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Forests in the Light of Sustainable Development

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Abstract: The concept of sustainable development assigns all the social and economic development methods and forms, whose fundament is firstly represented by the insurance of a balance between these social-economic systems and the elements of the natural capital. The most known definition of sustainable development is surely the one of the World Commission on Environment and Development (WCED) in the "Our common future" report, also known as the Brundtland Report: "sustainable development is the development that aims at satisfying the present need without compromising future generations' possibility to satisfy their own needs". Sustainable development also aims at and tries to establish a theoretical frame in order to make decisions in all situations that include a human/environment report, whether it is about the environment, the economic or the social environment. Though sustainable development has initially been regarded as a solution to the ecological crisis determined by the huge industrial exploitation of resources and the continuous soil degradation of the environment and it has sought to preserve the quality of the environment, nowadays the concept has been extended to the living quality in its intricacy, involving the economic and social issue. Nowadays, the concern of sustainable development also represents a concern for right and country equality, not only for generations. Within the process, several international conventions have been adopted, which establish precise country requirements and strict implementation terms regarding climate changing, biodiversity preservation, protection of the forest fund and of the wet areas, access to environment quality information and others, that outline an international judicial space for the implementation of the sustainable development concepts.

Keywords: sustainable development; equity; forests

Introduction

It is thus admitted that planet Earth has a limited capacity of satisfying the growing natural resources growth from the socio-economic system and absorbing the destructive effects of their usage. Climatic changes, erosion and desertification phenomena, soil, water and air pollution, the forest systems areas reduction, the extinction or the existence endangerment of a large number of plant species and terrestrial or water animal species, the accelerated exhaustion of nonrenewable resources started having negative effects, measurable in terms of socio-economic development and human living standard quality in large areas of the planet.

The forest is a very important factor of the sustainable development of the society through its environmental protection functions that it performs and through its socio-economic functions.

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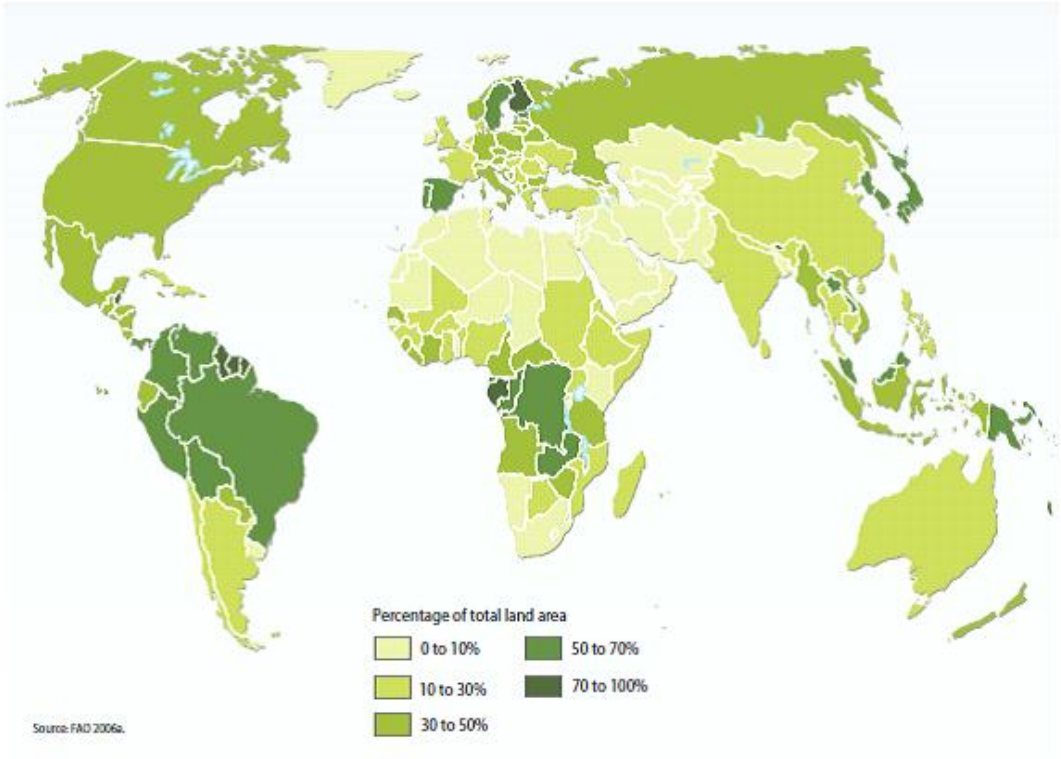


Source: FAO

Forest is defined as a land surface covered by forest vegetation and larger than 0.25 ha. Like in the case of green spaces, these areas are highly important for the maintenance of the optimal living quality. The forest, the Earth's green gold, has always been an unlimited life source, both for humans and animals. The wood in forests has been used for a long time. Next to stone and clay, wood has given humans the possibility to develop their first hunting tools, the first houses and tools. Wood also has had an important role in preparing the food since the discovery of fire.

The Function of Forests in Nature and Society

Forests that still represent important areas of the planet are important ecosystems both for humans and strictly in ecological terms. Forest has esthetical, recreational and economic values for mankind. Wood, as well as other forest products has both an economic local and global significance. It is estimated that a third of the world population still depends on wood as a significant energy source.

One of the main advantages of the forest is represented by the reduction of the soil erosion risk, landslides, floods and avalanches. Forest also has an important role in the regime of local rainfalls, it prevents desertification, it can positively influence the climate and it is an important oxygen source, as well as a carbon dioxide retainer.

In economic and ecological terms, forest has met and meets an important series of important, vital functions.

Table 1. Forest area in Europe, 1990–2010

Region	Area (1 000 ha)			Annual change (1 000 ha)		Annual change rate (%)	
	1990	2000	2010	1990–2000	2000–2010	1990–2000	2000–2010
Russian Federation	808 950	809 269	809 090	32	-18	n.s.	n.s.
Europe excluding Russian Federation	180 521	188 971	195 911	845	694	0.46	0.36
Total Europe	989 471	998 239	1 005 001	877	676	0.09	0.07
World	4 168 399	4 085 063	4 032 905	-8 334	-5 216	-0.20	-0.13

Source: FAO

In the hilly area, forest favors the process of water retaining in the slopping lands, preventing the surface spills and water floods as a result of torrential rainfall and melting snow, thus avoiding the flooding and soil erosion phenomena.

In the photosynthetic process forests also have an important place in renewing both the local and global oxygen reserves. One hectare of forest annually produces almost 30 tons of oxygen, of which 13 tons are used in the process of tree breathing. Trees and shrubs also help at the various sound levels mitigation, they have a positive influence on the wind regime, air humidity and temperature, as well as air vibrations. To this regard, literature assigns that windbreaks can reduce the noise up to 10 decibels.

The assembly of favorable living conditions created in forests determines the reduction of pulse frequency with 4-8 pulsations/minute, tending to optimize the blood pressure and favor the good mood. For people that suffer from breathing affections, softwood forests or beech and softwood mixture forests in the mountain areas are benefic. In plain areas, with reduced forest areas, windbreaks have an important influence on the environment. Thus, they reduce the speed of the wind from 5 up to 10 times their size, causing the uniform snow retention and distribution on the arable areas that protect winter crops against frosts, increasing the water reserves, protecting the communication means, human communities and animal farms against snowmaking.

Forests contain the largest plant and animal diversity on the Earth. Thus, they represent vegetal or animal medication source. Medicinal substances that have already been especially discovered in the Equatorial forests represent a guarantee for the future greater therapeutically successes.

On the whole, forest contribution to the biosphere balance maintenance has a great significance as a massive windbreak. Due to this fact, national or global forest exploitation must be rational, not only from the wood point of view, but also from the methods used for the most possible avoidance of reducing the forest surfaces. Due to exaggerate deforestation and forest destruction through global unreasonable exploitation and excessive grazing, the desertification process has increased, especially on the African continent, where forest damages cannot be ecologically or economically justified.

Within the destructive process against the forest surfaces, air pollution has an important role, which leads to the drying trees phenomenon. For example, 10 million forest hectares in Europe have witnessed the three drying process for spruce, fir, oak and sessile. Other factors that have contributed

to the process have been the high altitude pollution and the one produced by chemical and oil industries, in the cement factories, metallurgical and mining enterprises.

Table 2. Area of planted forests in Europe, 1990–2010

Region	Area (1 000 ha)			Annual change (1 000 ha)		Annual change rate (%)	
	1990	2000	2010	1990–2000	2000–2010	1990–2000	2000–2010
Russian Federation	12 651	15 360	16 991	271	163	1.96	1.01
Europe excluding Russian Federation	46 395	49 951	52 327	356	238	0.74	0.47
Total Europe	59 046	65 312	69 318	627	401	1.01	0.60
World	178 307	214 839	264 084	3 653	4 925	1.88	2.09

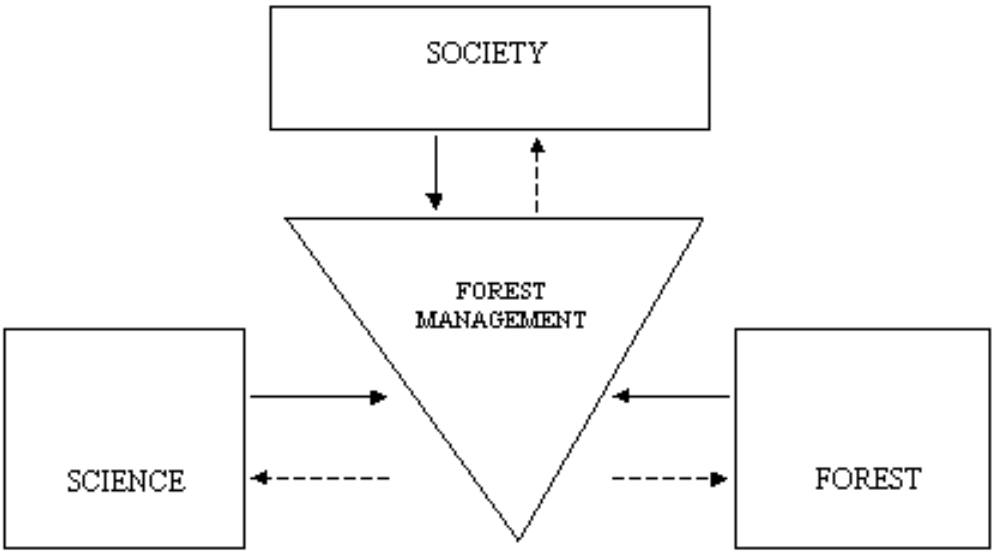
Source: FAO

As a whole, forest significance and maintaining the ecological balance and the destructive actions they are subject of, emphasize the need of cooperation on various plans of all specialists that operate in different productive and research fields of agriculture and forestry, in order to prevent, reconstructions and maintenance of ecological balance, vital for life on Earth.

Forest management is considered as both independent scientific branch and practical field, containing many aspects of forestry, which formulates synthetic conclusions indicating the main directions of management.

Forest management is engaged in formation of relation between nature and the man on the basis of knowledge of forest state, demand society for forest functions as well as scientific achievements and experience in solving the problems of running and organic structure of forestry.

The system of information flow of forest management services can be shown as a model:



	Impulses flowing to forest management services
	Impulses outflows from forest management services

Source: http://www2.nr.no/foremms/forestmanag.html

Forest Resources in the European Union

The forest surface in one country consists of the total area excepting the river and lake areas. Forests are defined by the FAO as surfaces covered by trees that cover more than 10% of the total area, which has to be larger than 0.5 ha, including trees that can reach 5 meters high at maturity.

Within the European Union, barely two fifths of the surface have been classified as forested areas (in other words, as forests or forested lands), a similar percentage to the one used in agricultural scopes. The total area of the forested surfaces in the EU reached 177,8 mil ha in 2010.

Table 3. Forest surfaces in UE, EFTA and candidate countries

	Surface	Forests and other forested areas	
	2008	2000	2010
	1000 ha		
EU-27	430 340	174 235	177 757
EA-17	265 779	111 304	112 628
Belgium	3 028	694	706
Bulgaria	11 100	3 480	3 927
Czech Republic	7 725	2 637	2 657
Denmark	4 310	622	591
Germany	35 711	11 076	11 076
Estonia	4 343	2 337	2 350
Ireland	6 839	650	789
Greece	13 082	6 525	6 539
Spain	50 599	27 452	27 747
France	63 283	17 165	17 572
Italy	29 511	10 439	10 916
Cyprus	925	387	387
Latvia	6 220	3 097	3 467
Lithuania	6 288	2 103	2 240
Luxembourg	259	88	88
Hungary	9 303	1 866	2 029
Malta	32	0	0
Netherland	3 376	360	365
Austria	8 244	3 955	4 006
Poland	31 269	9 059	9 337
Portugal	9 212	3 667	3 611
Romania	22 989	6 400	6 515
Slovenia	2 014	1 283	1 274
Slovakia	4 904	1 921	1 933
Finland	30 390	23 305	23 269
Sweden	41 034	30 653	31 247
United Kingdom	24 315	2 813	2 901
Iceland	10 025	142	116
Liechtenstein	16	7	8
Norway	30 547	12 000	12 768
Switzerland	4 000	1 263	1 311
Montenegro	1 382	744	744
Croatia	5 659	2 300	2 474
Macedonia	2 491	1 101	1 141
Turkey	76 960	20 780	21 702

Source: Eurostat, State of Europe's Forest 2011

Member states with the highest forested areas percentage were Finland and Sweden, where nearly three quarters of the country surface was covered by forests. Member states with the lowest forested areas percentage were Malta, the Netherlands, Ireland and the United Kingdom. Sweden only covers 17.6% of the whole surface of forests in Europe in 2010, and the five mostly forested area in the EU (Sweden, Spain, Finland, France and Germany) covered more than three fifths (nearly 62.4%) from the total forested areas in the EU. Between 2000 and 2010, forested areas in the member states of the EU had risen, due to the natural extension and afforestation by 3.5 mil. Ha, namely a 2% growth. Only four member states reported a reduction of the forested areas, with Denmark as leader with a 5% reduction followed by Portugal, Slovenia and Finland. In relative terms, the most important expansion of the forested areas were reported in Ireland (21.4%), while Belgium and Latvia have reported positive growths of 10%. In absolute terms, four member states have registered a growth of more than 400.000 ha, namely France, Bulgaria, Italy and Sweden, with Sweden reports of the highest forested surface (594 000 ha).

Nearly 40% of the forest surface in the European Union is a public property. Based on the available data of 24 member states of the EU (incomplete data for Greece, Portugal and Sweden), the public property forest surfaces have grown up to 8.6%. In the extended Europe, forests that are public properties are managed by more than 12 mil private forest owners, who are in most cases small owners outside the industrial field which manage their forests based on the sustainability principle.

The publically owned forest areas have decreased between 2000 and 2010 in ten member states, especially Romania, Slovenia and Lithuania and in a lower percentage in Austria, Finland, Latvia, Estonia and the United Kingdom. Some of these reductions in the new member states of the EU since 2004 can be the result of the restitution of the lands to the former owners, while other countries have sold the surfaces that made the object of public property.

Table 4. Forest property forms in the EU, EFTA and candidate states

	Public Property		Private or other form	
	2000	2010	2000	2010
	1000 ha			
Belgium	290	301	377	377
Bulgaria	3 041	3 408	334	519
Czech Republic	2 023	2 041	614	616
Denmark	138	139	348	448
Germany	5 846	5 708	5 230	5 368
Estonia	899	858	1 344	1 345
Ireland	399	400	236	337
Greece (1)	2 790	2 907	811	845
Spain	4 988	5 336	12 000	12 838
France	3 984	4 113	11 369	11 841
Italy	2 811	3 073	5 558	6 076
Cyprus	118	119	54	54
Latvia	1 749	1 655	1 493	1 696
Lithuania	1 562	1 366	458	784
Luxembourg	41	41	46	46
Hungary	1 155	1 178	753	861
Malta	0	0	0	0
Netherlands	184	184	176	181
Austria	928	858	2 332	2 482
Poland	7 535	7 661	1 524	1 658
Portugal (1)	54	54	3 366	3 382
Romania (2)	6 010	4 398	356	2 097
Slovenia	365	291	868	962
Slovakia	1 006	980	915	958
Finland	7 213	6 699	15 245	15 389

Sweden (3)	7 522	7 664	20 990	20 941
United Kingdom	1 011	959	1 782	1 922
Iceland	7	8	12	22
Liechtenstein	6	6	1	1
Norway	1 299	1 450	8 002	8 800
Switzerland (3)	885	889	-	-
Montenegro	337	337	130	130
Croatia	1 398	1 450	487	524
Macedonia (1)	864	881	94	94
Turkey (1)	10 131	10 730	15	10

- – 2005 instead of 2010, changes from 2000 to 2005
- – excluding other property forms
- 2005 instead of 2000,changes from 2005 to 2010

Source: SoEF 2011

Table 5. Protected forest surfaces in the EU (1000 ha)

	Protected areas
EU (1)	20 356
EA (1)	14 283
Belgium	209
Bulgaria	313
Czech Republic	740
Denmark	40
Germany	2 754
Estonia	213
Ireland	58
Greece	164
Spain	2 499
France	313
Italy	3 265
Cyprus	95
Latvia	610
Lithuania	433
Luxemburg	0
Hungary	424
Malta	0
Netherlands	83
Austria	659
Poland	187
Portugal	700
Romania	1 746
Slovenia	241
Slovakia	1 104
Finland	1 925
Sweden	1 435
United Kingdom	145
Iceland	0
Liechtenstein	4
Norway	167
Switzerland	90
Montenegro	13
Croatia	54
Macedonia	0
Turkey	269

- Data available for member states

Source: FAO (2010), Eurostat

20.4 mil forest ha (the equivalent of 13% of the total forested surface) were protected in 2010 in the EU, for example in national parks, where trees and their environments are usually protected. Member states with the highest percentage of protected areas were Italy, Germany and Spain; on the other side, one can see that states like Macedonia, Iceland, Malta and Luxembourg do not have protected forest surfaces.

Conclusions

Sustainable development can be seen as an accommodation of the society and economy with the great issues mankind faces nowadays: climate changes, water crisis, drought, desertification, resources depletion, wastes, biodiversity loss, population growth, poverty, migration etc. in order to overcome, counteract and remove their effects and to ensure economic development, social progress and human development the development and implementation of certain actions are required in this direction.

In the case of the European Union and Romania, environmental protection issues are keenly approached, especially as a result of intense local pollution of the industry, deforestation as well as other factors that have led to the damage of the ecosystems and the worsening of living standards.

If we accept that sustainable development means "satisfying the present needs without undermining the next generations' possibility to satisfy their needs", then its implementation also depends on and it is influenced by almost any political, social economic and/or administrative decision we nowadays make.

Being aware of the problems the community faces, including both the decision maker and citizens, accelerates the process of finding optimal solutions needed in order to reach the objectives of sustainable development. Any action strategy making process must make the object of social consulting, in order to ensure the fact that once adopted, the strategies will be implemented. This objective can be reached by educating and making citizens aware, by consulting and attracting them in the implementation process.

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