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The evolution of forest exploitation and restoration in Russia: myths and realities

The article analyzes the trends of forest exploitation and restoration in Russia embracing a period of over a century. It highlights the key issues of the forest industry. The article evaluates the effectiveness of institutional changes concerning forestry solutions. It suggests a package of measures on managing the evolution of the forest sector aimed at stable, non-depletable forest exploitation while maximizing forest revenue.

Forest, forest resources, sustainable forest exploitation, reforestation, forest revenue, deep wood processing, the Forest Code, forestry, innovation development.

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Forest is one of the planet's key resources, that apart from its economic value is essential (along with fresh water supplies) for maintaining acceptable living conditions on the Earth, carrying out an extensive range of environmental and social functions, that prioritizes solutions to the exploitation and restoration of forest potential in the world, countries, regions, settlements.

For over 20 years the forest sector of the Russian economy has been in a state of prolonged recession, which is proved by the negative dynamics of the key indicators of forest exploitation and restoration. It would seem that Russia, being one of the most forest-rich countries, must and is able to be one of the world leaders in the wood market, provided that its forest potential is used rationally, in order to supplement the budget by revenues ten times exceeding the current level of tax receipts from the use of forest resources. However, the situation is not the way we would like it to be. Moreover, when it comes to the forest sector, the country, in fact, has slid 20 years back and lags way behind the world's countries leading in this sphere. So what are the key issues concerning the forest sector of the Russian economy? How can we wisely use the forest potential for the good of the country's population? What has already been done in this direction and what are the consequences of the latest institutional reforms? What should be done and what should be changed about our consciousness to improve the situation, using the experience of previous generations and the world's advanced countries? The author addresses these issues most urgent in Russia and its regions.

Based on the analysis of numerous publications on the use of Russia's forest potential, international reports on the state of forests, statements made by forestry specialists, and having summarized the materials of round tables and own practical work experience in the timber industry, the author distinguishes at least four myths typical of the Russian consciousness at large, and which draw the vector of evolution of the forest sector away from the progressive direction.

Myth 1. Russia is the most forest-rich country in the world.

At first glance, this is really so. According to the data of the Food and Agriculture Organization of the United Nations (FAO), Russia accounts for 21.4% of the world's total forest resources. The total area of forest land is 809.09 million ha, corresponding to the first place in the world and takes the second place (after Canada) by the forested area per 1000 people of the population *(table)*.

However, according to the map of Russian forests prepared in 2004 by the Space Research Institute of RAS, the Centre for forest ecology and productivity of RAS [1], which considerably differs from the official map, and the results of which provided the basis for the conclusions that one third of Russia's forest fund is formed by the deciduous and degraded secondary forests of low-quality, regrown instead of former high-grade primary forests in the result of intensive lumbering. These forests are hardly usable in the forest industry. Huge land areas previously covered by forests, has turned into unforested territories. The undeveloped areas in the European part of Russia have mainly remained in swamps, mountain areas, or far from roads, which significantly increases logging costs, making them unprofitable.

These conclusions are more trustworthy than the official statistics recorded in the forest plans of the RF constituent entities, since forest management activities in the European part of Russia and the Urals, with few exceptions, were held more than 20 years ago, and in Siberia and in the Far East – more than 30 years ago (taking into account large-scale illegal logging since 1991, the increase in the area burned by wildfires, and destroyed by forest diseases and pests). Therefore, the estimates of forest yields in Russia are rather rough and overrated. These conclusions are confirmed by the fact that the leaseholders of the forest fund in the process of documentation and re-estimation of forest stands faced mismatch of the official and the real data. As a rule, the documents regulating allocation of the leased forest areas may contain inaccurate data on industrial wood resources and the forest fund structure, overrating the volume of industrial fine coniferous wood.

The world's forest area and area by countries and continents

Continent, country	Forest area, 2010			Change rate for 2000 – 2010	
	Forest area, thousand ha	% of land area	Area per 1000 people, ha	Thousand ha	%
South America	864351	49	2246	-3997	-0.5
including Brazil	519522	62	2706	-2642	-0.5
Russia	**809090**	**49**	**5722**	**-18**	**0**
North and Central America	705393	33	1315	-10	0
including the USA	304022	33	975	383	0.1
Canada	310134	34	9325	0	0
Africa	674419	23	683	-3414	-0.5
Asia	592512	19	145	2235	0.4
including China	206861	22	154	2986	1.6
Oceania	191384	23	5478	-700	-0.4
Total world	4033060	31	597	-5211	-0.1

Source: State of the world's forests. FAO. 2011.

It should be noted that forest reserves are distributed very unevenly on the territory of Russia: two thirds of forests are located in heavily forested areas of Siberia (33.5 billion m^3), of the Far East (20.8 billion m^3), of the European North -West (10.4 billion m^3), which are significantly distant from sales markets and which experience severe lack of logging roads and workforce. Thus, while an average transportation distance of timber made 560 kilometres in 1912, and 1019 kilometres in 1940, in 1970 it amounted to 1700 kilometres. By 1960 timber transportation costs had reached total investments volume in all branches of timber industry [2].

Moreover, Russian forests, being one of the most Northern forests in the world, are less productive due to harsh climatic conditions in comparison with the forests of Europe, the USA, and Canada, let alone tropical and subtropical countries. Consequently, Russia possesses very few highly-productive and available for exploitation forests, that have significant value to the forest industry in its current state. Therefore, it is necessary to realize that the country's timber resources are not so vast and limitless, and they need to be protected, used efficiently and comprehensively, carefully guarded from illegal felling, fires and provided with timely care. It is necessary to change approaches towards forest management, orienting not only on quantitative indicators of profit, but also on quality parameters of the biological productivity of forests, and advancing the interests of future generations.

Myth 2. Due to continued under-exploitation of forest resources (20-25% of the estimated wood-cutting area), forest potential increases naturally, with minimum artificial reforestation required. There is no need to spend money on forestry planting and the assisted forest regeneration.

Indeed, the rated wood-cutting in recent years is applied by no more than 25%. It was not completely applied in the Soviet years, either (less than 55%). According to the FAO, for the 2000 – 2010 period in Russia, the area covered by forests decreased insignificantly, by 18 thousand hectares (see table).

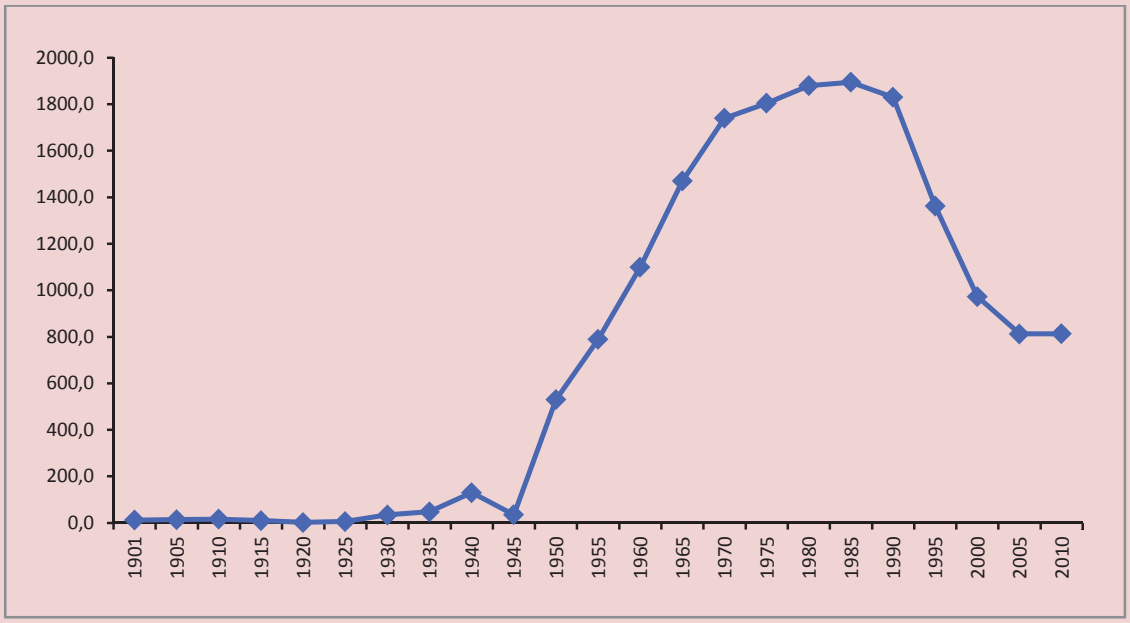
However, considering the experience of forest management and reforestation in the country that existed 100 years ago (exploitability age of a Pinus sylvestris), the current situation is not so optimistic.

In Tsarist Russia and during the first Soviet years, the Central-European territory had been heavily deforested, above felling rates. According to different estimates, overcutting of forests ranged from 60% in the Volga Region and Central Black Earth zone to 3.5 times in the South-East regions [3]. Practically, forests had not been restored *(fig. 1)*.

Forests were considered a free good. As a result, the percentage of forest-land in a number of regions reduced: from 39.6 to 26.3% in the Moscow Oblast, from 38.6% to 24.4% in the Smolensk Oblast, from 22 up to 16.3% in the Penza Oblast, from 21.2 to 17.2% in the Oryol Oblast, from 9.9% to 6% in the Kursk Oblast. At the same time, intensive forest quality degradation had been observed: only 5% of the forests of Russia's European part consisted of lumber, 32% of timber, and 63% of thicket. As a consequence of Russian forests depredation of the time, farmland soils degraded, ravines were overgrowing, rivers and lakes were becoming shallow, periods of dry winds and drought were increasing [4].

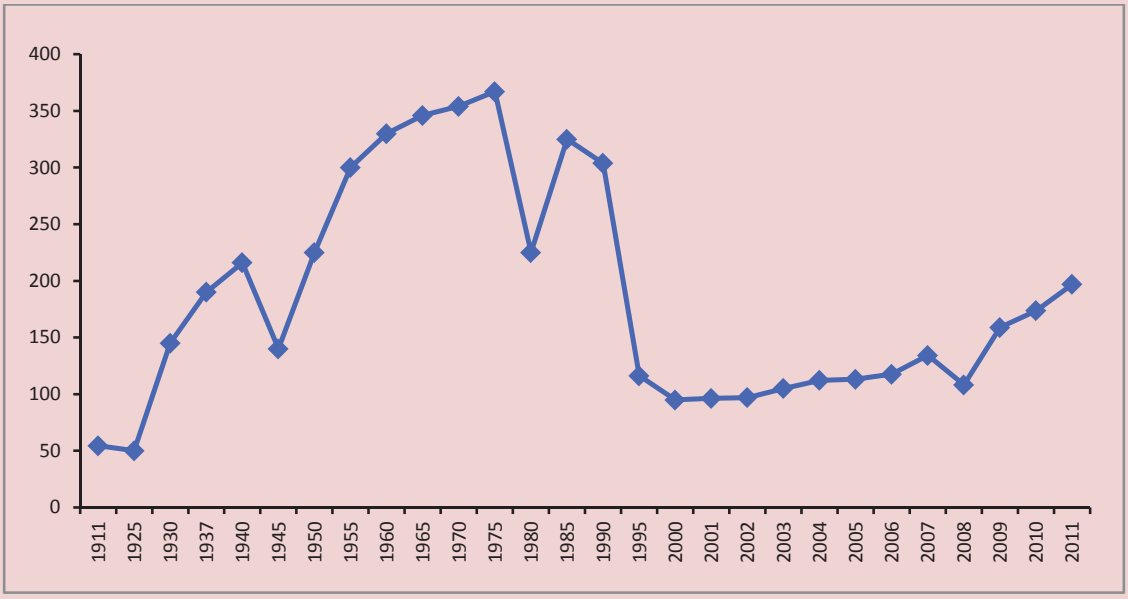
As N.A. Moiseyev notes, "due to unfavourable location of depleted and degraded private and farm forests in the central and southern regions, it was resolved right before the Revolution to protect and restore these forests and to focus logging in heavily forested regions" [2]. However, the process was hindered by the Revolution and the Civil War that resulted in numerous fires and illegal felling, leading to an increase in forest clearance. As a rule, forests were cut down in accessible locations, i.e. along railroads and near settlements. The dynamics of log hauling is presented in *figure 2*.

Figure 1. Forest restoration in Russia in 1901 – 2010, thousand hectares



Sources: National economy of the RSFSR for 60 years: statistical yearbook. Moscow: Statistics, 1977; Statistical Yearbook of Russia: statistical compilation. State Statistics Committee of the Russian Federation. Moscow, 2000; Statistical Yearbook of Russia: statistical compilation. Rosstat. Moscow, 2011.

Figure 2. Volume of logs hauled in Russia in 1911 – 2011, million m^3



Sources: National economy of the RSFSR for 60 years: statistical yearbook. Moscow: Statistics, 1977; Statistical Yearbook of Russia: statistical compilation. State Statistics Committee of the Russian Federation. Moscow, 2000; Statistical Yearbook of Russia: statistical compilation. Rosstat. Moscow, 2011.

The country's industrialization, the Great Patriotic war, the post-war recovery of the national economy, with forests being regarded as a free good, contributed to further degradation of the country's forest potential. The clear felling of the Siberian, Ural, and Far East forests; lack of timely reforestation and sufficient carding of plantations, as well as selective cutting of mainly quality forests, leaving cutting-areas covered with illiquid forest thinners resulted in the replacement of conifers by soft-wooded stands of low quality and in the decrease of forest biological productivity.

Only since 1948, a stronger focus was made on reforestation. The 1948 – 1980 period may be considered flourishing for Russia's forestry (see fig.1). The regulatory legal acts, forest management of the time is regarded as a model for conducting forestry, with constantly increasing volumes of logs hauled and processed.

Thus, for example, the Decree of the USSR Government 'On the plan for planting of shelterbelts, introduction of grassland crop rotation and construction of ponds and reservoirs to ensure high crop yields' helped to ensure food security of the country and achieve success in shelterbelt and conservation afforestation. Unfortunately, this golden age of the forestry was historically short and suspended the degradation of the country's forest potential only for a while. Since the mid 1980-ies and up to now degradation and destruction of Russian forests has continued at rates, compared to those of the industrialization period in the 1930-ies, with reforestation volumes at the 1955-level. Moreover, the quality of reforestation works has dropped dramatically in the absence of proper carding of plantations. Forest revenue loss from round wood export and the import of final products could have been justified, if accompanied by a technological mode change. However, deindustrialization prevailed in Russia at this difficult period.

Consequently, contemporary problems existing in Russia's forestry and wood industry are partly caused by the fact that previous generations, wasting the resources, 'borrowed' a part of forest riches from the current generation. The present situation is similar, although the under-exploitation of the forest potential has been observed. Overmature and mature forests are being destroyed by fires, pests, diseases, illegal loggers.

In fact, our generation also has been borrowing the resources from the future one, the only difference being that now we live in peacetime. If we want to leave the future generations a favourable living environment, qualitative forest potential, it is necessary to revive the forestry sector, to increase the volumes and the quality of the artificial reforestation of high-productive valuable wood species, to provide forests with qualitative care, to establish order in the sphere of forests protection from illegal felling and fires.

Myth 3. The private property on forests and wooded lands is a panacea for the problems of the Russian forest sector.

While developing the new Forest Code No. 200-FL, adopted on December 04, 2006, it was initially planned to introduce private property on forests, except for privatizing only a part of lands (less than 10%). This is, indeed, a revolutionary undertaking, that had no precedence in any other country of the world. The bill aroused violent disapproval among public organizations, environmentalists and the majority of the population. So who is wrong: the majority of the population or the reformers? The following arguments in favor of private property on Russian forests were and are still being presented mostly by large companies and oligarchic structures, lobbying its interests in the State Duma and in the Government:

- in the advanced countries with efficient forestry and wood industry, e.g.: in Finland, Latvia, the USA private forests occupy a substantial part of the territory, i.e. the fact

that enabled the countries to achieve high level of development in the forest sector of the economy;

- in Tsarist Russia, the forestry, with part of the forests being in private property, brought considerable revenues to the state coffers;
- introduction of private property on forest plots in Russia will enable companies to invest in the development of forest roads, to reduce the distance of raw materials delivery to the place of processing and to increase the investment attractiveness of the forest industry in general;
- the state will not have to force the leaseholders of the forest fund to engage in reforestation, as having become the owners, they will actively begin to restore forests themselves;
- from the social and economic point of view, privatization of forests by natural persons will increase employment of the population in rural areas, strengthen the financial position of the farms, create conditions that instill in the young generation a love of forests; and, finally, will allow geographically dispersed forest plantations, located mainly on the territory of former rural forests, etc.to be drawn into economic circulation.

Nevertheless, the social and environmental risks of introducing the private property institution with regard to forest lands in Russia are extremely high. Moreover, it is unlikely to fundamentally change (if not worsen) the situation in the economy. In addition, the privatization of the Russian forests is another institutional 'trap', which may intensify the degradation of the country's forest potential in future. The arguments in favour of state property on forests are the following:

1. The experience of Finland, where 70% of the forests are in private and corporate property, shows that private ownership of forests, even in such a small country, is associated with many risks, primarily with regard to the preservation of forest biodiversity. Although Finland is under the strict Forest Code, important habitats of rare and valuable animals and birds can not be efficiently preserved, if cause financial losses for the forest owners. And this is Finland, with highly conscious forest owners, who consider forests as family property, passing from generation to generation that they love and are proud of; law-abiding citizens and high level of entrepreneurship [5].

2. The experience of private forest ownership in pre-revolutionary Russia affected negatively the state of the forest potential and can not be accepted as a standard.

3. The introduction of private property will not activate forest restoration, as the mentality of Russian entrepreneurs is such that no one believes in the effectiveness of long-term investments. After all, a time lag between investments in reforestation and the payback period is at least 50 times larger in the forest industry than, for example, in agriculture.

4. As forests were regarded for a long time a 'free good', and the culture of entrepreneurship in Russia was low, upon introducing private property the 'cherries of the cake', previously included in the category of forest shelterbelts, will go under the 'axe'. Speculative transactions regarding the sale of various forest areas will take place, a fertile ground for corruption will be prepared, forest lands will be purchased not for conducting forestry, but for momentary gain and other purposes not related to forestry. Ultimately, the oligarchic structure will get the greater part of forest lands, while the interests of the population and the state will be infringed.

The past experience is also to be considered. As a rule, the reforms initiated by the 'top' and not supported by the 'bottom', are doomed to failure. But the question is who will be responsible for the results of these reforms, the answer to which is much more difficult to define in Russia in comparison with developed European countries.

Myth 4. The forest sector of the Russian economy may be saved by foreign investments and the purchase of the advanced foreign technologies and equipment.

Indeed, in technical development Russia's forest sector lags behind the world's advanced countries, the fact confirmed by lower labour productivity indicators in comparison with foreign competitors, the low level of production automation and computerization, the underdevelopment of forest management technologies. The Soviet equipment and technology, which is both obsolete and outdated, still has been frequently used. As a result of systematic errors in the country management after the collapse of the USSR, forest sector science and education had been deprived of proper state support, and are not capable of offering in short terms any 'breakthrough technologies', required for modernization. It is much easier to borrow advanced foreign technology for 'stratospheric prices', without developing science and education of the home country and without organizing the innovation system. What's the use in hundreds of students at forestry faculties of agricultural universities in Russian regions at the moment, if the number of jobs in the forestry sector had been reduced 4 times after the introduction of the 2007 Forest Code?

Moreover, the majority of regional agricultural universities are registered by the Ministry of Education and Science of the Russian Federation as inefficient, only because rural students have low Unified State Exam results upon admission and teachers are not able to earn sufficient amount of extra-budgetary revenues through contracts with poor agricultural enterprises.

Past mistakes, connected with the sale of strategically important enterprises to foreign competitors are, nevertheless, to be considered. For example, miscalculation regarding the transfer of a number of successful pulp and paper enterprises strategically important for the forest sector of the country's economy to foreign owners at underestimated market prices.

Among them is, for example OJSC Volga (formely the Balakhna Pulp and Paper mill), purchased by the German company HIT. The enterprise satisfied Russia's significant need of newsprint. Svyatogorsk pulp-and-paper mill was sold to the Swedish company Tetra Laval that closed the country's only acetate pulp production at the plant, forcing the country to import soluble cellulose from Sweden at higher market prices. JSC Segezha Pulp and Paper Mill at the insistence of the Swedish firm Assi Doman that had bought the controlling stock of the enterprise, rolled up the bag paper production, forcing the import of the same paper bags from Sweden [2]. The list of the strategic miscalculations may be continued.

But will the foreigners sell us their advanced technologies and equipment? Of course, not. The equipment offered in the Russian market is mostly obsolete, of 10 years ago at best, not meeting the modern requirements of environmental standards. It is certain that our country fell so behind technologically, that the proposals of foreign transnational companies on the construction of timber-processing plants and factories generate lots of buzz. The regions of Russia compete fiercely to implement the projects, offering various tax incentives, government guarantees, co-financing, a five-year moratorium on the reproduction of forest resources, etc. It is a double-edged sword, however. Sure, this will, indeed, solve the problem of deep wood processing and fuller exploitation of the estimated wood-cutting area in the short- and, perhaps, in the mid-term perspective. But as soon as these enterprises 'skim the cream off' the attractive raw material resources areas of Russia, they will be successfully looking for others, until such areas disappear at all, as foreigners consider the forest business in Russia only as temporary. And what will remain for the people living on this territory and considering it their homeland?

In this connection, it is necessary to develop native forest science and education, to set higher hopes upon ourselves, to rebuild our own innovation system, not upon words, like in multiple programmes and strategies, but upon deeds.

Institutional, economic-organizing changes and their consequences for the evolution of Russia's forest potential.

Energy-sapping reforms in the forest sector of the Russian economy, accompanied by the adoption of the new forest codes, numerous reorganizations and the transfer of powers and responsibilities on forest management from one ministry and agency to another in recent decades did not improve the situation, but, on the contrary, considerably worsened it.

Thus, the Forest Code adopted in December 2006 destroyed the old system of forest management, but, had not offered a new one instead. The main innovation of the Forest Code is the decentralization of management and the transfer of powers on managing the forest potential to the regional level. The functions for control and regulation in this sphere, as well as the right of ownership had been reserved to the federal center. The decentralization itself might be a good step for improving the sector management system, since problems are easier to be determined and solved at the local level. This decision, however, was not prepared and sufficiently financed. Management mechanisms and the corresponding regulatory-legal base have not been worked out.

As a result of the liquidation of forestry enterprises, the elimination of the 'Forester' post and Avialesookhrana (Air forest protection service), Russian forests were left for a time abandoned and not protected from natural disasters, and illegal actions of citizens. Small-numbered personnel of foresters was not able to suspend negative trends in the forestry sector, being more occupied with bureaucratic problems.

Therefore, the economic damage from numerous wildfires, aggravated by abnormally dry weather in the 2010 – 2011 period, increasing volumes of illegal logging and exported round timber (as a rule, in China) in the past years largely exceeded the financing of forestry, which was self-sufficient, but started consuming the budget funds. Thus, the consolidated budget expenditures of the Russian Federation and its constituent entities for forestry amounted to 44.57 billion rubles in 2011. Consolidated budget revenues from the use of the forest made only 21.21 billion rubles.

Today one may say that since the adoption of the Forest Code 5 years ago, the system of forest management in the regions has been finally formed, but still it is far from perfection due to the Code imperfection, as well as lack of funding and of highly-qualified personnel.

So what can we do to change the vector of evolution of the country's forest sector, and to orient it to stable, sustainable forest management?

The man has not been valued in our country throughout the country's history, as well as now. Engineering tools, equipment, technologies are more preferable and, as a consequence, too little is invested in human capital. Thus, for example, the share of scientific research financing under the Forestry Development Programme in the Russian Federation for the 2012 – 2020 period will amount to 0.5% only. The salary level of foresters, i.e. 12 thousand rubles, is over 1.5 times lower than the average salaries in the economy. A similar situation is in the Republic of Bashkortostan. Three million rubles are to be allocated for scientific research under the Forestry development program of the Republic (0.49% of the Programme total financing). For comparison: in Finland, the annual cost for scientific research in the forest cluster is more than 400 million euro. The key challenge facing Russia is the personnel problem and innovation development. In this

connection, it is necessary to increase financing of scientific research in priority directions of forestry development at least up to the costs level of the former USSR, i.e. 4% of the total funding.

Forests in our country ('a free good') are not treasured at all. Standing timber cost is 20 times lower than in Europe or America. The term 'forest' is not even defined in the Forest Code. Through mass media it is necessary to make people, in particular, forest users aware that there is not much forest left, and that it should be protected.

Providing technical equipment to the forest fire services in regions is only half the business. The main cause of fire is human factor, therefore, more active work on educating population about rules of visiting forests is needed, the burning of fires in forests is to be completely banned during fire season (e.g., in Finland, lighting of a fire in this period is classified as arson and incurs substantial fines and criminal liability), a complete ban on agricultural burning near forestlands is to be introduced.

Moreover, it is necessary to tighten forest, administrative, and tariff legislation with regard to illegal logging by raising fines 50 times, at the least. In order to restore order in forests it is advisable to enlist the defense and law enforcement agencies, to introduce automated systems for forest resources registration.

In this respect, the Republic of Bashkortostan has a positive experience, having implemented the information system of control over forest resources management, used not only by forestry authorities, but also by the Ministry of Internal Affairs, customs, law-enforcement agencies. As a result of such control over the efficiency and quality of the republic forests management, the volume of illegal timber felling decreased 6 times already in 2012.

Finally, foresters, without whom the country's forests are still not adequately protected from illegal loggers, are to be returned to the forests.

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