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Report on work as the Invited Research Fellow

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During my stay at the RIHN and participation at the Amur-Okhotsk Project (Human Activities in Northeastern Asia and Their Impact on the Biological Productivity in North Pacific Ocean) I carried out work on 2 basic directions.

1. Data collecting. One of the results of previous land-use works of the Amur-Okhotsk project was a compiling of "Present-day land use map of Amur River basin". It has allowed to characterize modern utilization and land-use conditions of the watershed territory. But for the full understanding of present-day processes and its driving forces, for development land-use strategy and management it is also necessary to know history of this area. That kind of information is needed for the time estimation of anthropogenic impact on the territory, for the detection kinds and levels of its landscape transformation and capacity of resource utilization, etc.

Last years historical researches of land use and cover changes (LUCC) of transboundary Amur watershed became more active (1-5). As a rule such large-scale works cover rather small territories, for example Sanjiang or Songnen Planes (6-9). Works studying a whole Amur river basin often have too generalized character. Frequently they are carried out in borders of large administrative units that restrict the spatial interpretation of information. One of the main reasons of that investigation's particularities is the deficit of historical data and its heterogeneity.

The Japanese libraries possess a unique collection of materials on a history of economic development of a whole China and its northeastern part. That is why first of the main goals of my work at the RIHN was the collecting materials about the history of economical development and historical land-use changes of Amur River basin. The greatest interest was given to the search of cartographical materials, the detailed statistical data, and references concerning various aspects of land use history. Mainly data in English was gathered. The basic part of material has been collected in RIHN and Kyoto University libraries. It was initially planned to collect the data for the various time periods and land use development stages suggested by Prof. Baklanov and Dr. Ganzei for the Amur River basin (10). However the preliminary work with library catalogues showed that the data of necessary details describe mainly development of Manchuria in first half

of 20th century when this part of China has been actively influenced by Japan. Further the most attention was paid to gathering of this period's information. As a result of work in library rich and interesting materials has been collected.

Maps. Totally 6 maps of Manchuria in 1930-1940 on various scales (the largest is 1:2,500,000) have been gathered and copied. The basic information of these maps includes administrative division for the various periods, transportation and settlement system, distribution of some economical objects, English and Japanese toponymics of Chinese territory. The economic map of the Manchuria published in 1942 has the greatest value. It shows distribution of the basic land use types, areas of manufacture of various industrial and agricultural products. The map's projection allows to directly combine it with available GIS layers of Amur basin. Also in the university library topographical maps of Manchuria in 1930th have been found out. These maps were compiled by Japanese military forces in scale 1:100,000 and have detailed characteristic of land use and land cover.

Statistics. The big part of collected statistical data describes the relatively small administrative unites of Manchuria and the most important cities. Their spatial interpretation is possible in combination with the economical and administrative maps in scale 1:3,000,000 or 1:2,500,000. At a whole gathered data covers next items: population, agriculture, forestry, fishery, mining, manufacturing, transportation, cities. Also numerous books and journal articles describing development process of studying area were copied and collected. The bibliographic details of the most important sources are represented in the Appendix.

The initial purpose of information gathering was a creation of the historical land use map of the Chinese part of the Amur watershed. However now it is clear that collected data are not enough basis for the compiling of the Manchurian land-use map in present-day understanding and land-use categories. At the same time that information is provided a good basis for the creation of economic-geographical map of Manchuria in the end of 1930th with detailed land-use maps of the key territories on the base of topographical maps.

Next stage of this study will include the creation of historical data base and compiling the Chinese part of map will include collecting the analogous material for the Russian and Mongolian territories. We are expected that creation of the historical map will allow to analyze the human impact on the most part of the Amur basin's territory in the end of 1930th on the uniform background and become the important instrument for the land-use change explanations at the region.

On the basis of the collected data theses and presentation have been prepared for participation in the international conference «Problems of sustainable use of the transboundary

territories» (25-27 October, 2006) at the PGI FEB RAS in Vladivostok. The paper will be prepared for the conference of young scientists (November, 2006) at the PGI also.

In spite of the fact that the main attention at data gathering was given to first half of 20th century accessible materials on economic development and ecological conditions of Northeastern China during other periods also were collected. The greatest interest is caused with the time after the World War II and the Cultural Revolution in China as that information are small and rare. I collected both data of former Manchuria and a whole China because after 1949 they have formed one country and developed within the same framework. The information about China in 1980-2000 is various but regional works are still not so widely distributed. Therefore I collected data of studying territories from the more extensive all country's works also. Further these materials will be used for the investigation of land use development in the Chinese part of Amur River basin in second half of 20 century.

2. Resources flows. Countries of the Amur-Okhotsk region have not only hydrological and ecological interrelationships inside Amur watershed but also economical ones. Rise of resources demand in one country may results in their more intensive utilization and negative environmental consequences in other. So the present-day and future land-use situation, capacity and restrictions of resources use in the Amur river basin have connections with the international trade in the region. And the second main direction of my work at the RIHN was the analyses of flows of resources products between the principal countries of Amur-Okhotsk region - China, Japan and Russia. The idea of this study belongs to Prof. Shiraiwa. The final aim of this study is to detect the role of mutual trade by resources products like one of the driving forces of the land-use changes in the region.

From the project point of view wood, marine and agricultural production are the most important objectives of such investigation. The major source of data about resources exchange is national foreign trade statistics. Principal stages of this study in my opinion are as follows.

1. Comparative analysis of the main indices, geographical and commodity structure of China's, Russia's and Japan's foreign trade.

2. Studying of the mutual trade of these countries (dynamics, structure of import and export), detection of the main resources commodities, resources trade directions, importance of the resource trade relations for the each country's resources supply.

3. Investigation of the participation of Amur watershed administrative unites in the regional resources trade, including, in fact, quantitative resources flows in different years.

4. Analysis of the resources export and land-use system changes interactions in the Amur watershed regional level (for example correlation of wood's export and forest area, timber harvest; export of cereals and their yield, sown areas, per capita output, etc.).

Certainly research of resources flows on regional level of the Russian Far East and the Northeast part of China in which territory the largest part of Amur basin is located are the most interesting and important. However for the analysis of situation in separate regions it is necessary to represent the situation in each whole country. In addition collection of necessary regional statistical data in Japan was impossible. Therefore work has been started from countries level data gathering (export and import value, commodities and geographical structure: Russia - 1992-2003, USSR - 1970, 1980, 1985; China - 1985, 1994-2005; Japan - 1960-2005) and their partial analyzing (period of 1995-2004) (Appendix).

1. Comparative analysis of the principal foreign trade data of Russia, China and Japan.

Even comparison of several most general indicators of Russia, China and Japan (table 1) reflects their significant contrast in density of population, development of manufacture, social security.

Table 1

Some major country's indicators, 2004

Indicator	Japan	Russia	China ¹
Total area, thous. km ²	387	17075	9597
Population, thous. persons	127687	144200	1299880
Population density, persons / km ²	342,4	8,4	135,4
GDP, millions of US \$	4945121	329746,9	1653090,6
GDP per capita, US \$ / person	38728	2287	1271

¹- Excluding Taiwan, Hong Kong and Macao,

Sources: www.gks.ru; Japan Statistical Yearbook, 2006; Chinese Statistical Yearbook, 2005.

The foreign trade situation in the examined countries also essentially differs (table 2) both in values and tendencies of development.

Table 2

The principal foreign trade indices, billions of US\$

Indices	Japan		China		Russia ¹	
	2000	2004	2000	2004	2000	2004
Total value	873,5	1022,1	474,3	1154,5	137	257,3
Export	487,3	566,4	249,2	593,3	103,1	181,7
Import	386,2	455,7	225,1	561,2	33,9	75,6
Trade balance	+101,1	+110,7	+24,1	+32,1	+69,2	+106,1

¹ Custom statistics

Sources: Japan Statistical Yearbook, 2006; Chinese Statistical Yearbook, 2005; Russian statistical yearbook, 2004; www.gks.ru.

However in all countries dynamics of export and import value (fig. 1-2), and trade balance were positive in 1995-2004. On this background Japan had rather significant fluctuations of import and export in 1997-2001 and its foreign trade stably extended only last three years. In China rapid growth of parameters is observed since 1998. In Russia the increase of trade value occurred less actively.

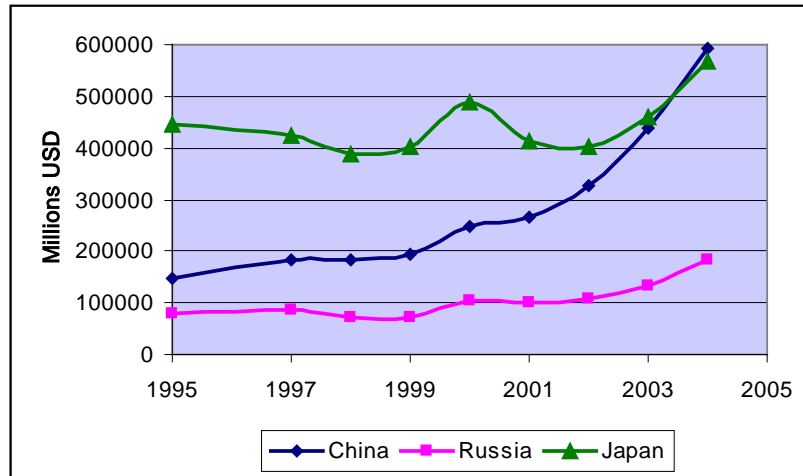


Fig. 1. Dynamic of export value

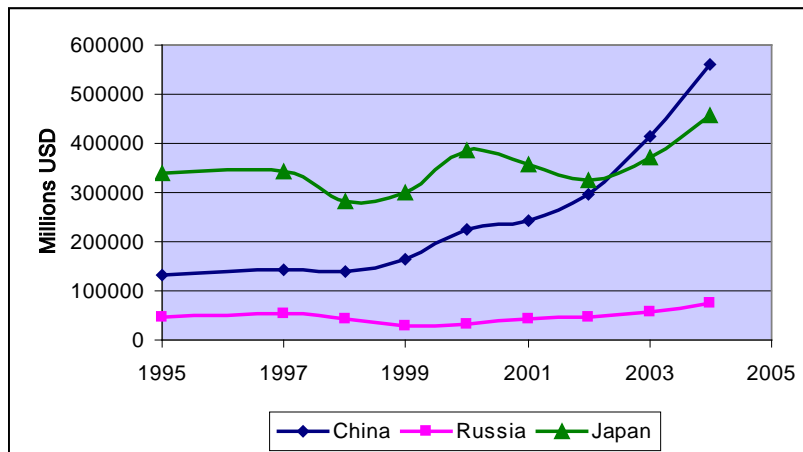


Fig. 2. Dynamic of import value

(Sources: Russian statistical yearbook, 2004; Japan Statistical Yearbook, 2002, 2006; China Statistical Yearbook, 1996-2005)

Among three countries Russia has the least volume of the foreign trade operations. The share of Russia in world export and import was 1,9 and 0,8 % in 2003 whereas parameters of Japan and China were higher in 3-5 times (Russian statistical yearbook, 2004). In 1995-2004 the most stable situation was in trade value of Japan. Russian foreign trade has increased almost for 90%, and Chinese in 2,4 times. In all countries volumes of import extended more actively than export.

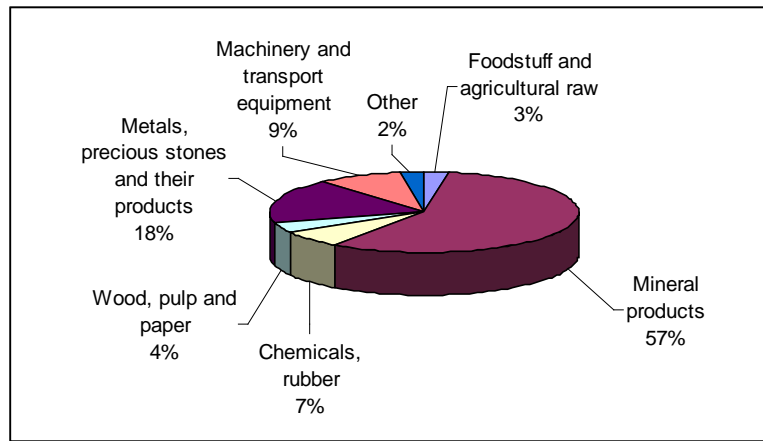


Fig. 3. Commodity structure of Russia export in 2003 (Russian statistical yearbook, 2004)

The commodity structure of export of the examined countries essentially differs. In 2003 in export of Russia (fig. 3) the greatest share of the taken out goods (57 %) concerned to the group of mineral products including ores and concentrates of various metals, such nonmetallic production as asbestos, phosphates of calcium, etc., and also various kinds of energy materials and the electric power. In 2005 the share of these goods in export has increased up to 64,6 %. Also the significant part of export fell to metals and their products.

In value of the Japanese export (fig. 4) the equipment and transport were in the lead in 2004. Various kinds of that production formed about 66% of goods taken out from the country. Approximately 10 % of export value is industrial goods and production of chemical industry.

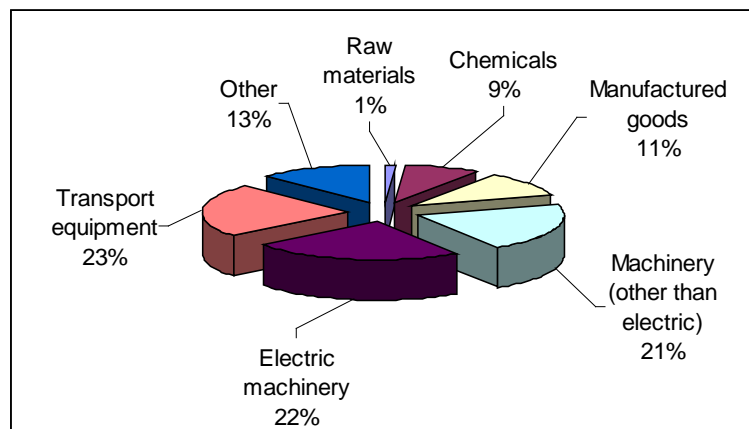


Fig. 4. Commodity structure of Japan export in 2004 (Japan Statistical Yearbook, 2006)

The estimation of export structure of China is a little bit complicated because its significant part (approximately 45 %) is attributed to unshared category of an industrial output in custom statistics (fig. 5). The greatest part from the stayed sum of export falls at light and textile industries, and also manufacture of rubber and metallurgical production. The notable part of the taken out goods is not food raw materials.

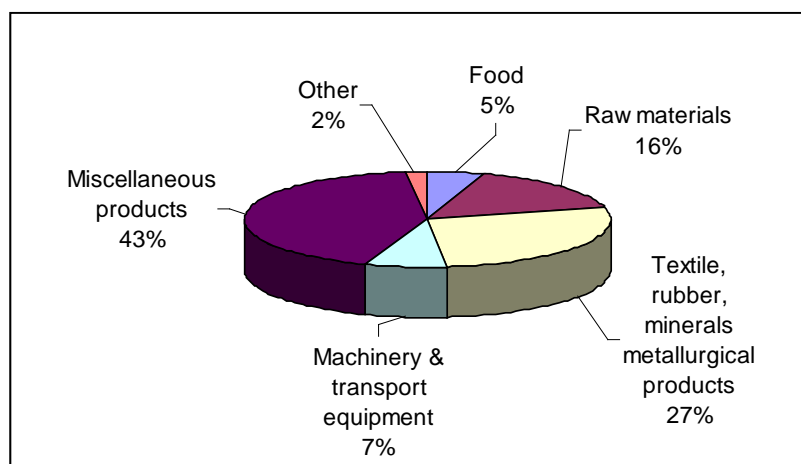


Fig. 5. Commodity structure of China export in 2004 (China Statistical Yearbook, 2005)

Comparison of commodity structure of the Russian export in 1995 and 2003 shows that the basic tendency during this period was growth of a share of mineral products (from 42 to 64 %) and reduction of a share of other goods groups except the foodstuffs. The commodity structure of the Japanese export has high stability. Here the share of machines and the equipment was only a little reduced; the share of the transport equipment and production of the chemical industry has increased. In China the share of raw material in export has increased to 4 times (with 4 up to 16 %), the share of the goods of light industry and other branches rose in 9 times (with 3 up to 27 %), considerably decreased a share of machines and the equipment (almost for 20 %).

Commodity structure of import. In 2003 the greatest part of the Russian export fell to the equipment and transport (fig. 6), food raw materials and foodstuffs, production of the chemical industry.

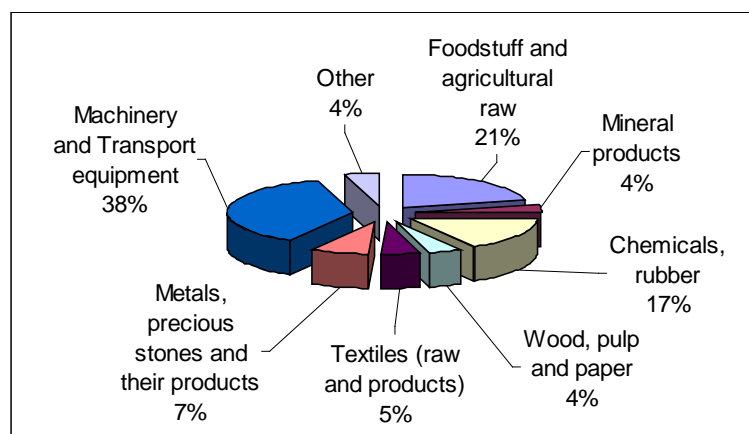


Fig. 6. Commodity structure of Russia import in 2003 (Russian statistical yearbook, 2004)

The structure of the Japanese import (fig. 7) is diverse and balanced. The greatest share falls at import of fuel, electronic mechanical engineering has the second place. About the tenth

part of the imported goods makes the foodstuffs, the share of raw material is almost in 2 times less.

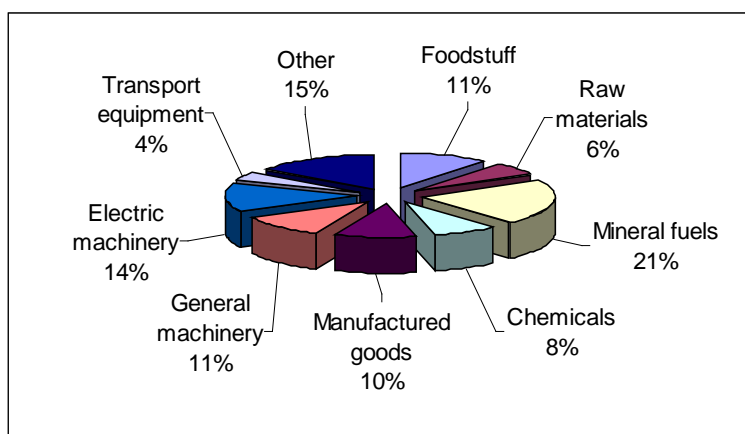


Fig. 7. Commodity structure of Japan import in 2004 (Japan Statistical Yearbook, 2006)

In 2004 in China the group of the goods including production of light industry, metallurgical and rubber branches (fig. 8) was a leader of import value. The share of the goods of the chemical industry has made 20 %, almost the same part of import fell to not food raw material.

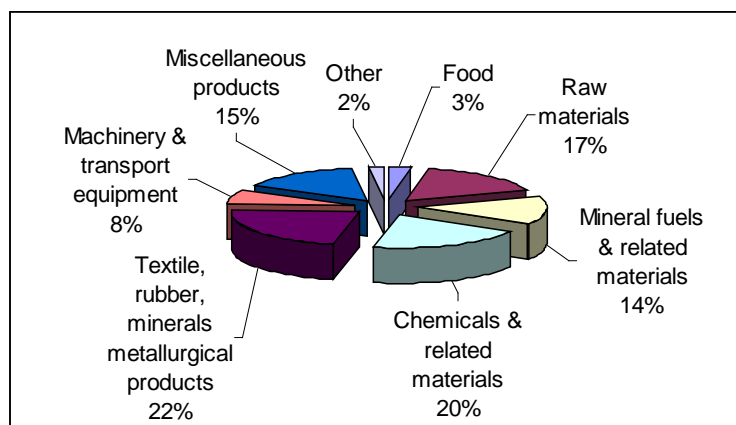


Fig. 8. Commodity structure of China import in 2004 (China Statistical Yearbook, 2005)

Thus, in 1995-2004 in Russia the significant part of import falls at the industrial and consumer goods, the share of the foodstuffs was also great. The main feature of Japan import structure is significant share of foodstuffs (11 %), mineral fuel and various raw materials makes about 30 % of the import value. In China the situation is the similar but import of raw material is wider (17 %) than fuel.

The growth of share of machines, equipment and transport from 35 % in 1995 up to 44 % in 2005 and decrease of share of the foodstuffs (with 28 up to 17,7 % for the same period) were the basic tendencies in structure of Russian import during 1995-2004. In Japan it was observed a rather stable structure. The main changes were in growth of fuel import (with 17 up to 21 %),

reduction of the foodstuffs share (with 15 up to 11 %) and raw material (with 10 up to 6 %). In China changes were more large-scale - in goods import the share of the equipment and machines was reduced in 5 times (with 40 up to 8 %), import of fuel (for 10 % in structure) and the raw materials (on 9 %) has increased. The share of the foodstuffs in import has a little decreased (with 5 up to 2 %) though its value increased approximately in 1,5 times. As a whole, China had the most significant changes in commodity structure of import and export in an examined time period.

Geographical structure of import and export of the examined countries - the leader's five. The principal partners of Russia on export value in 2005 were Netherlands (10,2 %), Germany (8,2 %), Italy (7,9 %), China (5,4 %), Turkey (4,5 %). In total amount of import leaders on deliveries were Germany (13,5 %), China (7,4 %), Japan (5,9 %), the USA and Italy (on 4,6 %) (www.gks.ru).

China, 2004. In value of export leaders were the USA (21 %), Hong Kong (17 %), Japan (12,4 %), Republic Korea (4,7 %), Germany (4,0 %). In import Japan (16,8 %), Taiwan (11,5 %), Republic Korea (11,1 %), the USA (7,9 %), Germany (5,4 %) were the largest suppliers (Chinese statistical yearbook, 2005).

Japan, 2004. Leaders in export were the USA (22,4 %), China (13,1 %), Republic Korea (7,8 %), Germany (3,3 %), Singapore (3,2 %). The main countries-partners in import were China (20,7 %), the USA (13,7 %), Republic Korea (4,8 %), Australia (4,3 %), Indonesia (4,1 %) (Japan statistical yearbook, 2006).

The basic conclusion from that data as follow: China and Japan are the major foreign trade partners for each other among all countries of the world. Also these countries play a significant role in export and import of Russia; however Russia does not have a big share in foreign trade of Japan and China.

2. Mutual foreign trade of the countries of Amur-Okhotsk region.

Comparing the data describing mutual export-import transactions of the Russia, China and Japan showed that figures from their statistical year-books do not coincide (tab. 3).

The special attention pays on itself a divergence of data of the Japanese and Chinese national statistical organizations. According to the Chinese yearbook trade balance of China with Japan was negative in 2002 and 2004. But statistical collections of Japan showed the opposite situation (fig. 9).

Table 3

Mutual foreign trade of the main countries of Amur-Okhotsk region in 2004, mln USD

		Export		
		Russia	China	Japan
Import	Russia		9098	3120,4
	China	10105		74018,5
	Japan	3404	73509	
		12127,4	7576	3941
		5713	9443562	94326,7

Sources: Japan Statistical Yearbook, 2006; Chinese Statistical Yearbook, 2005; www.gks.ru;

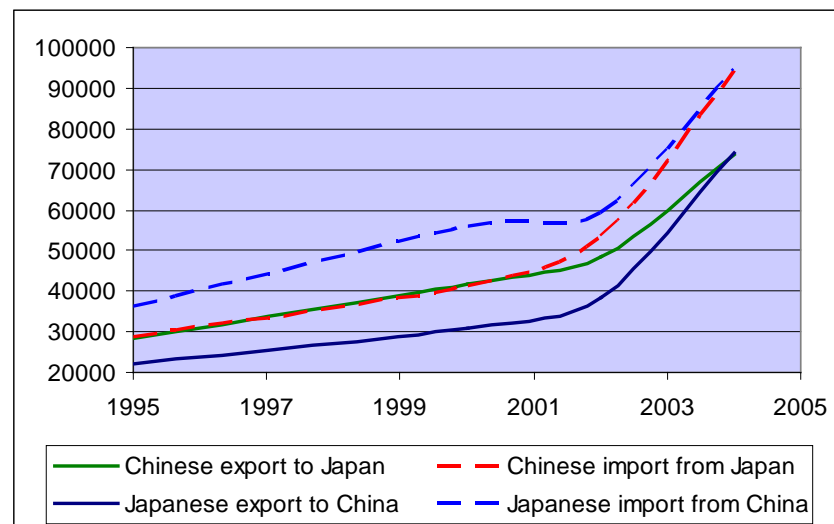


Fig. 9. Dynamic of mutual export and import value of Japan (Japan Statistical Yearbook, 2006) and China (China Statistical Yearbook, 2005), mln USD

Now it is difficult to find a reason of the data differences. Probably it is connected to features of calculation of import and export value in each country; price differences; mistakes in statistical editions. Additional consultations of experts in the field of statistics, economic geography and economy are necessary for the finding the answer to that question. Now at work we can characterize only a situation in mutual foreign trade from a position of each of three countries, using its data on trade with two other countries.

Other problem is absence of data on commodity structure of foreign trade with the separate countries in standard statistical yearbooks of China and Russia. The gathering of special materials in each of those countries is necessary. Now we can use only the Japanese statistics describing trade interrelations with China and Russia. The collected data allow to consider mutual relations since 1965 till 2004, but at the initial stage of work we consider the period of 1995-2004 only.

The analysis of the foreign trade value of each country with two other (table 4) shows first that volume of Russian export-import transactions significantly less than similar parameters of China and Japan. Second, Japan was a leader in value of the foreign trade operations in 1995 and 2000 but after 2002 China holds the first position.

Table 4

Countries		Exports				Imports			
		1995	2000	2002	2004	1995	2000	2002	2004
China to/from	Japan	28462,7	41654,3	48433,8	73509	29004,7	41509,7	53466	94326,7
	Russia	1664,7	2233,3	3521,7	9098,1	3798,4	5769,9	8406,7	12127,4
Japan to/from	China	22172,0	30886,8	38307,7	74018,5	36354,8	56047,2	59446,2	94435,2
	Russia	1161	575,5	907,7	3120,4	4784	4660,4	3153,8	5713
Russia to/from	Japan	3174	2764	1803	3404	763	572	980	3941
	China	3371	5248	6837	10105	865	949	2401	4746

Sources: Russian statistical yearbook, 2004; Japan Statistical Yearbook, 2002, 2006; China Statistical Yearbook, 1996-2005; www.gks.ru.

Volumes of Chinese export and import actively extended in 1995-2004 (fig. 10). Value of foreign trade with Japan is considerably more than with Russia, but barter develops with last more rapidly. Import from Russia essentially exceeded cost of taken out production. But volumes of export increased more actively (in 5 times). In result the share of Russia in the Chinese export has increased and in import was reduced. In trade with Japan Chinese import increase faster than export. As a whole total value of Chinese foreign trade with Japan increased in 2-3 times but due to very intensive expansion of Chinese international trade the share of Japan there was reduced in 9 examined years.

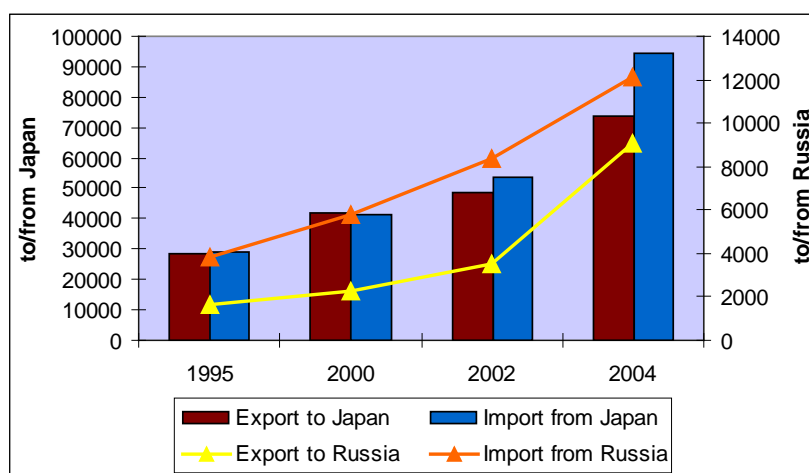


Fig. 10. Foreign trade of China with Japan and Russia, mln USD

From the Russian side volumes of trade with China increase also more actively than with Japan but at whole value of trade operations with these countries are comparable (fig. 11). Import to Russia from Japan and China increased more rapidly that export value. Export from Russia to China also extended enough actively against the export to Japan which were essentially

reduced by 2002. In a result in 1995-2004 the share of China in foreign trade of Russia has increased a little, as well as a share of Japan in the Russian import. In export the share of Japan in 2004 was reduced in 2 times in comparison with 1995.

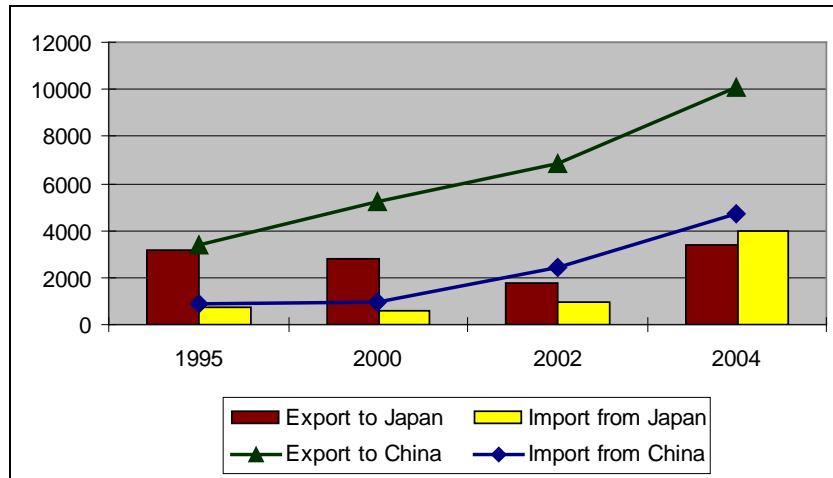


Fig. 11. Foreign trade of Russia with Japan and China, mln USD

According to the Japanese statistical data in foreign trade of Japan with China graduate growth was observed, value of export extended more intensively (about 3 times for 9 years) (fig. 12).

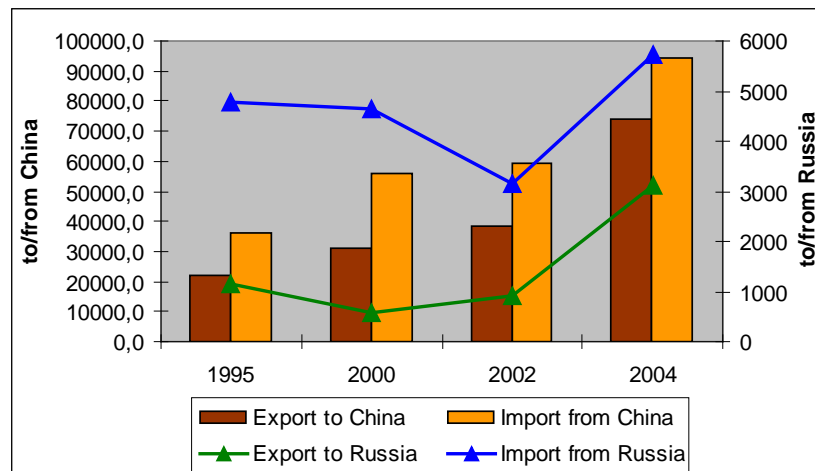


Fig. 12. Foreign trade of Japan with Russia and China, mln USD

In result the share of China in export and import of Japan has increased for 8 and 10 % accordingly. In trade with Russia were the period of trade value reduction in 2000-2002 and growth of volume by 2004 mainly due to expansion of the Japanese export. The share of Russia in foreign trade of Japan holds approximately at one level but in compare 1995 and 2004 its participation in export has a little increased and in import decreased.

It is necessary to note that here we meet with one more contradiction. According to the Russian data in 2004 the volume of import to Russia from Japan has exceeded cost of taken out

production (fig. 12). However, following the Japanese data Russian import to Japan exceeded export value in the same year, as well as in previous.

The studying of export dynamics from Japan to China in separate commodity groups (table 5) showed that machines, equipment and transport in 1995 and 2004 formed more than 50 % of its volume. In that period the share of China in the Japanese export of all kinds of the goods has essentially increased especially in export of raw material - with 9 up to 35 % (basically synthetic rubber, steel and scrap iron), chemical production - with 7 up to 19 %, the electronic equipment - with 4 up to 15 %.

Table 5

Value and structure of Japan exports by principal commodity to Russia and China

Commodities	China				Russia			
	mln USD		% of total value		mln USD		% of total value	
	1995	2004	1995	2004	1995	2004	1995	2004
Foodstuffs	93,0	295,2	0,4	0,4	5,7	25,9	0,5	0,8
Raw materials & mineral fuels	525,0	2649,3	2,4	3,5	22,4	10,9	1,9	0,3
Chemicals	2040,0	9180,1	9,3	12,4	29,3	36,4	2,5	1,2
Manufactured goods	6701,2	12047,3	30,6	16,3	189,3	264,0	16,2	8,5
General machinery	6066,0	17076,5	27,7	23,1	439,5	398,8	37,6	12,8
Electric machinery	4806,0	19440,6	21,9	26,3	310,5	320,2	26,5	10,3
Transport equipment	941,0	4197,8	4,3	5,7	97,0	1967,8	8,3	63,0
Other	758,9	9133,8	3,5	12,3	76,4	98,9	6,5	3,2
Total	21931,0	74020,7	100	100	1170,1	3122,9	100	100

Sources: Japan Statistical yearbook, 1997, 2006.

In export to Russia there also was an increase in value of all commodity groups except for raw material and mineral fuel. But the significant gain was observed only in categories of food stuffs and the transport equipment. Share of transport in export had huge growth with 8 up to 63 %. Nevertheless, the share of Russia in Japan export is insignificant (1-2 % in different categories). As a whole machines, equipment and transport made most part of the Japanese export to Russia both in 1995 and in 2004 (84 and 86 % accordingly).

Thus Japan was and remains mainly the supplier of the industrial and deeply processed goods for China and Russia. However the structure of the Japanese industrial goods which are taken out to China is more balanced and diverse in comparison with export to Russia. Distinctions in structure of the Japanese export to China and Russia have increased by 2004.

In 2004 the basic groups of the goods imported to Japan from China were machines, equipment and transport, and also "other" production half of which were clothes and accessories (table 6). Amount of these goods groups made more than 70 % of all import. Also the significant

volume of the industrial goods and the foodstuffs were imported (more than 20 % of commodity structure). It is necessary to note that systematic reduction of a foodstuff's, raw materials and fuel's share of Chinese import goes already more than 20 years.

Table 6

Value and structure of Japan imports by principal commodity to Russia and China

Commodities	China				Russia			
	mln USD		% of total value		mln USD		% of total value	
	1995	2004	1995	2004	1995	2004	1995	2004
Foodstuffs	4704,1	7413,2	13,1	7,9	1353,1	1094,8	28,4	19,2
Raw materials	1354,6	1550,7	3,8	1,6	837,1	932,7	16,9	16,3
Mineral fuels	2097,1	3252,4	5,8	3,4	347,1	1469,3	7,3	25,7
Chemicals	1332,7	1751,9	3,7	3,2	53,7	74,8	1,8	1,3
Manufactured goods	21136,4	11178,5	24,4	11,8	1976,6	2092,2	41,5	36,6
Machinery & transport	5161,7	15150,6	14,4	36,1	5,1	7,3	0,1	0,1
Other	135,53	17459,1	34,8	36,0	188,9	44,7	4,0	0,8
Total	35922,3	94434,8	100	100	4763,3	5715,8	100	100

Sources: Japan Statistical yearbook, 1997, 2006.

Not deeply processing production is dominated at the structure of import from Russia to Japan: foodstuffs (about 98 % of which make a fish and seafood), raw material (mainly a wood - 90 %), energy carriers and their derivatives (table 6). These categories formed more than 60 % of import in 2004. Among the industrial goods which share is 36 % the primary metal production plays a leading role (80-90 %).

So Russia remains mainly the supplier of resources and primary processed goods for Japan. China has essentially changed "specialization" in the Japanese import during last 10 years. However the share of resource remained relatively high in import from China down to the beginning of 1990th.

Thus the collected statistical data allow to analyse the general features and tendencies in foreign trade of the countries at the Amur-Okhotsk region. Besides it also allow to study the dynamics of value and physical volumes of resources import from China and Russia to Japan in 1965, 1970, 1975, 1977-2000, 2004.

Also for the estimation of trade in separate kinds of resources it is possible to use the data of other sources, for example, FAO. Initially it was supposed that using the data from one source for all 3 countries will allow to decide a question of their discrepancy. However the analysis of mutual wood trade of Russia, China and Japan in 2003 (table 7) has shown that data for examine countries are not the same. And in that case we again could and must study the resources trade from the separate country point of view.

Trade of forest products in 2003, mln USD

		Export		
		Russia	China	Japan
Import	Russia		655,7	1249,3
	China	440,2		357,4
	Japan	7,6	1,7	
		438	788,5	1606,8
		7,7	1,7	460,5

Source: FAO, 2006 (www.fao.org)

After short trial study of the mutual trade relations of Japan, China and Russia it is clear that gathered information allows to ascertain the situation only. For the answering questions about reasons and driving forces of any changes and tendencies it is necessary to investigate an economic and political history of all countries and Amur-Okhotsk region. Necessary information was collected during me work at RIHN (Appendix). Also I am going to decide a question about possibility of gathering regional Chinese and Russian statistics for the administrative units of the Amur river basin because of the exceptional importance of that scale research. Positive deciding of this question will allow to realize third stage of resources trade research which includes investigation of the mechanism and estimation of quantitative characteristics of Amur-Okhotsk territories participation in the resource exchange.

Last stage of this study is the most interesting and difficult. It is supposed the search of the answer to a questions as the trade tendencies correspond with stocks of separate kinds of resources; as intensity and scales of resource streams are interconnected to separate economic parameters of agriculture (crop areas, productivity, production per capita), forestry (timber harvest, the forest area, etc.), economy in whole (gross national product, incomes of the population, etc.); as intensity of foreign trade is connected with environmental conditions, etc.

Thus, as a result of work an RIHN in April-September 2006 studies on two basic directions have been executed. Firstly the data about history of economic development, land use changes, environmental conditions and driving forces of these processes in Northeastern China have been collected. The basic period of research was the first half of XX century. The collected data will be used for the creation of historical database and economic map of the Chinese part of the Amur watershed in the end of 1930th that becomes a part of the same map of the whole basin.

Secondly the basic materials about foreign trade of the principal countries of the Amur-Okhotsk region have been collected for the further wider and deeper investigation of the

resources interchange processes between Russian and Chinese territories of Amur basin and Japan. Works on both directions will be continued after my returning in Russia on base of the PGI FEB RAS.

References

1. Ganzei S.S., Mishina N.V. Land-use and Land-cover Changes in the Amur River Basin (South of the Russian Far East and North-East China) //Land-use and Land-cover Changes in the Separate Regions of the World. IGU - LUCC Atlas, 2005.
2. Haruyama Sh. Land Use and Land Cover of River Basin-Amur: Geographical View and Human Impact // Report on Amur-Okhotsk Project. No. 3., 2005.
3. Himiyama Yu. Long-term Land Use/Cover Change in Northeast China // Int. Study on the Processes and Impact of Land-Use Change in China, 2002.
4. Kakizawa H., Sakashita A., Park H. Underlying causes of land use change and degradation of Natural resources in the Amur basin // Report on Amur-Okhotsk Project. No. 3., 2005.
5. Sheingauz A. Overview of forest sector in the Russian Far East: production, industry and the problem of illegal logging. Forest Trends, 2004.
6. Hongyu Liu, Shikui Zhang, Zhaofu Li, Xianguo Lu, Qing Yang. Impacts on wetlands of large-scale land-use changes by agricultural development: the small Sajiang Plain, China //Ambio, Vol. 33, No. 6. 2004.
7. Wang Z.M., Zhang B., Zhang S.Q., Li X.Y., Liu D.W., Song K.S., Li J.P., Li F., Duan H.T. Changes of land use and of ecosystem service values in Sanjiang Plain, northeast China // Environmental monitoring and assessment. Vol. 112, No.1-3. 2006
8. Wang Z., Zhang B., Zhang S., Song K. Estimates of loss in ecosystem service values of Songnen plain from 1980 to 2000 // Journal of Geographical Sciences, Vol. 15, No. 1. 2005.
9. Zhang B., Wang Z., Duan H. A Study of the Land Use in Songhua River basin in China // Report on Amur-Okhotsk Project. No. 2., 2004.
10. Baklanov P.Ya., Ganzei S.S. Basic Stages and Tendencies of the Land Use Development in the Amur River Basin //Report on Amur-Okhotsk Project. No. 2., 2004.

Appendix. List of the most important data sources.

1. The economic and land-use development of Manchuria in the first half of XX century

Adachi Kinnoyuke. Manchuria: a survey. Robert M. McBride, 1925.

An official guide to Eastern Asia: trans-continental connections between Europe and Asia. V. 1 – Manchuria and Chosen. Tokyo: Imperial Japanese Govt. Railways, 1913.

Answering questions on Manchuria. South Manchuria Railway Co., 1936, 1939.

Baron Y. Sakatani. Manchuria, a survey of its economic development. Garland Pub., 1980. (The Modern Chinese economy; 31).

Contemporary Manchuria: a bi-monthly magazine. Vol. 1-4. South Manchuria Railway Company, 1937-1940.

Economic conditions in Manchuria / Dairen Chamber of Commerce and Industry, 1934.

Economic history of Manchuria: compiled in commemoration of the decennial of the Bank of Chosen. Seoul, Chosen. 1920.

Economic map of Manchuria, scale 1:3,000,000. 1942.

Japan - Manchoukuo year book: cyclopedia of general information and statistics on the Empires of Japan Manchoukuo. Tokyo: Japan-Manchoukuo year book, 1937-1939.

Kang Chao. The economic development of Manchuria: the rise of a frontier economy. Center for Chinese Studies, University of Michigan, 1982. (Michigan papers in Chinese studies ; no. 43).

Kungtu C. Sun. The economic development of Manchuria in the first half of the twentieth century. East Asian Research Center, Harvard University, 1968. (Harvard East Asian monographs ; 28).

Manchuria: A statistical Survey of Its Resources, Industries, Trade, Railways and Immigration. Edited by Chu Hsiao. Tientsin, 1929.

North Manchuria and the Chinese Eastern Railway / Chinese Eastern Railroad Printing Office. Garland Pub., 1982. (China during the interregnum, 1911-1949).

Ramon H. Myers. The Japanese economic development of Manchuria, 1932 to 1945. Garland, 1982. (China during the interregnum, 1911-1949; 15).

Reardon Anderson. Land use and society in Manchuria and Inner Mongolia during the Qing Dynasty// Environmental history, Vol. 5, No. 4. 2000.

Report on progress in Manchuria: 1907-1928, to 1930, to 1936. Dairen: South Manchuria Railway Company, 1929, 1931, 1936.

Sadako N. Ogata. Defiance in Manchuria: the making of Japanese foreign policy, 1931-1932. Greenwood Press, 1964. (Publications of the Center for Japanese and Korean Studies).

Shahid Javed Burki. A study of Chinese communes, 1965. East Asian Research Center, Harvard University, 1970. (Harvard East Asian monographs ; 29).

The Manchoukuo Year Book. Hsinking: The Manchoukuo Year Book Company, 1942.
Topographical maps of Manchuria, scale 1:100,000. 1930th.

Давидов Д. А. Колонизация Маньчжурии и с.-в. Монголии / Изд. и печать Восточного института, 1911. (Известия Восточного института; т. 37, вып. 1-й).

2. China and former Manchuria in the second half of XX century

Bao Maohong. Environmental History in China //Environment and History. Vol. 10, № 4. 2004.

China's environment and the challenge of sustainable development. Edited by Kristen A. Day; foreword by N.T. Wang. M.E. Sharpe. 2005.

Choh-Ming Li. Economic development of Communist China: an appraisal of the First 5 years of Industrialization. Berkeley: Univ. of California Press, 1959.

Wheelwright E.L., Mc Farlane B. The Chinese road to Socialism: economics of the Cultural Revolution. New York, London: Monthly Review Press, 1970.

Judith Shapiro. Mao's war against nature: politics and the environment in Revolutionary China. Cambridge University Press, 2001.

Kako, T; Zhang J.P. Problems concerning grain production and distribution in China: The case of Heilongjiang province //Developing economies. Vol. 38, No. 1. 2000.

Liu L. Labor location and agricultural land use in Jilin, China // Professional geographer. Vol. 52, No. 1. 2000.

Liu Y.S., Wang D.W., Gao. J., Deng W. Land use/cover changes, the environment and water resources in Northeast China // Environmental management. Vol. 36, No. 5. 2005.

Ho S., Lin G. Non-agricultural land use in post-reform China // China quarterly. No. 179. 2004.

Nakagane K. Structural changes in agricultural production in China - 3 northeastern provinces// Developing economies. Vol. 20, No. 4. 1982.

The globalization of the Chinese economy. Edited by Shang-Jin Wei, Guanzhong James Wen, Huizhong Zhou. E. Elgar, 2002.

Vaclav Smil. China's past, China's future: energy, food, environment. Routledge, 2004.

3. Resources flows in foreign trade of Amur-Okhotsk countries

Abraham F., Van Hove J. The rise of China: Prospects of regional trade policy // Review of world economics. Vol. 141, No. 3. 2005.

Cook I.G., Lardy N. R. Foreign trade and economic reform in China 1978-1990 //Political geography, Vol. 16, No. 5. 1997.

Felloni F., Gilbert J., Wahl T.I., Wandschneider P. Trade policy, biotechnology and grain self-sufficiency in China // *Agricultural economics*. Vol. 28, No. 3. 2003.

Gale H.F. Agricultural trade and policy in China: Issues, analysis and implications // *Agricultural economics*. Vol. 32, No. 2. 2005.

Japan statistical yearbook. Tokyo: Statistical Bureau, Statistical Research and Training Institute. 1960-2006.

Russian Statistical Yearbook. 2002-2004.

Statistical yearbook of China / compiled by the State Statistical Bureau, PRC. English edition. Beijing: Statistical Press. 1986, 1996-2005

White paper on International Trade Japan. 1979, 1981-2001. Tokyo: JETRO.

Ye R.Q. Sustainable development in China and international trade // *International environment affairs*. Vol. 8, No. 1. 1996.

Yu Q. Capital investment, international trade and economic growth in China: Evidence in the 1980-90s // *China economic review*. Vol. 9, No. 1. 1998.