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## THE EVOLUTION OF AFFORESTED LAND IN NORTHERN MOLDOVA PLATEAU

Victor Capcelea<sup>1</sup>

**Key words:** forest resources, forests, forest management, illegal felling, forest planting.

**Abstract.** The present article contains a study on the evolution of afforested land in Northern Moldova Plateau. In addition, it describes some spatial aspects concerning the use and expansion of these categories of land within the study region. The present article also reflects the research results on the basis of the data submitted by the "Moldsilva" Agency, The Institute of Research and Forestry Management and Land Relations Agency and Cadastre of the Republic of Moldova. The scientific publication also depicts some current issues on the protection of land in Northern Moldova Plateau.

### Introduction

Forests represent an element of the geographic landscape composed of forest vegetation with areas larger than 0.25 hectares [9].

A forest carries various important functions for the environment (climate, hydrological, edaphic, social) [3], and as a result appears the question of enlargement and protection of this element.

### Results and discussion

According to the Land Cadastre of the Republic of Moldova [5], 01.01.2015 land area covered by forests in Northern Moldova Plateau amounted to about 30 200 hectares, increasing for the last 25 years with about 4800 hectares (fig. 1).

Nowadays, the share of land covered by forests in Northern Moldova Plateau is about 9.0% [5] (fig. 1), as being less than the average of the country (11.2%) [5].

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<sup>1</sup> Tiraspol State University, Moldova victorcapc@mail.ru

After the data [4, 5] share of afforested land in Northern Moldova Plateau during the last 25 years has increased by only 1.5%.

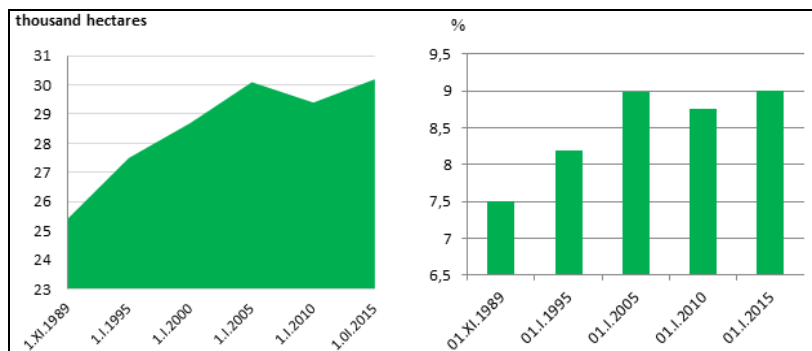


Fig. 1. The Evolution of Land Covered by Forests in Northern Moldova Plateau

According to data of the latest forest management in 2004-2007 period [8] of the 30,200 hectares of land covered by forests of Northern Moldova Plateau limits, about 27 100 hectares (89.7%) - belong Agency "Moldsilva" and about 3100 hectares (10.3) - belong to other owners (municipalities, services of roads exploitation).

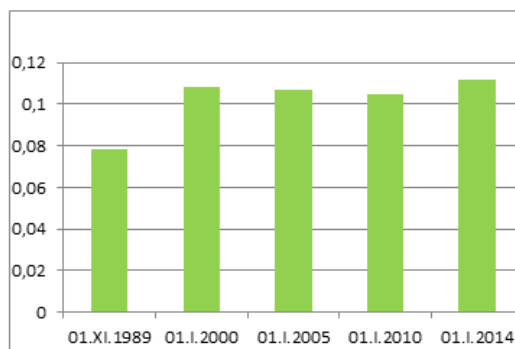


Fig. 2. The Degree of Assurance of the Population with Afforested Land in Northern Moldova Plateau (hectares per person)

One inhabitant of this region has about 0,112 ha of land covered by forest, in comparison with the state from 01/01/1989 the degree of assurance of the population of Northern Moldova Plateau with afforested land increased by about 0,034 hectares [4, 5, 6] (fig. 2).

According to data [1], in territorial profile, the highest share in the structure of forest land is registered in the commune of Briceni: Slobozia-Șireuti (over 41.6%), Cotiujeni, Caracușenii Vechi, Hlina, Balasinești, also is highlighted Gârbova (Ocnița), where the degree of afforestation varies between 25.0% - 41.5% of the total area of commune (fig. 3).

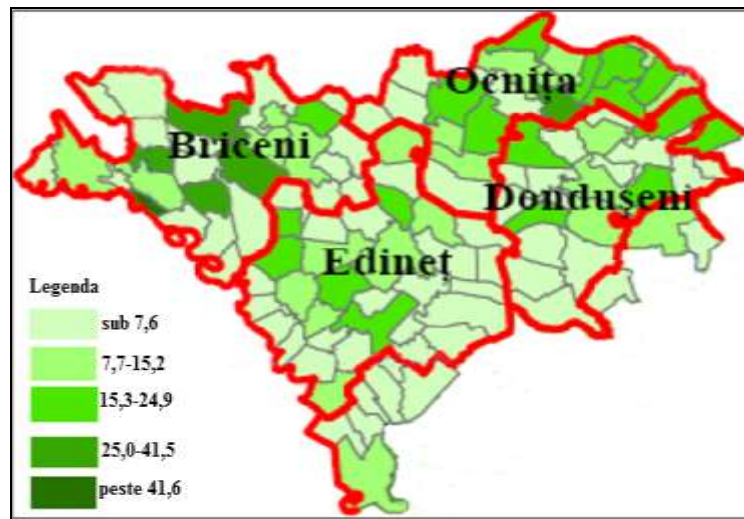


Fig. 3. The Forest Share in the Structure of Land Fund, on commune (%)

According to official data from Research Institute and Forestry Management, the largest forest bodies in the region were kept in the limits of Edineț, Briceni (Caracușeni 1368,9 hectares and Rosoșeni -892,6 hectares) and Lipcani (Șirauti-1169.0 hectares) [8].

The negative anthropogenic factors affecting forests are considered to be: illegal felling, damaging trees and unendorsed grazing.

According to the data presented by Forest District [7, 8, 11] between the years 1994-2004 on the territory of Moldova Plateau North were illegally cleared over 987.3 m<sup>3</sup>, and later in the period 2005-2014 the volume of deforestation increased up to 3216.1 m<sup>3</sup> of wood or 3.2 times. The highest deforestation during 2005-2014 was recorded in forest districts Dondușeni (1395.71 m<sup>3</sup>), Ocnița (827.95 m<sup>3</sup>) and Otaci (674.73 m<sup>3</sup>) [11] (tab. 1).

Tab. 1. The Volume of Illegal Felling in Northern Moldova Plateau (the forest districts)

Forest district	Illegal felling 1994-2004, m <sup>3</sup>											
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	total
<i>Edinet State Forest Enterprise</i>												
Briceni	6,12	8,5	11,45	1,23	6,31	23,75	6,42	3,05	1,31	3,75	4,16	76,05
Lipcani	-	-	-	-	-	-	-	-	-	-	-	123,22
Edineț	-	42,3	44,3	22,8	50,9	24,5	124,2	91,4	165,0	122,6	50,5	738,5
Dondușeni	-	-	-	-	-	-	-	-	-	-	-	-
Ocnita	#	#	#	#	#	#	#	#	#	#	#	#
Otaci	14,5	16,5	27,0	26,5	45,8	34,0	13,9	1,2	6,5	14,0	-	199,9
<i>Glodeni State Forest Enterprise</i>												
Râșcani*	-	-	-	-	-	-	-	0,97	0,04	2,16	46,19	49,36
<i>Solcani State Forest Enterprise</i>												
Șolcani*	-	-	-	-	-	-	-	-	-	-	-	-
Forest district	Illegal felling 2005-2014, m <sup>3</sup>											
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Total	
<i>Edinet State Forest Enterprise</i>												
Briceni	3,08	2,85	2,47	3,18	3,81	8,78	5,93	27,26	43,8	26,94		128,81
Lipcani	5,01	0,93	1,41	0,65	1,65	4,77	4,36	12,5	21,6	8,75		61,63
Edineț	13,75	11,03	44,69	33,71	28,55	30,29	33,6	139,4	102,8	90,98		52,88
Dondușeni	28,4	34,2	26,3	32,4	20,1	275,9	76,9	56,16	792,9	52,45		1395,71
Ocnita	*	*	*	14,2	11,4	91,1	62,5	27,43	597,1	24,22		827,95
Otaci	48,35	23,64	34,9	8,43	12,43	329,97	62,5	26,65	78,7	49,16		674,73
<i>Glodeni State Forest Enterprise</i>												
Râșcani*	5,894	9,52	1,04	0,65	6,07	10,42	0,78	18,0	16,34	5,14		73,854
<i>Solcani State Forest Enterprise</i>												
Șolcani*	-	-	0,04	0,17	0,05	-	0,11	0,13	0,06	-		0,56

\* Forest district assigned to Northern Moldova Plateau, # no data were presented by forest districts staff

The main causes conducive to illegal felling of forests and other forest land vegetation are considered to be [2]:

- the high level of poverty and lack of other income of the rural population;
- excessive taxes and fees on legally obtained timber;
- lack of specialized staff in guarding the forests and other holders;
- low payments of staff and employees in guarding forestry, that determine the evolution of corruption phenomenon in this system;
- low level of ecological education, especially in the forestry domain.

An important role in the complex of measures for the protection and rational exploitation of forest resources is held by forest planting and regeneration. Regeneration and forest planting reached remarkable proportions in 1990, with a downward trend, with the exception of 2003 year, when the planted area increased significantly. Thus, in 1990 were planted forests on an area of 175.5 hectares in Northern Moldova Plateau, later planting pace drops to the 9.8 hectares in 2002. Between 2003 forest plantation area increased again sharply up to 121.8 hectares.

After the 2003 planting rate fell sharply from 5.2 hectares in 2005 and subsequently increased to 61.4 hectares in 2014 [10] (fig. 4).

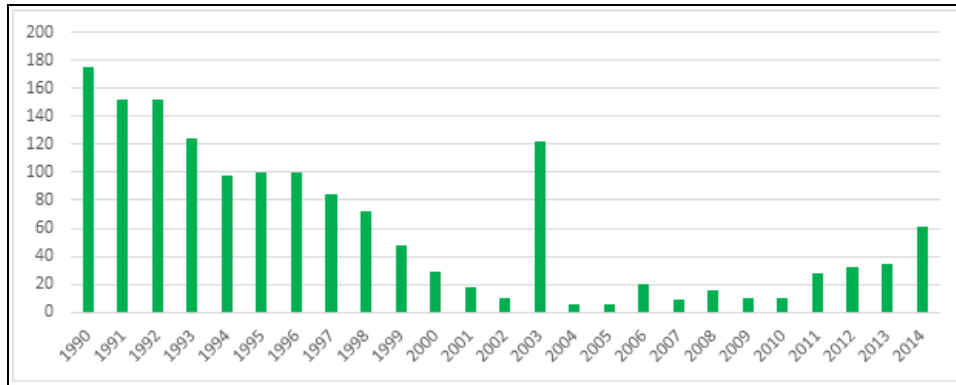


Fig. 4. The Area of Afforested Land in the State Forest Fund of Northern Moldova Plateau (hectares)

### Conclusions

During the period 1990-2014, the area of land covered by forests in Northern Moldova Plateau increased by 4.8 thousand hectares, or 1.5%. About 90% of land covered by forests in this region belongs to the state forest. The highest odds of forests in the land structure in recent years are recorded in the northern part of Northern Moldova Plateau (Briceni and Ocnița). The current state of forests in Northern Moldova Plateau has not yet reached the optimal form and in order to achieve eco protective functions in the region is necessary to exceed the degree of afforestation of 15%.

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- \*\*\* Dărilor de seamă a Direcțiilor (secțiilor) pentru statistică raionale (Briceni, Ocnîța, Edineț, Dondușeni, Râșcani, Soroca, Drochia) privind numărul populației la 1.01.1989, 1.01.2000, 1.01.2005, 1.01.2010, 1.01.2014. (6)
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