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NATIONAL FOREST RESOURCES – AN ANALYSIS ACROSS REGIONS FROM A SUSTAINABLE RURAL DEVELOPMENT PERSPECTIVE

ABSTRACT

The economic growth based on the consumption of energy from hydrocarbon resources proved to be a concept with validity on short term worldwide, the social and environmental consequences being pollution at the level of biological inadmissibility and serious economic crisis. Out of this reason, the assessment of the forest resource and the monitoring of the intensity in its utilization from sustainable development perspective, makes it necessary an economic analysis to ensure the continuity in the regeneration of the forestry fund, as energy resource and as social value with multiple valences, identified mainly in the rural area.

Key words: sustainable development, alternatives, rural area.

JEL Classification: O13, O18, P25.

1. INTRODUCTION

In terms of its economic and ecological importance at national and local level, Romania's forest resource has experienced many changes over time, imposed, among others, by the structural changes produced in its relation with the society. Concretely, the human society's evolution has imposed the establishment of a new relationship with the available forest resource, mainly starting from its extensive utilization in the economy, sometimes without taking into consideration the environmental impact. In this context, the present study attempts to make a quantitative analysis of the national forest resources and of the modifications produced in the period 1990–2016, at regional level inclusively, from the perspective of sustainability and durability of the economic processes.

2. STATE OF KNOWLEDGE

The forest resource and its exploitation, correlated with the forest regeneration process, has been the object of many studies, both at academic level (Palaghianu, 2007),

at the level of active enterprises in this domain, as well as at the level of decision-makers, in terms of designing strategies and programs to ensure the sustainability of this resource.

Without being limited to the national level, the studies and the strategies elaborated in this field so far are closely linked to the policies at community and world level, derived from the need to establish some ways of common actions in this sector. Starting from the multifunctional role of the forest resource (economic, ecological and social), the designed strategies have in view the identification of the best ways of action for the preservation of the forest role in national economy.

The ecological character of the forest, as core element of the forestry fund, resides in the essential contribution to soil protection against erosion, but also in ensuring the water circuit and climate balancing, being, at the same time, a habitat for many species, having a primordial role in the preservation and improvement of the bio-diversity of forest ecosystems.

As regards its economic function, forest exploitation is generating significant resources, mainly wood, with a wide range of uses in the energy sector, in the furniture and timber industry, as well as in the paper and panel industry; it also provides non-wood products such as forest fruit, mushrooms, resins and oils, etc.

Finally, the studies conducted so far have also revealed the social component of forest resources, mainly materialized into job creation in rural areas in particular, as well as into putting into value the folk culture developed on this theme.

Having in view the above-mentioned considerations, the present approach is based on the information support ensured by Tempo-Online database of the National Institute of Statistics (NIS), the results of the analysis being provided both under tabular format and graphically. In order to find the main modifications produced in the structure of national forest resources, well-known statistical methods are used, of comparison and structural type.

3. MATERIAL AND METHOD

The present approach is based on public information supplied by public institutions/authorities/research institutes with attributions or experience in this field as well as on statistical data from the Tempo-online database of the National Institute of Statistics. The analysis of the regulatory framework has a special importance in our analysis, the starting point being the updated primary legislation.

We must also specify that information processing was based on well-established statistical methods, of comparison or structural type, the results being presented under tabular or graphic format. The tabular presentation results in a greater visual clarity of data.

4. RESULTS AND DISCUSSIONS

4.1. FOREST RESOURCES – DEFINITIONS AND STRUCTURES

The primary framework of regulation in the field, i.e. the Forest Code¹, defines the forest fund as representing, regardless the ownership form, the totality of forests, the land areas destined to afforestation, those serving the cropping, forestry production or management needs, the ponds, the river beds, other land with forestry destination, including the non-productive ones, included in the forestry arrangements by January 1, 1990, with the modifications of their area inclusively.

The national forest fund includes:

- a) forests;
- b) land areas under regeneration and plantations established for forestry reasons;
- c) lands destined to afforestation: degraded land and non-forested land, established under legal conditions to be afforested;
- d) land serving crop needs: nurseries, solaria, seed orchards and mother plantations;
- e) land serving the needs of forestry production: wicker, Christmas fir-trees, ornamental and fruit trees and shrubs;
- f) land serving the forestry management needs: land intended for the production of game feed and fodder production, land given into temporary use for the forestry staff;
- g) land occupied by buildings and related yards: administrative headquarters, chalets, pheasant farms, trout farms, farms with animals of hunting interest, forestry transport roads and railways, industrial spaces, other technical endowments specific to the forestry sector, land occupied temporarily and land under disputes, as well as the forest land areas within the border line and frontier protection strip of the state border and land intended for the achievement of certain objectives within the Integrated System for Border Security;
- h) ponds, river beds, as well as the non-productive land areas included in the forestry arrangements.

According to the law, all land included in the national forest fund is land with forestry destination.

According to the primary and secondary regulatory framework, land areas with an area of at least 0.25 ha, covered with trees that are minimum 5 m tall at maturity under normal vegetation conditions, are considered forests.

¹ Approved by Law no. 46/2008, republished, with subsequent modifications and completions.

The term forest includes:

a) land with forest use included in the forestry arrangements on January 1, 1990, modifications of area inclusively, according to entry/exit operations made according to the law;

b) protection shelter belts;

c) land areas on which juniper trees are installed;

d) land covered with forest pastures with higher or equal consistence to 0.4, calculated only for the area effectively covered by forest vegetation;

e) plantations with forest species from the protection areas for the hydro-technical constructions and land reclamation works made on public land owned by the state, as well as the plantations with forest species on the land administered by the State Domain Agency, which comply with the legal conditions.

4.2. THE FOREST RESOURCE: STOCK AND STRUCTURAL MODIFICATIONS

In the period 1990–2016, the national forest resources followed a slightly increasing trend, to reach 6559 thousand ha by the year 2016, as against 6371 thousand ha in the year 1990. It must be mentioned that 3 out of the 8 regions (North-West, Center and West) exceed the increase percentage at national level (3%), oscillating from 0.2 percentage points (North-West) to 3.6 percentage points in the region Center.

From the 8 Development Regions, 3 regions (Center, North-East and West) concentrate 53.6% of the national forestry resources, with a noticeable increasing trend of land areas covered by this resource (Table 1).

Table 1

Evolution of the forest fund area by regions, in the period 1990–2016 (thousand ha)

	1990	2016	2016/1990 (%)
Total	6371	6559	3.0
North-West	963.5	993.9	3.2
Center	1185.1	1263.7	6.6
North-East	1186.6	1197.4	0.9
South-East	541.9	551	1.7
South Muntenia	660.9	658.7	-0.3
Bucharest-Ilfov	26.3	26.6	1.1
South-West Oltenia	806.5	812.9	0.8
West	1000.2	1054.8	5.5

Source: Calculations based on Tempo-Online data, NIS, 2018.

The area under forests has the same increasing trend, yet by a lower intensity; over 27 years, the area under forests increased by 2.4% in total, by percentages oscillating from 0.1% (North-East and South-West Oltenia) to 6.4% (Center).

53.9% of the area under forests is found in three regions (Center, North-East and West), summing up 3449.1 thousand ha.

The lower total percentage of the increase of areas under forests was influenced by the diminution of these areas in two regions (South-Muntenia and Bucharest-Ilfov); these two regions together accounted for a 2.7% diminution in the period 1990–2016 (Table 2).

Table 2

Evolution of areas under forests by regions, in the period 1990–2016 (thousand ha)

	1990	2016	2016/1990 (%)
Total	6252.3	6404.4	2.4
North-West	950	974.1	2.5
Centre	1169.7	1244.1	6.4
North-East	1168	1169.2	0.1
South-East	519.8	523.1	0.6
South-Muntenia	646.7	642.1	-0.7
Bucharest-Ilfov	25.5	25	-2.0
South-West Oltenia	790.1	791	0.1
West	982.5	1035.8	5.4

Source: Calculations based on Tempo-Online data, NIS, 2018.

The structure of the area under forests reveals the prevalence of deciduous forests both per total and by regions, with about 70% of the total area being covered by deciduous species. In dynamics, the areas under deciduous and coniferous forests experienced a slight recoil over the period 1990–2016. As compared to coniferous forests, in which the area diminished by 0.7%, the deciduous forests increased in area by 0.7%; in 3 out of the 8 regions (North-West, South-East and South-West Oltenia) a diminution of areas could be noticed, from -0.1% (South-East and North-East) to -0.3% (South-West Oltenia) (Table no. 3).

Table 3

Evolution of the structure of areas under forests, by types, across regions, in the period 1990–2016 (%)

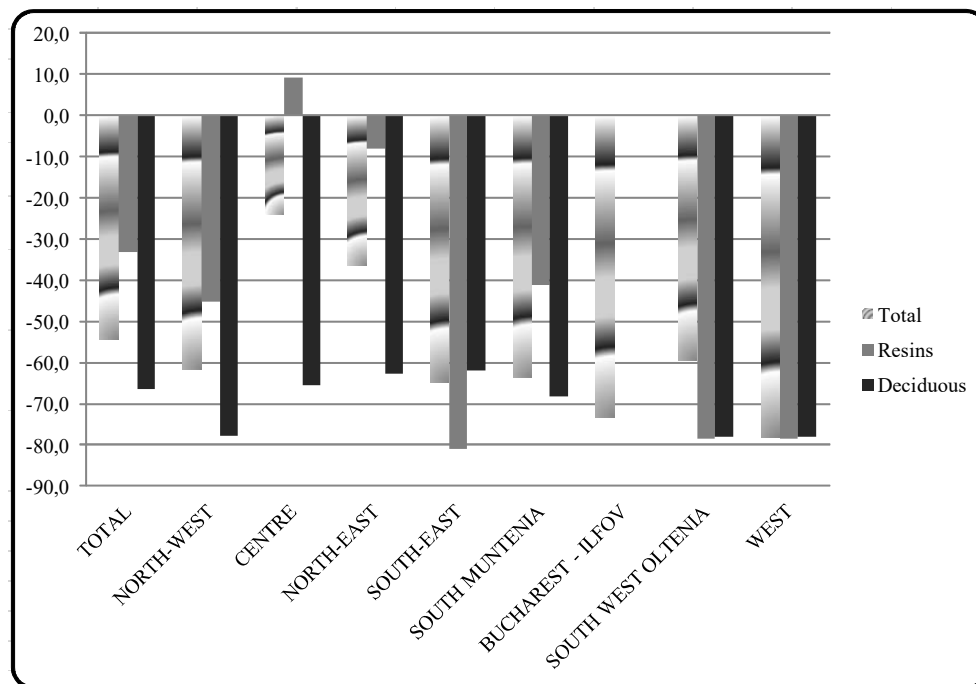
	Coniferous			Deciduous		
	1990	2016	2016/1990 (%)	1990	2016	2016/1990 (%)
Total	30.8	30.1	-0.7	69.2	69.9	0.7
North-West	4.7	4.8	0.1	10.5	10.4	-0.1
Centre	8.3	8.7	0.4	10.4	10.8	0.3
North-East	9.3	8.7	-0.6	9.4	9.6	0.2
South-East	1.8	1.7	-0.1	6.5	6.5	-0.1
South-Muntenia	2.1	2.1	0.0	8.3	8.0	-0.3
Bucharest-Ilfov	0.0	0.0	0.0	0.4	0.4	0.0
South-West Oltenia	2.0	2.0	0.0	10.7	10.4	-0.3
West	2.7	2.2	-0.5	13.0	13.9	1.0

Source: Calculations based on Tempo-Online data, NIS, 2018.

Unlike the overall evolution, relatively favourable to the forest fund area, the land areas on which artificial forest regenerations were performed experienced significant decline, both per total and by the two main categories, i.e. deciduous and coniferous.

Thus, per total country, the area on which artificial forest regenerations were performed diminished by over 50%, by percentages oscillating from -24% (region Center) to -78.3% (West region). This is a dramatic situation, as even in the regions where the largest part of the forest fund is concentrated, no forest regeneration works were made, on the contrary, these regions experienced significant decline.

The same negative situation is found in the two types of forests – deciduous and coniferous. In the case of coniferous forests, the total area on which artificial forest regeneration was performed diminished by about one-third (the greatest decline was in the South-West region); in the areas under coniferous forests, the decline was by almost 67% per total, as at the level of the regions North-West, South-West Oltenia and West the decline reached up to 80% (Fig. 1).



Source: Calculations based on Tempo-Online data, NIS, 2018.

Figure 1. Dynamics of areas on which artificial regeneration works were made in the year 2016, versus 1990, by regions (%).

Under the background of a slight increase of forest areas, the volume of harvested timber significantly increased, both per total and by species, nationwide

inclusively. A doubling of the harvested quantities of coniferous and beech timber was noticed in the region South-West Oltenia, followed by the regions West, South-Muntenia and South-East (Table 4).

Table 4

Dynamics of the harvested timber volume by species and by regions, in the year 2016 compared to 1990 (%)

	Total	Coniferous	Beech	Oak	Different hardwood species	Different softwood species
Total	3.3	7.8	17.0	-17.5	-3.0	-18.6
North-West	-2.8	-19.8	3.6	78.5	-15.6	-31.5
Centre	7.2	3.0	13.8	14.4	25.1	-40.7
North-East	13.5	11.4	45.6	-19.7	6.0	-13.5
South-East	2.5	59.4	35.1	-56.9	-16.1	-20.0
South-Muntenia	12.4	60.2	54.1	-26.8	26.6	-21.5
Bucharest-Ilfov				-3.2	-8.6	195.0
South-West Oltenia	-7.2	136.4	120.3	42.7	76.3	76.1
West	-7.2	96.8	90.8	104.9	79.7	114.7

Source: Calculations based on Tempo-Online data, NIS, 2018.

We must specify that out of total harvested timber volume in the year 2016, 80% was represented by coniferous species (36.4%), beech (33.7%) and oak (9.8%), the difference being represented by various hardwood and softwood species.

5. CONCLUSIONS

Having in view that the forest resources of Romania total 6559 thousand ha on the whole country's territory, in the context of the structural changes that have taken place, correlated to climate changes, forests are getting an extremely important role not only through the carbon dioxide capture, but also through biomass production and through the potential they have for renewable energy. As an extremely important cultural heritage, forests are attractive from the social and cultural point of view, permitting the development of recreational activities, beneficial for people's health.

In this context, we must appreciate the efforts made by the national authorities to identify the most adequate measures in this field to contribute to sustainable development based on limited resources. Thus, the most recent document-program at national level – The National Forestry Strategy 2018–2027 – has as general goal to harmonize the forest's function with the present and future requirements of the Romanian society through the sustainable management of the national forestry resources. The implementation of any documents elaborated at central level must

have in view providing the necessary financial resources, in the first place. Thus, the mobilization of funding sources should benefit from the active involvement of all the authorities, mainly of those in charge of the forestry sector.

REFERENCES

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