



## Albania Country Report 2004

### 1. Description of the fire environment, fire regimes, ecological role of fire

Albania, despite its very small territory (28,750 km<sup>2</sup>), is one of the European countries with rich vegetation, which originated during the Tertiary era. Today's vegetation of Albania is composed of endemic relic vegetation and of species that have invaded from neighbouring regions through migration, having phylogenetic similarities with floristic elements of neighbouring countries. Albania is a mountainous country with higher topographic and climatic variety than the other European countries: 52% of its surface is on elevation between 600 and 700 m above sea level with prevailing steep slopes (ca.30%). Thus, ca.90 % of its surface is subject to severe erosion. The northern, northeastern, southeastern and central areas are characterized by hilly-mountainous terrain; whereas the north-southern/coastal area along the Adriatic and Ionian coast is lowland.

Climate extremes range from extreme cold winters in the northern, northeastern and southeastern areas to very hot and dry summer along the coast. Rainfall regimes vary from north to south and from coast to inland. There are fewer rainy days in the south than in the north, but months without rainfall can occur at any time of the year, as it is typical for the Mediterranean climate. Local precipitation differences lead to diverse vegetation patterns. Forests occupy 1.025 million ha standing volume of about 82 million m<sup>3</sup> and an average annual growth of 1.4 m<sup>3</sup> per ha (this is very low compared with many countries of central Europe). The management regime of the forest areas is as follows:

- 460,950 ha are high forest (46% of the total forest area) consisting of 171,850 ha coniferous and 289,370 ha broadleaved species
- 332,250 ha coppice forests (29% - mainly oaks)
- 257,850 ha shrublands (25%)

Taking into account the functions of the forest areas, 193,000 ha perform a protective function while the rest (836,650 ha) are productive forests.

The forest species composition is as follows:

- 160,000 ha of beech (*Fagus silvatica*)
- 142,000 ha of pine (*Pinus* spp.)
- The rest is broadleaves 310,000 ha (34%)

### Fire Impacts

The negative fire impacts are very large in the conifer forests and less in coppice and shrubs. The main negative impacts are the erosion after the fire occurrence in the area burned, the destruction of the regeneration cover, the influence in land structure and water regime cycle. Farther more there are impacts on diminution of the forest productivity. With all the characteristics mentioned above the forest ecosystems in Albania are very sensitive from the fire. Only in the seaside forest protection belt, surface fires in pine have the role of maintenance and as a measure of controlling the fire propagation. In the sites affected by fire especially in the pine natural forests in the north of the country in the districts of Puke, Kukesi, Mirdita we can see that the vegetation cover after the fire is very different from the vegetation before it.

In the southern part of the country, traditionally for centuries, the fire is used as a tool of cleaning and regeneration of the pasture. In these sites the long use of fire has done big changes in the ecosystems. One of the main impacts is the installation of one year old grass plant and the disappearance of the many years vegetation plants.

We have noted that the regeneration of the shrubs is very fast after the fires and it depends from the severity and the intensity of the fire in these sites. The main problem that appears in these sites is the erosion and the water regime in the first years. We have observed considerable damages in the fauna, and change of behaviour of animals and birds. We want to underline the fire impacts in the Albanian forest are negative in every ecosystem and land-use system they affect.

### Summary Tables of natural and human influenced fire regimes

**Table 1a.** Summary table describing the natural and human-influenced fire regimes in different ecosystem types in Albania.

Ecosystem Type	Name / Designation <sup>1</sup>	Total Area of Ecosystem in the Country (x 1000ha)	Ecosystem Sensitivity <sup>2</sup>	Typical Fire Frequency (yrs) <sup>3</sup>	Typical Fire Size (ha) <sup>4</sup>	Fire Origin / Cause <sup>5</sup>
<b>Wildfires (including wildfires burning within prescription)</b>						
<b>Forest</b>						
<b>Forest 1:</b> Not intensively managed and protected.						
<b>Forest 2:</b> Intensively managed and / or protected (major ecological or economic assets at risk)	Conifers/ Broadleaves	460.950	FS/FM	2-3	2	Human causes
<b>Forest 2:</b> Intensively managed and / or protected (major ecological or economic assets at risk)	Coppice	332.250	FM	1-2	0.5	Human causes
<b>Other Wooded Land</b>						
<b>Wooded Lands / Shrubland / Savanna 1:</b> Not intensively managed and protected						
<b>Wooded Lands / Scrubland / Savanna 2:</b> Intensively managed and / or protected (major ecological or economic assets at risk)	Shrubs	257.850	FS	2-4	2-2.5	Human causes
<b>Other Land</b>						
<b>Open Steppe / Grassland / Pastures</b> (not included in Wooded Lands / Scrubland / Savanna) Both intensively and not intensively managed	Pastures	415.000	FS/FM	1	4-5	Human causes
<b>Peat / Swamp / Wetland</b>						
<b>Indicate biome type</b> (e.g. peat land, peat-swamp forest, marsh)						
<b>Prescribed Burning</b>						
<b>Forestry, Conservation</b>						
<b>Indicate Ecosystem Type:</b>						
<b>Agricultural / Pastoral</b>						
<b>Agricultural lands / Pastures</b> (straw burning, e.g. corn, wheat, rice paddies, sugar cane; slash and burn systems; pasture maintenance burning)	No data					

**Notes:** Ecosystem sensitivity classification: **FS** (fire sensitive ecosystem: fire has a detrimental effect on these ecosystems in terms of ecological and/or economic damage), **FM** (fire maintained ecosystem: fires are needed to maintain these ecosystems in terms of ecological and/or economic benefits; **FT** (fire tolerant ecosystem: fires have a minor impact on these ecosystems in terms of ecological and/or economic aspects). -- In Albania prescribed burning is not used. Thus, there are no statistics available.

**Table 1b.** Distribution of natural and human-influenced fires throughout the year.

Ecosystem Type	Wildfire Occurrence / Use of prescribed burning by Month and Percentage											
	J	F	M	A	M	J	J	A	S	O	N	D
<b>Wildfires (including wildfires burning within prescription)</b>												
<b>Forest</b>												
<b>Forest 1:</b> Not intensively managed and protected												
<b>Forest 2:</b> Intensively managed and / or protected (major ecological or economic assets at risk)	0.12	0.5	3.5	2.6	1.7	1.2	17	64	7	1.7	0.34	0.34
<b>Other Wooded Land</b>												
<b>Wooded Lands / Shrubland / Savanna 1:</b> Not intensively managed and protected (major ecological or economic assets at risk)	0.3	0.7	8.4	4.2	2.5	1.7	25	51	5	0.9	0.15	0.15
<b>Wooded Lands / Shrubland / Savanna 2:</b> Intensively managed and / or protected												

**2. Fire statistical database: Wildfire and prescribed burning statistics for the period of 1988-2004**

**Table 2.** Wildfire database 1988-2004. Data of the two 5-yr periods 1988-92 and 1998-2002 are highlighted because these periods are of key interest for the FAO Global Forest Resources Assessment 2005 (FRA-2005).

Year	Total No. of Fires on Forest, Other Wooded Land, & Other Land no.	Total Area Burned or Forest, Other Wooded Land, & Other Land ha	Area of Forest Burned ha	Thereof area of "Forest 2" ha	Thereof area of "Open Steppe / Grassland / Pastures" ha	Human Causes % of No.	Natural Causes % of No.	Unknown Causes % of No.
<b>1988</b>	<b>121</b>	<b>256</b>				<b>100</b>		<b>60</b>
<b>1989</b>	<b>132</b>	<b>320</b>						
<b>1990</b>	<b>269</b>	<b>417</b>						
<b>1991</b>	<b>147</b>	<b>250</b>						
<b>1992</b>	<b>659</b>	<b>1011</b>						
1993	560	522						
1994	585	705						
1995	110	153						
1996	490	410						
1997	735	1847						
<b>1998</b>	<b>601</b>	<b>680</b>						
<b>1999</b>	<b>628</b>	<b>689</b>						
<b>2000</b>	<b>915</b>	<b>3675</b>						
<b>2001</b>	<b>327</b>	<b>1434</b>	<b>941</b>	<b>941</b>	<b>493</b>	<b>100</b>		<b>55</b>
<b>2002</b>	<b>140</b>	<b>690</b>	<b>650</b>	<b>650</b>	<b>40</b>	<b>99</b>	<b>1</b>	<b>63</b>
2003	771	6359	4419	4419	1948	95	5	57
2004	143	1473	491	491	982	100	0	40
<b>Average</b>	<b>431</b>	<b>1229</b>	<b>1625</b>	<b>1625</b>	<b>866</b>	<b>98.5</b>		<b>53.7</b>

**Note:** The data collected in Albania are different from the Global Wildland Fire Assessment 2004 system. Thus, the table cannot be completed properly. The Forest Service collects data only for the forest and pasture fire occurrence.

### **3. Financial losses due to wildfire impacts on people, property, and natural resources between 1988 up to 2004**

In the fire sensitive ecosystems the ecological damages is very high. We have observed loss of species in sites that are prescribed from fire in a frequency of 1-2 years. The assessment is based on the on the studies of the sites by the forest service teams.

Two kind of values are taken into account when calculating the value of damages caused by forest fires:

- Foregone benefits: these benefits are out-weighted due to a fire damages. The damages vary quite a lot and are subject of differences existing in-between the characteristics and types of the forest stock where the fire occurs (the so-called forest fire typology). For some of the patterns, the cost-values is calculated on basis of the forest area affected by the fire and latter on will be aggregated on per ha basis while for other patterns these costs will be calculated on per ha basis;
- Fires suppression/rehabilitation related-investments/cost. These costs are necessary to be incurred for suppressing the fire and are calculated on per ha basis.

Evaluation of damages in economic or quantitative terms is essential as it is the background for establishing sound fire management programmes through better forest planning and silvicultural techniques as well as risk sharing approaches. Ecological losses cover a broad range of situations.

The multifunctional role of forests has been emphasized quite often over the last ten years in all international political processes dealing with forests. In particular, societal and environmental functions have been highlighted, although the wood production function remains important. Although, the valuation of non-marketable functions of forests, the so-called "positive externalities", is not easy from a methodological point of view; the fact that forest fires have affected these externalities, is important to take into consideration. Once all losses have been estimated, their conversion into expected loses, is obtained by incorporating hazard probability characteristics.

#### **Foregone Benefits: Identification and Description**

Benefits form a forest area that are foregone due to the occurrence of a fire can be classified in two groups:

- Direct benefits such as wood production, hunting and wildlife, watershed protection, climate moderations (air-pollution, microclimate effects) and
- Indirect benefits such as forest landscape, non-wood products, recreational values

#### **Direct benefits**

Wood production: A forest area affected by fire loose first of all, forest trees consisting in that area. DGFP has considerable data about the mean forest stock, selling prices and the age and pattern of different forest areas, thus is possible to quantify the wood production (industrial round-wood and fuel-wood) foregone due to a forest fire.

Hunting/Wildlife: Besides the amenity values derived from their contribution to the landscape, the forests provide some recreational opportunities in the form of hunting activities. The benefits from these activities could be measured by using values derived from the lease of hunting rights. The hunting potential of different forest areas is different due to inherent site characteristics and differences in their accessibility, some area are easily accessible and some others are very hard or quite impossible.

Watershed Protection: It is known that vegetative cover protects from erosion. The benefits due to watershed protection are quite significant especially in a country where forest areas are located mainly in mountainous landscapes. In addition, they provide improvements to hydrological conditions (which are small in on average and very hard to measure).

Climate Moderation: The forested areas are a good source to reduce air pollution (due to their potential to sequesterate the carbon emitted in the atmosphere) and creation of some micro-climatic conditions favourable for natural regeneration. Therefore, in case a forest area gets burned the carbon sequestration potential is decreased and the micro-climatic conditions considerably halter the natural regeneration.

## Indirect benefits

Forest Visibility and Landscape: Visual impact of forests landscape is another important benefit to the national economy. Attractive forest landscapes are public goods that can be enjoyed by many people without detracting from the enjoyment of others. It is therefore needed to know the potential tourist population, their distribution and their willingness level to pay in order to determine the benefits. In general this is done through contingent valuations<sup>1</sup>. In case when forests are in close proximity to the population concentrations, they provide benefits to the local population in the form of recreational values. However, the magnitude of these benefits is not possible to be known, partly due to lack of data and partly due to difficulties in computing financially the benefits that might derive.

Non-Wood Products: besides simply timber, there are other products that are excerpted by the forested areas such as fodder, fruits and various medicinal and aromatic plants. Generally, forest fires destroy these benefits in short-terms; however in some cases production of non-timber products might increase in medium and/or long run.

We have made the economic evaluation for each lost benefit. We have divided the damages caused by the forest fires (the calculation of their economic values is the respective lost benefit) in two groups:

- Direct measurable foregone benefits, the damages for which there are known with a relatively high exactness (the quantitative as well as the economic and unitary values of the damage);
- Indirect measurable foregone benefits, the damages for which there are not exactly known nor the quantitative values and neither the economic and unitary values of the damage;

The main direct measurable foregone benefit is considered the wood material (as timber and fuel-wood), while, the indirect measurable foregone benefits are classified: NTFP, hunting and wildlife stock, climate moderation, watershed management and erosion control, loss of the landscape and the nature beauty.

The most human activities that have a strong impact are the forest harvesting, agriculture activities, the building activity mainly in the costal area etc. These impacts have negative influence on the fire regime.

The recreation activities have also influence in the fire regime. Other factors are: grazing in the forest, collecting of second forest products. These factors have a positive impact to the redaction of the fuel in the forests.

The number of fires has been increased during years since 1980. The following general statements attempt to explain the increasing of fire occurrence and fire damage:

- Vacuum of ownership, power and responsibilities
- Fires as a weapon against former decisions in land-use planning
- Land property disputes
- Consequences of market-oriented forestry operations
- Lack of access
- Lack of funding to pay personnel for fire suppression
- Lack of technical means for fire management
- Climate change
- The fires are occurring earlier in the year we explain this with the climate change and the people activities in the forest areas

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<sup>1</sup> Contingent valuation is a commonly used practice to obtain monetary estimations about the local consumption of goods and services for which there is no market. Survey respondents are asked for their willingness to pay or for their willingness to accept compensation for specified fluctuations in the level of the service/good offered to them.

**Table 3.** Summary of financial losses due to wildfire impacts on people, property, and natural resources between 1988 and 2004

Year	1991	1992	1993	1994	1995	1996	1997
<b>Damage (\$US)</b>	3,120	2,553	3,724	12,000	3,283	21,740	40,000
Year	1998	1999	2000	2001	2002	2003	2004
<b>Damage (\$US)</b>	15,400	174,923	1,022,064	200,208	24,553	4,385,758	665,551

#### 4. International cooperation

Until now there is not an international cooperation for the forest fire management. We are trying to make agreements with the neighbouring countries but until now it has been no contact. The only field of cooperation in international level are the training courses and workshops organised from different countries like Spain and Italy. We think that there is a big need for cooperation in international level, especially with the neighbour countries for sharing information, knowledge and if necessary to support each other with personnel and technique if necessary during the big fire situations.

#### 5. Application of prescribed burning in the region to achieve management objectives (purposes, extent, results)

Prescribed burning is not used as a tool for fire management. We have no experience for that. The community is very sensitive and for the moment it can't be used in the forest area. We have no data on the prescribed burning in the agriculture land but sometimes we have had forest fires from the uncontrolled agriculture area.

#### 6. Operational fire management system(s) and organization(s) present in the country or region

**Table 4.** Responsibilities of different stakeholders in fire management at various levels in the country.

	<b>Government Organisations / Agencies</b>	<b>Non-Government Organisations</b>	<b>Private Sector</b>	<b>Local Communities</b>	<b>Academia</b>	<b>Other</b>
National	Directorate General of Forests and Pasture			Ministry of Local Government	Academia of Science of Albania / Forest and Pasture Research Institute	Ministry of Defence/ Ministry of Public Order
Provincial	Forest District Service		Forest harvesting companies	Civil Emergencies office in Prefectures		Ground Troops
Municipal	Sector of Civil Emergencies			Civil Emergencies Sector		
Local	Volunteers			Fire fighters		
Other	Fire Fighter Service					

The Forest Service is responsible for the forest fire management. The Forest Service collaborates with the Directorate of Civil Emergencies, Fire Fighter Service, Military Units and other state agencies. Until now there is due to the recourses that they have it is very difficult to use them in forest fire. The last years, forest service has done significant investments for the logistic support of forest fire suppression and control but is still much to be done for the planning and logistic support measures.

The private sector is not involved for the fire management. Only the private companies that work in the forest harvesting are obliged to support in the fire operation suppression.

There are no non-government organizations involved in this field.

The local community is involved only in the forest areas that have passed to the community use.

The Forest Service finances all the operations regarding the forest fires.

In large fires situation the Forest Service calls the Directorate of Civil Emergencies for help; this is the state agency that has the authority to involve the other institutions recourses inside and outside the country. There is an inter-agency agreement between five institutions. Since its establishment the Directorate of Civil Emergencies is mandated to coordinate the efforts of all stakeholders.

There is no international agreement until now.



**Figure 1.** Fire burning in a pine forest on a steep slope.

## **6. Sustainable land-use practices employed in the country aimed at reducing wildfire hazards and wildfire risks**

There is a lack of information for land use system. What the forest service does is the awareness campaigns for the damages related to the wildfires and the need for their help and support from the community. We have started to implement forest management practices for fire management purposes. There is much to be done in this direction because there is a lack of knowledge and experience in this direction.

## **7. Fire management / suppression technologies, training standards and facilities**

There is no early warning system of the forest fires the only measure taken is the classification of the most exposed areas to the fire. Fire detection and monitoring is performed on the ground. Fire suppression equipment consists mostly of simple hand tools. During the last years we have received 28 complete firefighter units with full sets of protection and fire suppression tools. We have in use six vehicles adapted for forest fire suppression.

The information system is based on radio communication system used by the Forest Service.

### **National wildland fire management planning, preparedness**

After the approve of the National Forest Fires Management Strategy, the DGFP has review the national management plan furthermore, every forest district directorate have review the local forest fire management plane according the new legal framework and new conditions.

These annually updated plans contain:

- Analysis of the causes of wildfires and factors that influence the spread of fire
- Fire statistics of the last year
- Forest fire risk areas and periods
- Actions for the forecast and the prevention of forest fires
- Entity and location of the means, equipments and human resources for the forest fire fighting
- Entity and location of the ways of access to the forests
- Technical fire prevention measures (fuel management, silvicultural and maintenance operations
- Training and information activities
- Finance plan

There is no training centre for forest fire fighters in Albania. The fire service intends to build up a training centre for urban fire fighters.

The Directorate General of Forest and Pasture has supported the training of some staff abroad. Their experience has been used in the training organised by the Forest Service for local field staff.

There is a lack of training staff; there is much to be done in this direction.

## **8. Public policies concerning fire**

The legal framework has been completed in the last years, but there are needs for improvements in this direction. All the institutions, agencies, government and private sector are obliged by law to take precaution measures against fires and to assist in managing fire emergencies. The problem is the implementation of the law and the improvement of regulations.

## **9. Wildland fire research**

There are no research in this field, except some studies and analysis. We have used the experience in the past years and the experience of other countries.

## **10. Needs and limitations**

There is a lack of responsibility from the local government authorities regarding the measures that need to be done for the prevention and control of the forest and pasture fires. The local community generally is mobilized by the forest service not by the commune. There is nothing being done from the local government authorities regarding the sensitisation of the community and the precaution measures that must be taken during the burn of the agricultural fields after the harvesting of crops.



The forest service by law is the government organization for the management of the fires in forest and pasture, but this service has big limitations in personnel and finance support. So, it is very difficult for us to manage all the fires.

During the last years considerable efforts have been invested in the coordination of measures with other institutions. However, communication still needs to be improved. Regional forest fire management plans must be coordinated with the management plans of the civil emergency protection bodies at local level.

There is a need for international exchange of knowledge and experience.

There is need for financing the prevention measures including the silvicultural treatment of the forest for fuel managements.

## **11. Other**

Examining the reasons of forest fires, it is revealed that 29% of forest fires arise from carelessness and negligence, 61% from unknown reasons, 9% from intentionally reasons and only 1% from unusual events and from lightning (Figure 1). However, it should be understood that even forest fires marked as "caused by unknown reasons" are considered as started by people. As these fires are not known exactly why they were started by and therefore, they are called as "unknown reasons". In this case, it can be concluded that people cause a great portion of the forest fires occurred in Albania. These values don't differ so much from the data of other Mediterranean countries.

Among the forest fires caused by negligence and carelessness, the most important ones are the fires arisen from cropland burning and clearing fields for agricultural purpose, cigarettes, picnic fires, and other fires set by shepherds and hunters. Among the fires occurring accidentally, the fires arisen from breaking off the electricity line are also important. Clear cutting for agricultural purposes and covering the tracks of criminal are intentional fires started by people. In Albania, people are a main factor causing the forest fires. This must be taken into consideration for planning forest fire prevention measures.

Besides the requirements for forestry related training of a part of society, it is necessary to expose the economic aspect of damage resulted from forest fires and therefore having a clearer picture on the financial values of damages created by fires and hopefully making aware the respective authorities for the need to get immediate and appropriate measures.

## **12. Date of report and address of rapporteur and key contact**

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