

ORIGINAL SCIENTIFIC PAPER

QUALITY MANAGEMENT AND CERTIFICATION IN SUSTAINABLE FOREST MANAGEMENT (SFM): THE CASE STUDY OF RUSSIA

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ABSTRACT

Sustainable Forest Management is a main part of the Global Sustainable Management. The main instruments for the implementation of the concept of Sustainable Forest Management are Forest Certification and Forest Quality Management. In the article authors investigated the essence, content and principles of Sustainable Forest Management as a key element of the formation and implementation of the Sustainable Development of the Society and its adaptation in the case study of post-communist countries like Russia. Also specific of Forest Certification and Forest Quality Management in Russia was investigated. The obtained result laid the foundation for the review and systematization of the interests of key players in the domestic forest industry, the prerequisites and limitations for the implementation of the Sustainable Forest Management Concept. For this purpose, the authors carried out situational analysis, interviewing, content analysis of media texts. In the article are analyzed 7 top-forestry Russian enterprises and also Russian timber industry complex generally. Based on the results of the study, the interests and priorities of the parties participating in the development of the national concept of sustainable forest management have been identified and systematized. This allowed us to identify incentives and prerequisites, problems and limitations, as well as prospects and directions for the development of forest certification in the territory of the Russian Federation. Based on the research results, it is concluded that Quality Management and Forest Certification are considered by all stakeholder groups as a key tool for ensuring Sustainable Forest Management by the case study of Russia.

KEY WORDS: quality management, forest certification, forestry in the Russian Federation, sustainable development, sustainable forest management.

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INTRODUCTION

In recent years, the scientists, public and political figures of many countries in the world are actively discussing the need to develop global and national strategies for the sustainable development of society. The reason for such initiatives is connected with the fact that extensive industrial, socio-political and everyday life activity of people has become so large-scale that it generates more and more global contradictions and crisis situations threatening the very existence of human civilization. The term "sustainable development" was first proposed in 1980 in the work "The World Strategy for Conservation of Nature. The preservation of the vital resources for sustainable development", prepared by the International Union for conservation of nature and natural resources (IUCN), the United Nations Environment Program (UNEP) and the World Wide Fund for Nature (WWF), with the support of the Food and Agriculture Organization of the United Nations (FAO) and UNESCO. In this document, "sustainable development" was understood to mean a change in the biosphere and the use of human, financial resources, living and non-living resources (resources of animate and inanimate nature) to meet human needs and improve the quality of life³⁹.

At the socio-political level, this phrase first appeared in 1987 in the report of the Commission on Environment and Development of the United Nations "Our Common Future" (Brundtland Commission), where sustainable development was defined as development that satisfies the life needs of the current generation of people without deprivation of this opportunity for future generations. Within this document, the problems of economic development were linked together with the worsening global environmental crisis, and social injustice was recognized as a significant obstacle to the further development of mankind. Thus, the basis of the concept of sustainable development of society was laid the unity of the economy, ecology and society due to report of Our Common Future by World Commission on Environment and Development, Oxford University (1987) (World Commission on Environment and Development, 1987).

In this format, the concept of sustainable development was approved at the Earth Summit in Rio de Janeiro (United Nations Conference on Environment and Development, 1992) and served as the ideological basis for the adoption in 2000 of the eight Millennium Development Goals. And the subsequent confirmation of the commitment of the world community to sustainable development ideas for the long-term satisfaction of basic human needs while preserving life on planet Earth were the results of the work of the United Nations World Summit on Sustainable Development in Johannesburg in 2002 (Rio + 10) and the United Nations Conference on Sustainable Development Rio + 20 in Rio de Janeiro in 2012 (Haines et al.2012). At the same time, the countries participating in these Conferences unanimously recognized global environmental problems as climate change, forest loss, desertification, soil and ecosystem degradation, reduction of biological diversity, depletion of natural resources, waste accumulation and environmental pollution.

The strategy of sustainable development in modern society is the only way to solve the global problems that humanity is facing. This is evidenced by the adoption, under the auspices of the United Nations in 2015, of the "Agenda for Sustainable Development", which contains 17 goals and 169 objectives related to all components of sustainable development, designed for the period from 2015 to 2030 (Nam, 2015).

³⁹ The world strategy of nature protection. The preservation of the vital resources for sustainable development (extract) prepared by the International Union for conservation of nature and natural resources (IUCN), UN environment programme (UNEP), the world wildlife Fund (WWF), the Food and agriculture organization of the UN (FAO), UNESCO (UNESCO), 1980, <http://www.baikal-center.ru/books/element.php?ID=1326-25.12.2017>

The Sustainable Development Goals focus on "conservation of terrestrial ecosystems and sustainable forest management, combating desertification, cessation and reversal of land degradation and halting the loss of biodiversity" (Goal No. 15) (<https://sustainabledevelopment.un.org/content/documents/21252030%20Agenda%20for%20Sustainable%20Development%20web.pdf>). The importance of this goal is predetermined by the fact that forests occupy 30% of the Earth's surface, providing not only food security and shelter, but also plays a key role in combating climate change, help preserve biodiversity and are home to indigenous peoples.

According to the UN Forum on Forests (UNFF), today 1.6 billion people - about 25% of the world's population - regard the forest as their main source of livelihood, relying on forest products and revenues from the forest industry. At the same time, irrational use of forest resources and unreasonable management of forests lead to their disappearance: 13 million hectares of forest disappear from the surface of the Earth every year. The causes of deforestation are numerous, but mostly they are all related to human activities. One of the ways to solve this problem, the international community associates with the development at the global level of the concept of rational, sustainable, "sustainable forest management." For its implementation, according to the calculations of the Secretariat of the United Nations Forum on Forests (UNFF), it is necessary to allocate annually from 70 to 160 billion US dollars (<https://www.un.org/pga>).

For the first time the term "sustainable forest management" (sustainable forest management) within the concept of sustainable development of society was used in 1992 in the "Principles of Forestry", containing elements for a global agreement on the effective use, conservation and sustainable development of all types of forests (<https://www.un.org/documents/ga/conf151/aconf15126-3annex3.htm>), as well as in "Agenda for the 21st Century" (<https://www.un.org/documents/ga/conf151/aconf15126-3annex3.htm>). According to these documents, humanity should "rationally use forest resources and areas to meet the social, economic, environmental, cultural and spiritual needs of present and future generations. It is necessary to take appropriate measures to protect forests from the harmful effects of pollution, fires, insect pests and diseases, so as to fully preserve their multifaceted value".

According to the Secretariat, the Ministerial Conference on the Protection of Forests in Europe (MCPFE, now Forest Europe), sustainable forest management is the management and use of forests and forest lands in a manner and at a level that ensures the conservation of their biodiversity, productivity, capacity to regeneration, vitality and capacity to provide relevant and appropriate environmental, economic and social functions at the local, national and global levels, without causing damage but to other ecosystems (<http://foresteurope.org/communication/#1473684927281-829b95cc-499686b5-6c62>).

Many scientists of the world research the problems of sustainable forest management. Main part of them promote the approach based on using modern technologies in forestry with active role of human (Razzaque, 2017). Another part of scientist show that approach based on forest isolation from technogenetic influence is more prospective. But both need in the complex of criteria for sustainable forest management evaluation. The problem of finding appropriate *indicators for sustainable forest management* are investigated by Salvati, et al.(2017): they decomposed the overall impact of silviculture on forest structure in two manipulative effects: (i) structural changes between control and treatments, and (ii) the net manipulative effect of innovative versus traditional treatment and finally they resume that the sustainable management of forests, outlining between-site differences in stand structure and identifying a diversity gradient shaped by silvicultural practice. We are sure that this approach is prospective and will be successfully implemented soon.

So this complex of indicators can be used for evaluation of efficiency different approaches in sustainable forest management. As we said before there are two main tendencies in the development of sustainable forest management, but the most popular is technogenetic approach,

which promote the active role of human in forest. Nowadays forestry is facing many challenges, including the need to adapt to climate change and an unprecedented increase in forest damage. In the case study of Europe challenges in a Norway were investigated by Hlásny et al. (2017). The main group of modern scientists agree that the basic principle of silviculture is the rational use of natural regeneration. Also in the works of Tadeusiewicz et al. (2017) confirm that the results obtained from the use of the vision system designed to determine the length and orientation of acorns may be considered satisfactory: the implementation of the seed orientation detection algorithm using the Harris detector was 90% accurate. We agree that concept of Sustainable Forest Management is not suitable for all cases but mainly it is, like it is shown at the case study of Russia in our article.

Also scientific discussion about more effective silvicultural systems as a part of Sustainable Forest Management are very active today. Some scientists like Fernandez-Vega et al., (2017) present that within the region that require multiple entries to the stand every 15–30 years and should be coupled with liberation thinnings to promote shade-tolerant, commercially valuable timber species.

Another scientists said about important and positive role of technogenetic technologies in SFM like Tadeusiewicz et al., (2017) promote the modern method of sustainable forest management based on new automatic technologies in forestry, which the intensity and red components of the images of scarified acorns facilitated the best results in terms of the materials examined during the experiment and outcome of the presented research is an evaluation of the ergonomic parameters of the user interface that is attached to the unit controlling the device when it is running in its autonomous operation mode. This method is interesting but it's risky by technogenetic risks.

The co-influence of forest and tourism and their integration in SFM is investigated by Tyrväinen, Silvennoinen, Hallikainen (2017) on the case study of Finland. They found out that the growth of nature-based tourism has raised the need to better understand tourists' expectations towards outdoor recreation environments. They conclude that forestry and tourism can coexist in the same area with good planning and with management actions that take visual quality and recreational values of the environment into account.

Historical influence on SFM and positive effect of intensification in Sustainable Forest Management investigated many scientists from the post-communist countries like Angelstam, Naumov, Elbakidze (2016) they investigate the problem of transitioning from Soviet wood mining to Sustainable Forest Management by intensification and conclude, that barriers in ecosystems to intensification include Soviet legacies of large-scale harvesting, which resulted in a very uneven age distribution, limited and poorly conducted silviculture, as well as insufficient transport infrastructure.

The important role of domestic policies in Sustainable Forest Management is researched by many scientists too. For a example on the case study of Brazil is investigated and shown by Faggin, Behagel, (2017) how to translate sustainable forest management from the global to the domestic sphere: in the context of fragmented global forest governance, Sustainable Forest Management (SFM) has gained force as a strategy to improve forest conditions and livelihood outcomes, they conclude that the role of domestic policies is very important. The general forest fire policy as a part of quality management in forest management is researched in works of Schweizer, Cisneros, (2017) : they contend that landscape use of ecological fire is essential to forest and human health and radical change is needed where beneficial wildland fire smoke is treated as natural background and exempted from much of the regulation applied to anthropogenic sources. They showed that tolerance of the measured release of routine smoke emissions from beneficial fire is needed and using present air quality standards in the more remote areas will provide an opportunity to increase burning in many forests while protecting public health. Also

the influence of a quality management system on forest management is investigated by Kaufmane, Smilgaine, (2017). Empirical evidence from forest management shown that forest management certification standards have been promoted to contribute to community livelihood conditions. Kalonga, Kulindwa, (2017) in their research find out and provide an insight into the influence of forest certification in enhancing livelihood conditions and that the incorporation of FSC standards into forest policies may lead to more enhancement of livelihood conditions. These findings serve as a baseline for further research on the effects of forest certification at both spatial and temporal scales. Also the problems of certification in forest management was investigated by Şen, Genç, (2017), they tried to identify and define problems encountered by forest institution personnel (forest engineers, FEN), forest conservation officers or rangers (R), and forest workers (FW) who are directly related to forest management certification (FMC) practices. In their research they found out that there are certain cases where forester groups have different opinions in identification and recognition of certain problems: the greatest disagreements were found between Forest Engineers and Forest Workers.

The global aspect of sustainable forest management in the context of mapping certified forests for sustainable management as the global tool for information improvement through participatory and collaborative mapping is investigated in research of Kraxner et al. (2017). Also the application of IT solution for the quality management in forestry is researched by Martínez-Falero et al. (2017): they analyzed SILVANET (Universidad Politécnica de Madrid, Madrid, Spain) is a software package that offers a useful methodology for assessing the preferences of individuals or groups, and applying them to the design of a sustainable forest management plan. Finally, by identifying preferences, they show opportunities for design the forest management system that maximizes the concept of sustainability for each individual or group of individuals. In this paper, we present the results of its application to mono-specific conifer forest stands, although it can be adapted to other forest types. The forestry management experts classify its usability as good, although non-expert users give it a lower rating.

So our research shows that nowadays the problem of Sustainable Forest Management is popular in the world and the role of the quality management and certification in its development is critical and important. Also in many researches scientist shows that concept of sustainable forests management needs adaptation for the individual cases and country conditions due to economic, cultural and climate conditions.

METHODS

The research methodology is based on a critical review of scientific literature and publications in the field of sustainable development allowed to systematization of various authors points of view and determine the scientific directions on the study topic. The genesis of the "sustainable forest management" category was refined and presented in domestic and foreign management practical framework by goals, objectives, principles and mechanisms. The authors' used the methods of analysis and synthesis. The research was done due to the basic principles and issues of international declaration in the research topic such as United Nations Sustainable Development Agenda, Forestry Principles, Sustainable Forest Management Criteria and Indicators.

In the article are investigated and analyzed the consistency of Sustainable Forest Management and its strategy of development for the case study of Russian Federation: the authors analyzed the relevant national regulatory and legal framework. They investigated and analyzed the provisions of the Forest Code of the Russian Federation, the Concept of Sustainable Forest Management of the Russian Federation, and the Strategy for the Development of the Forestry Complex of the Russian Federation for the Period to 2020.

For determining the role of the Russian Federation in the global processes of forest management globalization, the authors relied on the statistics of the Food and Agriculture Organization of the United Nations (FAO), the State Forest Registry of the Russian Federation, the Federal Forestry Agency, the Federal Service for State Registration, Cadaster and Cartography, and the Federal State Statistics Service For the period 2014-2017.

The assessment of the level of development of forest certification in the territory of Russia is carried out in dynamics on the basis of economic-mathematical methods in two key schemes - the FSC scheme and the PEFC scheme. Global statistical data were used for calculations and data from Russian offices of FSC and PEFC.

The obtained result laid the foundation for the review and systematization of the interests of key players in the domestic forest industry, the prerequisites and limitations for the implementation of the Sustainable Forest Management Concept. For this purpose, the authors carried out situational analysis, interviewing, content analysis of media texts. The representativeness of the research sample was provided in accordance with the ratings of the Russian media holding RosBusinessConsulting (RBC) (<http://www.rbcholding.com/>).

RESEARCH MATERIALS VOLUNTARY FOREST CERTIFICATION IN RUSSIA: ANALYSIS OF THE RECONDITIONS AND LIMITATIONS OF DEVELOPMENT

Since the second half of the nineties of the twentieth century and up to the present time, a number of interstate processes have contributed to the development of the concept of sustainable forest management, within which "Criteria and indicators for sustainable forest management" have been formulated, serving as a kind of tool for assessing the level of maturity of the forest management system in different countries of the world, and also to identify trends in the state of the world's forest fund. The key priorities of sustainable forest management for today are recognized (<http://www.fao.org/docrep/004/ac135e/ac135e08.htm>):

1. Maintaining biological diversity;
2. Conservation of productive functions of forests;
3. Strengthening the health and vitality of forest ecosystems;
4. Protective functions of forests: conservation of soil and water resources;
5. Assessment of the contribution of forests to the global carbon cycle;
6. Maintenance and expansion of long-term socio-economic functions of forests to meet public needs;
7. Legal, policy and institutional conditions and mechanisms for sustainable forest management.

In other words, today it is possible to talk about the recognition by the world community of the special ecological and social role of forests and the desire of the society to make forestry sustainable - economically successful, environmentally literate and socially responsible.

The principal differences between traditional and sustainable forest management systems are presented in Table. 1.

Table 1: Comparative analysis of traditional and sustainable forest management systems

Criteriaes for comparison	Traditional forest management system	Sustainable forest management system
Purpose of management	Reproduction of forest as a source of wood	Formation of a forest ecosystem with various resources and functions
Attitude towards the forest	Forest is a place for growing and harvesting wood The forest is a free natural resource that you need to use	The forest is an element of a landscape with complex connections between living and non-living components Forest is natural capital, whose ecosystem functions can generate income
Attitude to forest products	Utilitarian: The cost of forest products is determined only by its quality	In addition to cost, the ecological and social aspects of timber production are important. The price or demand for wood is higher if it is in a well-managed forest
Mechanisms of forest management	Unified concept of forest management. Applying single rules and templates	Flexible mechanism of forest management. The choice of types of use of forest resources depends on economic, ecological and social views on the sustainability of different stakeholder groups.
Adoption of management decisions	Solely from the state or the owner	With the participation of the local population and public organizations
Indicators of the effectiveness of the approach	Forest productivity. Quantity of received products	Condition of the forest ecosystem after use. Quality of the products
Sustainability indicators	Sustainability (non-depletion) is estimated by the ratio of the growth of wood and the volume of its harvesting. The valuation is carried out only on the scale of the economic unit	Sustainability is assessed in various aspects, including the social importance of forests, the natural features of the territory, the habitat of rare plant and animal species, and so on. The scale of the assessment can be different - from a separate forest area, the zone to the state and interstate level.

Source: MacArtur Foundation (1999)

The Russian Federation, being one of the largest forest powers in the world (Table 2), can not be kept out of the global processes of forest management globalization.

Table 2: Leading countries according to the Global Forest Resources Assessment - 2015 of the Food and Agriculture Organization of the United Nations (FAO)

№ п/п	Country	Forest area, thousand hectares	Share in the land area, %	Share in total forest area, %
1	Russia	814 931	50	20
2	Brasil	493 538	59	12
3	Canada	347 069	38	9
4	The USA	310 095	34	8
5	China	208 321	22	5
6	Congo	152 578	67	4
7	Australia	124 751	16	3
8	Indonesia	91 010	53	2
9	Peru	73 973	58	2
10	India	70 682	24	2
	Total :	2 686 948		67

Source: Global forest resources assessment 2015. How changing the forests of the world? Second edition. Prepared by the Food and agriculture organization of the United Nations (FAO), Rome, 2016 , <http://www.fao.org/3/a-i4793r.pdf>.

According to the State Forest Register as of January 1, 2017, the total area of Russia's lands on which the forests are located amounted to 1,184.3 million hectares (Table 3).

Table 3: Information on the state of the forest fund of the Russian Federation

Indexes	2014 г.	2015 г.	2016 г.
Area of land on which forests are located, thousand hectares	1 184 146,3	1 184 101,2	1 184 318,7
Total area of forest land, thousand hectares	891 559,9	890 855,4	891 432,3
Share of forest land leased out in the total area of the forest fund, %	21,0	20,7	21,1
Area of forest land leased for the purpose of logging, thousand hectares	173,9	167,4	170,1
The volume of harvested wood, thousand cubic meters. M	202 765,7	205 143,5	213 805,

Source: The data of the Federal forestry Agency submitted to the Unified interdepartmental information-statistical system (EMISS), http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/databases/emiss/; The data of the Federal service for state registration, cadaster and cartography, represented in the Unified interdepartmental information-statistical system (EMISS), [http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/databases/Emiss stock](http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/databases/Emiss_stock); Data of Federal state statistics service of the Russian Federation, presented in the Unified interdepartmental information-statistical system (EMISS), http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/databases/emiss/.

Russia ranks first in the world in terms of forest land, which in total exceeds the forest lands of countries such as Canada, the United States, Sweden, Norway and Finland. In the forests of Russia, 20% of the world's timber reserves are concentrated, of which over 50% are valuable coniferous species. This provides our country the first place in the world - for the export of round timber, the second place for the export of sawn timber, the fifth place for the export of plywood and the eighth place for the export of pulp (FAO. 2015)

Russia's dominant role in the global system of management and reproduction of forest and water resources, as well as the country's considerable potential in the "greening" of the world economy, was confirmed by the international community at the UN Conference on Sustainable Development Rio + 20 (Rio de Janeiro, 2012).

At the same time, rational use, rather than exploitation of natural resources, including forests; conservation of biodiversity; the contribution of society to maintaining and preserving the global ecological balance have become key elements in the formation and implementation of the national sustainable development strategy of the Russian Federation (The Russian Government resolution No. 559). This is evidenced by the adoption of such state documents as:

- The main provisions of the state strategy of the Russian Federation for the protection of the environment and sustainable development (1994);
- The Ecological Doctrine of the Russian Federation (2002);
- National Strategy and Main Directions of the National Action Plan for Biodiversity Conservation (2001);
- National strategies and state programs for the development of a system of protected and protected natural areas, the rescue of rare and endangered plant and animal species, the implementation of the requirements of the Conventions on Biological Diversity;

- Fundamentals of state policy in the field of environmental development of the Russian Federation for the period until 2030 (2012);

The review of Russian legislation and regulations showed that, in addition to the category of "sustainable forest management," the concepts of multi-purpose, rational, continuous, sustainable use and management of forests are actively used in domestic practice. Thus, the Constitution of the Russian Federation (Article 58) prescribes a careful treatment of natural resources, including forests, as the most important strategic resource of the state. Art. 2 of the Forest Code of the Russian Federation determines that the domestic "forest legislation is aimed at ensuring rational and sustainable use of forests, their reservation, protection and reproduction, based on the principles of sustainable forest management and conservation of biological diversity of forest ecosystems, improving the ecological and resource potential of forests, satisfying the needs of society in forest resources on the basis of scientifically based, multipurpose forest management" (<http://foresteurope.org/communication/#1473684927281-829b95cc-499686b5-6c62>).

Mechanisms of sustainable forest management are also fixed in other regulatory and legal acts, including:

- Criteria and indicators for sustainable forest management of the Russian Federation (1998);
- Concept of sustainable forest management of the Russian Federation (1998);
- Strategies for the development of the forestry complex of the Russian Federation for the period until 2020 (2008);
- The fundamentals of the state policy in the sphere of use, reservation, protection and reproduction of forests in the Russian Federation for the period until 2030 (2013);
- The State Program of the Russian Federation "Forestry Development" for 2013-2020. (2014);

These documents declare a number of principles of forest management aimed at ensuring their sustainable development:

- 1) sustainable forest management, conservation of forest biological diversity, increasing of their potential;
- 2) preservation of environment-forming, water-protective, protective, sanitary-hygienic, health-improving and other useful functions of forests in the interests of ensuring the right of everyone to a favorable environment;
- 3) use of forests taking into account their global ecological significance, as well as taking into account the duration of their growing and other natural properties of forests;
- 4) provision of multi-purpose, rational, continuous, sustainable use of forests to meet the needs of society in forests and forest resources;
- 5) reproduction of forests, improving their quality, as well as increasing the productivity of forests;
- 6) reservation and protection of forests;
- 7) participation of citizens, public associations in the preparation of decisions, the implementation of which may affect the forests in their use, reservation, protection, reproduction, in the manner and forms established by the legislation of the Russian Federation;
- 8) use of forests in ways that do not harm the environment and human health (www.rosleshoz.gov.ru/docs/federal/codex).

To date, quality management and forest certification are the key mechanisms for implementing and adhering to the principles of sustainable forest management in the Russian Federation. The main objects of certification of the forestry sector in Russia are shown in Figure 1.

Let's consider these objects in more detail.

1) Certification of the enterprise management systems is carried out for compliance with the requirements of ISO 9001: 2015, ISO 14001: 2015, OHSAS 18001: 2007 or other standards on management aspects due to Vdovin, Salimova, Biryukova (2014). As Russian practice shows, in the forestry sector this type of certification is applied to a limited extent, first of all at enterprises that do not lease forest land and do not carry out logging activities independently. As a rule, these are pulp and paper mills and enterprises engaged in chemical, mechanical, deep and / or complex wood processing. Examples are the management systems of Arkhangelsk Pulp and Paper Mill JSC, Solikamskbumprom JSC, Syktyvkar Plywood Plant LLC, etc. In most cases, integrated management systems (IMS) function at the enterprises, providing:

- a high level of quality management at all stages of the life cycle of the products;
- reducing the impact on the environment;
- the proper level of occupational safety and health at work;

- conditions for socially responsible business conduct by Salimova et al. (2015). At the same time, the inclusion of forest management activities in the production cycle of the enterprise, as a rule, leads to an expansion of the scope of application of the IMS for implementing the requirements of standards for sustainable forest management (PEFC-RUSSIA-ST-01-2015 "RF Standard for Forest Management and Forest Management" or FSC- STD-RUS-V6-1-2012 "Russian national standard for voluntary forest certification under the FSC scheme"). The IMS of Ilim Group, which implements the requirements of quality management, environmental management, industrial safety management, and the requirements of the Forest Stewardship Council for forest management and forest management can serve as an example of this (such) practice.

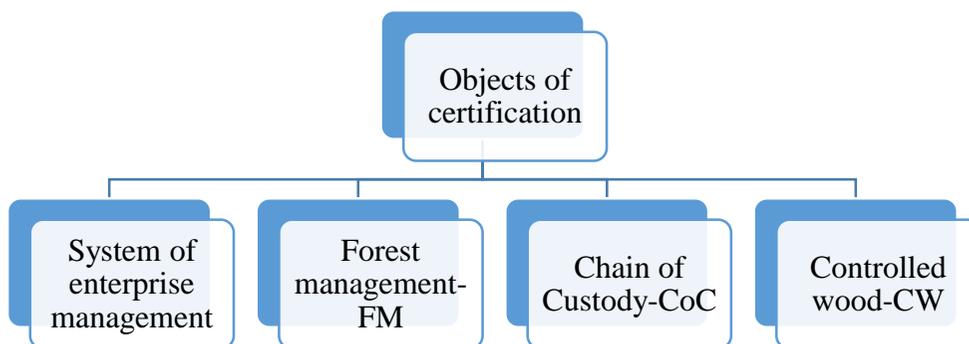


Figure 1. Objects of certification of the forest industry of the Russian Federation.

2) Certification of sustainable forest management (Forest Management) assumes that the quality of management of forestry and use of forest resources meets the principles and criteria for responsible forest management. As a rule, applicants for this type of certification are:

- tenants of the forest fund. Such as, for example, JSC "Baikal Forest Company";

- forest areas, as local bodies of state forest management and administrations of protected and protected areas. Such as, for example, forestry and the Ministry of Forestry of the Republic of Tatarstan, forestry enterprises of the Vologda Forestry;

- other interested persons.

Within the certification, the following aspects of activity are subjects to assessment: a) forest management planning; b) logging technology; c) development and maintenance of infrastructure in working order; d) methods and approaches to reforestation; e) the degree of preservation of rare and endangered species of plants and animals, unique natural complexes; e) condition of soil and water; g) observance of social rights and guarantees of personnel, local population and indigenous peoples, etc.

3) Chain of Custody (CoC) certification allows tracking the path of a certified forest products from the procurement site to the consumer through numerous redistributions and transport nodes. Enterprises engaged in harvesting, transportation, processing, trade in forest products and timber, printing plants and other participants in the supply chain are the applicants for this type of certification. As an example of this practice, the supply chains of ZAO TetraPak, OOO Tverskoy Printing Factory, Karelia Pulp LLC, etc. can be cited.

4) Certification of controlled wood (Controlled wood - CW) is developed for organizations that seek to ensure the absence in their supply chains (CoC) of timber that is procured a) illegally; b) with violation of traditional or civil rights; c) in forests of high conservation value; d) on the territory of non-forest lands; e) places of cultivation of genetically modified trees.

Sustainable Forest Management, Chain of Custody (CoC) and Controlled wood – (CW) are the objects of forest certification, which has become extremely popular over the past decade. For today two international systems of voluntary forest certification are actively developing in Russia:

1) FSC Forest Stewardship Council system (Table 4);

2) Pan-European forest certification system PEFC (Table 5).

In order to understand the scale of the works, we note that 195.7 million hectares of forest in the world have passed the conformity assessment as of October 2017 according to the FSC scheme, of which 22% falls on the forests of Russia, which is 4.8% of the domestic forest fund or 23,8% of the area of forest fund land leased for the purpose of harvesting timber. Under the FSC scheme, 33,120 certificates for supply chains (CoC) have been issued in 120 countries, of which less than 1.5% are owned by Russian manufacturers (FSC Facts & Figures).

Table 4: Indicators of the development of FSC certification in the territory of Russia as of 01.12.2017 (Holders of FSC certificates)

Types of certificates	Quantity of certificates	Quantity of certificate holders	Total area of forest plantations, thousand hectares
CoC Certificate	471	630	0,0
Combined FM / CoC certificate	145	216	40 303,3
Certified controlled wood for the controlled wood standard for forest managers of CW / FM enterprises	2	2	236,9
Total:	618	848	40 540,2

Table 5: Indicators of the development of certification on the PEFC system in Russia as of December 1, 2017

Types of certificates	Quantity of certificates	Quantity of certificate holders	Total area of forest plantations, thousand
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			hectares
CoC Certificate	27	27	0,0
Certificate FM	23	23	13 023,0
Total:	50	50	13 023,0

Source: Base certificate PEFC for 01.12.2017, <http://pefc.ru/rc.html>.

As of September 2017, according to the PEFC scheme, 304.2 million hectares of forest have been assessed in the world, 4.2% of which falls on forests in Russia, which is 1.44% of the Russian forest fund. Russia ranks 5th after Canada, Great Britain, Australia and Finland in the area of certified forests in which sustainable forest management is conducted. This result was achieved largely thanks to the entry into force on 03.03.2013 of the EU Regulation No. 995/2010, which prohibits the import of timber products of unknown origin to Western markets. At the same time, according to the PEFC scheme, 11,262 certificates for supply chains (CoC) in 72 countries of the world were issued, of which less than 0.3% belong to Russian producers (PEFC Global Statistics).

The main areas of certified forests are concentrated in the European part of the Russian Federation - 67%, in Siberia - 23%, in the Far East - 13%.

RESULTS

The presented data allow, on the one hand, to note the positive dynamics in the development of forest certification in the territory of Russia. On the other hand, they testify to the existence of problems and misunderstandings by the participants of this process of the forest certification role in the integration timber industry complex of Russia into the world economic space, as well as in the fight against illegally harvested wood in the country's trade turnover.

In order to determine the priorities for the development of forest certification in Russia, we consider it expedient to review and systematize the interests of the key organizations of the national forestry sector that are somehow interested in deploying the concept of sustainable forest management (Table 6).

The data presented in Table. 6, confirm the awareness and interest in the development of forest certification among the key structures of the Russian forest industry. Especially it concerns the timber industry enterprises. At the same time, for large enterprises engaged in the production of products with high added value, the issue of applying forest certification as a tool for business development has long been resolved (Table 7).

Table 6: Structure of interests and priorities of the groups interested in the development of forest certification in Russia

Groups	Interests and Priorities
The bodies of state administration, represented by the Ministry of Natural Resources and Ecology of the Russian Federation, the Federal Forestry Agency (Russian forestry), the Federal Service for Supervision in the Sphere of Nature Management (Russian natural supervision), regional structures	At the state level, forest certification is considered as one of the mechanisms for improving forest management. Certification should be exclusively voluntary, the participation of state bodies of forest management in this process should be mediated. Issues related to the development of forest certification are included in the "Strategy for the Development of the Forestry Complex of the Russian Federation for the Period to 2020" ⁴⁰ , in the long-term plans for the development of the timber industry complex of certain subjects of the Russian Federation (for example, the Arkhangelsk Region, the Komi Republic, the Krasnoyarsk Territory, etc.)
Representatives of the timber industry	Exporters of pulp and paper products, wood boards, plywood and sawn timber are most interested in forest certification. Forest certification is considered by them as a tool that provides the enterprise with a competitive advantage, quick access to "environmentally sensitive" external markets, compliance with the standards of "green" housing construction, as well as compliance with the requirements of the domestic market to the legality of the origin of forest products. So far this concerns the production of office paper, Tetre-Pack packaging, kraft paper, furniture, etc. In addition, adherence to the principles of sustainable forest management can reduce production costs, reduce environmental fines, improve the profitability of forest management, reduce social costs and expenses, etc.
Non-governmental organizations	Non-governmental environmental organizations were at the root of the development of forest certification in Russia. They support forest certification as an important tool for preserving the sustainable development of society in environmental matters (WWF, Greenpeace, regional environmental organizations, for example, "Silver Taiga" (Komi Republic), "Dront" (Nizhny Novgorod region), etc.); in the protection of the rights of small indigenous peoples, while maintaining the original habitat and traditions of nature management (for example, the Association of Indigenous Peoples of the North, Siberia and the Far East of the Russian Federation (RAIPON).

Table 7 :Information on the availability of certificates of compliance for forest certification schemes for the largest revenue companies forestry complex of Russia

⁴⁰ Development strategy for the forest complex of the Russian Federation for the period till 2020, approved by joint order of the Ministry of agriculture and Ministry of industry and trade dated 21 October 2008, No. 482 and No. 248 respectively/
http://www.rosleshoz.gov.ru/docs/ministry/47/Strategiya_razvitiya_lesnogo_kompleksa.pdf.

Place in the top 500	Business (enterprise) name	Revenues, (proceeds) billion rubles	Availability of FM certificate (sustainable forest management)	Availability of CoC certificate (supply chain)
104	JSC "Group" Ilim "	112	+	+
188	"Mondi Syktyvkar Forestry Complex"	55	+	+
234	JSC "Segezha PPM" (CC Senezha)	43	+	+
238	International Paper (Svetogorsk PPM)	42	+	+
315	Group "SVEZA"	31	+	+
359	Arkhangelsk Pulp and Paper Mill JSC	27	- *	+
430	Karelia Pulp Ltd.	21	- **	+

Source: The rating of Russian business: 500 largest revenue companies in Russia: "RBC" (as 25.09.2017), <https://www.rbc.ru/rbc500/>.

* Do not lease forest areas, does not have its own logging units. Works with a certified supplier of PKP "Titan" LLC

** Timber is purchased only from suppliers of controlled wood

DISCUSSION

To a lesser extent, enterprises engaged in trade of forest products, in production of round timber and sawn timber with low added value are covered by forest certification. For this category of enterprises, the main prerequisites and incentives for improving quality management and inclusion in the forest certification process can be:

- 1) purposeful aspiration to occupy leading positions in the market, including on its ecologically sensitive segments;
- 2) demand from key consumers and suppliers, both on the external and internal markets;
- 3) increasing the share of exported products;
- 4) the possibility of obtaining long-term investments for the modernization of production from foreign partners;
- 5) increasing the availability of forest land for rent;
- 6) ensuring the legality of logging and timber products; creation of a mechanism for monitoring supply chains (CoC);
- 7) improvement of relations with federal, regional and local government authorities, as well as with NGOs;
- 8) internal motivation associated with the desire to streamline business processes, reduce the impact on the environment, be a socially responsible enterprise, improve working conditions and employee safety, etc.;
- 9) improving the efficiency of forestry activities in general.

In a post-crisis economy, the solution of any of the above issues gives grounds for considering forest certification as a protective mechanism for the Russian timber industry

complex, which allows it to retain market positions, sales volumes, maintain the image of the enterprise and the state, and balance the interests of all stakeholder groups (Table 8).

Table 8: *The benefits and advantages of different stakeholder from forest certification*

Interested group	Benefits and advantages		
	Economic	Social	Environmental
Representatives of the timber industry	Access to environmentally sensitive markets. Increase sales to existing customers. Price premiums. Hold a share in the falling market segments. Increasing profitability of forest management. Reduction of penalties and payments for non-compliance with legislation and contractual relations Increasing investment attractiveness and improving the reputation of the company. Corporate Risk Management	Involvement of personnel in quality management activities. Growth of responsibility for labor results and quality of management decisions. Reducing social costs by increasing the impact of staff. Improving the living standards of the local population.	Reducing the environmental impact on forest ecosystems through effective planning of economic activities at the landscape level.
Government bodies at the federal, regional and local levels	Compliance with tax legislation (timeliness and completeness of budget revenues, including pop-fee (payments for timber)). Reducing the number of illegal logging. Improving the quality of logging, reforestation, forest management and forest exploitation	Partnership with business representatives of the timber industry complex. Increase the level of social protection of employees of enterprises and local people.	Compliance with environmental legislation. Conservation of biodiversity, protection of soil and water resources in the areas of logging and timber processing.
Non-governmental organizations	Participation in planning of forestry activities and carrying out environmental assessments. Controlling responsible business	Respect for the rights and interests of indigenous peoples who regard forests as their original habitat and traditional way of life.	Conservation and enhancement of biodiversity, protection of soil and water resources in the areas of logging and timber processing.
Employees and trade unions	Increasing the level of social protection of company employees (stable employment, wage growth, social rights and guarantees)	Systematization of work in the field of labor protection and occupational safety	-
Society in the person of the local population and local administrations	Participation in forest management planning Preservation of forests as a source of forest products of value to the local population (mushrooms, berries, grasses, animals, etc.)	Provision of local population with firewood, building materials, etc.	Reducing impacts on watercourses and rivers

Despite the existence of benefits and clear advantages received by different stakeholder groups within the framework of forest certification, it should be noted that there are a number of problems and limitations related to the implementation of this process in the Russian economy.

The most important of them, in our opinion are:

- lack of a clear position of the state regarding the status of forest certification in the domestic forest legislation, as well as in the national practice of forest management and forest management;
- the presence of contradictions between the Russian and international legislation in the part of the forest use rules;
- financial constraints: the lack of available cash from small and medium-sized enterprises in the forestry sector in Russia;
- lack of institutional conditions for the development of forest certification (tax incentives, preferences for leasing forests, obtaining subsidies and subventions for certification, access to investment loans, etc.);
- lack of mandatory requirements for forest certification by consumers in the domestic market;
- a relatively low level of trust in forest certification in the business environment;
- the paradox of management level, consisting, on the one hand, in the understanding by top management of enterprises the need to optimize the forest management system, and, on the other hand, in reluctance to take personal part in this process, support it with resources and initiate necessary changes;
- the problem of incompetence, lack of specialists in the field of quality management and sustainable forest management both at forestry enterprises, and in government agencies and conformity assessment bodies.

Nevertheless, the potential of forest certification in Russia is significant. Already today it stimulates the business to invest in natural, human and social capital, orienting the enterprises of Russia's timber industry complex to the realization of socially and economically effective forms of management that allow creating a favorable environment in the areas of presence both for the functioning of the business itself and for the life of the local population.

CONCLUSIONS

Based on the results of the study, it can be concluded that quality management and forest certification are considered by all stakeholder groups as a key tool for ensuring sustainable forest management in the territory of the Russian Federation. Their active development is a consequence of the globalization of forest management and forest management processes. Application of the independent forest certification mechanism in the activities of enterprises and organizations of Russia's timber industry contributes to better implementation of forest legislation, including monitoring the legality of harvested and purchased timber; expanding the markets for timber products, increasing the investment attractiveness of business, which in turn becomes an additional incentive for the development of socially, environmentally and economically balanced sustainable forest management and forestry in the country.

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