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**INCREASING INVESTMENT ATTRACTIVENESS OF THE FORESTRY  
COMPLEX OF UKRAINE AS A GUARANTEE FOR SUSTAINABLE DEVELOPMENT**

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**Abstract.** Within the article, the importance of increasing investment attractiveness of the forestry complex as a factor of sustainable development and conservation of the ecosystem is investigated. A methodical toolkit for evaluating the process of forming investment attractiveness of the forestry complex is proposed. The importance of improving workflow management and motivation of the personnel of the enterprises. It has been proved that the growth of investment attractiveness can be achieved provided proper tax climate is created, state guarantees are developed, timber export is reviewed, cooperation with foreign companies is established. Attention is drawn to the fact that the investors' decisions to invest in the economy of a particular country are significantly influenced by the following ratings: The European Business Association's Investment Attractiveness Index; Doing Business; Index of economics freedom; Global Economic Forum Competitiveness Index. The proposed method of estimation of the process of formation of investment attractiveness of the forest complex is expedient due to the set of factors and indicators, which should be supplemented by carrying out an analysis to check their collinearity according to the Farrar-Glober algorithm. The article states that the growth of the forestry complex is directly dependent on the efficiency of work motivation, recognition of personal contribution to the overall success.

**Key words:** forestry complex, enterprises of the forestry complex, agriculture, investment attractiveness, factors of investment attractiveness, capital investments, sustainable development, workflow management, labor motivation, ecologic function.

**Target setting.** Development of social relations, transformation and reformation of the domestic economy, including the forestry complex, requires the introduction of new-type social and economic relations, as well as a revision of the production management system. Improving the productivity of employees is a key criterion for the success of organizational and economic reforms.

The forestry complex is at the epicenter of special attention, different scenarios and mechanisms for its reform are proposed. This concerns the transformation of the management system, improvement of regulatory tools to influence timber markets, and the review of the relationship between the forestry and forestry segments of the industry. Investment deficits are a major hindrance to real reforms in the forestry sector. As a result, the worked-out and obsolete equipment at the vast majority of forestry enterprises is replaced in an untimely and incomplete manner, and the quality of products is not improved [1].

Proper labor management at the enterprises of the forestry complex determines the activity efficiency and is a complex and costly process, which requires systematic support, clear regulation and proper control by senior management and the state, which will increase investment attractiveness and sustainable development of the industry enterprises.

In order to carry out efficient production activities at forestry enterprises, the matter of mobilization and efficient use of investment resources is urgent, that cannot be done without increasing the level of investment attractiveness of both the forestry complex and the entire Ukrainian economy.

**Actual scientific research and matters analysis.** V. Bondar [1], Bhirsma P. Subedi [2], Dankevych [4], O. Dzyubenko [5], O. Fedorchak [6], M. Stupen [14] and others devoted their papers to the problems of effective activity, investment attractiveness and stimulation of sustainable development, methodology and practice of the enterprises management of the forestry complex, however, this issue remains relevant and debatable.

The study of Bruno Kanieski da Silva, Frederick W. Cubbage, Luiz Carlos Rodriguez Estraviz, and Christopher N. Singleton prove that financial attractiveness is not enough to entice investors; it also is necessary to have an attractive. Developing countries have made political and economic changes to create a favorable business environment for foreign investments [3].

Yousefpour R., Jacobsen J. B., Thorsen B. J. have come to the conclusion that forest managers base their decisions on different sets of information and in ways quite different from those assumed. This is a crucial issue as the success of decision making in adaptive forest management depends on managers being aware of changes with regard to state and development of the forest and knowledgeable about available management strategies. Most likely, attention to risk analysis in forestry would grow even more in the coming years, as climatic changes and

uncertainties will manifest themselves into concrete management challenges, knowledge shortages and decision support needs [20].

Teyo Ritteri, Tara Peltola and Lina A. Leskinen argue that most of the problems of branches and complexes of the national economy in the context of the state of their activity and sustainability are reflected in the state of enterprises [11].

E.Hansen, C.Claudi Rasmussen and E.Nibakk found that a stronger customer orientation for forestry companies takes place during the crisis, as this leads to increased innovation and improved product development [7].

**Methodology:** Fundamental provisions of the economic theory, outlined in scientific works of domestic and foreign scientists on investing, personnel management, improving the efficiency of the forestry complex of Ukraine are theoretical and methodological basis for writing the article.

In order to solve certain problems, general and special methods were used in the research process, including analysis, synthesis, induction, deduction (to determine the nature and role of the forestry complex in the course of economic processes in Ukraine); abstract-logical (to form conclusions and proposals for improving the activities of enterprises of the forestry complex).

**Purpose of the article:** study of the enterprises activities of the forestry complex in terms of the activity efficiency and investment attractiveness, as a key component of achieving sustainable development, preservation of the ecosystem, taking into consideration priorities of increasing the efficiency of utilization of the forest resource potential.

**Results.** One aspect of sustainable development is a caring attitude towards natural resource ecosystems; an important part in this process is taken by the forest complex, which increases the level of provision of the state and population with forest products and improves the environment state by increasing the volume of forest plantations.

Let's analyze the activities and investment volumes of the forestry complex in Ukraine. In 2017, the number of forestry entities in Ukraine decreased by 130 units, but in 2018 their number increased by 51 units and amounted to 3422 units. Due to the sale of forest resources and limitation of forest protection processes, the volume of sold products (goods, services) by enterprises of the forestry complex of Ukraine during 2016-2018 tended to increase, while the share of investment in forestry and logging in total investment in agriculture, forestry and fisheries has been shrinking since 2016 (from 2.6% in 2015 to 1.5% in 2018) (Table 1) [12, 13].

**Table 1. Capital investments in agriculture and forestry of Ukraine in 2010-2018**

Years	2010		2011		2012		2013		2014		2015		2016		2017		2018	
		%		%		%		%		%		%		%		%		%
Agriculture, forestry and fishery	11062.6	100	16466.0	100	18883.7	100	18587.4	100	18795.7	100	30154.7	100	50484.0	100	64243.3	100	66104.1	100
Forestry and timber cutting	177.8	1,6	283.1	1,7	281.4	1,5	383.4	2,1	381.0	2,1	788.5	2,6	777.1	1,5	768.9	1,2	980.3	1,5

Source: compiled by authors based on [12, 13]

Forestry enterprises operate at full capacity and have high performance, which in turn affects wages. As the level of wages is higher than the level in Ukraine, it is possible that in the presence of jobs at such enterprises, economically active population will leave to other areas in search of work less.

Forestry complex, as a holistic system and subsystem of the national economy of Ukraine, is aimed at providing three groups of tasks aimed at sustainable development of the country:

- 1) ensuring social functions of reproduction, conservation and multiplication of forests and forest lands of Ukraine as natural resources - its national wealth;
- 2) carrying out production and economic functions for the purpose of rational use of forest resources, production of industrial goods, consumer goods, provision of services to the population;
- 3) ensuring the ecological function of forests and forest resources, enhancing soil protection, water conservation and climate change mitigation.

In order to resolve them, appropriate functional links between the forestry system and other subsystems must be established. Based on the research results, the interconnections between the forestry and other sectors of economy are generalized (Table 2).

Analysis of the interconnection of the forestry with other sectors of the economy shows that they have a causal nature, which influences the activities of forestry enterprises, especially state-owned ones, which are the basis of forestry, and are established and operate within the structure of the state forest resources agency. They are independent economic entities. At the same time, each enterprise, although an independent economic unit, is at the same time an element of higher-level economic systems - a particular industry or the economy of the state as a whole.

The leading role in the allocation of enterprises of the forestry complex belongs to the raw material factor; transport is also of great importance. Forest harvesting is mainly carried out in the areas of raw materials.

**Table 2. Interconnection of the forestry with other branches of economy and their impact on sustainable development**

Branch structure	Interconnection of the forestry with other branches of economy	Impact on sustainable development
Heavy industry, mechanical engineering	Technical reconstruction of forestry production	+
Fuel industry	Satisfies needs for fuel and lubricants	+
Chemical industry	Provides mineral fertilizers to feed forests	+
Agriculture	Opportunities for mutually consistent rational use of land and forest funds to increase the efficiency of both industries, sharing labor and logistical resources	+
Transport	Consistent consumer of a large amount of timber; road and transportation companies make extensive use of protective and water-protecting properties of the forest in their production process; forest resources, mainly timber, occupy a significant place in rail freight	+
Construction industry	Ensures construction of fire-fighting facilities;	+
Pulp and paper industry	Uses wood and its wastes for the production of paper, cardboard, as well as fibrous materials, which are used as semi-finished products for the production of artificial fibers, plastics, cellophane, varnishes, explosives	+
Pharmaceutical, chemical, food industry	Consume useful by-products: saplings, juices and herbs, bark, nuts, mushrooms, berries, medicinal plants, bee products	+

Source: compiled by authors

Low investment attractiveness of the domestic forestry complex does not allow to reach the proper level of capitalization and increase the share of products with high added value in the forest processing units of state forestry enterprises, and this affects adversely the ability of these entities to invest in the reproduction of forest resource potential [5].

The speed of reproduction processes in forests, provision of positive qualitative changes in nature conservation activities, and therefore the achievement of a balanced level of the forestland use are directly dependent on the volume and efficiency of investments.

Insufficient level of investment attractiveness in the forestry complex caused the outflow of investments to the neighboring countries, where they use Ukrainian untreated timber and export finished products to Ukraine. The country loses significant profits that could be obtained by attracting investors by converting wood at its enterprises to chipboard or furniture, which would then be exported abroad, because the production of furniture made of chipboard is 40 times more efficient than the export of raw materials.

Reduced exports of unprocessed timber and an increase in timber production will have a positive impact both on the development of the national economy and regions. Attraction of investments will help increase tax revenues to the budgets of all levels, improve the use of infrastructure potential, develop labor potential, and increase the standard of living of the population [4].

Instead, countries with developed forestry complex export deep-processed forestry products, primarily furniture, cardboard and paper. These issues are also closely related to the problems of ecology and balanced development, environmental regulation of forest business [14].

According to the results of the research, it is established that among the main problems of the forestry complex of Ukraine are: imperfect regulatory framework; problems of forest management of different forms of ownership; imperfect economic mechanisms to stimulate forestry development; low level of investment attractiveness; low rates of implementation of environmental technologies; high anthropogenic load on forest ecosystems; imperfect tax base; growing demand in the domestic timber market; unauthorized felling of forests, self-seizure of forests; inadequate legal status of forest protection [9].

Among the most well-known ratings, which significantly influence the decision of investors to invest in the economy of a country, are the following: The Investment Attractiveness Index of the European Business Association [16]; The Doing Business rating) [17]; The Economic Freedom Index [9]; The Global Competitiveness Index of the Economic Forum [18, 19].

Investment attractiveness of a particular country, industry according to the ratings is determined by the following factors: registration of new business, availability of electricity, availability of credits, protection of investor rights, fulfillment of contractual obligations; freedom to start a business and freedom to trade; fiscal freedom; government intervention in the activities of private enterprises; freedom of investment, absence of corruption, freedom of the labor market, etc. [6]. In addition, economic and political stability are important factors for increasing investment attractiveness.

Against this background, it is advisable to present the process of forming the investment attractiveness of the forestry complex as a system  $S_{III}$ , which is described in the following way:

$$S_{III} = \langle F, I, R^{FF}, R^{FI}, P \rangle \quad (1)$$

where  $F$  - host of factors,

$I$  - host of indicators;

$R^{FF} \subset F \times F$  - host of casual relationships between factors;

$R^{FI} \subset F \times I$  - host of parametrical links between factors and indicators;

*P*- host of procedures for the assessment of factors interconnections (grouping, clustering, correlation, regression and others);

The host of factors  $F = \{f_1, f_2, \dots, f_i, \dots, f_n\}$  of the impact on investment attractiveness of the forestry complex can be defined as some features of the system, that can be evaluated qualitatively or non-parametrically.

It is advisable to divide the host of factors into subsets that characterize:

- $F^C$  – factors of long-term impact;
- $F^U$  – factors of short-term impact;
- $F^E$  – stochastic factors that cannot be influenced within the system frames.

Definition of the host of associative interconnections between factors and their indicators can be presented as follows:

$$R^{FI} : F \times I \rightarrow [0,1] \quad (2)$$

Under this elementary correlation for the relevant factor and a set of the indicators  $f_i R^{FI} i_j$ , the compliance factor is matched, weight of the relevant indicator  $w_{ij} \in [0,1]$ . The higher the value of the coefficient, the more accurate the indicator  $i_j$  characterizes the factor  $f_i$ .

In order to eliminate the interconnection between the indicators, variations in the use of different measurement scales in addition to determining the standardized values of the indicators (formula 1), an analysis should be performed by checking their collinearity by the Farrar-Glauber algorithm, which will allow the construction of an adequate econometric model when determining the form of a link within a given factor.

In modern conditions, determining motivational factors for enterprises of the forestry complex, which enhance the incentives for workers to productive work, are: providing equal employment and job growth opportunities on the basis of performance criteria; reconciliation of the remuneration level with its results and recognition of personal contribution to the overall success. This implies a fair distribution of income according to the degree of productivity gains; providing opportunities for professional development, realization of employees' abilities, development of training programs, advanced training and retraining.

To create effective staff motivation, we propose to formulate clear goals and milestones; for support managers at various levels to support employee initiatives to improve work organization; strengthen the discipline of work; establish an effective corporate culture; provide empathy for managers (interest in personal problems of employees, desire to help); create favorable working conditions; establish effective team interaction; develop conflict management skills; form a sense of involvement in employees.

Development of the forestry complex also requires the implementation of projects to increase the forest resource potential, the introduction of modern technologies of woodworking and electronic accounting of trees.

Since forestry enterprises are predominantly state-owned, it is possible to use state guarantees as a powerful tool for increasing investment attractiveness of forestry production.

Simplifying leasing arrangements can be an important factor in increasing investment in the forestry and wood working, that will speed up the process of updating the fleet of production equipment and forestry equipment and ensure a gradual decrease in the level of physical operation of fixed assets of state forestry enterprises [1].

Considering that Polesie, Carpathian and Transcarpathian regions, which have the largest areas of forests, are in close proximity to the borders of the European Union, there is every chance to establish effective cooperation and, in the medium term, establish large timber companies in Ukraine, to get rid of the timber feeder brand and enter the global value-added forestry chains.

**Conclusions of the conducted research.** Therefore, increasing investment attractiveness of the Ukraine's forestry complex is a key to ensuring sustainable development. With the need to save all kinds of resources and optimize costs, the improvement of labor organization, as a factor of competitiveness and investment attractiveness, is becoming increasingly important. Measures on the labor inflow improvement at forestry enterprises should be complex, take into consideration peculiarities of working conditions, as well as the modernization, reconstruction and technical re-equipment of fixed assets.

Stabilization and growth of forestry production, profits of producers are directly dependent on the efficiency of work motivation in the primary sector of the economy, in particular the combination of its tangible and intangible assets, as a result, the development of human skills and capabilities as the ultimate goal of social progress and its impact on production is ensured. Priorities of the modern system of work motivation of forestry enterprises are improvement and increase of the level of remuneration, stimulation of young people for living and production activity in rural territories, state support in providing a favorable investment climate, providing preferential loans, consulting services and promoting the development of forestry enterprises, involving managers to participate in professional exhibitions, fairs, international conferences and more.

It is found that significant growth of investment attractiveness of forestry enterprises can be achieved by maximizing profits while creating the appropriate tax climate, developing a system of state guarantees, revising the timetable for export of timber, establishing cooperation with foreign companies.



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