THE CURRENT STATUS AND DEVELOPMENT STRATEGIES OF THE NATIONAL FOREST FUND

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Abstract

The forests of the Republic of Moldova are part of the national natural patrimony and are among the few renewable sources that offer the possibility to influence and improve the quality of the environment. The forest resources of the Republic of Moldova consist of the resources of the forest floor and forest vegetation in the forest environment. The Republic of Moldova has a forest fund which, on January 1, 1999, covered an area of 394 thousand ha (11.6% of the country's territory), including forests - 325.4 thousand ha (the degree of afforestation of the territory is 9.6%, or 0.075 ha of forest per capita). The forestry fund also includes the areas intended for the cultivation, production and administration needs of the forestry sector, land intended for afforestation and included with forestry planning. These lands are an integral part of forest ecosystems and are managed and protected in accordance with the legislation in force. At the same time, Moldova has 46.7 thousand ha of forest vegetation outside the forest fund. The forestry authorities manage 349.2 thousand ha, or 88.6% of the national forest fund, of which forests occupy 311.8 thousand ha. The rest of the forest land - 44.8 thousand ha, or 11.4% - is managed by municipalities, agricultural units and other forest beneficiaries. Forests (325.4 thousand ha) are extremely unevenly distributed: the Central Zone is responsible for about 60% (afforestation rate of 13.5%), the Northern Zone - about 26% (with an afforestation rate of 7.2%), and the Southern Zone (with an afforestation rate of 6.7%), which is particularly affected by drought and erosion, with a deficit of water resources, only 16%.

Keywords: forest environment; forestry fund; Strategy of the National Forest Fund; forest

Forests are a valuable source of a wide variety of benefits. In addition to contributing to the development of the national economy through wood processing and the purchase of forest products, forests are also an important factor in maintaining ecological balance. Forests create a microclimate that reduces the impact of negative factors. The importance of forests for the continuous stabilization of groundwater levels and the maintenance of aquatic resources, the balance of carbon dioxide,

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nitrogen and phosphorus in the atmosphere and the release of oxygen are well known. The capacity of forests in the Republic of Moldova to absorb carbon dioxide from the atmosphere is about 2.23 million tons per year. Forests contribute significantly to reducing soil erosion and landslides. In Moldovan conditions, with high temperature fluctuations, frequent droughts, water shortages, landslides prone to landslides, decreases the soil fertility by up to 40-50%, through intensified erosion processes, the protection of forests is of paramount importance. The numerous benefits, which are conditioned by the existence of forests, are not inexhaustible. Reckless attitudes towards ecologically balanced components of the forest can cause irreparable damage with implications for the well-being of present societies and, to an even greater extent, future generations. For these reasons, the sustainable management of forests and forest vegetation has become a priority concern for each country and the international community as a whole. The Republic of Moldova has a Forest Fund covering an area of 394 thousand hectares (11.6% of the country's territory) on January 1st, 1999, of which 325.4 thousand hectares are forested (9.6% of the territory is forested, or 0.075 hectares per capita of forest) (Natural Resources and Environment in the Republic of Moldova, 2022, p. 28). According to data from 2021, the total area of the Forest Fund of the Republic of Moldova is currently about 373,000 hectares, which is about 11.5% of the total area of the country. Of these, approximately 77% are deciduous forests, 21% are coniferous forests, and the rest are mixed or other types of forests. The Forest Fund also includes areas for the cultural, productive and management needs of the forestry sector, land for afforestation, including forest management. These lands are an integral part of the forest ecosystem and are managed and protected in accordance with the laws in force. Meanwhile, Moldova has 46,700 hectares of forest outside the Forest Fund. The area under the management of the forest authorities is 349,200 hectares, representing 88.6% of the country's forest resources, of which the forest area is 311,800 hectares. The rest of the Forest Fund - 44,800 hectares, or 11.4 % - is managed by municipalities, agricultural units and other forest beneficiaries. The distribution of forests (325,400 hectares) is extremely uneven: about 60% in the middle (13.5% afforestation rate), about 26% in the north (7.2% afforestation rate), and 6.7% afforestation rate in the south, mainly affected by drought and soil erosion, water shortage only 16%. Moldova's forests are mainly composed of deciduous species (97.8%), with only 2.2% coniferous species (Natural Resources and Environment in the Republic of Moldova, 2022, p.31). About half of the forest area belongs to live oaks, but about 12% belongs to other native species. In the last 50 years, the forest area has increased considerably due to the planting of salt and resin trees. Although

the total area of hopper trees has increased by 18%, their share in the forest structure has decreased by 13.6% (Dragan, 2010, p. 12).

Thus, more than a third of plantations are cultivated by introduced species that are not part of Moldova's natural ecosystem, about 90% of goren plantations and more than 60% of oak plantations are from seedlings of generations II-IV (Natural Resources and Environment in the Republic of Moldova 2022, p. 36). For these reasons, the latter has a very low vegetation status and resistance to adverse biotic and abiotic factors. The Forestry Fund administered by the Forestry Regie the Forest Fund administered by the Forestry Regie includes 311,800 hectares of forest, including forestry developments. The total volume of timber stock is 35.14 million cubic meters and the timber reception per capita is 8.1 m^3.

The current stand structure by age group is largely unbalanced. The average age of trees is 40 years, of which 26.3% are young trees, middle-aged trees - 43.7%, developable trees - 17.5%, growable trees - 12.5%. The average wood volume per hectare reaches 124 cubic metres and the average annual growth in production is about 907,000 cubic meters. The average credit rating is 2.3, but the average forest consistency is 0.73 (Postolache, Ciubotaru, Galupa, Begu, 2005, p. 14).

The harvesting potential of the main product established by the forest unit is 195,000 m^3 per year. For the secondary products (care and hygiene cuts), the annual harvest could be 180,000 m^3 (Dragan, 2010, p. 14). In the next 20-40 years, the amount that can be harvested will increase as young trees reach old age and the forest area expands. Forests in the Republic of Moldova belong to functional group I and have a dedicated environmental protection function.

In relation to the functions they perform, the following functional subgroups can be distinguished:

1) forests with water protection functions - 4.9 thousand ha;
2) forests with land and soil protection functions - 21.9 thousand ha;
3) forests with protective functions against harmful climatic and industrial factors - 158.3 thousand ha;
4) forests with recreational functions - 95.9 thousand ha;
5) forests of scientific interest and with functions of protection of the genofund and forest ecoforest - 44.1 thousand ha.

For each functional category, the forest management plans establish appropriate management methods, which ensure the fulfillment of the assigned functions.

Between 1950 and 1980, forest regeneration was mainly manual (removal of wood, subsequent land preparation and planting of forest crops). In the same way, forest crops were grown on land considered unsuitable for agriculture. In total, more than 200,000 hectares of forest vegetation were planted and the forest area increased by 60% (Postolache, Ciubotaru, Galupa, Begu, 2005, p. 14).

Since the 1990s, the possibility of large-scale planting of forest crops has declined, leading to a decrease in the rate of expansion of land covered by forest vegetation. At the same time, under the new forest management policy, priority is given to natural regeneration, which in the case of natural forests facilitates the establishment or introduction of seeds under the plots and contributes to natural regeneration (leading to the rooting of acacia). The main share (about 72%) of forest renewal and expansion projects is afforestation of woodland, open space, etc., as well as restoration of degraded forest stands and low-efficiency forest crops. In recent years, certain irregularities related to the existing forest structure and the influence of unfavorable climatic factors have led to the emergence and spread of complex outbreaks of forest pests and diseases, resulting in the deterioration of forest phytosanitary conditions. The area of forest affected by the pest has increased by 15-30% annually over the last decade. Each year, 30-40,000 hectares or 9-13% of forests require pest and disease control measures. Moldova's forests, according to their specific composition, which is predominantly deciduous (97%) (Postolache, Ciubotaru, Galupa, Begu, 2005, p. 14), belong to the category of forests with low fire danger (average - 3.6 points). The main cause of forest fires is usually the irresponsible behavior of the population with fire. Illegal logging, unauthorized grazing and contamination of the forest floor with household waste, construction and other waste and residues pose increased dangers. From 1992 to 1999, the forest authorities illegally felled about 174,000 cubic meters of forest, equivalent to about 1,400 hectares of forest land (Dragan, 2010, p. 12).

As a result, the forest land managed by the Forestry Directorate has lost about 1% of its forest area. During the same period, 13% of forests managed by other owners were destroyed. Unlicensed grazing accounted for about 6% of forest crop losses, a particularly worrying proportion between 1990 and 1995, while the number of animals in the private sector was also increasing. The forestry sector supplies the national economy with about 360,000 cubic meters of timber annually. However, 70-80% of the population's firewood needs are met. The total wood processing capacity of forestry authority enterprises is about 100,000 m^3 per year (slightly less than a third of the harvested wood volume), but only about 25,000 m^3 per year, or 7% of the harvested processing volume. As the forest industry lacks the necessary equipment

and advanced technology, the types of wood products are limited to flooring, wood chips, planks, embers, barrels, clothespins, yarn tails and similar items, failing to meet the needs of the industry and the profit of the entire national economy. Non-wood forest products are also under-utilized. The annual potential of ancillary products from Moldova's forests, such as fruits and berries, nuts, mushrooms, medicinal plants, etc., is about 4 000 tons, with only about 3 000 tons of such products actually harvested per year. Annually, the forestry sector brings the national economy an income of about 34-35 million lei, which is 0.3- 0.4% of the gross domestic product.

The circumstances that condition the low contribution of the forestry sector to solving social-economic problems are:

1) the insufficient degree of afforestation of the country's territory and, as a result, the reduced possibilities of harvesting and processing of wood mass and accessory forest products;
2) the insufficient use of seasonal potential, which leads to low forest productivity;
3) the insufficient use of the wood supply (current growth), which could be harvested without damaging the condition of the forests;
4) the low level of provision of the forestry sector with modern equipment for the efficient processing of wood, which has a negative impact on the assortment, quality and competitiveness of the finished wood products from it, as well as on the harvesting of ancillary products;
5) the insufficient development of some auxiliary activities, such as nurseries, raising snails and pheasant for commercialization, hunting tourism, ecotourism, etc., which could bring income, and this could be used for the additional financing of the basic activities.

Forests managed by other operators, especially cities, represent 11.4% of the National Forest Fund and fulfil the priority function of land and soil protection. In these forests, the last 30 to 50 years have been planted on land unsuitable for agriculture, the forest system is not respected, care measures are implemented on a case-by-case basis, and forests are affected by illegal cutting and indiscriminate grazing, pollution by waste, etc. The forest vegetation includes protective barriers for agricultural land, traffic routes, clusters of trees and solitary trees around cities and other areas, not included in the Forest Fund, which covers an area of 46,700 hectares, of which 30,000 hectares belong to the curtains forestry (for the protection

of agricultural lands - 27.3 thousand ha, for the protection of communication routes - 2.4 thousand ha; the rest of the forest curtains - 0.3 thousand ha) (Natural Resources and Environment in the Republic of Moldova 2022, p. 38). The owners of these lands are the rural municipalities, which do not have dedicated staff to stop illegal logging, unauthorized grazing and garbage that pollutes green spaces. Therefore, only about 18,000 hectares (60%) of the total area of the canopy are in good condition, the rest are either cut (19%) or completely destroyed (21%), according to the analysis of forestry experts. The sustainable management of the forest in the Republic of Moldova can only be successfully approached by promoting a forestry policy adapted to the new requirements. In this sense, the new vision system of the sector must form a new forestry mentality, implement the provisions of the international conventions to which the Republic of Moldova is a party, organize the rational addition of forest products to ensure the continuity of the forest as a structure and function, in correlation with growing conditions, contributing to maintaining the multifunctional potential of forests.

Forest management must be subordinated only to sustainable national interests, guided by national traditions and forestry objectives and based on ecological principles. Forest protection and sustainable development are inseparable from the protection of national health. In forestry policy, emphasis must be placed on biodiversity conservation at all levels, training of forestry personnel, harmonization of legislative frameworks and international cooperation. The legislative framework is the basis of the national policy in the forestry sector and consists of the Constitution of the Republic of Moldova, 12 laws and a series of government decisions directly or indirectly related to the forestry sector. In the national forestry policy, the primary function of forests is to protect the environment and ensure ecological balance. According to Article 127 of the Constitution of the Republic of Moldova, the forests in the country are the exclusive object of public property. Private ownership of forests is allowed only on condition that they are planted on private lands. The legislative framework related to forestry policy is to be developed and improved both in line to the new requirements of the transition period and starting from the need to harmonize the national forestry policy with the norms, accepted by the world community.

The Republic of Moldova has signed and ratified 16 international conventions and agreements in the field of environmental protection, which aim, directly or indirectly, at the protection of forest resources and the preservation of the biological diversity of forests, including the Convention on Wetlands of International Importance, especially as a Waterfowl Habitat (Ramsar, 1971), the Convention on

the Conservation of European Wildlife and Natural Habitats (Bern, 1979), Convention on the Conservation of Migratory Species of Wild Animals (Bonn, 1979), Agreement on the Conservation of Bats in Europe (London, 1991), Convention on Biological Diversity (Rio de Janeiro, 1992), United Nations Framework Convention on Climate Change (Rio de Janeiro, 1992), Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Helsinki, 1992), Agreement on the Conservation of African-Eurasian Migratory Waterbirds (The Hague, 1995). The central forestry authority, legally empowered to regulate, coordinate and exercise control over the administration and management of the forest fund, is under the direct subordination to the Government (Decision no. 350 from July 12, 2001, for the approval of the Strategy for the Sustainable Development of the Forestry Sector in the Republic of Moldova).

Within this authority activate: 14 state forestry units, three forestry units, the "Pomusoara" Forest Fruit Processing Enterprise, five state nature reserves, as well as the Forestry Research and Management Institute. The forestry and forest-hunting units are state structures with full powers in the field of forestry and hunting funds administration in the territory, they have the status of legal entity with all necessary attributes (autonomous balance sheet, current budget accounts and other accounts) and include altogether 69 forestry districts with 187 sectors and 1068 forestry cantons (Grodu, Covali, 2011, p. 23).

Their establishment, reorganization and liquidation are carried out by the central forestry authority. State nature reserves are legal entities with autonomous balance sheets, current bank accounts and other accounts. They are established and liquidated in accordance with the legislation. The reservations are not divided into forestry detours.

The Forestry Research and Management Institute is a legal entity with full powers in the field of forest management, organization of detection and combating of forest diseases and pests, in the field of scientific forestry research and forestry planning. The Central Forestry Authority ensures forest monitoring, which represents a system for observing and forecasting the condition of forests, detecting and preventing negative processes and trends in their development. The national network of permanent surveys, created in 1993, has a density of 2x2 km (1 survey per 400 ha) and includes about 700 surveys. The European network, established in 1992, has a density of 16x16 km (1 survey per 25.6 thousand ha) with 12 permanent surveys (Republic of Moldova: comparative analysis of national forest legislation with the international legal framework to ensure efficient management of forest resources). Based on forest monitoring data, the Republic of Moldova is included in

the group of countries with heavily affected forests (the percentage share for classes II-IV exceeding 20%), along with Belarus, Bulgaria, Czech Republic, Denmark, Estonia, Germany, Greece, Hungary and other countries (Grodu, Covali, 2011, p. 23).

Starting from 1992, the Republic of Moldova is a member of the International Cooperation Program for the Assessment and Monitoring of Pollution Effects on Forests "ICP-FORESTS" based in Hamburg (Germany). Currently, under this program, all the surveys within the national network are being inventoried for assessing the state of the forests at level I and moving on to carrying out the works for level II. In the future, it is also planned to carry out level III surveys (Republic of Moldova: comparative analysis of national forestry legislation with the international legal framework to ensure efficient management of forest resources).

In order to develop the forestry fund of the Republic of Moldova, the following strategies can be implemented:

1) Promoting sustainable forest management - This includes forest protection and regeneration measures, as well as a rational exploitation of wood resources.
2) Infrastructure improving - The development of the necessary infrastructure for access to forest exploitation areas and for the transport of timber can contribute to increasing the efficiency of forest exploitation.
3) Promoting responsible logging - This can be achieved by enforcing logging standards and monitoring forestry sector' activities.
4) Implementing the fire and pest protection measures - This includes the training of staff to prevent and extinguish fires, as well as the use of phytosanitary treatments and other pest control measures.
5) Developing ecological tourism - This can be achieved by creating tourist routes in the forests of the Republic of Moldova and promoting of ecotourism activities.
6) Stimulating the involvement of local communities in the forest management - The involvement of local communities can contribute to a more efficient management of forests and to increasing the degree of responsibility towards them (Decision no. 350 from July 12, 2001, for the approval of the Strategy for the Sustainable Development of the Forestry Sector in the Republic of Moldova).

These strategies can be implemented through a forestry fund development plan, that must be based on a detailed assessment of the current state of the forests and the needs of the forestry sector in the Republic of Moldova. Also, it is important to involve all actors in the forestry sector and local communities in the development of this plan and in the implementation of the measures provided for it.

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