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# **Forestry in Italy: state of health and management**

**A challenge for the future**

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# Introduction

By Raoul Romano

The **Italian forests** are a common good, linked to the history and culture of our territory. The future of our country depends on how we perceive, protect and manage this heritage that represents 35% of the Italian territory.

Forests and **the manner in which we manage this resource**, represent the main tool in limiting the **hydrogeological risk**, in fighting **climate changes**, in safeguarding **biodiversity** and **landscape**, in **purifying and regulating waters**.

At the same time, forests represent an essential and renewable **resource** for the socio-economic development of the mountainous and rural areas of the country. These are furthermore ever more subjected to new pressures and potential elements of destabilization due to climate changes, **fires**, **pathogen attacks**, new forms of **forest management**.

In this context is therefore ever more needed undertaking a reflection on **forestry management policies**, with a particular focus on the **active management** concerning the **protection of the territory** and of natural resources, as well as of the biodiversity conservation. The efficient and viable management of forests is also important to preserve their role in the protection of the environment and the landscape, except for some particular situations, **the active and economic management of the forestry resources**: the abandonment of forests often **leads** to degradation and instability problems, with an increase of hydrogeological risk, fires and in some cases even loss of diversity.

Nowadays, the **Rural Development Policy** represents the main (in many cases the only) tool for the **achievement of the international commitments undertaken by the Italian Government** in terms of environment, climate and energy, as well as of the **EU Forestry Strategy** (COM(2013) 659 final).

The European Rural Development Policy 2014-2020 acknowledges the forestry resources and its related productive sector as the main elements for the achievement of the Europe 2020 objectives and of the **EU strategic Priorities**, with particular reference to the “local socio-economic development”, “fight against climate change”, “energy sustainability” and “safeguard of biodiversity”.



# Forest land

The National Inventory confirms the growth of forestry land, with an increase of 5.8% over 2005.

Specifically, there are **9,297,078 hectares** of forest and **1,813,237 hectares** of other wooded lands, for a total of **11,110,315 ha**, that is **35%** of the national land area (**30,132,858 ha**).

The rate of increase, is approximately **54,000 ha / year**, and includes natural regeneration and afforestation, while the average annual rate of deforestation between 2005 and 2015 was just over **3,500 ha / year**.

The forest area has increased by more than **600,000 hectares in 10 years**, about **2% of the national land area**.

More than **86.6% of the forest area** is under hydrogeological constraint.

The landscape restrictions cover 100% of the national forest area pursuant to the Legislative Decree n. 227 of 2001.

Only **15.7% of the Italian forests (1.3 million ha)** is subjected to a detailed planning (multi-year management plans), essential tool for ensuring the provision of ecosystem services in balance with that of commercial products (timber for industrial use and firewood).



	1990	2000	2005	2010
Public Owners	2,933,995	3,306,382	2,942,000	3,032,000
Private Owners	5,448,848	6,140,424	5,817,000	5,996,000

Source: Our processing from Istat data and INFC data

	1985	1990	2000	2005	2010	2015	% Change
Forest Land	7,200,000	7,589,800	8,369,400	8,759,200	9,032,299	9,297,078	29.1
Other wooded land	1,475,100	1,533,408	1,650,025	1,708,333	1,760,404	1,813,237	22.9
Total Forest Land	8,675,100	9,123,208	10,019,425	10,467,533	10,792,703	11,110,315	28.1

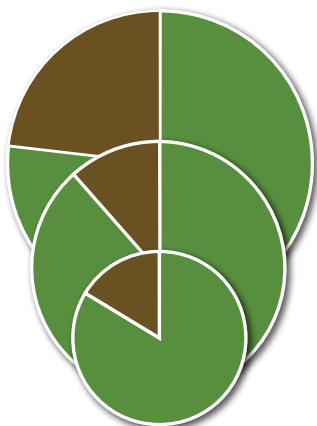
Source: Our processing from CRA-MPF data



Forest land ●  
Other wooded land ●

National classes		Area
Naturally originated forest	Of which, Old-growth highly protected forest	93,127
	<b>Tot</b>	<b>1,485,354</b>
Seminaturally originated forest		6,671,399
Artificially originated forest (planted forest)		602,448
Forest dominated by invasive species (Black locust and Ailanthus altissima)		233,553
Productive Plantations	Poplar plantations	66,269
	Eucalyptus plantations	19,626
	Other broadleaves plantations	21,359
	Douglas plantations	2,598
	Pinus radiata plantations	2,978
	Other introduced coniferous plantations	1,835
	Indigenous conifers plantations	7,587
<b>Tot</b>	<b>122,252</b>	
<b>Total Forest Area</b>		<b>8,759,200</b>

Source: FRA 2015 (INFC 2005)

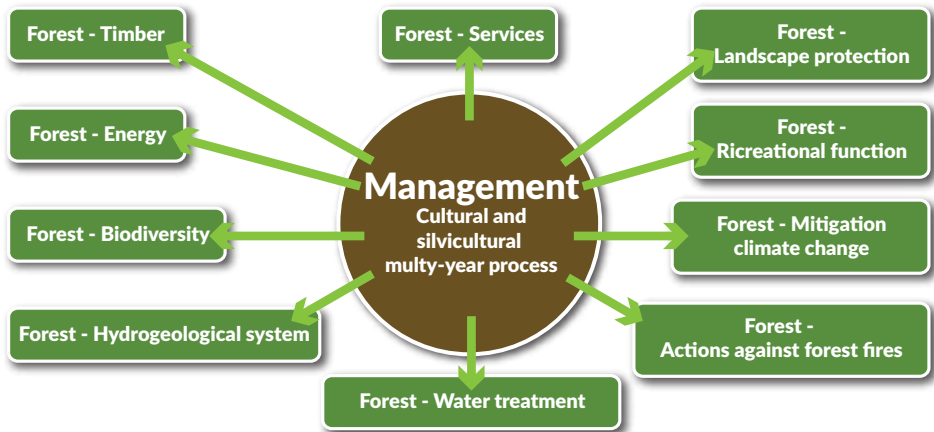


	Forest land	Other wooded land
Earth	3,999,000	1,204,000
EU	161,081	20,843
Italy	9,297	1,813

(Million ha)

Source: FRA 2015

# Management



The increase in forest area was not followed by an increase in operating investments in the territory. Forestry management is the main tool to enhance the environmental, social and economic functions of the forest and ensure the protection, conservation and production. The overall increase of wood biomass of Italian forests is estimated at **38.4 million m<sup>3</sup> / year** (Fra 2015), **30 million m<sup>3</sup>** of which are thought to be really usable annually.

The annual use of biomass produced by the Italian forests, for energy or industrial purposes doesn't exceed **30-35% compared to a European average** which uses instead **about 60%** of what forests can grow every year.

Italy would hardly achieve a levy higher than **12 million m<sup>3</sup> / year**, compared to the **30 million** available annually.

The reasons stem essentially from the high management costs, orographic limits, small size of private properties (**67% of the National forest area**) and wood cutting often less than one hectare. Public properties are larger and better managed, with an average size of the cuts little **lower than 3 hectares**.

In Europe the production of forest based raw material (work timber, firewood and energy uses) amounts to **approximately 484 million m<sup>3</sup> per year**, while the annual growth of forests (annual increase) is **about 768 million m<sup>3</sup>**.

In this context, the Italian industry of wood products imports **more than 80%** of raw materials from abroad.

In 2013, **over 10 billion euro** were spent, **7.5 billion** of which for primary products (wood-timber) and **2.7 billion** for secondary products - herbs, fruits, resins, mushrooms, etc. To these data it should also be added the amount of imported wood materials for energy use, thus placing Italy as the first world importer of wood to be burnt and derivatives.

# Timber yield in 2015

About **5.5 million cubic meter** (Istat 2015) (12% less than in 2014), 61% of which (about **3.3 Million cubic meter**) was used as firewood, the remaining 39% (about **2.2 million m<sup>3</sup>**) as work timber.

The surface and the number of cuts have decreased respectively by 21% and 18.4% over 2014 (Istat 2015).

Statistics on forestry use suffer from some underestimation issues, due to the failed accounting of the wood used by private owners for their own consumption, on the one hand, and to the absence of any obligation, on the other hand, to inform the forestry authority about the cuts below certain size (which differ across Regions), or the cuts related to the wood assigned to the local population for civic uses.



		Average 2001-2014	2015	Average size of the cuts (2015)	% Difference 2015/14
Region and Government	Number of cuts	1,642	861		-36.2
	Surface (ha)	3,579	1,914	2.35	-5.9
Municipality	Number of cuts	7,172	4,023		-63.4
	Surface (ha)	19,561	12,869	3.20	-46.7
Other institution	Number of cuts	1,406	1,463		0.0
	Surface (ha)	3,716	2,495	1.70	-24.7
Private	Number of cuts	70,869	48,697		-9.7
	Surface (ha)	55,145	36,940	0.76	-14.4
Tot	Number of cuts	81,520	55,044		-18.4
	Surface (ha)	83,592	54,218	0.98	-21.0

Source Istat

	2012	2013	2014	2015	% Change 2014/15	% Change 2012/15
<b>Total Italy harvest (Mt)</b>						
Timber production for energy (Mt)	4,279	4,213	4,061	3,335	-17.9	-22.1
<b>Removals for industry (Mt)</b>						
Round wood	848	979	1,170	1,136	-3	33.9
Sawnwood, panels and pulp for paper	684	751	547	698	27.6	2
Others assortment	535	346	403	357	-11.5	-33.4
Tot	2,068	2,075	2,120	2,190	3.3	5.9
<b>Total</b>	<b>6,347</b>	<b>6,288</b>	<b>6,181</b>	<b>5,526</b>	<b>-10.6</b>	<b>-12.9</b>

Source: FederlegnoArredo, 2016



## ITALIAN IMPORTS

2014

2015

% Change

### Raw wood products

Conifer (mc)	1,361,658	1,333,716	-16.7
Temperate Deciduos (mc)	1,541,602	1,522,393	-1.2
Tropical Deciduous (mc)	9,584	20,614	115.1
Firewood (t)	935,726	808,555	-13.6
Pellet, sawdust (t)	3,272,584	2,577,029	-21.3
Coal (t)	60,991	57,984	-4.9

### Secondary timber product

Conifer (mc)	3,914,261	3,873,087	-1.1
Temperate Deciduos (mc)	627,555	601,249	-4.2
Tropical Deciduous (mc)	157,006	156,594	-0.3

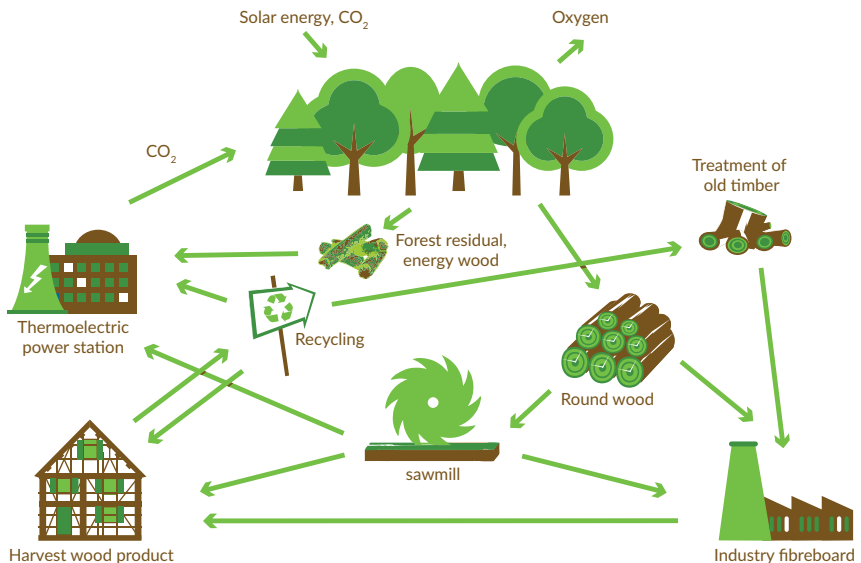
Source: ISTAT

These issues compel Italy to be a net importer of timber, so that in 2015 it imported **10.7 Million of cubic meter** of timber, **6,1 Mm<sup>3</sup>** of which consisting of raw timber products and 4.6 Mm<sup>3</sup> of semimanufactured timber products.

### 2015 Million m<sup>3</sup>

Estimate average harvest (last 10 years)	6.5
Import 2015	10.7
Annual increase biomass (last 10 years)	38.4

Source: Our processing from datas Istat, FederlegnoArredo and FRA 2015





# Biodiversity

The Italian forest flora is estimated at **61 families, 133 genera, 469 species**. The woody shrubs make up **74% of the flora**, trees and lianas respectively 23% and 3%.

There are approximately **12 billion trees** (200 plants/inhabitant equal to 1,500 sqm/inhabitant).

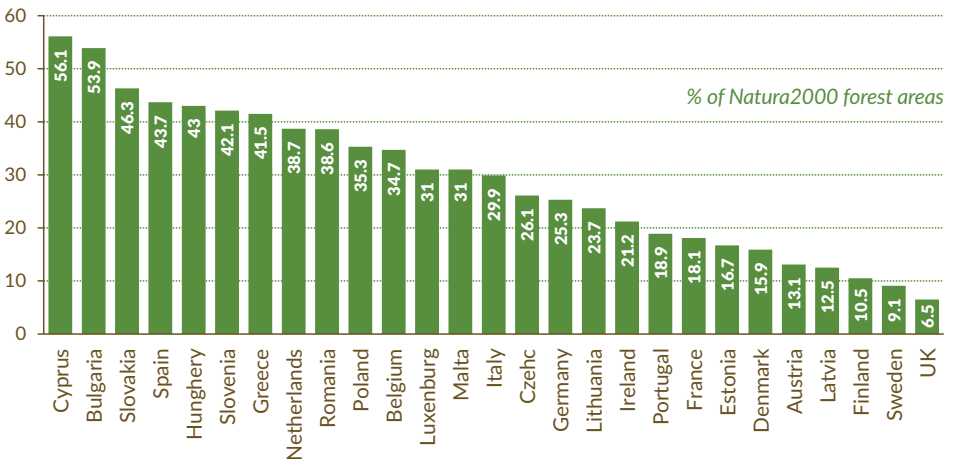
7.6% of forests is located in national parks, 6.7% in regional natural parks, 1% in natural reserves or in other protected areas. **22.2% of the national forest area** is part of Natura 2000 sites (sic e zps) and **23%** of the eu-28 Natura 2000 network is **occupied by forests**.

There are 68 sites that are part of the network of old-growth forests, most of them located within the major national parks, and the most represented species is the Beech, but the total number of species represented is 16.

**27.5% of the national forest area is subject to a natural constraint**; in Abruzzo, Campania, Puglia and Sicily more than half of the forest areas is subjected to natural constraints.

INFC2005	Surface (ha)
Larix and Pinus cembra	382,372
Picea Abies	586,082
Abies alba	68,460
Pinus Sylvestris	151,671
Pinus Nigra	236,467
Pine forest mediterranean	226,101
Other Conifers	63,407
Fagus Sylvaticae	1,035,103
Quercus pubescens and Q. Rubur	1,084,247
Q. Cerris, Q. Trojana, Q. Frainetto	1,010,986
Castanea sativa	788,408
Carpinus Betulus	852,202
Hygrophilous wood	229,054
Other deciduous	994,777
Quercus ilex	620,318
Quercus suber	168,602
<b>Tot Wood</b>	<b>8,582,968</b>
Poplar cultivation	66,269
Plantation of other Broadleaf	40,985
Plantation of coniferous	14,998
<b>Tot Plantation</b>	<b>122,252</b>

Source: FRA 2015



# Forest conditions in Italy

The Italian report “**state of forest health of ICP forest**” has a sample base of **4,757 trees**. These have been divided into two categories: young trees **under 60 years** and old trees with **more than 60 years**.

In 2015, 29.8% of the Italian trees has a rate of defoliation **higher than 25%**, while in 2014 it was **33.8%**.

	Rate of defoliation >25%					
	Deciduous			Conifer		
	Quercus pubescens	Fagus sylvatica	Chestnut	Larix	Picea abies	Pinus nigra
<b>&lt;60 years</b>	38,1%	21,2%	80,0%	15,4%	58,0%	26,6%
<b>&gt;60 years</b>	48,9%	8,0%	83,0%	7,7%	20,9%	20,9%

Source: ICP Forest2016

Among the conifers, the younger ones have the greatest defoliation rate, and in particular **58% of spruce trees** have a rate of defoliation **higher than 25%**.

Among the deciduous, the species that has suffered the worst damage is the **chestnut tree** with a defoliation rate of between **25% and 75% for 80% of juveniles** and **83% of older trees**.

The beech is the species that has suffered less damage, with a defoliation rate **exceeding 25%** only in 8% of the older individuals.

The **biotic factors** remain the main liable for damage to vegetation and in particular **20.5%** is ascribable to **insect pests**, while **5%** is due to the action of **fungi**.

Other factors that cause defoliation of the trees are drought and the high temperature peaks recorded in the summer season.

## Sustainable Forest Management certification

The Italian certified forestry area (updated at 31/12/2015) amounts to:

**FSC:** 52,000 ha and 1,965 certifications issued for the Chain of custody (CoC).

**PEFC:** 824,048.76 hectares and 935 certified companies for the Chain of Custody (CoC).

# Forest fires

In 2015, Italy has suffered a worsening of the damage caused by fires over the previous year.

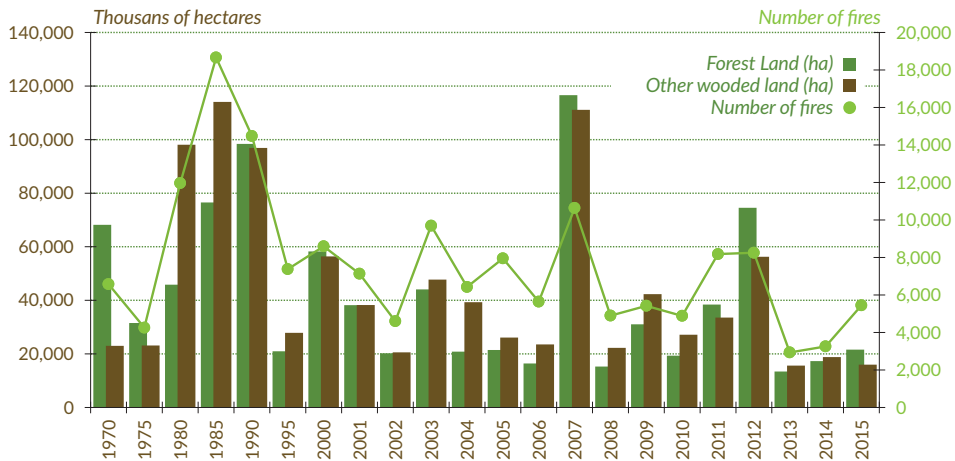
The number of fires has **increased by 67%** (5,442), while the total surface burnt by fire by 15%, **up to 41,511 hectares**, 25,867 of which Forest and 15,644 not wooded (Table below).

On the contrary the average areas for event are decreasing (7.6 hectares), thus reflecting an overall improved efficiency in fire suppression actions.

About 65% of the events, with almost 70% of the total surface covered by fire at a national level, occurred only in three regions: Campania (994 fires), Calabria (864), Sicily (832).

The most remarkable share of **forest area affected by fire** (20%) has been detected **in Lazio**, where as a consequence of about 450 events, roughly **6,000 hectares have been burnt**.

Furthermore, here it has also been recorded the highest value of average area per event (13 hectares), almost twice the national average.



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