

THEORETICAL PRECONDITIONS FOR THE DEVELOPMENT OF ACCOUNTING IN FORESTRY ENTERPRISES ON THE CHALLENGES OF SUSTAINABLE DEVELOPMENT

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Purpose. The purpose of the article is the formation of theoretical principles of accounting in forestry enterprises on the challenges of the concept of sustainable development, in terms of defining the directions of improving the information support system of rational forestry for the purpose of preservation, reproduction and use of forest resources at the micro and macro levels of the economy.

Results. Based on the results of the study, it is established that to ensure the functioning of domestic forestry enterprises on the principles of sustainable development, a necessary condition is to take into account economic, environmental and social goals in management. For this purpose, the directions of economic operations on forest use (harvesting and processing of forest products, reproduction of forest resources) are identified, which can be used as a basis for clarifying the composition of accounting objects specific to forest enterprises for further development of their organizational and methodological support. It is proved that forest resources and losses caused to the environment due to irrational forest use should be reflected in accounting, which will allow forming information support for forest resources management at the microeconomic level.

Scientific novelty. The lack of a developed management mechanism that would ensure the conservation, reproduction and rational use of forest resources leads to the loss of national wealth. The evolution of the modern world market economy necessitates the interaction of society and nature, which is based on the postulates of the theory of sustainable development. For forestry, it is the

observance of the balance of economic interests of the subjects of forest relations and the protection of forest resources. The above necessitated the delineation of areas for improving the information system of rational forest use in order to preserve, reproduce and use forest resources at the micro and macro levels of the economy.

Practical value. The main results of the study can be used: at the microeconomic level (forestry enterprises) – to develop a management mechanism that would ensure the conservation, reproduction and rational use of forest resources; improvement of the system of information support of rational forest use in terms of development of organizational and methodological support of accounting of objects specific to forestry; at the macroeconomic level – to prevent the loss of a component of the country's national wealth – forest resources; control over the availability and condition of forest resources, which is a component of economic security of the state.

Key words: sustainable development, sustainable forestry, accounting development, forestry.

Introduction. The ecological situation in the world is in crisis. It was formed over a long period of time and was caused by ignoring the objective laws of development and reproduction of the natural resource complex. This has led to significant actualization and development of the ecological economy since the 80's of the twentieth century. During this period, issues of sustainable development are actively raised, that are now a priority of national development strategies of many countries. Ukraine has joined the global trends towards greening the economy: within the strategic plan of national development of Ukraine for the period up to 2030, the process of adaptation of the Sustainable Development Goals (within the framework of 17 global goals, 86 development tasks and 172 indicators have been formed to monitor their implementation).

Entrepreneurs play a key role in achieving the Sustainable Development Goals (Goals, 2015). Business solutions and management technologies are crucial to overcoming the acute economic, environmental and social challenges posed by the goals. Solving these problems requires a perfect system of environmentally-oriented management, taking into account the Sustainable Development Goals of Ukraine for 2016–2030, not only at the macro level but also at the level of business entities.

The forest sector plays a special role in the state's economy, as it is both a strategic resource of the economy and a factor of stability, and therefore an important sector in achieving environmental and economic goals of sustainable development. Annually, the rate of logging worldwide reaches 13 million hectares (Official, 2022). Besides, a significant part of forest resources is disappearing due to fires.

Ukraine has a significant stock of forest resources, ranks 8th in Europe in terms of forest area and 7th in terms of timber reserves. The total area of the forest fund of Ukraine as of January 1, 2018 is 10.4 million hectares, of which 9.6 million hectares are covered with forest vegetation. In 50 years, the area of forests increased by 21 % and the stock of wood almost tripled. The stock of wood in forests is estimated at 2102 million m³ (Official, 2022). The gradual increase in wood stocks confirms the significant economic and environmental potential of Ukraine's forests.

However, the forest policy of the state, which developed during the twentieth century, is focused mainly on the use of raw forest resources – wood and non-wood,

which led to depletion of forests. As a result of unauthorized logging, 15 million hectares of land were damaged by erosion, and the annual increase in eroded land exceeds 80,000 hectares (Official, 2022). To reduce the negative impact of erosion processes on agricultural land, expanded reproduction of forest resources is carried out by attracting new lands. In order to achieve optimal forest cover (20 %), more than 2 million hectares of forest crops should be created on the territory of Ukraine. Irrational forest usage threatens the country's national security. Uncontrolled deforestation (in 2019, 7,000 cases of illegal logging were detected in subordinate forests, resulting in the felling of 15.9 thousand m³ of wood (Official, 2022)) is one of the causes of recent environmental disasters in Ukraine and around the world. Therefore, in order to preserve the natural environment, it is necessary to reconsider the approach to forest usage.

Review of literature. The main principles of economic incentives for sustainable development of forestry are highlighted by Synyakevych (2012). The study conducted by S. Linser and M. Lier (2020) examined the correlation between various national indicators used to measure the advancement of the bioeconomy and the indicators of the Sustainable Development Goals (SDGs), as well as the established and widely used intergovernmental regional or international indicators related to the forest sector, which plays a crucial role in the development of the bioeconomy. The main objective of N. Neykov's study (2021) is to compare and evaluate the economic performance of four state-owned forest enterprises in Bulgaria and four forest enterprises in Slovakia.

The research conducted by J. Wildberg and B. Möhring (2019) confirms the idea that forest businesses that have a variety of tree species in their composition may not generate the highest profits, but they can reduce risk while maintaining a certain level of return. However, it is important to take into account the changing nature of tree species assets and risk preferences when making management decisions. The study by R. Barker (2019) aims to enhance corporate accountability regarding natural capital within existing market structures.

Results of the study O. Furdychko et al. (2021), aimed at ensuring balanced use of forestry land, theoretical and methodological justification of completeness, accessibility and transparency of ecological and economic reporting of forestry enterprises. V. Zhuk et al. (2021) describe the conceptual vision of the accounting model of ecological activity as a factor of agroecosystem preservation is grounded.

O. Sokil et al. (2020) investigate the theoretical and methodological ability of the accounting institute to solve the problem of information support for the implementation of the national (global) sustainable development policy. O. Sokil et al. (2019) the novelty of this methodology is the combination of risk identification techniques within the framework of the specifics of achieving sustainable development by agricultural enterprises. I. Zhurakovska et al. (2021) investigate a methodology for identifying the impact of taxes on the activities of forest enterprises in Ukraine.

M. Bolshakov (2006) proposes to introduce the term "post-industrial forest" into scientific circulation, which embodies the peculiarities of post-productive forest

management and forest management, in which the emphasis is not on wood harvesting, but on environmental protection problems.

V. Petruk and Y. Kozlovska (2010) analysed the definition of “sustainable forest use”. Ya. Koval (2012) and M. Atroshenko (2012) describe the directions for the integration of forest use with the provisions of the concept of sustainable development. V. Zhuk (2009) offers equal accounting paradigms of harmonious (sustainable) economic development. V. Shevchuk (2009) asserts the need for the formation of information support for the sustainable development processes analysis by modifying the balance sheet on the basis of physical and subordinate to its requirements of political economy.

Therefore, it is important to form new requirements for taking into account the environmental component in the accounting system. Imperfect accounting of environmental costs and environmental benefits does not allow to build an effective accounting system at the enterprises of the forest complex.

The purpose of the article is to establish the theoretical basis for enhancing accounting practices in forestry businesses in order to address the challenges posed by the concept of sustainable development. This involves identifying areas for enhancing the information system pertaining to the sustainable utilization of forest resources at both micro and macro levels.

Materials and methods. The purpose of the article is the formation of theoretical principles of accounting in forestry enterprises on the challenges of the concept of sustainable development, in terms of defining the directions of improving the information support system of rational forestry for the purpose of preservation, reproduction and use of forest resources at the micro and macro levels of the economy.

The research methodology utilizes dialectical and systematic approaches to analyze scientific literature on the implementation of sustainable development at the microeconomic level, as well as the theoretical foundations and characteristics of accounting in forestry enterprises. Methods of analysis and synthesis, the method of analogies was used to assess the current state of management of forestry enterprises of Ukraine, to determine the characteristics of forestry enterprises and to identify objects of accounting for such enterprises. Abstract-logical method is used to outline the theoretical foundations of accounting development in forestry enterprises.

Results and discussion. In the 70s of the twentieth century. Scientists have begun the work on the basic principles of the concept of sustainable development, which aims to preserve limited natural resources for future generations and reduce the anthropogenic impact on the environment. One of the main postulates of this concept is to stop the irrational use of natural resources, which can be achieved through the introduction of environmentally friendly technologies. Economic activity is considered to be effective, which involves obtaining the maximum possible economic benefit with the least impact on the environment.

Sustainable forest management is such methods and ways of exploiting forest resources that simultaneously meet the needs of the population in woody and non-

woody forest products, as well as maintaining favourable for human health natural and ecological living conditions, conservation, reproduction and increase of forest resources. domestic enterprises

Thus, the concept of “forest use” encompasses two interrelated processes – the exploitation and reproduction of forest resources, because the implementation of logging cannot be inexhaustible without the need for reforestation (Figure 1).

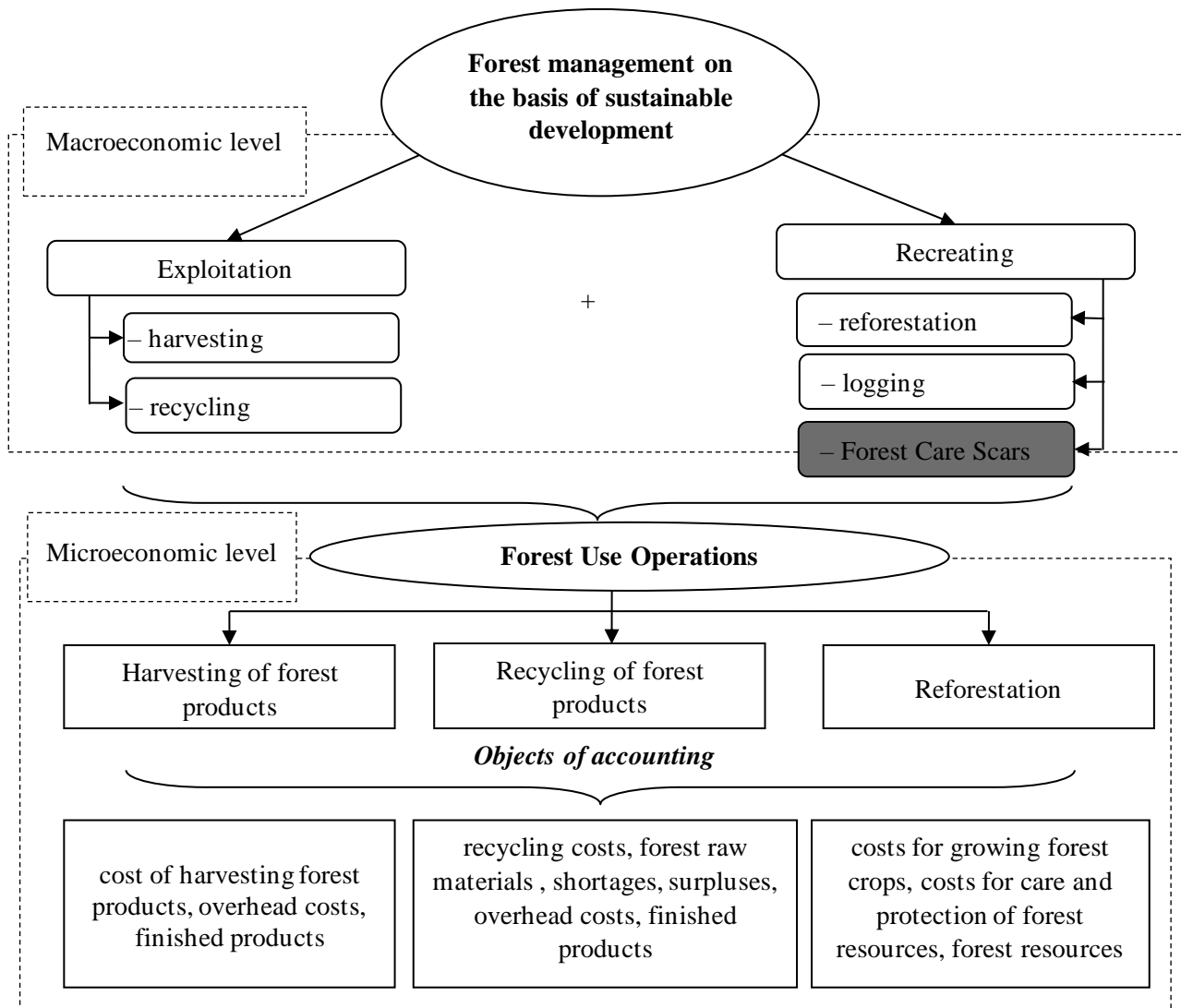


Figure 1. Objects of accounting for forest operations

Source: developed by the authors.

At the macroeconomic level, forest use characterizes the forms, methods and ways of exploitation and reproduction of forest resources. The process of exploitation of forest resources on the basis of sustainable development includes harvesting of wood and non-wood forest products, processing of forest raw materials and waste, use of protective and recreational functions of forest resources. Reforestation is an integral part of forest use, which includes two processes: reforestation and afforestation (creation of forest stands and preservation of productive wood stock at the root) and periodic felling of care to remove low-productivity forest stands. These two aspects of a single process of reproduction of forest resources are contradictory, as the increase

in timber harvesting during felling leads to a decrease in the stock of forest resources, and vice versa.

At the microeconomic level, forest management operations include operations on the harvesting and processing of forest products, as well as operations on the reproduction of forest resources.

For the formation of information support for the management of forestry enterprises, taking into account the provisions of the concept of sustainable development (Figure 2), we consider it necessary to keep records of facilities in terms of selected areas of forestry operations.

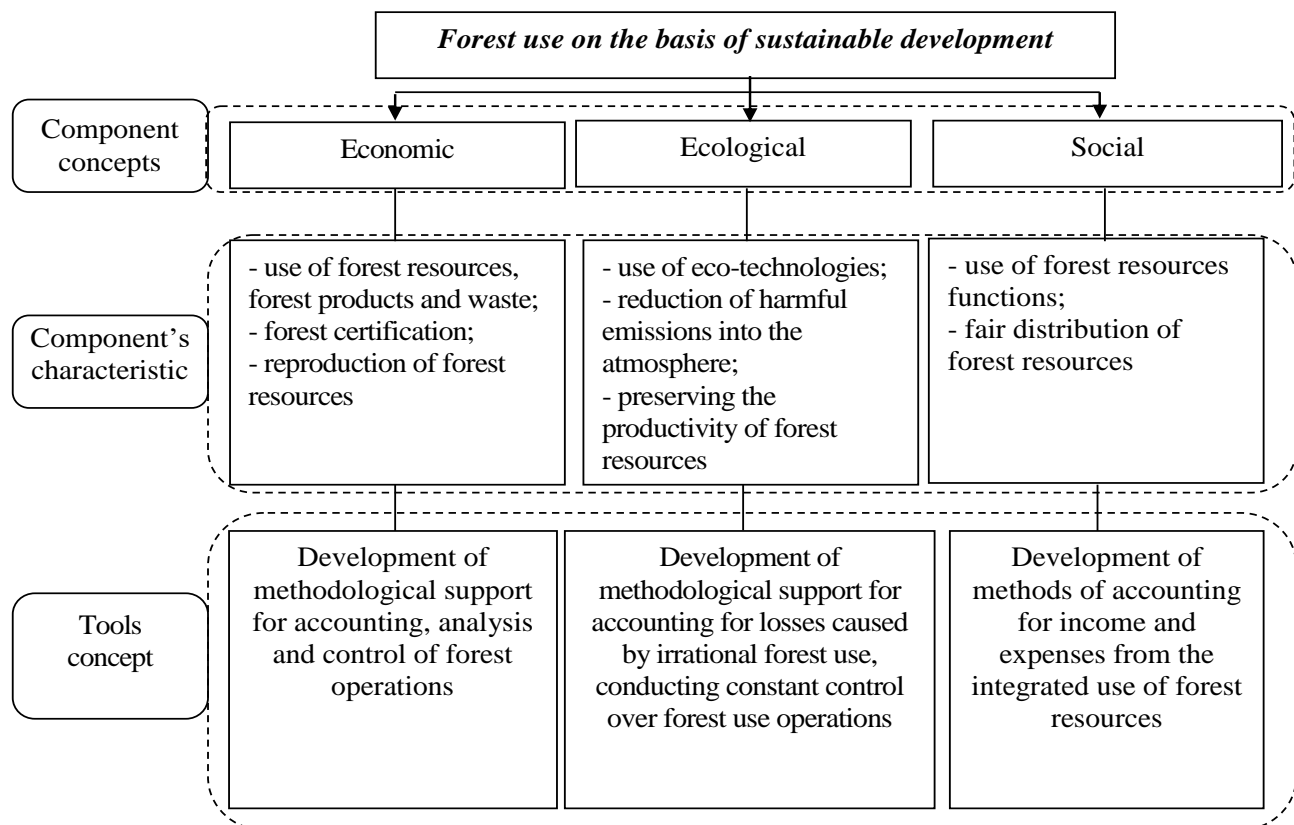


Figure 2. Implementation of the concept of sustainable development in the accounting of forest management operations

Source: developed by the authors.

The economic component of the concept of sustainable development involves environmental and economic management of enterprises based on the management of forest resources, which ensures their conservation, increased productivity and capacity for natural regeneration. A necessary condition for achieving such management is the implementation of mandatory forest certification, which gives domestic companies a competitive advantage – the ability to increase exports of raw wood and processed products.

To solve the problem of irrational forest use, it is necessary to introduce wood at the root of the objects of accounting, because only the formation of information on the availability and movement of forest resources will manage these resources on a sustainable basis, because the accounting system will generate complete and reliable

information for conservation, reproduction and use of forest resources.

Integrated use of forest resources involves ensuring the full use of untreated wood and waste from logging and lumber by forming closed-loop production complexes. The current state of waste use is unsatisfactory, as they are used only by 10–20 %. Annually in the process of wood processing at domestic enterprises about 7 million m³ of waste is generated, more than 3 million m³ of which is not included in the economic turnover (Ozeran and Chik, 2015). Thus, the integrated use of waste is one of the promising ways to develop the enterprises of the forest complex, as logging waste is a raw material base for the manufacture of chipboard and fiberboard, and so on.

The ecological component of the concept of sustainable development involves greening production, ie reducing the negative anthropogenic impact on the environment by increasing control over forest use, monitoring the state of forest resources, minimizing the use of valuable forest species, establishing control over deforestation in mountain areas, introduction of new technologies. reduction of losses of forest products during logging and reforestation works. The greening is based on reconciling the environmental and economic interests of businesses and society as a whole in order to ensure environmental safety.

The social component of sustainable forest management involves changing priorities in forest use by moving from predatory use of forest resources as a source of material goods to the use of ecological, recreational, protective functions of forest resources on the principles of non-depletion and conservation for future generations. Thus, forest use on the basis of sustainable development involves the economical use of forest resources with an emphasis on using the effect of the functions of forest resources, rather than its raw materials, to preserve the ecological potential of the forest ecosystem.

Forest management on the basis of sustainable development requires the development of appropriate accounting support. Accounting is a subsystem of management of the business entity, which generates information on the composition and condition of forest resources and forest products at a given time. The priority is to improve the accounting support of forestry enterprises at the microeconomic level by including forest resources in the assets.

In order to ensure the functioning of forestry enterprises on the basis of sustainable development, it is necessary to radically reform the management system of such enterprises, in particular in the field of accounting, the following areas are identified:

- development of a mechanism for ensuring of the environmental safety of Ukraine through the improvement of organizational and methodological support for accounting of forest management operations;
- improvement of the legislation (formation of new standarts of accounting and methodological recommendations for accounting of forest management operations, taking into account the specifics of forestry enterprises and the principles of the concept of sustainable development);
- development of an information support system for ecologically oriented

management of forest resources at the microeconomic level for the implementation of the state strategy for forest conservation (Tanasiieva, 2020).

Forest resources and losses caused to the environment due to irrational forest use should be reflected in accounting, which will allow to form information support for forest resources management at the microeconomic level. The development of organizational and methodical support for the accounting of forest use operations should take place taking into account the specifics of the industry (Table 1).

Table 1

Influence of specifics of forest use operations on the organization and methods of accounting

No	Factor	Influence on the organization and methods of accounting
1	Connection with the land plot	accounting of land and forest assets should be carried out taking into account the norms of regulations (standards) of accounting 30, as the main feature of these assets is their ability to biological transformations
2	Natural origin	the need to develop a methodology for accounting of forest resources, which will include them in the assets of forestry and in the indicator of national wealth of the country
3	Seasonal impact	timely adjustment of harvesting works and accounting of forest products of wood and non-wood origin during its maturation
4	Heterogeneity of forest products	accounting of forest products to meet the information requests of management staff, statistical authorities on the volume, income and expenses from the procurement of products of wood and non-wood origin
5	Ability to use nonforest products by people to meet their own needs	timeliness of organization of procurement works by own forces for harvesting of non-wood products and accounting of expenses for procurement, processing, sale of such products and income from sales of products of non-wood origin

Source: developed by the authors.

The system of management at forestry enterprises consists of the following subsystems: planning, organization, accounting, analysis and control. The relationship between the elements of the management system in terms of forest operations is shown in Figure 3.

Planning is important for the implementation of the state strategy for forest conservation. The volume of forest use is affected by the goals of the forest sector and the existing legal restrictions on the volume of logging. During the planning, the allowable volumes of logging for different species are determined, as well as the volumes of reproduction of forest resources by natural and artificial means in the short and long term. The implementation of these goals requires a clear definition of units (forestries) tactical goals and specific tasks, as well as appropriate resources, measures for their implementation. Planning involves defining specific tasks for each division of the enterprise for a certain period and developing programs.

The organization of forest management involves the construction of a system consisting of a set of tasks, principles and methods of management. The function of the organization characterizes the management system, in particular: its properties,

structure, composition, relationships and the process of interaction between the elements of the system. Regarding forest use, the function of the organization reflects the structure of the managed (object of management) and management (subject of management) systems that ensure the process of conservation, use and reproduction of forest resources. The forms of organization of the production process in forestry enterprises are influenced by the degree of automation of production processes and the relationship between workers in this process. Management of forest operations is carried out on the basis of planning, organization, coordination, control over the implementation of decisions and regulation of production processes.

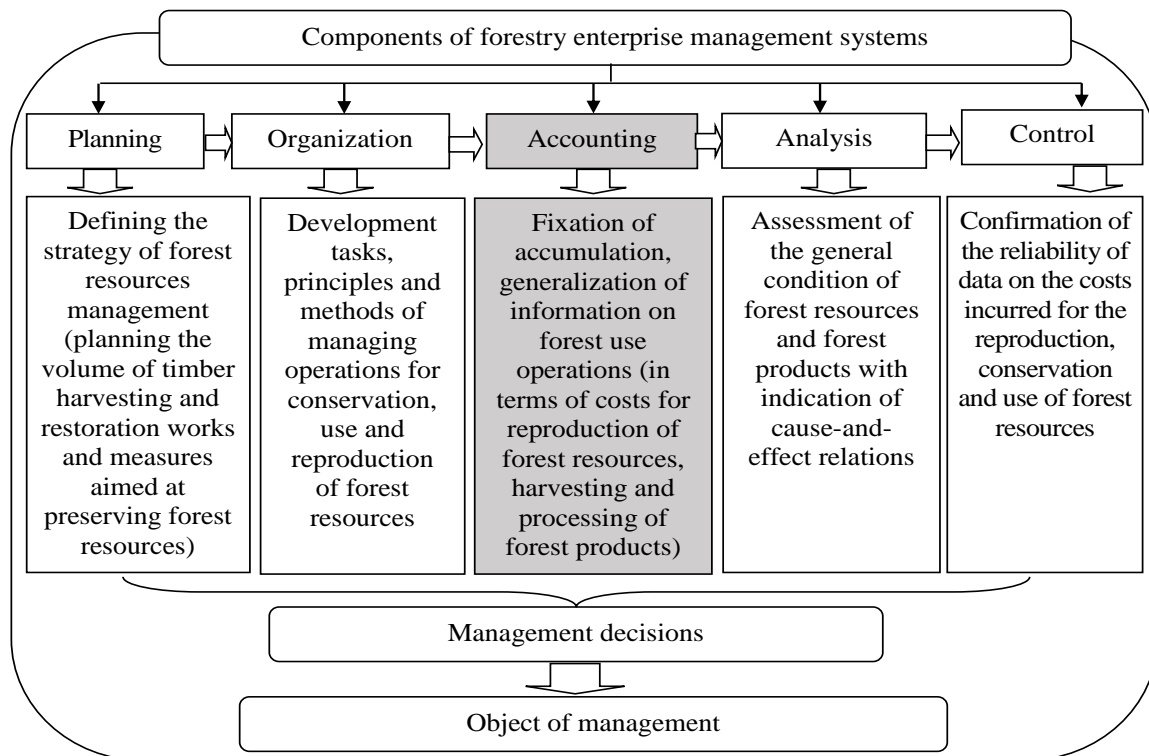


Figure 3. Forestry enterprise management system

Source: developed by the authors.

The main problem of forest resources management in Ukraine is the lack of statistically reliable data on the growth, natural waste and harvesting of forest resources, which complicates the planning of forest management operations. This problem can be solved with the help of accounting, since the accounting generates information about forest operations, including the cost of conservation, maintenance and reproduction of forest resources, the cost of harvesting forest products. Therefore, it is important to improve the organizational and methodological support of accounting for forestry operations in order to form complete and reliable information about the availability and condition of forest resources and forest products.

The functions of analysis and control include the usage of accounting and planning information. The analysis is the inverse between the accounting subsystem and other management subsystems – planning, organization and control. The results of the analysis characterize the state of forest resources and forest products, indicating the cause-and-effect relationships. The information obtained from the results of the

economic analysis is an integral part of the management information system and can be used for both operational and strategic planning. The analysis provides an assessment of business transactions and generates the necessary information for management decisions.

The basis for control is the information generated in accounting. The control function of the management system is to verify the correctness of the reflection of the costs of conservation, maintenance, reproduction of forest resources, harvesting of forest products and the identified deviations of actual volumes and costs from the norms and plans. Control allows to detect the facts of illegal logging and shortage of harvested timber, overstatement of costs for reproduction, conservation and use of forest resources. Timely detection of facts that interfere with the operation of the enterprise, allows you to take measures to avoid losses and damages, which helps to improve the efficiency of the entity.

The management decisions are made taking into the information obtained from the subsystems of accounting, analysis and control. Management of forest management operations consists of three successive processes: obtaining information about the state of the object of management, decision-making on the managed system and implementation of decisions, evaluation of the results of the decision on the economic activity of the entity.

Conclusions. Irrational forest use has led to the unsatisfactory state and the shortage of forest resources, which threatens the economic security of both the entity and the country. Therefore, it is necessary to form forest use on the basis of sustainable development, which provides for the balanced use and reproduction of forest resources.

The main obstacle for the implementation of the concept of sustainable development in the practical activities of forestry enterprises is the lack of information support for the management functions of such enterprises. We consider the following ways to improve the system of information support of forest use in accordance with the provisions of the concept of sustainable development to be a means to eliminate this obstacle:

- 1) development of organizational and methodological support for accounting of forest operations, taking into account sectoral characteristics and concept of sustainable development;
- 2) expansion of indicators of forms of financial reporting and development of forms of internal reporting in order to meet the information needs of external and internal users;
- 3) creation of an effective system of internal control over forest management operations to ensure the conservation and reproduction of forest resources and the rational use of forest products.

Thus, to ensure the functioning of domestic forestry enterprises on the principles of sustainable development, a necessary condition is to take into account economic, environmental and social goals in management. For this purpose, the directions of economic operations on forest usage (harvesting and processing of forest products,

reproduction of forest resources) are identified, which can be used as a basis for clarifying the composition of accounting objects specific to forest enterprises for further development of their organizational and methodological support. It is proved that forest resources and losses caused to the environment due to irrational forest use should be reflected in accounting, which will allow to form information support for forest resources management at the microeconomic level.

The main results of the study can be used at the level of forestry enterprises to develop the management mechanism that would ensure the conservation, reproduction and rational use of forest resources, improving the information system of rational forest management in terms of developing organizational and methodological accounting for forestry-specific objects; and at the state level – to prevent the loss of forest resources as part of the national wealth of the country, control over the availability and condition of forest resources, which is part of the economic security of the state.

The directions of further research are: development of organizational and methodological support for accounting of forest operations; expansion of indicators of forms of financial reporting and development of forms; creation of an effective system of internal control over forest management operations.

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