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DEVELOPMENT OF FOREST MANAGEMENT: A CASE STUDY OF ZHYTOMYR OBLAST

The total area of forest plantations in Ukraine is 10.6 million hectares, of which 9.6 million hectares are covered with forest vegetation. The forest cover of the country's territory before the invasion of Russian forces was 17%, unfortunately, it is now around 15%. Forests in Ukraine are distributed very unevenly, concentrated mainly in the Polissia region and the Ukrainian Carpathians. The forest cover varies significantly in different natural zones and does not reach the optimal level at which forests positively influence the climate, soil, water resources, mitigate the effects of erosion processes, and ensure a higher timber yield [1, p. 53]. Zhytomyr Oblast belongs to the forest-rich regions of Ukraine. The total area of all natural and artificial forests in Zhytomyr region constitutes its forest fund, with a total land area of 1081.9 thousand hectares, out of which 1001.6 thousand hectares are covered with forest vegetation. The forest cover level of the region is one of the highest in Ukraine, reaching 33.6% (while the calculated optimal level for this natural zone, necessary to achieve a balance between timber consumption and environmental requirements, is 36%). Zhytomyr Oblast's forest cover is surpassed only by Zakarpattia, Ivano-Frankivsk, and Rivne Oblasts [2, p. 95].

The forest resource potential of Zhytomyr Oblast is characterized by uneven distribution, diversity of tree species, varied age structure, different levels of development, and intensity of use. This requires special attention and the application of specific approaches tailored to the region's unique characteristics.

Excessive logging in the post-war period has left its mark on the age structure of forests in Zhytomyr Oblast. Currently, young and middle-aged plantations dominate the age structure, accounting for 73%. Mature and overmature plantations cover only 10% of the forested land. More than half of the forest plantations (53%) have been established through artificial afforestation (creating forest stands after clear-cutting). The majority of Zhytomyr Oblast's forest plantations are classified as

highly productive. Based on their assessment characteristics, they fall into the I and II bonitet classes, with an average stand density of 0.8. Currently, there is a trend towards increasing areas affected by diseases, pests, and, in the past year, fires caused by shelling from the aggressor's territory. The total area of damaged forests is 55.0 thousand hectares, including 11.0 thousand hectares affected by root rot.

Within Ukraine, 52 state-owned forestry enterprises operate under conditions of pollution, including 12 such enterprises in Zhytomyr Oblast. For the main product of forestry (timber), there is a gradual increase in Cs-137 content in most areas of Zhytomyr Oblast due to the annual accumulation of radioactively contaminated annual and radial tree growth.

However, despite the bans and restrictions on timber harvesting and other products of incidental forest use established by the current legislation, the volumes of timber harvesting in the areas of Zhytomyr Oblast affected by radioactive contamination continue to increase. According to the information provided in Table 1, it is evident that the harvesting of salvage timber in the regions affected by radioactive contamination constitutes approximately 64% of the total volumes in the region. In some areas, this indicator has increased by more than 1.5 times compared to 2017, notably in the Luhynsk, Korosten, and Malyn districts.

Table 1

Harvesting of salvage timber in the districts of Zhytomyr Oblast affected by radioactive contamination, 2017–2022

Indicators	Years					
	2017	2018	2019	2020	2021	2022
Zhytomyr Oblast, total, thousand	2444,1	2684,	2677,	2881,	3026,	3127,
Including in the districts affected by radioactive contamination:						
Yemilchynskiyi, thousand m ³	159,0	172,7	173,4	183,5	174,5	176,6
Korostenskiyi, thousand m ³	98,9	129,7	135,7	122,5	146,0	149,4
Luhynskiyi, thousand m ³	100,7	108,3	101,1	140,1	146,8	157,5
Malynskiyi, thousand m ³	153,4	178,9	202,3	244,3	235,7	250,5
Narodytskyi, thousand m ³	118,6	137,8	137,1	133,0	158,1	146,6
Novohrad-Volynskiyi, thousand	271,3	284,4	298	309,9	326,6	334,7
Ovruchskiyi, thousand m ³	370,1	415,6	399,1	375,8	436,6	464,2
Olevskiyi, thousand m ³	307,0	327,1	310,3	331,5	337,2	306,7
Total for districts affected by radioactive contamination,	1579,0	1754,5	1757,0	1840,6	1961,5	1961,5
Proportion of salvage timber harvesting by districts affected by radioactive contamination, %	64,6	65,3	65,6	63,9	64,8	64,8

Source: Calculated by the author based on the data [1]

Considering the formation of a strategy for balanced forestry management, researching the role of forestry in the region's socio-economic context is crucial. By utilizing key performance indicators of enterprises in Zhytomyr Oblast, excluding banks and government institutions, it is possible to determine the significance of forestry enterprises in these metrics and, consequently, their impact on the socio-economic development of the region [3, p. 125].

The analysis of the eco-economic prerequisites for forming a strategy of balanced forestry management, using the example of Zhytomyr Oblast, indicates that issues related to the utilization of the region's forest resources significantly affect all areas where these resources are present. Historically, industrial development in these regions has been weak, and the production capacities existing during the command-administrative economy era were closely linked to forestry. The privatization of wood processing facilities in the 1990s often led to their decline and the reorientation of forestry towards exports. The number of jobs in the forestry sector in forest-rich regions has decreased significantly.

The main trends in contemporary forest management are shaped by specific environmental, economic, and social conditions that must be considered when forming a strategy for balanced development. Environmental conditions include the location of forest plantations, the forest cover level in regions, the distribution of total forest area by categories, tree species composition, age structure, and the degree of contamination with radioactive elements. Environmental conditions for forestry vary regionally and, in turn, influence the economic and social factors in the development of forestry enterprises.

It has been established that among the economic trends characterizing forest management development in Zhytomyr Oblast, the following points can be highlighted: the increasing share of salvage timber harvesting, already high at present (more than 64% of the total volumes in the region), and timber export volumes (more than 50% of the total volumes in the region) from areas affected by radioactive contamination; the allocation of forest resources to various forest users with different organizational and managerial subordination, leading to the complexity of implementing a unified forest management strategy; the enhanced economic role of communal forestry enterprises in the development of the forestry sector; the strengthening correlation between the economic activities of forestry enterprises and the incomes of the local population.

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