

# **ROLE OF FOREST TRADE RELATIONS BETWEEN RUSSIA, JAPAN AND CHINA IN DEVELOPMENT AND UTILIZATION OF THE AMUR BASIN'S FOREST**

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Forests of the Amur River Basin play one of the key roles in the system of ecological interactions inside Amur-Okhotsk region as well as provide economic interrelations between Russia, China and Japan. In the XXth century forest ecosystems of the Amur basin were heavily exploited as resource base of timber industry in the Russian Far East and Northeastern China. Long-term economic development of forest resources located on the Chinese or Russian part of basin was not driven only by the internal factors of each country. On the contrary during certain periods from the end of the XIXth to the beginnings of the XXIst centuries utilization of forests was notably determined by external influence of neighboring countries and foreign markets.

The purpose of the present work is to study participation and influence of Russia, China and Japan on the development and exploitation of the Amur basin's forests, interactions between these countries in trade and consumption of basin's timber during last 100-120 years. Different questions of timber industry development in the Russian Far East and Northeastern China, its influence on forest health and dynamics, trade by forest products have been considered in research studies of different years (Krokos, 1926; Surin, 1930; Krechetov, Sheigauz, 1973; Sheingauz, 1973, 2004, 2006; Natural resources., 1975; Natural resource use., 1997; Forest Sector., 2005; etc.). Variety of those publications and other available materials provided the basis for the present study focusing on the forest relations between countries of Amur-Okhotsk region.

## **1. FOREST DEVELOPMENT AND UTILIZATION IN THE CHINESE PART OF THE AMUR RIVER BASIN**

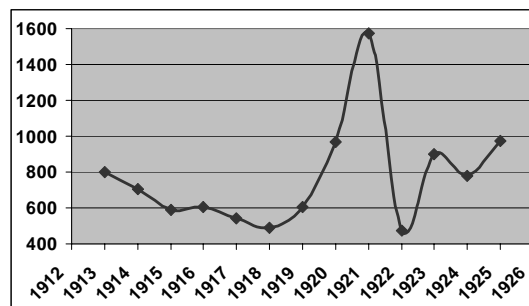
Economic development of the basin's Chinese part from the late 1890s until the late 1920s was notably determined by the Russian influence. It was connected with construction of the Chinese Eastern Railway (or CER) in 1896-1903. This road, built up and managed by Russians on the base of leased agreement with Chinese government, initially was constructed for realization of economic and strategic goals of Russia, but eventually it made new Manchurian territories accessible for the settlers and was oriented to rapidly growing regional economy on the foreign markets.

After the Russo-Japanese war in 1904-1905 Japan expropriated the southern part of the CER and Manchuria has been divided into 2 zones of influence. South Manchuria enclosed Kvantun Leased Territory, Mukden Province, and southern part of Girin Province, was mainly affected by Japan. The zone of the Russian influence, known as North Manchuria,

consisted of Amur Province with Barga, and the northern part of Girin Province (Frizendorf, 1929). Spatially North Manchuria was located approximately within the borders of the Chinese part of the Amur Basin.

Timber harvesting data on North Manchuria in the beginning of the XXth century are small and characterize mainly activity of the large timber concessions located in the zone of the CER. As a whole, the railroad's construction and operation were the main reasons of origination and development of the large timber enterprises in North Manchuria. Majority of such enterprises were owned by Russians, some part of concessions had a joint Russian-Chinese character. Penetration of the Japanese capital into forest sector was enhanced in the 1920s.

The total output of timber and firewood in the concessions located in the zone of the CER in 1913-1925 fluctuated between 480 and 1,550 thousand tons per annum (Fig.1). About 80 % of these materials were consumed by the railroad. Only after 1922 the share of wood supplied to the private and foreign markets reached 30-50% of the total output. However a whole consumption of forest products in North Manchuria was much larger and according to estimates of Economic bureau of CER it exceeded 1-2 million tons annually. In addition to the CER's timber harvesting the Lower Sungari region produced over 500,000 tons. And huge volume of wood was logged by small local artels scattered all over Manchuria, activity of which was poorly supervised and practically not accounted (North Manchuria..., 1982; Surin, 1930).



*Fig. 1. Dynamics of timber and firewood output in the forest concessions located in the zone of the CER, thousand tons (North Manchuria and CER, 1927)*

The share of lumber delivered from large concessions and the CER beyond the borders of North Manchuria was not large. Till 1921 volume of export did not exceed 50,000 tons. It increased quite rapidly in the beginning of the 1920s and reached 170,000 tons in 1924. Forest products were exported for the most part to the markets of South Manchuria. From there sawn timber and joists, and small aspen logs were transferred to Japan through Changchun and Dairen. Among the consumers of forest products in South Manchuria the most significant ones were the railway and Fushun collieries (North Manchuria and CER, 1927). Wood from North Manchuria had no wide access to the China's market because it has higher price owing to remoteness of forest areas from sea ports and high costs of railway transportation, and also because of differences in standards of forest products. Volumes of

export to Japan also were not too much (in the second half of the 1920s Manchuria supplied less than 0,5% of the total Japanese wood import) (Surin, 1930).

In the 1920s the Russian influence in Manchuria gradually weakened because of the civil war, political and economic instability. The growing Japanese impact resulted in military invasion of Manchuria and creation of completely controlled state of Manchoukuo in 1932. Japan notably enhanced economic development of Manchuria because considered it as platform for the further gains and expansion of the Japanese Empire (Anuchin, 1948).

Figure 2 shows the dynamics of logging volumes in Manchuria in the 1920-1930s according to the official Japanese statistics. Timber logging increased most intensively after formation of new state – more than in 4 times for 7 years. At the same period the role of North Manchuria in total wood production considerably extended – from 23% in 1932 to 66,5% in 1938 (Statistical Yearbook..., 1939; The Manchoukuo Year Book, 1942).

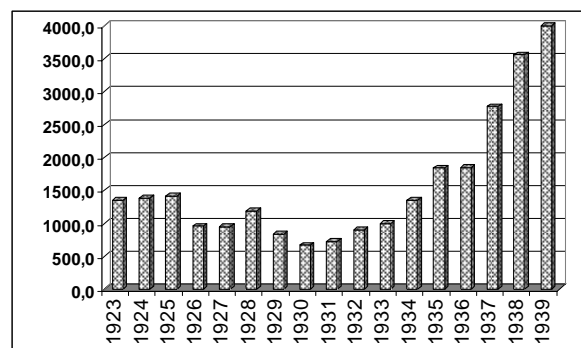


Fig. 2. Changes of logging volume in Manchuria, thousand m<sup>3</sup> (Report on progress..., 1929; Japan-Manchuokou YearBook..., 1939; The Manchoukuo Year Book, 1942)

Increase of timber output in Manchoukuo was not accompanied by growth of forest export. On the contrary a share of exported timber in total volume of output was reduced from 25% in 1932 to 3% in 1938. Moreover import of forest products extended (Fig. 3) because of development of civil and industrial constructions (amount of their contracts increased only between 1936 and 1938 more than in 2 times) and enlargement of paper-pulp industry (The Manchoukuo Year Book, 1942).

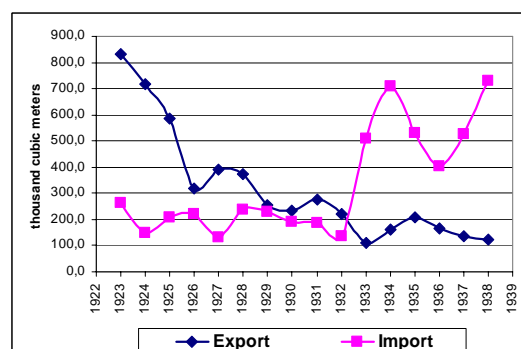


Fig. 3. Dynamic of forest import and export of Manchuria, thousand m<sup>3</sup> (Report on progress..., 1929; Japan-Manchuokou YearBook..., 1939; The Manchoukuo Year Book, 1942)

Information about economic situation in Manchuria in the 1940s is fragmentary and incomplete. But it is assumed that intensive forest cutting in the Chinese part of the Amur

River Basin continued. Analyzing a history of reduction of China's forests, Yaoqi Zhang (2000) concluded that their most significant digressions occurred during wars and periods of political instability. It is possible to apply this thesis to Manchuria in the second half of the 1940s, because in the period from the ending of the World War II and Japan's leaving of the region to the foundation of the People's Republic of China in 1949 Manchuria went through multiple authority changes and military struggles. In such conditions utilization of forest probably was uncontrolled and oriented mostly to internal consumption. Some part of forest products could be transferred to the nearest areas of China or Korea.

Thus in the first half of the XXth century the development of forests in the Chinese part of the Amur River Basin was conducted under conditions of significant economic and political influence of Russia and Japan. However exploitation of forest resources in this period has been directed chiefly to satisfaction of internal regional needs in wood products. The domestic consumption of timber essentially exceeded volumes of forest export, and growth of wood consumption totally was determined by high rates of economic development of Manchurian region.

Utilization of forest resources of Northeast China in the first half of the XXth century led to notable reduction of forested areas. In Heilongjiang province it decreased almost by 50 % from 1900 to 1948 (Fig. 4).

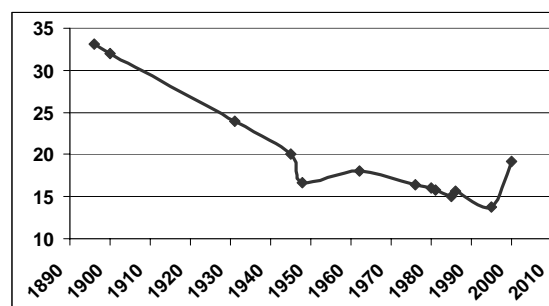


Fig. 4. Changes of forest area in Heilongjiang Province, million ha (Zhang, 2000; Ganzei, 2005)

After foundation of People's Republic of China and till present days Heilongjiang and Jilin Provinces, and Inner Mongolia Autonomous Region are the main suppliers and large consumers of wood in China. According to the data of the 1950s about 44% of forest area and around 40% of total wood stock of the country were concentrated on their territory (Natural resources..., 1975). Heilongjiang Province was the leader of output of timber industry production in the Northeastern China in the second half of the XXth century. Logging volume in Heilongjiang rapidly expanded to the beginning of the 1970s when annual output achieved 11-12 million m<sup>3</sup> according to data from one source (Dai, 2000, cited on Yamane, 2007, p. 114) and 15-16 million m<sup>3</sup> – on another data (Yamane, 2007, p. 122). In the 1990s timber harvesting decreased and at the end of the decade annual logging volume reached from 6 to 10 million m<sup>3</sup> on different estimations (Yamane, 2007, pp. 114, 122).

The forested area of Heilongjiang province during the examined period reduced not so quickly as in the first half of the century. In 1948-2000 forested area of province changed

from 13,8 to 19,2 million ha (Fig.4) (Ganzei, 2005). The most shrinkage of the forests happened by 1995 and it was a critical point in the forest resources digression. In 1998 the government of the People's Republic of China accepted the law restricted logging of natural forests in the Northeastern China (Forest Sector..., 2005).

On the whole in the second half of the XXth century intensity of forest use in the Chinese part of Amur basin has essentially increased. Logging volumes only in Heilongjiang Province exceeded timber production of all Manchuria in 1939 in 2-4 times. Strengthening of timber harvesting in the Northeastern China coincided with realization of governmental programs of country's development – Great Leap Forward, Great Cultural revolution, economic reforms and policy of external openness in 1978, which sequentially changed each other. So development of forest resources in the region was defined by internal economic factors, policy of the national and regional development. As before, exploitation of forests of Northeastern China has been directed to satisfaction of regional and country's demands for wood. Absence of the data on commodity structure of China's export in the 1950-1980s does not allow to insist that China had no timber export in this period. But even if timber export existed it is supposed that its volume was much less than internal wood consumption. Rapid growth wood import to China since 1980s indirectly confirms it.

In 2006 volume of China's total forest product import was 141 million m<sup>3</sup> (round-wood equivalent). At the end of the 1990s import covered about 40 % of the country's wood consumption (Sun Syufa, 2000) while in 2005 about 75% of internal consumption of round wood has been supplied by imported forest products (Northway, Bull, 2007).

Traditionally Malaysia and Indonesia were the main suppliers of forest products to China. In the 1990s Russia also became one of the basic suppliers of wood production. In 2006 Russia provided a half of forest products imported by China, including about 70% of round wood. Russia is also one of the China's top five suppliers of lumber, pulp and paper (Northway, Bull, 2007). Among the Russian territories delivering forest products to China the Far Eastern region are playing very important role. And by the end of the 1990s - beginning of the 2000s China has turned into one of the "agents" of development of forests located in the Russian part of the Amur River basin.

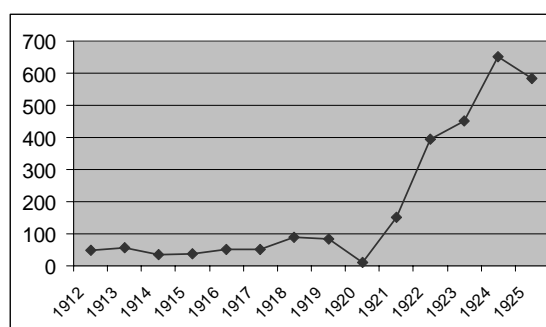
## 2. FOREST DEVELOPMENT AND UTILIZATION IN THE RUSSIAN PART OF THE AMUR RIVER BASIN

A significant part of the Russian portion of the Amur basin spatially coincides with the most populated and economically advanced southern part of the Russian Far East region. Forests development of this territory started in the 1870s. Prior to the beginning of the 1920s forests exploitation was mostly oriented to the local consumers of wood as well as on the Manchurian territory. Growth of timber industry was determined by the general economic situation in the region. According to the estimations of A. Sheingauz (1973) total wood consumption in the southern part of the Far East (FE) was about 5,4 million m<sup>3</sup> in 1922 (Table 1). Population was the basic wood consumer during all shown period (1 million m<sup>3</sup> in 1882 г, 2,6 million – in 1899, 5,5 million in 1922) though a share of transport and industry's use of forest products gradually increased.

In 1928 logging volume in the FE reached 16,5 million m<sup>3</sup>, and about 70% of timber were harvested in the southern part of the region. One of the reasons of wood production growing in the 1920s was expansion of forest products exports (Fig. 5).

*Table. 1. Dynamics of wood consumption on the Russian Far East, million m<sup>3</sup> (Sheingauz, 1973)*

Administrative units (borders of the 1970 <sup>th</sup> )	Years			
	1882	1899	1917	1922
Primorskii Krai	0,2	1,5	1,8	2,3
Khabarovskii Krai	0,5	0,9	1,5	1,1
Amurskaya Oblast	0,6	1,1	3,1	2,0
Far East Region	1,5	3,9	7,9	9,9



*Fig. 5. Dynamic of forest products export from the Russian Far East till the middle of the 1920s, thousand m<sup>3</sup> (Krokos, 1926).*

Efforts of wood exports from the FE region were undertaken from 1859 but only since 1907 it became regular (Sheingauz, 1973). Until the beginning of the World War I a share of the region in the Russia's forest export was less than 0,5%. In the middle of the 1920s it increased up to 15%. At the same time wood export composed about 40% of total value of the Far Eastern export (Krokos, 1926). However domestic consumption of forest products exceeded volumes of wood supplying to the foreign markets in several times.

The main recipients of the timber exported from the FE were Japan and China. Till the middle of the 1920s a share of the forest products annually exported to Japan fluctuated from 50 to 90%. As a whole the USSR supplied in the 1920s from 8 to 20 % of the wood import of Japan. Volumes of the forest products export to China from the FE sharply extended also in the first half of the 1920s. For the period from 1921 to 1924 a share of the USSR in China's wood import increased from 2% to 19,3% (Krokos, 1926; Surin, 1930).

Timber export from the FE consisted mainly of round wood. Cedar and aspen dominated in the species' structure of export. Fast growth of logging volumes at the end of the 1920s caused more intense deforestation in the (Sheingauz, 1973). However assessment of forested area's changes in the first half of the XXth century is a difficult task because of incompleteness of the necessary data. In 1923 forest lands of the Russian FE were estimated as 58,4 million ha, and to 1928 they were registered as 101,6 million ha (in Primorskii Krai – 10 million, in Khabarovskii krai - 44, and in the Amurskaya oblast – 33 million ha). This calculated and controlled area composed only 40% of really available forest resources. Full inspection and survey of the FE forests was finished only in 1957 (Sheingauz, 1973).

Volumes of forest products export remained at relatively high level till the middle of the 1930s. Then foreign trade of the Russian FE was rather rapidly reduced because of the political reasons, and in the time of the World War II it was stopped (Natural resource use..., 2005). Decrease of export occurred at the time of intensive industrial development of the Soviet Union and its Far Eastern region. Growing internal demand of lumber, firewood and building materials led to the increase of logging volumes to 31,8 million m<sup>3</sup> in 1940. Around 20,6 million m<sup>3</sup> of them have been harvested in the south of the FE region (Sheingauz, 1973).

In 1940-1947 output of wood production of the FE reduced because of the War. However in the 1950s growth of logging volumes began and continued until the middle of the 1980s. The most output of forest products in the south of the FE exceeded 25 million m<sup>3</sup>. The decrease of production's volumes which has begun in the second half of the 1980s was accelerated by the economic crisis in the 1990s. Restoration of the logging volumes started after 1998. During almost all post-war period the crucial producers of timber in the FE were Khabarovskii and Primorskii kraises, and Amurskaya oblast (Fig. 6). From the middle of the 1950s these 3 administrative unites located mainly in the Amur basin supplied more than 70% of the regional timber output.

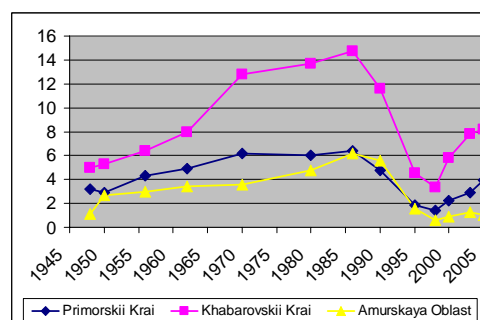


Fig. 6. Changes of logging volumes of 3 southern administrative units of the Russian Far East, million m<sup>3</sup> (Krechetov, Sheingauz, 1973; Industry of Khabarovskii kraie, 2000; Forest complex..., 2005; Forest Complex..., 2006)

In the 1950s export of forest products from the Far East was renewed. For the period from 1954 to 1960 export of round wood increased from 2,5 thousand m<sup>3</sup> to 0,9 million m<sup>3</sup>, and by 1970 volume of forest product export reached 7,0 million m<sup>3</sup> (Natural resource use..., 2005; Sheingauz, 2006). As a whole 20-25% of the regional output of wood production were supplied to foreign markets, and 10-15 % were taken out to other regions of the Soviet Union. In the 1980-1990s forest products were exported to 13 countries, but the principal consumers of timber were Japan (60-65%), Republic of Korea and China (Natural resource use..., 1997). Changes of volumes of forest products exported from the FE in the 1980-1990s followed by the dynamic of the regional timber output (Fig. 7). In 1995 total volume of export decreased to 4,3 million m<sup>3</sup> (Japan - 3 million m<sup>3</sup>, Republic of Korea and China - 1 and 0,3 million m<sup>3</sup> respectively) (Sheingauz, 2006), then changes of export volumes became positive.

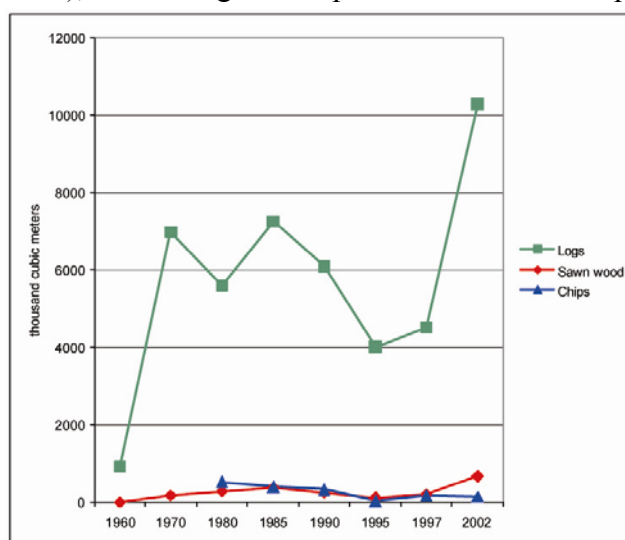


Fig. 7. Dynamic of forest products export from the Russian Far East (Sheingauz, 2004)

Generally speaking during the post-war period wood consumption inside the Far Eastern region exceeded forest products export. Situation changed in the beginning of the 1990s. As a result of the economic crisis in Russia, timber industry of the Far Eastern region was reoriented to foreign markets. At the same time regional demand for forest products notably reduced and became much less than volume of export. In 2003 about 85% of the round wood harvested in the region and 38% of sawn timber were exported from the FE (Forest Sector..., 2005).

Presently the basic part of the forest products export of the FE consists of unprocessed logs as well as in the 1920-1930s and during the Soviet period. In 2003 a share of this kind of timber was 96% of the total volume of export (Natural resource use..., 2005). So high share of round wood at the structure of timber harvesting is maintained through the exhaustive character of logging when only the best part of wood is transported from the cutting area while about 30-50% of an initial forest stock remains unused there (Forest Sector..., 2005). Negative ecological consequences of such destructive harvesting practice results in prompt expansion of the logged areas, rise of fire danger, degradation of the forest's age structure, reduction of the total wood stock and forest areas (oak, lime, pine, fir, ash forests), etc. Many



researches studied development of the Far Eastern timber industry and its influence on the forest health noted that intensification of round wood export amplify some forest use problems and negative consequences of forest exploitation (Krokos, 1926; Surin, 1930; Sheingauz, 1973; Natural resource use..., 1997; Forest Sector..., 2005; etc.).

Spatially consequences of unsustainable forest land use are concentrated in a great measure in the south of the Russian Far East because located here administrative unites are supplying the significant part of the regional timber output and forest products export (95% of export in 2003). As result transformation of forest cover in 2003 was estimated at 39,8 % in Khabarovskii Krai, 42,8 % in Primorskii Krai, 59,7 % in Jewish Aautonomous Oblast, 46,1 % in Amurskaya oblast (Forest Sector..., 2005). Despite of significant transformation of forests they are still keep natural character and have potential for timber industry development (Natural resource use..., 1997).

Today the largest importers of the Far Eastern forest products are China, Japan and Republic of Korea (Fig. 8). Japan was a leader on wood export from the FE for many years up to 2001. Since 2001 the top position was occupied by China. Fast growth of export to China (in 9,3 times for 1998-2003) was greatly caused by restriction of natural forest harvesting at the end of the 1998s. In 2003 the Russian FE (or actually its 3 southern administrative units) supplied more than 40% of total Russia's forest products export to China (in value), and almost all export of deciduous timber (Natural resource use..., 2005). In 2003 Japan imported from Russia 5,3 million m<sup>3</sup> of round wood (35% of total country's round wood import). The share of the FE region in the total value of the Russian forest products export to Japan in 2000-2003 was about 50% (Preliminary..., 2004; Forest Sector..., 2005; Customs statistics..., 2005).

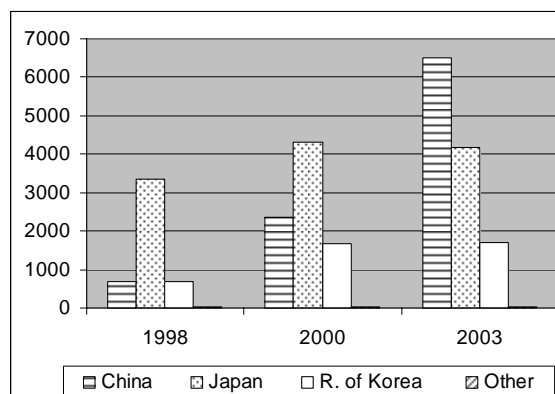


Fig. 8. Dynamic of the Far Eastern forest products imported by main countries-demanders, million m<sup>3</sup> (round wood equivalents) (Forest complex..., 2005)

In general present day development of timber industry and intensity of forest land use in the Russian part of the Amur River basin is considerably determined by export of forest products to China and Japan. According to the experts' forecasts demand for forests from the Russian Far East in the nearest decades will grow. However modern tendencies of forest exploitation in the region endanger the forest ecosystems health and possibility of their sustainable use in 20-30 years.

### 3. CONCLUSION

Analysis of the data characterized participation and interaction of the countries of Amur-Okhotsk region in the development and utilization of the Amur basin's forests allows to draw the following conclusions.

Dynamics of forest exploitation in the Russian part of the Amur basin in the 1920-1930s and from the middle of the 1950s till the present days was notably determined by external influence of the foreign markets, first of all Japan's and China's, acted to the economic activities of timber industry enterprises of the Far Eastern region. External influence on the forest development in the Northern Manchuria in the first half of the XXth century had other character. It was caused by deep penetration of Russia and Japan into politics and economy of the region.

The Russian Far East, Northeastern China and Japan being ecologically interdependent within the Amur and Okhotsk Sea basins during the XXth century have been rather closely connected by the trade of forest products. The most stable external participant of forest development and timber consumption of Amur basin's forests is Japan. It influenced on forest development in Manchuria, imported wood from the Russian part of the basin during almost 100 last years (excepting trade interruption in the 1940s – middle of the 1950s), and last decades Japan is one of the world's largest consumers of the Chinese wood goods.

Exploitation of forests in the China's part of the basin during the XXth century including the period of Russia's and Japan's influence were determined by internal wood consumption – regional and/or national. In the Russian part of the Amur Basin share of the exported forest products at the total output of their production was rather big even during the periods with high level of domestic wood consumption. Round wood always formed the main part of the forest products exported from the Russian Far East.

The common feature of forest exploitation in the both Chinese and Russian parts of Amur basin is its exhaustive character. Forest use remained unsustainable independently of dominated direction of consumption, existence or absence of external influence, political regime in the county. On the Chinese territory unsustainable forest use partly can be justified by historical factors of regional development (high population density, specific character of colonization, etc.) while on the Russian one main reasons are the state (governmental) policy of the resources development and internal economic factors.

Today ecological value of forests of the Russian part of the Amur basin grows as well as their resource meaning. In the conditions of ecological and economic interdependence Japan and China also should be interested in sustainable forest use in the Russian Far East. Their feasible participation in solution of such crucial problems of the Far Eastern forestry as illegal forest export and development of wood processing can be notable contribute to the forming of sustainable forests use in the Amur River Basin.

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*Note: \*In Russian. Bibliographical details are tentatively translated by the author.*