only two JI projects, in addition there are a number of projects undertaken according to the green investment scheme. Possibilities of receiving financing under Kyoto Protocol will be discussed in a more detail later. But it is worth mentioned hat a focus only on receiving investments due to increasing carbon sequestration may slightly change the direction of forest management affecting other goods and services.

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- ***Philanthropic and charitable contributions***. According to experts research only 6% of charitable contributions goes to funding environmental issues. Besides opportunity of receiving these contributions for the public sector is very low. Increasing philanthropic and charitable contributions require an effective fundraising program, but without any guarantee of success of this program especially in a crisis. Charity can be an important addition, but certainly could not substitute for public funding.
- ***Official development assistance***. Precise data on amount of official development assistance for forestry program is not known. Experts estimate that international investments in forest sector are 1.9 billion dollars per year, at that from the total amount 500 million dollars are investments in forest industry. For comparison: in China in 2003 state funding to forestry amounted 4.2 billion dollars. It is considered that 95% of international assistance for forestry is provided by nine donor countries and organizations - Japan, Germany, EU, Netherlands, Switzerland, USA, United Kingdom, France and Finland. Two thirds of international assistance directed to Asia, 20% to Africa and 11% to Latin America. That's mean that Europe and Oceania have less than 4% of total investments. The main beneficiary countries are India, China and Vietnam. Together with Indonesia, Cameroon, Tanzania, Bolivia, Brazil, Colombia and Honduras, they receive two-thirds of total investments.

Collaborative Partnership on Forests web-site contains 800 links to financial sources, which may be used for financial support for sustainable forest management. The main financial donors are the following international organizations:

World Bank Group. In general bank investments are directed to independent forestry projects and projects which contain forestry issues. These projects mainly concern on conservation of biodiversity, reducing poverty, rural development, energy and sustainable use of natural resources. Bank financing covers a wide range of elements in the context of national measures, because its field of interest is generally quite large and projects have large framework and funding.

International Finance Corporation (IFC), a branch of the Bank collaborates with the private sector aimed at stimulation of economic development and poverty reduction.

Keeping in mind positive experience of Biocarbon fund the World Bank has established the Carbon Partnership Facility and the Forest Carbon Partnership Facility, which will test encouraging payments in 20 pilot countries (according to a REDD program).

Bank has four partnership programmes or funds for enhancing its strategy in forestry. These four programs are: 1) alliance of World Bank and WWF for conservation and sustainable use of forest resources 2) the Programme on forests, 3) the Forest Law Enforcement and Governance (FLEG) and 4) the Critical Ecosystem Partnership Fund. Their financing is relatively modest, but effective.

FAO. Food and Agriculture Organization (FAO) mainly supports active stakeholder participation at the country level in the development and implementation of national forest programmes, forest policy formulation, development of new legal, fiscal and institutional instruments.

Global Environment Facility. Global Environment Facility (GEF) finances environmental measures and is the only existing fund which finances the implementation of several conventions. In 2007, the GEF Council has approved the program on sustainable forest management keeping in mind selection priorities for future funding. Key priorities include: (a) sustainable financing of protected area systems at the national level; (b) strengthening terrestrial protected area networks; (c) strengthening the policy and regulatory framework for mainstreaming biodiversity; (d) fostering markets for biodiversity goods and services; (e)

support of sustainable forest management in the wider landscapes; (f) promotion of sustainable biomass production; (g) prevention, control and management of invasive alien species; and (h) management of land use, land use change and forestry as a means of protecting carbon stocks and reducing greenhouse gas emissions.

International Tropical Timber Organization. International Tropical Timber Agreement is a legally binding instrument which provides financing mechanisms for sustainable management of tropical forests.

At present existing sources of financial support to sustainable forest management are fragmented and no fund/mechanism covering the entire range of activities pointed in Non-Legally Binding Instrument on All Types of Forests. In addition there is duplication and unproductive competition between different funds. Furthermore, complicated donor requirements of financial reporting in most cases reduce the effectiveness of assistance.

In 2007 at the initiative UNFF it is began work on the development Proposals for a Voluntary Global Financial Mechanism/Portfolio Approach/Forest Financing Framework aiming at support the implementation of the non-legally binding instrument on all types of forests. In this context, the term "voluntary global financial mechanism" could refer to a global forest fund. The proposed "portfolio approach" for forest financing means that various aspects of sustainable forest management may be financed from a variety of sources. A framework could define the roles of various different sources (national, bilateral, multilateral, non-profit, etc.) in any new mechanism. Any new framework should, of course, build on existing partnerships, and create maximum synergy and effective cooperation between existing and emerging programmes.

For discussion approaches and identifying areas for developing a global financial mechanism / portfolio approach / framework for financing activities of all types of forests UN Secretariat has organized two ad hoc expert group meeting in 2008 and 2009. It was pointed that the whole process of financing can include three components: upfront investments (e.g., preliminary planning process, increasing capacity), short-term investments (such as creating appropriate conditions for investment) and sustainable financing itself. By experts estimations it is needed totally 20 billion dollars per year for prevention deforestation and forest degradation, without costs for reforestation and afforestation. The current level of international financial assistance at level of 1.9 billion dollars is not sufficient and ODA direction does not always correspond to national a priority, that's why it is needed appropriate research for mapping counties need in assistance. At present there are significant problems in obtaining international assistance in countries with low levels of forest cover, small in size and island states.

Also a significant part of investments directed to non-governmental organizations and the public sector in most cases is unable to provide further financial support. In this regard, countries need to effectively coordinate technical assistance projects as specified by 2005 Paris Declaration on Aid Effectiveness and coordination of international assistance with national development programs and financing strategies.

Unfortunately there was not founded common decision during 2008-2009 discussions on the direction of future activities. On the one hand, delegates from the Africa insisted on creating a global fund, while donor countries took a rather restrained position on the advisability of this step and offered to improve the existing mechanisms of international financial assistance. It was decided to create facilitative mechanism of harmonization approaches to allocation financial support and improving coordination among existing funding schemes. This on the one hand will simplify access to funding sources for recipient countries, as there will be no need to apply immediately to several donors and perform different procedures for funding, and on the other hand will help speed up the harmonization of national strategies for forestry development. Facilitative mechanism was officially started according to resolution of 9 UNFF special session

at 30.11.2010. March 10, 2010 Director of UNFF secretariat presented strategic plan (2010-2013) which contents activities of expert groups and facilitative mechanism itself (identifying key obstacles and opportunities, promoting coordination, searching ways of mobilization existing and new financing sources, etc.).

A significant step aimed at prevention deforestation and forest degradation, and thus the financial support of sustainable forest management was made in Bali in December 2007 at 13th Conference of the Parties of Kyoto Protocol where was recognized that reducing carbon emissions from deforestation and forest degradation in developing countries - REDD will be an important part of international agreements after 2012. Generally REDD program was established in partnership FAO, UNDP and UNEP and now it has 74.3 billion dollar fund in its disposal, major donors are Denmark, Spain and Norway. 7 projects currently were approved in framework of REDD programme. Next step was made in Copenhagen last year where was started a new process REDD +, which covers also question of sustainable forest management because it is proved that a significant part of carbon emissions is also associated with forest fires, destructive fellings, including illegal logging, etc. Copenhagen Accord was not designated as successor to the Kyoto Protocol, but a significant number of countries associated themselves with its provisions, including the establishment of the Copenhagen Green Climate Fund as an operating entity of the financial mechanism of the Convention aimed providing support to projects, programs, policies and other activities in developing countries in framework of REDD+, technology development and transfer and capacity-building. In Copenhagen Accord was pointed that it should be provided 30 billion dollars investments in framework of REDD+ within 2010-2012 and have a goal of mobilizing jointly 100 billion dollars per year by 2020. Real start of REDD+ was at March 11, 2010 in Paris, France where was conducted international conference on the world's major forest basins. Australia, France, Japan, Norway, Britain and the U.S. confirmed its position as stated in December 2009 to provide 3.5 billion program REDD +. Germany, Slovenia, Spain and the European Commission joined the first group of donors and pledged another $ 1 billion. Representatives from ten countries, including both developed and developing countries were appointed to form a REDD+ steering group. Among its first tasks will be to consider how to fairly distribute the billions in early funding among forest countries, which include Brazil, Congo, Indonesia and a host of smaller tropical countries. A second conference should be organized in Oslo, Norway, in May 2010 for elaborating a concrete plan devoted specifically to deforestation for its presenting to the UN Climate Change Conference in Cancun, Mexico in December 2010,.

So there was made considerable amount of work during 17 years of negotiations, but still a lot of work remained to do with hope that finally there will be found an effective way of financial support of sustainable forest management.

Environmental aspects of the National Forest Programme

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The National Forest Programme up to 2013 was approved by the government of the Czech Republic through Resolution No. 1221 of 1 October 2008.

The National Forest Programme was prepared as a conceptual document, the main goal of which is to create the conditions for the sustainable management of forests in combination with a long-term improvement in the competitiveness of forest management.

The National Forest Programme – while respecting the fact that in the Czech Republic pursuant to the Forestry Act (Act No. 289/1995 Coll.) forests are a national treasure – should also define the planning framework for the influence of other sectors on the state forestry policy, increase the awareness of the greater public about the importance of forests as components of the environment and ensure the involvement of the widest possible range of affected subjects in addressing the problems of forests and forestry.

In Europe and also of course in the Czech Republic forest management is seen as part of rural development and the use of the countryside, where forests fulfil economic, ecological and social functions, which in turn depend on the principle of sustainable development.

In terms of the economic function of forests, strategic goals are the long-term improvement in the competitiveness of forest management and increasing the use of forestry products, goods and services in societal life.

Regarding the ecological functions of forests, strategic goals are the retention and improvement of biological diversity, the integrity, state of health and robustness of forest ecosystems and their stabilisation function in the countryside taking account of expected climate change.

Regarding the social function of forests, the strategic goal is to improve quality of life through retaining and improving the social and cultural dimensions of forests and forestry, in particular maintaining employment levels of rural regions.

Since the National Forest Programme in the Czech Republic was approved by the government, individual key actions of the programme have been elaborated in expert groups composed of representatives of professionals in the field of forestry, representatives of forest owners, state forest administration bodies, state nature protection authorities, forest research, forestry-focused further education facilities and some non-government organisations.

Regarding the ecological functions of forests, six key actions have been formulated in the National Forest Programme, focusing on

- reducing the impacts of expected climate change and extreme weather conditions,
- retaining and improving biological diversity in forests,
- improving forest monitoring,
- improving the state of health and protection of forests,
- reducing the impacts of old and current ecological burdens,
- achieving a balanced relationship between the forest and wildlife.

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In the Czech Republic there are currently over 2,650 thousand hectares of forests. Of this, around 28% are forests situated on specially protected land, in particular in four national parks and in twenty-five protected landscape areas. Not only in these forests, but also in all other forests, nature protection bodies have gradually built up a position that permits them to directly influence forest management. A typical tool of this influence is the issuing of binding statements by nature protection bodies on drafts of forest management plans. In addition to this, various ecologically-focused non-government organisations are also continually working to exert more influence on the management of forests at both nationwide and local levels.

One regularly discussed problem is the conflict of interests between the fulfilment of the ecological functions of forests with economic and social interests. Several important issues must be addressed during the preparation of individual key actions of the so-called ecological pillar of the National Forest Programme, and should include the formulation of the methods for achieving the individual goals of the programme.

The first of these is the economic problem relating to the lack of financial resources. A large portion of the measures proposed to date for the fulfilment of the goals of the National Forest Programme present the retention of, or increase in, financial support from the state as one of the essential prerequisites for their implementation.

In contrast to this, the current lack of public financial resources is leading to a reassessment of the range of forest management activities, the performance of which is supported by the state through the provision of subsidies, contributions or compensation for increased operating costs incurred by the owners of the forests for such activity.

One good example in this connection is the renewal of forest vegetation with a specific minimal share of soil-improving and binding trees. The current situation is that if the owner of a forest demonstrates that he used at least the minimum legally stipulated share of soil-improving and binding trees during the renewal of the forest vegetation (during reforestation), he can claim compensation from the state for the extra costs that he thus incurred.

One serious flaw in this system is that the fulfilment of the conditions for entitlement to compensation for increased costs is assessed at the time of the renewal of the forest vegetation. In practice, this means that in the subsequent development of the forest vegetation the share of soil-improving and binding trees in the renewed forest vegetation quickly falls or disappears completely.

The importance of soil-improving and binding trees for the stability of forest vegetation and for the renewal of a natural composition of tree types in the forest is indisputable as a prerequisite for the retention and improvement of biological diversity in forests. In spite of this, however, it is necessary – both now and in the future – to act on the basis that ensuring the stability and robustness of the forest is of primary interest to, and therefore also the obligation of, the forest owner. This is also true because in the future practically no forestry management measures will be linked to entitlement to state financial support. It is necessary to switch from a policy of entitlements for which the state will not have sufficient financial resources, to other means of motivation and the education of the forest owners.

Within the framework of the development of the ecologically focused aspects of the National Forest Programme the following measures have also been proposed

- support ecologically appropriate reforestation of agricultural land,
- reduce the rotation period for trees most threatened by climate change,

- grow vegetation that is varied in terms of space and type with the greatest possible use of natural processes, varied types of trees, natural renewal and varied cultivation methods,
- increase the retention capability of forests and ensure protection for forest soil from water erosion and degradation.

Measures have also been proposed motivated by efforts to promote ecological elements in forest management irrespective of their economic impacts for the forest owners. These include in particular the expansion of forests left to develop naturally, including some outside specially protected areas, or requirements to allow more wood to naturally decompose in forests.

Those who promote ecological principles of forest management do not realise or underestimate and intentionally overlook the financial impacts of the implementation of such measures. The unilateral promotion of such measures engenders resistance from both forest owners and also foresters, who see them in a negative light as efforts towards further unnecessary increase in the ecology-related burden placed on forest management.

Since 2008, when the National Forest Programme was completed and approved, the amount of financial resources available for subsidies and aid has fallen as a consequence of the global economic crisis. The current cost-cutting measures are thus also making themselves felt in a reduction in the resources for the financing of important ecological projects in forest management. In spite of this, there remain some problems that must be addressed even in a situation where there is an acute lack of money. This means in particular the need to sanitise old, and remove the consequences of current, ecological burdens, the need to improve the quality and characteristics of forest soils through calcification, the need to implement measures to protect forests from calamitous attacks of pests or to remove the consequences of extraordinary climatic conditions.

At the present time, when the great majority of the population lives in towns and cities, the awareness of forests and their importance is gradually changing. Forests are seen by the public more and more not only as a source of wood, but in particular as a resource for relaxation, recreation and sport. The state therefore cannot simply cease financial aid for forest management; however, it has the right to tighten up the conditions for the provision of subsidies and also to refuse to support measures that are not essential from the perspective of maintaining forests, even if they have a wider ecological justification.

The implementation of the National Forest Programme is the joint task of the Ministry of Agriculture and the Ministry of the Environment. It will result in real recommendations for forestry practice and recommendations for specific forestry policy measures in the fields of forestry research, economics and legislation.

The existing Forestry Act (Act No. 289/1995 Coll.) has now been in force for fifteen years. It is clear that some goals of the National Forest Programme cannot be achieved without the significant amendment of this Act. In particular, it is necessary to increase the distinction between the rights and obligations of forest owners according to the form of ownership. Differing, higher demands will be placed on forest management in forests owned by the state. In private forests, the majority of which are small in size, it will be necessary to reformulate some current forest management obligations as recommendations supported by available motivational tools. The result will be the preparation and adoption of a completely new Forestry Act by 2013.

Natural values and the new regulation in the Republic of Serbia

Nataša Tomić[*]

There is no key that will resist to the laws of nature.

Dostojevski

1. Introduction

Changes in the world we are living in are constant and quick and environmental crisis in essence, is the integral part of the great civilization's happening. At the end of the last century world has started to pay more attention at environment. These years were called »decade of the environment« or »decade of the Planet Earth« and development of the green marketing, which included the great spectar of activities, happened at that time.

After Convention on protection of the world cultural and natural heritage ratified by Socialist Federal Republic of Yugoslavia in 1975, Federal Republic of Yugoslavia has ratified and by Laws confirmed Convention on biological diversity[1] and Convention on international turnover of endangered species of wild fauna and flora[2] in 2001. Republic of Serbia in 2007 adopted Law on ratification of the Convention on preservation of the European wild flora and fauna and natural habitats[3].

Law on environmental protection[4] of the Republic of Serbia regulates integral system of environmental protection by which provides for realization of human right on life and development in healthy environment and balanced relation od economic development and environment in the Republic of Serbia.

2. The cases of Serbia and its capital Belgrade

In our country sincere concern has been demonstrated for the protection of environment we are living in.

Aware of the fact that for years Serbia is fighting with droughts and extreme floods, suffering the consequences of the global climate change, on the occasion of the World's Day of the forests protection, on the 21-st of March the important action has been started. About 18.000 seedlings of firs will be planted and 10 hectars of forests in the National Park of Tara will be regenerated. These days recent floods throughout Serbia because of the increased water level on rivers have made enormous damages[5]

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[1] "Official Gazette FRY – International contracts", no. 11/2001.

[2] "Official Gazette FRY – International contracts", no. 11/2001.

[3] "Official Gazette RS – International contracts", no. 102/2007.

[4] "Official Gazette RS –International contracts", no. 135/2004, 36/2009, 72/2009.

[5] On that occasion it was pointed out also at the generally weak culture of insurance of objects in our country.

to the coastal area, and the worst situation was in the Eastern Serbia and in the surroundings of town Zaječar.

Having in mind that the ecological sustainability is made by forests, as the biggest natural generator of oxygen, on the Day of clean mountains (26th of September) "Power Stations of Belgrade" have acquired 15 seedlings, representing each one thermo power station of the "Power Stations of Belgrade", and in that way joined the action "Green cities of Serbia".

Unfortunately, in Serbia[6] per year in courses of the rivers is discharged 72 000 tons of nitrogen and 7 000 tons of phosphor.

In October 2009. the public enterprise for forest management "Srbijašume" organized the action of afforestation in the Republic of Serbia, and on the occasion of the World's day of pure air, on the 3-rd of November 2009. National Office of the Predsident of the Republic of Serbia and the Ministry for environment and spatial planning have started the action »Green cities of Serbia – 100 new parks in one day«. This action has been started by signature of the Protocol on lanscaping of cities in Serbia during the Fair of ecology »Ecofair«, with the aim of revitalization of green surfaces in Serbia[7].

We should also have in mind the threats posed by climate change on forests, on the goods and services they provide. Taking into consideration that in Europe some species of trees have completely disappeared (for example elm) and many forests are disappearing in the world[8], very interesting is the proposal of botanists from Kolašin[9], town in the Republic of Monte Negro for foundation of the bank of forests genes.

Genetic diversity is the foundation for adaptation of natural forests to climate change and represents also the resource basis for the selection of adapted forest reproductive material to establish planted forests and agro-forestry systems.

Everything that many countries do to mitigate climate changes loses its importance, when we take in consideration the activities of big polluters. It is well known the fact that only smaller numbers of countries have the possibilities for introduction of technological innovations in respect of the climate changes, so the regulations related to the transfer of knowledge and investments from these countries to other countries will be more significant from the general agreements.

Nature as the good of general interest for the Republic of Serbia has special protection in accordance with Law on the protection of nature[10] and special laws. By coming in

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[6] Our country is on the third place in Europe by the quantity of nitrogen and on the second place by the quantity of phosphor that flows in the river Danube, from all 13 countries of the Danube basin. In Serbia, only in 20 municipalities there are facilities for refining of waste waters.

[7] During the last three decades research studies have shown that the number of green surfaces had been reduced for one fifth, what lead to harmful consequences for environment in urban zones. Planting each 50 seedlings of wooden plants simultaneously was organized in 100 municipalities in Serbia.

[8] Around year 1500, at the beginning of the 16th century in England there were around 200 raised plants, and in thirty years of 19th century around 18.000 plants. Nurseries of flowers were predicted for decoration and joy and so up to today.

[9] In the Republic of Monte Negro there are more than 3000 species, and among them more than 120 endemic.

[10] "Official Gazette RS", no. 36/2009.

effect of this law, the Law on national parks[11] stopped to be valid with exception of few articles. It is interesting that the first city park in Belgrade was built in 1836. and now occupies 1.95 hectares. Nature was exceptionally generous to our capital city, which has the special position on two big rivers Sava and Danube.

Belgrade was proclaimed as the best tourist destination of the South-Eastern Europe by choice of organization "Sancen international"[12]. After visit to the 14 countries of Balkans, Mediterranean and Central Europe, international expert jury awarded the title of the best tourist location to Belgrade, while our national park "Đerdap" got the title of the best ecological tourist destination.

Strategy for afforestation of Belgrade predicts afforestation of another 50.000 hectares of city land. The level of afforestation of Belgrade will be raised for 20% and at the moment in the city there are 0,025 hectares of forests per inhabitant and ideally is that procentage amounts to 0,33.

Our Kalemegdan Park is green oasis in the heart of the capital city. In our municipality named »Vračar« in Belgrade, with the goal of its landscaping from 22nd of April[13] till 24th of May[14] will be carried out organization and embellishing of green surfaces, embellishing of the environment and direct education of the youngest inhabitants. Anyway, parks are missed by the inhabitants of this municipality, because that is the municipality with the smallest number of green surfaces in our city with regard to the number of inhabitants.

In our capital, town of Belgrade on the 22-nd of October 2009. was noted the celebration of 80 years of existence of the public-communal enterprise "Zelenilo" ("Greenery")[15] which today has 1253 employees /unfortunately 60 less than during the last year 2008/. This enterprise takes care about 3 000 hectares of the public greenery, 150 000 nursery plants, and on the occasion of the anniversary were planted two rare trees in the "Pionirski Park", which by tradition, from the times of old court garden, represents the place for planting of rare herbal sorts.

In addition to everything else, during 2010 public-communal enterprise "Zelenilo" ("Greenery") – Beograd takes care of protected natural goods and monuments of the nature and these are:

- Big military island,
- forest Banjica,
- "Pionirski Park" ("Pioneer's Park"),
- "Studentski Park" ("Academic Park") and
- 40 separate trees.

[11] "Official Gazette RS", no.39/93, 44/93, 53/93, 67/93, 48/94, 101/2005.

[12] Recognitions were awarded in 16 categories. Slovenia was declared as the best tourist country.

[13] Day of the Planet Earth.

[14] European Day of parks.

[15] Enterprise »Zelenilo« - Beograd («Greenery« - Belgrade) is the winner of the award-letter of thanks from the international Commission for contribution to the protection of the river Danube.

3. The role of legislation in the protection of natural values in Serbia

Law on the protection of nature[16] adopted in 2009 regulates protection and preservation of nature, biological, geological and spatial diversity as the part of environment. Often is neglected intra-specific diversity of tree species as a dimension of forest biodiversity, scientists said. By this law the Bank of genes is established for preservation of genetic diversity of wild plants, animals and mushrooms.[17] Legal persons who manage the forests, wild animals and waters are obliged to harmonize forest, hunting, fishing and water-economy bases with provisions of this law during their renewal or first revision. Legal persons, enterpreneurs and natural persons who manage the protected area are obliged to harmonize management plans for protected areas with provisions of this law in the time period of two years from the day of coming in effect of this law.[18]

In 1992. Government of the Republic of Serbia made Decision on foundation of the organization for the protection of natural values[19]. This organization was established for performance of works in the area of protection of natural values and it operates under the name: Institute for the protection of nature, with integral liability.[20]

By the Regulation on the register of protected natural goods[21] are prescribed the contents and the manner of keeping of the register of protected natural goods and accompanying documentation (records).[22]

Regulation on forest's order[23] regularizes the time and the manner of maintenance and establishing of forest's order, which especially includes measures for protection of forests from fire, herbal diseases and pests, protection of land under forests from the appearance and development of erosive processes because of cutting down or removing trees from the forest and protection of offspring, and which users and owners of forests are obliged to carry out.[24]

This year 2010 the Minister of agriculture, forestry and water-economy made Regulation on conditions and criteria for award and utilization of resources for protection and advancement of forests[25] which in detail establishes conditions and criteria for award and utilization of resources, as well as the manner of awarding of resources for protection and advancement of forests.

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[16] "Official Gazette RS", no. 36/2009.

[17] See: article 22. of the Law on the protection of nature, "Official Gazette RS", no. 36/2009.

[18] See: article 131. of the Law on the protection of nature, "Official Gazette RS", no. 36/2009.

[19] "Official Gazette RS", no. 88/92.

[20] See: Article 1. of the Decision on foundation of the organization for the protection of natural values, "Official Gazette RS", no. 88/92.

[21] "Official Gazette RS", no. 30/92.

[22] See: article 1 of the Regulation on the register of protected natural goods, "Official Gazette RS", no. 30/92.

[23] "Official Gazette RS", no. 106/2008, 34/2008, 104/2009.

[24] See: article 1. of the Regulation on forest's order, "Official Gazette RS", no. 106/2008, 34/2008, 104/2009.

[25] "Official Gazette RS", no. 4/2010.

In February 2010. Sweden directed support to the sustainable development of Serbia and on the 10th of February the Agreement in connection with donation of Sweden for the project "Support for enforcement of the National strategy of sustainable development of the Republic of Serbia" was signed.

Government makes the Strategy of forestry development of the Republic of Serbia.[26] New Law on forests will provide for the legal framework for implementation of the Strategy. It will replace the current Law on forests from 1991. Government will also take activities on harmonization of the Law on environmental protection (2004), Law on hunting (1993), Law on waters (1991), Law on agricultural land (1992), Law of inheritance (1995), Law on public enterprises and performance of activities of general interest (2000), Law on local autonomy (2002) and other regulations which in direct or indirect way influence on the sector of forestry.

Key questions of the new legislative framework will include:

- sustainable forest management;
- establishing of mechanism for participation of interest groups in the forestry development,
- setting of the framework for coordination and planning in the sector,
- defining of the role and responsibility of institutions and interest groups in the forestry sector and establishing of clear relations between the State and enterprise for state forests management,
- establishment of the real and functional system of financing in forestry,
- defining of optimal model of organization of public forestry service for performing of works in private forests,
- harmonization with ratified international conventions and protocols in the area of forestry, i.e. European Union legislation (Acquis Communautaire).

4. Conclusions

It seems that the words of Nikola Tesla who said that »there is nothing more important than studing a nature« do not lose actuality. Only the development of total environmental industry overcomes global economic crisis which is present all over the world. Environmental crisis can lead to unforseeable consequences for the whole Planet and destruction of the environment is the problem of people all over the world. That problem is not equally represented in all regions, but it must be solved globally.

Our chance is production of organic fruits and vegetables which do not thrive or grow with lower incomes on the territory of the European Union. However, it is necessary to make corresponding set of laws that will follow the world trends in organic agriculture. For example, at the Global Council for the energy of wind was decided that "Future generations will regret for years of inactivity". In Eastern Serbia we also have the possibility to use the power of wind.

We know that in 2010 the Eufgis project (Establishment of the European Information System on Forest Genetic Resources) will carry out its last activities to produce the planned outputs and the national focal points are now being finalized. The Portal will be launched in September in Vienna at the final meeeting organized by the Federal Research and Training Centre for forests, Natural hazards and Landscape. Till that

[26] "Official Gazette RS", no. 59/2006.

meeting we have to continue with already started works on the advancement of forestry in the Republic of Serbia.

Nature as the good of general interest for our country has special protection in accordance with the Law on the protection of nature[27] adopted in 2009 and special laws. Existing legal framework in the Republic of Serbia gives a good basis for the protection of natural values, but our main concern should be its implementation in practice, what sometimes represents a problem.

We should not forget that life consists of the large number of posiblities for devoted acts. Don't miss any opportunity.

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[27] "Official Gazette RS", no. 36/2009.

Improvement of legal and economic relations in forestry of Ukraine

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Abstract

The development of Ukraine's forestry calls for improving the legal, economic and organizational mechanisms designed for implementing Ukraine's forest policy and for applying modern methods of economic analysis with which to take optimal managerial decisions at all levels of management over the forest sector.

To improve legal and economic relations in forestry, it is necessary to use internal (sectoral) reserves and to develop a legal regulatory framework for forestry at a macro-level under an active effect of forestry institutions.

Key words: forest legislation, economics, ownership.

The State policy relating to utilization, renovation and conservation of forests has been formed depending for the most part on dynamics in developing socio-political and economic relations in the country, on the extent to which forest relations are reformed, and on the degree to which forest practice conforms with scientifically sound principles of sustainable forest management.

To date, the forest sector is facing the necessity of solving problems associated with new big socio-economic challenges in society that are directly related to forestry. Because of this, it is necessary to develop a system of measures aimed at improving the legislatorial statutory regulation and at economic and organizational transformations in the forest sector based on principles of conservation and accumulation of the silvicultural-environmental potential of Ukraine's forests. The experience of institutional transformations in the new countries of EC is convincing evidence of the need for reforms that have enabled those countries to considerably improve economic and silvicultural-environmental indicators of their forestries. For example in Poland, annual revenues from State-owned forests made up € 400 mln. in 1994 and € 1250 mln. in 2005 (increased by a factor of three); in Estonia, with its 1.1 mln. ha of State-owned forests, in 2005 the money turnover in forestry made up € 71 mln., the income € 8.7 mln., investments € 8.5 mln., revenues to the State budget € 11.4 mln. in contrast to 1999 where the money turnover in forestry made up € 45 mln. and the income about € 1 mln.; in Lithuania, its State-owned forests give ever growing incomes: in 2002 – 320.7 mln. lits, in 2006 – 392 mln. lits.; in Slovakia the income from sale of wood extracted from State-owned forests in 1990 made up 2604 mln. crowns and 7635 mln. crowns in 2005.[1]

Principal directions of the balanced development of forestry associated with strengthening environmental, social and economic functions of forests are presented in the updated State programme "Forests of Ukraine for 2010-2015" (approved by the Cabinet of Ministers of Ukraine on 16 September 2009). The fulfillment of this programme will allow in 2015 for an

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[1]Materials of the International conference " Support to Reforms in the Forest Sector of Russia and South-East European countries on the Basis of Experience of EU Members", Pushkino, 21-22 March 2007., p.263.

increase of 0.5 mln. ha in the forest area and a rise of up to 16.1% in the percentage of forest land in the country (at present, the percentage of Ukraine's forest lands is 15.7% while the optimal level is 20%). This programme provides also for improving the legislation and for optimizing the system of forestry management.

Improving the system of State management over forestry is an important component part of institutional transformations in the forest sector of economy. This provides for the decentralization of management, the differentiation between supervising and economic functions in forest-managing State bodies at all levels with the transfer of respective authorities to economic players. The differentiation between the State administration and economic management is based upon the clear distribution of authorities and responsibilities between agents of management and economic players on a strict legislative basis. The principal function of the State administration of forests has to lie in the supervision over the observation of the forest legislation.

State-owned forests in most Western European countries are managed by independent State forestry enterprises. In countries with transitional economy, the system of forest management underwent the reforming process for 10-15 years. Common to all these countries are two mutually related problems: the forming of an effective market mechanism in forestry and the support to the valid State regulation of multipurpose forest exploitation and forest regeneration. It should be noted that, under conditions when market relations are in the making, economic interests of managerial bodies often disagree with those of economic players. Therefore, it is necessary to work out a mechanism that would provide a balance of the above disagreed interests and would optimize the organizational and productive structure of forestry in accordance with requirement of market economy at all hierarchical levels. At the same time one should take account of experience and traditions of Ukraine's forest management and assess the efficiency of the existing system of forest management in terms of fulfillment of objectives and goals set by the State before the forest sector. In this connection, it is reasonable safe to suggest that the direct duplication of market patterns of management may lead to a reverse effect. It is essential that an evolutional way be provided for introducing market mechanisms that are able to get acclimatized under conditions of Ukraine's forestry.

Special attention must be given to interrelations between local governments, territorial forestry administrations and local communities. Local population must be involved in joint (common) forest management. The system of such interrelations should be regulated with regulatory legal documents to be developed just now, considering that the valid legislation fails to completely remove the conflict of interests between territorial communities and State governing authorities of different levels.

For the time being, the mechanism of the private sector performance in forestry has not yet been worked through enough in terms of the legislation. As is stated in the Forest Code of Ukraine, holders of proprietary rights to forests are citizens and legal entities of Ukraine who can acquire in their ownership forest blocks with the total area of up to 5 ha. If such forest blocks are poor or degraded sites their area is not limited by the Forest Code. However, the mechanism itself of how to acquire proprietary rights to forest lands is not described in detail. The same is true as for the mechanism of how the State should give encouragement to private forest owners so that they could grow forests on poor and degraded lands and as for economic incentives to a long-term process of afforestation on private sites when the owner bears all the expenses during the first decades.

The State Committee of Forestry of Ukraine has prepared a draft regulatory document for the Cabinet of Ministers of Ukraine on 'The order of provision of incentives to owners of land

plots to encourage them to grow forests on lands that were not under forest before" as well as suggestions as for revising the valid legislation so that it would provide for encouraging private owners by way of:

- compensation for owners' expenses of afforestation that they bear on their own;
- giving credits on favourable terms and tax allowances to landowners who invest their own money into afforestation;
- implementation of forest crop insurance by landowners who obtain credits on favourable terms at the expense of Ukraine's State budget;
- refund of non-received profit which landowners could have on land lots where they created forests.

The economic incentives to private landowners for afforestation cover the period from planting to 40 year-old stands which begin to bring in return to landowners. Being approved by the government, this document will give an economic impulse to afforestation on private lands that are of little use for farming.

Forestry enterprises seek to improve efficiency of their management both in developed countries and in countries with transitional economy. The latter face a challenge in developing the private sector, considering specific conditions of a certain country. The introduction of market relations into forestry, and in particular the development of the private sector, will call for in-depth study into positive experience of European countries that testifies to the validity of attracting private companies to fulfillment of the whole complex of forestry operations. Transferring to modern organizational patterns of wood production will help solve one of the most complicated problems of Ukraine's forestry – the differentiation of economic and managerial functions at the level of enterprise. Interrelations between two independent economic players (a private organization and a State forestry enterprise) are based on contractual principles and make it possible to completely solve silvicultural and economic problems, with the proper balance of both sides' interests being kept. What is important in this process is the fact that supervising functions performed by an enterprise and State forestry authorities are not of a formalistic character owing to their being dissociated from private organizations that carry out forestry operations (at present, these operations are performed for the most part by staff members of State forestry enterprises). This organizational pattern of forestry is favorably valuated in Ukraine's forestry. Over the last three years, many enterprises shifted to a regime of attracting private organizations to the execution phase. And once again, this confirms the thesis about an evolutional character of improvement of forest relations when economic players are ready to it and their economic interests are not in conflict.

In optimizing the organizational productive structure of enterprises one should take account of the availability of wood production both in the forest sector and in other sectors of economy including the private sector. Wood-processing sites may be included in State forestry enterprises, or be independent State enterprises and be a private enterprise. A criterion for deciding on certain organizational patterns of management has to lie in production efficiency of forestry operations and timber processing.

The "Concept of reform and development of Ukraine's forestry for the period of up to 2015" states that the financial economic mechanism of forestry development and tax policy are far from being perfect because of the disregard for a long-term character of forest-growing. The system of financing and fiscal policy in Ukraine's forestry must create incentives for economic activity of State enterprises. The basis of the financial system that ensures the reproduction of forest resources is made up of payments for forest resources that form the

forest income. The valid Forest Code of Ukraine provides for utilization of forest resources and blocks of the available forests on a paid basis.

Taking measures on State regulation and on implementation of market mechanisms will contribute to the accumulation of appropriate financial resources in forestry authorities and to the creation of conditions for making the Forest budget that will make it possible to effectively plan assets and liabilities of forestry and to determine subsidies granted to enterprises of certain regions. The making of a special Forest fund in Ukraine will allow for introducing self-financing principles in executing forestry operations, reserving for the State budget the right to finance only socially important projects in forestry (the production of common social benefits, like the protection of forests against fire, insects and diseases, soil erosion control, management over the available natural areas, forest inventory, education and science).

Regional and local programmes have to be financed mainly at the expense of special charges, tax funds and other revenues from forest management in respective territories as well as funds of enterprises obtained from their economic activity. It is necessary to effectively use the possibilities of local budgets for financing measures on forest reproduction and environmental activity on principles of return of funds (in the form of taxes and charges) obtained from forest management in a 'proper' territory.

The above concept of reform and development of Ukraine's forestry treats also the problem of lack of an economic mechanism for giving incentives to introducing environmentally sound technologies in wood cutting. The very economic factors impede an increase in volumes of selective cuttings of major harvest in Ukraine, with these selective cuttings being friendlier to the environment than clear cuttings. Environmentally sound technologies of wood cutting (gradual, selective felling) are comparatively cost-based and less profitable than clear felling. Because if this, forestry enterprises have no direct economic incentives to move in the direction of extensive use of environmentally sound technologies for selective felling. In addition to his, the natural reproduction of forests and, respectively, the need for such technologies in silvicultural terms are not available for all natural zones and forest types; partial cuttings call mainly for special machinery that is not available for many forest enterprises.

Technologies for selective felling, especially in mountainous forests, call for the use of special nature-conservation machinery and mechanisms, and consequently considerable investments for the technical refitting of harvesting equipment. To speed up the process of technical re-equipment of forestry enterprises, it would be expedient to implement a leasing scheme. Paying for harvesting equipment by installments during 3 – 7 years would considerably lessen the burden of forestry enterprises in acquiring modern machinery from European countries. It is to the State to initiate this mechanism under its warranties, considering that the State ownership of forests is predominant in Ukraine.

Stimulating State forest enterprises and investing money into technical re-equipment are possible not only through leasing but also through tax benefits, for example through tax exemption on income of profits that are directed by enterprises to buy nature-conservation machinery and technologies for forestry-related and logging operations. Encouraging forestry enterprises to implement selective felling is also possible through decreased rates of price for wood which are granted to the enterprises during gradual and selective felling. Consequently, apart from legislatively binding commitments of forestry enterprises to implement environmentally sound technologies for felling in respective natural zones and under

appropriate silvicultural conditions, it is necessary to give them economic incentives for technical re-equipment and using nature-conservation harvesting machinery and facilities.

The effective forest management is impossible without a clear vision of prospects in the development of economy, nature management and environmental control at all hierarchic levels. Therefore, a principally new approach is needed today in developing strategic plans on forest management in Ukraine. To do this, it is necessary to draw up a special policy document of systematic character with which to identify principal areas of an integrated solution to problems of the forest sector, that is to say, problems of environmental control, of the development of forestry, wood industry, nature management, science, education, cultural and educational values, etc. In doing so, of fundamental importance will be intersectoral ties, their optimal parameters, a mechanism for implementing a strategy for the development of each sector and intersectoral relations. The National forest policy has to become such a generalizing, conceptual, legal, and economic document of national importance which would contain political, economic, social and environmental provisions of a strategy aimed at developing Ukraine's forestry for the forthcoming 15-20 years. It might be well to point out that similar National programs do practically exist in all European countries.

Ukraine's forest policy has to ensure an ecosystem-based approach to the management over forest resources and forest utilization as well as to guarantee a democratic character and transparency of managerial decisions. Obligatory for this job are public relations, an extensive use of communication technologies, and the adoption, after discussions, of a document that would clearly outline strategic areas of Ukraine's forest policy. A National forest policy has to take account of recommendations of recent international conventions, wherein Ukraine participated, on problems of environmental control and to be based upon accordingly revised legal regulatory acts of the State. At the same time, this policy has to recognize an exceptionally important role of Ukrainian forests not only for the national economy but also for stabilization of the environment.

In such manner it is essential that relevant bodies of Ukraine's public administration set up to work on developing "The National Forest Policy of Ukraine" with the involvement of scientists, leading foresters, specialists in adjacent areas (ecologists, agrarians, timbermen, etc.), the public, and all concerned parties. The approval of such a document will enable the forest sector to address legal, managerial, organizational, financial, economic and other issues in a transparent, systematic and planned manner on principles of environmentally oriented silviculture.

Conclusion

The problem of reforming Ukraine's forestry covers a wide range of legal, economic, organizational, financial, environmental problems and calls for its systematic solution. The following objectives may be considered the nearest objectives: the development and approval of "The National Forest Policy of Ukraine"; the extension of the legal regulatory framework for performance of forestry enterprises and for public administration over forestry; a clear differentiation in rights and responsibilities between forest owners, agents of management and economic players; the optimization of the organizational productive structure of forestry; the use of market mechanisms of management; the improvement of the economic mechanism aimed at management over the State property and the financial and fiscal policy; the promotion to implementation of European experience into practice of Ukraine's forest management by way of introducing principles of the closest-to-the-nature silviculture into forestry practice.

A strategy for the development of the forest sector must be flexible and revised at times to be adapted to changes in legal, socio-economic and environmental conditions both at the level of the State and on the basis of advanced world trends.

Some views on status of national parks – are they a tool for sustainable forest management in the Czech Republic?

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Abstract

This paper refers an item related to forestry and nature protection legislation mentioned as one of the four topics for this international symposium. Long-term problem of the National Park Sumava (Bohemian Forest) represents an example, which documents the collision between regulations in forest laws and environment related legislation.

Problems related to this issue are shown on concrete case of bark beetle outbreak and ideas of creation of "virgin forest" in densely populated region, forests of which is several hundred years intensively managed.

Information on current initiative related to the preparation of Forest Parks Network is enclosed.

Key points:

- Collision between regulations in forest laws and environment related legislation.
- Legal and Institutional status of national parks as tool for sustainable forest management.

1. Introduction

Sumava National Park belongs to mountain range at borders with Austria and Bavaria. Majority of the park on Czech side is covered by spruce monocultures that are mostly even-aged, planted frequently by unoriginal seed after windy calamities of the 19th century. Nevertheless Bohemian Forest had, comparing to other forest regions, big share of appropriate spruce populations fit from the ecotype point of view. They were adapted to mountain conditions and Norway spruce certified seed stands were seek to transfer to the analogous climatic mountain regions in the country. Forest is exposed to extreme conditions in high altitude, long distance transfer of pollutants in the last decades and excesses of weather, but many commercial mixed stands, largely in spruce-beech forest vegetation zone, survived. High deer makes harsh damages by browsing and barking of middle-aged stands. These stands are attacked by rots soon and untimely are liable to windy and snow calamities.

Nature protection was oriented above all on conserving of near nature stands in the past. It was largely enlightenment foresters, who either directly, or indirectly influenced feudal owners to save many virgin forests so that the future generations had opportunity to admire them. These stands were mostly conserved on extreme sites (rubble, rockies, high peat-bogs and stony and inaccessible localities).

Whole territory was declared as the biggest Protected Landscape Area in the country (1,682 km^2, 65 % forests of it) in 1963. Well known are some of reservations with protective zone, as

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Boubin Virgin Forest and Modrava Low Moor. It surrounds the National Park from the north west, north, and south, and therefore has the function of forming its protective zone.

The National Park Sumava (Bohemian Forest) was proclaimed in this cultural landscape, which Bohemian Forest represents without question after several centuries of high-powered exploitation, in 1991 on the area almost 70,000 ha (forest covered 59,000 ha). National park was declared with the vision of "Green Roof of Europe" and for protection of well-kept ecosystems, above all forests in elevation between 600 and 1378 m above sea level.

The National Park is divided into three basic zones, which are supposed to be important to re-establish the ecological stability of the landscape:

1st zone has an area of 9004 ha, and represents 13 % of the park area. This strict natural zone contains the most precious, important and stable areas of the Park with natural ecosystems - remains of primeval forests, wet grounds, and peat bog sources. Man leaves the areas of the 1st zone to their natural development without any interference.

2nd zone has an area of 56 856 ha, and represents 82 % of the park area**.** This directed natural zone contains the majority of the remaining forest and other ecosystems with different levels of condition and structure of the vegetation, from the original or changed, to the badly damaged and unsuitable. The target of all activities is to restore and maintain the natural balance, and to gradually change the present ecosystems to their original form.

3rd zone has an area of 3 200 ha, and takes 5 % of the Park area. This edge zone contains areas, which have been highly affected by human activities, and the residential centres. The target is to support and keep this zone as a residential one, with services, agriculture, tourism, and recreation, if this does not go against the main target of the National Park.

The area contains most of the precious natural phenomena of the Sumava Mts. with the need for strict protection, like the glacial lakes, peat bog sources, or the remains of primeval mountain forests. At the same time its basic characteristic is the constant mixing of this untouched nature reserve with the traces of the many years presence of man who worked here and lived peacefully with the beautiful environment – many years before the nature protection creation.

2. Description of situation

Unfortunately National Park Sumava was found at the time of bark-beetle gradation after windy calamity in mid of 80ties. Leadership of the park of that time regardless of mostly unnaturally ecosystem started promote a theory, that there is no need to fight against bark beetles, because it is a part of the nature. Advocates of active protection according to statutory legal instruments were denoted as timber special interest group, timber-eaters and "fachidiots". Politicians and decision makers displayed indecision in the time of growing beetles outbreak – mostly under the pressing of "green groups" activities whose members mostly do not know anything about problem or were only superficially informed and/or misinformed, but sometimes eager to perform themselves in media.

Taiga Rescue Network in that time called for ecological recovery program that includes „conserving remaining natural vegetation and helping it recover and expand through a rigorous forest restoration ecology program". And Friends of the Earth Czech Republic and other "greens" supported these last fragments of wild Europe e.g. by non- violent blockade during which they guarded the most valuable complex of mountain spruce climax virgin forest in the Czech Republic (so-called Trojmezn virgin forest) against loggers in summer 1999. The blockade was successful in the sense that it saved Trojmezn from logging – and

European spruce bark beetle (*Ips typographus*) destroyed everything there up to this time (2010).

NGOs informed media that forests of the second zone of the Park, which are forestry managed (according the forest plan) "*have been heavily logged and that the consequences of the large-scale clear cut logging (clearings of areas of many hectares, erosion rills, etc.) are much worse than the consequences of the bark beetle calamity (decaying spruce trees). The beetle does not damage timber, so the administration of the Park removes this timber and sells it. Moreover, the population of the bark beetle has not fallen despite the drastic logging; it has even increased between 1996 and 1999. As the logging continues, the forests on the national park are disappearing...*"

There should be mentioned that by this way foresters who sacrificed two thirds of newly created preserve saved the famous "virgin forest" Boubin (one of the oldest in the Czech Republic, with some trees as old as 300 or 400 years old) in the time of beetle calamity more than 150 years ago.

The area of clear cuts in the second half of 90ties had risen to more than 2000 ha, and logging started in so-called core zones in 1999 because of terrible situation. The "greens" saw the core of the problem that the administration of the park was under the control of technocratic-minded forest professionals, who believe that they are able to rule the development of ecosystems better than nature would do. *"Even if the foresters were not removing timber out of the core zones, the continuous development of the habitats was broken and the whole purpose of existence of the National Park was cast into doubt"* - what is the current situation because of this ideology.

People representing this ideology, saying that nature can stand without men just by itself, should include also human beings and have a kind of the landscape view on protection of environment, particularly in cultural areas.

Foresters called for the risk of the „no-intervention" approach but when the Act 114/1992 Coll. ceded a right to manage local forests on NP Administration since that time already nothing opposed to that manner of management there.

It is necessary to mention, that behind state boundary in Bavarian Forests NP, where non-interference approach was used in the past, they have other climatic conditions and generic species composition with majority of broad-leaved trees. Currently they control bark beetle intensively there.

Felling on the Czech side is currently much higher than 10 to 15 years ago (in that time foresters headed NP was called "timber-eaters" who only make money… Official estimation of NP Administration is that felling will be 700,000 m^3 in 2010 (it means that it will be higher).

3. Problems

Bark beetle was allowed to reproduce spontaneously, without any intervention of man. Ecological problems was rational solved in 1998 -2002, when previous bark beetle calamity of the half of 90ties was quite bridled. Bark beetle was modulated to the ground state and no further calamity did not menace. Reached stabilized status of forest ecosystems, which could become a basis of gradual conversion and restoration of commercial forest stands in mature age on ecosystems of near-nature character. An active care and protection were practised with the aim of slow, step-by-step conversion of cultural stands on nature near stands in spirit of scientific counsel recommendation.

Hypothesis “non-intervention” and “protection and investigation of natural processes” came later as an artificial surgical implant, which evoke rise of the first massive wave of bark beetles calamity. This “green approach” changed everything. There is known a famous statement*,*„Left there everything after windbreaks, the beetle sadly multiply there and eat everything and then we will not have to bargain with no one about the intervention”.* Minister of environment* decided to left 140,000 m^3 (in reality ca. 200 000 m^3) of wood without any treatment in NP after Kyrill. Thereby in cool blood and on purpose implemented large-scale-hatch bark beetles, his gradation and following sudden large-scale destruction of spruce high forest inclusive fragments of virgin forest character. It was line of sight liquidation "green roof of Europe", for whose protection and forest ecosystem preservation the NP was declared.

This minister of environment also declared, that he takes-over all political liability for status of National Park. During one year after that he left a position of minister…. He successfully not only restarted mass destruction of originally well-conducted hundreds of years old cultural forests in the NP, but it had been expressively gradate. Destruction already affected area roughly 6 000 ha, but contemporary pandemic status is threatening more than 20,000 ha of forest stands.

Forestry experts accurately foreseen the destruction course, as far as forest tending and protection of forestry practices will not be realized. A lot of expert reviews perfectly describing situation were prepared: "Trees assaulted by bark were founded on the whole territory of zone No. 58 and they are potent ional sources of next diffusion and destruction of adult forest on whole territory of this zone within the next 8 - 10 years. Four times multiplication of bark beetle within a year can be expected without control in this zone. The same rate of bark beetle multiplication was checked in similar elevation above sea level in the I. zone No. 124 (Trojmezna Mt. - Dreisesselberg) in r. 1999." This prediction was unfortunately filled at the time even shorter.

Through aimed silvicultural care, even under considerably amended natural conditions, and by systematic, locally fit forestry stands conversions it is possible to start the development of near nature forest ecosystems. In spite of the fact that it takes hundreds of years (foresters are working with trees, which in average reaches 115 years of age in our country), these practically well-tried silvicultural methods make for fast and much certain results, particularly without losses of continuous tree cover, thereby also without limits or losses of environmental functions inclusive function of animal species sites.

In this situation NP Administration argued against restoration of tourist footpath over concrete area because the capercaillie (wood grouse) lives there and it is necessary to protect his niche. Currently it is quite sure, that biotope of this bird, in the beginning of stands disintegration still acceptable, was destroyed over the past 6 years. Now it is possible to see total forest destruction on northeast till north-facing slope and on top parts (March 2010).

The first zone of Smrcina Mt. locality was proceeding actively in between 1998 – 2003, and it set an example of near nature forest stands protection. Good forest condition in the 1st zone here could be acknowledged even after the August 2006. After 2007 reached the progressive destruction nature near spruce stands in the 7th and 8th forest altitudinal zone on Smrcina Mt. near nature stands were restrained against of developers’ hits project of building-up funiculars on top in 1998 – 2004. Under today's state of forests break up it will hard to bear up against pressure of special interest groups in face of build-up funiculars and ski slopes. Mandatory “non-intervention” on Smrcina Mt., as far as it already wasn't hidden intention (!), accurately record on the profit of arguments winter sports premises designers on Smrcina Mt. against politics of nature protection.

The national park conception was always read as maximal possible protection of natural wealth. Particularly in situation that the generation hereof wealth, with share generation industrious and well-educated men, improves natural sources by culturally historical funds. These funds are really national, as it is shown in the title "national" park. So that is why is absolutely inadmissible, that the group of self-centred "desirable" adventurism backers did from nation-wide wealth an object for cater of their own unwarranted hypotheses and large area unverified experiments with an aim of destruction of extant cultural and near nature forests of virgin forest character. The enforcement of "non-intervention" in cultural stands (and in maturity age) presents the most brutal interference into forest ecosystem, which you can imagine at all.

Crazy ideas that bark beetle destroy only unoriginal, non-autochthonous stands had gone very soon and the beetle continues everywhere destroying all those valuable old-growth including gene-preserves of mountain Norway spruce.

4. Collision between existing legislation

Crucial issue from the legislative point of view is, that on the one hand identical changes of natural processes, forest environment, forest functions, stability of forest ecosystems and forest landscape controlled by Ministry of Agriculture are pronounced and reassured as against-natural and harmful to nature as such.

On the other hand the same changes in the forests managed by organizations of Ministry of Environment are asserted and protected like nature corresponding, harmless and worthy of admiration.

Basic environmental law No. 17/1991 Coll. on Nature and Landscape Protection, in relation to forest treatment classification of influence on the environment, introduced a situation that would have concern on "*interventions to the landscape that can cause substantial changes in biodiversity and in structure and function of ecosystem*". It is not possible assert, that in the NP Sumava did not happen substantial changes in structure and function forest ecosystem! In addition it happened owing to a decision of legislative qualified body – and not in natural forest stands and not in natural but cultural landscape.

The same situation in commercial forests (possibly 50 m behind national park borders) would be qualified as turning point and appraisal of damage rising from it for nature as such according the law. Using scientific method agreed by Ministry of Environment to valuation of nature environment should amount to billions of CZK per year! Interpretation of law matter is in contradiction with natural reality. The ideology of environmentalism is identifying nature protection with protection of environment.

What environmental law strictly saves for the sake of environment in forests outside responsibility of the Ministry of Environment, on the other hand neglecting at all and leaving it out of account on territories, which are under its own administration. And Czech Inspection of Environment is not allowed to execute there.

5. Situation after 20 years of National Park existence: Problems exceeded

Inhabitants are convicted about the need to perceive "new aesthetics" of landscape with vast areas of dying and dead trees (with a statement, that accurately by this way it would be arranged by nature – but nearly everything what (still) grows on Bohemian Forest has antropogenous origin, similarly as clear-cuts in Ore Mts. /Erzgebirge/. NP Administration builds so called „Traces of Experience" (showing there new generation of young trees – i.a. in

localities where recently under- plantings were done intensively!). It would not be necessary, if done results of forest management correspond to some well-considered conception, which unfortunately does not exist (e.g. 1st zones of the NP are probably created one step behind the bark beetle – everything eaten is proclaimed as the zone without intervention… and the beetle growing strong).

6. Idea of Forestry Parks

Ministry of Environment proclaimed in terms of updating of the State Environment Policy also programme of other national parks creation. It is impossible to be surprised that from this idea have apprehensions and uneasiness not only foresters but also respective surrounding communities inhabitants if new parks would be managed in such a way like NP Bohemian Forest.

Having intention to show that foresters are able protect and manage forested landscape and nature equally well the idea of Forestry Parks was born in the Landscape Protected Area Krivoklat. Forestry not Forest Parks, to show that forestry is not four-letter word.

Currently the Krivoklat territory is, in the light of conservation, protected quite conveniently as a part of Biosphere Reserve (M&B), the most valuable locations and natural rarities are covered by Nature and National Nature Preserves, which from this standpoint represent the same degree of protection like large-scale units (e.g. National Park).

Representatives of more organizations expressed their opinion re. Forestry Parks idea. Generally they see this initiative, supported by Ministry of Agriculture and state forests, like voluntary posture of forests and other grounds proprietors who show their attitude towards preservation natural, productive and social values of the landscape, which they manage without any pressure from the side of the state bodies. This engagement society should have welcome, because no titles for state budget arise from it from it.

The endeavour to create Forestry Parks is possible comprehend like endeavour about improvement of conservation in cultural landscape. Forestry Parks might be tools, which show the multifunctional sector of forestry, like an element of balanced development without contemporary restriction of activities of men who belong to the landscape in that they are living. On the contrary it would be useful to utilize their willingness to cooperate and with the improvement of awareness on forests and forestry could be improved their liability for state of local nature. Meaningful is also educational element oriented on public and partnership of all subjects on management and administration of given territory in support of interests of forests owners.

Important aspect of Forestry Parks existence will be to offer responsible information to public particularly on the way of forest management, the importance of wood and forestry for public and on contribution of timber exploitation like renewable raw material.

Forestry Parks have an ambition to be a demonstration object for other forested regions and would like to join, even they are will not be so large in size, to the International Model Forest Network in the future.

The 1st Forestry Park in the Czech Republic was symbolically founded on Thursday, May 13, 2010 during the conference "Krivoklat Forestry in the 3rd Millennium" (two other regions informed on intention to create such a park as well as to join Model Forests). This date is quite an interesting; it has something to do with forestry. On May 13, 1717 was born an empress Maria Theresa under hers rule were prepared progressive forestry laws also for the territory of Bohemia and Moravia (current Czech Republic).

There must be add here that Ministry of Environment started the process of new national park creation in the same area – in fact against the decision of the government (new elections will be on May 28 to 29, 2010…), which decided that Ministry of Environment will evaluate contemporary status of nature protection in the LPA Krivoklat territory and check up possibility of national park promulgation (with the term 2014).

7. Collision between existing legislation

Imperfections of some laws that were prepared in a hurry at the beginning of transformation displays all the time. The revision of laws is necessary – legislation and letter of law would be based on fictions, unsubstantiated hypotheses, but on exact scientific piece of knowledge. However, matter-of-fact discussions upon this subject were rejected by Ministry of Environment in past 15 years. There is a need to define term "*role of the forest like components of the environment*", which in fact lacks the content till this time.

Also the term "*environment*" must be comprehended like complex conception containing i.a. also standpoints of human beings and society life by course of the Act on Environment No. 17/1991 Coll. Then the Czech Inspection of Environment (body of Ministry of Environment) could fulfil its function given by Act No. 282/1991 Coll. and examine inadequacies and damages on functions of the forest like component of the environment. And consequently of possible risks e.g. in consequence of large-scale destruction of montane forest in particular of protected territories (see NP Sumava).

Damages on the park territory would arose to billions of EURO according to the scientific work ordered by Ministry of Environment: "Quantification and quantitative classification of social functions of forests of the Czech Republic like basis of their valuation", respectively "Real effects of forests functions of the Czech Republic". However these calculations are enforced only on forest stands of others proprietors, they are not applied to forests under the administration of nature protection body (!).

At the same time the use of this method in the national park does not obstruct any matter-of-fact nor legal reasons. Perhaps the changes evaluation only could harm purpose-made policy and its intention. And similarly at the same time there is missing responsibility for aftermath decisions according to ideas and nature protection legislation, if they contradicts not only forest and water legislation, but also to environmental one – to the sense of environment protection in cultural landscape at all. Collision between regulations in forest laws and environment related legislation is easily documented here.

- Jeopardy to neighbouring forests and environment by financially well supported organization from state budget ("*you can appraise the cost we will pay it*". "We" – it means that Sumava experiments are paid by every inhabitant through her/his taxes. Six projects of NP and PLA Sumava were approved from European Fund oriented on "*improvement of nature and landscape status*" in cost of 354 mill. CZK. Grants were given also to project of "Forests stabilisation" and "Care of non-stocked forestland" in the park.
- Damage of environment (lowering of biodiversity, influence on water regimen, danger of erosion, etc.).

The need of communication improvement is persisting. International institution and activities invocate to this matter but real and realistic communication is still far away probably mainly under the pressure of various green movements.

Politicians they are apathetic (only before just coming elections the problem of NP Sumava is used by some of them…) and law standards are often non-performed under reticent agreement of those, who would have watched it. Generally it undermines the respect to law and also officials who thoroughly, either on account of felling of personal power or because of other reasons is detrimental to legal conscience in the same way. Why? Because they cling also on stupidly formalized letter of law, neither they would understand their spirit. This type man represents disaster in the sphere of nature protection.

Responding one of the key points, which were mentioned as a theme of this year symposium I have to state that National park of the Sumava type and respective legislation is not a tool for sustainable forest management (SFM) in spite of the fact that it has legal status - (this park was originally created only by decision of ministry and governmental decree – other three Czech national parks by special laws!) - if SFM is (abbreviation from resolution H2 of the MCPFE 1993) "*the stewardship and use of forests and forest lands in a way that maintains their biodiversity, productivity, regeneration capacity, vitality and their potential to fulfil, now and in the future, relevant functions and that does not cause damage to other ecosystems*".

Project Wild Heart of Europe, newly rising wilderness on borderland of NP Sumava and Bavarian Forest, was presented in the frame of Congress in Mexico as a natural island in the middle of cultural landscape: "*It is unquestioned, that wild nature has not only big meaning for biodiversity protection as well as it ensures the whole set of ecosystem services, as is the first quality soil, sufficient amount of fresh water or flood control."*

Visiting the Sumava Mts. I cannot agree that current status of disintegrated stands (as in fact via bark beetle man made ones) represents higher degree of biodiversity, sufficient soil and water protection, not speaking about flood control (see above). My apprehensions are supported by some research results, of course, I have in mind that there are also other ordered results, which serving for confirmation of terrible experiments fairness and/or for visibility of some people, e.g. politicians, scientists with narrow specialisation or militant environmentalists.

As well as there are still ongoing general problems from the past:

- Overlapping responsibility for forestry (Ministry of Agriculture and Ministry of Environment), so called "double-lined" responsibility for forestry;
- Treatment of state forests lacking the conception (similarly like NP Sumava) and chaos in the whole wood working complex, maybe because forestry policy is currently missing as well – National Forest Programme II just prepared it cannot substitute;
- Systematic limitation of forest management;
- Bad image of forestry and lack of forestry propagation and P.R. and consequently the weakening of forestry sector position.

8. In closing

On the end I would like to offer a quotation of one external expert of the Ministry of Environment from abroad, whose conclusion is suitable for usage not only in our country.

"Why foresters and environmentalist in Sumava behave so differently in comparison with those in Krkonose (Giant Mts.)? We succeeded to build a bridge among forestry and nature protection in Krkonose National Park in terms of project FACE in considerably short time period in forestry sense. Reconstruction of forest management by Forests of the Czech Republic, State Enterprise and by Sumava NP on close-to-nature silviculture takes place

rather in personal abatement - foresters against conservationist - than in skilled, expert discussions done with mutual respect. Czech foresters and Czech environmentalist are trying to enforce their position, often in not too honourable way, and they do not discuses business itself. Discussion on versatility of possible variants is a matter that would be desirable to strive for!"

As many of professional matters are solved in quite an opposite way as political ones desirable solutions as mentioned above represent very probably the run for a long distance.

Results of Czech Forest Policy after Political Changes

Jaromir Vasicek

Abstract

Following the political changes of 1989, a discussion was initiated about a further orientation of the state forest policy. One of issues, which the forest policy proposed to resolve, was to increase the proportion of broadleaved species and fir in forests occurring in the territory of the Czech Republic. In this connexion, an obligation for forest owners was anchored in the Forest Act effective from January 1, 1996 to plant a corresponding share of so-called soil-improving and reinforcing tree species at forest regeneration in dependence on natural conditions, which are largely broadleaved tree species and fir. In addition to the legal duty, incentives started to be applied from the same year in the form of mandatory compensations and subvention programmes. A period of 14 years lapsed since 1996 and it is logical to ask about the efficiency of the legislative and motivation tools of the state forest policy, in other words whether the amount of finance incurred has actually achieved the set-up target.

Material and Method

In order to answer the question, data were used from the data store of the Forest Management Institute (hereinafter FMI). Forests are classified into the permanent units of spatial division (sub-compartments and compartments) and non-permanent units, which are forest stands further divided to stand parts. The FMI data store includes the specification of tree species composition for 2.317 million of stand parts. These specifications are made in compliance with the uniform methodology publicized in the Regulation No. 84/1996 Coll. on Forest Management Planning. It is a singular set of data, which is further complemented with a database of parameters on the natural conditions of forest environment (forest habitats) contained in a detailed database of forest typology. Historical data on the development of tree species composition in forest stands since 1950 represent an important part of information files kept in the data store. The databases were inspected by means of adjusted filters.

Results

The survey executed in the FMI database was broken down into following partial results:

1. The share of broadleaved species in the artificial regeneration of forest stands.
2. Development in the share of broadleaved species in forest stands in Forest Management Plans and Forest Management Guidelines in 1997-2009.
3. The share of broadleaved species in forest stands of the Czech Republic according to results of National Forest Inventories in 2001-2004.
4. The degree of species mixture exists in the individual units of the spatial division of forest.
5. Mean acreages of forest types or groups of forest types.
6. Long-term development in the change of species composition in forests is occurring in the Czech territory.

Conclusions

The paper deals with the results of state forest policy of the Czech Republic in relation to the change of tree species composition. It works with the information kept in the data store of

FMI and comments upon the results of state forest policy in the Czech Republic concerning the species composition and its development.

1. Introduction

After political changes in 1989, a discussion was opened about a further direction of the Czech national forest policy. One of persisting problems that the national forest policy was prepared to resolve concerned the increased proportion of broadleaves and fir in forest stands. Therefore an obligation was enacted in the Forest Law that regenerating their forests the forest owners have to plant a certain share of the so-called soil-improving and reinforcing tree species, these being predominantly broadleaves and fir. In addition to this duty, a positive motivation was applied from the same year in the form of mandatory compensations and subvention programmes. Fourteen years have elapsed since 1996 and it is logical to ask about the efficiency of these legislative instruments and incentives of the state forest policy.

2. Material and method

The question was answered with the use of information from the Data Warehouse of the Forest Management Institute Brandýs nad Labem (hereinafter ÚHÚL). The presented data are at all times a sum of the detailed information from effective forest management plans and guidelines contained in the database of the Data Warehouse administered by ÚHÚL.

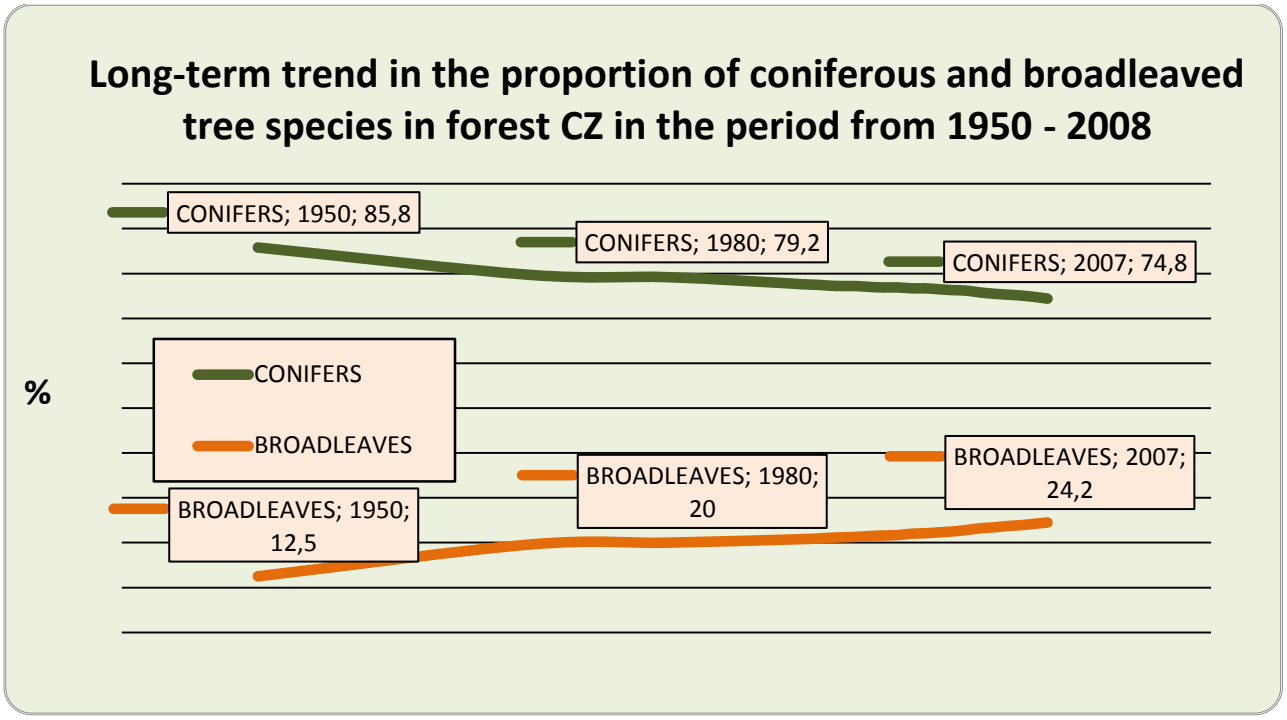
The ÚHÚL Data Warehouse contains descriptions of units of the spatial forest pattern and forest tree species composition of **2 351 100** stand parts which are associated in **816 180** forest stands and **347 251** sub-compartments. Total area of wooded land is **2 597 702 ha**. Since 1996, these descriptions are made out according to a uniform methodology presented in the Regulation no. 84/1996 on forest management planning. Each year, the calculations include plans and guidelines valid for a decennium. However, since the database contains plans and hence information about the state of the forest at an average age of 4.5 years, the today's actual area of individual tree species and standing volumes may insignificantly differ from the sums mentioned in the individual effective plans and guidelines. Figures presented in this document represent a calculation for the decennium from 1 January 1999 – 1 January 2008. The survey includes also information from the database of forest typology and NIL.

Partial methodological steps in working with databases are as follows:

a) to establish the long-term trend in the proportion of coniferous and broadleaved species in forests in 1950-2008,
b) to establish the proportion of coniferous and broadleaved species at artificial forest regeneration,
c) to establish natural, recommended and actual species composition of broadleaves in forest stands,
d) to establish natural, recommended and actual species composition of conifers in forest stands,
e) to establish the proportion of coniferous and broadleaved species in forests of the Czech Republic according to results of NIL in 2001-2004 and to compare them with similar data following out from the database of Forest Management Plans (FMP) and Forest Management Guidelines (FMG), SIL,
f) to compare the degree of forest species mixture in units of spatial pattern of the forest (sub-compartment, stand, stand part),
g) to establish total and to calculate average areas of forest types as units of the area diversity of forest sites.

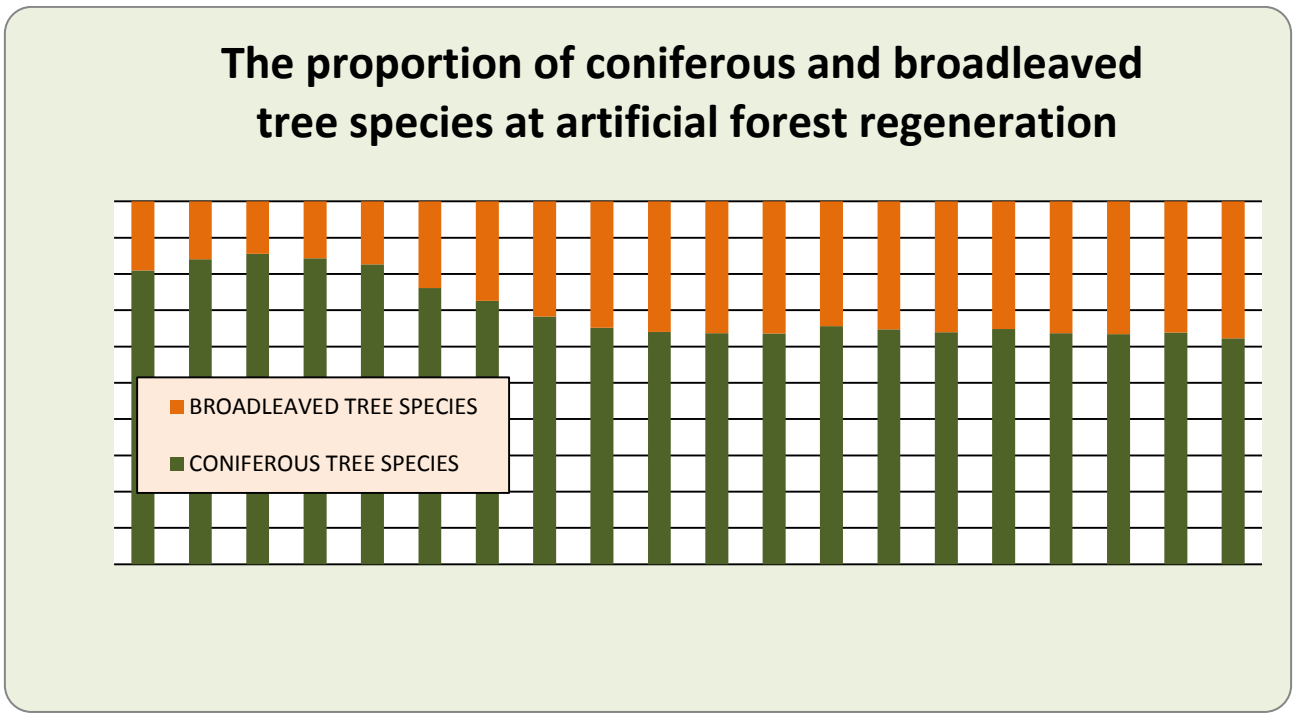
3. Results

Graph 1



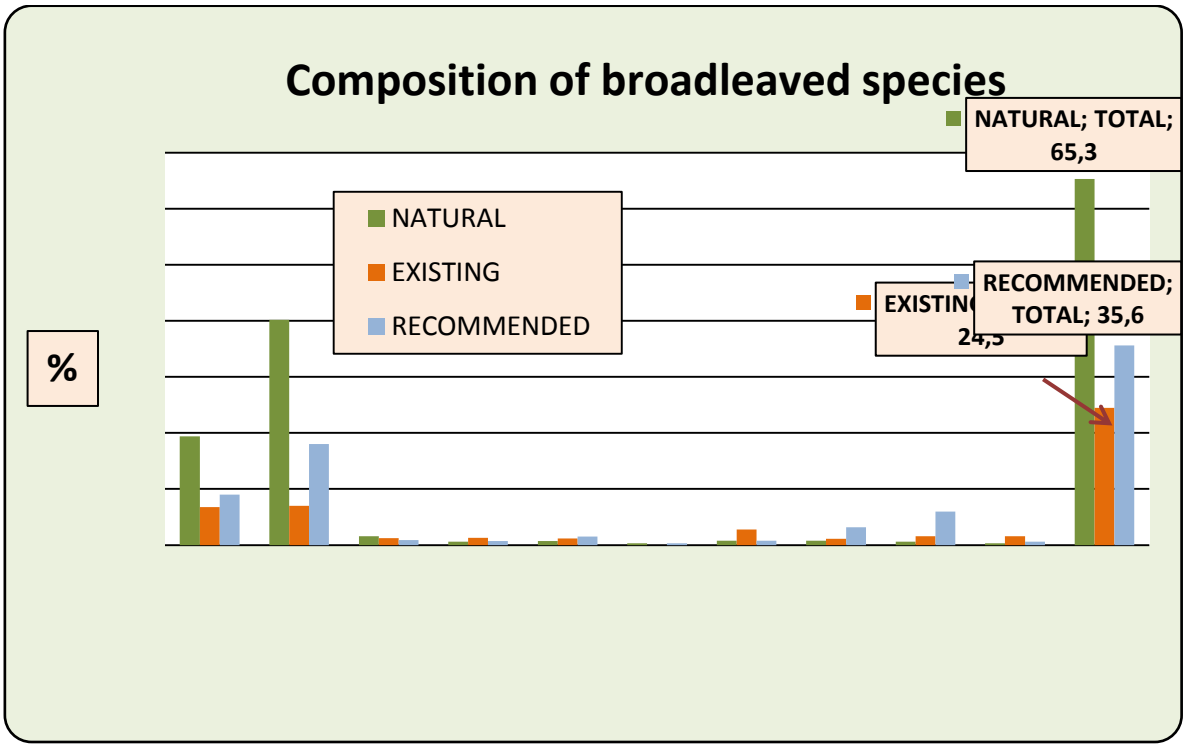
Source: FMI SIL, Czech Statistical Office

Graph 2



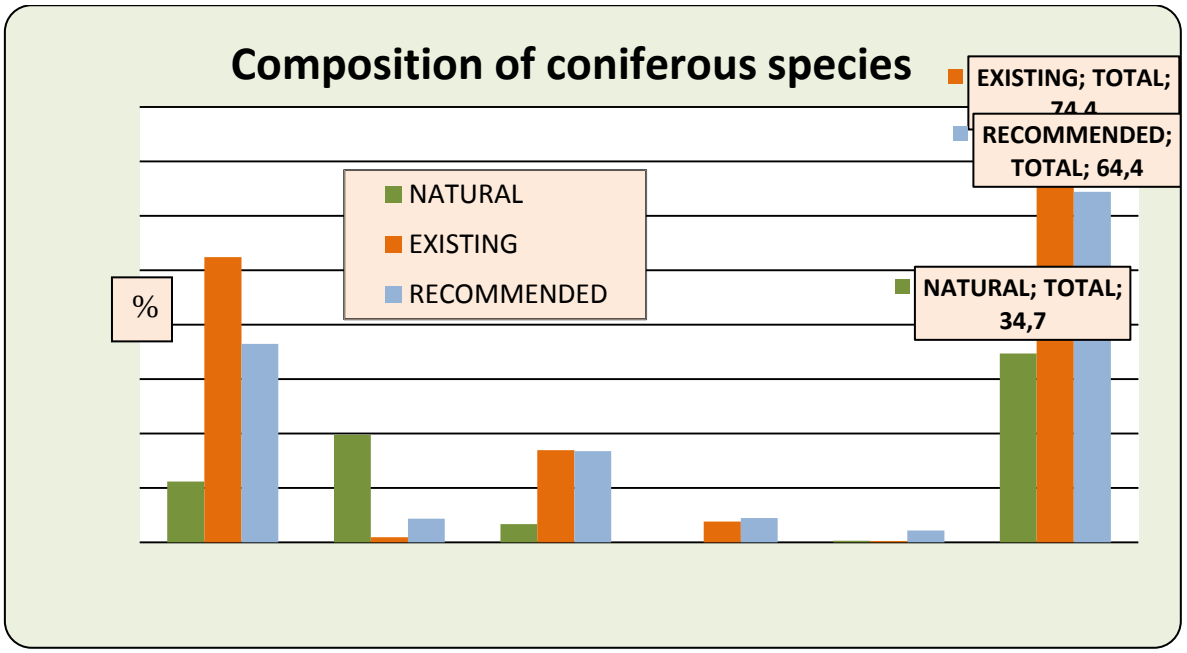
Source: Czech Statistical Office

Graph 3



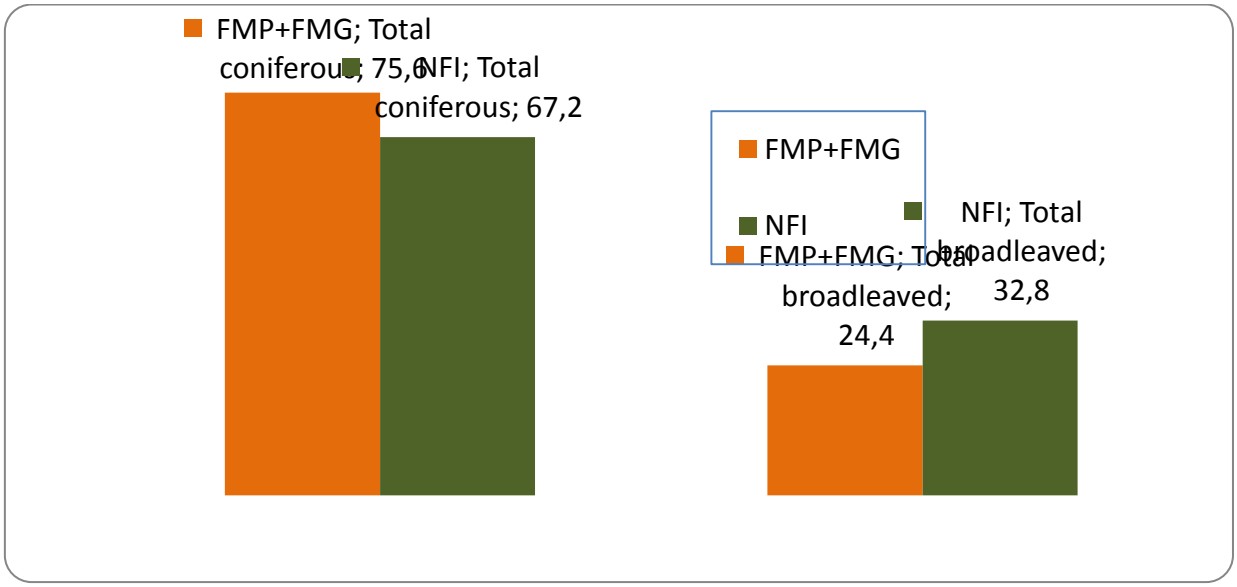
Source: FMI-SIL, Czech Statistical Office

Graph 4



Source: FMI-SIL, Czech Statistical Office

Graph 5 Comparison of the proportion of coniferous and broadleavedspecies established by different methods



Source: FMI-NFI 2007 (data as of 2004)

Table 1 Criteria of the species mixture

Species classification criteria		Stand/subcompartment/stand part classification criteria (degree of mixture)		
species	area share	stand/subcomp./part	symbol	primary species' share
primary	over 30%	pure	Č	over 90%
admixed	10-30%	with admixture	P	70-90%
interspersed	do 10%	mixed	S	up to 70%

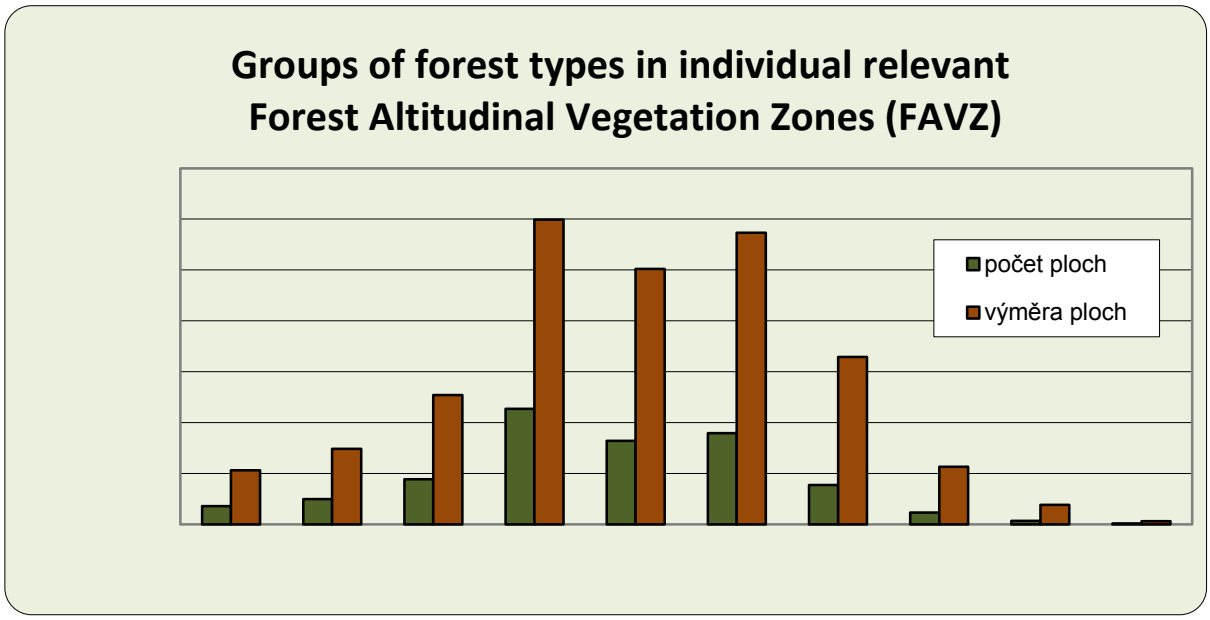
Source: ÚHÚL (Lesnický slovník naučný /Forest encyclopaedic dictionary/, MZe 1995, in Kraus, Zeman 2008)

Table 2 Type of mixture (according to the representation of individual species – total for CR)

Species	Representation of individual species	Admixture	Symbol	Share (%)			Average area (ha)		
				subcomp.	stand	stand part	subcomp.	stand	part of stand
TOTAL CONIFERS AND BROADLEAVES	90+	pure	Č	18.36	20.18	38.49	6.06	2.48	0.99
	70-90	With admixture	P	31.52	31.25	29.81	7.89	4.42	1.44
	up to 70	mixed	S	50.11	48.58	31.71	7.48	4.96	1.61
	up to 90	P+S		81.64	79.82	61.51	7.63	4.11	1.51
	total			100.00	100.00	100.00	7.28	3.38	1.17

Source: ÚHÚL (Kraus, Zeman 2008) – data FMP, FMG 1997 – 2006

Graph 5



(Green colour - number of plots /Brown colour- area of plots)
Source: FMI, Forest Typology

Table 3 Average area of forest types according to Forest Altitudinal Vegetation Zones

FAVZ	0	1	2	3	4	5	6	7	8	9
Average area (ha)	3.26	3.05	3.05	2.86	2.79	2.77	2.88	3.33	3.5	3.53

Source: ÚHÚL, LT

4. Discussion

Graph 1 was constructed on the basis of information originating from the forest management plans (FMP) and forest management guidelines (FMG). In the period from 1950-2008, the share of broadleaved tree species increased from 12.5% to 24.2%. Following from the graph which represents the development in the proportion of broadleaved and coniferous species in forest stands in the entire territory of the Czech Republic from 1950-2008 are the below mentioned long-term trends:

- A significant increase in the share of broadleaved species in forest stands occurred in the period from 1950-1965
- From 1965 to 1995 the share of broadleaved species in forest stands stagnated
- Since 1995, the representation of broadleaved species in forest stands has been increasing again.

In the 1950s and 1960s, the trend followed the decision of the then centrally controlled state forest policy. In this period, clear-felled areas arisen during World War II and some abandoned farms in the borderland were reforested.

The period of stagnation in the growing proportion of broadleaves in the composition of forest stands was caused particularly by permanent and increasing demand for spruce round wood.

The approval of national forest policy and the subsequent new forest legislation instigated the increasing share of broadleaved species in the composition of forest stands.

The fulfilment of by law stipulated duty by forest owners from the mid-1990s is documented in Graph 2, which clearly shows the increasing proportion of broadleaved tree species in artificial forest regeneration in 1993-1997. Since 1997, the representation of broadleaved species in the artificial forest regeneration ranged above 30%.

Graphs 3 and 4 show a current and a so-called reconstructed recommended and natural tree species composition. The recommended species composition is a compromise between the economic view and the natural composition of forest stands. The natural species composition was constructed by ÚHÚL on the basis of a conducted national field typological survey and other findings originating from forest ecosystems undisturbed or very little disturbed by man.

Graphs 3 and 4 show the total share of individual forest tree species and a total proportion of conifers and broadleaves. These data however do not provide information about the type or a degree of mixture of the individual species in the forest stands.

Compared with data established in the description of stands during the preparation of FMP and FMG, the results of NIL I in Graph 5 indicate a somewhat higher share of broadleaved species. This is mainly due to the fact that NIL provides a very precise and detailed description of the complete inventory of trees on sample plots in contrast to the characterization of stands within the preparation of FMP and FMG, which are not made out in such a detail.

Analyzing data in the Data Warehouse (FMP, FMG 1997-2006), Kraus and Zeman (2008) arrived at interesting results when using units of the spatial forest pattern in which the FMP and FMG database includes the species composition, which they divided according to the representation of individual species into three groups – see Table 1. Based on the numerical data presented in Table 2 it is possible to state that:

- The "**SUBCOMPARTMENT**" unit of spatial forest pattern has an average area of **7.28** ha in which
- the proportion of pure subcompartments (with up to 10% of interspersed species) amounts to 18.36%
- the proportion of mixed subcompartments and subcompartments with admixtures amounts to 81.64%
- The "**STAND**" unit of spatial forest pattern has an average area of **3.38 ha** in which
- the proportion of pure stands (with up to 10% of interspersed species) amounts to 20.18%
- the proportion of mixed stands and stands with admixtures amounts to 79.82%
- The "**PART OF A STAND**" unit of spatial forest pattern has an average area of **1.17 ha** in which
- the proportion of pure stand parts (with up to 10% of interspersed species) amounts to 38.49%
- the proportion of mixed stand parts and stand parts with admixtures amounts to 61.51%

Based on the above results we can conclude that in terms of the composition of forest tree species, a greater part of subcompartments, stands and stand parts in the forests of the Czech Republic are of heterogeneous character because of the dominant share of the units of spatial forest pattern classified in categories "mixed" or "with admixture".

Should we consider the area of all forests in the territory of the Czech Republic to be one unit, the whole "stand" would be classified in the second category (see Table 1) as "with admixture". It is logical that proceeding towards a smaller area, the stand species composition would be more homogenous. The units of spatial forest pattern are made artificially by man with the average area of subcompartment stand and stand part being 7.28 ha, 3.38 ha and 1.17 ha, respectively.

A question is what is the average size of forest types, i.e. units that are established through the field survey on the basis of the dissimilarity of forest sites and plotted in the typological map. The analysis of typological database revealed that the total area of typified plots is 2 671 thousand hectares (including the share of typified agricultural plots intended for afforestation) and on this total area there are 855 347 forest types according to the ÚHÚL typological system. The average area of the forest type in the Czech Republic is 3.12 ha (as of 2008).

The distribution of the total area of typified plots and their average sizes according to Forest Altitudinal Vegetation Zones (FAVZ) is shown in Graph 5 and Table 3. It follows from the documents that the greatest share of forest plots can be found in FAVZ 3 – 6. Moreover, the diversity of these forest sites is greater as compared with the other FAVZ.

As to size, the "**STAND**" unit of the spatial pattern of the forest with an average area of 3.38 ha is apparently the closest of the artificial units of spatial forest pattern to natural diversity of the forest site. The average area of forest types in the individual Forest Altitudinal Vegetation Zones ranges from 2.77 – 3.53 ha (see Table 3).

5. Conclusions

5.1 Based on the analysis of the database issuing from the description of stands within the preparation of Forest Management Plans and Forest Management Guidelines, we can state that the long-term intention consisting in the alteration of species composition in the forests of the Czech Republic towards a higher representation of broadleaves is being gradually materialized with success.

5.2 As it follows from the NIL I Database, the actual ratio of conifers and broadleaves is more favourable than indicated by FMP and FMG databases.

5.3 It is possible to state that the tools of forest policy, i.e. legislative instruments and incentives (financial), support the behaviour of forest owners in the sense of objectives set out by the state forest policy in 1994. It is necessary that the instruments are kept efficient in the future period too.

5.4 Forest stands of about 3.38 ha in average size draw near to the natural unit of the area diversity of forest sites and on average 79.82 % of the forest stands fall in the categories "with admixture" and "mixed". Only 20.18 % are homogenous stands (classified in the category "pure" with interspersed tree species of up to 10%).

5.5 It follows from the analysis of the average sizes of forest types and forest stands that the stands in the forests of the Czech Republic were classified with respect to differences of forest ecosystems.

6. Forest terminology used:

Subcompartment is a part of the forest characterized by natural and economic similarity, defined by distinctive natural and artificial lines. It is an optional element of the forest division.

Stand is a continuous stretch of the forest, differential in the species, age or spatial composition, forest category or requiring different management. The area size of stands does not fall below 0.20 ha provided the concerned forest is not in the ownership of different entities. The stand is an obligatory element of the forest division.

Stand part is a part of the stand whose boundaries change with the proceeding regeneration or a part of the stand insignificant in terms of area size. It is an optional element of the forest division. Stand part is defined by the enumeration of storeys growing therein.

Representation of tree species in the stand species composition is established as an area size occupied by individual tree species in the stand.

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