

Implementation of the Vertically Integrated Systems of Timber Industry Management as a Mechanism of Sustainable Development Security

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Abstract—Nowadays, the provision of steady development of the humanity is considered to be one of the most important goals for the world society. With that knowledge in mind, society is in the constant search of conceptual approaches towards providing the sustainable development. One of the strategic directions for the stable development is the implementation of the new vertically integrated system of the timber industry management of different economy branches in the business behavior. Taking the importance of the forest use for the life stability into account, consideration of this method applied to the timber industry is urgent and relevant. Elaborated model of the vertically integrated management system will not only enhance the quality of work of the domestic timber complex, which will result in new job formation, thus in regional and federal budget increase, but will also let rationally and carefully manage the forest resources of our country.

Keywords—sustainable development, vertical integration, management model, closed-loop resources, timber industry, effectiveness, budget.

I. INTRODUCTION

Increase in global environmental problems, emergence of local crises and accidents of an anthropogenous origin, threat for survival of mankind: all this has resulted in need of revision of ways of further development of a civilization. Today, ensuring sustainable development of mankind is the most significant problem facing the world community.[1] Sustainable development is such way of development, which first of all has to be based on maintenance of the expanded reproduction of production potential, human resources and the environment for a long time. It is known that as a result of long researches by the scientific world community it is established that sustainable development is based on balance between three closely interconnected system elements: economics, social sphere and the environment.

Today there is an active process of search of conceptual approaches of ensuring sustainable development.[2] In our opinion, the strategic direction of ensuring sustainable development is introduction of new management model - the vertically integrated control system of branches of the national economy, including timber processing complex (TPC). Consideration of this question in relation to TPC in the light of the importance of use of the wood in stability of life is particularly urgent.

II. THE STRATEGY OF THE VERTICALLY INTEGRATED MANAGEMENT SYSTEM IN TIMBER PROCESSING COMPLEX

The research of new model of vertically integrated management system allows to draw a conclusion that the vertically integrated management systems can be applied to timber processing complex and are one of factors of ensuring sustainable development. Now there is a problem of real introduction of this new model of management in managing practice, considering specifics of branch, and on this basis: creating the new mechanism of management of timber industry branch. In our opinion, creation of the vertically integrated holdings (structures of the commercial organizations) is one of mechanisms of ensuring sustainable development of the branch. Let us address this matter.

The vertically integrated control system is a complex organizational structure.[3,4] As a rule, such structures are characteristic of the large holdings, which are engaged in a full cycle of product production. Distinctive feature of such structure is the indivisible management company, which to a greater extent influences formation of final cost of the made product. Such structure allows to unite the enterprises of all technological chain of product production, that is the enterprise participating in extraction, processing, production and sale of ready goods. All material, information and financial streams in such management system pass through management company. The centralized management of the holding allows to effectively use information and funds of the enterprise, which, in turn, allows the holding to have a number of competitive advantages: optimal logistic streams, transparent relations between suppliers and buyers, existence of a long-term strategy.

The conducted research allows to draw a conclusion that such systems reach their maximum efficiency when functioning within the closed-loop resource cycle. A resource cycle is a set of transformations of natural resources during extraction, processing and final return after utilization. [5,6] During production a huge number of resources is withdrawn from nature, and at the end of this process there is only a bulk of waste, which nature can't assimilate, and that leads to sad ecological consequences. In order to avoid it, the resource cycle needs to be "closed", that is to provide use of waste at all production phases so that the former waste would become a new resource of production. Such long-term strategy will allow to avoid

tragic ecological consequences. Besides, such strategy allows the producer to cut down expenses on energy resources and raw materials, and also to increase environmental friendliness of production, to thereby increase status value and loyalty of consumers.

The most important is that such strategy promotes ensuring sustainable development both within the enterprise and within the branch.[7]

III. ADVANTAGES FOR THE PARTICIPATING COMPANIES OF A TIMBER INDUSTRY COMPLEX

So, merging of the separate enterprises in an indivisible commercial structure, namely the holding which is responsible for the whole technological chain of product production has the following advantages to the participating companies:

1. Cutting down expenses on raw materials: economizing on raw materials happens, because the closed-loop structure of production allows to optimize use of a source of raw materials at all production phases. Besides, the closed-loop structure allows to use waste of some stages of a technological chain as secondary raw materials.

2. Cutting down expenses on energy resources: economizing on energy resources happens due to use of waste of all production phases as a fuel source in private boiler rooms.

3. Reduction of logistic expenses: centrality of management allows to optimize material, information and financial streams, which reduces costs of transportation and storage of materials and finished goods.

4. Saving of time: presence of the indivisible managing center allows to use information efficiently.

5. Attractive image and loyalty of buyers: positioning of the production as being socially responsible attracts more and more responsible and educated citizens, who seek to preserve our peace for future generations.

Thus, each participating company receives significant benefits from joining the holding. We will call this set of benefits "the integrated effect". This effect is felt not only at the production level, but also at the branch:

1. Growth of regional and federal budgets: production of goods with high added value increases tax revenues in the budget.

2. Import substitution: production of an eco-friendly and competitive product results in uselessness of import of deep processing goods from other countries.

3. Ensuring sustainable development of branch: the aforementioned structure allows to make goods within the concept of sustainable development: from a social element of the concept: jobs are created, high profits allow to invest in non-profit organizations; from the point of view of responsibility for the environment such enterprises strive to "zero" waste, comply with the nature protection laws and effectively use resources; from the economic point of view, despite large investing, such projects not only pay off and win the market, but also have big profits, which allow to invest money in research and development and the innovative technical equipment.

Thus, development of not extracting and making industry, but the processing industries has to become the priority direction of state policy. Export of crude raw materials has to become unprofitable.[8] Association in a holding should be supported on a state level.

IV. THE SCHEME OF VERTICALLY INTEGRATED MANAGEMENT SYSTEM OF TIMBER PROCESSING COMPLEX

At the moment the potential of timber industry branch is not used properly and to the fullest.[10] In structure of export the roundwood prevails and in spite of the fact, that Russia is the largest forest power, the whole range of goods of deep processed wood is still imported into the country. The reason for such adverse situation lies in an old form of the organization of activity at TPC. The modern market model, within which each enterprise is an independent production facility doesn't correspond to the requirements of effective forest exploitation [11,12]. Discrepancies are the following:

1. Lack of innovative technologies in the sphere of a woodworking;
2. Low extent of raw materials processing;
3. Use of extensive methods on the basis of use of previously unexploited woods;
4. Lack of a indivisible technological chain;
5. Lack of universal certification of the woods;
6. Large volume of production waste.

Financial and material streams pass through management company and by that promote streamlining of finances and effective use of contents of streams[13]. Besides, vertically integrated structures at TPC will be able to give the following advantages:

- a possibility of creation of completely closed structure of production with autonomous sources of raw materials and target sales markets;
- optimization of the closed structure at all production phases due to creation of the main processing industries directly near raw materials sources, which will allow to reduce transport expenses; optimization of use of raw materials sources and processing production at each production phase;[14,15]
- balance of road construction;
- a possibility of implementation of several creation stages of the closed structure at the same time;
- achievement of stable year-round preparation of raw materials due to introduction of intermediate transportation;
- a possibility of accurate efficient management of the whole productions complex due to the adjusted collecting and the analysis of information.

Considering that achievement of competitiveness of domestic TPC is possible on the basis of development of deep processing production, which is the priority direction of state policy at the present stage[16], vertical integration gains paramount value. It is related to the fact, that large corporate structures will promote development of finished goods market in-

stead of raw materials market, as the small separate enterprises won't be able to bear a burden of expenses.

V. EXPERIENCE OF INTRODUCTION OF VERTICALLY INTEGRATED TPC MANAGEMENT SYSTEM THROUGH THE EXAMPLE OF LLC «WOODWORKING CONSTRUCTIONS MANUFACTURE (WCM SODRUZHESTVO)», BEING A PART OF THE HOLDING OF CLOSED JOINT-STOCK COMPANY

LLC «WCM Sodruzhestvo» has calculated the economic efficiency from joining the vertically integrated structure. During the research, the calculation of final cost of competitive forest deep processed products on the integrated and disintegrated manufactures for January, 2017 has been conducted. The result is presented in table 1.

TABLE I. THE COMPARATIVE CHARACTERISTIC OF PRICES FOR PRODUCTS, MADE BY LLC «WCM SODRUZHESTVO» WITHIN THE INTEGRATED AND DISINTEGRATED MANUFACTURES

Product name	Market value per cum, rub	
	Integrated manu- facture	Disintegrated manufacture
Glued laminated timber	29000	35400
Window	> 9000	> 11950
Door	> 10000	> 13800
Longspan structure	> 31 000	> 38000

Functioning within a large holding allows LLC «WCM Sodruzhestvo» to keep the prices at the average market level, while maintaining high level of production quality. The research of the market has shown, that retail and wholesale prices of LLC «WCM Sodruzhestvo» favourably differ from import prices in average for 4-17% percent. Over the last 10 years, LLC «WCM Sodruzhestvo» has almost driven import goods out of windows, doors and wide-span wooden designs market in the North-west region. However, the share of the enterprise of the Northwest region market is 37%.

The conducted research allows to speak about high economic and social efficiency of vertically integrated manufactures functioning in a framework of strategy of the closed-loop cycles.[17,18] More deep processing production with high added value added will be created through introduction of the developed model of vertically integrated enterprise, which will promote growth of a "Forest" Gross Product. Formation of vertically integrated structures will allow to make better forest deep processing product with high added value. All this will allow to provide sustainable development of timber industry branch. The same situation is present in many other branches.

Introduction of the closed economic and resource cycles seems necessary and cost-effective both to the state, and to the participating companies of the market. In process of introduction of the developed model of the vertically integrated holding, "the integrated effect" is going to accumulate, which is expressed not only in economic benefits for the holding members, but is also beneficiary for the whole state. Creation of deep processing production with high added value will promote growth of a "Forest" Gross Product.

VI. CONCLUSION

Formation of the new vertically integrated structures and expansion of old ones will allow to create new workspaces. Cost-effective production within the strategy of the closed-loop resource cycle will allow to keep forest wealth of the country, moreover, zero waste and environmental friendliness of production will make the final product even more attractive to the consumer.[19,20] It is possible to draw the general conclusion, that introduction of the vertically integrated management systems of timber processing complex maintains balance between three major elements of sustainable development: the financial, social sphere and the environment protection, thus acts as the mechanism of ensuring sustainable development.

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