ENVIRONMENTAL RISKS TO SINO-RUSSIAN TRANSBOUNDARY COOPERATION: from brown plans to a green strategy

Edited by Evgeny Shvarts, Eugene Simonov, Lada Progunova
ENVIRONMENTAL RISKS TO SINO-RUSSIAN TRANSBOUNDARY COOPERATION: from brown plans to a green strategy

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This study aims to identify environmental economic issues of Sino-Russian transboundary cooperation and to initiate a broad discussion with the purpose of finding solutions for the many acute environmental issues associated with economic cooperation between the two countries. It also aims to facilitate the cooperation between governmental economic agencies and environmentalists with respect to the greening of “brown” regional development plans and the development of “green” strategies in order to guide Russia’s transition to a more sustainable economic system in the post-crisis period – as is occurring already in other rapidly growing economies, including China. The study analyzes development strategies and programs of the border regions; programs of transboundary cooperation between Russia and China; environmental risks associated with individual resource-intensive sectors; as well as approaches to the greening of economies and natural resource management in both countries. It also provides practical recommendations aimed at the governments of Russia and China, as well as at the environmental and business communities in these two countries.

This publication is part of a series of reports by WWF’s Trade and Investment Programme. The objective of the series is to identify the factors of the greening of growth in the key emerging economies (Brazil, Russia, India, China, South Africa etc.), including their participation in international trade and investments, and to establish cooperation amongst the respective actors.


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INTRODUCTION
China is an economy that maintains stable and rapid growth, while aiming to globalize its investment flows and production operations. The nature of the economic relations between China and Russia, which is currently changing not in favor of the latter, raises concerns amongst Russian sustainability experts and environmentalists. One of the most concerning trends is the transfer of polluting technologies, which are banned in China, to Russia. It is noted that, until recently, China faced a similar situation in that it received and hosted polluting industrial operations, which were being transferred to China from developed countries.

However, concerns about Russia’s cooperation with China often prevent us from seeing the opportunities which exist as regards learning from China’s positive experience in areas such as: changing attitudes towards the environment at the highest levels of government; attempting to overcome adverse trends in the country’s environmental situation; and developing a national environmental policy aimed at the transition of China’s economy towards a path of sustainable low-carbon development.

China is gradually taking the lead in providing energy efficient and renewable energy equipment both to European developed countries and, particularly important, to the African developing countries, which have low purchasing power. It seems that, while talking a lot about the need for the modernization of the Russian economy, we do not pay enough attention to the potential opportunities that exist in technology cooperation with our Southeastern neighbor for purposes of the effective modernization of our economy and the transition to a low-carbon development scenario.

China views the expansion of its presence in the border regions of Russia very seriously. In principle, this process also conforms to the national interests of our country, and is being supported by its government and major state-controlled corporations. However, the planning of Russian-Chinese economic cooperation, particularly in the raw materials sectors should incorporate, as thoroughly as possible, Russia’s long-term national interests with regard to sustainable development. Therefore, WWF Russia views that becoming a raw materials supplier to China, instead of to the West, is definitely not the best economic development model for Siberia, or for the Russian Far East.

WWF Russia sees more systematic efforts by the Chinese government (compared to its Russian counterpart) in integrating environmental policy into the broader socio-economic context and channeling of investment flows into the “green growth” of the national economy. Thus, it was considered necessary to undertake this analysis of recently adopted governmental development strategies and plans for the regions of the Russian Far East and for the Chinese region bordering them Northeastern China. The purpose of this analysis is to identify the best approaches to economic cooperation between Russia and China, which result in the lowest environmental costs, as possible.

Since the publication of this book in 2010 there have been several important developments and changes in the current situation surrounding Sino-Russian transboundary relations as well as in Russia’s development plans in Eastern Siberia and RFE. However WWF Russia hopes that this study still offers a valuable approach to the major issues in the region as the state of affairs haven’t changed much. We believe that recommendations given in the end of this book will initiate the long-awaited discussion between environmental economists and the broader environmental community, while also being of use to ministries and Russian and Chinese governmental agencies in pursuing their efforts to improve regional development strategies and to develop specific plans for the implementation of those strategies.

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In the Eastern part of Russia the effectiveness of measures relating to the protection of air and water quality, forests, wetlands, wildlife and their habitats increasingly depends not only on domestic factors within the relevant Russian regions, but is also subject to a wide spectrum of factors emanating from China. Political, economic and social aspects of both Russia’s and China’s domestic policies, as well as trends of Chinese-Russian cooperation in their border regions, contribute to the way in which environmental protection measures are taking effect in the region. In particular, it appears that (i) impacts resulting from China’s development policy have increasingly become a major factor exposing the ineffectiveness of environmental protection measures taken in the Eastern Russia, and (ii) China’s development policy does not (and unilaterally cannot) fully take into account the economic, social, and environmental effects it has on Russia.

Development strategies vs. environmental policies

Many environmental protection measures within the RFE and Siberia regions, which were once effective have now become ineffective due to the emergence of transboundary environmental problems which cannot be resolved merely from within Russia but require multi- or bi-lateral attention. Some environmental problems in the Eastern Russia can be attributed to transition difficulties associated with the integration into the economy of the Asia-Pacific Region. However, most of the environmental damage is due to the lack of a regional system which ensures consistent environmental (as well as social and economic) security in the border regions of Far East and Eastern Siberia. This results from the absence of a well-balanced socio-economic development strategy in Russia as a whole, which is substituted by a tactics to live off natural resource exports without development of any diversified economy and social and political institutions of self-government in the remote regions. Unfortunately programs and strategies adopted by Russia in 2009 could potentially aggravate the existing environmental situation even further.

Unlike Russia, China has a clear development strategy for its Northeastern border provinces. This strategy includes well-aligned domestic and transboundary components. It is backed by administrative and diplomatic support, as well as by a program of out-ward expansion of Chinese resource extracting sectors. This program is aimed at providing resources for the economic development of the Northeast China (‘NEC’). Its aim is to reduce the pressure of environmental and social problems in the NEC, which in some areas of China have reached a severity and scale (fortunately) not yet experienced by Russia. For example, National Natural Forest Restoration Project, that due to its success was prolonged for another 10 years in 2010, explicitly links ability to reduce domestic logging with prospects to increase and secure timber imports from Russia and other adjacent countries. Naturally, given the magnitude of demand, such policies stimulate overharvesting and may exhaust resource base and lead to environmental degradation in Eastern Russia. However, compared to some forest areas inside adjacent China, that experienced decades of unbearable pressure, the impacts achieved to date could be considered moderate and justifiable by some experts. Therefore mismatch in baseline situation and associated expectations related to quality of the environment is also part of this trans-boundary conundrum.

China’s consistency and ingenuity in implementing its development policy in the NEC deserves admiration and perhaps emulation — however, Russia unfortunately shows growing incapacity both to use elements of the Chinese strategy to its benefit and to protect itself from its adverse consequences.

Small Khingan — mirror of big problems

Russia’s current incapacity to use elements of Chinese development strategy to its benefit is particularly exemplified by the situation existing in the Khingan Gorge, which is the most scenic section of the Amur River valley along the Russian-Chinese border, where the mighty river cuts through Small Khingan Mountains. The circumstances existing in the Khingan Gorge displays the contrasting approaches taken by Russia and China towards natural resources management and exemplifies the paradoxes of Russian-Chinese trans-boundary cooperation.
Ten years ago, the decision was taken to shelve a Russian-Chinese joint project, which would have effectively destroyed the free-flowing Amur River due to the construction of a cascade of hydropower plants. The most environmentally harmful of these plants was planned to be constructed in the Khingan Gorge, located in the Oktyabrsky District of the Jewish Autonomous Oblast.

As an alternative to constructing this plant, Russian scientists proposed in the 1990s that the Khingan Gorge area be developed by taking advantage of the outstanding natural beauty and biological importance of the area: i.e., by promoting river cruises, establishing multi-purpose sustainable forest management projects along the Amur River banks, creating a national park to protect mixed broadleaf-coniferous forests; and by encouraging eco-tourism.

To date, these proposals have been almost met: there are regular river cruises in the Khingan Gorge; processing of non-timber forest products and honey is taking place; several riverside hotels and a concrete road along the river have been constructed; the Amur River Museum, “The Three Gorges of the Dragon River” national forest park, and two more nature reserves are now successfully being operated. The next step planned is the creation of a multi-purpose tourist resort in Taipingou, the capital of the Khingan Gorge area in China, while this book has been in translation the first theme park dedicated to gold-mining heritage of the area has been built and put in operation by April 2011. However, all this has been achieved on the Chinese side of the river.

In contrast, communities on the Russian side of the riverbank spent the previous decade trying to find its place in the shadow of its neighbor’s growth. To date, there is still nothing but a road with grass growing between the tracks leading to Amurzet, the Oktyabrsky District center. Chinese ferries slowly but steadily cross the river at the Amurzet-Mingshan border crossing, blowing their horns, carrying small bands of shuttle traders who regularly travel along the broken road on the Russian side of the river and who comprise the extent of today’s local Russian economy. The remainder of local Russian economic enterprises have gone bankrupt and/or ceased to exist. A decade ago, due to restrictions on deforestation in China, Senhe Company — an affiliate of a Chinese Timber Industry Bureau — took a lease over half of the forests in the Oktyabrsky District area, for purposes of long-term harvesting of birch and aspen. The Chinese loggers of Senhe Company set a record: they remained in the area for 10 years, surviving three reforms of the Russian Forestry Agency, ten changes in the Russian rules on leases and harvesting of forests, and numerous requirements imposed on them by Russian local authorities (e.g., with respect to supplying the local population with firewood, mandatory ‘on-the-spot’ partial wood processing, recruiting a local workforce, fighting fires and repairing roads). However, the recent decline in demand for wood in China made Senhe Company, previously considered a leader in local Russian-Chinese cooperation, to abandon their forest lease and to sell their machinery. This left the Oktyabrsky District authorities at a loss as to who will supply the local Russian population with firewood. Furthermore, it transpired that Senhe Company had harvested all easily accessible timber, which meant that the remaining forest areas were no longer attractive for new lessees.

Not only Chinese timber companies set up operations in the Oktyabrsky District: two Chinese gold mining companies commenced activities along the pristine small tributaries of the Amur River five years ago. They arrived on the Russian Amur shores in 2005, as the mining of placer gold on the Chinese riverbank was prohibited due to environmental concerns. Despite protests by local Russian residents and by international organizations, the Mineral resources agency gave permission to these gold prospectors to bring 25 gold dredges to the mining area. This resulted in the destruction of area tens of kilometers wide along the Tulovchikha and Berezovaya spawning rivers, and in the establishment of an illegal border crossing. Only after a courier who was trying to smuggle gold was arrested, were the Russian authorities forced to revoke the gold mining companies’ licenses, and the gold dredges were sold for scrap to China in order to cover the gold prospectors’ debts.

A strategic plan of the Oktyabrsky District Administration as of 2005—2006 aimed at supplementing its local budget and make non-Russian sources boost the local economy was to lease out the District’s agricultural lands on a short-term basis. While bureaucrats in the Administration were sorting out who actually owns the land, China initiated its “Grain Security” campaign. This meant that by 2006, Chinese farmers started to
make enough money domestically and the prospects of plowing abandoned Russian fields became much less attractive. At the time of writing, in 2011, no more than 10% of the arable land in the Oktyabrsky District of the Jewish Autonomous Oblast is leased by Chinese farmers. However, it is noted that local Russian farmers are reported to go to these Chinese farmers for seeds and advice, as well as to purchase machinery for cultivating soybeans originating from China.

During the past decade, the creation of a protected area in highly valuable forest ecosystems on the Russian riverbank has been delayed by the authorities, despite the uniqueness of the site and proven prospects of the Khingan Gorge in terms of ecotourism. The traditional objections by local officials that the creation of such a national park on the Russian side of the riverbank “will reduce opportunities for socio-economic development” sound out of place when one considers the positive ecotourism developments which have taken place on the Chinese banks of the Amur River over the past decade.

Sino-Russian environmental cooperation vs. competition

In the absence of environmentally sound development practices in the Eastern part of Russia (such as in the Khingan Gorge), and focusing on natural resource exploitation, as well as associated environmental and natural resources issues, the Eastern part of Russia has become an arena for large-scale investment projects in fields such as the production and transit of oil and gas, mineral resources and electricity, as well as for the harvesting and processing of timber and other natural resources. Thus, as Russian-Chinese cooperation dramatically intensifies with respect to natural resources exploitation and the revival of economic development in the Russian-Chinese border areas, reaching bi-lateral agreements on environmental security requirements, environmental standards and compliance is the most important pre-requisite for the region’s sustainable development and cooperation.

The mechanisms to jointly formulate and implement a Russian-Chinese common policy on environmental protection have not been sufficiently elaborated yet by either governments. Accelerating the formulation of such mechanisms is indeed an important task for Russian and Chinese leaders. However, this objective can hardly be accomplished without the engagement and participation of environmental non-governmental organizations and of international environmental institutions for Russia and China are in need to implement international environmental standards and compliance mechanisms as well as to develop a more responsible attitude toward their roles in addressing global environmental issues.

The need to develop such a common policy, became particularly obvious in November 2005, when an accident resulted in the catastrophic discharge of benzene into the Songhua River—a Chinese tributary flowing into, and eventually also contaminating, the Amur River. No effective joint Russian-Chinese emergency plan and mechanisms existed at the time, which could have mitigated or reduced the impact of this transboundary pollution event. To date, six years following this accident, no joint emergency action plan or mechanism has been put in place yet. This became quite clear in July 2010, when 7,000 barrels containing toxic chemicals were washed into the Songhua River from two chemical plants in China’s Jilin province.

Although there was a plan to do so (developed under so-called Sino-Russian Subcomission on Environment around 2006—2007), Russia and China have yet to formulate and adopt common water quality standards and to establish any joint institution for environmental monitoring like ‘Centre of Russian-Chinese Environmental Information and Analysis’.

In recent years and as is discussed in detail in this book, despite endless rounds of Russian-Chinese bi-lateral negotiations relating to environmental protection, old problems have not been fully solved and new even more challenging problems have emerged. One of them is that Russia and China (and Mongolia) are now aggressively competing for water resources in the upper reaches of the Amur River — namely Argun River basin. Uncoordinated water transfer from Argun (Hailaer) River to Dalainor (Hulun) Lake via canal built by 2009 despite objections from the Russian side can lead to a dramatic deterioration of the environmental situation in the upper Amur and set a bad precedent in the field of transboundary water resources management.

Unfortunately most of Russian environmental thinking is limited to areas west of the Urals, vast eastern bound-
ary regions are not covered by any systemic environmental problem-solving efforts. The Russian government’s priorities and mechanisms relating to environmental policy, state monitoring and regulation, advocacy and diplomacy do not take into account the reality of transboundary environmental problems faced by Eastern Russia. In contrast, the Chinese government finances numerous research centers, which conduct focused studies of the problems of Chinese-Russian cooperation relating to the harvesting of Russia’s natural resources and political, social, economic and environmental benefits resulting from such cooperation. WWF Russia is not aware of any significant projects wherein the Russian government provides long-term support of high-quality studies undertaken in Russia, which for example, focus on environmental security relating to Russian-Chinese cooperation.

Influence of the international market

When considering Russian-Chinese cooperation and the need for the Eastern Russia to develop in a more environmentally and socially responsible manner, it is important to note that the economic boom in China is driven not only by the growth of domestic demand, but also by China’s exports of high value-added end products to countries within the European Union and Northern America. The EU, U.S and Canadian governments have implemented legislation which requires that any imports to their respective markets must comply with internationally recognized environmental and social responsibility standards. For example in the USA the 2008 amendment to the Lacey Act of 1900 (a conservation law) introduced civil and criminal penalties on imports of forest products that have been illegally harvested in violation of the legislation of the country of origin. Positive actions by importing countries, such as the USA and the amendment to the Lacey Act 1900, resulted in the large-scale greening of export-oriented businesses in China. This in turn has started to influence natural resources management practices in the Russian Far East, where voluntary Forest Stewardship Council (‘FSC’) certification of forest management practices is becoming popular.

If Russia fails to understand the need to meet international environmental and social responsibility standards when selling natural resources abroad, this may result in a situation whereby a significant part of Russian natural resources, which are harvested in a manner inconsistent with such international standards, will become internationally non-competitive — even in the markets of the Asia-Pacific Region, where Chinese, Japanese, and South Korean companies compete for Russian natural resources. If Russian natural resources become uncompetitive, the poorest and the least economically developed areas of the NEC will de facto become the only possible export destination for such Russian natural resources. Some end products manufactured in the NEC, using such substandard Russian natural resources in their timber processing, may then be re-exported to countries, which have undeveloped social and environmental responsibility standards. This means that such re-exports would occur mainly to Russia and the countries of Central Asia. In economic terms, such a scenario would be extremely unfavorable to Russia, since it would reduce its potential to raise revenues from exports of natural resources (wood products, fish, minerals, etc), while almost all added value derived from the processing of these Russian natural resources, would remain in China.

Common environment — how can we agree to preserve it?

Russia and China are linked both by complimentary economies and common environment. The Amur River is the most important source of water for the RFE and NEC region — it is a strategic resource for all countries adjacent to the Amur River basin and it is of great geopolitical importance in that 3,500 km (or 90% of the Russian-Chinese border) is delineated by the rivers and lakes of the Amur River basin. Biologists, geographers and other scientists confirm that uncoordinated management of natural resources (overfishing, partial re-routing of the river flow, unilateral construction of flood control facilities, discharge of untreated effluent, deforestation) will lead to decreased productivity and resilience of the Amur River basin’s ecosystems. This is so, due to the transboundary status of the river and also because of institutional barriers between the agencies responsible for natural resources management both in Russia and China.

If Russia takes effective steps to maintain the environmental and socio-economic balance of the Amur River basin, it may have a chance in achieving long-term sustainable development in cooperation with its neighbors in Asia Pacific. Conversely, if Russia merely continues with current (environmentally and socially unsustainable) development trends, this will inevitably lead to environmental degradation, socio-economic dependency on China, tensions and conflicts. It is obvious that now is the time for Russia to make a definite choice to formulate and implement a sustainable development strategy, as well as domestic and foreign policy with respect to the Amur River basin region, based on the national interests of Russia, and taking into account the long-term interests of its neighbors. In a decade or two, it will be virtually impossible for Russia to make a choice
of its own, since its development path will inevitably be dictated by its neighbors. In 2010, the Russian President issued an order to develop “a federal program for environmentally sustainable management of water and biological resources of the Amur River Basin”. It is hoped that this program will become the starting point for the radical improvement of Russia’s transboundary environmental policy relating to the Amur River basin.

It is not just public health and the quality of agricultural products in the RFE region, but also the unique fisheries of the Amur River and the Sea of Okhotsk which depend on the resolution of current and future environmental problems of the Amur River basin. The restoration and replenishment of fisheries is a matter of interest to Russia, China, and other countries of the Asia-Pacific Region. Joint efforts aimed at the protection of the water quality and productivity of the Amur River, and adjacent sea areas, will be much more productive than arguing about who dumped more waste into this shared river. Indeed, such a joint program on river basin resources management could incorporate the most advanced components of each of the participating countries’ environmental policy and practice — for example: China’s policy of wetland conservation and forest restoration, and Russia’s high standards of management of natural protected areas.

Thus, if the Russian Government shows the political will for and formulates an effective program for the conservation and restoration of the Amur River basin, which can be and is implemented, it is likely that its Chinese neighbor will join this initiative due to the associated major long-term benefits. However, within the current situation and in the absence of such a Russian conservation program, China appears to view the border areas of Russia as a source of cheap resources, helping China to address its own economic and environmental problems, without having to take into account the urgent need to adopt a joint Russian-Chinese environmental security policy. Unfortunately, the domestic and foreign policy of Russia in the last decade shows a strong preference for short-term monetary gain over more sustainable resource management solutions, which largely fulfill aforementioned expectations of its great southern neighbor.

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INTRODUCTION

WWF, the World Wide Fund for Nature believes that it is a question of ‘when’ (rather than ‘if’) Russian businesses will integrate internationally recognized standards relating to environmental and social responsibility into their activities. The adoption by Russian businesses of international sustainability initiatives, such as the UN Global Compact, the Global Reporting Initiative, or the Equator Principles, in conjunction with economic cooperation with Western countries are factors that will facilitate the greening of the Russian economy and its transition towards a sustainable path of development.

Within this general trend of Russian businesses moving towards greening their activities and operations, the rapidly growing cooperation between Russia and China is regarded by some as a risk. This is so as it could potentially threaten the process of greening the Russian economy on the basis that the laws of these two countries do not yet fully incorporate the principles of the concept of sustainable development. For example, Russian and Chinese businesses may adversely use this situation in order to delay the implementation into their activities of environmentally sound standards and methods of natural resource management. This would, ultimately, cause irreversible damage to the environment and economies of both nations, and, in particular, in their remote regions (e.g., the Russian Far East and the provinces of Northeastern China).

In order to fully analyze and address the issues underlying Russian-Chinese cooperation and their effects on the environment, WWF Russia initiated the “Panda and the Bear in the Global Economic Wilderness” project, which includes the publication of this collection of articles. As part of this project, original research, as well as reviews of existing studies were undertaken by WWF specialists, experts and invited researchers, including the publishing of this collected volume of articles. The aim of the project is, also, to conduct future discussions amongst Russian and Chinese representatives of government and business, environmentalists and experts in related fields, as well as to initiate high-level intergovernmental discussions — based on the conclusions and recommendations of this study, which is ultimately aimed at decreasing any environmental risks resulting from Russian-Chinese cooperation. The research undertaken within this project, in particular, focuses on the cross-border regions of Russia and China, which coincide with WWF’s natural areas of interest. The authors of this publication include highly qualified researchers (doctors of sciences and PhD) with specialization in the areas of habilitation, geography, biology, environmental science, economics and history. They are also distinguished specialists in their fields, all working in different areas of Russia and China with a focus on the issues relating to sustainable natural resource management and the principles of the new green economy.

The relevance of this project is linked to the following three factors: (i) the formation of the global green economy within which Russia and China, as superpowers, are seeking to establish their respective place; (ii) the increasingly serious adverse impact of Russian-Chinese economic cooperation on the vulnerable ecosystems of Siberia and the Russian Far East; and (iii) the need to harmonize regional development programs of the Russian-Chinese cross-border regions based on sustainability principles.

The geopolitical situation, common border, and mutual complementarity of their national economies make the strategic partnership between Russia and China inevitable in the mid-term perspective. However, the quality of this partnership in context of the new global green economy will depend, among other factors, on how environmental policy will be implemented by the governments of these two countries; how fast businesses will adopt cleaner and energy efficient technologies, thus, improving their competitiveness; whether the Russian and the Chinese population will prefer “green” goods, which will, inter alia, determine where environmental pollution will take place, and what country will sell carbon credits to its counterparts. Recent developments show that China has surpassed Russia in terms of

1 Sustainable development ‘is development that meets the needs of the present without compromising the ability of future generations to meet their own needs’ (as defined by the 1987 Report of the World Commission on Environment and Development, Our Common Future, also known as the Brundtland Report).

2 The term “green economy”, as defined by UNEP, describes an economic system that recognizes the properties of healthy ecosystems as the backbone of economic and social well-being and a precondition for poverty reduction. A green economy is an economic system in which the costs arising from the degradation of ecosystems are internalized and in which environmental industries such as clean and efficient technologies and sustainable agriculture serve as major engines of economic growth, job creation, and poverty reduction. See: www.unon.org/confss/doc/unept/gc_25/gc_25_16/K0843096.doc.
the promotion of green products, the greening of investments, and building an alliance with Western economies within the green economy. Thus, there is a risk that Russia may become the dumping ground for “dirty” Chinese investments for many years to come, unless Russia takes decisive actions in order to avoid this from happening.

The rapidly growing Chinese economy affects the ecosystems of Siberia and the Russian Far East in three main ways, whilst the impacts associated with each of these is further aggravated by insufficient environmental compliance in both countries. Firstly, China is actively industrializing its Northern regions, leading to increased environmental pollution and resulting in other adverse environmental effects on both sides of the 4,000 km-long border between Russia and China. Secondly, trade between Russia and China is growing rapidly. In 2008, China became Russia’s largest trading partner in terms of Russia’s imports, while being the fourth largest destination for Russian exports. Resource-based commodities, such as metal ores, wood and wood processing products, oil and petroleum products, and fish account for a considerable part of this trade. The materials imported from Russia are both consumed in China internally and processed for subsequent export. The production processes of products exported from China to developed countries are determined by internationally recognized mechanisms of environmental responsibility, on the basis that developed countries (consumers) require suppliers of goods to comply with environmental requirements. Conversely, natural resources imported from Russia and consumed in China at the domestic level often fail to meet requirements of environmental responsibility. Moreover, a significant part of Russian-Chinese trade is characterized by violations of environmental, sanitary, customs, and tax legislation. Thirdly, China’s investments in Russia and Russia’s investments in China are increasing, while environmental practices of Russian and Chinese companies, and of financial institutions providing loans to them, are in need of substantial improvement.

The relevance of this collected volume of research articles is based on the need for comparative analysis of governmental strategies, programs, and plans for the development of the Russian-Chinese cross-border areas, including, in particular, of the two regional programs adopted at an earlier stage — the Strategy of the Socio-Economic Development of the Russian Far East, Buryat Republic, Zabaikalsky Krai, and Irkutsk Oblast for the Period until 2025 and the Strategy of Socio-Economic Development of the Provinces of Northeastern China — which are aimed at the more effective and environmentally sound development of these cross-border areas. The Program of Cooperation between the Regions of Far Eastern and Eastern Siberia in Russia and Northeastern China for the Period 2009—2018 approved by the Russian President, Dmitry Medvedev, and the Chairman of the People’s Republic of China, Hu Jintao, on 23 September 2009 (the ‘2009—2018 Program’) requires special attention by environmentalists, in particular, in order to identify any potentially serious threats to biodiversity in the ecoregions considered by WWF as priority ecoregions for purposes of global environmental conservation. The 2009—2018 Program, includes a list of 205 joint projects in the border regions of Russia and China, most of which are resource intensive and may potentially cause adverse impacts on the environment. To be fair, one should note that the 2009—2018 Program contains a dedicated section on environmental cooperation between Russia and China. However, the list of specific environmental activities presented therein is rather limited as it merely lists, in an unsystematic manner, earlier “environmental” agreements concluded by the cross-border regions. According to experts at WWF Russia, the environmental activities included in the 2009—2018 Program are unspecific, not aimed at environmental monitoring of bilateral cooperation, lacking provision for compensation for the environmental costs of such environmental monitoring, nor incorporating a financial mechanism to enable implementation in Russia.

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3 See: http://ictsd.net/i/news/bridgesrussiandigest/57191/
4 The global financial crisis led to a considerable decline in the amount of trade between Russia and China — for the first time in the last decade.
5 For example, banning some of the most environmentally dangerous technologies in China (in particular, methods of gold extraction leading to discharges of toxic substances into freshwater bodies) leads to “dumping” of this equipment in Russia as Russian companies acquire such equipment from their Chinese counterparts.
The goal of this research project is to identify environmental-economic problems of Russian-Chinese transboundary cooperation and to elucidate approaches which address and resolve them. The key objectives of this book include:

- the identification of the changes in approaches towards creating a sustainable economy and towards the formulation of environmental policies in Russia and China;
- analysis of the key governmental strategies and plans with respect to the economic development of the cross-border regions in Russia and China;
- the identification of opportunities for environmentally responsible natural resource management, investment and transboundary cooperation;
- the formulation of recommendations on the adoption by Russia and China of mutual (including voluntary) commitments regarding the greening of natural resource management, investments, and trade, as well as recommendations with respect to the improvement of Russian-Chinese regional development programs in the field of environmental protection, and seeking environmentally sound means to develop Russian-Chinese transboundary cooperation.


In Part 3 of this collected volume, existing approaches towards the greening of the respective economies and natural resource management practices in Russia and China and opportunities for their improvement are addressed. In particular, it contains a comparative analysis of the changes in approach towards the formulation and drafting of environmental policies in Russia and China — within context of the processes that define the emergence of the global green economy; Part 3 also addresses the creation of natural protected areas as a mechanism of ecosystem management within ecoregions; the development of forest certification as an instrument to move towards environmentally sustainable Russian-Chinese trade in forestry products; as well as issues relating to responsible finance in China and Russia.

This publication concludes in Part 4 with recommendations on how to address the issues identified in parts 1 to 3. These recommendations are aimed at all interested participants in Russian-Chinese transboundary cooperation.

We trust that our research will be of interest and use to representatives of given groups within Russian society and to international experts. By publishing the outcome of this project, we aspire to initiate broad discussion on, and to start the search for solutions to numerous pressing issues relating to Russian-Chinese cooperation.

Project manager and editor of the collected volume
Lada Progunova, PhD (economics), WWF Russia, Moscow
EXECUTIVE SUMMARY
This volume covers a multitude of topics ranging from environmental policies in both countries and regional development programs of their transboundary remote territories to cooperation in resource-intensive industries from an environmental point of view. Green alternatives, such as promoting environmentally friendly goods/services, investing in renewable energy and encouraging the private sector to invest in the low-carbon economy in both countries have merely been touched upon in this study and considered to be subjects for the next phase of this research project. The chapters were written by Russian experts, including experts living and working abroad, as well as in China, mostly for a Russian audience, with a great hope to be of interest to Chinese and international experts too.

Part 1: Programs on Sustainable Development and Transboundary Cooperation in the Border Areas between Russia and China

In 2009, a number of strategy (‘Strategy’) and program documents were adopted by Russia with respect to the development of Eastern Russia and its interactions with the countries of the Asia-Pacific Region and, in particular, with China, (the ‘2009 Documents’) and are currently under discussion. These documents have raised serious concerns within the expert community as they preserve and create incentives for unsustainable economic practices and stunt modern technological and social development, both in the Russian Far East (‘RFE’) and in the provinces of Northeastern China (‘NEC’) and so exacerbating problems in these regions.

The 2009 Documents envision a resource- and transit-oriented economic model for Eastern Russia, as well as accelerated exploitation of natural resources of low added value, which lead to huge environmental costs. Within this colonial development model, the priorities of local communities are subordinate to interests of the largest state-controlled companies and local economic initiatives have little opportunity to thrive. Despite the declared objective of keeping the population in the region, this model will result in making the region unattractive for permanent settlement — and in being inhabited mainly by a population whose income derives from federal, regional, and local budgets.

A further risk factor for the RFE is that the 2009 Documents define the financial mechanism tasked with the Strategy implementation as a public-private partnership, within which the state holds a dominating role. In principle, this is an acceptable option. However, the question with respect to what will happen to this region as its natural resources deplete, or as energy prices decrease due to the transition of the global economy to a low-carbon path, remains unanswered.

The 2009 Documents do not incorporate a well-grounded concept of environmental safety and responsibility, which takes into account the need (i) to introduce internationally recognized environmental and social standards and procedures into Russian-Chinese relations; and (ii) to internationalize some aspects of Russian-Chinese bilateral cooperation by converting such cooperation into multilateral cooperation, with an associated increase in openness and transparency. The proposed development model is based on the assumption that resource consumption and energy intensity of the Russian and Chinese economies will grow exponentially, which makes its extremely vulnerable if the Asia-Pacific Region increases its energy and resource efficiency.

The experts of this book emphasize that insufficient attention is paid by the Strategy to civil society development issues in Russia, such as changing social values, developing democratic institutions, including, in particular, a public appeal mechanism in order to increase the openness and transparency of government authorities. As a result, it is argued that the 2009 Documents resemble a Soviet-style regional economic development plan.

Furthermore, authors point out that two of the 2009 Documents, the Far East and Baikal Region Development Strategy for the Period up to 2025 (the ‘FEBR Strategy’) and the Program of Cooperation between the Regions of Far Eastern and Eastern Siberia of Russia and Northeastern China for the Period 2009—2018 (hereinafter the ‘2009—2018 Program’) are inconsistent. While the FEBR Strategy envisions the development of innovative industries and technologies in a number of economic sectors, the 2009—2018 Program does not provide for the development of innovation projects, unless one were to view primary wood processing as a type of high-tech processing.
The quality of the economic, environmental, and social aspects of the Russian regional development programs is far lower than those of the border areas of Northeastern China. For example, the 2009—2018 Program does not have a systematic and integrated marketing component, which makes it impossible to evaluate its economic and social effectiveness. The infrastructural “modernization” envisioned by the 2009—2018 Program is aimed at improving the transportation of Russian raw materials to certain Chinese provinces, their subsequent re-export to Russian regions (following processing), as well as at improving Russian tourists’ access to Chinese recreational sites. The Russian development programs excessively focus on Chinese clients and partners, whereas experts argue that the most effective cooperation is based solely on healthy competition between companies of many different countries.

The current long-term development program of Northeastern China (which borders the Russian Far East) is based upon the obvious advantageous aspects of the region with respect to already existing opportunities, including the production of “green” agricultural products, the development of ecotourism and cross-border tourism, processing of wood and non-timber forest products, as well as manufacturing of machinery. Unfortunately, these aspects are insufficiently considered and almost neglected in the RFE development plans.

Part 2: Environmental Costs of Industrial Cooperation between Russia and China

The extractive mineral resources sector in the Russian Far East is a key economic sector in Russia. It is also an important part of the RFE regional economy and is also expected to play a key role in Russia’s efforts to intensify its international cooperation. There are two possible scenarios with respect to the development of the Russian-Chinese region’s mineral resources extractive industry: “resource-transit” development and “innovation” development. Currently, the developments within this industry in the Russian Far East follow the resource-transit scenario. This scenario poses threats to the Russian economy as it results in a loss of control over the supply of strategic mineral resources to Russian industry; the weakening of the RFE as Russia’s outpost region in the Asia-Pacific Region; it also limits Russia’s opportunities to export to economically attractive and environmentally sensitive markets, such as Japan, the West coast of the USA and Canada, South Korea, Singapore, and Hong Kong.

Analysis of the FEBR Strategy with regard to the oil and gas sector shows that the strategy is focused on existing and planned projects of the largest Russian state-controlled companies, including Gazprom, Rosneft, and Transneft. It is clear that in implementing those projects, priority will inevitably be given to the corporate interests of these players (interests of which will not always coincide with national priorities), while regional needs will be given secondary consideration. This manner of implementation has been demonstrated, in particular, by numerous facts and decisions associated with the optimization of the Eastern Siberia-Pacific Ocean (‘ESPO’) oil pipeline routes, and by actions which deliberately ignored the objective interests of the economic development and environmental concerns of regions such as the Sakha (Yakutia) Republic and the Khabarovsk Kray.

Many problems derive from the low purchasing prices of electricity offered by Chinese companies, which are inconsistent with high Russian export tariffs relating to electricity (high cost of electricity plus added tax), as well as from the long transmission distances associated with high levels in loss of energy. This, in particular, puts in question the profitability and viability of Russian electricity plants and the recovery of investments into the transmission lines. It causes anti-competitive circumstances, so leading to use of alternative more environmentally harmful energy sources and, so, to environmental detriment. However, incentives should be provided in order to green industry, rather than to incentivize all manufacturers for competitiveness’ sake only. In this respect, the sale of power to China from CJSC Integrated Energy Systems of Siberia and from other companies based in Eastern Russia at a price lower than that which exists in Russia is unacceptable.

Most points of growth in the border areas of the Russian Far East are associated with Chinese capital invested in the RFE, Chinese companies’ operations, involvement of a foreign workforce and, in many cases, export to China of products, for which there is no local
demand. Large amounts of Chinese workers living in difficult conditions in remote RFE areas engage in poaching as a means to supplement their diet and income. At the same time, the ability to monitor Chinese companies active in the RFE areas with respect to their environmental and other compliance matters are limited due to a number of problems: narrow fields of responsibility of the individual supervisory RFE authorities; the competition and lack of coordination between these authorities; the lack of human resources potential; high levels of corruption of Chinese businesses and Russian agencies responsible for their monitoring and supervision; inherent xenophobia, and issues caused due to the Chinese-Russian language barrier.

Other environmental issues relating to Russian-Chinese cooperation are in abundance. Russia and China share most of the territory of the Amur River basin. The Amur is one of the world’s largest rivers, housing huge wetlands of international importance and various types of extremely valuable aquatic, land, and biological resources, and which, momentarily, is relatively undisturbed by hydropower projects and other human activities. However, the economic growth in Northeastern China inevitably has lead to an increased need of Chinese businesses to withdraw water from the Amur River, as well as from the Argun River and the Ussuri River. In addition, there has been a rapid increase of environmental pollution of the Amur River basin. Hence, one of the most important objectives of Russian-Chinese cooperation should be to develop a joint effort to conserve and manage this transboundary river basin. Previous joint programs, such as the Russian-Chinese “Scheme of Integrated Management of Border Sections of the Amur and Argun Rivers”, initiated in the 1950s, were environmentally unsound. However, to date, bilateral relations between Russia and China have not resulted in new or different approaches with respect to the conservation and sustainable management of the Amur River basin. This means that the Amur River basin faces a systemic environmental crisis, exacerbated, in particular, by China’s intentions to construct a cascade of six hydropower plants (‘HPPs’) on the Upper and Middle Amur, as declared in all Chinese economic development plans. Considering these dramatic adverse effects, the consequences of and approach towards the development of hydropower resources (such as being planned by China) should be considered in the FEBR Strategy and all associated environmental and socio-economic risks relating thereto must be assessed first. If any HPPs are to be constructed along the Amur river, and given the cumulative effect of all existing and planned HPPs on the Amur River flow, it is necessary to analyze and optimize the siting of HPPs on the Amur tributaries — and that only the most environmentally sound hydropower development scenario is chosen, taking into account the entire Amur River basin’s ecosystem.

Currently, the management of fisheries and other water-biological resources of the shared Amur River basin is increasingly dependant on China, which uses and exploits these resources more actively. In addition, China has more investment capacity in fields such as aquaculture, as well as in scientific and technological support and development of fisheries management. However, it is argued that the issues relating to the protection of the ecological integrity of the Amur River basin can only be addressed by Russia and China jointly. This is so, considering, in particular, that the Amur runs along and demarks about 1,100 miles of the Russian-Chinese border, thus, being of great geopolitical importance to both nations. How such environmental protection measures will proceed with much depends on what is understood to constitute an ‘acceptable strain’ on the Amur ecosystems, as well as on the selected reference ecosystems.

The Russian fisheries sector in the RFE, too, is increasingly influenced by China’s economy, in that the former is becoming a source for Chinese companies as regards inexpensive and sometimes illegally exported resources. At the same time, Russia imports from China increasing amounts of high value added fisheries products manufactured from such cheaply (or illegally) exported resources. As a result, the Russian economy is generating much less value per unit of original resources, leading to an inevitable and inefficient use of Russia’s own fisheries resources.

In Russia, the RFE is the most problematic region in terms of illegal trade in animals and plants and associated poaching. The amount of illegal trade in animals and plants in the RFE region exceeds the respective amounts of legal trade several-fold and, for certain species, even several ten-fold. Some species are traded
only illegally. Most animal products (e.g., deer parts, elk lips and horns) entirely bypass Russian and Chinese customs. Whilst high demand in China and Asia for rare species fuels the increase in poaching, which is leading to enormous harm to rare (and until recently widespread) species. While reports of customs agencies cite long lists of diverse products confiscated by the authorities, experts estimate that these numbers represent only a negligible fraction of the total illegal traffic. There is a great need for more Russian–Chinese cooperation in fighting illegal trade and in implementing CITES.

Development of eco-tourism could be viewed as a way to green the border economy. Compared to Northeastern China, Eastern Russia lacks key components, which would attract ethnographic, or cultural educational tourism (e.g., museums, art galleries, famous tourism attractions, customized national parks). However, the RFE does possess a large number of important and highly attractive natural resource features (e.g., areas of outstanding natural beauty, mountains, volcanoes, taiga and oceans) and species (e.g., Amur Tiger, Amur Leopard), which are of public interest and which attract tourists.

In the NEC, the development of nature tourism is limited by the high density of its human population, the low population of hunting animals and fish, as well as by the existing ban on hunting. Nevertheless, the rapid growth in nature tourism in the NEC and unsound management of tourism resources means that this Chinese region already faces the adverse effects connected to environmental pollution and damage to the ecosystems of its protected areas.

In order to avoid similar adverse environmental consequences in the Russian Far East, it is necessary to plan how tourism should develop from the outset, even if excessive tourist pressure on the RFE’s natural features may not seem to be an immediate concern of the region. It is noted that the tourism sector in the RFE has experienced a stagnation and decline of foreign tourism due to the absence of a clearly stated tourism policy, international cooperation on tourism matters, marketing and stable incentives relating to the development of the Russian tourism (and ecotourism) sector. The effective development of tourism, including ecotourism, in Eastern Russia requires, first and foremost, a persistent commitment of the authorities to facilitate the development of the tourism sector, as well as investments to develop tourism infrastructure. Again, China vastly surpasses Russia in this aspect and Russia needs a dramatic transformation in order to catch-up with respect to tourism and ecotourism in the RFE regions.

Part 3: Current Approaches to Green Economy in Russia and China

In China, the state of the environment and approaches to natural resource management has ceased to be an area of interest merely to environmental specialists. These topics now also receive serious attention from high-ranking Chinese leaders and economic authorities. The main feature of Chinese environmental policy is that it attempts to integrate environmental policy within the overall context of the socio-economic development of China. The key factor, which hinders China’s transition to an environmentally sustainable economy, is its aim to permanently maintain a very high GDP growth rate, which has ultimately led to a dramatic worsening of environmentally adverse issues being faced by China in the early 21st century.

Despite the existence of a solid environmental policy and an extensive legal framework relating to environmental activities applicable to Chinese society, companies and the state, the level of compliance with the relevant constitutional norms and other legal requirements remains low. While quantitative economic growth continues in China, environmental protection measures lag behind and public monitoring of governmental and business activities remains weak.

A new impetus for the greening of China’s economic development has been provided by the current global economic crisis, or more precisely by the Chinese government’s response to it. This response made China — one of the leaders in terms of the size of the “green” component of its national economic stimulus package. China is also the leader in terms of climate change mitigating projects implemented within the framework of the Kyoto Protocol’s Clean Development Mechanism (‘CDM’).
By way of comparison, the environmental rhetoric at the top levels of the Russian government is less pronounced than in China, but should not be underestimated. Russian leaders regularly declare that the Russian economy needs to improve its energy efficiency and environmental performance, as well as incorporate the consideration of climatic factors within plans for Russia’s long-term economic development.

This year, in 2010, China has been actively planning to create “reserves for the protection of environmental functions” — i.e., large areas where economic planning should take into account certain environmental imperatives, e.g., combating desertification. China also implements six large “forest” programs in order to facilitate the conservation and recovery of natural ecosystems and maintain their important protective functions.

Chinese authorities have designated millions of hectares of protected areas along the Amur and Ussuri Rivers in order to maintain environmental stability and to ensure conservation of animal and plant species facing serious anthropogenic pressure in the inner areas of China (however, see above with respect to Chinese companies’ adverse effect on the Amur River). Furthermore, as a result of state proclamations with respect to the creation of “protected territories”, about 16% of the Chinese section of the Amur River basin is protected. In comparison, Mongolia has proclaimed that 13% of the total area of its section of the Amur River basin is protected, whilst Russia has proclaimed the protection of only 9% of its section of the Amur River basin.

As a result of the separate efforts of Russia, China and Mongolia, the environmental reserves in the Amur River basin cover more than 12% of its total area. One protected area is recognized as a UNESCO World Heritage Site, 11 of them have been recognized as UNESCO biosphere reserves, and 15 areas have been included in the list of wetlands of international importance. Transboundary protected areas, such as the Russian-Chinese-Mongolian Dauria International Protected Area and the Russian-Chinese Lake Khanka International Nature Reserve, successfully operate on the basis of intergovernmental agreements. It is noted that, currently, agreements are being negotiated, which will create more such transboundary protected areas, including the “Headwaters of Amur” Russian-Mongolian reserve and the “Land of the Leopard” Russian-Chinese reserve, both of which are close to completion. However, there remains a need for more Russian-Chinese cooperation in the forestry sector. Unfortunately, Russia has gradually become a source of raw wood and timber, not only for developed countries, but also for the rapidly growing Chinese economy. Although developed country markets refuse to import Russian raw wood due to Russian timber companies’ non-compliance with international quality standards, lack of using Forest Stewardship Council (‘FSC’) certification, and being hampered by corrupt and unreliable business practices; developed country markets ironically, do not refuse import of certified wood products produced by Chinese timber companies, which have sourced their wood from non-sustainable Russian forest resources. This phenomenon could happen if Chinese timber companies have an only supply chair certification that is legitimate.

As China is increasingly involved in the re-export of Russian timber in that Chinese companies export products made from Russian timber to developed countries. As a result, Russian timber companies, which provide the raw resources used by Chinese timber companies, are generating less added value than their Chinese counterparts. Not only does this cause a commercially unfavorable situation, but has also lead to Russian timber companies shifting their focus away from environmentally responsible markets (which emphasize the need to take into account the environmental and social aspects of deforestation, as well as the legality of the product’s origin), towards trading in markets, which are less advanced in this regard.

The main problems facing the Russian forestry sector is: illegal deforestation, which is characterized by non-compliance with forestry laws; lack of conservation of valuable biotopes; ignoring the need for reforestation and forest maintenance, and so forth. Furthermore, such illegal deforestation harms legally operating timber companies in Russia by undermining their resource base; it is detrimental to the Russian budget income as less taxes are being collected; and adversely affects the forest ecosystems themselves.

A number of forest management certification systems assure the sustainability of forest management practices. Only one such system — the Forest Stewardship Council (‘FSC’) certification — is currently implemented in Russia. More than 25.2 million ha of forests in Russia (19% of the total leased forest area) have FSC
certification. However, currently the Russian timber industry lacks sufficient incentive to certify all their products. This is so as there is no significant domestic demand for such products and the demand by Chinese companies for FSC-certified products constitutes only a fraction of the wood products imported from Russia.

As regards other steps, which enable the greening of the Russian and Chinese economies, sustainable (or ‘green’ ‘responsible’) finance has emerged as a positive trend. In the past few years, Russian-Chinese cooperation within the finance and investment sector has actively developed. However, it appears that Russian statistical publications do not fully account for all Chinese investments in Russia. According to Russian official sources, China’s cumulative investments of all types amounted to about USD 10 billion. However, according to estimates by WWF Russia for the period 2006—2009, the total cumulative direct investments of Chinese businesses in Russia reached at least USD 5 billion, while China’s cumulative loans to Russian companies were at least USD 40 billion. One can state that the current global financial crisis has increased Russia’s dependence on Chinese investments as a result of the narrowing of Russia’s ability to attract capital from other sources and due to the strengthening of China’s position in the global financial markets. This has various environmentally harmful consequences for Russia.

The concerns of environmental NGOs and the broader environmental community with respect to the rapid growth of financial flows between China and Russia are based, firstly, on the fact that these financial flows are channeled mainly to sectors associated with high environmental risk and, secondly, as such transactions are usually approved at the highest decision-making levels, which means that public participation and the ability of the environmental community to influence such projects is limited.

This said, China’s financial sector, with the People’s Bank of China (the Chinese central bank) taking the lead, is making progress in context of developing its approach towards environmental responsibility. Industrial Bank was the first Chinese bank to adopt the Equator Principles. A number of Chinese banks take account of environmental risks when assessing the credit risks of their clients and “green” points of economic growth in their investment portfolios. While the current green initiatives of the Chinese financial sector are effectively only applicable to economic activities within the country, we hope that these policies could also play an important role in guiding financial flows channelled by China towards the implementation of environmentally sensitive projects in Russia and other countries.

In Russia, the financial sector is less developed than that existing in China with respect to considering environmental responsibility matters, including the Equator Principles. This can be explained, in part, by the fact that the Russian financial sector itself is not sufficiently mature and as the Central Bank of Russia (‘CBR’) has taken a passive position as regards the assessment of environmental risks in financial transactions. In addition, Russia (unlike China) has not taken the opportunity to give additional support to mechanisms, which would green the Russian economy within its anti-financial crisis stimulus package. So far, no financial organization with significant Russian capital has joined any of the internationally recognized mechanisms of social and environmental responsibility. Standing apart in this regard are the announced, but still extremely vague plans of state-controlled banks to finance Russian companies’ environmental projects aimed at the implementation of the Russian government’s policy on energy efficiency. It is noted, however, that investments by the IFC and EBRD in Russia prove that environmentally responsible and progressive investment approaches are viable within the Russian context.

Part 4: Guidelines for Sustainable Transboundary Cooperation between Russia and China

Part 4 sets out recommendations, which are based on the conclusions made by the authors over the course of this research project and on the results of numerous discussions conducted at different levels with the involvement of WWF experts. They are organized in the following order: from the intergovernmental to the eco-regional level — and then in context of environmental policy to eco-regional practices.
The recommendations cover numerous aspects of Russian-Chinese transboundary cooperation, which have been reviewed in this collected volume, including:

- the formation of Russia’s internal and foreign environmental policy;
- the “greening” of the financial sectors of Russia and China;
- the improvement of strategy and program documents regarding the development of cross-border regions;
- cooperation with respect to the mineral resources extractive sector, the oil and gas sector, and other export-oriented sectors;
- water resource management and energy;
- the harvesting of the fisheries and prevention of illegal trade in wild animals and plants;
- the development of cross-border tourism and ecotourism;
- forestry and forest certification; and
- the system of protected natural areas in transboundary regions.

Most of these recommendations are intended for the Russian local and regional governments (LRGs), some — for both Russian and Chinese authorities and businesses. We hope that these recommendations will be interesting to all parties involved in Russian-Chinese transboundary cooperation and to the broad environmental community on both sides of the Russian and Chinese borders.
List of abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>ChAO</td>
<td>Chukotka Autonomous Okrug</td>
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<td>CHPP</td>
<td>combined heat and power plant</td>
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<td>DPRK</td>
<td>Democratic People’s Republic of Korea</td>
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<td>ERI FED RAS</td>
<td>The Economic Research Institute of the Far Eastern Department of the Russian Academy of Science</td>
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<td>FTP</td>
<td>Federal Targeted Program</td>
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<td>GMO</td>
<td>genetically modified organism</td>
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<td>GW</td>
<td>Gigawatt</td>
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<tr>
<td>HPP</td>
<td>Hydroelectric Power Plant</td>
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<tr>
<td>IEIE RAS</td>
<td>Institute of Economics and Industrial Engineering, member of the Russian Academy of Sciences</td>
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<td>IES</td>
<td>interconnected electrical systems</td>
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<td>JAO</td>
<td>Jewish Autonomous Oblast</td>
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<tr>
<td>kWh</td>
<td>kilowatt hour</td>
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<td>LEPT</td>
<td>lines of electric power transmission</td>
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<td>LLC</td>
<td>limited liability company</td>
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<td>LRGs</td>
<td>Local and regional governments</td>
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<td>MPP</td>
<td>mining and processing plant</td>
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<td>MPSI RAS</td>
<td>Melentyev Power Systems Institute, member of the Russian Academy of Sciences</td>
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<tr>
<td>mtpa</td>
<td>million tonnes per annum</td>
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<td>NEC</td>
<td>North East China</td>
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<tr>
<td>NPP</td>
<td>nuclear power plant</td>
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<tr>
<td>OJSC</td>
<td>open joint-stock company</td>
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<td>PRC</td>
<td>People's Republic of China</td>
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<td>RCBC</td>
<td>Russian-Chinese Business Council</td>
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<td>RF</td>
<td>the Russian Federation</td>
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<td>RFE</td>
<td>Russian Far East</td>
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<td>SEA</td>
<td>South-East Asia</td>
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<tr>
<td>SWOT</td>
<td>strengths, weaknesses, opportunities, and threats</td>
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<tr>
<td>TNPU</td>
<td>trans-national power union</td>
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<tr>
<td>tpa</td>
<td>tonnes per annum</td>
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<tr>
<td>TPP</td>
<td>Thermal Power Plants</td>
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CHAPTER 1

PROGRAMS ON SUSTAINABLE DEVELOPMENT AND TRANSBOUNDARY COOPERATION IN THE BORDER AREAS BETWEEN RUSSIA AND CHINA
1.1. State programmes for the prospective development of “peripheral” regions of Russia and China: imperatives of industrial modernization

N. Lomakina

At present, the Far Eastern Federal District of Russia is going through active processes of creating a new regional ‘industrial and economic space’. These processes are largely being determined by:

1) Long- and medium-term governmental development strategies and programmes for the Far Eastern Federal District and individual regions comprising it, namely the Federal Targeted Programme “Economic and Social Development of the Russian Far East and Transbaikal region for the Period until 2013”, Strategy of the Socio-Economic Development of the Russian Far East and the Baikal Region for the Period until 2025, and other development strategies of individual Russian regions comprising the Far Eastern Federal District

2) Investment projects and by interests of major international and Russian companies.

Development goals with quite similar purposes are being pursued by China in its North-eastern provinces.

In 2002, the Chinese government adopted a programme for the development of old industrial bases in North-eastern China (“NEC”);

In 2003, the decision to facilitate the development of the NEC provinces was made;

In early 2004, the Office of the Leading Group for the Revitalisation of North-eastern China and Other Old Industrial Bases of the State Council (the “Office”) was established. The objectives of the Office include: the development and implementation of a strategy for revitalising old industrial bases; coordinating activities for the revival of specific areas; the preparation of development strategies for the key economic sectors; the development of proposals aimed at attracting investment, promoting transparency, protecting the environment. At present, these objectives are addressed within the framework of a government programme — The Plan of Revitalising Northeast China.

A new stage in Russian-Chinese regional development planning was marked by the adoption in October 2009 of a joint document aimed at “coordinated” development of large cross-border regions of Russia and China by way of the “Programme of Cooperation between the Regions of Far East and East Siberia of Russia and North-eastern China for the period 2009 2018”. In our opinion, before considering opportunities and risks of the proposed “coordinated development”, it would help to understand the objectives, priorities, and development approaches defined by internal development programmes for the border regions of the two countries (see Annexes, Administrative Map of Border Regions of Russia and China).

Despite all the differences in the current development levels of the Russian Far East and Northeast China, challenges faced by the regions and their development pace, there are also certain similarities between them.

Table 1. Comparison of government development programmes for the Russian Far East and Northeast China

<table>
<thead>
<tr>
<th>Level</th>
<th>Federal Targeted Programme “Economic and Social Development of the Russian Far East and Transbaikal for the Period till 2013”</th>
<th>Plan of Revitalising Northeast China</th>
</tr>
</thead>
</table>
| Scope | Area: 6.9 million km²  
Population: 8.7 million  
Administrative units: 12 Russian regions | Area: 1.45 million km²  
Population: 120 million  
Administrative units: three NEC provinces (Liaoning, Jilin, and Heilongjiang Province) and five areas in the eastern part of Inner Mongolia Autonomous Region |
| Period | 1996—2013  
(the current version 2007—2013) | 2006—2010  
(with regard to certain key issues — till 2020) |
| Role of the government | Overcoming infrastructure constraints | Coordinating the development of key interregional infrastructure  
(6 key transportation corridors and 7 comprehensive transportation systems for coal, oil, ore, grain, containers, heavy equipment and passengers) |


Although actual implementation results may differ from what is envisioned by the programmes, a review of the latter helps understand general direction and possible results of the development processes. Therefore it makes sense to undertake a comparative analysis of the Russia’s and China’s development programmes mentioned above.

**Goals and Key Objectives of Government Development Programmes for the Russian Far East and Northeast China**

As for general features of the development programmes of the Russian Far East and Northeast China, in terms of their status and scope both of them are national-level programmes covering large areas with significant population, each area being comprised of several subnational administrative units. Both of them are medium-term programmes (5—7 years), which can later be extended in order to build upon the results achieved. Both programmes define priority goals of the respective governments as “coordinating the development of key interregional infrastructure” and “overcoming infrastructural limitations” (see Table 1). This generally exhausts “visible” similarities between the two programmes.

As for the vision of the future role and positioning of the respective regions, the Russian programme is based on the assumption that “in the nearest future the region will not be able to compete with the countries of the Asia-Pacific region in such areas as mechanical engineering, the manufacturing of IT products, and other manufacturing sectors. Therefore the positioning of the economy of the Russian Far East and Transbaikal should be based on the production and processing of natural resources and the use of transit opportunities of the region”.

Such an outlook determines the goal and key objectives of the programme. Given the overall goal of “the formation of the necessary infrastructure and a favourable investment climate for the development of the priority economic sectors”, the Russian Far East and Transbaikal development programme defines its key objectives as: retention of the population in the region by protecting the existing and creating new jobs; removal of infrastructural constraints for the economic development at the regional level; and the implementation of a number of projects aimed at the development of engineering and social infrastructure.

The Chinese government sees the future of Northeast China in a quite different way. The area should develop “as internationally competitive equipment manufacturing base; a national base for new materials and energy supply; a key national base for grain, animal husbandry, and other agricultural production; a key national base of technology development and innovation; and a strategic area for national environmental safety”. In fact, the government intends to transform NEC into a region of balanced economic growth with well-developed market institutions, a rational sectoral structure, sustainable development of areas used as a resource base, and harmonious social environment. It is planned to achieve these goals through the deepening of institutional reform and reduction of the share of the state-owned sector of industry; the restructuring and modernisation of industry; and promotion of regional cooperation. While addressing such issues, traditional to the region, as the development of the social sector and expansion of employment opportunities, the plan also focuses on such objectives as the development of resource-saving industries, environmental protection and conservation, and sustainable development of areas used as a resource base.

**Industrial Modernisation: Structural Priorities**

Both programmes in question view industrial modernisation as a key objective and at the same time as an essential pre-requisite for successful regional development.

Analysing the existing situation and evaluating the results of the first few years of “revitalising old industrial bases”, the Chinese government states that the industrial sector of Northeast China faces serious institutional and structural problems, which are yet to be resolved. In particular, the share of high-tech industries remains small; in the resource sectors the capacity for deep downstream resource processing is very limited; many enterprises do not have the capacity for independent innovation. One can observe that the industry of the Russian Far East faces broadly similar challenges. So, what areas, priorities, objectives and investment projects are identified as strategic to the modernisation and structural transformation of the industry of the border regions?

In the Plan of Revitalising Northeast China, the very first section following the goals and objectives is dedicated to the promotion of structural modernisation of industry. The section declares the need to adopt “new industrial development models” and “change the pattern of economic growth”, promote innovation in industry, create new industrial sectors, support labour-intensive industries, and establish new industrial bases through “structural and special adjustment”. The plan defines the main priorities of future industrial development of Northeast China as follows:

1. Restructuring of heavy industry in order to create a nationally and globally competitive base for the manufacturing of state-of-the-art high-tech equipment.
2. Accelerating the development of high-tech industrial sectors.

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3 Hereinafter the quoted sources (unless other references are provided) are: the Federal Targeted Programme “Economic and Social Development of the Russian Far East and Transbaikal for the Period till 2013” (approved by the Decree of the RF Government dated April 15, 1996 No.480 and amended by the Decree of the RF Government dated November 21, 2007 No. 801, see http://www.programs-gov.ru/) and the Plan of Revitalising Northeast China.
3. Optimising the development of the energy sector.
4. Improving the efficiency of the raw material processing industry.
5. Accelerating the development of the consumer goods sector with regional specifics taken into account.

The key objectives and investment projects associated with these priorities are presented in Table 2.

With regard to the structural modernisation of the economy, the Russian Programme for the Economic and Social Development of the Russian Far East and Transbaikal provides for “the implementation of measures for the development of the sectoral structure of the regional economy, including the development of such sectors as energy, transport, metal industry, and forest industry on the basis of public-private partnerships”.

The programme has a clear infrastructure focus — infrastructure development projects account for 85% of all proposed government expenditures under the programme. “The main priorities of the Programme implementation include the development of the fuel and energy complex, transportation and engineering infrastructure, the social sector, as well as the improvement of the water resource management and environmental protection”4 (see Table 3).

The proposed “elimination of infrastructure constraints” should lead to the improvement of the investment attractiveness of the region and the implementation of the key projects envisioned by the programme. What industrial development projects mentioned in the document can form the “core” and the “foundation” of the long-term development of the Russian Far East?

### Table 2. Priorities of the industrial modernisation of Northeast China

<table>
<thead>
<tr>
<th>Priorities</th>
<th>Key objectives and investment projects</th>
</tr>
</thead>
</table>
| Restructuring of heavy industry in order to create a nationally and globally competitive equipment manufacturing base | 1. Heavy equipment for oil refining and ethylene manufacturing.  
2. Heavy equipment for chemical processing of coal.  
3. Heavy metallurgical equipment.  
4. High-capacity power generation equipment, UHV (ultra-high-voltage) power transmission and transformation equipment.  
5. Large tonnage vessels.  
6. Rail transport equipment.  
7. CNC (computer numerical control) machines and manufacturing systems. |
| Accelerating the development of high-tech industrial sectors | Building competitive high-tech production chains, advanced industrial sectors and clusters according to the following priorities:  
1. IT and software industry (Changchun City, Dalian City).  
2. Biotech industry (Changchun City).  
3. New materials industry (fine organic synthesis, powder metal materials, nanometal materials etc.).  
4. Manufacturing of aircrafts and core engine components. |
| Optimising the spatial structure of the energy sector and the structure of energy consumption | 1. Energy saving, development of environmentally sound energy technology, and diversifying energy production and consumption should become the key economic development factors.  
2. Creation of new coal-chemical-power industrial bases and coal production centres.  
3. Expansion of crude oil and gas production, oil exploration, and oil shale exploration in Jilin province.  
5. Creation of a gas transportation system (a trunk pipeline linking the cities of Harbin, Changchun, Shenyang, and Tangshan, and ten local branches).  
6. Development of renewable energy resources.  
7. Achievement of the following production targets by the year 2010: 300 million tonnes of coal, 57 million tonnes of crude oil, 7 billion cubic meters of natural gas, 300 billion kWh of power with an installed capacity of 60 GW. |
| Improving the efficiency of the raw material processing industry | 1. Creation of a state-of-the-art petrochemical industrial base with a total processing capacity of 100 mtpa of crude oil to be achieved by 2010.  
2. Creation of the world’s leading ethylene manufacturing base with an output of 4 mtpa to be achieved by 2010.  
3. Creation of a coal chemical industrial base.  
| The development of the consumer goods sector | The development of the consumer goods sector should be aimed at balancing regional economic growth and absorbing excessive labour resources. The priorities in this area include:  
1. Creation of a nationally significant pharmaceutical industrial base.  
2. Creation of enterprises for the production and intensive processing of agricultural and biochemical products.  
3. Strengthening textile, garment, pulp and paper, wood processing, furniture, and plastic industries. |

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One of the largest industrial projects to be promoted under the Federal Targeted Programme is the one titled “Integrated Development of South Yakutia”, which is aimed at the creation of a new large industrial district in Sakha (Yakutia) Republic of the Russian Federation. The proposed district will utilise the natural resource potential of South Yakutia, including the hydropower resources of the Aldan River and its tributaries. A number of sectoral industrial clusters combining individual industries will be created in the district, including a nuclear (Elkonsky Uranium Mining and Processing Plant), a coal (Nerungrinsky, Denisovsky, and Chulmakansky coal complexes), a chemical (Seligdarsky Mining and Chemical Complex and Aldansky Gas Chemical Complex), and a metallurgical (iron ore deposits of South Yakutia) ones. The South Yakutia project can become the largest public-private partnership project in the Russian Far East.

Another large-scale industrial project to be implemented in Yakutia and Magadan Oblast is the development of the Yano-Kolymskaya gold-ore province, which includes 14 gold fields. It is expected that 60 tonnes of gold will be produced in 2013, 82 tonnes — in 2016, and 88 per year (full design capacity) — since 2018.

In Primorsky Kray, on the shore of the Sea of Japan, it is planned to build an aluminium smelter, which would use imported alumina; a site for proposed Primorskaya Nuclear Power Plant has been selected (in Arsenyevsky District), and a feasibility study for the NPP is being prepared. Large-scale development projects in Khabarovsk Region include major industrial and transportation hub Sovetskaya Gavan — Vanino, and a pulp and paper plant to be built in Amursk. A significant project in Amur Region is the development of an integrated industrial and transportation complex intended to support the development of iron ore deposits in Jewish Autonomous Oblast (Kimkanskoye, Sutarskoye) and Amur Oblast (Garinskoye, Kuranakhskoye).

Thus, the comparative analysis of government medium-term development programmes for the Russian Far East and Northeast China revealed that while the two pro-

Table 3. Key objectives of the Federal Targeted Programme “Economic and Social Development of the Russian Far East and Transbaikal for the Period till 2013”

<table>
<thead>
<tr>
<th>Main priorities</th>
<th>Key objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel and energy complex</td>
<td>Elimination of grid constraints, optimisation of the power generation scheme, improvement of the efficiency of power and heat consumption, reducing dependence on energy resource supply from other regions, and ensuring reliable gas supply of power plants and households.</td>
</tr>
<tr>
<td>Transportation infrastructure</td>
<td>Construction and modernisation of regional roads connecting communities and major industries to federal highways; development of the infrastructure serving local and interregional air traffic; modernisation of port facilities; construction of railroad infrastructure.</td>
</tr>
<tr>
<td>Engineering infrastructure</td>
<td>Modernisation of the systems in the housing and utility sector.</td>
</tr>
<tr>
<td>Social infrastructure</td>
<td>Construction and modernisation of the key health care, culture, and sports facilities.</td>
</tr>
<tr>
<td>Improvement of water resource management and environmental protection</td>
<td>Protection of settlements from floods and other adverse environmental factors.</td>
</tr>
</tbody>
</table>

Source: Federal Targeted Programme “Economic and Social Development of the Russian Far East and Transbaikal for the Period till 2013”

Table 4. Development programmes for the Russian Far East

<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Programme goals</td>
<td></td>
</tr>
<tr>
<td>22. Creation of necessary infrastructure and favourable investment climate for the development of the priority economic sectors of the Russian Far East and Transbaikal and the promotion of international and cross-border cooperation programmes and projects.</td>
<td></td>
</tr>
<tr>
<td>3. Development of the social sector and achievement of appropriate social standards that meet local needs of the Russian Far East and Transbaikal.</td>
<td></td>
</tr>
</tbody>
</table>
programmes have similar strategic intents — the revitalising and restructuring of the respective economic complexes — they considerably differ in terms of their goals, objectives, instruments, approaches, and, ultimately, expected results of their implementation. One should note that the Russian Programme “Economic and Social Development of the Russian Far East and Transbaikal for the Period till 2013” has narrower goals and, therefore, offers a narrower range of opportunities for the regional development. As seen from Table 4, the Programme goals were narrowed down in the process of the most recent Programme revision in 2007.

The implementation of the Federal Targeted Programme and, in particular, of its infrastructure component will definitely be beneficial to the Russian Far East. However, the Programme that implies a traditional development model based on natural resource harvesting can hardly lead to a radical transformation of the sectoral structure of the regional economy. It is likely that the implementation of a number of infrastructure projects alone will not be enough to launch a qualitatively different development model. As seen from the experience of the Baikal-Amur Mainline project — a major national-level infrastructure development project implemented in the Russian Far East — “the commissioning of the mainline did not result in an automatic emergence of a second latitudinal industrial complex, as many hoped”5. To achieve a qualitative transformation, special efforts and special conditions are required; in particular the concept of the creation of an “industrial and service arc” in the southern part of the Far East should be explored in detail. The latter concept was proposed by P.A.Minakir, a member of the Academy of Sciences, for the purpose of elaborating mechanisms for “transforming objective threats into objective advantages” and “intercepting a part of additional revenue streams received by our partners in Northeast Asia, i.e. redistributing the regional multiplier effect for the benefit of the Russian Far East”6. The other “alternative for the Russian Far East is being subsumed, in trade and economic terms, by the integrated market of Northeast Asia as a transportation and resource segment”7.

Comparative analysis of the two government development programmes helps better understand possible structure of the “industrial space” which is being formed in “peripheral” regions of Russia and China, fields and the degree of their possible cooperation and mutual dependence, as well as benefits and threats to the development of bordering Pacific regions of the two major global players.

1.2. Accountability of environmental factors in regional development strategies, programmes, and plans in Russia and China: a case study of the Russian Far East and Northeast China

A. Dikarev, V. Dikarev

Over the last two years environmental priorities and concerns have received increasingly more attention in the rhetoric of both federal and regional authorities dealing with the modernisation of the economy of the Russian Far East. For example, in autumn 2008, Sergey Darkin, Governor of Primorsky Kray, defined environmental priorities of the region for the years to come in his speech at the Third International Environmental Forum “Nature without Borders”. These priorities include intensification of the law enforcement in the field of environmental legislation; further development of the legal framework of natural resource use; creating economic incentives for the adoption of cleaner, low-waste and resource efficient technology; and creating a new economic sector using industrial and municipal waste as an input stream. In particular, a number of low-waste wood processing industries to be built in the region — a pulp plant, an OSB panel factory etc. — are being designed1.

Yet, of all strategic development programmes of the RFE regions the development programme of Primorsky Kray (approved by a regional law on October 20, 2008) is particularly short on statements regarding environmental priorities or projects. The document states: “The development of agriculture will be a priority for Primorsky Kray. The key development focus will be the production of environmentally clean food products without transgenic modifications”. The most significant projects in the field of energy saving and energy efficiency include the construction of new generating capacities and modernisation of the existing ones, particularly: the modernisation of Artemovsk CHPP and Vladivostok CHPP-2 and their conversion to natural gas, as well as the construction of a nuclear power plant in Primorsky Kray. No other provisions related to environmental priorities are found in the Strategy 2.

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6 Ibid., p. 661—662.
7 Minakir P. A. Tihookeanskaja Rossija: vyzovy i vozmozhnosti jekonomicheskoj kooperacii s Severo-Vostochnoj Aziej // Prostranstvennaja jekonomika, 2005, No4, p. 8

2 http://www.pacific-congress.ru/ru/total-materials/1; http://primorsky.ru/governor/?a=3328&s=72&p=1
In May 2009, at the meeting “On Cross-Border Cooperation with China and Mongolia and Development Objectives of the Eastern Regions of the Russian Federation”, Russian President Dmitry Medvedev did not address environmental priorities directly, but emphasised the need “to work on changing our priorities, moving away from low-tech exports of raw materials to their processing, and creating state-of-the-art processing capacities, which helps gain maximum possible benefits from international economic cooperation”.

The official text of the Strategy is available at: http://government.ru/gov/results/9049/. The protracted process of the Strategy development even elicited a public remark from Russian President Dmitry Medvedev who noted during his visit to the Far East in autumn 2008 that, while the time had long come to start implementing the national modernisation strategy, the deadline for submitting a draft Far East development strategy to the government (June 18, 2008) was long past. The President’s criticism had an effect, and a few days later, on October 1, 2008, Igor Shuvalov, the First Deputy Prime Minister of the RF, held a meeting on the preparation of the draft strategy. See: Golobokova, Ya. Strategy 2020: Regional Dimension. Vladi, 2008, 12, p. 139.

Original goals of the Strategy developers were quite ambitious. As an example, one can mention a goal of increasing the population of the area by 2.5—3 million over the next 15 years (it is clear that the developers expected this increase to be achieved entirely due to internal migration and natural population increase, otherwise the issue would be discussed in quite a different manner). This proposed goal was cited in September 2009 by Sergey Yurpalov, a Deputy Minister of Regional Development of the Russian Federation. At the same time it was entirely unclear how the federal or regional governments were going to reverse the trend of steady decline in the Russian Far East population, which had continued over the past few decades (in the first half of 2009, Yakutia was the only region of the Russian Far East that experienced a slight increase in population). In fact, by tracking the changes in this indicator alone in the years to come one would be able to see whether the Strategy as a whole was realistic or not. Therefore it was not surprising that this goal was not included in the final version of the Strategy approved by the government. The figures included in the Strategy annexes provide only for a modest increase (approximately by 200 thousand) in the number of those employed in the Russian Far East’s economy between 2005 and 2015. At present, however, the Far Eastern Federal District has one of the largest negative net migration rates in Russia (minus 26 thousand in 2008).

The document defines the strategic development goal of the Russian Far East and Baikal Region as the creation of a well-developed economy and a comfortable living environment, and the achievement of the average Russian socio-economic development level. It is clear that the notion of a comfortable living environment is closely related to the state of the natural environment. In this regard, one can appreciate the rhetoric of government officials who presented the key elements of the Strategy to participants of the Fourth Far Eastern International Economic Forum. Among the main principles of and approaches to the Strategy implementation they mentioned the following:

**Maximum level of nature protection** — granting permits for the extraction or harvesting of natural resources only under the condition of using the technology with lowest possible environmental footprint and implementation of compulsory measures on the restoration of the natural environment. This will also require designing and implementing integrated programmes to monitor environmental safety of operations and amending the existing legislation on compensation for environmental damage.

In addition, compensation of irreversible environmental damage caused by human activities should have a regional component determined by lost revenues of the respective regional budgets and the decrease in employment associated with the damage.

**Maximum resource efficiency** — granting permits for the extraction or harvesting of natural resources only under the condition of a high efficiency of the resource use. The authors of this provision believe that such an approach will facilitate the adoption of new resource harvesting and processing technologies, in fact introducing the “technology-for-resources” principle.

Of particular importance in the environmental context is the principle of global innovativeness understood as the “capability to implement global innovative projects for the benefit of the entire mankind on the basis of international cooperation”.

The key priorities in this area include:

- efficient (optimal) use of the ocean potential (shelf): hydrocarbons — biological resources — tidal power plants — evaporation (desalination) — deep ocean currents — other opportunities (storms, hurricanes, tsunamis, standing waves etc.).

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3 http://kremlin.ru/transcripts/4160 (May 21, 2009)
4 The official text of the Strategy is available at: http://government.ru/gov/results/9049/. The protracted process of the Strategy development even elicited a public remark from Russian President Dmitry Medvedev who noted during his visit to the Far East in autumn 2008 that, while the time had long come to start implementing the national modernisation strategy, the deadline for submitting a draft Far East development strategy to the government (June 18, 2008) was long past. The President’s criticism had an effect, and a few days later, on October 1, 2008, Igor Shuvalov, the First Deputy Prime Minister of the RF, held a meeting on the preparation of the draft strategy. See: Golobokova, Ya. Strategy 2020: Regional Dimension. Vladi, 2008, 12, p. 139.
5 http://dvcongress.ru/doklady/yurpalov.pdf
6 http://dvcongress.ru/doklady/vvedenie.pdf
7 For example, the compensation for irreversible environmental damage caused by the Sakhalin-1 project in 2006 was only USD 11 million — a dramatic underestimation of the actual damage.
8 It is difficult to understand what exactly is meant here, particularly under the “other opportunities” subcategory. Probably, this is something inspired by science fiction.
• use of the potential of tectonic activity and volcanism (use of volcanic gases and magma), evaporation (water desalination), temperature difference (power, heat etc.);
• geothermal potential;
• integrated system for the use and restoration of natural systems (forests, rivers and lakes, mountain systems);
• wind energy;
• potential of deep layers of the Earth;
• opportunities for extracting mineral resources from easily accessible raw materials with low resource content — e.g. platinum sands;
• growing and processing crops for biofuel on a large scale.

Compared to presentations on the Strategy, the official text of the Strategy itself does not look that ambitious, although it is not surprising that the document frequently mentions “innovations”, “resource efficiency”, and “nature protection”. In particular, the Strategy objectives include the adoption of energy and resource efficient technologies in 2009—2015; the implementation of “a system of measures to facilitate the development and introduction of resource and energy efficient technologies”, “compulsory measures for identifying carrying capacity of natural systems etc.”

The main area of activities with regard to the environment is framed in the following way: “In the long run, energy and environmental security of the Far East and Baikal Region will be ensured by means of the development and use of tidal energy, geothermal energy resources, wind and solar energy etc. An important factor of the transition to environmentally sound energy is the adoption of necessary legislation providing incentives for broader use of renewable energy.”

It is important to note that the Strategy and a number of other official documents typically view environmental issues as a factor “directly influencing the economy and the social sphere of the region”. It is illustrative that immediately after making this rather broad statement the text goes on to observe that “…from this perspective, a river border shared with China becomes a problematic factor giving rise to real challenges and threats rather than a competitive edge factor.”

Public discussion of the Strategy started only after the final approval of the document. In particular, on January 26, 2010 public consultation on the draft Strategy implementation plan was launched in Khabarovsk. The draft plan was amended in April 2010, but has not been officially approved yet.

There have been both official coverage and unofficial discussions of the Strategy in the media (mainly on the Internet).

Governmental websites of Primorsky Kray and Kamchatka Kray encouraged the public to submit comments and suggestions via email; no open online discussion was organised. Some public remarks were made by officials of the United Russia Party, but they were entirely supportive and did not contain any criticism of the Strategy. More interesting comments were made by Victor Isayev, the Presidential plenipotentiary envoy in the Far Eastern Federal District. In particular, he said: “…People never lived and worked here without incentives. When Stolypin carried out his reforms [which, among other measures, encouraged farmers to move to Siberia and the Far East], settlers were offered a one-off 100 roubles allowance, free land and tools. …We need to make people’s life in the Far East comfortable…”

“…First and foremost, we emphasise the importance of the comprehensive and proactive infrastructure development in the Far East. Motorways, railroads, ports and airports need to be built here. For example, we explore opportunities for the construction of the Baikal-Amur Mainline-2, since it is no longer possible to further develop the Trans-Siberian Railway. The government plans to promote industrial development of the region, to energetically build housing for people. If we make life in the Far East comfortable, people will start moving here on their own initiative…”

Unofficial discussions are represented by blog posts and readers’ comments on online news items. They can be categorised into:

9 Despite these declarations, the list of specific projects included in the Programme of Cooperation between the Regions of Far East and East Siberia of Russia and Northeast China for the Period 2009-2018 signed by the heads of the two nations on September 23, 2009, contains virtually no high-tech or innovative projects, unless the construction of plants for high value-added wood processing is counted as such (an area of economic development promoted by Valdimir Putin since his presidential term).
11 ibid, p. 209.
12 ibid, p. 193.
13 http://www.primorsky.ru/content/?s=1856
14 http://www.minregion.ru/activities/territorial_planning/strategy/federal_development/346/
15 http://er-duma.ru/press/39437/
17 http://baikal-daily.ru/news/15/5830/
• entirely negative, reflecting the rejection by any government’s initiatives by a significant portion of the public (“no strategy ever worked, works or will work here”);

• substantive comments, including criticism. The main points of criticism include:

1) the lack of consistency between the Strategy and the Programme of Cooperation between the Regions of the Russian Far East and East Siberia and Northeast China (2009—2018);

2) the lack of ideas in such areas as the development of civil society, transformation of society’s values, development of democratic institutions, and improvement of the openness and transparency of government authorities, which effectively turns the Strategy into a regional plan for economic development;

3) the lack of a small and medium development programme in the Strategy. According to commenters’ estimates, in the absence of such a programme, and given the annual population decline by 10—15 thousand, by 2025 the population of Primorsky Krai will amount to 1.8 million and will almost entirely consist of government officials, military servants, other government servants and pensioners.

The main instrument of the Strategy implementation are Federal Targeted Programmes (FTPs) “Economic and Social Development of the Russian Far East and Transbaikal for the Period till 2013”, as well as “Socio-Economic Development of Kuril Islands (Sakhalin Oblast) for 2007—2015”18. The first one in the most interesting in the context Russia-China cooperation, but at the same time difficult to discuss it in specific terms, since the Programme is being revised at the moment. The existing draft mentions unbalanced structure of the natural resource use in the region and proposes a number of traditional recommendations formulated in a rather general and unspecific way (e.g. remediation of environmental “hotspots”, environmental monitoring, introduction of clearly defined environmental standards, transition of the energy sector to a “greener” fuel mix, development of forestry infrastructure etc.). The document is somewhat more specific on the proposed introduction of a separate waste collection and processing system (instead of waste combustion). Experts regretfully note that “despite numerous discussions of demographic problems, the Programme does not address them”19.

The Programme authors explicitly recognise that “the planned structural changes in the economy of the Russian Far East and Transbaikal will be associated with contradictory trends regarding impacts on the natural environment”. At the same time they are convinced that “the expansion of industrial operations on the basis of the modernisation will be a powerful factor contributing to the stability of the environmental situation”, and therefore the Programme implementation will not ultimately result in an environmental degradation. Obviously, avoiding further environmental degradation is viewed by the authors as the best possible scenario, and any environmental improvement is beyond reasonable expectations.

In the future, it is planned to extend the Programme period to 2018, to increase its federal funding, and include one more region of the Russian Federation — Irkutsk Oblast — in the Programme. In addition, the Russian Ministry of Regional Development is reviewing the proposal by the President of Sakha (Yakutia) Republic to align the periods of the Programme and the Strategy of the Socio-Economic Development of the Russian Far East and the Baikal (i.e. effectively extend the Programme to the year 2025).

The previous version of the Russian Far East and Transbaikal development programme adopted in 2002 was obviously ineffective and often criticised by scientists and NGOs. In particular, WWF experts observed that the programme was a collection of diverse projects and good intentions rather than a consistent integrated strategy and had several fundamental flaws, while the implementation process was a long series of failures. In particular, the programme:

• did not require a compulsory environmental expert review, a procedure which could help avoid or mitigate environmental issues, and no such review was carried out;

• received only a small fraction of the planned funding, which made its impossible to design and implement viable development schemes or plans;

• was confined to Russian territory and did not take into account the Plan of Revitalising Northeast China, thus failing to take into account conflicts and joint projects, which were a major and probably the most significant factor of the economic and political development of the area.

As a result, the experts came to a sad conclusion that the actual development of the Russian Far East is determined by China’s economic expansion rather than by the Federal Targeted Programme20.

One can only hope that after the approval of the new Strategy and the updated Federal Targeted Programme the situation will change, and necessary pre-requisites for effective cross-border environmental cooperation will emerge. Experts believed that the lack of a consistent development strategy of the Russian Far East com-

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18 See: www.programs-gov.ru; http://fcp.vpk.ru/cgi-bin/cis/fcp.cgi/Fcp/Title/
parable to the Chinese plan for Northeast China was one of the main obstacles for the development of such cooperation.

Now we turn from national-level strategies and federal programmes to the level of individual Russian regions (so called “federal subjects”) comprising the Russian Far East. In the recent years each of them has prepared a development programme or strategy of its own. We will see to what extent these programmes take into account environmental factors, and what environmental issues are considered the most significant.

Khabarovsk Kray

The Strategy of the Social and Economic Development of Khabarovsk Kray till 2025 was approved by the Decree of the Khabarovsk Kray Government dated January 13, 2009 No.1-pr. The main objective of the Strategy is the formation and development of a highly competitive regional economy within the respective environmental constraints.

Weaknesses or threats identified in the context of a SWOT analysis include the following:

- inefficient use of the natural resource potential;
- dramatic increase in the probability of environmental and natural disasters, in particular, associated with the growing transboundary pollution in the Amur River Basin and forest fires.

The Strategy defines the following three environmental priorities of the regional development:

- creation of a system of measures ensuring not only reproduction of terrestrial and marine biological resources, but also conservation and restoration of natural landscape, which is particularly relevant to minority indigenous communities;
- integrated amelioration of agricultural landscapes and conservation of natural landscapes that can be used for tourism and recreation;
- formation of a system of measures to reduce human impacts on the environment (water and air pollution, soil contamination), in particular, by means of sound waste management, and to control the impacts of natural disasters (floods, forest fires) etc.

In addition, the Strategy mentions a well-known transboundary issue:

“The addressing, on the government level, of the international environmental issue associated with transboundary pollution of the Amur River — the largest transboundary river of Eurasia — is of particular political and social significance to the environmental security of the Russian Far East. According to the agreement between the governments of Russia and China on cooperation in the field of environmental protection and rational management of transboundary water resources dated January 29, 2008, the parties assumed an obligation to take measures on the abatement of transboundary environmental pollution. While China has been implementing a USD 1.9 billion programme for environmental remediation of the Sungary River, the largest Amur tributary, no comparable measures are taken on the Russian side”.

In order to address the issue, the Strategy suggests to improve the monitoring of transboundary environmental pollution, defining the following specific objectives:

- further develop Russia–China transboundary monitoring of the water quality, bottom sediments and fish by expanding the range of indicators measured;
- establish new posts for monthly observations at Amurzet village (in Jewish Autonomous Oblast, upstream of the Sungari River mouth) and Nizhne-leninskoye village (in Jewish Autonomous Oblast, downstream of the Sungari River mouth);
- establish a new permanent observation post at the Russia–China border, on Bolshoy Ussuriysky Island.

Jewish Autonomous Oblast (JAO)

The Strategy of Socio-Economic Development of the Oblast for the Period till 2020 was approved by the regional government’s Decree dated December 23, 2008 No. 394-pp. This extensive document (some 500 pages) pays surprisingly much attention to environmental priorities and concerns (at least compared to similar documents of the neighbouring Russian regions).

One of the key Strategy principles is the maximum level of nature protection — granting permits for the extraction or harvesting of natural resources only on the condition of the use of state-of-the-art environmentally sound technologies. This will also require designing and implementing integrated programmes to monitor environmental safety of operations and amending the existing legislation on compensation for environmental damage.

The general feature of the regional development with regard to the environment is described as “unbalanced natural resource use” — a language already familiar to us and commonly used across the Russian Far East. The Strategy authors believe that Jewish Autonomous

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21 It is worth noting that not all documents of such kind are easily accessible at the moment, which makes it difficult to carry out a comprehensive analysis across all federal subjects of the region.
22 http://www.fipa.khv.ru/info/strategy/
Oblast can serve as a kind of a regional pilot area for the development of approaches to the assessment of issues at the intersection of natural factors and human activities, since the JAO is characterised by a number of patterns and features typical to the Russian Far East, including:

• combination of generally undeveloped areas with compact urban clusters;
• combination of well-preserved unique natural ecosystems with a disastrous condition of most watercourses;
• significant decline of industrial output combined with an increased content of hazardous substances in industrial emissions and wastewater;
• the lack of an effective environmental monitoring system, redundancy in the activities of different supervisory agencies, a significant contribution of secondary and transboundary pollution combined with difficulties of tracking these types of pollution.

Significant and persistent pollution of surface water bodies is viewed as one of the main environmental challenges faced by the region. It is important to note that transboundary pollution of the Amur River caused by pollutant discharges on the Chinese side is considered the most significant environmental threat. The Strategy authors believe that the environmental situation in the Amur River Basin is deteriorating and in the nearest future may reach a disastrous level. Therefore international cooperation of the JAO is focused on addressing environmental issues within the Amur River Basin. Measures on the monitoring of the Amur water quality are included in “The Environment of the JAO” regional targeted programme on an annual basis. One should note though that the level of the programme funding (e.g. RUB 1870 thousand in 2009) looks insufficient, to say the least. The regional government participates in the activities of the Amur River Basin Coordination Committee on Sustainable Development and provides financial support to the Committee.

Another pressing environmental issue faced by the JAO are waste landfill. More than 90% of all region’s landfills are illegal municipal solid waste dumps located within communities or in their immediate vicinity. Up to a half of all dumps are located on agricultural land — pastures, hayfields, arable land. Official permanent waste disposal facilities do not have any means of protecting the environment. The infrastructure of all landfills does not comply with the existing sanitary standards.

The document also lists many other threats to the regional environment (forest fires, floods, parasitic diseases of animals). However, the main environmental threat as seen by the Strategy authors is the disruption of the regional environmental balance as a result of the development of the mining and metal industrial cluster. The authors recommend promoting certification of businesses in accordance with international environmental standards as a measure to reduce this kind of risk.

It is characteristic that another factor of the regional environmental deterioration explicitly mentioned in the Strategy is China’s policy aimed at promoting imports of raw materials and low value-added products, which may lock the JAO in the role of a raw materials producer for a long time. Overall, foreign investments “pose a threat to the social and environmental security of the region, since foreign investors put priority on the profitability of their investments, which results in a failure to comply with the established environmental standards and constraints”.

It is important to note that the base development scenario discussed in the Strategy implies for “the strengthening of constraints to growth associated with environmental factors”.

The document includes a rather extensive action programme aimed at “creating favourable environmental conditions for the population of the Far East” and “ensuring safe living environment for the population”. The first and the most important short-term objective is defined as “the development of measures for eliminating threats of transboundary pollution and for environmental remediation of the Amur River Basin, and incorporation of those measures into the Federal Targeted Programme ‘Economic and Social Development of the Russian Far East and Transbaikal for the Period till 2013’ and in the draft federal programme ‘Clean Water’”.

Thus, from the analysis of development strategies of two different federal subjects of Russia it is quite clear that the issue of transboundary water resource management or, more broadly, natural resource management is seen by regional politicians as one of the largest, if not the largest, environmental challenge for the years to come. Therefore, if the current policy of openness of the economy persists, the federal subjects of the Russian Far East will inevitably engage in increasingly close cooperation with the Northeast provinces of China.

In order to reverse the trend of growing pollution of transboundary and border rivers, it is necessary, in addition to general declarations of concern, to adopt common water quality standards for border regions of the two countries to begin with. As for the model of cross-border economic cooperation, the existing “resource harvesting focus” of the economy of Russian border regions, called “colonial development model” by some experts, will inevitably persist in the foreseeable future. This is proved both by China’s own plans for the
development of its Northeast provinces and by recently approved programme of cooperation between border regions of the two countries.

**Northeast China**

Since the natural resource crisis in Northeast China became obvious, the Chinese Academy of Engineering undertook a strategic assessment of the resource base of the region and prepared recommendations for ensuring sustainability in implementing the Programme for Revitalising Old Industrial Bases of Northeast China. The recommendations were discussed by government authorities, approved by them and can be viewed as strategic objectives of the Northeast China development for the period till 2030 and beyond. This period may seem long, but one should keep in mind that it took only a century of development (with significant engagement of foreign entities) to turn almost pristine region into an area bordering on the environmental crisis. Nowadays Northeast China is a region where 45% of forests are stands too young to be harvested, where large rivers are too polluted to be used as sources of drinking areas, where extensive plains with drying wetlands suffer from the effects of poor development practices and are hit by floods increasingly often. Despite all these issues the region is considered as relatively rich in natural resources compared to other parts of China, and Chinese experts view the current “crisis” as a result of poor resource management practices rather than intrinsic resource constraints.

According to WWF experts, the main drawback of these recommendations stems from the fact that the experts neither intended to consider sustainability issues from the perspective of a transboundary basin shared by three countries (China, Russia, Mongolia), nor were tasked with such consideration. Therefore potential impacts of the development of Northeast China on the environment of border regions of the neighbouring countries were simply ignored.

Despite some scepticism expressed by experts, one can state that, compared to development strategies of the neighbouring Russian regions, China’s programme of revitalising old industrial bases looks much more sound. It is a comprehensive multi-aspect strategy of internal economic development. Its international component is focused mainly on ensuring access to natural resources of the neighbouring country, and nothing else could be expected from China’s government with regard to consideration of transboundary environmental issues.

As for internal aspects of the Northeast China development, the Plan of Revitalising Northeast China for the 11th Five-Year Planning Period (also including certain targets for the year 2020), developed under the auspices of the National Development and Reform Commission has an extensive and rather specific environmental component. For example, Section 7.3 “Ecology and Environmental Protection” reads as follows:

“We must do a good job of ensuring environmental conservation in mining districts in the vicinity of ‘resource-based’ cities... Relocation of residents living in mining-induced subsidence areas must be carried out when appropriate, and locations with potential geological hazards, such as open-pit mines, waste landfills, etc. must be treated appropriately. ...Take measures to tackle the issue of decreasing water level and soil salination and alkalisation as a result of oil extraction; carry out land reclamation at abandoned mines.

“We must increase expenditures on tackling desertification and land degradation, continue activities on afforestation and protection of natural vegetation”.

It is interesting to note that the document contains both broad imperatives and specific targets:

“We must promote energy saving, emission reduction and environment protection. In particular, we must implement water pollution prevention programmes for the Songhua River and the Liao River, enhance the protection and treatment of drinking water sources used by large and medium-sized cities with centralised water supply, increase the rate of urban sewage treatment to over 70% and municipal waste decontamination rate to over 60%, improve the industrial pollution prevention system, promote the installation of desulphurisation units at power plants, and increase the industrial water recycling rate to over 90%... We will actively promote the recycling economy. Pilot projects aimed at the promotion of industrial recycling should be initiated by businesses, industrial parks and governments, with a focus on energy, raw materials, industrial equipment manufacturing and agricultural products processing sectors.

There are two annexes to the environmental section of the Plan, one of them being titled “Priorities of Environmental Development in Northeast China”. The priorities listed there include:

**Measures with regard to Kerqin Sandy Lands:** to create an environmental belt preventing the expansion of sands; to build an integrated forest-grass-pasture environmental and economic system; to prevent the decline of coniferous forests and implement water conservation and storage projects and soil conservation projects in arid areas.

**Measures with regard to sources of sandstorms in Beijing and Tianjin areas:** to contain and protect lands affected by desertification; to plant forests and brush as a means of protection from sand and wind; to contain the growth of pasture lands, and implement migration programmes.

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24 The full text of the Plan was published in Russian in the journal Spatial Economy (Spatial Economy, 2009, 1, pp. 62—123). The environmental sections are found on pp. 89—94.
Measures in black soil areas: to strengthen activities on the prevention of soil erosion; to improve the system of windbreak tree belts protecting farmlands; to restore vegetation in grasslands; to improve the fertility of black soil; and to prevent water pollution associated with surface runoff.

The priorities also include the protection and development of natural forests, and measures to protect grasslands (mainly in inner Mongolia), including more active measures to address problematic grasslands, transformation of traditional modes of grazing, creation of highly productive artificial grasslands and fodder bases, and promotion of indoor cattle feeding.

Other priorities include environmental remediation in mining areas based on combined engineering and biological approaches, and comprehensive waste treatment in order to stop soil erosion. The Plan also mentions measures to protect wetlands and biodiversity of the Sanjiang and Songnen plains, and to protect marine environment, including pilot projects on marine environmental restoration.

The second annex to the environmental section of the Plan addresses priorities of environmental protection, including protection from environmental pollution, in Northeast China. Here, the key priority is the protection of water resources, in particular, protection and enhancement of the quality of drinking water sources, which requires establishing clearly defined protection zones of water sources.

Water pollution control in the Liao and Songhua River basins provides for the development of cleaner production, accelerated construction of municipal effluent and waste treatment plants, the promotion of water recycling practices, improvement of the waste management system in large-scale livestock and poultry farming, and control of nonpoint source pollution associated with agriculture.

As for air pollution control at the regional level, the Plan pays particular attention to the desulphurisation of emissions of coal-fired power plants, and motor vehicle emissions control. Urban clusters in the central part of Liaoning province are viewed as a priority area for these measures. Pollution control targets should be defined for each city. Projects for the conversion or relocation of heavy polluting industries located in densely populated urban areas should be initiated.

Section 7.4 of the Plan for Revitalisation deals with the efficient use of natural resources.

With regard to land resources, it is planned to strengthen the protection of farmlands, prevent the sprawl of land under construction, and promote land reuse. The Plan also provides for remediation and reuse of lands in abandoned mining areas, heavily salinized lands, and lands in coastal area. A standardised system for leasing land for commercial activities will be introduced.

As for water resources, inter-regional water transfer projects and projects to improve water supply of cities will be implemented. Medium and large reservoirs will be created as a means of flood control. The Plan briefly mentions the use of water-saving irrigation technologies and envisions that the recycled water utilisation rate in the region will exceed 20% by the end of the 11th Five-Year Plan Period.

Turning to more specific measures on water resource management, one should note that Annex 12 lists numerous large-scale engineering projects to be implemented in Northeast China. They are divided into two main categories:

Water transfer and storage projects. These include the completion of water transfer projects at Dahuofang, Xishan, and Sanwan reservoirs; construction of Laolongkou Dam and the second phase of Taoshan Dam; completion of preparatory works for the construction of Hadashan Reservoir; water transfer project from Songhua Reservoir to supply urban clusters of Jilin province, from the Nen River to Baicheng City, a project to improve water supply of Dalian City etc.

Projects in the areas of artificial irrigation. It is planned to complete the expansion of Nirji water storage project intended to support water transfer from the Nen River. It is also planned to make preparations for large-scale irrigation projects in the valleys of the Sanjiang, Songnen and Liao Rivers and launch those projects when appropriate.

As for ore resources, China, while actively exploring a range of import opportunities, still recognises the need to have an internal “safety cushion”. Therefore it is planned to expand prospecting activities for oil and natural gas in Songnen Plain, and for nonferrous metals, precious metal, groundwater deposits and other important non-metal resources in Daxinganling and Xiaoxinganling (Greater and Lesser Khingan) Mountains and Changbai Mountains. A pilot project on the integrated development of iron-boron mining will be initiated in Wengquangou District of Fengcheng City (Liaoning province).

With regard to forests and grasslands, the key policy principle is that “forest areas should be restored at a faster rate than they are harvested”. Priority objectives include establishing strategic national reserves of commercial timber, ensuring rational use and protection of natural pastures in Hulunbeier and Xilinguole, etc., and restoring productivity and ecosystem functions of grasslands.
Plans with regard to marine resources include the development of off-shore oil and gas production, generation of thermal energy, and production of various chemicals from seawater. The development of aquaculture in shallow sea waters should not exceed the carrying capacity of the marine environment. The extraction of sea sand should be limited in order to protect ecosystems of coastal areas.

Overall, the approaches of the Plan of Revitalising Northeast China to many types of biological resources are based on the extremely important principle of maintaining a dynamic balance between resource consumption and restoration. This a clear indication of an ecosystem sustainability focus of Chinese regional development plans. The Plan also extensively addresses the need to ensure the overall sustainability of the development.

**Programme of Cooperation between the Border Regions of Russia and China**

Compared to the Plan of Revitalising Northeast China, Section IX of the Programme of Cooperation between the Regions of Far East and East Siberia of Russia and Northeast China for the period 2009-2018 (hereinafter — the Programme 2018), dedicated to environmental cooperation between border regions of the two countries, looks much less specific.

The Programme in a very general way declares the need for cooperation between the governments of the respective Russian and Chinese provinces. At the same time the document outlines a number of important areas of activity, including: joint monitoring of the air quality, the quality of surface waters and the state of biological resources; creation of joint protected areas in order to ensure the conservation of ecosystems of transboundary water bodies; exchange of cleaner production and waste management technologies; and exchange of environmental protection specialists.

The Programme 2018 does not contain more specific environmental measures. Therefore it is clear that, while there is some similarity between general environmental priorities of Russia and China, the main challenge will be to find mutually acceptable approaches to all specific cases of transboundary natural resource use, and to identify environmental protection measures within the framework of every joint economic project.

The analysis of the Programme as a whole, with all of its two hundred specific projects, makes it obvious that in Russia it is planned to develop mainly resource harvesting or low value-added processing operations, while projects to be implemented in China generally deal with end product manufacturing. For example, some 60% of 87 projects to be implemented in the Russian Far East involve resource harvesting or basic processing of raw materials. At the same time, of 125 projects to be implemented in Northeast China only some 15% can be considered having a resource focus (and most of these projects involve resource processing rather than harvesting). The other projects involve manufacturing of various products, often using high technology, sometimes — with a clear environmental focus. Some examples include lime manufacturing with low emissions of nitrogen oxides in Anshan, manufacturing of environmentally safe plastic tubes in Liaoning province, and manufacturing of a new generation flu vaccine in Dalian.

The only type of specific environmental projects in Russia (in a broad sense of “environmental”) are several advanced wood processing projects planned almost in every region of the Russian Far East.

As for joint ventures or projects created or implemented in the previous years, there are not much examples of those giving rise to win-win environmental solutions. No specific attempts to achieve mutual understanding in the planning of joint natural resource management and environmental protection are made, although the need for such common understanding has been often emphasised at various forums and at the highest levels of the Russian government. In particular, Vladimir Putin, Russian Prime Minister, mentioned environmental challenges among the issues, which simply cannot be resolved unless Russia and China develop a common view of them.

As for specific issues, one of them was emphasised in late 2009 by Sergey Shoygu, Russian Minister of Emergency Situations, who urged the two countries to adopt a common international water quality standard. According to his opinion, transboundary differences in what is considered “polluted water” result in a different level of emergency response on the two sides of the border, like during benzene contamination of the Sungari River in 2005.

So far experts’ conclusions have been disappointing: “The two nations are not prepared to face environmental pressures resulting from their economic development, and are much less prepared to take into account environmental impacts when planning future activities. If this continues unchecked, economic growth will accelerate environmental degradation. The outcomes are un-imaginable given that even today some wild rivers are undrinkable and some wild fish

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25 http://www.minregion.ru/activities/international_relations/data_base/293.html


inedible”\textsuperscript{28}. Where there are joint transboundary economic development plans in place, they are viewed as “environmentally destructive”. An example is the infamous Joint Russian-Chinese Comprehensive Scheme for Water Resource Management in Transboundary Sections of the Argun and Amur Rivers.

An interesting example of a local environmental issue turning into a subject of political games between China and Russia played at different levels is so called “Argun crisis”. Since the beginning of 2007, China has been allocating significant funding for river cleanup projects, at the same time planning a project for water transfer from the Argun (Hailar) River to the Dalai Lake, which would inevitably have a major adverse impact on the river ecology on the Russian side. Concerns voiced by environmentalists and local governments met harsh responses from China; the country stated that it considered Argun an internal river and did not find itself obliged to inform Russia of the respective plans. At the same time, a process of drafting a new agreement on the use and protection of transboundary waters was progressing at the highest levels of government. Russian politicians turned out to be much less flexible than their Chinese counterparts, trying to address the issues of river pollution and protection, being already addressed by China itself, but ignoring the emerging issue.

In summer 2008, China National Gold Group started the construction of a water pipeline from the Dalai Lake, a move contradicting the Ramsar Convention on wetland protection. Only a year earlier China was convincing Russia that the transfer of one third of Argun flow was intended to “save the ecology” of the unique lake, while underlining that the whole project was an entirely internal matter of China. But the implementation of the water transfer project was not started, and there was a hope that the neighbours changed their mind. As it turned out, they did not, but decided to start in a different way — withdraw even more water from the lake to make the water transfer project look better justified. At the same time, the government of Inner Mongolia Autonomous Region (China) suggested the government of Zabaikalsky Kray to stop regular meetings on the protection of water and landscapes of the Argun basin, stating that these issues are addressed at the level of the joint Environmental Subcommittee. Attempts were made to attract public attention to positive developments in the field of water monitoring, and to the creation a new protected area in the Argun floodplain.

In summer 2009, Ravil Geniatulin, the Governor of Zabaikalsky Kray, asked Yuri Truntev, Russian Minister of Natural Resources and the Environment, and Sergey Lavrov, Russian Foreign Minister, to find an opportunity to promptly check the information about the beginning of the construction of a canal between the Argun River and the Dalai Lake. If this was confirmed, the governor asked to raise the issue at the upcoming summit between Russian President Dmitry Medvedev and Chinese President Hu Jintao. The fact of the construction was confirmed, but the issue was not raised during the summit, at least in any significant way.

In September 2009, China started to transfer water from the Argun River to the Dalai Lake. While Russian environmentalists were ringing alarm bells, heads of the Russian and Chinese governments highly appreciated the results of environmental cooperation between the two nations on 2009. In particular, it was noted that the project for the creation of a protected area in the Argun Basin, a future part of the international Daursky Reserve was making a slow but steady progress. Meanwhile, as a result of a high precipitation level, by the end of the year the water level of Argun, despite the commissioning of the Hailar (Argun) — Dalai canal, reached the highest value compared to the previous drought period, which lasted from 2002 to 2009. Russian federal and regional officials seemed to sigh with relief, hoping that they would not have to demand China to stop the water transfer. Minister Trutnev and Governor Geniatulin are busy establishing the protected area in the Argun basin. At the moment the situation seems to be resolved. Is this true, and wasn’t the rising of the Argun water level a short-term phenomenon masking the actual impact of the water transfer on the river? Only the future will tell.

1.3. The Russian-Chinese Transboundary Cooperation Programme — a Case of “Business as Usual”

O. Yengoyan, E. Simonov

In September 2009, long before the approval of Russian national development strategies for the regions of Siberia and the Russian Far East, leaders of Russia and China signed the Programme of Cooperation between the Regions of the Far East and East Siberia of Russia and Northeast China for the Period 2009—2018 (the “2018 Cooperation Programme”)¹. This document, which has already sparked a storm of criticism in the media and society, really resembles a cart put before the horse.

The long history of relations between Russia and China saw the development and implementation of a number of “programmes” intended to manage and organise integration processes in the border area. The best known “programme” of such kind was the construction of the Chinese Eastern Railway (“CER”), which had extremely controversial political, socio-economic and environmental consequences. To Russia, the CER project was mainly a means of securing a foothold in the Asia-Pacific region, and substantial economic benefits were eventually gained by China, third countries, and rich Russian entrepreneurs having good connections in the government. Huge social and environmental costs were also incurred by China, although what has been preserved in the historical memory of Chinese people are not these costs, but rather the national humiliation associated with the project and resulting from the lack of mutual understanding and sensitivity to the feelings of the neighbours. The history knows no subjunctive mood, but often helps develop a deeper perspective on contemporary processes. Today the combined size of the existing Russian initiatives on the infrastructure development and natural resources harvesting/exporting ultimately aimed at helping the nation establish itself politically in the Asia-Pacific region considerably exceeds the costs of the CER project.

Nevertheless, these initiatives much resemble the second edition of the century-old railway project, and it is important to learn the lessons of the first edition. It is symptomatic that nowadays Russians often contemplate a future national humiliation as something inevitable, instead of undertaking a sober and comprehensive assessment of political, socio-economic, and environmental consequences of different integration scenarios, when some choice between them is still possible.

The analysis shows that the 2018 Cooperation Programme simply reinforces the status quo of border relations between Russia and China. In fact, the 2018 Cooperation Programme clearly describes the most probable scenario of cooperation — business as usual, which works on its own regardless of any strategies, programmes, or doctrines.

In this chapter, we will take a brief look at the content of the 2018 Cooperation Programme; the completeness of the description of technology chains and areas of cooperation; Programme’s correspondence to the development potential, problems, and needs of the Russian Far East and Northeast China; and the planned environmental and social security measures (or the lack thereof).

“The trumpets of strategies”

The territory of Russia is huge and abundant in resources. Virtually every Russian region has, at least to some extent, sufficient natural and human resources, and, in many cases, the necessary economic base for tackling the existing social and economic problems in an environmentally sound and economically beneficial way. But due to the general disorganization Russia’s economy and particularly Russian Eastern regions have faced serious challenges caused by substantial weakening or even complete disruption of economic connections between the regions, and long-time neglect of regional issues by the federal centre. Another key factor limiting the development of the Russian Far East (and Siberia as a whole) is the low level of diversification and innovativeness of the regional economies which are focused on natural resources yet lack of resource processing capacities.

Eventually the Russian government focused on the Eastern regions and formulated the strategic goals for two thirds of Russia’s territory. Therein, the Russian President and the RF Government officially named the economic acceleration of Siberia and the Russian Far East as a priority of State policy. The “Strategy of the Socio-Economic Development of Siberia until 2020” (the “Siberian Strategy 2020”) “considers not only the current state of the economy of Siberian regions (particularly the impact of the recent crisis on its development paths), the national and global economy and its future development trends, but also potential social consequences of the implementation of local components of transnational, national, interregional and regional projects…”².

“The lack of a clear governmental strategy for the development of the Russian Far East and the Baikal Region leads to the risk of the area turning into a mere source of energy and other resources for the countries of the Asia-Pacific region. Thus, Russia will fail to realise its inte-
The only realistic approach to mitigating potential treats to Russia’s national security in the Far East and Baikal Region can be based on a special strategy of the integrated socio-economic development of the area, aimed at speeding up the growth of the economic potential of this part of the country (on the basis of innovations), securing Russia’s interests in the Asia-Pacific region, and retaining the population through the creation of a comfortable living environment and optimisation of the human settlement system in the region.

The strategic goal of the development of the Far East and Baikal Region is to achieve the geopolitical objective of retaining the population in the Far East and Baikal Region through the formation of a well-developed economy and a comfortable living environment in the area, and achievement of a socio-economic development level similar to the average Russian level.” The internal development strategies are analysed elsewhere in this volume; here we will confine ourselves to the observation that the objectives set by “the Siberian Strategy 2020” are ambitious, set on a large scale and still remain relevant, provided, of course, that they are really supposed to be implemented.

The 2018 Cooperation Programme as a mirror of the reality

“... the Programme of Cooperation between the Regions of the Far East and East Siberia of Russia and Northeast China for the period 2009—2018 has been developed.”

At a glance, the 2018 Cooperation Programme has been an extremely successful document containing brief references to numerous cooperation projects. However, the analysis of the document is made difficult by the fact that neither of the five different Programme texts received by us from independent sources does not contain technical and economic parameters of the projects to be implemented in Russia — capacity and/or capacity utilisation of the operations to be built, economically feasible reserves of mineral deposits, product outputs etc. — and other indicators, which would help estimate feasibility and social effectiveness of the projects proposed. The Programme also does not mention potential consumers (this is particularly significant for resource harvesting projects) — what enterprises in what regions will process the resources, and in what production chain will the resources mined in Russia be used. Overall, the Programme lacks a systemic approach, integration, and a marketing component (even at the level of indirect references): the document does not provide any data about the needs and demands of the Russian and Chinese markets with regard to the projects proposed, which makes it impossible to evaluate their economic and social significance.

What is required for regions with such a low level of economic diversification, when the structure of the regional economy still undergoes a formation stage, is the maximum possible development of the whole production chain including all its stages. Given the current context of the economic crisis, even direct protectionist measures can be helpful. In the existing situation, chaotic,

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4 The 2018 Cooperation Programme, p.1.

5 According to the Programme, the power generated in Russia will be exported to China, where it will be consumed not by end customers, but by industrial customers who will use the energy for producing goods and services. In our opinion, in this context it is possible to view the energy sector as a resource one.
unsystematic approach to the development and a failure to apply the principle of integration inevitably raise concerns regarding the national security of Russia. These concerns are particularly relevant in the crisis periods, when social, economic or any other dependence on unpredictable external factors can easily lead to a destabilisation of social, environmental, economic and, in some cases, even political situation within the country. For example, one can say with confidence that such sectors of the Russian Far East’s economy as vegetable farming and construction already heavily depend on Chinese workforce: when in 1996—1997 the number of Chinese workers in these sectors decreased by 18%, the output plummeted by 21%. Naturally, such a level of dependence on foreign workforce may have a serious impact on the socio-economic stability in the region. It is worth mentioning in this context that in 2008 the Far Eastern Federal District had the second largest unemployment growth rate among the Russian federal districts.

Structure of the project list of the 2018 Cooperation Programme

Neglecting the economic potential still preserved in the regions of the Russian Far East (production capacities, human resource, technology) will lead to further degradation of the economic systems of these regions, a decrease in their already low level of economic diversification, and, ultimately, to a complete transition to a resource economy. (See Table 1 for the distribution of the projects of the 2018 Cooperation Programme by sector; see Annexes, map “Programme of border cooperation between Russia and China. Project distribution by region”).

The first sector includes mineral resource extraction projects, as well as agriculture and aquaculture projects. The projects were categorised as extraction projects only if they did not involve the creation of industries for processing the resources mined. The “Agriculture and aquaculture projects” also did not include the development of any processing facilities. It is this common feature that justified including the two project types into one sector.

![Table 1. Project distribution by economic sector](image-url)
The second sector includes four different groups. The “Mineral resource processing” group includes projects involving primary processing of the resources mined. The “Forest industry” includes wood processing projects, the construction of wooden houses factories, the production of parquet, veneer, MDF and OSB panels etc. “Power generation and transmission” — the construction of generating capacities (hydropower and thermal power plants etc.), transmission lines and other projects in the energy sector. “Building materials production” — projects for the construction or modernisation of brick and cement plants etc.

The third sector includes five groups of projects. The “Food and pharmaceutical industry” group includes projects for the construction, modernisation or expansion of industries producing food and semi-processed food products, food supplements, ferments, and pharmaceuticals. “Mechanical engineering” — the manufacturing of industrial and agricultural equipment, mining machinery etc. “Chemical industry” — projects for the production of various chemical materials, including polycrystalline silicon, plastics etc. “Appliance and car manufacturing” — projects for the production of electric household appliances, cars, car spare parts, and car servicing. “Furniture manufacturing” — the construction or modernisation of industries manufacturing furniture, wooden doors, kitchen furniture sets etc.

The fourth sector includes such groups as “Industrial zones and technology parks”, “Tourist infrastructure development” and “Transport infrastructure development”. The “Industrial zones and technology parks” group includes projects for the creation of logistic centres, industrial zones etc. “Tourist infrastructure development” — the construction or modernisation of ski resorts, spa resorts, hotels, entertainment complexes, tourist bases etc. “Transport infrastructure development” — the construction or modernisation of motorways and railroads, bridges, border checkpoints etc.

The fifth, “Miscellaneous” sector includes projects which cannot be categorised into any of the above groups. In particular, this sector includes port construction projects, reorganisation of assets, and the projects with unclear relevance to transboundary cooperation.

In addition, in the Russian part of the programme the resource component is supported by a strong infrastructure one: resource production projects (mining, agriculture and agriculture projects) account for over 30% of the total number of projects, while infrastructure development projects — for almost 24%.

At the same time, the Chinese part of the programme is almost entirely based on protectionist approaches, involving strong state support for the creation of jobs within the country. Despite common prejudice against protectionist measures, it is these measures that helped overcome crises throughout the entire human history.

The sectoral structure of the Chinese part differs from the Russian one dramatically: in any Chinese region covered by the programme the number of projects involving the manufacturing of finished products for end customers — food and food supplements, pharmaceuticals, household appliances (not assembly parts but finished consumer goods), furniture, cars, as well as machinery for agriculture and other economic sectors — is many times higher than what is planned for Russia.

In China, infrastructure development projects are intended to support processing and manufacturing industries rather than resource harvesting ones (see Figure 2): infrastructure projects account for 22% of the total number of projects, while projects for the manufacturing of finished products for both industrial customers (mechanical engineering, chemical industry) and consumers (food and pharmaceutical industry, appliance and car manufacturing, furniture manufacturing etc.) account for almost a half (48.65%) of the projects.

It is clear even to a non-expert that the sectoral structure of the Chinese component of the programme is much more balanced than the structure of the Russian one. The charts provided allow making conclusions about diversification levels of the respective regional economies. And, of course, one should note that the structure of the Russian projects looks bleak against more or less balanced Chinese structure. The difference between the two approaches is seen even clearer in Figure 3.

Thus, our analysis of the project list included in the Programme of Cooperation between the Regions of the Far East and East Siberia of Russia and Northeast China for the period 2009—2018 shows that the Programme views the Russian Far East as a resource-extraction colony, while Northeast China is viewed as a metropolitan country with a more diversified economy.

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*For example: Integrated Development of the Northern Residential Neighbourhood (Blagoveshchensk, Amur Oblast); Construction of a Residential Neighbourhood (Ulan-Ude, Buryatia Republic); Construction of Affordable Housing (Sakhalin Oblast); Construction of Residential Neighbourhoods in Petropavlovsk-Kamchatsky and Yelizovsky Municipal District (Kamchatsky Kray) etc.
CHAPTER 1. PROGRAMS ON SUSTAINABLE DEVELOPMENT AND TRANSBOUNDARY COOPERATION IN THE BORDER AREAS

Figure 1. The structure of the Russian projects

Figure 2. The structure of the Chinese projects

Figure 3. Russian and Chinese projects compared by sector
A few words about logistics and “infrastructural limitations”

The lack of clear logistics schemes in the 2018 Cooperation Programme makes the document fragmented, limiting the possibilities for a coherent analysis of the document as a whole. Of course, any development of transboundary cooperation is impossible without appropriate transport infrastructure and the optimisation of freight traffic. The 2018 Cooperation Programme provides for the construction or modernisation of 12 border checkpoints (4 — in Primorsky Kray; 3 — in both Zabaikalsky Kray and Jewish Autonomous Oblast; one — in both Khabarovsk Kray and Amur Oblast). For the Russian regions covered by the 2018 Cooperation Programme and having no access to large-scale land transport infrastructure (Magadan Oblast, Kamchatka Kray, Chukotka Autonomous Okrug, Sakhalin Oblast), the Programme envisions a number of measures for expanding airline services.

Given the overall context of the Programme, such “modernisation” is apparently aimed at expanding both exports of Russian raw materials to the Chinese provinces for processing and imports of Chinese finished products to the Russian regions. Another outcome will be improved accessibility of Chinese resorts to Russian tourists.

At the same time one should note that the Programme includes a number of resource harvesting projects to be implemented in the Russian regions with a limited access to large-scale transportation infrastructure. The cost effectiveness of such projects with transportation costs taken into account raises serious doubts. In order to ensure the maximum economic and social effectiveness, especially taking into account poor condition of the necessary infrastructure (energy, transport etc.), or even the absence thereof, projects proposed for the implementation in Russia should be focused on the manufacturing of finished products and high value-added products.

Thus, in the context of the 2018 Cooperation Programme the strategic objective of “overcoming infrastructural limitations” is reduced to a trivial expansion of export channels for Russian raw materials and energy, which would indirectly lead to depressing effects on the ecosystems of the Amur River Basin and its socio-economic sphere, promoting the development of a resource economy and increasing anthropogenic pressures on the living environment in the border regions of both Russia and China.

Externalities and risks

As the theory goes, externalities can be both positive and negative. However, meaningful discussion of positive or negative externalities associated with the 2018 Cooperation Programme is impossible without additional information.

The documents analysed and discussed in this volume, firstly, fail to define an integrated approach towards the creation of a cohesive diversified economic system, well-integrated into the national economy. Secondly, they are lacking physical or other non-monetary indicators, which would provide a foundation for an analysis of externalities. Therefore at the moment it is impossible to give a positive evaluation of the whole Programme as well as individual projects, since it remains unclear how the Russian regions will benefit from their implementation.

Judging from the nature of the projects proposed for the implementation in the Russian Far East and Transbaikal, one can conclude that the Programme as a whole is aimed not at the “cooperation” but rather at the integration of the economy of East Russia into the Chinese economy. The projects to be implemented in Russia are designed to meet the needs of China’s border regions, since it is obvious that these projects are closely connected to the development of Chinese processing industries manufacturing high value-added products, including customer goods. At the same time, the document provides no ground for the conclusion that the Russian projects will ultimately contribute to the development of Russian industry, introduction of innovative technologies, energy conservation, improvement of energy efficiency of the Russian economy and its modernisation.

The accelerated development of certain economic sectors, particularly associated with natural resource harvesting, will inevitably lead to increased depressing effects of such activities on both the ecosystems and the socio-economic sphere across the whole region.

The most significant negative temporal externalities will include the following:

- Resource extraction focus of the projects, which will lead to massive pollution of the whole ecosystem of the Amur River Basin, where Russian projects of the Programme are to be implemented; this will result in inevitable depressing effects on the regional environment, reducing the attractiveness of the area in terms of both living and recreation; and

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9 For example, the construction of Ust-Srendekskaya HPP on the Kolyma River and a hydrogen fuel plant in Srednekansky District of Magadan Oblast; industrial development of the Krutorogovskoye coal field in Kamchatka Kray etc.

10 External (third party) effects.


12 So-called “restoration of old industrial bases” (see Chapter 1.1 for more details).
the long-term perspective, systematic “development of mineral deposits” will make the region hardly suitable for living as the deposits get depleted;

- Degradation of the quality of human resource resulting from the lack of demand for highly-skilled specialists — a typical situation in the economic systems where key sectors, such as resource extraction, agriculture etc., do not generate sufficient demand for highly-skilled workforce and skill development; if universities providing training in a broad range of specialties still survive in the region, it will be difficult for their graduates to find appropriate jobs locally, and they will be forced either to take low-skilled jobs within the region, or to look for jobs in other regions and countries, since the projects included in the 2018 Cooperation Programme are unable to support a broad range of high-skilled jobs;

- Degradation of the quality of life resulting from environmental effects of mining operations, which are known as one of the largest sources of environmental pollution; these effects will have immediate impact on the public health, affecting, in particular, such vulnerable groups as children, people with disabilities etc.;

- Resource depletion and degradation of ecosystems will give rise to numerous problems with regard to energy and food supply of the next generation, and tacking these problems will require enormous costs compared to what is spent on those needs now;

- New elements of infrastructure (roads, transmission lines, new and expanded border checkpoints) will increase the fragmentation of natural system, which will also have an inevitable depressing effect on the ecosystem of the Amur River Basin.

The main global externalities will include various kinds of transboundary pollution, which will be inevitable given the Programme’s approach to the implementation of resource extraction, industrial, and infrastructure projects.

One should also take into account major negative cross-sectoral externalities: the resource component of the Russian part of the Programme will have serious impact on such sectors as agriculture, tourism and recreation etc. While most of the resources will be processed in China, a significant part of pollution associated with the production of these resources will take place in Russia. However, one should keep in mind that both the Russian regions and Chinese provinces covered by the 2018 Cooperation Programme are located within the shared Amur River Basin with its interconnected ecosystem, and environmental damage caused by the Programme’s approach to economic development will inevitably affect the quality of life on the both sides of the border.

The scheme under which mining operations are based at a large distance from the respective processing industries (on the different sides of the border), while remaining within the same regional ecosystem, leads to a major increase in adverse impacts on this ecosystem. These impacts could be significantly reduced by siting processing capacities in the same areas where the respective resources are produced: firstly, this helps reduce demand for infrastructure facilities and associated environmental impacts; secondly, this allows to use treatment facilities in a more efficient manner, reducing their costs and creating high value-added production cycles with the minimum amount of waste and the maximum recycling rate possible.

As seen from the above considerations, it makes sense to develop compact production complexes, siting processing industries as close to the respective sources of materials and energy as possible. However, the 2018 Cooperation Programme provides for quite the opposite approach: the resources are mined at a large distance from the respective processing industries; additional major infrastructure facilities (roads, transmission lines, communications etc.) are built to supply those industries with materials and energy; the system of vocational training and higher education is shrinking and expected to produce an increasingly narrow range of skill sets (since only a narrow range is demanded by the non-diversified regional economy) etc.

To be fair, one should note that both Russian and Chinese industries will cause serious impacts on the ecosystem of the Amur River Basin, since emissions into the air, discharges to water bodies, and other forms of impacts typical to processing industries will take place within a common regional ecosystem. And the main cause of major environmental impacts will be the violation of a key principle of sound spatial distribution of industrial operations: given the types and amounts of resources to be extracted, it would make much more sense to build processing industries as close to the sources of raw materials and energy as possible.

At the same time one should not forget that a failure to consider environmental costs and internalise externalities by including these costs into the prices of final products imposes a heavy social and economic burden associated with the degradation of the living environment on local communities and budgets within the impact area (affected by both direct and indirect impacts).

Unfortunately, one can discuss positive externalities of transboundary cooperation only hypothetically, since the 2018 Cooperation Programme provides no grounds for identifying such externalities. At the same time, effective transboundary cooperation programmes designed and implemented on the basis of a different paradigm may lead to long-term positive effects.
In principle, potential positive externalities of trans-boundary cooperation may include:

- Investments of foreign companies in the creation of industries manufacturing high value-added products in Russia, particularly if such projects involve joint programmes for human resource development and training;
- Implementation of environmental protection actions: construction of off-gases/wastewater treatment facilities, land reclamation, creation of protected areas;
- Using energy and resource efficient technologies in all projects implemented within the framework of transboundary cooperation;
- Joint research and development activities;
- Providing preferences for Russian high value-added products in the markets of neighbouring Chinese regions;
- Incentives for upgrading the existing industrial equipment in order to improve the efficiency of operations (including energy efficiency), social and economic effectiveness, return on assets etc.

Environmental component of the Programme

A significant portion of the risks described above already exists now, at least to a certain extent, creating a heavy environmental, social and economic burden on the local communities and budgets. A quantitative analysis of such risks would be an appropriate objective for a strategic environmental assessment of the 2018 Cooperation Programme, but no such assessment has ever been carried out.

However, the Programme contains a dedicated environmental section, and what is particularly sad is that the very presence of such a section should be welcomed nowadays, when many recent Russian development programmes do not contain any environmental section at all as a result of the dismantling of the state environmental oversight and enforcement system.

Environmental measures envisioned by the 2018 Cooperation Programme are much less specific than the proposed economic projects; they are not aimed at the oversight and monitoring of environmental effects of the cooperation projects, not provide for compensation of environmental damage, and are not supported by funding in Russia. The Programme lists 18 substantive points representing “intentions in the field of environmental cooperation” between the five Russian regions and the border provinces of China. Due to a complete lack of specific figures, clearly defined measures and results, we can only resort to an analysis of the Programme’s language with regard to the cooperation between the two countries. In ten cases the parties carry out “exchange” (of experience, knowledge, or technologies), in four cases — “protection”, in two cases — “monitoring”; the creation of a protected area, participation in a conference, and signing of an agreement are mentioned once. The document does not contain such phrases as “joint oversight”, “development of standards for environmental pressures”, “environmental enforcement”, “harmonisation of environmental quality standards”, “compliance with mutually agreed standards”, “joint management”, “compensation of environmental damage” etc.

For the most part, the environmental component of the Programme comprises a mechanical compilation of existing agreements signed years ago, which cannot address in a meaningful way environmental costs of the 2018 Cooperation Programme, which was adopted in 2009. The experience of the last decade shows that such approaches to transboundary environmental cooperation are generally ineffective and do not involve specific commitments and/or mechanisms for overseeing their implementation. An illustrative example in this regard is “the standing Russia-China interregional working group for the environmental protection of the Argun River water resources” mentioned in the Programme as a key mechanism of environmental cooperation between the governments of Zabaikalsky Kray (Russia) and Inner Mongola Autonomous Region (China). Indeed, the agreement establishing the working group was signed in 2006, but the technical group for the protection of landscape and biological diversity of the Argun River Basin has never started its work, while the group for water quality monitoring was active only due to the existence of a similar monitoring agreement between the governments of the two countries. In 2007, the government of Zabaikalsky Kray (Russia) expressed its concern over the planned construction of a canal for water transfer from the upper reaches of the Argun River to the Dalai Lake. In the next year, Bagatur, the acting Chairman of Inner Mongolia Autonomous Region, in a special letter dated July 25, 2008, suggested to cancel regular meetings within the framework of the Argun protection agreement, citing the absence of the need for such meetings as a reason. Since then, no meeting has been held, and the planned canal has been built[13]. On the one hand, including this point in the 2018 Cooperation Programme can be viewed as a positive development, since this can make the regions to resume the dialogue. On the other hand, however, this clearly shows the ineffectiveness of “environmental protection” mechanisms included in the Programme and their inability to ensure the environmental conservation in the border regions.

Sometimes the “environmental component” of the 2018 Cooperation Programme includes obvious nonsense bordering on misrepresentation. One example is the section “Cooperation with regard to the Develop-

ment and Protection of the Environment of Bolshoy Ussuriysky Island”, which goes as follows: “Activating the cooperation with regard to the development and protection of the environment of Bolshoy Ussuriysky Island. The development of Bolshoy Ussuriysky Island will be carried out with requirements of the environmental legislation taken into account. Construction of a bridge crossing over Amurskaya channel by Russia. Construction of a bridge crossing over Kazakevicha channel (Fuyuan) and road network on Bolshoy Ussuriysky Island by China. The possibility of establishing a border checkpoint will be explored after the appropriate transport infrastructure is in place”. We were unable to see any specific environmental component in the paragraph quoted above. After studying available documents in Chinese we found out that China already works to establish a protected area covering a part of the recently acquired islands. However, the “environmental agreement” mentioned in the Programme has nothing to do with these plans and contains only a general declaration on the need to develop the area “with requirements of the environmental legislation taken into account”, as if environmental compliance was not necessary at other sections of the border.

Despite a decade of talks about joint environmental protection in the border areas, the Russian regions have had neither effective cooperation programmes with their Chinese counterparts nor reliable mechanisms for coordinating their own environmental activities within the larger Russian Far East region. If one honestly recognises that the 2018 Cooperation Programme is in fact an extension of the economic strategy defined by the China’s Plan of Revitalising Northeast China, than it should be expected that it will be some Chinese authority that sooner or later will take the thankless work of coordinating the environmental protection activities of Chinese and Russian regions in the border areas.

And what gives hope for change for the better is not the 2018 Cooperation Programme, but the following news story released by Xinhua in February 2010:

“Journey to the West

The signing of a document such as the 2018 Cooperation Programme and, what is even more important, its public discussion, provide ample material for an analysis of administrative approaches presently used for the formulation and implementation of federal and regional socio-economic policies with regard to border regions of Russia. This analysis is particularly relevant in the context of the further expansion of cooperation between Russia and China. The border regions of the Russian Far East have already got used to these approaches, the freshness of perception has been lost, and the 2018 Cooperation Programme just follows the “business as usual” principle, summarizing and replicating deplorable but well-established patterns of modern day “transboundary cooperation”. Now let’s imagine that the same model of cooperation spreads westward reaching West Siberia, particularly the Altai Mountains.

According to most sources, the most significant factors of China’s adverse impacts on the Russian regions of the Far East and Transbaikal include the export of cheap labour, the squeezing out of Russian businesses from the regional markets (in particular, due to extremely low labour costs), massive extraction and harvesting of natural resources in the border (and other) regions, loose environmental quality standards etc. All these factors strongly affect the social, economic, and environmental spheres. In the recent years the Russian regions of West Siberia also have been facing increasing pressures
associated with cheap Chinese labour, harvesting of natural resources, and dumping by Chinese agricultural enterprises.\(^\text{15}\)

The Altai Republic is located in the very centre of Eurasia at the junction of several nations, natural zones and cultures, bordering China, Mongolia, and Kazakhstan. The western segment of the Russia-China border is a small section (54 km) running along the South Altai mountain range and separating the Altai Republic from the Xinjiang Uyghur Autonomous Region. It is the Ukok Plateau that is adjacent to the South Altai range from the Russian side of border. In 1992, the Ukok Plateau has been declared a “quiet zone” and assigned the status of a nature park; in 1998, it has been designated as a UNESCO World Heritage Site.\(^\text{16}\)

Explored mineral resources of the Republic include gold (with deposits ranging from major to insignificant), rare earth metals (tantalum, lithium, rubidium, caesium, bismuth) etc. There are large coniferous forests in the Republic. The area also has some hydropower potential. Overall, the Altai Republic plays a very modest role in the economy of the Siberian Federal District, since its main asset is the unique ecosystem comprising diverse landscapes and natural complexes, and providing the population of the nearby regions with clean water and air. These features are reflected in the profile of the regional economy with well-developed tourism and recreation business and associated economic sectors (agriculture, processing industry, the services sector etc.).\(^\text{17}\) The Altai Republic is integrated into the national economy through its most developed sectors — animal farming and tourism. The M52 Federal Highway (the Chuysky Highway) passing the Altai Republic and connecting Russia to Mongolia is a road of international significance.

Unlike the Russian Far East and Transbaikal, the Altai Republic has had virtually no transboundary relations with China over the last century. This is a result of a range of factors, including, among others, the fact that the Kanas Pass — the only possible location for a border checkpoint — can be open for traffic for at most three months a year.

However, over the last decade various entities have been actively lobbying the construction of a “transportation corridor” via the Kanas Pass. The Altai section of the Russia-China border is now considered as an element of transboundary “cooperation” with China’s Xinjiang Uyghur Autonomous Region. The proposed projects include the construction of the “Altai” gas pipeline and a motorway (probably also a railroad) to China, and the construction of a chain of hydropower plans on the Katun River, also supplying power to China. In addition, Southwest Siberia has extensive areas of arable lands, including those with high-quality black soil, which are becoming an increasingly attractive resource in the coming age of global instability. Looking at the Russian Far East, it is not difficult to imagine how the integration on the basis of a well-tested “resource and infrastructure scenario” will affect the further development of the region.

Under such a scenario, the “cooperation” will be limited to the construction of roads and pipelines and supplying Chinese customers with Russian resources. In addition, Chinese industries will be able to enter Russian regional markets, creating additional jobs for China’s citizens. The tourist resources of the Altai will not be demanded by foreign customers, since China has similar natural features with better tourist infrastructure and affordable prices, particularly the Kanas ski resort and park. Russian customers will also gradually start to give preference to more convenient and affordable tourist services in China (see the article on tourism in this volume). Many farms in Southwest Siberia, viable under the current economic conditions, will find themselves unable to compete with cheaper Chinese products. At the next stage, arable lands abandoned either recently of long ago will be “saved” by laborious Chinese farmers, as it currently happens in the Russian Far East. Mineral resources and agricultural products will be exported to the Xinjiang Uyghur Autonomous Region for high-value-added processing, while primitive resource extraction industries based in Siberia will be unable to pay even for the reclamation of lands affected by mining operations. Then, under pressure from the Russian government, some designated Chinese investors will finance the construction of a few showcase processing industries with not particularly high value added in Siberia.

The construction of a transport corridor, including a gas pipeline, a motorway, a railroad, and power transmission lines will give rise to the problems similar to those faced by the Russian Far East: expansion of mining operations, export of natural resources (including timber and non-timber forest products), depletion (or export) of fertile soils, pollution of water bodies etc.

Naturally, the most significant long-term consequence will be the degradation of the ecosystem vital to the Ob River — the river with the largest catchment area in Russia — since the Katun River, whose catchment includes, among other areas, alpine tundra landscapes

\(^{15}\) For example, growing vegetables with the heavy use of chemical fertilizers (in some cases also using GMOs), thus driving Russian producers out of business, legal and illegal exports of timber, black soil, mineral resources etc. Chinese producers pushed out of the Russian markets virtually all other manufacturers of consumer goods, household appliances etc.

\(^{16}\) In addition to the Ukok Plateau, the UNESCO World Heritage Site in Altai includes Altai and Katun Nature Reserves, Lake Teletskoye, and Belukha Mountain.

\(^{17}\) To be fair, one should not that the lack of appropriate regulatory framework with regard to the use of natural resources for recreation leads to serious pressures on the most popular recreation sites, which may result in the loss of unique features, landscapes and resort areas.
of the Ukok Plateau, provides almost 60% of the total Ob flow at the location where the latter is formed.

And the first step of “cooperation” for Altai will be the construction of a gas pipeline crossing the Ukok Plateau, which is not only an important centre of biodiversity, but also a sacred area to the peoples living there. A UNESCO mission, which visited the Altai Republic specifically with regard to the proposed pipeline construction, clearly and unambiguously underlined the extreme fragility of alpine ecosystems and the fact that the construction of a “transport corridor” will inevitably result in the degradation of these ecosystems and the subsequent loss of numerous sacred sites and monuments of ancient history and culture of the region (see Annexes, map “Alternative route of the ‘Altai’ pipeline system proposed by NGOs”).

The official propaganda insists that this integration scenario “has no alternatives”. At the same time, the ongoing breakthrough in gas and oil production technologies and the rapid growth of energy efficiency makes the construction of large-scale international gas pipelines an extremely risky enterprise potentially leading to enormous debts. Nowadays, an alpine gas pipeline would definitely be beneficial only to those who are going to make a profit on its construction. Taking a broader look at the cooperation in the Altai region, one should note that there already exist two transport corridors in the centre of Asia — through Mongolia and Kazakhstan. The reliance on these existing corridors may lead to more balanced integration in the larger region. China realises this and de facto recognises possible alternatives. In particular, in February 2010 an announcement was made of the expansion of the Taikeshken checkpoint on the China — Mongolia border and the certification of the checkpoint as an international one.

A brief conclusion

The 2018 Cooperation Programme is a sign of a failure to achieve the harmonisation of development plans of Russia’s and China’s border regions. To Russia, this means a total collapse of sound development strategies, which ultimately leads to serious economic, political, social, and environmental risks. To China, the Programme is generally aligned with the objectives of comprehensive socio-economic development, but fails to adequately take into account the potential for transboundary social and political tensions and transboundary aspects of environmental safety.

The “resource model” of integration as a foundation for transboundary cooperation encourages both countries to loosen their environmental and social standards, avoiding investments in innovations and diversification of the economies. In the short-term and medium-term perspective, this reduces the competitiveness and investment attractiveness of the region. This is much more relevant to East Russia than to the border provinces of China, since significant segments of the Northeast China’s economy undergo the processes of active diversification and development in cooperation with South China, Taiwan, Japan, Korea, the USA, and the European Russia. In this context, the fact that Russia in fact subsidises the economy of Northeast China by supporting the 2018 Cooperation Programme is probably not that critical to the development of the Northeast China’s economy but definitely contributes to this development.

The political decisions made in Russia and China lead to a deliberate narrowing of the range of development options for the Russian Far East and Baikal Region and, ultimately, to the “colonial exploitation” model of development. There are indications that the region is already becoming less attractive to domestic and foreign investors with a different perspective on economic diversification and innovations. The existing development model, when projected into the future, leaves no hope for self-realisation and decent living conditions and the region becomes increasingly less attractive, particularly for energetic and proactive people. The population of the border regions has already decreased by 7—20% and the approved development policies will only lead to a further decrease.

The main global risk associated with the existing model of Russia — China cooperation is the accelerating degradation of natural ecosystems and the living environment in the border areas. The north of China is an area of environmental disaster, and enormous funds are spent on attempts to reverse adverse trends.

Until recently, Russia was separated from these degraded areas by a belt of relatively undisturbed forests and steppes, and by the Amur Basin ecosystem capable of self-purification. The “infrastructure and resource extraction” model of cooperation, not supported by adequate environmental oversight and rehabilitation measures, leads to a rapid destruction of this protective buffer and subsequently to a dramatic degradation of already difficult living conditions in the border regions of the Russian Far East. Unfortunately, both the 2018 Cooperation Programme and internal development strategies for the Russian Far East, Transbaikal, and Siberia, uncoordinated with the former, lead to aggravation of these problems rather than to their mitigation, and are unable to offer sound approaches to tackling them.
1.4. Approaches to ensuring environmental safety in shared ecosystems along the eastern section of the Sino-Russian border

Vladimir P. Karakin

In one way or another, cooperation with China cuts across all areas of socio-economic activity in Russia, having a particularly strong impact on nature management. This partially explains the geographic distribution of cooperative projects between Russia’s Far Eastern regions, Eastern Siberia and Southwest China, defined by the Program. Most of these cooperative projects between the two countries, significant for Russia’s geopolitical security and regional development, have been undertaken in contiguous regions of China and Russia. The Sino-Russian border areas are mainly concentrated in the eastern part of Russia.

Stretching for 4,300 km, the eastern Sino-Russian border runs predominantly through the Amur River and its major tributaries — the Argun and Ussuri, with the exception of an overland section, from Lake Khanka to the Tumangan River. Its Transbaikal section was formed at the end of the 17th century; sections in the middle and lower reaches of the Amur River were formed in the mid-19th century. Back then, it was the border between the Russian and Manchurian empires. The Manchurian chapter in the history of the region’s ecosystems and nature management has great significance. When Russia began exploration and development of the Middle and Lower Amur sub-basins in the 19th century, these lands were inhabited by the Manchu people and several aboriginal peoples — the Evenks, Dauri, Duchers, Nanai etc. — which had lived side by side for years. Extensive farming was the dominant land-use type in the region. The ruling Manchu dynasty deliberately supported and promoted extensive agriculture in the southern part of the region, which had most of the arable lands, as part of a campaign under the slogan “Saving Our Small Motherland”. This explains why ecosystems along the Sino-Russian border retained their integrity to as late as the mid-19th century. The Amur River basin’s unique natural landscape is largely a result of its paleogeographic development. During the climatic minimum of the Pleistocene Era (18—20 thousand years B.C.), the region was ice-free. The absence of ice created favorable conditions for local biodiversity, enabling the survival of flora and fauna in refuges within the Amur River basin.

The Amur River basin, along with the Caucasus, has an exceptional concentration of animal and plant life among Russian regions; it also harbors the largest number of endemic species. Preserving this rich biodiversity is a key priority for Russia, highlighted in many international treaties and agreements. The Amur River basin’s assemblage of natural communities is so rich on a global scale, that a number of top priority Global 200 ecoregions have been identified in the area (See Annex, Map “Globally Important Ecoregions along the Sino-Russian Border”). At the sub-regional level, the future of North-East Asia’s entire biological diversity depends directly on the conservation of the existing animal and plant species in transboundary ecosystems within the Amur River basin, as this enables the exchange of biodiversity between the Russian and Chinese parts of the river basin.

Large areas in the central and northern parts of the Amur River basin were once extensively overgrown with nemoral forests, which have always boasted an exceptionally diverse mix of unique animals and plants. In the mid-19th century, this was the only remaining strip of undisturbed nemoral forests and forest steppes in the Northern hemisphere; by that time, similar ecosystems in Europe and America had changed beyond recognition. Even today, forest ecosystems of the Amur River basin and the Eastern Manchurian Mountains are the only broad-leaved forest ecosystems which have retained the original structure of their food chain, with the tiger and leopard poised at the top.

Whatever the importance of environmental issues in the Amur River basin and whatever public reaction they stimulate, these territories are a valuable socio-economic and geopolitical asset both for Russia and China, though for different reasons:

1. China regards its north-eastern territories as a resource base for such products as grain, soy, timber, etc., as well as an industrial base, the foundation for which was laid by Russia and Japan between 1890 and 1945. These territories are not part of the “Han Ecumene” — they constitute what could be called the nearest natural resource belt, along with Mongolia, Xinjiang Uyghur Autonomous Region (XUAR) and some other areas. For today’s China, frontier relations with Russia are an issue that could be set aside for a while, as there are many other, much more pressing geopolitical issues. Such, for instance, is the need to comply with obligations under the latest demarcation agreement to build a model city opposite the Russian city of Khabarovsk.

2. Contiguous territories along the eastern section of the Sino-Russian border have a different significance for Russian future statehood than for
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China’s. China has on several occasions lost control over Manchuria and never stopped being the Middle Kingdom. If Russia lost control over the southern part of its Far East, this would mean losing the entire region. Russia can’t afford to lose its Far Eastern territories and its access to the Pacific Ocean, as this would inevitably change the country (sending it back, perhaps, to the days of Muscovy). The border areas have strategic importance for Russia’s presence and economic development in the Pacific, for the following reasons:

- Large-scale land development in the Russian Far East has always been limited due to natural conditions, such as climate and landscape. The only effective type of land development seems to be cluster development, with sprawling urban zones in the hospitable south, and occasional resource-mining areas, development routes and smaller settlements across the rest of the territory. This, coupled with traditional extensive agricultural practices, plays an important geopolitical role, projecting an image of the Russian Far East as a largely developed region with effective land-use management.

- The territories along the eastern section of the Sino-Russian border are the only parts of the Russian Far East relatively habitable and suitable for large-scale land development. These areas could become a starting point for further land development, aimed at taking firm control over the entire region.

The high geostrategic significance of the Russian border areas points to a series of important conclusions:

- Due to the rapid pace of economic growth, high population density, extensive land use and current climate trends, Chinese border areas will become an increasingly important source of negative transboundary environmental impacts, such as water and air pollution, invasion of alien species and diseases, dust storms and negative changes in local climate, potentially threatening desertification. Without an effort on the part of Russia to prevent these negative impacts, the role of border areas as an environmental buffer will quickly decline.

- The region is bound to witness a new upsurge in economic development, which will inevitably take its environmental toll. It is important to anticipate these new environmental impacts in order to mitigate and offset their effects. Thus, Russia is now facing the task of reading itself not only for current, but also for future environmental risks, as they will present a far greater challenge to the country.

- The territory in question is the “fa□ade of the Russian Federation in the Pacific”. This means that Russia, at least in accordance with the external rules of the “game”, needs to adopt approaches to the region’s economic development based on the principles of “green economy”.

- Promoting the Ussuri River basin, or the entire Amur River basin, as a unique natural landscape, Russia will simultaneously be able to look at and settle other regional issues through an environmental lens. Take, for instance, such geopolitical issue as China’s quest for an outlet to the Sea of Japan. Russia and the Democratic People’s Republic of Korea prevented China from accessing the Sea of Japan via the Tumangan River, justifying their refusal by the need “to treat the natural environment with care and respect”.

In order to analyze and streamline Russian-Chinese cooperation in contiguous regions, it seems appropriate to single out several territorial structures, in which such cooperation takes place, taking into account local-specific features of the environment and natural resources. In this article we call these structures shared transboundary ecosystems. Shared transboundary ecosystems represent geosystems, divided by the national borders between two or more countries and possessing shared geophysical environment, natural resources (such as water bodies) and commonly shared space where ecosystem management occurs. A key characteristic of transboundary geosystems is the interdependence between the state of the environment and natural resources in national parts and in the system as a whole.

For a better analysis of shared transboundary ecosystems, it makes sense to distinguish between transboundary territories (TT) and transboundary geosystems (TG). (Such distinction is made in relation to the Amur River basin in a number published works.\(^1\))

Depending on the aims of the analysis, transboundary geosystems can be singled out on different scales:

**Small scale — basin approach:**

- Based on the basin approach: the Amur River basin (including the Upper, Middle and Lower sub-basins), the basins of the Ussuri, Razdolnaya, and Tumen rivers and Lake Khanka;

- Based on economic and geographical approach, within the confines of a particular constituent entity: the middle reaches of the Amur River span the Amur region, the Jewish Autonomous Area, as well as Jilin and Heilongjiang provinces;

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• Based on natural resource management approach, by combining administrative and basin boundaries.

Professor L. Kondratyeva assesses the current ecological state of the Amur River as close to critical, and by some parameters in the lower reaches as critical. The current state of affairs is the result of high vulnerability and weak natural regeneration of Amur water and wetland ecosystems, as well as local forests against the backdrop of enormous anthropogenic stress on the environment. Nature management in general, and forest, water and fishery management in particular, are not balanced against nature’s moderate self-regeneration capacity.

In the foreseeable future, China and Russia will have to establish a common ecosystem management framework for their contiguous regions, to settle the following issues arising on a basin level:

• Managing water:
  a. use of water resources;
  b. protection of water resources;

• Offsetting the negative impacts of climate change on the region’s environment and natural resources;

• Moving towards green nature management (in agriculture, forestry, and mining of mineral resources). The most realistic way to achieve this goal is to implement green nature management policies in the national parts of transboundary geosystems, as well as reach a consensus on the general standards of nature management on small-scale transboundary territories (such as the extent of forest cover, the number of specially protected territories, the degree of flow control, etc.).

Medium-scale — transboundary ecosystems (geosystems):

Using the physiographic approach, one can single out transboundary territories sharing similar landscape features. Such, for instance, is the transboundary geosystems of the Amur River basin within the Russian Far East.

Based on S. Ganzei and co-authors’ work, with the addition of two regions — Tumangan and Transbaikal Amur River regions — we have devised a classification scheme of Russian-Chinese transboundary geosystems located along the eastern section of the Sino-Russian border (See Figure 1).

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Figure 1. Transboundary territories along the eastern section of the Sino-Russian border

![Figure 1. Transboundary territories along the eastern section of the Sino-Russian border](http://nio.khb.ru/person/270)
Table 1. Medium-scale assessment of ecological resources and impediments to green nature management within Russian-Chinese transboundary geosystems (to be analyzed together with Figure 1)

<table>
<thead>
<tr>
<th>Number on the map, name of the TG, surface area (S=thousand km²)</th>
<th>Surface area of the TT, Russia/China, %</th>
<th>Original natural landscape of the TG, and the extent of its development in Russia and China (arable lands/forests), %</th>
<th>Major environmental challenges-goals</th>
<th>Hindrances to green nature management</th>
<th>Underlying premises for green nature management (See below)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Tumangan, S=32</td>
<td>34/66</td>
<td>A low-mountain area overgrown with mixed coniferous-broad-leaved and oak forests; a coastal plain and wetlands at the mouth of the Tumen River. The ecosystems have been transformed, but their landscape structure has remained intact. Contains the richest diversity of Manchurian flora and fauna species among the remaining ecosystems. Retains tiger and leopard habitat. The most important part of the Changbaishan-Sikhote-Alin “ecological corridor”. Russia — 05/40; China — 8/60</td>
<td>Maintaining the existing biodiversity — tigers, leopards, migratory birds, high conservation value forests against the backdrop of rapid economic growth in accordance with TRADP. A lot has been done to this effect, but no permanent body responsible for addressing this challenge has been established yet.</td>
<td>National Park “The Land of Leopards” hasn’t been established yet. China’s Hunchun Nature Reserve doesn’t offer sufficient protection.</td>
<td>1</td>
</tr>
<tr>
<td>2. Primorye-Laolin, S=26</td>
<td>44/54</td>
<td>Natural landscape resembles that of the Tumangan transboundary geosystem, but harbors more forest-steppe and meadow-steppe areas. Has lost most of its biodiversity and its natural ecosystems as a result of overdevelopment. Russia — 12/40; China — 40/20</td>
<td>Reinforcing ecological structure of the territory by restoring some of the original plant species, and possibly reintroducing tigers and leopards from captivity</td>
<td>Large amounts of arable lands; the remaining forests are either fragmented or degraded; vast parts of land are severely affected by erosion. The Chinese part of the transboundary territory faces the same problems, its land development and use of natural resources being much more intensive than those on the Russian side</td>
<td>5</td>
</tr>
<tr>
<td>3. Ussuri-Khanka, S=30.9</td>
<td>59/41</td>
<td>An accumulation plain, with occasionally undulating relief. Overgrown with meadow-swamp and meadow-steppe type vegetation. Oak forests and sparse woods are also common. Russia — 30/7; China — 47/3</td>
<td>Preserving and conserving wetlands used by migratory birds</td>
<td>Large extents of arable lands; overuse of chemical fertilizers by rice growers in China; overall degradation of agriculture on the Russian part of the transboundary territory</td>
<td>2</td>
</tr>
<tr>
<td>4. Bikin-Wanda Shan, S=17</td>
<td>46/54</td>
<td>Low mountain spurs of the Sikhote-Alin Range jut out westwardly, overgrown with broad-leaved and mixed cedar-broad-leaved forest; valleys are dotted with wetlands. Russia — 0.5/81; China — 17/20</td>
<td>Launching and maintaining an “ecological corridor” that will connect the Amur tiger population in Russia with that in China</td>
<td>Rapid pace of agricultural development on the Chinese part of the transboundary territory</td>
<td>3</td>
</tr>
<tr>
<td>5. Songhua-Middle Amur, S=107.5</td>
<td>60/40</td>
<td>An accumulation plain, overgrown with meadow-swamp vegetation and waterlogged scrublands; highlands are covered with a mosaic of larch, cedar-broad-leaved and deciduous forests. Russia — 6/18; China — 60/2</td>
<td>Preserving and conserving wetlands, migratory birds and natural landscapes</td>
<td>Rapid pace of agricultural development on the Chinese part of the transboundary territory; the lack of a coherent program for comprehensive development of the natural resources and environmental management sector on the Russian part; dangerously high rate of land development both on the Chinese and Russian parts of the transboundary territory</td>
<td>3</td>
</tr>
</tbody>
</table>
### Underlying premises for green nature management (See Table, 1—5):

1. The existing resources, processes and capacity create ample opportunities for transition towards green nature management.

2. High potential for sustainable nature management, due to strong interest on the part of the government or external commitments.

3. There are many contradictory tendencies.

4. There are some objective underlying premises and no principle barriers to green nature management; however, the issue hasn’t been thrashed out yet.

5. Green nature management is at odds with key priorities for socio-economic development of the territory.

<p>| | | | | | |</p>
<table>
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<tbody>
<tr>
<td><strong>6. Lesser Khingan, S=95</strong></td>
<td>25/75</td>
<td>Low mountains and hills of the Lesser Khingan Range, overgrown with cedar-broad-leaved, oak, larch, spruce and fir forests and criss-crossed by waterlogged river valleys. Russia — 0.5/82; China — 8/80</td>
<td>Reinroducing tigers from captivity; identifying and preserving high conservation value forests; conserving wetlands in the Amur River valley</td>
<td>The lack of an efficient eco-economic development model and a comprehensive forest and natural resources-use plan on the Russian part of the transboundary territory. As a result, most of the implemented projects are resource-intensive and unconnected</td>
<td>3</td>
</tr>
<tr>
<td><strong>7. Zeya-Bureya, S=27</strong></td>
<td>90/10</td>
<td>An erosion-accumulation, forest-meadow-steppe plain, overgrown with oak, larch and birch sparse woods, as well as shrubs and wetland-grass-cereal meadows. Russia — 60/5; China — 89/8</td>
<td>Restoring the territory’s ecological structure and preserving its wetlands</td>
<td>Agricultural redevelopment modeled on the collective type of agriculture used in the 1960s. The model has proven highly inefficient</td>
<td>3</td>
</tr>
<tr>
<td><strong>8. Upper Amur, S=420</strong></td>
<td>50/50</td>
<td>Plateaus with occasionally undulating relief, supporting oak, pine and larch, birch and forest-meadow ecosystems. Russia — 1/80; China — 2/88</td>
<td>Restoring the original forest ecosystems; identifying and preserving high conservation value forests</td>
<td>The lack of an efficient eco-economic development model and a comprehensive forest and natural resource-use plan on the Russian part of the transboundary territory. High possibility of large-scale industrial and infrastructure projects in Eastern Siberia and the Russian Far East, attractive for their abundant natural resources and geopolitical location</td>
<td>4</td>
</tr>
<tr>
<td><strong>9. Daurian (China-Russia-Mongolia) S=360</strong></td>
<td>25/25</td>
<td>Plateaus with occasionally undulating relief, overgrown with forest-steppe and meadow vegetation, as well as the genuine Daurian type steppe vegetation. Contains numerous lake basins and river valleys, overgrown with meadow-swamp and meadow-steppe plants. The region’s ecosystem dynamics and migration patterns of local species, such as Mongolian gazelles, cranes, geese, bustards, etc. are determined by the 25—40-year climate cycle</td>
<td>Adapting the existing system of natural resource use (primarily water use) and environmental protection to climate change, and ratifying relevant transboundary agreements</td>
<td>Dialogue between the three countries is difficult to organize. China opposes any trilateral projects in the field of water management; high rate of ore mining and agricultural development (primarily on the Chinese part of the transboundary territory); Weakness of Russia’s foreign and nature conservation policy in the region</td>
<td>3</td>
</tr>
</tbody>
</table>
Small-scale and medium-scale approaches do not contradict but complement each other: the physiographic approach is effective for medium-and large-scale analysis of environmental issues, while the basin approach is ideal for analyzing small-scale issues, such as the use of water resources. The main barriers to ecological safety of the shared Russian-Chinese transboundary systems on a medium-scale are highlighted in the Table 1.

Protection of shared ecosystems — a unifying issue?

It is obvious that many natural values and ecosystem services, which have great national, and all too often regional or even global importance, depend directly on the state of transboundary ecosystems. Among some of the least obvious examples of ecosystem services within the Amur River basin is the crucial role the composition of Amur water plays in maintaining productivity of fish in the Sea of Okhotsk — a very important issue for Japan, Russia, China and other fishing countries in the region. Japanese scientists assume that fish productivity depends on the level of iron ions in the water, carried from the vast swamps along the main channels of the Amur and Ussuri rivers.

The state of transboundary ecosystems also has great significance for the national security of each of the contiguous countries. The self-regenerating and self-regulating capacity of these systems is crucial, as they serve as a buffer zone protecting the rest of the national territory from negative environmental impacts, preventing the invasion of alien species and mitigating the adverse effects of climate change.

Once, Russia and China were de facto separated by a buffer zone of practically undisturbed territories and a giant self-regulating river. In recent time, the barrier functions of this buffer zone have been increasingly undermined due to extensive and uncoordinated anthropogenic impact on the ecosystems on both sides of the boundary. In Russia these transboundary ecosystems play mainly a protective role, while in China they are valuable as an “ecological corridor” allowing for replenishment of wild flora and fauna stocks. On the other hand, risks are high that China’s swelling negative environmental impact on the Russian environment will spark a political conflict. This consideration might make protection of such transboundary territories a common long-term priority for the two neighboring countries. However, this priority is at odds with another top priority policy, consisting in stepping up the joint development of easily accessible natural resources within the transboundary areas. The ensuing conflicts of interests are rarely solved in favor of transboundary ecosystems and long-lasting comfortable living conditions for the region’s population.

Conclusions

The proposed classification scheme and characteristics of the transboundary ecosystems are not by any means conventional, as the process of gaining shared knowledge about transboundary ecosystems is sporadic and drags behind the much more rapid development of independent and practically unconnected national schools of thought.

Today, there is a lack of common ecological and information space; instead there are highly independent information spaces in China and Russia. Their interaction requires participation of highly qualified experts, who will share and jointly analyze the acquired data. The latter fact makes the goal of transition to green nature management within the Sino-Russian transboundary territories even more difficult to attain, as it seems almost impossible to stop making decisions based on individual, subjective assessment and devise a more objective working system. The common ecological and information space can’t be created by mechanical exchange of information between neighboring countries. What is needed is a shared system of ecological information acquisition, processing and analysis.
CHAPTER 2

ENVIRONMENTAL COSTS OF INDUSTRIAL COOPERATION BETWEEN RUSSIA AND CHINA
2.1. The Potential and Risks of Transforming the Russian Mining Industry into a Sustainable Economic Sector of the Russian Far East
(based on an analysis of projects presented in the Russian-Chinese 2009—2018 Cooperation Programme)

N. Lomakina

The mining industry of the Russian Far East: Transformation and development potential

This chapter discusses the theoretical and practical aspects relating to (i) the problems of choosing economic development priorities at the national and regional levels in Russia, (ii) the links between Russian socio-economic development and the availability and use of mineral resources, and (iii) the role of mineral resources in the economic dynamics of Russia. We focus on the following topics: interdependency between the mineral resources availability and the regional economic growth rate; balance between the mining and processing industries; use of mineral resources and sustainable development.

The contemporary discourse on the matters of economic development is closely related to the sustainable development concept. In general terms, the structure of sustainable development can be viewed as a system of relations between the government, the mining sector, society and the environment.

In recent years, increasing attention has been drawn to the environmental impacts of the mining of natural resources in Russia. Mining industry is known to place high pressure on the environment due to both the sheer scale of the operations and diverse and deep impacts on all components of the environment. For example, it is reported that “on average, some 20 tonnes of mineral resources are mined annually in the world per person, and it takes 800 tonnes of fresh water and 2500 W of power to transform these resources into end products. The mining of these resources involves moving some 400 tonnes of rocks and disturbing 2 m² of land area per person per year”.

Globally, at most 1% of all produced mineral resources end up as a part of finished products. The mining of one tonne of mineral resources requires moving of up to 10 tonnes of rocks, i.e. the product to waste ratio is ten-fold. In Russia, up to 10 thousand hectares of land is by mining operations annually, and over one billion tonnes of overburden rocks from open-pit mining alone is stockpiled.

In addition to the disruption of the land surface, mining operations cause serious impacts on all components of the natural environment. Rocks overlying and underlying most mineral deposits contain a range of toxic elements (e.g., mercury, arsenic). The transformation of a landscape by mining operations (due to mining pits, stockpiles, tailing ponds, etc.) gives rise to dust and acidification, which results in pollution of the soil, air, surface water bodies and ground waters. The impacts of mining operations, therefore, manifest themselves as a range of qualitative and quantitative changes to the natural environment.

Positive and negative effects of the mineral resources extraction are felt particularly strongly at the regional level. While priorities of economic development at the national level are typically a result of multi-criteria selection, to an individual region rich in mineral resources the resource focus of the economy is predetermined.

For the Russian Far East, the development of mineral resources has become an area of specialisation within the national economy and a systemic factor of the regional economic development. Even at a relatively early stage of the RFE’s regional development, in the middle of the 19th century, when government policies viewed the Far East mainly as a potential area for the resettlement of farmers from European part of Russia (West of Urals) and the support base for the Pacific army and fleet, the mining industry took a leading role in the regional economy. This pre-determined the significance of the Far East to the Russian economy as a source of raw materials for the non-ferrous metals industry, precious metals industry, and jewellery industry.

The Soviet period of the development of the mineral resource complex in the Russian Far East can be divided into several important stages defined by specific approaches of the government to the regional development. However, almost all of these stages are characterised by an accelerated growth of the regional non-ferrous metals industry compared to the average industrial growth rate, and by the growth of the share of this sector in the overall industrial output of the region. The main result of the Soviet period was the formation of a major centre of the non-ferrous metal industry in the Russian Far East; the sector became an important factor of the region’s specialisation within the national
1. THE POTENTIAL AND RISKS OF TRANSFORMING THE RUSSIAN MINING INDUSTRY INTO A SUSTAINABLE ECONOMIC SECTOR

By the beginning of the 1990’s, the Russian Far East accounted for 80% of the national (USSR) production of tin, 100% of the national production of diamonds, almost 50% of gold, and 14% of wolfram. In fact, the development of mineral resources was recognised as one of the main drivers of the economic development of the Russian Far East.

The modern regional development strategy, taking into account the new institutional and macroeconomic situation in the Russia and the RFE is founded on a system of certain principles and possible development scenarios based on those principles. All future development scenarios for the Russian Far East, whether focused on the Russian market or on the Asia-Pacific region, are at least to some extent based on the further exploitation of the natural resources of the region.

In the previous period (1991—2009), the economic conditions of the development of the RFE mineral resource complex underwent a number of significant changes and amounted to a large-scale transformation. The most significant changes include: a decrease in the resource potential, changes in the structure of the regional mineral resource base as a result of its re-evaluation in the market conditions and a resource replacement crisis; mixed trends in the amount and structure of output of the mineral resource complex; spatial, sectoral, organisational, and institutional changes in the mineral resource complex. However, despite these significant changes, the mineral resources extraction industry of the Russian Far East has retained its role and significance in the national economy (see Table 1).

The analysis of the contemporary and future mineral resource balance at the national level shows that the mineral resources of the Far East have accounted and will account for a significant share of their production, as well as existing and expected reserves at the national level. For some kinds of resources this share is critical. Overall, the mineral resource complex of the Russian Far East has continued to determine the unique “economic physiognomy” of the region in the national context and its specialisation within the national economy.

Table 1. Current and expected significance of the mineral resources of the Russian Far East to the mineral resource complex of Russia (2009 estimates, %)

<table>
<thead>
<tr>
<th>Mineral resource</th>
<th>Percentage of Russian national production and reserves</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Production</td>
</tr>
<tr>
<td>Diamonds</td>
<td>100.0</td>
</tr>
<tr>
<td>Gold</td>
<td>50.0</td>
</tr>
<tr>
<td>Silver</td>
<td>50.0</td>
</tr>
<tr>
<td>Tin</td>
<td>100.0</td>
</tr>
<tr>
<td>Wolfram</td>
<td>87.0</td>
</tr>
<tr>
<td>Lead</td>
<td>63.0</td>
</tr>
<tr>
<td>Zinc</td>
<td>10.0</td>
</tr>
</tbody>
</table>

Source: Database of the Economic Research Institute of the Far East Branch of Russian Academy of Sciences.

Analysis of the mineral resource development projects included in the Programme of Cooperation between the Regions of the Far East and East Siberia of Russia and Northeast China (2009—2018)

The mineral resources extractive industry of the Far East is viewed as one of the critical sectors for the development of international cooperation in the Asia-Pacific region. A recent study of the development trends of the mineral resource sector and respective national policies of the Northeast Asia countries shows that China is likely to have the most influence on the future situation in the mineral resource sector in Northeast Asia, the strategies and quantitative parameters of the international cooperation in the field.

China is far ahead of the other countries and regions of the Northeast Asia in terms of available reserves of the key mineral resources and the development of the national mining industry. However, despite the availability of large mineral reserves in absolute terms, many Chinese specialists underscore the insufficiency of mineral resources available within the country. For example, the China’s Agenda 21 states that “despite all the abundance of mineral resources, the reserves per capita are

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much lower than the respective global averages. The known mineral resource reserves are insufficient. Further in the 21st century the availability of mineral resources ...will become even more problematic”.

According to the Chinese Ministry of Land and Resources, the existing reserves of only 24 of the 45 key mineral resources are sufficient to meet the domestic demand by the year 2010, while the reserves of only 6 mineral resources are sufficient to support the domestic demand by 2020.

The main objective of the China’s policy with regard to natural resources is a substantial increase in the production and consumption of mineral resources per capita, while ensuring their efficient use and taking into account their non-renewable nature. At the end of the 20th century, this objective was achieved mainly by means of domestic production complemented by sound amounts of necessary imports and exports, but in the recent years the priorities and approaches of the China’s mineral resource policy have undergone serious changes.

In order to supply the national economy with the necessary natural resources, China adopted the “business without borders” strategy, which implies establishing direct relations with resource producers instead of relying on the international markets. Chinese companies are allowed to invest directly in foreign operations in order to secure necessary resources. Over the last two or three years, over 50% of Chinese foreign investments went in mining industries based in different countries.

In the situation of a rapidly growing demand of Chinese industry for mineral resources and the implementation of the “business without borders” strategy on the one hand, and “resource extraction” development model of the mineral resource complex of the Russian Far East on the other hand, China becomes the most active partner in the integration initiatives involving the mineral resource sector of the Russian Far East. And adopting a “joint” cooperation programme as a basis for such integration seems to be a logical step.

Of 89 projects proposed for joint implementation in Russia according to the Programme 2018, 30 involve the development of mineral resources and/or the use of products of the mineral resource sector at least to a certain extent. Over a half of the “mineral resource” projects are to be implemented in the Far Eastern Federal District. Certain parameters of the projects, available at the moment, are presented in Table 2.

One should note that the projects included in the Programme 2018 are not necessarily new ones — many investment projects have long been “traveling” between various programmes and strategies at both the federal and regional levels; some deposits are being developed at the moment. High upfront costs, inertia of development, long project implementation periods in the mineral resource sector, and the existing rate of mineral resource replacement in the region provide grounds for expecting that over the next 15—20 years the structure and development trends of the mineral resource complex will be determined by the set of investment projects and proposals being initiated in the Russian Far East today. The general situation in the regional mineral resource complex may follow one of the two main scenarios.

The resource extraction/transit scenario is based mainly on the development of traditional resource projects involving the mining and primary processing (concentration) of mineral resources. Another scenario — innovative/developmental (industrial, manufacturing) — can be aimed at the completion of production chains by adding high value-added operations manufacturing finished products from mineral resources mined locally, formation of new sectors and subsectors in the regional economies, coming up with innovative final products manufactured from local mineral resources, and entering new markets. This scenario can bring about qualitatively different results for the regional economy.

Presently, an important objective is to increase the “degree of innovativeness” of mineral resource development, and to ensure real transition to the manufacturing of high value-added finished products from mineral resources.

The project of the commercial development of the Yagodinskoye zeolite deposit in Kamchatka Kray can become an illustrative example of a sound approach to the use of non-renewable mineral resources. The deposit is characterised by a favourable location in geographical and economical terms, major reserves (explored — 19.7 million tonnes, prospective — 40 million), and a high quality of mineral resources. Currently the deposit has been developed in a “resource extraction” mode with relatively small amounts of zeolite (some 2 thousand tonnes) produced to be used as an active additive for cement. However, the zeolite of the Yagodinskoye deposit has much broader potential. It is characterised by a high ore purity (making the deposit stand apart from other known deposits in Russia), a high base exchange capacity (at the level of the respective international standards) and mechanical strength unique to this type of mineral resources. These properties can ensure a high quality of finished products manufactured from the zeolite. Even at the current stage up to 15—20 thousand tonnes of processed zeolite of appropriate quality can be consumed by various sectors of the regional economy, including agriculture, fish farming, construction, fuel and energy complex,

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5 Otd. in: Naumov I. N. Problemy obespechenija prirodnymi resursami jekonomicheskogo razvitija KNR v XXI veke // Problemy Dal’nego Vostoka, 1999, No.4, s. 104.

Table 2. Projects of the Programme 2018 in the mineral resource sector of the Russian Far East and their parameters

<table>
<thead>
<tr>
<th>Projects in the mineral resource sector</th>
<th>Certain parameters of projects</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Implementation dates, design capacity</td>
</tr>
<tr>
<td><strong>Kamchatka Kray: 10 (4)</strong></td>
<td></td>
</tr>
<tr>
<td>1. Zero-waste processing of titanomagnetite sands of the Khalkatyrskoye deposit</td>
<td>3 years</td>
</tr>
<tr>
<td>2. Commercial development of the Yagodnin-skoye deposit of natural zeolite</td>
<td>Capacity of the proposed operation — 25—50 thousand tpa</td>
</tr>
<tr>
<td>3. Commercial development of the Krutorogovskoye coal field</td>
<td>Open-pit mining, at least 150 thousand tpa</td>
</tr>
<tr>
<td>4. Manufacturing of heat insulation materials from locally produced raw materials (perlite) in Yelizovsky District</td>
<td>Development of a resource efficient technology</td>
</tr>
<tr>
<td><strong>Khabarovsk Kray: 12 (3)</strong></td>
<td></td>
</tr>
<tr>
<td>1. Development of the Sobolinoye tin field</td>
<td>2015 3.0 thousand tonnes of tin concentrate</td>
</tr>
<tr>
<td>2. Construction of a cement plant using limestone from the Nilanskoye deposit and argillaceous materials from the Sokdyukanskoye deposit as a feedstock</td>
<td>2009—2025</td>
</tr>
<tr>
<td>3. Construction of mining and processing complex at the Kutyn gold field in Tuguro-Chumikansky District</td>
<td>2012 1 tpa of gold</td>
</tr>
<tr>
<td><strong>Amur Oblast: 12 (3)</strong></td>
<td></td>
</tr>
<tr>
<td>1. Development of the Yevgenyevskoye apatite deposit</td>
<td>2009—2010</td>
</tr>
<tr>
<td>2. Development of the Kulikovskoye zeolite deposit</td>
<td>3.5 years 1 stage — up to 200 tpa of zeolite mass</td>
</tr>
<tr>
<td>3. Construction of a cement and clinker brick plant on the basis of the Chagoyanskoye limestone deposit</td>
<td>2010—2013 11.2 million tonnes of cement, 600 thousand tonnes of ground limestone</td>
</tr>
</tbody>
</table>
defence sector (for water treatment and decontamination of sites), and mining industry. Furthermore, in the future the mining sector can become the largest customer of zeolite, using it for improving the environmental safety of the mining of ore gold, copper, nickel, and other ores. It is expected that the Aginsky Mining and Processing Plant alone can consume up to 50 tonnes of zeolite. Innovative processing approaches combined with unique properties of the Yagodinskoye zeolites can expand potential areas of their use even further (production of synthetic zeolites with high-quality molecular sieves, activated zeolite etc.). As a side effect of the project, the development of associated infrastructure will improve the accessibility of balneological springs and recreation sites located in the vicinity of the deposit site.

In fact, the Yagodinskoye project can help tackle not only economic, but also environmental problems of Kamchatka Krai, a region with unique natural environment. Final products of zeolite processing have a high export potential, but to realise this potential it is necessary to develop processing capacities instead of continuing mere resource extraction.

Another prospective project is the manufacturing of heat insulation materials on the basis of basalt roving and heat insulation materials produced from it in Yuzhno-Sakhalsk.


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duced raw materials (perlite) in Yelizovsky District (Kamchatka Kray) using a resource efficient technology. A unique non-flammable heat insulation material with a bulk density of 50—60 kg/m$^3$ produced from perlites of the Nachikinskoye and Paratunskoye deposits can also become an export product.

In the Kamchatka Kray, special attention is paid to the introduction of state-of-the-art technologies helping prevent industrial pollution and waste generation. For example, it is planned to create an interregional research and development centre on the basis of the existing institutions of the Russian Academy of Sciences in order to facilitate the development and adoption of low-waste and environmentally safe methods of mineral resource processing.

However, the Programme 2018 also includes a number of problematic projects, whose Russian components involve resource extraction only, while finished products (including high value-added and high-tech ones) are to be manufactured in Northeast China.

One example of such an initiative is preliminary negotiations on the joint development of the Yevgenyevskoye apatite deposit in Amur Oblast. The parties agreed to carry out joint geological exploration and apatite extraction works to provide necessary raw materials for the manufacturing of 1.2 million tonnes of compound phosphate fertiliser. As a part of this agreement, a protocol on the construction of an apatite concentrator in Amur Oblast and a phosphate fertiliser plant in the city of Hegang (China) has been signed. It is planned to establish the Amur Phosphorus Company for the geological exploration and mining of apatite at the Yevgenyevskoye deposit; the produced apatite will be sent to Hegang for further processing.

The development of the Kimkano-Sutarskoye iron ore deposit in Jewish Autonomous Oblast, also included in the Programme 2018, is another project with mixed prospects. The project is viewed as one of the cooperation projects most advantageous to the Russian economy. Unlike most other projects listed in the Programme, it provides for the manufacturing of high value-added products (direct reduced iron).

The proposed development of the Kimkano-Sutarskoye deposit is a part of a larger project for the creation of the Amur Mining and Metallurgical Cluster actively promoted by Petropavlovsk Group. The declared ultimate goal of the project is the creation of state-of-the-art industries for the manufacturing of finished metal products in the Russian Far East. The initiative also provides for serious investments (some of them within the framework of a public-private partnership) in the development of infrastructure (railroad, a bridge, port facilities) (see Table 3).

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**Table 3. Project for the development of a mining and metallurgical cluster in the southern part of the Russian Far East and in Northeast China**

<table>
<thead>
<tr>
<th>Region</th>
<th>Mining and metallurgical component</th>
<th>Infrastructure component</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amur Oblast</td>
<td>Garinsky MPP: 7 million tonnes of product (concentrated ore — 47.8% Fe)</td>
<td>Shimanovskaya — Gar railroad (148 km), Shimanovsk — Gar high-voltage transmission line (220 kV)</td>
</tr>
<tr>
<td></td>
<td>Olekminsky MPP (B. Seyim and Kuranakhskoye deposits): 900 thousand tonnes of iron ore concentrate and 290 thousand tonnes of ilmenite concentrate</td>
<td>Motorway to Olekma station (42 km), power (35)</td>
</tr>
<tr>
<td>Jewish Autonomous Oblast</td>
<td>Kimkano-Sutarsky MPP: the mining of 10 million tonnes of iron ore, production of 6—7 million tonnes of ore concentrate and 3 million tonnes of pellets</td>
<td>Railway bridge and border crossing Nizhneleninskoye—Tongjiang to supply the products of the Kimkano-Sutarsky MPP and ore concentrates from Amur Oblast to China (up to 20—25 million tpa) Reconstruction of the Birobidzhan — Nizhneleninskoye railroad (124 km)</td>
</tr>
<tr>
<td>Khabarovsk Kray</td>
<td>Iron ore concentrate and pellets for the metals industry of Northeast China</td>
<td>Cargo handling complex (iron ore concentrate, 7—12 million tonnes), Sovetskaya Gavan</td>
</tr>
<tr>
<td>Northeast China</td>
<td>Joint venture (65% Aricom, 35% Chinalco) for the production of titanium sponge (30 thousand tonnes, 1st stage — 15 thousand tonnes) from the Kuranakhskoye ilmenite, Jiamusi</td>
<td>Railroad to Tongjiang border crossing at Huaitao (opposite the Nizhneleninskoye port)</td>
</tr>
</tbody>
</table>

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The project of a mining and metallurgical cluster in the Amur Region provides for the use of a number of advanced technologies. In particular, the innovative process ITmk3 developed by Kobe Steel (Japan) and Midrex (USA) was selected for the production of direct reduced iron (DRI). According to experts, the process “represents the third (the most recent) generation of technologies for producing inputs materials for steelmaking”\(^\text{11}\). However, it will be possible to utilise all the innovative technologies of iron ore mining and processing envisioned by the project only if the full-fledged production cycle involving ore mining, concentration, and manufacturing of finished products is developed within the Amur Region. Even in case when the production chain, still missing final stages, involves at least the production of iron pellets, there is a domestic demand for these. OJSC Amurmetall based in Komskomolsk-on-Amur, the only steelmaking plant in the Far East using electric furnaces, expressed its interest in using this kind of feedstock. The industry for many years has been trying to improve sustainability of its operations, overcoming the dependence on scrap metal as the only available feedstock. Pertopavlovsk Group itself many times declared its intention to become a leader of the industrial development of the Russian Far East by building a full-cycle metallurgical combine in the region.

However, there is a serious risk that the project will ultimately follow the “resource” track limited to mining, traditional concentration and supplying iron ore concentrate to Northeast China through the new Nizhneneninskoye—Tongjiang border pass. Given the close proximity of the Kimkano-Sutarsky MPP and convenient location of the new border pass, this simpler option may prove profitable enough and ensure sufficient return on investment from the investor’s perspective. One should also note that the Chinese steel industry has been gradually expanding its use of low value-added feedstock. In particular, over the recent years the number of iron ore pelletisation plants in China has increased significantly — at the beginning of 2009 there were over 70 such plants in the country. As a result of this process, China has reduced its imports of sintered/pelletised iron materials: over 11 months of the year 2009 the deposits and the plant!). The overall cost of the project (even given the 1300 km distance between the deposit and the plant!) would be USD 375 million (70% of the stage cost) at the LIBOR + 5% rate to Petropavlovsk Group.

By now, the final choice of the development track of the iron ore mining and processing sector in the south of the Russian Far East has not been made yet. Therefore, economic and environmental consequences of the project implementation to the region remain unclear. According to our tentative estimates\(^\text{13}\), the impacts of the “industrial” and “resource” scenarios of the project development on the regional economy will differ significantly:

- Direct effect of the project (total output) under the “resource” scenario is expected to be 3—3.5 less than in case of the creation of a full-fledged production cycle (the “industrial” scenario).
- Both scenarios involve significant indirect effects (increased sales of goods and services in associated sectors), amounting to 50—60% of the direct effect. In absolute terms, the overall size of indirect effects under the “resource” scenario is expected to be 3 times less than under the “industrial” one.

Another case of a purely “resources” approach towards the development of Russian mineral resources has not been included in the Russian part of the Programme 2018, but the attentive observer will easily identify it by looking at the Chinese part. Here we are talking about the construction of a titanium sponge plant in the Chinese city of Jiamusi. This project, in fact already being implemented, is a joint venture between Aricom (a British-Russian company of Pertopavlovsk Group) and Chinalco (China). All the feedstock for the plant — ilmenite concentrate — should be supplied by Aricom from the Kurankhskoye ilmenite and titanomagnetite deposit in Amur Oblast. The feasibility study carried out by the Shenyang Aluminium and Magnesium Design Institute for the plant with a capacity of 15 thousand tpa of titanium sponge (with subsequent doubling of the capacity) demonstrated the feasibility and profitability of the project (even given the 1300 km distance between the deposit and the plant!). The overall cost of the project will amount to some USD 300 million; Aricom will own a 65% interest in the joint venture, while the remaining 35% interest will be held by Chinalco. The plant will employ almost 3 thousand people.\(^\text{14}\)

As can be seen from the above examples, the business-as-usual “resource” scenario (mining, primary concentration, and export) of the development of mineral resources of the Russian Far East remains possible. This scenario would be unable to bring about structural changes in the mineral resource complex of the Far East and would preserve the existing “resource extrac-

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\(^\text{11}\) Ibid., p. 62.

\(^\text{12}\) Information and analytical materials by SOGRA: http://www.sogra.ru.


tion and export” model. Broader adverse effects of this scenario on the regional economy may include:

- further strengthening of the existing resource extraction and export specialisation of the regional economy;
- sensitivity of the economic growth rates to the price trends in the international commodity markets;
- depletion of the resource base as a factor of regional economic growth.

The “resource” scenario of the development of the mineral resource complex of the Russian Far East may also have adverse effects on the national level:

- possible loss of control over the supply of the Russian industry with strategic mineral resources;
- weakening of the Russian Far East as the Russia’s foothold in the Asia-Pacific region.

Under the innovation/developmental (industrial) scenario, the development of the mineral resource sector of the Russian Far East would be based on different approaches and would lead to a qualitative transformation of the sector. If such a scenario is realised, a number of new industries manufacturing finished products can be created in the Russian Far East:

- a metallurgical complex for zero-waste processing of titanomagnetite ores from the Khalkatyrskoye deposit using also scrap metal and manufacturing finished metal products (Kamchatka Kray);
- a plant for manufacturing competitive finished products from natural zeolite of the Yagodninskoye deposit (Kamchatka Kray);
- a plant manufacturing finished titanium products (for the national and international markets) from titanomagnetite ores of the Kuranakhskoye and Bolshoy Seyim (Tynda, Amur Oblast) deposits;
- a metallurgical plant using ores from polymetallic deposits of Khabarovsk Kray, in a longer-term perspective — processing ore concentrates from all over the Russian Far East;
- a mining and metallurgical combine providing finished metal products to the regional, national and international markets. Gradual integration of iron ore deposits of Amur Oblast, Jewish Autonomous Oblast and South Yakutia into the mineral resource base of the combine.

The latter three investment projects are interregional in terms of economic links and have national significance in terms of their product mix and output. The implementation of the “industrial” scenario will ensure a qualitatively different development path of the Far East mineral resource sector compared to the “resource” scenario:

- new economic sectors and subsectors within the regional mineral resource sector will be created;
- the production chain in the mineral resource sector will be complemented by the final stage, at which high value-added finished products competitive in the national and international markets will be manufactured;
- prerequisites for regional and interregional economic integration in the mineral resource sector and the industrial sector as a whole will be created;
- structural changes in the mineral resources extraction sector and the economy of the Far Eastern Federal District as a whole will occur.

The implementation of joint projects in the mineral resource sector according to the “industrial” scenario may give a real start to the formation of an “industrial and service contact arc” in the south of the region. What is formed today, however, is “not a contact arc, but transboundary belts including both Russian and Chinese segments”, with “processing operations and industries manufacturing finished products concentrated mainly in the Chinese segment. In order to come to a final conclusion regarding the nature and consequences of the proposed strategy, it is necessary to undertake, as soon as possible, a systemic assessment of the whole Programme”, including its social and environmental impacts. Instead of a possible “industrial and service contact arc”, the southern part of the region may turn into a mere mineral resource base for the industrial development of North-East China. The critical issues in this regard include those of structure (balance between private interests and regional development priorities) and localisation (within or outside the national border) of the “overall effects” of the development of the mineral resources in the region. An extremely important objective is identifying effective mechanisms for “cutting off” mineral resource development projects based on the resource extraction model alone. Since the overall framework for cooperation projects is defined by a state programme, it is government authorities that have to play the leading role in creating such mechanisms.

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2.2. Russian-Chinese Cooperation in the Oil and Gas Sector: Prospects and Challenges

Nina Poussenkova

Creation of the Eastern Oil and Gas Province

Over the last decade, the idea to create a new oil and gas province in the Russian Far East and Eastern Siberia, intended to support and replace the ageing facilities in Western Siberia — currently Russia’s main oil-producing region—has become increasingly relevant. The emergence of a new large oil and gas producing region in eastern Russia is crucial, in particular, for maintaining Russia’s leading position in the global energy market. However, since Russia’s eastern regions are characterized by extremely severe climate, difficult geological conditions, the lack of adequate transport infrastructure and scarcity of workforce, the estimated costs of prospecting, exploration and production of hydrocarbon resources in these regions are very high. Therefore the creation of the Eastern Oil and Gas Province may seem economically unfeasible, particularly given the declining trend in world oil prices.

Yet, profitability of individual projects cannot be the only factor affecting decision-making with regard to development policies in Russia’s eastern regions— one should also take into account broader economic considerations, as well as a range of social, political, and geopolitical factors. The priority objective is to improve the standard of living in the region, particularly with a view to preventing the outflow of population.

The creation of a new oil and gas province in eastern Russia is particularly important in the context of energy security of the country. Russia’s energy security is most often defined as “the country’s security, that of its citizens, society, state and economy from the threats to reliable supply of fuel and energy” (See, e.g., the Energy Strategy of the Russian Federation through 2030). However, this definition encompasses only the internal aspect of energy security, while the external aspect is no less important. For energy exporting nations, this implies the diversification of export markets and external consumers of energy resources, while for energy importing nations the critical concern is the diversity of supply sources.

In this regard, the new national Energy Strategy through 2030, approved in late 2009, stipulates that: “...the proportion of European energy markets in the total volume of Russian energy exports will steadily decline due to export diversification to eastern energy markets, such as China, Japan, Republic of Korea, other countries of the Asia-Pacific region.” To a significant extent, this shift in export destinations is driven by political considerations, particularly by a desire to exert pressure on European countries — currently the main destination for Russia’s oil and gas exports — so that Russian energy companies could gain access to the end-customers in the European Union.

Thus, Russia needs to diversify the destinations of its oil and gas exports, presently going mainly to European countries where energy demand is stagnant and may eventually decrease. What Russia needs is to establish a firm foothold in the rapidly growing Asia-Pacific market and to enter the US market. The previous Energy Strategy of Russia, approved in August 2003 and encompassing the period until 2020, stated that by 2020 the share of APR-countries in Russian oil exports will increase from 3% (at the moment the Strategy was being devised) to 30% while natural gas exports will reach 15%. Six years after the 2003 Strategy was adopted witnessed certain positive results, and the current Energy Strategy through 2030 contemplates “an increase, by the end of the third phase of the Strategy implementation, in the share of eastern destinations in the exports of liquid hydrocarbons (oil and petroleum products) from 6% at the moment to 22—25%, and in the exports of natural gas — from 0 to 19—20%”. Experts started talking about the need to develop a new oil and gas region in eastern Russia long time ago. As early as 1973, the USSR Ministry of Oil and Gas Industry reported: “In the decade between 1981 and 1990, a new oil region has to emerge in Eastern Siberia”. However, the Soviet socialist authorities turned a blind eye to the mounting problems in the oil and gas industry, firmly believing that the national reserves of oil and natural gas were limitless. It was not until the first oil production crisis in 1977—1978, manifesting itself in rapid declines in oil outputs in Western Siberia, that a decision was made to fast-track the development of new oil and gas provinces. To this end, the Central Committee of the Communist Party and the Council of Ministers of the USSR passed a resolution No. 265, dated March 21, 1979, On Intensifying Oil and Gas Exploration and Production in Eastern Siberia. However, the development of eastern oil and gas reservoirs took longer than expected and wasn’t completed due to the breakup of the Soviet Union.

1 The Energy Strategy of the Russian Federation through 2020, Moscow, 2003. Presently, Russia’s annual exports to the APR-countries stand at some 10-11 million tons of oil and 7-8 million tons of petroleum products, mainly shipped by rail from Western Siberia and Sakhalin.
3 Economics of Oil Industry, No.6, 1973, 6, p. 9.
The federal program entitled “The Environment of Bratsk” was adopted as early as the beginning of the 1990s. The city, where coal accounts for 99% of the fuel used by local thermal power plants, is considered one of the most ecologically disadvantaged cities in Russia. In order to improve the situation, plans were in the works to partially replace coal with natural gas, which was to be supplied from the Bratsk field, developed since 1994. In the 1990s, the program remained on paper.

It is obvious that these projects will be driven primarily by corporate interests of these giants (not necessarily always aligned with national interests), while the regional needs and priorities will play a secondary role.

In the 1990s, the government of the Russian Federation all but forgot about Eastern Siberia and the Far East. Against the backdrop of the most severe economic crisis in the country, manifesting itself in plummeting industrial outputs, declining domestic demand for energy, and low global oil prices, neither the government nor Russian oil and gas companies considered the development of a new oil and gas region a top priority. In addition, Russia’s eastern regions had been caught in a “vicious cycle”: large-scale oil production made no sense due to the lack of an export pipeline, while the construction of an export pipeline was considered unnecessary since not enough oil was produced in the region to make the project profitable.

It was also clear that the “eastern oil project” would be much more costly and complicated than the development of oil and gas resources of Western Siberia in terms of various economic, political, social, and demographic parameters. Finally, the Russian government was unable to rely on Soviet-style command-and-control mechanisms widely used in the development of the Western Siberian oil and gas region, and at the same time failed to create a favorable economic and market environment for power companies that could potentially operate in the region.

However, in the first decade of the new century Russia started to pursue close cooperation with such rapidly growing economies as China and India and set itself an objective to enter the Asian energy market. The government’s approach to the development of Russia’s eastern regions changed accordingly, and large-scale development projects began to seem more feasible than in the previous decade, given higher oil prices.

In late 2006, Vladimir Putin, the then President of Russia, characterized the situation in the Russian Far East as “a threat to the national security” and emphasized the need to “invest in the Russian Far East”. In order to improve the socio-economic conditions in the region, a commission chaired by Mikhail Fradkov, the then Prime Minister, was tasked with devising a special-purpose regional development program. This program, Development of the Russian Far East and Transbaikal Region through 2013” was adopted in 2007.


The analysis of the FEBR Strategy as applied to the oil and gas sector shows that the document relies mainly on projects that are currently being implemented — or are in the pipeline — by the largest state-controlled energy corporations, such as Gazprom, Rosneft, and Transneft.

One of the main objectives of the FEBR Strategy is the development of the Eastern Siberia — Pacific Ocean pipeline, for a number of reasons, may pose a serious threat to the environment. On the one hand, the Eastern Siberia — Pacific Ocean pipeline, for a number of reasons, may pose a serious threat to the environment. On the other hand, improving access to gas for households and industries in Russia’s eastern regions, currently characterized by one of the lowest gas access rates in the country — provided that the respective programs are implemented by Gazprom fully and in due time — will help enhance the quality of life for local residents and improve the natural environment since gas will be replacing coal, widely used in the region as a fuel.

The authors of the FEBR Strategy agree that improving natural gas supply and access to this resource in the Russian Far East and Baikal region will ultimately lead to the creation of an integrated gas production, transportation and supply system. New opportunities will emerge for gas exports to China and other Asia-Pacific counties. A significant improvement in households’ and industries’ access to natural gas in the Irkutsk, Transbaikal, Sakhalin, Kamchatka, Amur, Khabarovsk, Primorye regions, as well as the Republic of Buryatia and the Jewish Autonomous Area will be made possible through the construction of trunk pipelines bringing gas directly from gas fields. For example, there are plans to complete, in 2010, the first phase of the project aimed at supplying natural gas to the Kamchatka region, including, among other objectives, the construction of a pipeline that will run from the west coast of Kamchatka Peninsula to the region’s capital, Petropavlovsk-Kamchatsky. As for the Irkutsk region, plans are in the works to supply natural gas to the region’s southern areas, including such cities as Irkutsk, Sayansk and Angarsk under the General Gas Supply and Distribution Scheme. This is going to be achieved by means of developing medium- and small-sized gas condensate fields. In addition, there are plans to improve gas supply to the city of Bratsk by completing the second phase of the Bratsk Gas and Condensate Field — Bratsk pipeline, which will noticeably enhance the quality of the urban environment. The use of natural gas will also be expanded in the Sakhalin region, particularly due to a transition of the Yuzhno-Sakhalsk TPS-1 to natural gas-fired electricity generation. This will significantly contribute to the preservation of nature in the southern part of the island.

Plans to develop gas chemical and gas processing industries in the Primorye region, the Republic of Sakha...
pipelines in Songyuan with an annual capacity of 200.

China is the production of oil tubes and tubes for oil exploration and production at the Verkhne-Echin-sky and Olkhovoye fields. The only oil-related project in the Far Eastern Autonomous Area, including the construction of an oil refinery in Anadyr, the 138 km long Verkhne-Telekayskoye — Anadyr oil pipeline, a main pumping station, a tank farm and an oil-loading terminal, as well as oil exploration and production at the Verkhne-Echinsky and Olkhovoye fields. The only oil-related project in China is the production of oil tubes and tubes for pipelines in Songyuan with an annual capacity of 200 thousand tons.

Nevertheless, the energy cooperation with China has been actively promoted in recent years, with such companies as Rosneft, Gazprom, and Transneft being the main drivers of this process. Therefore, any analysis of prospects for cooperation between Russia and China should focus more on activities of specific companies, particularly major state-controlled corporations, rather than on what is highlighted in various strategies and programs, including those adopted at the highest level of government.

It may seem that, given the proximity of the two countries, the huge and rapidly growing energy market of China, and China’s intention to reduce its dependence on Middle East oil, Russia should have started to view its southern neighbour as a priority partner for energy cooperation long ago. However, until recently, the cooperation between the two countries in the oil and gas sector was virtually non-existent. In particular, any attempts on the part of Chinese energy companies to participate in Russian oil and gas projects invariably ended in failure: thus, they failed to participate in the privatization of Slavneft, or acquire Stimul Oil Company (Orenburg) or Yuganskneftegaz. However, the situation has begun to change in recent years. State-controlled companies, such as Rosneft and Gazprom, have continued to expand their presence in the Russian Far East, squeezing private companies, such as Yukos and TNK-BP, and foreign players out of the region, and started to build and strengthen relations with China.

Oil industry

Yukos

Prior to the “Yukos case”, the company controlled the largest oil reserves in eastern Russia. At the end of the 1990s, Yukos was one of the first Russian oil companies expressing interest in the region. The company’s main oil production facilities were based in Western Siberia, and initially Mikhail Khodorkovsky viewed Eastern Siberia as a transit area for oil exports to China. Yukos started its cooperation with China in 1999, when the first shipment of oil (12 thousand tons) was delivered there by rail. Yukos exports to China were growing rapidly, and the company soon decided to build a pipeline between the Russian city of Angarsk and Chinese Daqing.

As early as 1999, Yukos, Transneft, and Chinese CNPC started to prepare construction documents for a pipeline...
between Russia and China. In September 2001, a general agreement to carry out a feasibility study for the project was signed. In May 2003, top executives of Yukos and CNPC signed a long-term contract for oil supply via the future pipeline. It was planned to ship 20 million tpa for the first five years of pipeline's operations and 30 million tpa after 2010. Almost half of that amount was expected to come from the Yurubcheno–Tokhomskaya zone in Evenkia, a region rich in hydrocarbon resources.

The Angarsk — Daqing pipeline, conceived by Yukos, for some time competed with an alternative project — the Angarsk-Nakhodka pipeline, promoted by Transneft. The estimated costs of the Yukos-backed 2,247 km long pipeline amounted to $1.7 billion USD, compared to $5.2 billion USD for the Transneft-backed 3,765 km long pipeline. The former project would reach profitability at a throughput of 20 million tpa, while the latter required as much as 50 million tpa. It was unclear whether the amount of oil necessary to support such a throughput would be available in Eastern Siberia. On the other hand, shipping oil to the port of Nakhodka would allow for diversification of export destinations, while the Angarsk — Daqing route would make Russia dependent on a single buyer — China. At that time, the choice between the two routes would be determined by political considerations.

In 2001, Japanese companies started to actively lobby the Angarsk — Nakhodka route, offering $5 billion USD for the pipeline construction and another $2 billion USD for the development of oil field in eastern Russia. As a further argument, they emphasised that a pipeline with a sea terminal would also provide access to the U.S. market.

In the spring of 2003, a decision reconciling both proposals was made: to build the Angarsk — Nakhodka pipeline with an offshore shoot off Daqing. However, soon the Ministry of Natural Resources rejected both proposed routes for environmental reasons. The southern route proposed by Yukos passed south of Lake Baikal and then crossed Tunkinsky National Park. For the northern route promoted by Transneft, the closest distance between the pipeline and Lake Baikal was 20 km. Then the “Yukos case” was initiated, the cabinet of Mikhail Kasyanov who supported the route to Daqing was dismissed, and the Eastern Pipeline project seemed to be forgotten for a time.

**ESPO**

However, not very long after that, the construction of an eastern export pipeline started: on December 31, 2004 the then Russian Prime Minister, Mikhail Fradkov, signed a resolution that cleared the way for the construction of the Eastern Siberia — Pacific Ocean (ESPO) oil pipeline along the route Taishet — Skovorodino — Perevoznaya Bay in 2005—2020.

In fact, the story of this largest Russian pipeline project to date exemplified the most significant economic and political trends characteristic of the country, including, among others, the neglect of the latest pipeline design and routing standards aimed at minimizing associated environmental risks. This “geopolitical project”, according to Vladimir Putin, was intended to open a window to the East. One of the project objectives was to exert pressure on the European countries by demonstrating that Russia has access to other prospective oil export markets.

The authors of the FEBR Strategy argued that “the newly created pipeline will ensure the projected growth of oil outputs in oil-bearing regions of Eastern Siberia and the Russian Far East, and will help reduce the dependence of Russian oil exports on transit through neighbouring countries, strengthening Russia’s role in ensuring international energy security. Successful implementation of the Eastern Pipeline investment project will be a step toward the creation of an integrated oil pipeline system allowing for prompt redistribution of westward and eastward export oil flows, depending on economic and political factors”. In fact, the authors of the Strategy recognize that the project was to a significant extent dictated by political considerations.

Initially, there were plans to construct a pipeline with a total length of 4,188 km and a tube diameter of 1,020 mm. The planned pipeline flow rate had to be 80 mtpa at the Taishet — Skovorodino section and 50 mtpa at the Skovorodino — Pacific Ocean section. The oil for the first section of the pipeline was to be moved from oil fields of Western Siberia and those fields in Eastern Siberia that had better infrastructure and were located closer to the proposed pipeline route.

The original plan, according to which the ESPO pipeline was to pass within only 800 m of Lake Baikal through a very active seismic area, sparked public protests supported by WWF, Baikal Environmental Wave, Greenpeace, and many other regional and local Russian environmental NGOs. In addition to passing in dangerous proximity to the lake, the pipeline was to cross permafrost zones, areas with complex physiographic, geological, and hydrological conditions, as well as several largest rivers of the Baikal Basin. Furthermore, the proposed route ran through a number of specially protected natural areas. Transneft’s intention to build an oil terminal at Perevoznaya Bay threatened the integrity of two nature reserves, primary habitat for the Far Eastern leopard, and could inflict irreparable damages on the fishing industry in Prymorye. T state-commissioned environmental impact assessments rejected the project twice. Some 100 thousand Rus-
sians signed a petition calling for the pipeline to be moved away from Lake Baikal.

Environmental NGOs were not opposing the project as such, but insisted on its strict compliance with Russian legislation, consistent with internationally-accepted stakeholder engagement standards and principles of fair assessment of all alternative options, with a view to ensuring that the ESPO route and the site for the Pacific oil terminal are selected with due consideration of environmental effects to minimize inevitable environmental risks. (Evgeny Shvarts, WWF)

However, Transneft managed to push its project through, pledging it would take all necessary environmental precautions. Transneft said it would be too complicated and expensive to move the pipeline northward, since in that case it would pass through uninhabited and rugged mountain areas.

Trying to ram through its proposed pipeline route, Transneft managed to secure a refusal by Konstantin Pulikovsky, the then head of Rostekhnadzor (Russia’s Federal Environmental, Engineering and Nuclear Supervision Agency), to endorse the negative review given to the project by the expert committee following the state-commissioned EIA. The committee composition was changed (in particular, experts directly involved in the pipeline design and Transneft’s activities were included), and the project was re-submitted for review as three separate projects for different pipeline sections. These actions clearly contradicted the EIA regulations in place at the time. (Evgeny Shvarts, WWF)

Semyon Vainshtok, the then President of Transneft, claimed that protests and rallies that drew thousands of people were a result of malicious intrigues on the part of either overseas “puppet masters” trying to prevent Russia from strengthening its international influence, or on the part of rival Russian businesses promoting their corporate interests. Trying to ridicule the environmentalists’ demands, he even promised to hold public hearings with all leopards living in the areas crossed by the pipeline.

The groundlessness of Mr. Vainshtok’s statements and his desire to shift responsibility for faults in the Transneft project design and implementation to “some overseas puppet masters engaged in nefarious scheming” are quite obvious, considering the fact that the construction of a pipeline with the terminal on the Pacific coast instead of Daqing is in line not only with Russia’s economic interest, but also with energy security interests of the US, Japan, and South Korea. (Evgeny Shvarts, WWF)

Finally, in April 2006, Vladimir Putin made a decision to reroute the Eastern Siberia-Pacific Ocean pipeline, moving it 400 km to the north of Lake Baikal. A few months earlier, in the winter of 2006, Rostekhnadzor ratified the negative conclusions of the EIA regarding the construction of an oil terminal at Perevoznaya Bay, proposed by Transneft. As a result, the ESPO pipeline will terminate at Kozmino Bay, as it was proposed by WWF Russia based on research carried out by the staff of the Russian Academy of Sciences’ Far Eastern Branch and other regional universities. The new route will pass in the vicinity of ten major oil fields of Yakutia and the Irkutsk region, such as Verkhnechonskoye and other reservoirs (See Annex, map “Proposed routes for the Eastern Siberia — Pacific Ocean (ESPO) oil pipeline”), whose oil will be used for filling the pipeline. The change of the route clearly benefited Surgutneftegaz, TNK-BP and other oil companies, which otherwise would have had to finance the construction of an additional pipeline connecting their fields with the main pipeline, had the originally proposed route not been rejected. Various NGOs advocating for a change in the pipeline route repeatedly noted the advantages of the “northern route” for these companies and the economy of Yakutia. Eventually, Mr. Putin bowed to collective pressure from NGOs, Russian Academy of Sciences’ Siberian Branch researchers, and environmental impact assessment experts, calling on him to change the route of the pipeline.

It has become increasingly clear that in Russia environmental concerns and risks must and will play as important a role in major, geopolitically significant infrastructure projects, as they do all across the globe. Therefore, when devising such projects it is important to proactively incorporate international best practices, standards and requirements applicable to activities of such kind. In this respect, it is worth noting that the “double optimization” of the ESPO route intended to reduce environmental risks became possible even though project investors included neither any international financial institutions, such as the European Bank for Reconstruction and Development (IBRD) and the Asian Development Bank (ADB), globally known for their high social and environmental performance standards, nor any private banks—signatories to the Equator Principles (voluntary performance standards similar to the International Financial Corporation (IFC) performance standards). (Evgeny Shvarts, WWF)

The ESPO project will be implemented in two phases:

1. The Taishet (Irkutsk region) — Skovorodino (Amur region) with a throughput of 30 mtpa and an oil terminal on the Pacific coast, which will handle oil shipped from Skovorodino by rail.

10 Oil and Capital, No. 5, 2006, p. 39.
2. Later, Transneft plans to builds a section between Skovorodino and Kozmino Bay. This section will have a throughput of 50 mtpa, which will increase the throughput of the Taishet—Skovorodino section to 80 mtpa.

Main problems associated with the ESPO

Resource base. The main problem with regard to the pipeline resource base lies in the fact that the proven oil reserves in Eastern Siberia, which are supposed to eventually replace Western Siberian fields as the main source of oil for the pipeline, are relatively low. Initially, the ESPO was used in the reverse mode, transporting oil from fields in the east to western regions. However, when the pipeline construction was completed, it was still necessary to use some oil from the fields of Western Siberia. The infrastructure connecting the pipeline to major oil fields in Eastern Siberia is still inadequate. According to some experts, if the share of Eastern Siberian oil transported via the first section of the pipeline reaches 80% of the total throughput in 2015, this will be considered a very good result.

Transneft claims that the issue of filling the ESPO pipeline has been resolved once and for all. At present, the main providers of oil transported via the pipeline are Verkhnechonskneftegaz and Surgutneftegaz. In addition, technical specifications were issued to Rosneft, TNK-BP, Irkutsk Oil Company, Slavneft, Urals Energy, and Taas-Yuryakh Neftegazodobyva. The main sources of oil for the pipeline in Eastern Siberia include such fields as Vankor, Verkhnechonskoye, and Talakan. By the end of 2010, Vankor is expected to reach a production level of 11—12 mtpa of oil. In order to create incentives for the development of hydrocarbon resources in Eastern Siberia, the Russian government established, in November of 2009, a zero export duty on oil produced at such fields as Vankor, Yurubcheno-Tokhomskoye, Talakan, Srednebotuobinskoye, Dulsiminskoye, Verkhnechonskoye, Kuyumbinskoye etc., effective since December 1, 2009. Moreover, the government is now considering expanding the list to 22 deposits. It seems, however, that Russia, seeking to enter the Chinese market, is ready to some extent sacrifice well-established relations with its traditional European partners and even, acting against its own commercial interests, use for eastern exports the fields from which it would be easier and more profitable to export oil to other markets. For example, oil from the Vankor field, located in the north the Krasnoyarsk region, could be exported to the USA by tankers along the Northeast Passage (known in Russia as the Northern Sea Route).

Competition with the Russian Railways (RZhD). RZhD has always played an important role in transporting oil and petroleum products in eastern Russia. Currently, the company is planning to expand the overall capacity of its export route to China to 30 million tpa. The outcome of the competition between RZhD and Transneft will, to a large extent, depend on the lobbying power of each of the two giants: presently, the “rail lobby” is rather powerful in Russia; in addition, the Russian government is keen to revitalize the Baikal-Amur Mainline, which could be used for oil shipments.

Tariffs. The issue of pipeline tariffs remained open for a long time. Transneft and government officials tried to come up with so-called “network tariffs” intended to equalize profitability of oil exports to different destinations — to the west and to the east. Such tariffs are expected to be introduced for all pipelines starting from 2011. In 2010, the “network tariffs will be used only for the ESPO (including both the pipeline and the railroad section running to the Pacific terminal at Kozmino). Due to an unspecified delay to the introduction of “network tariffs” for western destinations, rates for eastern destinations will be subsidized by revenue obtained from western exports. According to Nikolai Tokarev, Transneft President, if pumping rates were calculated at cost price, they would amount to $130 USD per ton. This shows just how costly the whole project is, and raises a series of questions regarding its cost effectiveness, as well as reveals political considerations behind the project. According to estimates, in 2010 Transneft may lose some $66 USD per each ton of oil moved via the ESPO, or almost $1 billion USD over the year. However, the oil pipeline monopoly will by no means incur losses, since its expenses will be offset by increased tariffs for other export destinations. Experts express concerns that tariffs established for the ESPO may prompt a 20—35% raise in oil transportation tariffs for other destinations.

As a result, on December 24, 2009, the Federal Tariff Service established the rate for oil transportation to Kozmino — 1,598 RUB per ton. This rate, combined with zero export duty on Eastern Siberian oil, creates rather favorable conditions for Rosneft — the main provider of oil for the ESPO.

Construction delays. The project was also plagued by a lengthy construction delay. Initially, the first section of the pipeline was expected to be completed by the end of 2008. However, after the route change it became obvious that it would be impossible to achieve this goal within the original timeframe, due to the project scale and complex geological conditions. Therefore, the deadline was stretched until the end of 2009. Nikolai

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12 http://www.transneft.ru/projects/project/?zpID=4248
13 http://www.transneft.ru/news/newsitem/?id=9366
15 Vedomosti, November 9, 2009.
Problems with suppliers. While the pipeline was under construction, it became clear that there would be serious problems with suppliers. Transneft had grievances from suppliers for quite a while: approximately 7.4 billion RUB. However, faulty seals in the equipment needed to provide 41 pumping units at a total cost of some 337.122 billion RUB, or some $12.5 billion USD. At the ceremony inaugurating the first phase of the pipeline, the then Prime Minister Vladimir Putin raised the total sum to 420 billion RUB (some $14.5 billion USD), including the costs of the Pacific terminal.20

Social issues. Although initially the ESPO project was expected to help tackle many socio-economic problems plaguing eastern Russia, its social significance raises doubts now. Thus, during discussions of the original pipeline project Transneft promised that some 16 thousand new jobs would be created along the pipeline route21. However, had the original route been chosen, the benefits of the pipeline to such little developed areas as Buryatia would likely be insignificant: as very few local workers had the required skill, the company would have had to bring employees from other regions.

Uncertainty regarding the pipeline offshoot running to China. Transneft waited long to get the official go-ahead to start construction of an offshoot from the ESPO running to China. The final decision depended on the outcome of negotiations regarding the price of oil that would be exported to China and particularly on whether it would be possible to raise the price of oil supplied under the existing Rosneft contract (See below). It was only when China agreed to provide loans to Rosneft and Transneft in 2009 that the final decision on the construction of the Skovorodino — Mohe offshoot with an initial throughput of 15 mtpa of oil (potentially to be expanded to 30 mtpa) was made.

Construction of additional infrastructure. In addition to the ESPO, a pipeline system intended to connect the fields of Eastern Siberia with the end-customers in China is being constructed at the moment. The 420km long Purpe — Samotlor pipeline, with the tube diameter of 1,020 mm, will become a “bridge” connecting the western and eastern parts of the national pipeline system. The pipeline will make it possible to ship up to 25 mtpa of oil from the Vankor field (delivered to Purpe via the Vankor— Purpe pipeline) to the ESPO system. The estimated project costs are put at 38 billion RUB.

Project costs. The ESPO construction costs were continuously growing. Initially, the estimated total costs of the project were put at $11.5 billion USD, including the costs of the first phase of the pipeline — $6.65 billion USD. However, after the change in the pipeline route the estimated costs of the first phase ballooned. In August of 2007, a state-commisioned assessment was conducted, which put the estimated costs 337.122 billion RUB, or some $12.5 billion USD. At the ceremony inaugurating the first phase of the pipeline, the then Prime Minister Vladimir Putin raised the total sum to 420 billion RUB (some $14.5 billion USD), including the costs of the Pacific terminal.20

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The company’s pledge to create some 16 thousand new jobs was largely based on the myth that new large-scale infrastructure should necessarily bring numerous jobs to the area. In reality, a new trunk pipeline might help generate new jobs at production sites, handling facilities (oil terminals), and at industries consuming the oil, but not along the pipeline route itself. There is even a high probability that the number of new jobs created as a result of the ESPO project will not be able to offset the pipeline-driven decrease in the number of railroad jobs in the same regions. (Evgeny Shvarts, WWF)

The FEBR Strategy states that “expansion of the regional pipeline network caused by the ESPO construction will require attracting highly-skilled employees trained at existing educational institutions”. However, the lack of skilled workforce in Russia made contractors bring workers from China (See below).

In addition, the ESPO project may further widen the already wide wealth gap between different regions in eastern Russia — for example, the new route was clearly beneficial to Yakutia, which already enjoyed a relatively high standard of living.

Environmental risks. The ESPO pipeline, which was constructed and is operated in extremely complex cli-
matic and geological conditions, poses a source of serious threats to the local environment. Transneft recognizes that “the length and complexity of the route along which the pipeline was laid — the lack of infrastructure at many sections, rock formations and sandy soils, bogs and swamps, taiga forests, permafrost zones, intense seismic activity, a large number of water bodies to cross, low winter temperatures etc. all these factors required special engineering solutions”. The company assures that “the project includes a set of engineering and environmental measures, which will mitigate or prevent adverse environmental impacts”.

However, even the most well-thought-out engineering solutions might be brought to nought by the human factor, which plays an enormous and often negative role in Russia. An interesting illustration of this is the following story, told by Nikolai Tokarev, the current President of Transneft, in his interview to a leading Russian business daily Vedomosti. Although it is clear that to some extent Mr. Tokarev’s statements were motivated by an understandable desire to criticize the approaches of his predecessor, Semyon Vainshtok, they still paint an alarming picture with regard to the environmental safety of the pipeline. “Krasnodarstroygaz” [a construction contractor] had nothing but a pen in the owner’s pocket and a door plaque. It was an off-the-shelf company, acquired just before the beginning of the project. The company received an advance payment of 7 billion RUB and then started to frantically look for someone to do the actual construction work. However, no self-respecting company, including Stroytransgaz, was willing to get subcontracted by them, since the financial terms offered by Krasnodarstroygaz were dubious and unacceptable. Therefore, the company had to subcontract cooperatives, small companies having 10—20 pieces of machinery and employing 100—200 workers, and tried to work something out with these sparse resources. Then had no other option but to bring in 2,000 Chinese workers, who did not seem to have any skills at all and had no idea how to lay pipes in the Siberian environment”.

One should also keep in mind that had Rosneft honestly complied with legal requirements to assess all alternative routes, instead of submitting for the state-commissioned EIA obviously unrealistic “mountain” and “middle” routes (See Annex, map “Proposed routes for the Eastern Siberia — Pacific Ocean (ESPO) oil pipeline”), project documentation for the ultimately chosen “northern” route would have been of a much better quality. (Evgeny Shvarts, WWF)

Rosneft

Having acquired Yukos’ main oil assets, including its eastern oil fields (the Yurubcheno—Tokhomskaya zone in the first place), Rosneft is now the leading company in the Russian oil industry and the top player in the oil sector in Russia’s eastern regions. The state-controlled oil company is also the main driver of the dialogue with China in the oil sphere.

Rosneft has had well-established and long-lasting relationships with Chinese companies. Jointly with Sinopec, it has been developing the Adaisky block in Kazakhstan. In 2003, Rosneft acquire a five-year license to explore the Veninsky block as part of the Sakhalin-3 project. In 2005, Rosneft invited Sinopec to join the project, offering it a 25.1% stake in the operating company. Sinopec committed itself to financing some stages of exploration works and subsequent development of the oil field. The oil produced at the Veninsky block will be exported to China, Japan, and South Korea.

In 2006, Rosneft-Sinopec alliance bought Udmurtneft from TNK-BP. Sinopec paid $3.5 billion USD for Udmurtneft, and then sold 51% of its shares to Rosneft. According to Gazprom, that was “a political decision” in favour of the state-controlled oil company.

In 2005, Chinese banks granted Rosneft a loan of $6 billion USD to finance the acquisition of Yuganskneftegaz. The debt had to be repaid in future oil shipments to

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22 http://www.transneft.ru/projects/project/?zpID=4248
26 http://www.rosneft.ru/Upstream/Exploration/international/aday_kazakhstan/
China: Rosneft committed itself to delivering 48.8 million tons of oil by rail by 2010.

The price terms of the deal were not favorable to Rosneft: the oil price was pegged to Brent crude with a $3 USD discount. In November of 2007, the company managed to negotiate a $0.675 USD per barrel increase in the price (i.e. the discount was reduced by $2.325 USD per barrel)\(^{29}\).

Chinese oil companies strengthened their relations with Rosneft even more, by acquiring a stake in the company. In 2006, when Rosneft held its initial public offering (IPO), CNCP bought $500 million USD billion worth of Rosneft shares\(^{30}\).

In 2006, during an official visit to China of the then Russian President, Vladimir Putin, Rosneft and CNCP signed a cooperation agreement between Russia and China. The two companies also agreed to set up joint venture for exploration and production of hydrocarbons in Russia. In mid-2006, the agreement was fulfilled and the joint venture, Vostok Energy, was established, with Rosneft owning a 51% stake in it, and CNPC a 49% stake. In August of 2007, Vostok Energy, bidding against Surgutneftegaz and Basic Element, acquired licenses to explore two relatively small fields in the Irkutsk region,\(^{31}\) located close to the ESPO\(^{32}\).

There were also plans for another joint venture, to be set up in China, for the construction of a refinery with a capacity of 15 mtpa and a network of 300—400 filling stations.

In 2008, China accounted for 16.4% of the total amount of Rosneft’s oil exports (8.9 million tons)\(^ {33}\).

Chinese companies once again came to Rosneft and Transneft’s rescue at the height of the financial crisis, when oil prices were plummeting, oil companies were facing severe financial difficulties, and the future of the ESPO seemed uncertain. After lengthy and difficult negotiations, the Russian Deputy Prime Minister Igor Sechin managed to secure a $25 billion USD loan, and an agreement to construct an offshoot from the ESPO to China was initialled.

The deal was officially announced by Igor Sechin, head of the Russian delegation on a visit to Beijing: “During 20 years Russia will annually supply 15 million tons of oil to China under a loan scheme on terms acceptable to both parties”. Four documents were signed: two long-term loan agreements between the Russian companies and the China Development Bank (CDB) worth a total of $25 billion USD (Rosneft — $15 billion, Transneft — $10 billion), a 20-year long contract between CNPC and Rosneft for oil exports to China, and an agreement between CNPC and Transneft to construct a jointly operated pipeline connecting Skovorodino and Moho, an offshoot from the ESPO to China. The oil price will now be determined on a different basis than it was provided for by loan agreements with regard to the Yuganskneftegaz acquisition: it will be determined monthly on the basis of Argus and Platts assessments at Kozmino terminal. Receiving a loan from China on a scale unprecedented in the Russian history could be considered good news, if only these funds were spent efficiently, meeting the real needs of the Russian oil industry, such as geological exploration and development of new oil fields in eastern Russia, or construction of oil infrastructure facilities across the country. In fact, Transneft will use the loan mainly to construct the offshoot from the ESPO to China, while Rosneft does not disclose what it intends to do with the funds. Analysts believe that a significant portion of the loan will be used to repay the company’s debts resulting from its aggressive acquisition of Yukos assets and, probably, to enter China’s downstream markets\(^ {34}\).

These loans raise a number of other questions: to what extent environmental requirements and performance standards will be complied with within the framework of Russian-Chinese oil dialogue, and whether these initiatives will contribute to sustainable development? To a significant extent, these concerns stem from the fact that the China Development Bank is not a signatory to the Equator Principles, according to which financial institutions assume commitments with regard to environmental and social performance of the projects financed by them, particularly those implemented in emerging markets, including Russia.

Transneft is going to purchase oil from Rosneft to export it to China: the oil transport monopoly will supply 6 mtpa of oil to China (although according to the Russian Law on Natural Monopolies, only oil producing companies are allowed to export oil), while Rosneft itself will supply 9 mtpa. Rosneft and Transneft will hold exclusive rights to access the future offshoot to China for 20 years. This automatically gives the state-controlled companies an advantage over their private competitors operating in eastern Russia, since they will have to use lengthier and much more expensive export routes.

\(^{29}\) In February of 2008, Rosneft wanted to negotiate an additional price increase, but the negotiations were very difficult due to strong resistance of the Chinese side (Vedomosti, April 11, 2008).

\(^{30}\) Neftegazovaya Vertikal, No. 13, 2006.

\(^{31}\) The two fields are the Verkhneichersky area with D1 category reserves of 50 million tons of oil and 90 bcm of gas, and the Zapadno-Choinsky area with D1 category reserves of 30 million tons of oil and 15 bcm of gas.

\(^{32}\) Vedomosti, August 1, 2007.

\(^{33}\) http://www.rosneft.ru/Downstream/gas_condensate_exports/

\(^{34}\) Oil and Capital, No.3, 2009, p. 44.
In addition, Rosneft has been actively strengthening its positions in the oil refining sector in eastern Russia. In particular, it has embarked on a large-scale overhaul of the Komsomolsk Refinery, one of the oldest refineries in Russia (its construction started in 1938, and it was put into operation in 1942). The project scheduled for completion in 2013 is aimed at:

- expanding the refinery capacity to 8 mpta;
- increasing the refining depth to 95%;
- launching the production of Euro-4 and Euro-5 compliant petroleum products;
- introducing state-of-the-art process control and management systems meeting modern industrial safety and environmental standards;
- ensuring flexible adjustment of the amount and mix of petroleum products depending on market trends and seasonal demand fluctuations.

In 2006, the refinery completed revamping its hydrotreating unit, which enabled Komsomolsk to start producing Euro-5 compliant diesel fuel. Currently, works are underway to construct a hydrotreating unit with the capacity of 1.7 mtpa, which will enable the refinery to increase the refining depth to 95% and expand production of Euro-4 and Euro-5 compliant petroleum products. Following the adoption of the Technical Regulation “On Requirements for Automotive and Aviation Gasoline, Diesel and Marine Fuel, Jet Fuel, and Heating Oil”, introduced by the Russian government in 2008, the refinery started to revamp its catalytic reforming unit in order to make it capable of producing Euro-4 compliant gasoline. If the refinery overhaul, if implemented in full accordance with the original plan, will help improve the quality of life and environment both in this particular region and in the whole country.

In addition, in line with the strategic goal to shift from exports of crude oil to exports of petroleum products set by the Russian government, Rosneft intended to build a new refinery at the terminus of the ESPO pipeline by 2012, its planned capacity expected to be 20 mtpa, and refining depth — 93%*. The refinery was supposed to produce Euro-4 and Euro-5 compliant gasoline and diesel fuel, with 95% of the output exported to China and other destinations, and 5% consumed in the Primorye region. However, against the backdrop of the global economic crisis and a noticeable decline in demand for petroleum products, as well as the excess refining capacity in the Asia-Pacific region, particularly in Japan, the project appears practically unfeasible. Currently, Rosneft’s official website contains the following, rather oblique statement: “…The company is considering the possibility of constructing a new refinery in the Russian Far East at the terminus of the Eastern Siberia — Pacific Ocean oil pipeline”.

At present, Rosneft is facing certain problems getting a firm foothold in the downstream sector in China. The company expected to sign, in the fall of 2009, an agreement on construction principles for a 15-mtpa refinery in the Chinese province of Tianjin, which had been a subject of negotiations with CNPC since 2006. The feasibility study for the refinery was completed and necessary permits and approvals from the Russian authorities obtained, but conclusions of China’s state-commissioned EIA are still missing.

In addition, project stakeholders still cannot agree on how the refinery will be financed. According to the initial plan, the joint venture of Rosneft and CNPC was expected to provide 35% of the needed funds, while Chinese banks were supposed to provide the rest. Presently, China proposes to increase the contribution of the joint venture. The future refinery capacity and sources of feedstock remain the subject of ongoing discussions. Finally, China is not satisfied with the progress of the joint oil production project in Russia: the license portfolio of Vostok Energy still comprises only two development licenses for small fields in the Irkutsk region.

At the same time, China is getting prepared to receive and process additional amounts of oil from Russia. On July 9, 2009, Liaoyang Petrochemical Company launched the construction of China’s first refinery specially designed to process Russian crude oil, with a capacity of 10 mtpa. The refinery is expected to become operational at the end of 2010. The refinery will operate a hydrocracking unit with a capacity of 1 mtpa and a hydrotreating unit with a capacity of 2 mtpa. In addition to Beijing-standard diesel fuel, the refinery will produce naphtha and other feedstocks for the petrochemical industry.

Gas industry

**TNK-BP**

In addition to Yukos, another private Russian oil company active in the country’s eastern regions was TNK-BP, the majority shareholder of RUSIA Petroleum, a company which held the license to develop the huge Kovykta gas condensate field in the Irkutsk region. Initially, there were plans to use Kovykta gas to improve gas supply to the region, as well as export it, mainly to 35 http://www.rosneft.ru/Downstream/refining/Refineries/Komsomolsk_Refinery/
36 http://www.rosneft.ru/Downstream/refining/
37 http://www.rosneft.ru/Downstream/refining/
38 Vedomosti, October 12, 2009.
China. Negotiations with China and South Korea on developing of the field began in December of 1997. Then the project was mainly viewed as export-oriented. However, the actual field development was hampered by a lack of accord between numerous shareholders of RUSIA Petroleum.

A further problem was posed by Gazprom, which had little interest in the success of the Kovykta project and came up with an unexpected proposal to export gas from the Yamal Peninsula to China. The Chinese side considered this idea unrealistic due to a tremendous length of the proposed pipeline.

Finally, project stakeholders had serious disagreements regarding gas prices, and tough negotiations with China on this issue continued for several years.

After TNK-BP was launched in 2003, the new company became the majority shareholder of RUSIA Petroleum holding a 62.89% stake. When BP became a shareholder, exports to China and South Korea became the company’s top priority, overtaking such objectives as improving gas supply to the region.

In November of 2003, RUSIA Petroleum, CNPC, and Kogas, supported by the respective national governments, signed a trilateral agreement to prepare an international feasibility study of the project.

They assumed that 4 bcm/year of natural gas would be consumed within the region, while 30 bcm/year would be exported to China and South Korea — 20 bcm/year and 10 bcm/year respectively. Gas was to be supplied to foreign consumers via a 4,500km long pipeline running from the field to Northeast China and then to South Korean markets and Bohai Bay in North China.

The price of gas at the border was supposed to be $100 USD per 1,000 cubic meters. The total costs of the project were estimated at $15—20 billion USD. The project was expected to be approved by the governments of the three countries in March of 2004. However, the project stalled due to an intervention of Gazprom, the national gas monopoly, which aggressively defended the principle of a single integrated gas export channel and criticized RUSIA’s plans to export the lion’s share of gas produced.

According to the licensing agreement, the commercial development of the field was to begin in late 2006, while gas exports from Kovykta were to start in 2008. Without constructing an export pipeline (made impossible by the Gazprom’s stance), it was impossible to reach the planned production level. That meant that RUSIA Petroleum failed to comply with the licensing agreement, and starting in 2003 the Ministry of Natural Resources repeatedly threatened to revoke its license.

After the protracted clashes of interests were over, the fate of Kovykta was finally decided in 2007, when TNK-BP agreed to sell its share in the project to Gazprom. However, the two companies failed to agree on the price, and the negotiations lingered on until they “went into a deep freeze” due to the global crisis. In addition, in April of 2008, Gazprom acquired a license to develop the Chayanda field in Yakutia, which made the need to acquire Kovykta less pressing. Gazprom and the Russian Ministry of Energy estimate that gas production at Kovykta will commence only sometime between 2017 and 2022.

Over the 1990s, Gazprom showed no significant interest in Russia’s eastern regions. During that decade, the company was very busy trying to prevent a decline in gas production, ensuring stable exports to Europe, dealing with arrears, counteracting attempts to break the company into several entities etc. However, in the new century the company’s interest in eastern Russia resumed, and Gazprom started to actively promote its own vision of the regional development.

In 2002, the Russian government designated Gazprom as coordinator of the state gas policy in Russia’s eastern regions. That same year, Gazprom and the Ministry of Energy were tasked with devising a Program for an Integrated Gas Production, Transportation and Supply System in Eastern Siberia and the Russian Far East, Taking into Account Potential Gas Exports to China and other Asia-Pacific Countries (Eastern Gas Program) (the so-called Eastern Gas Program”).

In fact, the Gazprom’s Eastern Gas Program was completed only in 2007. In June of 2007, the then Prime Minister, Mikhail Fradkov, approved the Program, which then was formally endorsed by the Ministry of Industry and Energy in September of the same year. According to the Program, natural gas production levels in eastern Russia should reach 27 bcm in 2010, 85 bcm in 2015, 150 bcm in 2020, and 162 bcm in 2030.

The Eastern Gas Program provides for the development of gas production centres in the Krasnoyarsk, Irkutsk, Sakhalin and Kamchatka regions, as well as in the Republic of Sakha (Yakutia). It is expected that, simultaneously with the development of gas fields and an integrated gas transportation system, gas processing and gas chemical industries will be built, including liquefied natural gas (LNG) and helium production plants.

Over recent years, Gazprom has significantly expanded its resource base in eastern Russia, transforming from a virtual player carrying out a number of important polit-

40 Neftegazovaya Vertikal, No.18, 2005, pp. 92—94.
41 Oil and Capital, No. 8, 2008, p. 150.
42 Vedomosti, April 20, 2010.
ical tasks but having no actual production projects, into one of the most powerful actors in the region. To name but a few of the company’s achievements: Gazprom acquired Sibneft, which held prospective assets in eastern Russia; using environmental firepower”, became the majority shareholder of the Sakhalin-2 project; reached an agreement with TNK-BP regarding the Kovykt field; squeezed Rosneft out of the West Kamchatka shelf; acquired, without an auction, the Chayanda field in Yakutia, as well as the Ayashsky and East Odoptinsky blocks of the Sakhalin-3 projects. In the summer of 2009, Gazprom updated its forecasts regarding gas production at the Chayanda field, saying it would not be sufficient for ensuring the “optimal load” of the Yakutia — Khabarovsk — Vladivostok pipeline, via which the eastern gas will be transported to the Asia-Pacific regions. The company believes it needs four more licenses in Yakutia.

In 2009, the construction of the Khabarovsk — Vladivostok section of the Sakhalin — Khabarovsk — Vladivostok gas transportation system was commenced. The project is slated for completion in late 2011. The monopoly will use the pipeline to export gas to South Korea and China. The first phase of the system will consist of a 1,350 km long pipe with a capacity of 6 bcm per year. Once the whole system is constructed, it will transport as much as 30 bcm of gas from Sakhalin annually. According to Gazprom, the project will help both meet the growing demand for gas in the Russian Far East and create additional facilities for gas exports to the Asia-Pacific countries.

Gazprom also has attempted to establish control over gas exports from the Sakhalin-1 project, in particular, intending to use its Sakhalin — Khabarovsk — Vladivostok pipeline for exporting the gas. Although Rosneft, the state-controlled oil powerhouse, also participates in Sakhalin-1, the company faces problems stemming from Gazprom’s intention to preserve the single integrated export channel.

Rosneft, which has the right to export gas from Sakhalin-1 independently from Gazprom since the project is implemented under PSA terms, is considering various export markets, including China, Japan, and South Korea.

However, Gazprom has a vital interest in Sakhalin-1 gas. Though the Law on Gas Export, adopted in July of 2006, strengthened Gazprom’s position as the exclusive gas exporter, the company has not yet been able to become a leading player in the Russian Far East. Therefore, when Exxon Neftegas signed, in October of 2006, a preliminary agreement with CNPC to construct a 900km pipeline running from Sakhalin to Northeast China with a throughput of 8 bcm/year, Gazprom strongly opposed the plan.

In the summer of 2007, Alexander Ananenkov, deputy chairman of Gazprom, declared that gas from Sakhalin-1 had to be delivered to the domestic market, estimating the demand of four regions of the Russian Far East at 15 bcm per year. “We consider it necessary to adopt a directive ordering sales of Sakhalin-1 gas to Gazprom with the aim of improving gas supply to Russian regions, instead of exporting it, as ExxonMobil wants,” he stated unambiguously.

The desire to control all gas produced at Sakhalin-1 is not so much driven by Gazprom’s care for Russian regions, as by the monopoly’s intention to export gas to China itself. Gazprom does not need any competition from ExxonMobil, since the agreement with participants in the Sakhalin-1 project gives Chinese companies more leverage in their negotiations with Gazprom.

Over recent years, relations between Gazprom and China have expanded rapidly. First, a strategic cooperation agreement between Gazprom and CNPC was signed on October 14, 2004.

Then, during the March 2006 official visit of Vladimir Putin to, leaders of Gazprom and CNPC signed the Protocol on natural gas supplies from Russia to China. At that time it was expected that shipments would start in 2011, and in the future China would import up to 68 bcm of gas from Russia.

The 2006 agreement was an important step forward in implementing Russia’s plans to diversify its gas export markets, which until recently had been focused only on Europe; it was also in line with the Russia’s general desire to establish closer ties with countries of Northeast Asia. However, it was unclear whether Gazprom would have enough gas to meet its long-term export commitments to European customers and satisfy the growing domestic demand, while at the same time ensuring gas supply to new customers in China.

Gazprom intended to transport gas to China via two pipelines: the western one (the “Altai” project); and the eastern one — the gas was supposed to be delivered to Harbin via an offshoot of the Sakhalin — Khabarovsk — Vladivostok pipeline.

Plans were to transport some 30 bcm per year via the future “Altai” pipeline. The main advantage of this route was a relatively short distance from the end-consumer (China is much closer to Russia than Europe) with no transit countries involved.

During the first phase of the project of the project, plans were in the works to build a new 2,800km long pipeline

\footnotesize{\bibitem{OCA} Oil and Capital, No. 7-8, 2009, pp. 17—18.
\bibitem{Gazprom} http://www.gazprom.ru/production/projects/east-program/
\bibitem{Vedomosti} Vedomosti, June 20, 2007.}
with a tube diameter of 1,420 mm running from Western Siberia within the existing Urengoi—Surgut—Chelyabinsk transportation corridor. Later the pipeline was supposed to be extended further, passing through the Tomsk and Altai regions until it reached China. The new “Altai” pipeline had to connect the fields of Western Siberia to the Xinjiang Uyghur Autonomous Region in western China. There it was supposed to connect to the Chinese West—East pipeline delivering gas to Shanghai46.

The “Altai” pipeline was to be operated using resources of the Nadym–Pur–Taz region, which could turn out to be insufficient for filling the pipeline, since production at major fields of Gazprom was declining. The “Altai” project, as it was envisioned by the 2006 agreement, wasn’t implemented due to disagreement over prices with China, but it was still able to play an important political role, demonstrating to Europe that Russia was ready to shift its gas exports to the east47.

Victor Khristenko, the then minister of industry and energy, recognized that price was the key issue during Gazprom’s negotiations with China. “We still have not reached mutual understanding, and it is impossible to build a pipeline to China, since a decision on the pipeline construction can only be based on long-term gas supply contracts”48. Alexander Medvedev, Gazpromexport President, noted in this regard: “the negotiations are difficult; the Chinese are skilful negotiators, as known to everyone who has dealt with them, whatever was discussed”49. Gazprom wanted gas prices to be linked to market prices for oil and petroleum products in the Asia-Pacific region, while China preferred a scheme linking gas prices to the prices of cheap local coal abundant in the country.

On October 13, 2009, during an official visit to China of the Russian Prime Minister Vladimir Putin, Gazprom and CNPC signed a Framework Agreement on Basic Terms and Conditions for Natural Gas Supply from Russia to China. The agreement mentions the same two pipelines (the “Altai” and the “Eastern Route”), whose construction has not yet been started49. It is clear that it will not be possible to start shipments in 2011, as envisioned by the 2006 agreement.

According to Vladimir Putin, the western route (i.e. the “Altai” pipeline) could be implemented very soon, since both the necessary resource base in Western Siberia and the required infrastructure are available. Shipments via the route are scheduled to start in 2015, initially transporting 10—15 bcm per year. As for the Eastern Pipeline, which will be laid within the same corridor as the existing Sakhalin — Khabarovsky — Vladivostok pipeline, it will be commissioned no sooner than 2017, and will supply gas from the fields of Sakhalin and Eastern Siberia, including Kovyktka and Chayanda50.

On December 22—27, 2009, the Russian delegation to China headed by Alexander Medvedev, Deputy Chairman of Gazprom and Gazpromexport President, conducted another round of commercial negotiations regarding the exports of Russian gas to China via both the western and the eastern routes. As a result of the negotiations, Gazpromexport and CNPC signed an agreement determining basic economic and engineering conditions of Russian gas shipments to Chinese customers51. Obviously, the parties were able to reach some agreement regarding the prices, in particular, linking them to the cost of the oil products basket in Japan.

There is also a serious environmental conflict regarding the route of the “Altai” trunk pipeline, which according to plans, cross the Golden Mountains of Altai, a UNESCO World Heritage Site. WWF Russia and regional environmental NGOs propose an alternative route, which follows the old Chuya Road and passes through Mongolia before entering China. This route would allow bypassing the World Heritage Site, laying the pipeline within the existing well-developed corridor with all necessary infrastructure (see Annex, map “Alternative route for the ‘Altai’ pipeline system proposed by NGOs”).

In any way, Russian gas in China will have to compete with both Chinese coal and imported liquefied natural gas (LNG). Currently, China is constructing a number of LNG import terminals on its east coast; in 2009, the first shipment of LNG from the Sakhalin-2 project was purchased52.

Gazprom has lost time negotiating with China. Even if the pipelines are commissioned within the new agreed timeframes, Turkmenistan has been able to enter the Chinese market ahead of Gazprom. On December 14, 2009, the Central Asia — China pipeline with a capacity of 30—40 bcm per year was inaugurated. The pipeline starts at the border of Turkmenistan and Uzbekistan, crosses Uzbekistan and Kazakhstan, and

46 http://www.gazprom.ru/production/projects/pipelines/altai/
47 Oil and Capital, No. 12, 2006.
48 Vedomosti, April 28, 2008.
51 Oil and Capital, 2009, 11.
then enters China’s Xinjiang Uyghur Autonomous Region, where it connects to the West—East pipeline. As seen from the above-mentioned examples, the energy dialogue between Russia and China has been progressing rapidly, with the key drivers of this dialogue in Russia being major state-controlled corporations, including Gazprom, Rosneft, and Transneft. It is obvious that the diversification of export markets for Russia’s hydrocarbon resources will help strengthen the energy security of the country. At the same time, it has become increasingly clear that this process is driven not only by commercial considerations, but also by political ones. A whole range of new uncertainties and risks have been emerging, in particular, in Russia’s relations with its traditional energy partners — European countries. The situation is further aggravated by the effects of the global economic crisis: given the declining energy demand, overproduction of hydrocarbon resources, development of alternative energy sources, and improving energy efficiency in the world’s leading economies, the developed countries need Russia’s energy resources much less than earlier. At the same time, Russia will face different “rules of the game” in the new Chinese market, to which it has not yet got accustomed, as well as a fierce competition from other suppliers, including national companies of Middle East countries, which gained a foothold in China long ago, and Turkmenistan, which commissioned a gas pipeline to China in late 2009.

Conclusions

Whatever great prospects they highlight, the Strategy for Socio-Economic Development of the Far East and Baikal Region through 2025 and the Program for Cooperation between the Regions of the Russian Far East and Eastern Siberia and Northeast China for the period between 2009 and 2018 should be taken with a pinch of salt—many strategies and targeted programmes adopted in Russia in recent years remained on paper. Chances of full, effective, and timely implementation of a full-fledged development strategy for such a complex region, where different interests of diverse players interact and often collide, seems to be slim. The Russian–Chinese cooperation is also influenced by a broad range of external and internal factors, whose impacts are sometimes difficult to predict. In particular, the oil and gas dialogue between Russia and China shows that the parties have difficulties finding a common ground on the whole range of issues.

Of course, neither WWF Russia nor other environmental NGOs advocate for “energy containment” of China’s economic development. However, with the Sino-Russian land border being one of the longest borders in the world, environmentalists call for a serious and well-balanced approach to selecting construction projects and export routes for oil and gas, such as the ESPO pipeline route and its terminal site, and the “Altai” pipeline. Such decisions should take into account environmental risks and constraints, as well as economic and geopolitical interests of the country. (Evgeny Shvarts, WWF)

The main players in the oil and gas sector in eastern Russia — Gazprom, Rosneft and Transneft — are actively developing relations with China. This means that in order to achieve measurable improvements in FEBR environmental quality and ensure sustainable cooperation between Russia and China, priority efforts should be focused on raising environmental responsibility and environmental performance of these companies, which — as a recent research conducted by WWF revealed — have low environmental transparency. In this regard, there are concerns that environmental priorities could be sacrificed in favour of strengthening competitive positions of Russian oil and gas companies in the Chinese market (where the level of environmental responsibility is still lower than, for example, in Europe, currently Russia’s main oil and gas partner). Particularly strict oversight of the construction of the second phase of the ESPO pipeline (taking into account the bitter experience of the first phase) and Gazprom’s pipeline systems by government authorities, NGOs, and the general public is required.

It is necessary to ensure strict environmental compliance of oil and gas exploration and production activities, carried out within this environmentally vulnerable region. This is particularly important with regard to activities of joint ventures and joint projects with Chinese partners (in the Irkutsk region and Chukchi Autonomous Area).

Modernization of refineries in eastern Russia and transition to production of Euro-4 and Euro-5 compliant petroleum products will help improve the environmental quality not only in the FEBR region, but all over the country as well all across. Therefore, it is necessary to introduce more stringent state standards with regard to the quality of petroleum products and ensure compliance of Rosneft, the largest player in the regional oil refining sector, with these standards.

Improved access of regional households and industries to gas supply, as well as further development of the gas and chemical industry, making it possible to eliminate

flaring of associated petroleum gas — all these will significantly improve the environmental quality and standard of living in the Russian Far East and Baikal Region. Further development of petrochemical, gas and chemical and LNG industries will also reduce the risks of the region becoming a “resource appendage” to China. Therefore, the Russian government should pay special attention to creating a set of incentives to drive the development of these industries in the region.

Since Rosneft and Transneft received large loans from Chinese banks, China’s transition to green practices in its financial sector by, inter alia, adhering to the Equator Principles is becoming particularly important. Green financial practices are currently promoted on the basis of a joint agreement between the Ministry of Environmental Protection of China and the International Finance Corporation (IFC) with the active involvement of WWF China.

The FEBR Strategy rightly notes that “construction of future oil refineries and gas processing plants, modernization of resource production and processing facilities, increase in these facilities’ processing depth, reduction in their energy intensity and improvement of their environmental performance will largely rely on foreign technology and depend on foreign investment, but will be implemented in full compliance with strategic interests of the Russian Federation”. In this regard, it is necessary to ensure that politics doesn’t get in the way when it comes to adopting the latest foreign technology and attracting environmentally responsible foreign investors.

2.3. Analysis of the prospects of Russian Far East and North-western Chinese economic transboundary cooperation within the power industry

Tatsenko, K.V.

The activation of economic cooperation between two countries in the area of power industry require considering essential factors that determine the sustainability of ecological, scientific-technical and economical cooperation between Russia and China within this specific sector.

Let us recall that on March 3, 2005 during the course of bilateral consultations on the promotion of the project of the Russian-Chinese Business Council (RCBC) on a “Russian-Chinese Energy Bridge”, a memorandum on cooperation between RAO “UES of Russia” and the State Grid Corporation of China has been signed in Peking. In this memorandum, it was documented that the demand from the Chinese side amounts to 20 bln kWh per year. On July 1, 2005 these same two companies signed an Agreement on long-time cooperation to attract financial resources for the construction of power engineering projects and the development of network infrastructure enabling an increased power capacity and supply between the two states\(^1\). Within the framework of this project, Russia was supposed to export 3,6 — 4,3 bln kWh to China, already from 2008 — 2010, and starting from 2015, up to 60 bln kWh of electric power every year.

However, in July 2008 RAO “UES of Russia” under the leadership of A. Chubais, has ceased to exist. The role of managing the energy network in the RFE was given over to the Ministry of Energy that was lead by another director. Resulting from further discussions on the cooperation between the two countries concerning the export of energy, on February 1, 2007 the comparably low energy supply to China from the territory of the RFE that had been carried out by two aerial circuits for 15 years under a border cooperation agreement, has been terminated. Officially, this happened due to a lack of consensus regarding the tariffs. We will try to analyze the current situation and display factors that lead to the development of the situation, keeping in mind that taking an impartial assessment in examining this problem consists in the following:

\(^1\) Information service on the activities of the Russian part of the Russian-Chinese Business Council from 2004-2006 (http://www.rcbc.ru/about/)
1. The study of cooperation within the power industry in adjacent territories started in 1998. Then it was prolonged under the patronage of RAO “UES of Russia”. The study conducted by L.A. Melentyev Power Systems Institute of the Russian Academy of Sciences (MPSI RAS, Irkutsk), the leader in the development of energy projects in the Far East and Eastern Siberia, was a part of the research project aimed at creating trans-national power unions (TNPU) in South East Asia (SEA). It was announced that this study has been conducted to meet the international trend of integrating different countries' power industries. The following institutions have contributed to the study: the IEIE RAS (Novosibirsk) and the ERI FED RAS (Khabarovsk), institutes and universities of the corresponding specialization, the Fuel and Power Ministry of the Russian Federation, RAO “UES of Russia”, stakeholder companies, RAO “Gazprom” and also local and regional governments adjacent to the PRC, DPRK, Mongolia, Republic of Korea and Japan. Specialists from these countries have taken part in cooperation talks.

2. Results of these studies have been discussed on yearly conferences, financed by “Irkutskenergo”, RAO “UES of Russia”, RAO “Gazprom”, Fuel and Power Ministry of the Russian Federation, the British Petroleum Company. The results of these discussions have been published in official collections of articles that have become one of the main source of information for the current study. (Collection of articles of MPSI RAS).

In a multitude of articles and research papers on cooperation within the power industry between Russia and the PRC, Mongolia, DPRK, Republic of Korea and Japan and on the possibility and practicability of creating a single trans-national power union in South-East Asia, as well as on local unions between Russia and China, we will limit our study to examine the cooperation between the latter.

The motives and cases for the possibility and need of creating a TNPU “Russia-China” mentioned in various projects are the following:

1) the need for increased reliability of the energy supply through uniting the power systems of the adjacent nations;
2) energy saving through diversification of peak loads according to the different time zones;
3) creating mutual complimentary economies;
4) the availability of power surplus in Siberia and the Russian Far East;
5) the possibility of building export-oriented nuclear, thermal and hydroelectrical power-plants on Russian territory.

We’d like to note that this discourse around cooperation possibilities appeared only as a result decline in production on Russian territory. If some reserves existed for generating electricity in Eastern Siberia at the beginning of the 1990s, there weren’t any in the Far East. At that time, enterprises in the South of Primorsky Krai had to work in three shifts to use the nightly decrease in energy consumption.

This is why in all initial projects for creating a TNPU, it was mainly suggested that the power supply from Russia would not be carried out from the RFE but from Eastern Siberia. For this, several alternatives for constructing lines of electric power transmission to connect Russian and Chinese power systems were proposed. That said, the potential of Siberian power reserves was estimated higher than in the Far East. In 1997, in the context of a decreasing industrial output the power surpluses in interconnected electrical systems (IES) in Siberia were estimated at 7—8 GW, and up to 25—28 bln kWh of electrical power. The exporting capabilities were estimated at 2—3 GW and 10—18 bln kWh in electrical power per year, considering transfer over the distance of 2600—2800 km.

The main sources for generating IES in the East are situated at a closer distance of around 700—1000 km from the main Chinese consumers. But as opposed to the “IES Siberia”, the “IES East” was not regarded as a redundant system, but as a scarce one. So, again, this is the reason why exporting electricity from the RFE became possible only in the context of a decreased production output in the RFE which was more substantial than in Siberia.

The idea of exporting power was implemented in 1992 through the organization of power transmission over buslines at the shores of the Amur river, from the Blagoveshchensk combined heat and power plant by high-voltage electric power transmission (overhead transmission) from Blagoveshchensk to Heihe with an outstretch of 3 km (1992) and by overhead transmission from Sivaki — Kuznecovo to Shipachzhan with an outstretch of 160 km (1997). Operational voltage was 110 kW. The total volume of power exported to China amounted to 140—150 bln kWh from 1994—1996, and 60 bln kWh in 1997. From 1992 to 1997 a total of 400—500 bln kWh of power were exported to China.

Transportation costs and losses in the network impose objective limitations on the possibility of exporting power from the IES Siberia. Perhaps that it is the reason why electricity sales from Siberia and the Trans-Baikal region to China via Mongolia had not been

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2 For more details, see: Beljaev L. S., Voropaj N. I., Koweev L. A. Perspektivy razvitija mezhgosudarstvennyh jenergoob'edinenij na evrazijskom superkontinen // RAS News - Power, 2000, N 2, pp.27—35.
organized until February 1, 2007. In addition, unlike the Russian Far East (RFE), Mongolia and Northeast China (NEC) have rich deposits of coal and oil, sufficient for the construction of thermal power plants (TPP) near the main consumers which reduces transfer losses. These plants can easily constitute serious competition for Russian energy export and thus lowering of prices.

Until 2007, the interaction between adjacent territories of Russia and China in the field of power industry constituted only the unilateral power supply from Amur Oblast to local consumers in Heihe and Shipachzhan settlements in Chinese Heilongjiang province. Initially, power supply to China was carried out on terms of border trade. Mutual payments were accomplished through barter and poorly monitored from the Russian side which allowed the company DalMES (ДальМЭС) (Khabarovsk) to add to create chain stores selling imported goods, which does not fit their company profile. Starting from 2001, the power supply has been carried out through the international branch of “RAO UES of Russia”.

The estimated increase in exports was planned to be accomplished by the capacities of the new power generating Bureyskaya HPP. After the launch of its first units in 2003, the power systems of Siberia and RFE due to small, random and multidirectional flows were separated in order to improve their effectiveness. (This eliminated the need to maintain a single frequency and reduced losses of electricity.)

Thus, 15 years after the beginning of power supply to China incentives for the creation of a TNPU “in order to enhance the stable operation of Russian power systems” has still not been justified.

In this context, it is necessary to state the following:

- Estimated costs on the Russian side for the construction of connecting lines between the Russian and Chinese power systems do not correspond to the original incentive: the need for interconnecting power systems between the two countries in order to improve the reliability of Russian power systems does not correspond with reality.

- Existing and planned transportation systems imply the transmission of electricity in one direction only: from Russia to China. Electricity export in the opposite direction according to the current projects is not provided.

- Russian electricity is delivered only to a selected number of Chinese industrial enterprises with unknown ownership.

- Instead of using the energy efficient IES Siberia for the power exports to China, the energy deficient IES East is used. But since this export is only possible until restoration of the production output in the Russian Far East, the exporters of electricity, bearing costs of facilities construction aren’t interested in a rapid growth of electricity consumption in the RFE.

- This is proved by the fact that for more than 15 years Russian electricity was supplied to China at prices 3—4 times lower than the tariffs in force on the territory of the Russian Far East. This energy export at prices lower than on the Russian internal market made RFE companies uncompetitive compared to the Chinese ones.

- In addition the “RAO UES of Russia” went for a disproportionate to the production costs increase in tariffs in order to “help” the local and regional governments (LRGs) of the RFE that found themselves unable to restore industrial production output and to create the necessary taxable base. Furthermore, “RAO UES of Russia” provided local and regional governments with an income by collecting additional fees from utility consumers. Due to the structure of the LRGs’ budget where the fees collected from population account for more than 2/3 of tax income, the main financial burden was placed on the population of the RFE, prompting many people to leave to Western parts of the country.

- At the same time, in order to preserve the possibility of exporting electricity from the energy deficient Eastern IES, exporters urge the government to invest into the construction of hydroelectric power plants while such an investment doesn’t correspond to the region’s needs.

Another explanation for the decreasing capacity of power plants is probably in the need to extend the lifetime of the equipment in absence of the possibility to replace broken units. After USSR ceased to exist their production was terminated. The power breakdown in Petropavlovsk-Kamchatsky during the winter of 2007/2008 is an example of this feature which determines the current state of the power industry in the RFE. Due to the absence of a suitable transformer to

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3 For more details, see: Tatcenko K. V. Nekotorye voprosy obespechenija jelektrojenergiej Dal’nego Vostoka Rossii, Vladivostok, 2001.
4 Ibid.
6 Only few people know that this is the path the Molokans went, to whom Russia owes the development of agriculture in the Far East. In 1906, they received a medal of the Paris World Exhibition for the most highly mechanized agricultural production in the world. The houses of ordinary people (not even members of the administration) in the now existing village of Tambovka (Amur region) already had electricity, which cost an individual home ownership a haystack in a year. Molokans in Canada and the U.S. envied the living conditions of their Amur peasant co-religionists.
replace the burned one spare parts could be found only in Italy, and had then they were urgently delivered Kamchatka by emergency aviation.

The history of the Russian Far East shows that due to the lack of population the only option for the region's development is the development of highly automated production in both industry and agriculture. This suggests an intensive electricity consumption.

Given the scale of construction and the development of sea ports in the RFE (for example, a coal terminal in Vanino and an oil terminal in Kozmino), as well as the new pipeline to Skovorodino in the Amur region and further to the Sea of Japan, the development of the gas pipeline and other facilities on the eve of the APEC Forum in Primorsky Krai, the development of new mineral deposits and processing facilities — the power consumption in the IES East should increase dramatically in the nearest future.

However, despite the urgent need for construction of the overhead transmission line VL-500 to Vladivostok and Nakhodka — the main consumers in Primorsky Krai — possibly using the allocated money for its construction and instead of it, in 2006—2007, RAO “UES of Russia” has been constructing the similar in length to the other overhead transmission line 500 in the Amur region, but designed to export electricity to the “Sirius” company in the PRC. There were no plans for the construction of this line by RAO “UES of Russia”.

To compensate for the loss of generating capacity resulting from the supply of electricity to China (and to preserve the possibility of exports) exporters associated with RAO “UES of Russia” offered the Russian government to build the Nizhnebureyskaya HPP with 321—428 mW in the RFE, i.e. the amount of power that is needed to secure their sales to China. Thus, the increased power supply to China, planned by RAO “UES of Russia” urges the Russian side to plan the construction of yet another HPP. In this case, the original incentives of the parties are not taken into consideration anymore.

In general, the construction of two hydroelectric power plants led to a breach of the geotechnical stability of the region and the environment deterioration in the RFE. Amongst the local population that traditionally settled along the rivers there are migratory trends on the rise. To cure the situation, it is necessary to clear the flooding zone from vegetation and to stop further deterioration of living conditions in the region which happens for the profit of electricity exporters. It’s time to acknowledge that the electric power industry is an auxiliary branch of the economy.

As for the idea of building thermal power plants in the RFE for electricity exports to NEC, in our opinion, this option has to be disregarded. Due to certain economic and geopolitical reasons it is preferable for China to build thermal power plants on its own territory which in fact has all the necessary conditions and resources (coal and oil). We also believe that the renewal of electricity exports to China in March 2009 at the price of 0.41 RUR per 1kWh (10 times cheaper than at the internal market) can be explained only by the lack of information on the matter. A restoration of the RFE’s economy is impossible in such conditions.

Insufficient power generation through during peak loads by the Zeya HPP of the IES East has led to the construction of the Bureya HPP. In the situation of decreased production output it would have been possible to shift to the cheap electricity produced by Bureya HPP, thus reducing the cost of coal delivery for thermal power plants. However it is impossible since all CHPs besides generating electricity are also supplying heat to the city for 7—9 months of the year. Moreover, the combination of these heating functions with power generation reduces costs for the whole process. Therefore, even the existing reserves for power generation are technologically inseparable from the whole process. There is no “pure” reserves of generating capacity as such. There is only a temporary mismatch of technological conditions and electricity consumption in the IES East, caused by a decreased industrial production in the RFE.

So, again, in the IES East, there is no “pure” reserves of power generating capacity which could be safely used to generate electricity for export to NEC on the basis of long-term agreements. This means that RAO “UES of Russia”, trying to negotiate long-term contracts over power supply to the PRC that required state guarantees of the Russian Federation by the Chinese side, operated with a non-existent generating capacity.

To provide such guarantees backing up the agreements signed by RAO “UES of Russia” and China, it would require building power plants of such a capacity that is similar to those already existing in the IES East. As the emphasis is made on building HPPs to provide exports the most productive and habitable land — river valleys in the south of the RFE — will be flooded. The consequences of such actions must be studied thoroughly, as well as the effects of simultaneous operation of existing reservoirs on the three main tributaries of the Amur: Songhua, Zeya, and Bureya. This study has not yet been conducted.

Since the possibilities for constructing HPPs are limited, the initiators of the electricity export suggested to build another “exporting” TPP.

However, firstly, the declining population in the Far East today is barely sufficient to cater for Russia’s national interests in the region. The dam at the Bureya HPP was completed, in 2007—2008 with the help of construction workers from the former Central Asian Soviet republics. A participation of Chinese workers
would have lowered the costs but it would have led to the outflow of financial resources abroad from the regions.

Secondly, the limited capacity for the cement production of the required quality (Spassky and Novospassky Cement Factory in the Primorsky krai and Teploozersky CF in the Jewish Autonomous Oblast) in the RFE have led to a large scale import of cheaper cement from China. Thus Chinese companies will receive a significant profits share from the construction of thermal and hydroelectric power plants on the Russian territory.

Thirdly, the calculation of financial and economic efficiency of investments in the electricity export from IES East to China indicate that the return on investment on large projects involving the Bureya HPP and with prices set by Chinese buyers will come after 16—20, or more years.

The return on investment for power transmission lines depends on the volume of export and transportation tariffs.

The official reason for ceasing the export of electricity from Russia to China was the lack of consensus on this particular tariffs.

In our opinion, this disagreement is of a fundamental nature. The reason lies, perhaps, in the different approaches of the parties in defining the role of electricity for the economic development.

In socialist China, as it was in the former Soviet Union, electricity is considered to be a service which causes inflation in the country. Therefore this subsidiary industry mustn’t condition the industrial production.

The CEO of the Far East Energy Company, Mr. V. Myasnik (В. Мясник), in December 2007 claimed that the electricity tariffs in the IES East did not meet the actual costs of its production and supply7.

Tariffs on electricity along with tariffs on heating, public transportation and telecommunication are set in conjunction with the budget needs of different LRGs. This is the reason of substantial differences in tariffs. As of September 1, 2010 electricity prices for households were: 2.69 RUB for 1 kWh in Khabarovsk, 2.42 RUB in Birobidzhan, 1.62 RUB in Vladivostok, 2.03 RUB in Blagoveschensk (while about 0.70 RUB in Harbin). Electricity prices in the RFE have no relation to the real cost of 1 kWh, which, for example, in the Primorsky krai, was estimated at 0.38 RUB in 2008 (while the tariff to be paid by the population was 1.12 RUB in Vladivostok) and thus in fact comprise an “extra tax for living in this area”.

The high cost of power transmission and the construction of transmission lines, the significant losses in the networks associated with long distances as well as high tariffs are the reasons why the export of power from the IES Siberia has not been organized properly over a period of 15 years. But there is more to it.

The origins of yet another fundamental reason for this lie in a scientific discipline called “Theoretical Foundations of Electrical Engineering”. The power system in Eastern Siberia was in fact created to meet the consumers’ needs on the territory of Russia and Mongolia. To supply specific industrial facilities and local settlements with electricity a network of substations with specific capacity and voltage was drawn. According to this grid, the direction of electric power flows, their magnitude and the required bandwidth of LEPT was calculated beforehand.

Therefore, if any additional high capacity consumer is added to the existing power network with multiple generation sources it leads to a radical change in the direction of power flows within the network and can destabilize it. From the technological perspective this can lead to an overload at certain network lines, as it happened in Moscow in 2005 and which is happening today in the Primorsky Krai. From the commercial perspective, it is difficult to determine from which generating station the power is exported at a given time, and what are the exact losses and the cost of its transmission. To avoid this, the channeling of electricity for export (under optimal conditions) should be performed directly at the power plant. And additional LEPT should be constructed for the transportation of exported power. However, calculations of the return on investment at prices proposed by consumers show that the construction of such LEPT is a problem. Therefore, the reserves are not being used.

These are the reasons why the reseller chose the Blagoveschensk TPP, part of the scarce IES East to establish power exports to China. But the reseller does not bear the costs of transporting additional power into the Amur region to compensate this export, while also not paying for power losses in the networks that occur at the delivery from other regions. But there are no surplus power reserves in the IES East. The available reserves are to be used for the regions’ development.

Conclusion

The analysis revealed the following factors which determine the export of Russian electricity to China:

The existing systems within the IES of Siberia and the East were created to meet the needs of Russian consumers. An arbitrary connection to the network of the “export” LEPT is impossible. To arrange exports to China the power should be channeled directly from the power plants thus requiring construction of a separate export-oriented LEPT. However a disparity between the proposed Chinese purchase prices and the Russian

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export tariffs, as well as long distances and transmission losses make the return on investment of newly built LEPT problematic.

We believe that it is the high cost of power transmission losses over long distances that has caused the shift of export projects from the profitable IES Siberia to the unprofitable IES East. But both systems are separated, and there are no real (the long-term) power reserves in the IES East. The payback period for export projects are related to electricity tariffs and export volumes. However, there is no agreement of tariffs with the importer (i.e. China). The electricity tariffs in the RFE are set according to the budget needs of LRGs. Electricity tariffs in the RFE are not market-related. But the power exports from the IES Siberia and the IES East to China at prices lower than on Russian internal market are unacceptable.

We believe that under these conditions, the different views existing today on the role of power within the national economies of China and Russia, make the possibility of reaching a price agreement for problematic.

The effectiveness and feasibility of combining the Russian and Chinese power systems, and the creation of a transnational unification of power systems in the adjacent territories of NEC and the RFE (as an incentive for cooperation) is not confirmed. Moreover, recent scientific studies show that by combining the power networks, the requirements for a careful timing of the frequency of all generating stations will increase. The phase stability of the joint network is deteriorating, leading to undesirable (or even unacceptable for stable conditions) deviations of power, which, in turn, affect the reliability of the network.

In absence of a standby generating capacities in the scarce IES East, the signing of a long-term agreement on electricity supply from the region to the PRC under Russian government guarantees will become the basis for future problems in the relations between the two countries.

The actions of power exporters can only be explained by the fact that they profit from the electricity exports to China and they expect that the Russian government having given a state guarantee on the deal, will be forced to build new hydroelectric stations close to the border with China. And, in addition, they will flood territories in the south of the Far East (a limited agricultural zone), lower the quality of water and worsen navigational conditions in the region’s breadbasket—the river Amur and its tributaries—and bear costs disproportional to the needs of the country and the RFE for the construction of HPP, and, by doing so, lowering the quality of life of the local population.

The question of constructing thermal plants in the territory of the RFE for the export of electricity to NEC must be taken off the agenda. TPPs must be built on the territory of the PRC, for both economic and strategic reasons. China has all of the necessary resources, equipment, and conditions to do so.

(Editor’s note) During the production of this publication several important developments occurred. These developments aggravate the aforementioned problems. In the course of government meetings that took place in August and September of 2010 within the framework of energy dialogues between Russia and China, the decision was made to continue the delivery of electricity to China by the existing LEPT of 110 and 220 kW, as well to construct the 500 kW LEPT “Amurskaya—Gosgranitsa”. Moreover, the administration of Amur oblast’ is actively lobbying for the renewal of an agreement to gradually increase export to the PRC to 60 billion kWh per year, which will require the creation of a multitude of “export” power plants. It is possible that as early as 2010, the export of electricity from Russia to China will exceed 1 billion kWh.

2.4. Transboundary water resources management on the Amur River: competition and cooperation

Vladimir P. Karakin

Of all issues related to transboundary natural resources management, transboundary water resources management (TWRM) is the most critical one, given the dynamic nature of water and its importance for the sustenance of life.

Russia has international borders with 14 nations, their total length constituting 60,933 km; of which 7,141 km runs along rivers, 475 km along lakes; and 38,807 km along seas. The total number of transboundary water bodies exceeds one thousand. The basins of 70 large and medium-sized rivers are transboundary. Over 3,000 km of Russian freshwater border, encompassing four large river basins, is shared with China. The largest portion of the Tumen River basin lies in North Korea; the Irtysh River basin spans Russia and Kazakhstan; and the Amur River upper reaches are located in Mongolia.

China’s TWRM affects national interests of 13 countries, including Kazakhstan, Mongolia, Russia, India, etc. This is the second most contentious issue in China’s relations with surrounding countries — the first being geopolitical interests (Taiwan, the Spratly Islands, etc). In the past decade, China has somewhat “put on hold” its geopolitical issues; however, it has been actively trying to resolve its water management issues, in a way that more often than not affects the interests of its neighbors. This is happening amid a general tendency for China to view transboundary cooperation as a tool to pursue its own interests and to secure access to natural resources in the long run.

Amid China’s general issues with other states, such as India or the Mekong countries, TWRM issues between China and Russia stand out particularly, due to their territorial scale and the location of shared watercourses (all other transboundary rivers flow across and not along the border). As much as 80% of the Sino-Russian border runs along water bodies (see Annex, map “Transboundary river basins along the Sino-Russian border in the Far East”).

When addressing issues relating to management of Sino-Russian transboundary water resources, localized to specific areas, such as the Amur, Irtysh and Tumen river basins, it is important to take into account the general water management procedures in the two riparian states, including the centralized water management system, both in Russia and in China; the development of national regulatory framework, both in Russia and in China; the need for relevant interstate agreements; and state funding for water engineering infrastructure.

To build a feasible system of TWRM, one should soberly take into account the interests of each of the riparian states in the region. Thus, the Amur basin countries are primarily interested in securing water resources for economic development of their respective territories, improving the quality of water resources so that they could meet certain standards and preventing flood damage. Preserving the existing ecosystems and their biodiversity, as well as maintaining the natural flow regime are, in their view, issues of secondary importance.

However, Russia is also very much interested in shifting to a more sustainable TWRM, as it finds itself in a more vulnerable position than China, given the current water withdrawal volumes and pollution rates. The most exploited Amur’s tributaries, as well as the headwaters of other transboundary watercourses are located in China, where anthropogenic pressure on shared water resources is, by all measures, stronger than in Russia, and is expected to remain so in the long run. For now, as well as for the foreseeable future, the Russian territories in the Amur River basin have enough water to meet their needs. The only exceptions are the Upper Amur and Khanka areas in the Primorye region. The most critical transboundary issue Russia faces in the Amur River basin is the quality of water resources.

In the mid and long run, China will be more interested than Russia in building a comprehensive system of TWRM in the Amur River basin. Presently, the problem of water quality in China somewhat overshadows the problem of water quantity. However, the latter will become increasingly acute in the future, despite steps to streamline water management, because:

- the aridization trend will continue in North and Northeast China;
- in order to resolve such important socio-economic issue as food production, China will have to increase consumption of water resources.

China sees TWRM as an opportunity to resolve many of its socio-economic issues, as it will enable the country to make maximum use of water resources in the shared river basins. To protect Russia’s interests in the shared river basins, it is necessary to establish a coordinated (joint) system of water resources management, both in the basins and transboundary watercourses, based on a coherent institutional framework.
Water-related agreements between Russia and China
Over the last 100 years, Russia and China have officially discussed many issues relating to management and protection of transboundary water resources, including:

- border changes caused by a meandering river;
- multipurpose use of basin resources;
- construction of cascades of hydro plants on transboundary river beds;
- coordinated protection of river banks;
- control of commercial fishing and protection of ichthyofauna;
- protection of wetlands and creation of transboundary specially protected natural areas;
- hydrological monitoring and flood prevention;
- impacts of reservoirs on transboundary waters;
- consequences of interbasin transfer of runoff;
- maintaining favorable conditions for navigation;
- prevention and monitoring of pollution;
- prevention of environmental emergencies.

Only a few of these issues have been resolved, partly because they were not properly formalized in international agreements and treaties (see Annex, Main Sino-Russian Agreements on Environmental Protection and Natural Resources Use).

Presently, Russia and China are not bound by any multilateral commitments in relation to TWRM, with the exception of the Ramsar Convention on Wetlands. The two countries are signatories to more than 10 bilateral water-related treaties, and they are part of numerous commissions and working groups tasked with resolving water-related issues. However, the backlog of unresolved Sino-Russian TWRM issues indicates that most of these agreements and commissions are highly inefficient. The existing regulatory and institutional framework failed to prevent most of the problems that arose in the last decade. Such state of affairs does not inspire optimism about the recently adopted Sino-Russian Agreement for Sustainable Management and Protection of Transboundary Water Resources, ratified on January 29, 2008. Similar agreements between Russia and Mongolia, as well as China and Mongolia were signed as early as the mid-1990’s.

After the agreement was signed, Yury Trutnev, Russia’s Minister of Natural Resources and Environment, said in an interview: “The agreement makes the most of what could have been achieved at present. It is the result of a compromise between the two states...Russia persistently brought up the issue of joint protection of transboundary water bodies, and the Chinese government responded by pouring a lot of money into environmental protection, which helped cut the concentration of pollutants in transboundary water bodies almost by half... This agreement became possible only because the issue has become a top priority for China... I don’t think that Russian experts should conduct inspections at Chinese enterprises, or that Chinese experts should in their turn check Russian enterprises. We monitor water. Now we have an official channel for information exchange, mandatory at both ends.”

Mr. Trutnev pointed out in his comments that China played a leading role in determining the scope of the agreement, the main decision-makers, and the amount of funds to be allocated to resolve TWRM issues between Russia and China. It is important to emphasize that even though the agreement calls for sustainable management and protection of transboundary water resources, it primarily focuses on water pollution and its monitoring. Minister Trutnev confirmed that the essence of this agreement was monitoring rather than control of transboundary resources.

Amur basin water resources in Russia and China
The Amur River basin covers an area of around 2 million km². As much as 49% of the basin area belongs to Russia; 42% is accounted for by China’s provinces of Heilongjiang, Jilin and Inner Mongolia; and the rest belongs to Mongolia.

Given the specific nature of Amur basin water resources (the river forms a natural boundary) and problems associated with water consumption (in riparian states), it seems convenient to divide the Amur River basin into three sections that roughly correspond with the administrative borders: the Upper Amur (Inner Mongolia and Trans-Baikal region), the Middle Amur (Heilongjiang, Jilin, Amur region, Jewish Autonomous Area, Primorye region), and the Lower Amur (Khabarovsk region).

The main part of the Amur River basin is located in the region that gets sufficient rainfall and has vast freshwater resources. The amount of annual precipitation varies widely across the region, increasing from west to east and south-east. The most arid area in the region is dry grasslands of the Transbaikal region, located to the south of the Borzya and Onon rivers — they get 250—300 mm of rainfall per year. Other parts of the basin get at least 500 mm of rainfall per year, while high mountain areas receive 900 — 1,000 mm of rainfall per year. An average of 50 to 70% of the Upper and Middle Amur is replenished by rain, while for the Lower Amur this figure is 60 to 85%. The runoff regime varies throughout the year: the winter runoff (November—March) accounts for 4—8% of the annual runoff, while the summer and autumn runoff accounts for 75—80%.

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1 Rossiyskaya Gazeta, 02.02.2008
Seasonal fluctuations in the level of large rivers in the basin attain 6—8 meters.

The average annual runoff at the Amur mouth is 357 km. The Amur’s largest tributaries are the Songhua, Zeya, Burial, Argun, and Ussuri.

The high seasonal variability of water resources (in small rivers) hampers their large-scale exploitation for household needs without regulating their flow. In the winter, about 1 m/s or 86 tdsd m/day (31.5 mln m/year) could be withdrawn from rivers with the minimum flow of about 4 m/s (95% of the needed supply). To put this into perspective: in 2007, as much as 22.4 mln m was withdrawn for domestic needs in Ussuryisk, the second largest city in the Primorye region, with a population of 180.5 thousand.

Water resources in Heilongjiang are estimated at 74 km (1.95 tdsd m/person); in Jilin — at 55 km (2.07 tdsd m/person); and in Inner Mongolia Autonomous Region at 45 km (1.92 tdsd m/person). The annual runoff in the Chinese part of the basin (the Argun, Songhua, Ussuri and other tributaries) is put by different researchers at an average of 102—123 km.

Comparison of data on the mean annual runoff in the Russian and Chinese parts of the Amur basin, despite all discrepancies, shows that the runoff in the Chinese part is noticeably less voluminous, which is an important factor to be taken into account when developing a Sino-Russian TWRM policy (see Table 1).

In the Chinese part of the basin, the runoff per unit of area, calculated on the basis of data in the table below, is also less voluminous than in the Russian part. The entire Amur basin’s runoff rate is 6 L/s/km. In the Chinese part, the total runoff rate is 3.9 L/s/km, 2.3 and 5.2 in the Songhua basin and Heilongjiang province respectively.

In addition, China withdraws huge volumes of water runoff for agricultural uses, which means that this water can never be retrieved. It is also necessary to take into account aridization processes taking place in the western part of the territory in question. Thus, there is a long-term natural trend towards lower water contents in the Chinese part of the Amur basin. Since the 1980s, western Heilongjiang, Jilin and Inner Mongolia have been experiencing desertification.

Over the past decades, the provinces have seen a dramatic decrease in the amount of rainfall and a significant increase in air temperatures. Under such unfavorable climate conditions the overly intensive pastureable cattle breeding has resulted in degradation of local steppes. Construction of reservoirs at river headwaters makes water resources even more scarce and causes droughts.

### Runoff regulation

The amount of water withdrawn for domestic uses could be increased by collecting runoff in storage facilities.

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**Table 1. Mean annual runoff in the Amur River basin from Russian perspective**

<table>
<thead>
<tr>
<th>Region of Russia</th>
<th>Local runoff</th>
<th>Inflow from China and Mongolia</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>km³</td>
<td>L/s/km²</td>
</tr>
<tr>
<td><strong>Upper Amur</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transbaikal region</td>
<td>23</td>
<td>2.55</td>
</tr>
<tr>
<td><strong>Middle Amur</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amur oblast</td>
<td>79.4</td>
<td>7</td>
</tr>
<tr>
<td>Jewish Autonomous Area</td>
<td>7.8</td>
<td>6.9</td>
</tr>
<tr>
<td>Primorye region</td>
<td>27.2</td>
<td>9.3</td>
</tr>
<tr>
<td><strong>Lower Amur</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Khabarosk region</td>
<td>131.1</td>
<td>7.4</td>
</tr>
<tr>
<td>Total</td>
<td>268.5</td>
<td>no data</td>
</tr>
</tbody>
</table>


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5 Zhu Jin-hua, Li Jin-song. A study on desertification of west Jilin Province based on remote sensing and GIS techniques, Chinese Geographical Science-Volume 12, Number 1, 2002.
such as dams or reservoirs. In Northeast China water demand for industrial and agricultural uses is satisfied largely by means of runoff regulation. In Jilin, the combined storage capacity of all reservoirs is 40.4 km$^3$, with more than half of them located in the Amur basin. In Heilongjiang, the combined storage capacity of all reservoirs is 9.62 km$^3$.

As of 2003, the combined storage capacity of some 13 thousand reservoirs and ponds operated in the Chinese part of the Amur basin was estimated at 40 km$^3$ (see Annexes, map “The Existing and Projected Hydraulic Facilities in the Amur Basin”).

The Amur region is crisscrossed by some of the most highly regulated rivers in the Russian part of the Amur basin. A total of 113 reservoirs and ponds with a net storage capacity of 42.4 km$^3$ are operated in the region. The largest of them are: reservoirs at the Zeya hydroelectric power plant (net storage capacity of 32.26 km$^3$), used for various purposes, including power generation, water supply, runoff regulation, etc.; reservoirs at the Bureya hydroelectric power plant, with a projected net storage capacity of 10 km$^3$. Other reservoirs in the region have a net capacity of up to 10 km$^3$ and are used for water supply and irrigation.

In all, some 300 water storage reservoirs and ponds are presently operated in the Russian part of the Amur basin, used for household or agricultural purposes. A detailed overview of various issues related to runoff regulation and construction of hydroelectric dams in the Amur basin is provided in Chapter 2.5, Hydraulic power industry and challenges to economic exploitation of water resources in the Amur basin.

Water consumption

For now and the foreseeable future, the Russian part of the Amur basin has sufficient water resources to meet the demand of main water consumers. The volume of water withdrawals (direct consumption) is less than 1% of total water resources. Even during the rainless winter months, when the average monthly runoff is at its lowest, withdrawal volumes amount to only 2.3% of total water resources that accumulate in the Amur basin. In 2007, freshwater withdrawals amounted to 1,184 mln m$^3$, including 37 mln m$^3$ for irrigation purposes (the Primorye region). These types of comparisons usually inspire bouts of misplaced optimism among many Russian policy makers.

Table 2 contains data on water consumption in different regions in the Russian part of the Amur basin.

In recent years, agriculture’s share of water use in different regions of the Russian Far East, including irrigation, has been estimated at about 4.5% of total water withdrawals.

In China’s Heilongjiang province, water withdrawals amount to almost 40% of total water resources, estimated at 27 km$^3$. As much as 19 km$^3$ is used for agricultural purposes. In 2005—2007, in Heilongjiang alone the volume of water used for irrigation was 500—1,000

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Table 2. Water consumption in the Russian part of the Amur basin (by region) as of 2007, km$^3$

<table>
<thead>
<tr>
<th>Region of Russia</th>
<th>Volume of freshwater withdrawn for various purposes</th>
<th>Freshwater consumption</th>
<th>Volume of wastewater discharged to surface waters</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>Purposes</td>
<td>House-hold</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>and drinking</td>
</tr>
<tr>
<td>Transbaikal region</td>
<td>348.98</td>
<td>281.85</td>
<td>222.89</td>
</tr>
<tr>
<td>Primorye region</td>
<td>344.70</td>
<td>497.55</td>
<td>297.48</td>
</tr>
<tr>
<td>Khabarovsk region</td>
<td>363.25</td>
<td>349.10</td>
<td>201.72</td>
</tr>
<tr>
<td>Amur region</td>
<td>105.12</td>
<td>97.54</td>
<td>41.35</td>
</tr>
<tr>
<td>Jewish Autonomous Area</td>
<td>22.05</td>
<td>20.31</td>
<td>5.79</td>
</tr>
<tr>
<td>Total</td>
<td>1184</td>
<td>1248</td>
<td>769</td>
</tr>
</tbody>
</table>

Source: Russian Federal Agency for Water Resources
Table 3. Water resources and water consumption in the Chinese part of the Amur basin in 2003 and projected water consumption through 2030

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit of measurement</th>
<th>Nen Jiang</th>
<th>Second Songhua River</th>
<th>Total for Songhua</th>
<th>Argunn</th>
<th>Amur — main channel</th>
<th>Ussuri</th>
<th>Total for trans-boundary sections areas</th>
<th>Total for the Chinese part of the Amur basin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean annual rainfall</td>
<td>km$^3$</td>
<td>138.45</td>
<td>51.07</td>
<td>301.5</td>
<td>59.03</td>
<td>60.06</td>
<td>32.93</td>
<td>170.37</td>
<td>471.88</td>
</tr>
<tr>
<td>Total water resources: long-term average annual</td>
<td>km$^3$</td>
<td>29.38</td>
<td>16.42</td>
<td>81.77</td>
<td>12.03</td>
<td>21.19*</td>
<td>7.86*</td>
<td>47.8</td>
<td>129.57</td>
</tr>
<tr>
<td>75% of the needed supply</td>
<td>km$^3$</td>
<td>20</td>
<td>12.3</td>
<td>57.3</td>
<td>9.2</td>
<td>16.3*</td>
<td>4.6*</td>
<td>—</td>
<td>101.7</td>
</tr>
<tr>
<td>95%-of the needed supply</td>
<td>km$^3$</td>
<td>11.8</td>
<td>8.2</td>
<td>36.9</td>
<td>6.5</td>
<td>11.4*</td>
<td>2.3*</td>
<td>—</td>
<td>73</td>
</tr>
<tr>
<td>Area of irrigated lands, 2003</td>
<td>thsd ha</td>
<td>—</td>
<td>—</td>
<td>2,610</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>801</td>
<td>3,412</td>
</tr>
<tr>
<td>Area of irrigated lands, 2030</td>
<td>thsd ha</td>
<td>—</td>
<td>—</td>
<td>4,051</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>1,495</td>
<td>5,545</td>
</tr>
<tr>
<td>Surface water withdrawals, 2003</td>
<td>km$^3$</td>
<td>5.3</td>
<td>4.4</td>
<td>17.6</td>
<td>0*</td>
<td>0.6</td>
<td>2.7</td>
<td>4.0</td>
<td>21.6</td>
</tr>
<tr>
<td>Total water withdrawals, 2003</td>
<td>km$^3$</td>
<td>9.53</td>
<td>5.84</td>
<td>27.19</td>
<td>0.2</td>
<td>1.6</td>
<td>5.7</td>
<td>8.3</td>
<td>35.5</td>
</tr>
<tr>
<td>Projected demand, 2030</td>
<td>km$^3$</td>
<td>17.3</td>
<td>9.8</td>
<td>42.6</td>
<td>1.01</td>
<td>4</td>
<td>8.5</td>
<td>14.5</td>
<td>57</td>
</tr>
<tr>
<td>Projected surface water withdrawals, 2030</td>
<td>km$^3$</td>
<td>11.0</td>
<td>7.3</td>
<td>27.8</td>
<td>0.6</td>
<td>2.3</td>
<td>4.7</td>
<td>8.5</td>
<td>36.3</td>
</tr>
<tr>
<td>Irrigation, 2030</td>
<td>km$^3$</td>
<td>—</td>
<td>—</td>
<td>30</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>11.9</td>
<td>41.9</td>
</tr>
<tr>
<td>Industries and cities, 2030</td>
<td>km$^3$</td>
<td>—</td>
<td>—</td>
<td>12.6</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>2.6</td>
<td>15.2</td>
</tr>
<tr>
<td>Overall increase, 2003-2030</td>
<td>km$^3$</td>
<td>7.77</td>
<td>3.96</td>
<td>15.41</td>
<td>0.81</td>
<td>2.4</td>
<td>2.7</td>
<td>6.2</td>
<td>21.5</td>
</tr>
</tbody>
</table>

*Note: Figures for the Amur’s main channel and Ussuri runoff show only the volume of runoff in the Chinese part of the basin.

Source: Strategic Issues of Environmental Protection and Distribution of Natural Resources in Northeast China. The Chinese Academy of Engineering, 2007. Translated by E. Simonov

Times higher than in the Russian Far East. Even compared with 1995, when the volume of water used for irrigation in the RFE was 5—7 times higher than now, the difference would still be dramatic.

Water demand in the entire Songhua basin will steadily approach the total runoff volume estimated at 75% of the needed supply, while peripheral transboundary subbasins have surpluses of water resources over demand. The situation in the Amur basin is less critical than in the nearby Liao, Yellow, and Huai basins, where des-
Plain, water is pumped from the main tributaries of the Amur and Ussuri rivers and transferred to remote agricultural lands to replenish the depleted groundwater resources. However, withdrawing more water from transboundary rivers is technically unfeasible until dams are constructed on their main channels.

The annual water consumption in the Chinese part of the basin amounts to 36 km³, while in the Russian part of the basin it is put at 1.18 km³. This enormous difference can be explained by the fact that agriculture in China consumes much more water than in Russia. Water consumption per capita is: 734.5 m³ in the Inner Mongolia Autonomous Region; about half of that in Jilin; and 712.9 m³ in Heilongjiang. For the sake of comparison: in the Russian part of the basin this figure is 216 m³/person/year.

Wastewater disposal and pollution in the Amur River basin

Without wading through the details of the long-standing dispute as to who pollutes the Amur River, we will just state that available statistics on water management does not give enough information to draw any definitive conclusions. Russian researchers put the average volume of wastewater released into the Amur River basin at about 1km³ per year, most of it being wastewater from stationary sources, which has not been treated properly. Despite low levels of agricultural development, a substantial part of pollutants comes from diffuse sources in the Russian part of the basin, researchers point out. On the Chinese side of the border, the volume of wastewater generated by stationary sources reaches 4—5 km³ per year, according to most conservative estimates. Judging from water consumption data, it can be safely assumed that even if 50% of consumed water is never retrieved, these estimates are somewhat understated.

In 2005, the volume of wastewater generated by households amounted to 568.16 million tons in China’s Jilin province, and 688.83 million tons in Heilongjiang. The concentration of pollutants in this water was: ammonium nitrogen — 6.9 and 12.3 thousand tons; COD — 161.3 and 136.8 thousand tons respectively. The concentration of pollutants in wastewater produced by industrial enterprises in Jilin and Heilongjiang reached: oil products — 761.8 and 1,436.5 tons; phenols — 19.9 and 2,830.9 tons; arsenic — 0.7 and 1 ton; copper — 0.13 and 0.23 ton; chromium — 2.6 and 0.16 ton respectively.

Approximately 90% of wastewater is discharged into the Songhua River basin. Table 4 contains data obtained by the Asia Development Bank during a specially-commissioned project aimed at devising an action plan to curb pollution in the Songhua River, carried out long before the infamous explosion at a chemical plant in China’s Jilin province, which spilled some 100 tons of toxins into the river.

However, the volume of diffuse wastewater in the Songhua River basin has already exceeded that from stationary sources and is forecasted to augment further (see Table 5).

Table 4. Industrial and municipal wastewater disposal in the Songhua River basin in 2003 (ADB 2005)

<table>
<thead>
<tr>
<th></th>
<th>Total wastewater discharge (m³/day)</th>
<th>Total wastewater discharge (km³/year)</th>
<th>COD - kg/day</th>
<th>COD thsd tons/year</th>
<th>NH3-N kg/day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial</td>
<td>3,334,323</td>
<td>1,217</td>
<td>563,771</td>
<td>206</td>
<td>41,803</td>
</tr>
<tr>
<td>Municipal</td>
<td>6,083,740</td>
<td>2,221</td>
<td>2,387,613</td>
<td>872</td>
<td>197,510</td>
</tr>
<tr>
<td>Total</td>
<td>9,418,063</td>
<td>3,438</td>
<td>2,951,384</td>
<td>1,078</td>
<td>239,313</td>
</tr>
</tbody>
</table>


Table 5. Pollution in the Songhua River basin from stationary and diffuse sources (ADB 2005)

<table>
<thead>
<tr>
<th>COD %</th>
<th>Nen Jiang</th>
<th>Second Songhua</th>
<th>Songhua</th>
<th>Total for the Songhua basin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stationary sources</td>
<td>22</td>
<td>70</td>
<td>54</td>
<td>47</td>
</tr>
<tr>
<td>Diffuse sources</td>
<td>78</td>
<td>30</td>
<td>46</td>
<td>53</td>
</tr>
</tbody>
</table>


The above-mentioned aggregate indicators, such as COD, especially used in relation to large river basins, do not provide insight into the levels of particular toxins in water, or into their spatial distribution. This means that it is impossible to predict potential reactions of ecosystems and organisms inhabiting them to pollution, or social implications of pollution for that matter. The only thing that is clear is that over some time, the problem of pollution in transboundary basins will become more complicated, making uncontrollable diffuse sources of pollution the object of special attention of water management experts.

**Navigation**

Water resources of the Amur River basin mainly provide for navigation along inner waterways. The basin is navigable for an average of 175—185 days per year. Of 5,630 km of navigable waterways in the basin, 2,745 km are accounted for by such border rivers as the Argun, Amur and Ussuri. Amid decreasing Russian cargo traffic, there are more and more Chinese cargo vessels plying the waters of the Amur and Ussuri rivers, as well as the Amur Channel off Khabarovsk. When water levels are low, shallow sandbars make it difficult to navigate cargo vessels. (Along the 900 km long navigational route between Blagoveshchensk and Khabarovsk, there are as many as 26 shallow sandbars stretching for 132 km.) Promoting commercial river cruises is one of the goals highlighted in the Program for Sino-Russian Cross-border Cooperation for the period 2009—2018.

It must be emphasized that maintaining favorable conditions for navigation in the Amur basin is one of the few issues related to transboundary water management on which Russia’s and China’s national interests coincide. As part of waterborne transportation development, China intends to expand its shipments through the Songhua River to the Amur lower reaches, and eventually to the sea. Works are underway to build a multi-tiered waterway in the Songhua River. China is also keen on establishing direct navigable routes between China and Japan for river- and sea-going vessels. This means that talks are likely to resume over the navigation channel Lake Kizi — Tabo Bay and other engineering structures to facilitate navigation.

**Impediments to harmonious Sino-Russian transboundary relations**

1. **Pollution**

All Sino-Russian TWRM issues have two major dimensions: quality (chemical composition) and quantity (runoff regime and volume) of water resources. Certain other issues, mainly of organisational and technological nature, must also be taken into account (such as coordination of flood prevention efforts, condition of wetland ecosystems, engineering structures’ effect on streamflows, etc.); however, in this article we will confine ourselves to discussing the first two problems. At this stage, a large portion of literature on Sino-Russian TWRM (both scientific and political articles) mostly concentrates on pollution of the Amur River. Accordingly, “quantitative” water management problems get “pushed” to the back burner — which seems to us to be methodologically incorrect, because (on condition adequate funds are available) pollution problems are much easier to deal with than such issues as water shortage.

Working on the Amur pollution problem is an area of actual cooperation between Russia and China in the joint water management field. Unfortunately, the USSR and then the Russian Federation have lost a lot of time getting evidence of the increasing pollution of the Amur River by the Chinese side for more than 20 years. The problem of the Amur pollution became evident as early as the mid-20th century (loose floating of timber until the 1960s, the Amur Works etc.); until the infamous 2005 accident the relevant discussions and the search for solutions were rather sluggish, though they received sufficiently detailed coverage in scientific literature and various mass media. Given the more or less permanent chain of crises and restructuring efforts since the 1980s, the USSR and then the Russian Federation never reacted to the agricultural and industrial boom in Northeast China, leading to increased pollution of the Amur. The potential of the existing legislation, limited as it may have been, also wasn’t used adequately. In the 2000s, Russia’s policy became more proactive, in terms of raising awareness of and mobilizing resources to deal with the Amur problem, mostly in the border regions. Since the level of river pollution in China generally and the north-eastern provinces in particular became threatening to future development prospects (people’s health, supply of drinking water etc.), and to the region’s attractiveness to potential investors, the country started taking practical steps to deal with the water pollution.

The 2005 accident, when 100 tons of nitrobenzene leaked into the Songhua River, became the turning point in the environmental policy. It marked the beginning of a new stage in Sino-Russian cooperation in environment protection. The agreement on transboundary water management signed by Russia and China in January 2008 is part of this cooperation. Other policy initiatives include Regulation on Reducing Pollution of the Songhua River (2006—2010), approved by the State Council of the People’s Republic of China in 2006, and several other documents.

Currently China plays the leading role in dealing with Sino-Russian TWRM issues (the State Council, the

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Central Committee of the Chinese Communist Party, etc.). The 11th Chinese five-year plan allocated 12.2 billion yuan for cleaning up the Songhua River basin. There’s a danger that in the course of solving environmental problems associated with water management in the Amur basin, China might limit itself to the pollution issue — which would only be dealt with from the point of view of the local communal services’ and fisheries’ interests in the Chinese section of the river basin. Actually, data in Table 3 shows it’s already the case: water consumption in the traditionally exploited Songhua basin will be hindered due to priority development projects being implemented in less exploited transboundary parts of the basin. Another evidence of that are the recent development projects in the so far underexploited area of the Argun River basin, and the associated transboundary conflicts. Despite the lengthy process of coordinating various approaches to the Amur problems in Russia, after the turning-point event — the 2005 Jilin accident — the following issues became quite apparent:

- Uncoordinated data on water quality monitoring in Russia and China;
- Uncoordinated technologies for and approaches to analyzing water pollutants;
- “The approved maximum permissible concentration (MPC) figures do not take into account such things as regional conditions, seasonal variability, the mixed nature of pollutants, different sensitivity of hydrocoles living in the surface water and the bed silt, the bio-accumulation effect, the toxic substances’ potential for concentrating in the bed silt, and during the winter season — in the ice”\(^{10}\);
- Many of the water quality criteria do not match the modern requirements and the current environmental safety concept. E.g. why MPC of nitrobenzene for drinking water (0.2 mg/l) is 20 times higher than for fishery water reservoirs (0.01 mg/l)\(^{11}\);
- Lack of agreed estimates of the Russian and Chinese sides’ contributions to pollution levels in various sections of the Amur River. The anthropogenic pressure on the near-border waters which originates in Northeast China is about 10 times bigger than the one originating in Russia for ammonium nitrogen and lead, and 4 times bigger for petrochemical products. According to Russian estimates (not confirmed by the Chinese side), China’s share in the total amount of wastewater discharged into the Amur is 75% for the section between the mouth of the Argun and the mouth of the Songhua, 98% from the mouth of the Songhua to the mouth of the Ussuri, and 97% in the Ussuri River.

After 2005, several agreements have been signed, and the work on various issues, primarily information exchange, prevention, and monitoring technologies went under way. The quality of water in the Amur and Argun rivers remains low, and this fact is noted in scientific literature and various official documents. The quality of the joint monitoring efforts also remains low. Accordingly, the major issue now is not a detailed breakdown of the Amur pollution problems but fine-tuning the mechanism for dealing with them bilaterally, in the course of Sino-Russian interaction.

In our opinion, at this stage the primary objectives regarding development of the Sino-Russian TWRM mechanism include the following:

- Legally confirming China’s participation in solving the problems of deposited pollution not just for the Middle Amur (the actual Sino-Russian border), but also for the lower section of the river;
- Developing a joint TWRM system for monitoring, prevention and neutralising of pollution, in particular by developing common acceptable exposure limits for transboundary waters;
- Provide mutual economic compensations for future damages to water resources/environment, caused by the other side;
- Maintain at least relative parity in funding of initiatives to deal with pollution problems; otherwise, after China solves its problems reaching a certain target level, it would immediately start making claims to the Russian side in case the latter exceeds any MPC.

2. Water supply and competition for water

Despite the fact that the Russian section of the Amur basin (in the Russian Far East) has significant water reserves, there’s a shortage of clean water. The problem is more pronounced in the areas below the point where the Songhua River flows into the Amur. Reconfiguration of the Khabarovsk region’s drinking water supply system is currently being considered, to switch to water sources unconnected with the main flow of the Amur. During the medium water level period in the winter of a dry year, clean drinking water shortages are felt in the Jewish Autonomous Area, Khabarovsk and Primorye regions. No insurmountable (from the technical point of view) problems with drinking water supply in the Russian Far East are being foreseen for the near future.

On the other hand, in the arid Transbaikal region such problems area already quite pronounced, reflecting the existing resource management system’s poor adaptability to the typical climatic fluctuations in Dauria.


\(^{11}\) Ibid, p.23
There are several transboundary basins in the Daurian steppes: the rivers Onon and Balja (Mongolia–Russia); the rivers Uldza, Imalka, lakes Khukh Nuur and Torey (Mongolia–Russia); and the river Argun, lakes Dalai and Buir (Mongolia–China–Russia). There are acute water shortages in all these basins; they regularly experience disastrous reductions of water flow in the course of the climate cycle, and are particularly sensitive to the global climate changes currently taking place. The ecosystems in these areas, though capable of adjusting to the wide amplitude of the water flow fluctuations and the humidity conditions, still experience severe stress in dry periods, and are especially vulnerable to transboundary anthropogenic impact. The level of water consumption available during the damp phase cannot be sustained during a drought, which leads to socio-economic losses and increased pressure on the environment. Accordingly, it becomes a truly trilateral problem, the solution of which lies in developing and implementing transboundary adjustment plans for cyclic and linear climate changes. In reality, a potential crisis has already caused competition for water.

The most intensive economic development is taking place in the Chinese territory, where emergence of new settlements, irrigation-based agriculture, thermal power stations, mining and other industries require increasingly more water. Interestingly, it’s a result of a specifically designed development policy rather than a planning miscalculation: local authorities believe that availability of water in the near-border province of Hulun Buir constitutes a competitive advantage over the rest of the Inner Mongolia where the resources are already depleted, which have led to adverse ecological consequences including desertification etc. Accordingly, development of water-intensive industries is being encouraged here, and subsidies are provided to build hydraulic facilities.

One of the first initiatives was the transfer of some of the upper Argun runoff (the Hailar River) into Lake Dalai. The canal connecting the river Hailar and Lake Dalai via the Hulungou Channel (which used to be the ancient bed of a dry river), was built in 2009, and now delivers the water. The planned water intake is 1.05 km³/year (33.3 m³/s), or 30% average long-term flow of the river. Such intake can negatively affect the upper reaches of the transboundary Argun River, specifically and primarily damaging the extremely valuable flood lands. Later on, construction of the planned reservoirs in the upper reaches of the Hailar River will increase the intake by further 1 km³/year, possibly causing direct water shortage for agricultural and other uses in the Argun settlements, contributing to aridization of the climate in the Argun River valley. However, the concern of the Russian side expressed (at the head-of-state level!) in 2007 didn’t lead either to termination of the canal construction or to open discussion of future water management prospects in the transboundary basin.

Implementation of the existing socio-economic development plans for the Northeast China would lead to increased water consumption. Accordingly, regardless of how successfully China deals with the major water pollution problems, the problem of depleted flow from the Chinese territory into the rivers Argun, Ussuri and Amur, and reduction of their overall water content, would become much more acute. China is accelerating consumption of transboundary rivers’ resources, and extending the huge irrigation systems along the banks of the Amur and Ussuri rivers, and Lake Khanka/Xingkai Hu (see Table 3).

If the trend towards aridization of North and Northeast China continues, and China doesn’t abandon the food self-sufficiency policy, in 10—15 years’ time development of the Chinese section of the Amur River basin and the adjacent north-eastern areas would be significantly hindered by water shortages. The probability of China trying to solve this problem by increasing water intake from the main Amur River bed seems to be quite high.
2.5. Hydropower and water resource management in the Amur River basin

Eugene Simonov
Coordinator International Coalition "Rivers without Boundaries"

The Amur River is one of the largest free-flowing rivers of the world where there are more than 120 species of fish, including anadromous salmon and the world’s largest sturgeon — Kaluga. The river basin stretches from the northern boreal to the southern subtropical bio-geographic regions, therefore, presenting an exceptional variety in ecosystems. The floodplains of wetlands of the Amur valley and its tributaries serve as a crucial stopover for migratory birds and nesting site for rare species. This territory connects a few ecoregions that have a global priority in the conservations of biodiversity of the planet: wetlands of the Amur River and the Far Eastern coniferous-deciduous forests (in Russia and China), and the Daurian steppe and wetlands (Russia, China and Mongolia). The transboundary ecosystems are important for the migratory fauna, including many fish species.

Amur as development arena

The Amur is the largest international river of Eurasia. One of the most interesting features of the basin is the bordered between Russia and China. It stretches for nearly 4 thousand km, along which the sharp contrast in the population density, characteristics of land use, and cultural traditions are most noted. Throughout history, these lands were disputed over by the neighboring countries, and, combined with the remoteness of the territory, that contributed to the preservation of wild nature in the region. The border position and circumstances allowed for a greater preservation of ecosystems of the transboundary rivers like the Argun, Amur, and Ussuri. (See Annex; map “Transboundary river basins of Russia and China in the Far East”).

The river water of the Amur catchment is increasingly a strategically important resource for all the countries in the region. Today, as a result of uncoordinated use of shared resources: there is a overharvesting of fish stocks; diversion of parts of river flow; unilateral construction of structures for flood control; development of hydropower plants (HPP); the discharge of untreated runoff; deforestation; etc.—that are gradually reducing the productivity and resilience of the Amur ecosystem.

The Amur River ceases to operate as a self-regulating resource ecosystem.

The insatiable demand for resources in the Pacific Rim and the Russian government’s desire to solve all the painfully complex socio-economic and geopolitical problems in one fell swoop bring about giant, ill-designed projects for resource extraction and energy infrastructure, like the pipeline from Siberia to the Pacific or the plan for electricity export to the PRC in amount of 60 billion kWh/year. The socio-economic and ecological impacts of such “massive development projects” are very complex and difficult to predict, meaning that they are accompanied by huge uncalculated risks that are not taken into account. In particular, when reviewing options for the construction of HPP in modern conditions, one should take into account all the other types of important water uses, including the maintenance of certain ecological parameters of the environment.

Russian-Chinese IWRM scheme: a case-study

As is well illustrated by the example of the joint Russian-Chinese Scheme for Integrated Water Resource Management of the Amur and Argun (SIWRM), hydropower is tightly connected to all other aspects of water use. On August 18th, 1956, an agreement was reached to perform a joint research and development project to create a Scheme for the comprehensive use of the Argun and transboundary stretches of the Amur River. As a result of almost four years of joint work of the Amur (USSR) and Heilongjiang (PRC) expeditions so-called “Project Grand Amur” was prepared by 1962. Hydro-engineering systems for generating energy and flood protection were designed for the Upper Amur. This included the Amazarsky, Dzhalindinsky, Kuznetsovsky, Suhotinsky, and Blagoveshchensky hydropower complexes. The Khinganskiy HPP in the Middle Amur was designed just for power generation and could work only after the completion of Zeya/kaya, Zhelundinskaya (on Bureya) and Kuznetsovskaya water regulating reservoirs with cumulative live volume over 107 km³, accounting for 70% of the Amur river runoff. This first Scheme for the Amur practically ignored environmental impacts. The Scheme didn’t even have a section on the protection of the environment. The deterioration of Sino-Russian relations in the 1960s halted further implementation of the Scheme¹.

In the 1960s Russian scholars, had unilaterally developed a concept of “Transforming the Nature of the Amur basin,” with the following components: flow control, integrated use of river energy, improved transportation, and development of industrial fish farming in the Amur basin. The concept envisioned creation of

water reservoirs with storage capacity equal to 200% of the mean annual flow volume of the Amur River, as well as active development of water transport: canals between the Lake Kizi and the Tabo Bay, Lake Khanka and the Amur Bay, etc. Although we dislike this outmoded paradigm of a “cardinal transformation of nature”, it is necessary to note that this Concept advocated a comprehensive approach to development, and did not just focus on use of the energy potential of rivers as the only important task.

As soon as bilateral relationships improved in 1986 and a new agreement was signed by China and the USSR to resume interrupted work. The “Russia-China Joint Comprehensive Scheme for Water Resources Development in Transboundary Stretches of the Argun and Amur Rivers” solidified this later agreement. The initial intent was to review development opportunities in hydropower, flood prevention, fisheries, and clean water supply. However, China clearly prioritized hydropower and was thus inclined to avoid or dismiss any modifications that threatened electricity outputs. Russia was eager to explore relationships between all sectors of the economy and take into account quality of water, the condition of fishery resources, and environmental issues. Nevertheless three amendments initiated by China and accepted by Russia biased the resulting scheme exclusively towards hydropower:

- The project area was demarcated to exclude the reach of the Amur River between the Songhua and Ussuri River mouths, thereby avoiding the need to explore transboundary pollution issues arising from the Songhua River;
- Flood-risk prevention was deleted from the common agenda and subsequently handled by each country independently. This opened the way for uncoordinated dyke-building along national riverbanks, causing tremendous hydrological problems. Similar treatment resulted for all issues related to “water used within national territories”;
- Evaluation of alternative plan — to build dams on tributaries while leaving the main channel of the Amur-Heilong River free-flowing — was deliberately deleted from the agenda, despite resentment of many Russian experts on this issue.

Russia and China failed to agree on many issues including dam height, exact location, reservoir volume and regime, mitigation of impact on fish stocks, and many other environmental issues. Finally Russian-Chinese commission declined to approve the full document, agreeing only on 100-page “Synopsis” (“Joint Comprehensive Scheme Synopsis” 2000) with many points of disagreement listed in the text. Half-completed document proposed up to 10 dams on the Amur River and its tributaries, while the Argun River was to be developed in a large cascade. Three dam locations on the Amur River main channel: Khingansky, Dzhalindinsky and Amazarsky were agreed to be more feasible than the other and thus were called "first-stage dams" (Table 2). Russia has continually proposed that the two countries sign an agreement on protection and use of transboundary rivers. This is cited in 2000 in documents of the Russia-China Commission as a precondition for further work on the dam proposals.

The Scheme evoked considerable public debate in Russia in the mid-1990s, scientists and public environmental NGOs actively criticized its shortcomings and submitted numerous petitions to the government. This encouraged several provincial governments and resource management agencies also to express criticism and disagreement with the Scheme. The Scheme was not recommended for environmental impact assessment (EIA) and/or subsequent governmental review in Russia and successfully shelved.

Nevertheless all proposed dams on the Amur-Heilong main stem are still included in the official list of future hydropower construction sites featured on web-sites associated with the China Ministry of Water Resources (see Figure 1). Those dams are also included into the Programme "Revitalization of Old Industrial Bases in North-East" and National Hydropower Programme of the PRC.

China most likely has complex long-term goal for hydro-engineering on the Amur: not only production of electricity, but also creation and use of strategic reserves of fresh water for a wide sphere of needs from agriculture to diversion into dehydrated inland wetlands. The water resources have been exhausted in the plains of Northern China. Huang He, the Yellow River, often doesn’t reach the sea, sand consumes fields, and the desert advances in the northeast. For the north-central China, the adjacent Amur River Basin seems to be a more reliable source than the remote Yangtze River, from which in 2010 two canals have begun to divert water northwards to Beijing. As early as 1960 the “Project Grand Amur” already considered possibility of water diversion from the Amur into the Nen River for the development of irrigation. According to the current water management plans, by 2015 an interbasin water transfer of up to 5.3 billion m³ per year will bring waters of Songhua River southwards into Liao River Basin.

Meeting “ecological demands” of drying wetlands

\[2\] Nicholas V.V. and Stradomsky E. A. Editor, "The southern part of the Far East", Moscow: Nauka, 1969


(Xianghai, Chaganhu, and others) already has become one of the routine tasks of inter-basins water transfers from Nen, Taoer, Second Songhua rivers. Even the moderate development of agriculture in the Heilongjiang Province will result in a necessity to add supplementary water from somewhere. It will be the easiest to take it from either Amur or Ussuri, but for large-scale withdrawals they will need to build reservoirs. The water can either go to farmland irrigation of the northeastern China or for diversions to the rapidly deteriorating basins of Liao, Huang He, and Huai rivers, that’s why Canadian scholar, Frédéric Lasserre, had predicted the inevitable competition between China and Russia over water resources of the Amur basin.

It is quite noteworthy, that Russian-Chinese tensions first surfaced in the most water deficient reaches of the Upper Amur basin triggered by construction of complex water infrastructure, first of all a canal for the diversion of a significant portion of the Hailar (Argun) River runoff 2007—2009. The Hailar River water resources are used for quite broad spectrum of needs: the provision of coal-fired thermal power plants, supplying mining and enrichment plants, irrigation and fish farms, restoration of wetlands and tourist beaches, desalination of Lake Dalai, providing water for municipal needs and livestock, as well as HPP. Whether two countries manage to agree on the environmental flows regime and protection of the transboundary Argun River wetland ecosystem, that they share, would have decisive influence on the future mode of competition for the water resources in the whole Amur River basin. So far, both the “historic” Sino-Russian Schemes and the modern Argun water crises show that during the periods of mutual hostility shared transboundary ecosystems were protected more consistently than in the periods of friendship and cooperation.

**Existing reservoirs and HPPs in the Amur River Basin**

In 2010, 100 hydroelectric power plants were active in the Amur River Basin, but only two of them in Russia (see Annex map of Existing and planned hydro-engineering structures in the Amur River basin). The installed capacity of the 2 Russian plants (on Zeya and Bureya rivers) is 3,330 MW and annual electricity pro-

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5 C. Podolsky, E. Simonov, Y. Darman, “Where is the Amur Is flowing?, WWF Russia.
7 Section "Documents" website (www.dauriarivers.org).
Chapter 2: Environmental Costs of Industrial Cooperation Between Russia and China

Production can reach up to 12 billion kilowatt hours. In terms of their flood regulating capacity and impacts on the Amur River basin ecosystems these two Russia dams might well be equivalent to all of China's hydropower facilities in the basin combined. All of the remaining reservoirs of the Russian part of the basin (about 300) have small volumes up to 10 million m³ with the purpose of water supply, irrigation, fish breeding, but not production of electricity.

Hydropower has a modest part of in the energy sector in the northeastern China and its portion declined through 2003—2009 (See Table 1). At the same time, the wind power energy has doubled annually in recent years and exceeded the numbers written into the Five Year Plans. In 2010, the wind farms have surpassed HPPs in both production and installed capacity.

Strictly speaking, the installed capacity of HPPs in China on the Amur River basin proper is about 4,400 MW with the annual generation of 8.5 billion kWh. Out of those more than 30 existing HPPs have installed capacity of 10—400 MW and about 50—70 more have capacity less than 10 MW. Xiao Fengman, the oldest major dam in the region blocks the Second Songhua River in Jilin City in the Changbaishan foothills. Tens of other large, medium, and small HPPs block this river and its upstream tributaries. Lianhua is another large HPP on the Mudan River — a tributary of the Songhua River in the east Manchurian mountains (see Table 2.). More than 20 medium and small sized HPPs block this river and its upstream tributaries. Lianhua is another large HPP on the Mudan River — a tributary of the Songhua River in the east Manchurian mountains (see Table 2.).

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The power of wind energy reached over 8,000 MW by 2010. In addition to the Amur River basin, it covers Yalu, Tumen, Liao river basins (source: Xinhua News)


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**Table 1. Power plants in the Northeast China in 2003 and 2009 (MW)**

<table>
<thead>
<tr>
<th>Time</th>
<th>TPP</th>
<th>HPP and HAPP</th>
<th>Wind PP</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>35,082</td>
<td>5,578</td>
<td>123</td>
<td>40,832</td>
</tr>
<tr>
<td>2009</td>
<td>58,272</td>
<td>6,615**</td>
<td>6,272*</td>
<td>71,413</td>
</tr>
<tr>
<td>2009, %</td>
<td>81.6</td>
<td>9.2</td>
<td>8.8</td>
<td>100</td>
</tr>
</tbody>
</table>

* The power of wind energy reached over 8,000 MW by 2010. In addition to the Amur River basin, it covers Yalu, Tumen, Liao river basins (source: Xinhua News)


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**Hydropower Potential and Planning for its Development**

**Russia**

A myth of “endless” untapped hydropower resources of Eastern Russia is nowadays very popular but poorly supported by reality. In official documents of RusHydro and governmental agencies, it is stated that only 3% of hydropower potential of the Far East rivers is being used. This statement is based on ancient piece of research conducted in the USSR in mid 1960s. Today, leading Russian experts are urging for a re-evaluation of economically-feasible hydropower potential of Russia. They refer to multiple factors that necessitate such review:

- the rising cost of constructing hydro engineering structures;

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• the strengthening of environmental restrictions and regulations;
• substantial increase in cost of environmental protection, in part, for fish protection and fish passing facilities, clearing reservoir beds, maintaining water quality, etc.
• stricter requirements for the living conditions of the resettled human population;
• the emergence of new opportunities for use of natural resources that would have been lost due to reservoir inundation;
• competitive circumstances related to the changing economic conditions and systems of market evaluation, that are used in the analysis of effectiveness of hydroelectric projects\(^\text{10}\).

Table 2: Existing and planned, large and medium, hydropower plants in China and Russia in Amur River basin (principal examples—also see map in the Annex)

<table>
<thead>
<tr>
<th>Reservoir</th>
<th>River course</th>
<th>Status* (readiness)</th>
<th>Power (MW)</th>
<th>Annual runoff (km cu./year)</th>
<th>Regulated Volume (Km cu.)</th>
<th>Reservoir Area (Km square)</th>
</tr>
</thead>
<tbody>
<tr>
<td>In China</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Xiao Fengman</td>
<td>2nd Songhua</td>
<td>1</td>
<td>1004</td>
<td>13</td>
<td>5,350</td>
<td>565</td>
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</table>

* The status of HPPs in 2010: 1 — operational; 2 — being constructed; 3 — in current development plans, adopted after 2000; 4 — designed before the year 2000 (conceptual).

Source: Amur Information Center Database

\(^{10}\) Asarin A., Danilov-Danilyan V. We have been generous in the assessment. "World Energy", May 2007, № 5 (41).
As a result the economically feasible hydropower potential of the Russian side of the Amur basin, which in 1967 was evaluated at 60 billion kWh/year, today with the new calculation decreases to approximately 30 billion kWh/year. From those power generation at the existing and presently constructed HPPs amounts to 14 billion kWh/year. Thus hydropower potential of the Russian side of the Amur catchment, calculated just from the perspective of economic and legal requirements (without consideration of the ecological limitations) already has been utilized by 50%. As a result of such new calculation done for three large basins of the Far East (Lena, Amur, and Kolyma) presently economically feasible potential decreased from 317 billion kWh/year (expected in 1967) to only 85 billion kWh/year. From those 24 billion kWh/year (28%) is already in use. This way, the rate of present use of the economically accessible hydro potential of the Far East is at least 10 times higher than the official statement of RusHydro and the Ministry of Energy, even before ecological and geopolitical limitations are accounted for. 

Corporate, institutional, national, and regional plans and strategies issued in last 5 years are promising to start in next 20 years 15 hydropower construction projects in the Amur River basin (as well as another 10 projects in adjacent basins):

Amur Complex: Shilkinskaya (Trans-sibirskaya) HPP on the Shilka River; Gramatuhinskaya (Lower Zeya) HPP on the Zeya River; Rusinovskaya and three more hydropower plants on the Selemdzha River; Lower Bureya, Nizhnenimanskaya and Ust-Nimanskaya HPPs in the Bureya River basin; and for Ussuri River Basin there is the Dalnerechensky cascade on the Bolshaya Ussurka River and Sukpaysky cascade of HPPs on Khor and Sukpai rivers.

Transbaikal complex (Lena Basin): Mokskaya HPP and Ivanovsky counter-regulator on the Vitim river, as well as Karalonski, Telmamski, Amalykski, and Bodaibo HPPs.

Southern-Yakutsk complex (Lena basin): Kankunsky; Nizhnetimponsky, Aldansky, and Uchursky HPPs.

Tidal power: Tugursky TPP in Tugursky Gulf of the Sea of Okhotsk in the Khabarovsky Province.

“Competitive advantage” of almost all those HPPs above stressed by their proponents is that “they already have complete project documentation developed” i.e. these are plants with 20—40 year old obsolete designs that compete now for money of “federal investment funds”.

In addition, according to the draft “Energy Strategy of the Far East” (2008) proposed gradual increase in the electricity exports from facilities that find no demand in the domestic market of Eastern Siberia and the Far East. It is planned to use for export old plants (i.e. Zeysky HPP) as well as develop new generating capacity (i.e. Lower Bureya HPP). (for more information on exports see the article by K.V. Tatsenko in this volume.) In 2010—2011 to expedite electricity exports to China the YES-Energo joint venture was founded by Chinese Yangtze Power (subordinate to Three Gorges Co.) and Cyprus EurosibEnergo (belongs to Russian billionaire Deripska, controls HPPs in Enisey River basin). In the first stage of the venture, YES Energo will examine two hydropower and one thermal power project in Eastern Siberia with a total installed capacity of over 3 GWt, then additional 7 GWt will be considered in the second stage. One of the two proposed dams is Trans-Sibirskaya HPP on lower Shilka River with installed capacity from 400 — to 900 MW. The Onon-Shilka watercourse is the primary source of the Amur flowing from Mongolia into Russia and thus upper part of the main stem of Amur River System. An assessment of such hydropower project in the same stretch of Shilka River done by Chita research institute of Academy of Science in 1990 came to conclusion that it is environmentally and socially unacceptable due to high negative impact on fish, water quality, regional biodiversity and living environment of local people. This hydro in 2010 was not in the HPP construction plan recently approved by the State and was not a part of any regional development strategy. Nevertheless hydropower companies shamelessly and aggressively promote expedited construction of such HPP projects.

China

A consistent evaluation of the general economic hydropower potential of the Amur Basin is made difficult by division of responsibility (and statistics) for large and medium/small HPPs between China’s different government departments. It is economically feasible to use 233 sites on rivers (with potential of more than 10 MW each), where there can be installed capacity of 9300 MW with annual generation of 19,630 billion kWh. A potential for construction for pumped-storage hydroelectricity in the same area is about 30,000 MW. Large hydropower has a small role in the “Revival of the Northeast” Programme and the 12th Five Year Plan (until 2020) with only 500—600 MW of newly installed HPP capacity in the Amur basin. This is not only because many sites suitable for large HPPs are already engaged, but also because of the increased socio-eco-
nomic limitations imposed on the river management. On the other hand, in the same period, Heihe Prefecture plans to add 160 MW installed capacity in 11 small HPPs not accounted in national statistics and construction of small HPPs will continue in all other mountainous areas. However, in most places, water reservoirs will be built, not so much driven by demand for electricity, but to satisfy other societal needs (municipal supply, irrigation, etc), even though, wherever possible, a small power generator is mounted into the dam.

With a rapid growth of energy sector in Northeast China, the share of hydropower naturally decreases (see table 1). This is due to many factors, including new requirements for environmental flows on rivers. The only possibility of a large-scale development of the hydropower industry is the construction of HPPs in the main channel of the Amur River, which will also help to solve the problem of diverting Amur waters inside China. That is why the political pressure from China on Russia to agree on damming the Amur River will not decrease in the foreseeable future. (More on the transboundary water relations see in the article by V. Karakin in this volume.)

**Risks and Environmental Impacts of Hydropower on a River Basin Scale**

In the PRC, where there are a lot of factors at work—like the massive withdrawals of water for various needs, pollution, and embankment construction—it is more difficult to single out and assess the role of HPPs in overall anthropogenic pressure. The ecological impacts of hydropower plants are more evident in Russia on the Zeya and Bureya tributaries of the Amur, where other human impacts are comparatively small.

When assessing the cumulative effects of several HPPs on the ecological condition of the basin, first and foremost we consider the following broad impact factors:

1. Alteration of flow regime downstream of dams and through that effects on the three dimensional interaction of the river and valley
2. Catastrophic transformation of riverine habitats in the region and their replacement by water reservoirs;
3. Fragmentation of river network, including disruption of migration routes of species and material transport

In assessing the impact of individual HPP projects, experts usually also evaluate many local impact factors (eg, seismic risks, reservoir bank erosion, the destruction of terrestrial ecosystems and species habitats, change in local climate, displacement of people, etc). However, important local factors usually do not determine the cumulative effect of HPPs on the whole river basin. Therefore we use them only in more detailed analysis, while 3 main factors listed above are essential part of our strategic assessment of development plans.

**Flow Alteration Below Dams**

The biota and ecosystems of the rivers in the Amur catchment are dependent on the floods that are cutoff by HPPs. The mere regulation of the Zeya has caused the decrease of the water level during large floods on the Middle Amur by 2.8 m and by 1.7 m in Khabarovsk. The flow regime of Zeya and Bureya has changed significantly, which has resulted in the actual loss of natural floodplain ecosystems on both rivers. But the impact of HPPs has also spread downstream onto the main channel of the Amur River. For example in Amur valley near Khingansky nature reserve, floodplain areas that used to be flooded every 20 years, from now on will be inundated not more than once every 100 years; and some important areas that received only highest floods have become completely independent from flood influence. This causes decline in typical floodplain communities, habitats of cranes and storks, refugia for other important species14. Populations of phytofile fish species in the lower section of the Middle Amur, the upper section of the Lower Amur, and the Lower Zeya River have been greatly reduced and species composition has changed15. The degradation processes of the floodplain system of the Amur River under the cumulative influence of Zeya’s and Bureya’s hydropower plants are further exacerbated below the mouth of the Songhua River, where water regime has undergone additional anthropogenic changes due to construction of hydro engineering structures on the territory of the PRC. Hydrologists see distinctive changes in the water levels and fluctuations of the runoff due to the influence of HPPs all the way down to the Amur River mouth16. The reservoirs drastically reduce sediment flow below the dam, and due to the lack of sediment the erosion process is activated. This is particularly evident on the Zeya River which as result become impassable for most ships.

The greater is river flow alteration capacity by reservoirs—the greater are changes in hydrology and in ecosystems downstream. This could be expressed as ratio between live volume of upstream reservoirs and mean annual flow at a given river section. For Middle Zeya, the degree of flow alteration is 155—100% (meaning that the mean annual flow volume is less or equal to

live volume of reservoirs). for Lower Bureya flow alteration is 35%; for Lower Zeya — 64%; and for the Amur downstream from Blagoveshchensk it is 29% (see Fig 1).

In China, Second Songhua and Songhua rivers have a similar degree of flow regulation. Unfortunately, economists analyzing water management such flow alteration capacity of reservoirs interpret this only as an important benefit that reduced the flood damage with no consideration to its environmental impacts.

Ecosystem Transformation By Reservoirs

Any reservoir is an anthropologic feature created in place of the most important socio-ecological landscapes—river valleys. We may assume that the larger the surface of the water reservoirs and the greater is their share in all water surface of the river system, the stronger they transform aquatic and terrestrial ecosystems. The Bureya and Zeya reservoirs are enormous: together they occupy 3,160 km², which equals roughly 45% of the total water surface in the Middle Amur Freshwater Ecoregion in Russia. In China, all reservoirs of the HPPs of the basin occupy only half of that area. The Zeya and Bureya reservoirs have low quality water, in part due to inundation of massive volumes of vegetation, soil, and peat. Before Zeya dam construction, the composition of fish fauna of the Upper Zeya Basin in 1970 included 38 species, by 2007 the fish fauna of the Zeya Reservoir was reduced to 26 species. Fish stocks of the Zeya reservoir have been in seriously depressed state for many years. Reservoir also serve as places for initial introduction of exotic species that then may spread in the whole river basin.

Fragmentation Of River Network

Dams that block/isolate parts of the river system from each other and thus contribute to fragmentation of a river basin. As a result, the migration of aquatic organisms is stopped, and there is a delay in runoff of biogenic elements. For example, above the Zeya and Bureya dam the sturgeon, Kaluga, salmon, lamprey and other

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migratory species have already disappeared. A simple measure of the fragmentation of the river basin is percentage of the basin area, which is cutoff from the sea by dams. Taken together, the Zeya and Bureya dams block 8—9% of the Amur catchment area, while all of the existing dams in China block additional 22—23%. This means that nearly one-third of Amur River system has already been isolated from the sea and no longer can sustain migratory species, e.g. diadromous fish. Major negative aspect of proposed Trans-Sibirskey dam — its location in the lower reaches of Shilka, which would isolate 200000 square kilometres or another 10% of Amur River basin by development of a single project. When compared with 60 other existing and proposed hydropower projects in Amur Basin Shilka HPP shows greater potential environmental and social impact both in absolute figures and per unit production than the majority of other dams. Only Sino Russian hydropower plants proposed on the main stem of Amur River proper look more harmful than this project.

If we agree with the necessity to preserve the self-regulating resilient Amur ecosystem and the role of this river as a transboundary ecological buffer, we have to conclude that impacts of hydropower on the Zeya, Bureya, and even on the segment of Amur (from the mouth of the Zeya to the Kihangar Gorge), possibly have already exceeded the thresholds of “limits of allowable change”. First of all it is manifested in disruption of sedimentation process in river channel habitats, negative impacts on fish and reducing are of floodplain wetland ecosystems.

**Hydropower Development Scenarios and Water Resources and Opportunities for Optimization**

In different countries of transboundary Amur River basin people have different perceptions on the risks and perspectives of hydro engineering. But basin–wide environmental impacts of hydro-engineering on the same ecological and hydrological system of Amur, should not be measured by a different national yardsticks.

A remarkable Fareastern scientist, Vladimir Sapaev, who recently passed away, in his last article “Amur Flow Regulation—is Optimization Possible?”, left to us a challenge: “The most important objective should be to protect the Amur River, its floodplain containing main biological resources and ecological services as well as natural support-base for the local communities of the southern Far East. The methodology for the evaluation of the socio-ecological impacts and criteria for future HPP construction should be developed based on this main concern”19. Keeping that in mind we now examine several very broad conceptual development scenarios.

**Scenario #1: Implementation Sino Russian IWRM Scheme for Amur and Argun**

As already described above, the Russian-Chinese IWRM Scheme suggested massive hydropower development on the main channel, and also on yet undammed tributaries. The Chinese side and a number of Russian institutions are still actively lobbying this option. In 2007, “The Chinese Industry Newspaper” expressed the readiness of the PRC government to fully fund and build a Khingansky-Taipinggou HPP; with all of its energy to be used in China. In Sept 2011 at the Baikal Economic Forum the vice–head of the Three Gorges Co. Chen Guoqing again stressed that hydropower projects on the border river (i.e.Amur River) need the guidance and co–ordinations from the energy and water resource departments from both countries...20

The important incentives for implementation of this scenario are:

- a better long-term control over water management and water supply for the national economy of the PRC;
- the development of inexpensive (even by Chinese standards) electricity (assuming that the project does not pay for ecological functions disrupted by it);
- the possibility to increase the flow of Chinese workforce into Russia in the prestigious construction industry of HPPs and a large new market for the Chinese hydro-development business (besides a full Scheme containing 6—9 dams in the transboundary rivercourses, there are 70 more potential large dam sites on Amur tributaries in Russia;
- influx of Chinese investments into border areas, as well as construction and management costs being covered by the Chinese side, are attractive factors for some of the Russian executives.

Many experts evaluate this scenario as bad (even catastrophic) for its impact on the environment of the Amur and the development of inequitable socio-economic cooperation in the border areas. Instead of resolving already existing acute problems of integrated river basin management and environment safety in the Amur basin, the Scheme proposed to create new, much more serious problems and then try to mitigate their consequences. Several papers, including “Where is the Amur Flowing” have been dedicated to the assessment of IWRM Scheme21. The implementation of the Scheme, even partial, will result in flow alteration of the Upper Amur


to 60% (presently less than 1%); Middle Amur downstream from Blagoveschensk up to 45%; and Amur at Khabarovsk up to 30%. That means that the great River will practically be deprived of all natural floodplain ecosystems. Reservoirs in the Amur valley will occupy 130 thousand hectares, and total fragmentation of the river basin will reach 73% (from present 30%).

With just Khingansky-Taipinggou HPP in place, sediment flow will decrease by 5 million ton. Without receiving a compensating quantity of sediment, the Lower-Amur lowlands, which presently submerge with the speed of 10 cm per century, will be subject to increased waterlogging22.

If the Amur were regulated according to the Scheme saving its fish stocks would be impossible. Even the Scheme documents forecast that the decrease in the annual flooding due to cumulative action of reservoirs on Zeya, Bureya and Amur rivers will lead to a fundamental deterioration in fish habitats all the way down to the mouth of the ocean. The expected damage (by 2030) to the fisheries of Russian Amur was estimated at 9,185 tons, including 7,360 tons of salmon and 600 tons of sturgeon. Even the full-scale fish restocking of the water reservoirs cannot compensate for more than 10% of the losses23. Amur River runoff also brings important nourishment to rich fisheries in the Sea of Okhotsk and impacts of dams on disruptions in this economically important food chain have not been estimated.

**Scenario #2: "Opportunist". Hydropower development in national parts of the basin**

The situation in China and Russia is radically different, despite similar calculations of “underutilized” energy potential. Practically all of the dam projects in the PRC are multi-purpose endeavors with a modest hydropower component. As a matter of fact, only one of the known modern hydro-engineering schemes — development of water resources in the Hailar River Basin is associated with serious transboundary implications for transboundary Argun River24.

Further development of hydropower on tributaries inside China cannot significantly increase overall impact on the Amur River basin ecosystem as a whole. Neither the degree of flow alteration, nor the degree of basin fragmentation, nor the surface area of the reservoirs can undergo radical increase in the PRC, for there is already no room for it. Not hydropower development, but the growing water consumption, especially in agriculture and the resulting non-point pollution with fertilizers and pesticides are the actively growing impacts on Amur catchment from China side. In recent years in Northeast China the scale of negative impact on water bodies from new coal-based thermal power plants is quiet compatible with that of HPPs—due to massive disruption of natural river ecosystems by associated water infrastructure (Table 1).

In Russia, where there are still plenty of undammed tributaries with plenty of water and natural resources, it is a different story. Most of 70 potential dam sites are quite suitable for the creation of large HPPs, and while this energy is not needed by Russian Far East, it is always in demand among neighbors. Construction of only 15 new HPPs, proposed in the recent Russian programs (Table 2), would lead to flow alteration in the Upper Amur River up to 20%; Middle Amur below the Blagoveschensk up to 60%; and the Amur below Khabarovsk — up to 40%. 270 thousand hectares of reservoirs will appear on the tributaries and the degree of fragmentation of the basin will reach 43%. Even without blocking the main channel, the Russian side can deprive Amur of its natural floodplain ecosystems, at the least to the degree that can be now observed near the mouth of the Zeya River. In this scenario, from all relatively large tributaries, only the Bikin, Tunguska and Amgun rivers will escape direct negative impacts. Although, those rivers are undeniably remarkable natural pearls; nevertheless, they would be but a tiny remnant of the former diverse Amur River basin ecosystem.

**HPP on Shilka River aggressively promoted by Sino-Russian EN+YPC consortium is the most vivid example of threats presented by such development. Preliminary assessment done in 2011 by WWF Russia and Rivers without Boundaries Coalition shows that besides abovementioned consequences, the new dam would also likely have negative impacts on IUCN-listed Kaluga sturgeon, many local salmonid fish, as well as on fisheries tourism in upstream Mongolia, which is dependent on fish stock replenishment from the Shilka and Upper Amur. 450 kilometer long reservoir will occupy roughly a half of Shilka River proper destroying most livable river valley in this boreal zone. It will block important migration corridor between Amur River proper and northern Dauria upstream, exterminate floodplain communities unique for Dauria and Upper Amur, drown many important historical sites and artifacts. Besides, Trans-Sibirsyky Dam on Shilka is adjacent to several HPP construction sites proposed on the main stem of Upper Amur and its construction would facilitate further development of hydropower plants downstream.**

Thus active Russian-Chinese cooperation on the indiscriminate construction of HHPs on some tributaries can easily escalate into the development of the main channel (combination of scenario 1 and 2), which will have most detrimental impact on the natural of the Amur River Ecosystem, practically leaving it to history.


24 The section "Documents" of the website www.arguncrisis.ru.
Scenario #3: "Selective " Hydro Engineering

To make sound decisions about hydropower development and limitations to be imposed, and therefore to preempt environmental and social tensions, we should:

- design a system for the evaluation and limitation of environmental impacts of hydro engineering projects in the region;
- identify possible zones of influence for each dam and dam cascades;
- rank all potential dams and their combinations in the basin (development scenarios) according to the degree of possible environmental impact;
- analyse consequences cascade development of HPPs, the extent of its environmental and economic feasibility for the Amur River basin and compare it with other alternatives of HPP placement25.

For each freshwater of 7 freshwater eco-regions of the Amur River basin, in each of the larger sub-basins scientifically valid norms of acceptable level of flow alteration and fragmentation should be legally established that will guide restriction of the location and size of water reservoirs.

“No go areas” should be also delineated to conserve part of the basin in its wild natural state. Russian top experts Asarin and Daniylyan note that some legal environmental requirements can mean a de facto ban on the construction of hydropower facilities, e.g. Law on Protected Areas26. Such a ban, obviously, should also be imposed on the main channels of border rivers, natural heritage sites, major salmon-spawning rivers, etc. Sustainable development in general requires a polarized scheme of territorial expansion of human activities, which implies that significant sections of each of the major sub-basins should left in natural state and thus be exempt from large-scale hydro-engineering.

To account for cumulative integral effect of already functioning and planned HPPs on flow regime and other parameters of the environment, several long-term scenarios with different new HPP locations should be developed in detail and assessed so that it would be possible to choose the least environmentally dangerous scenario of basin-wide hydropower development.

A more effective approach could have been realized during the preparation of Schemes for Integrated Water Protection and Use (Russian Water Service is the responsible institution) and analogous schemes in the PRC. Ideally, a transboundary Russian-Chinese-Mongolian basin-wide scheme is required; however, disappointing results of past Sino Russian cooperation on such schemes preclude us from recommending to start such cooperative effort tomorrow.

Scenario #4: “Fix the River First!”

Nowadays, any new comprehensive development plan has to be based on the priority of environmental safety and the restoration of the ecosystem of the Amur, and not the accelerated development of just one of the branches of economy (hydropower). Transboundary Amur requires use of the best environmental standards of planning and operation for infrastructure facilities in context of integrated use and protection of natural resources.

First, for the already existing HPPs environmental flow requirements have to be established for each reservoir based on optimal regime of water supply to floodplains and the economic requirements of HPPs27. Ichthyologists consider that in wet years, concerted discharge from the reservoirs, simultaneous with lateral natural inflow, could increase water levels in the Lower Zeya, Middle, and Lower Amur to the levels sufficient for the flooding of the lower parts of floodplains and for the passage of phytophilous fish species to spawning areas28. Some environmental flow requirements for the Amur were calculated even during the unsuccessful Sino Russian IWRM Scheme in the 1990s. Since 2007 Russia has approved regulatory framework for calculating “limits of acceptable impact to the water bodies”, including environmental flow requirements.

Environmental flow release, ensuring migratory fish passage, and maintenance of natural water temperatures are all common ecological questions in designing and operating of dams which are now routinely addressed in most countries. In the Chinese section of the Amur River Basin, the ecological water requirements are calculated and provided for an increasing number of wetlands, and nearly a quarter of the live volume of the Nierji reservoir is designated for environmental flow releases29.

In Russia, these issues are most important precisely in relation to exploitation of HPPs and despite the requirements of the law and regulation problems are still not being solved. First, these problems have to be solved for Zeya’s and Bureya’s HPPs, and then the question of better environmental standards for design for new HPPs in should be addressed.

26 Asarin A., Danilov-Danilyan V. We have been generous in the assessment. "World Energy", May 2007, № 5 (41).
Conclusion
Management of water reservoirs requires coordination between nations of the transboundary basin, but not on the basis of the outdated and dangerous “Sino-Russian IWRM Scheme of transboundary parts of Argun and Amur rivers”, but on the basis of convergence of modern thinking on the joint environmental safety and resource security. The urgent need for a joint definition of norms for the environmental flow on the transboundary watercourses became particularly evident, in conjunction to water engineering in the Argun (Hailaer) river basin. But it is equally evident in the cases of cumulative impact of the Zeya, Bureya, and Songhua flow regime on the transboundary channel of the Amur river. Given that the provision of environmental flow for protected floodplain wetlands has already became management practice in the PRC, there is hope for quick development of a common language on these issues.

Our main recommendation is that Scenario #4 — i.e. implementation of acceptable environmental standards on the existing HPPs—is a mandatory first step, and only after it is completed, can a decision be made on the feasibility of the Scenario #3 — i.e. responsible continuation of hydropower development in the Amur basin. Since environmental risks from new HPPs are evident, while the economic need for their construction is questionable—and these doubts are only becoming stronger with time. In any case, energy-thirsty neighbors of Russia, for whom we are willing to block rivers, at home already tend to rely on wind and other cleaner technologies.

Near future will bring many more technological breakthroughs in energy and water use. Therefore, using natural capital in responsible and sustainable manner without haste, we can save a significant portion of our resource potential for more efficient use with use of new technologies.

2.6. Russian-Chinese cooperation in harvesting and processing of fish and seafood
A. R. Moiseev

Condition and trends in Chinese fishing industry
“Economics of the sea.” In recent years, China’s rapidly growing “economies of the sea” (its components are listed in Table 1): accounted for 9.87% of total GDP of China in 2008 (427.07 billion $). According to forecasts for 2010, the gross output of the fishing industry was 11% of the GDP; it’s structure will become more rational, the share of the services in this industry will exceed 50% (Table 1), and every year it will create 1 million new jobs.

Production and consumption of seafood. Currently, China is the world leader in the production of seafood. It accounts for 35% of the world seafood production. In spite of the general decline in the seafood production because of the global recession, China, as expected, increased seafood production up to 51.9 million tons (50.4 million tons in 2009) in 2010. In 2006 harvesting of fish reached 14.4 million tons which comprises 1/6 of the world harvest—estimated at 81.9 million tons. The biggest share was caught in Chinese waters and 7% — in international. There is an opinion between the experts in the field that the data on the marine harvest, provided by Chinese to FAO, is unreliable and the real harvest volume began to decrease as early as 1990s.

Steadily the harvest of all types of marine resources is decreasing in the seas surrounding China: In 2001, 1.3

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1 Xinhua News Agency.
2 Renmin Ribao News Agency.
3 U.S. Department of Agriculture’s Foreign Agriculture Service (FAS).
4 The first attempt to understand China’s Seafood Issues. S. Wang. WWF-China.
### Table 1. Changes in the structure of the Chinese “Economics of the sea”, %

<table>
<thead>
<tr>
<th></th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture, salt production</td>
<td>25.3</td>
<td>26.0</td>
<td>28.0</td>
<td>30.0</td>
<td>17.0</td>
<td>14.0</td>
<td>5.0</td>
<td>5.4</td>
</tr>
<tr>
<td>- salt production</td>
<td>0.3</td>
<td>0.3</td>
<td>0.2</td>
<td>0.3</td>
<td>0.2</td>
<td>0.2</td>
<td>0.5</td>
<td>0.7</td>
</tr>
<tr>
<td>- seaweed extraction</td>
<td>25.0</td>
<td>25.7</td>
<td>27.8</td>
<td>29.7</td>
<td>16.8</td>
<td>13.8</td>
<td>4.5</td>
<td>4.7</td>
</tr>
<tr>
<td>Industry, Power generation</td>
<td>34.3</td>
<td>30.9</td>
<td>27.5</td>
<td>22.3</td>
<td>29.3</td>
<td>37.6</td>
<td>42.7</td>
<td>43.9</td>
</tr>
<tr>
<td>- seafood processing</td>
<td>22.4</td>
<td>19.9</td>
<td>16.5</td>
<td>11.8</td>
<td>14.2</td>
<td>13.9</td>
<td>15.3</td>
<td>12.7</td>
</tr>
<tr>
<td>- offshore oil and gas extraction</td>
<td>5.9</td>
<td>5.8</td>
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<td>4.9</td>
<td>7.4</td>
<td>13.6</td>
<td>14.1</td>
<td>11.9</td>
</tr>
<tr>
<td>- maritime shipbuilding</td>
<td>1.8</td>
<td>1.7</td>
<td>1.8</td>
<td>1.6</td>
<td>2.0</td>
<td>5.1</td>
<td>8.2</td>
<td>10.5</td>
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<tr>
<td>- chemical industry</td>
<td>3.6</td>
<td>3.0</td>
<td>2.6</td>
<td>3.6</td>
<td>5.2</td>
<td>3.6</td>
<td>3.8</td>
<td>7.4</td>
</tr>
<tr>
<td>- pharmaceutics</td>
<td>0.3</td>
<td>0.26</td>
<td>0.31</td>
<td>0.14</td>
<td>0.17</td>
<td>0.8</td>
<td>0.8</td>
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<tr>
<td>- tidal energy</td>
<td>0.2</td>
<td>0.14</td>
<td>0.2</td>
<td>0.12</td>
<td>0.17</td>
<td>0.3</td>
<td>0.2</td>
<td>0.2</td>
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<tr>
<td>- mineral extraction</td>
<td>0.06</td>
<td>0.05</td>
<td>0.05</td>
<td>0.11</td>
<td>0.15</td>
<td>0.15</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>- seawater desalination</td>
<td>0.06</td>
<td>0.04</td>
<td>0.05</td>
<td>0.04</td>
<td>0.05</td>
<td>0.11</td>
<td>0.15</td>
<td>0.2</td>
</tr>
<tr>
<td>Construction</td>
<td>1.2</td>
<td>1.3</td>
<td>1.5</td>
<td>1.7</td>
<td>1.7</td>
<td>4.4</td>
<td>3.3</td>
<td>3.4</td>
</tr>
<tr>
<td>Service sector</td>
<td>39.2</td>
<td>41.8</td>
<td>43.0</td>
<td>46.0</td>
<td>52.0</td>
<td>44.0</td>
<td>49.0</td>
<td>47.3</td>
</tr>
<tr>
<td>- transportation services</td>
<td>9.6</td>
<td>9.7</td>
<td>10.2</td>
<td>10.9</td>
<td>10.8</td>
<td>14.1</td>
<td>14.0</td>
<td>13.0</td>
</tr>
<tr>
<td>- marine tourism</td>
<td>12.9</td>
<td>13.8</td>
<td>14.2</td>
<td>13.3</td>
<td>12.6</td>
<td>13.0</td>
<td>12.5</td>
<td>11.7</td>
</tr>
<tr>
<td>- oceanography, education</td>
<td>16.7</td>
<td>18.3</td>
<td>18.6</td>
<td>17.9</td>
<td>15.9</td>
<td>14.9</td>
<td>12.0</td>
<td>11.5</td>
</tr>
<tr>
<td>- health care</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3.9</td>
<td>12.7</td>
<td>2.0</td>
<td>10.5</td>
<td>11.1</td>
</tr>
</tbody>
</table>

Source: Xinhua News Agency.

### Table 2. Marine fisheries and aquaculture of China in 2000—2005 (million tons)

<table>
<thead>
<tr>
<th></th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harvest</td>
<td>2.2</td>
<td>2.2</td>
<td>2.3</td>
<td>2.4</td>
<td>2.4</td>
<td>2.6</td>
</tr>
<tr>
<td>Aquaculture</td>
<td>15.2</td>
<td>16.9</td>
<td>17.8</td>
<td>18.9</td>
<td>20.1</td>
<td></td>
</tr>
<tr>
<td>Total in freshwater</td>
<td>17.4</td>
<td>18.1</td>
<td>19.2</td>
<td>20.2</td>
<td>21.3</td>
<td>22.7</td>
</tr>
<tr>
<td>Harvest</td>
<td>14.8</td>
<td>14.4</td>
<td>14.3</td>
<td>14.3</td>
<td>14.5</td>
<td>14.5</td>
</tr>
<tr>
<td>Aquaculture</td>
<td>9.4</td>
<td>10.1</td>
<td>10.9</td>
<td>11.2</td>
<td>11.7</td>
<td>12.3</td>
</tr>
<tr>
<td>Total in marine waters</td>
<td>24.2</td>
<td>24.4</td>
<td>25.2</td>
<td>25.5</td>
<td>26.2</td>
<td>26.8</td>
</tr>
<tr>
<td>Total Harvest</td>
<td>17</td>
<td>16.5</td>
<td>16.6</td>
<td>16.7</td>
<td>16.9</td>
<td>17.1</td>
</tr>
<tr>
<td>Total Aquaculture</td>
<td>24.6</td>
<td>26</td>
<td>27.8</td>
<td>28.9</td>
<td>30.6</td>
<td>32.4</td>
</tr>
<tr>
<td>Industry Total</td>
<td>41.6</td>
<td>42.6</td>
<td>44.4</td>
<td>45.7</td>
<td>47.5</td>
<td>49.5</td>
</tr>
</tbody>
</table>

Source: The first attempt to understand China’s Seafood Issues. S. Wang. WWF-China.
million tons of fish and sea products were gathered in Eastern-China’s Sea. In 2005 this figure dropped to 980 kt. Furthermore, the number of fishermen working in Eastern-China’s sea reduced: from 250 thousand in 2002 to 210 thousand in 2006.

The decrease may be due to the depletion of fish, which resulted from overfishing and pollution of coastal waters with Chinese rivers drain and the extensive development of marine aquaculture. According to recent studies, 81% of the Eastern-Chinese Sea belongs to the fourth grade of pollution on a scale of five. In 2000, this number was 53%. The decrease in harvest is due to restrictive zones imposed on fisheries. Thus, in accordance with Chinese law, restrictive zones are established in areas with undersea fiber-optic communication lines and submarine pipelines—to 2 km on both sides. Scientists estimate that they will take 8 thousand km³ of Eastern-Chinese Sea from fishing traffic.

Aquaculture. Chinese aquaculture growth rate is much higher than the global average. Currently, China is producing almost 70% of the world aquaculture, while consuming 1/6 of the world’s produced fishmeal. According to FAO, in 2004 the Chinese total harvest in freshwaters was only 2.42 million, which is 7 times less than the production of freshwater aquaculture. A general understanding of the production types can be seen in Table 3.

China actively masters the cultivation of valuable fish species, and develops and implements research programs. In 2006 the production of freshwater aquaculture equaled the production of native Chinese species. The cultivation scale of valuable species implies that they occupy the endemic species habitats and thus displace the native species becoming a threat to biodiversity in Chinese waters. Among the many types of fish imported for cultivation, the Nile tilapia, catfish, and six types of sturgeon (Amur hybrid, Russian sturgeon, Siberian sturgeon, American paddlefish, etc.) are particularly important. China is the main producer of this three species in the world. In case of sturgeon it produces 85% of the world’s sturgeon, although that is controversial since in some countries sturgeon is bred for caviar and the statistics are not comparable.

The rapid development of aquaculture leads to severe pollution of rivers, lakes, and coastal waters. In addition, the demand for fish food generates exploitation of fish resources in other parts of the world. The Ministry of Agriculture and The Ministry of Natural Resources and the Environment of China prepared a Summary of the Status of Fishery Ecological Environment of China in 2006. According to the published data, one of the important factors that influences nations’ aquaculture is the water pollution. In 2006, the country’s fish breeding industry lost 243 million Yuan (around 31 million dollars) because of water pollution.

There are three laws that regulate water pollution in the fishing industry: the Fisheries Law, the Marine Environment Protection Law, and the Law on the Prevention and Control of Water Pollution (LPCWP). In 2008, important amendments were made to LPCWP, according to which the Department of Fisheries is authorized to regulate pollution issues. The Department also involved in the assessment of contamination and has the right to prohibit the implementation of projects that can potentially cause environmental degradation. The Protection Zones for Important Fisheries Waters (PZIFW) are set up on the governmental level of the province or higher to protect the quality of water for the fisheries. Any pollution in these zones is illegal. Additionally, the Department of Fisheries now regulates the pollution from the fishing fleets and has the right to investigate and impose penalties on the polluters.

Table 3. Structure of production of aquaculture in China in 2005

<table>
<thead>
<tr>
<th>Types</th>
<th>Production (ton)</th>
<th>Share in production, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shellfish</td>
<td>10,675,000</td>
<td>77</td>
</tr>
<tr>
<td>Seaweeds</td>
<td>1,511,300</td>
<td>11</td>
</tr>
<tr>
<td>Fish</td>
<td>658,900</td>
<td>5</td>
</tr>
<tr>
<td>Crustaceans</td>
<td>828,500</td>
<td>6</td>
</tr>
<tr>
<td>Others</td>
<td>174,100</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>13,847,800</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: The first attempt to understand China’s Seafood Issues. S.Wang. WWF-China.

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6 The first attempt to understand China’s Seafood Issues. S.Wang. WWF-China.
7 China Ministry of Agriculture, 2008.
China’s foreign trade — marine fisheries products. After China entered WTO in 2001, the country’s seafood export soared. As a result, during the past 7 years, China has taken first place in the world export of marine products. In 2007, the seafood export from China reached 9.74 billion dollars (about 10% of the world total), and in 2009 was already 10.7 billion dollars. Japan remains the main consumer of seafood from China, USA, South Korea, Germany, and Russia8 follow.

It is necessary to note the existing feature of the trade operations in China: export value exceeds the import value on a yearly basis. Cheap raw materials are imported and products with high added value are exported. For example in 2007, an average cost of 1 kg of frozen fish imported to China was $1.52, while export of fish products costed $3.23.

Frozen fish accounts for approximately 75% of the total seafood import9. Russia’s share of frozen fish of the total Chinese import is at a cost 45%10. It is necessary to indicate that fish prices from Russian fishermen are lower than those from Japan and USA. The big share of import is intended for processing and re-export. Part of this work is carried out within the framework of tolling operations. In 2007 1106 kt (39%) of Chinese exports were derived from imported raw materials. A significant share of import consists of frozen products of minimal degree of processing from several species of white fish—Pollack, cod, halibut, and flounder. Processing facilities are located in Liaoning and Shandong provinces. To these two provinces go 90% of the Chinese import of salmon and white fish. The largest ten importers account for more than 30% of the whole import. Port of Dalian (Liaoning Province) specializes in the processing of cod and Pollack. Qingdao (Shandong) produces a wide range of seafood, including salmon.

Trade transactions between Russia and China

Export-import of seafood between the two states. Russian export statistics show that the largest share goes to frozen fish that is usually produced in the sea and then sold for export right on the spot — it does not reach the Russian shore (Table 4).

Amendments made to Federal Law no.169 of the Russian Federation as of 01.01.2009 call for a required registration of exported seafood in Russian ports. This, according to industry experts, was supposed to help reveal the illegal export of marine biological resources (MBR), which by some estimates could exceed the official data by 1.5 times. Nevertheless fish and seafood export, for example in Kamchatka in 2009, estimated at 428.2 million dollars or 86% to last year meaning that statistics confirm that export has declined while the total harvest increased. Obviously this could have happened because of the massive purposeful understatement of contract prices by fish traders that were forced to register all of their export operations.

Official statistics of the Russian fishing industry still can’t be regarded as a reliable source for analysis. The export statistics for fish products from main fishing regions of the RF show that direct export to China is rel-

![Table 4. Export and import of Russian fish and seafood according to the Federal Customs Service](image)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fish and crustaceans, mollusks and other invertebrates, millions USD</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Export</td>
<td>1,483</td>
<td>134</td>
<td>1,340</td>
<td>315</td>
<td>1,431</td>
<td>416</td>
<td>1,449</td>
<td>645</td>
</tr>
<tr>
<td>Import</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Including:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Frozen fish, excluding fish fillet, in kt</td>
<td>818</td>
<td>310</td>
<td>948</td>
<td>415</td>
<td>1,005</td>
<td>495</td>
<td>1,042</td>
<td>585</td>
</tr>
<tr>
<td>Fish fillets and fresh, chilled or frozen fish in kt</td>
<td>139</td>
<td>10.9</td>
<td>58.0</td>
<td>34.7</td>
<td>67.6</td>
<td>55.4</td>
<td>49.3</td>
<td>62.2</td>
</tr>
</tbody>
</table>


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9 GTP China.

10 Minutes of the 18th session of the Joint Russian-Chinese Committee for Cooperation in Fisheries.
atively small: for example, total exports in Kamchatka
in 2009 amounted to: 63.4% to the Republic of Korea,
15.5% to Japan, 8.7% to the U.S., and only 4.6% to
China; Sakhalin Oblast exports mainly to the Republic
of Korea (30%), China (~ 22%), Japan (~ 22%), and
Hong Kong (12%). Meanwhile according to the Federal
Customs Service in 2005—2007 the main importer of
Russian fish products was China (Table 5 displays dif-
f erent scale data than Table 4, disregarding export in the
free trade zone possible till 2009). Supplies from Rus-
sia by weight comprise 57% from the total import of
salmon and white fish in China. The State Customs
(GAC) of the PRC doesn’t differentiate imported
seafood, which makes it difficult to analyze the source
and composition of import. Apparently that the Chinese
processing industry is somewhat dependent on the pri-
mary products import from the RF that comes from a
third party. Import of processed fish products from
Russian to China practically doesn’t exist.

For the last 10 years seafood products (fish, shellfish,
crustaceans) have ranked seventh in the overall amount
of export of Russian products into China: in 2008 the
volume comprised up to 40.48% of the whole fish
import (728.52 kt). In addition to the traditionally sup-
plied large quantities of Pacific cod, there was an
increase of diverse marine products (liver, roe, shrimp,
crab s) export. The value of the Russian import of
seafood from China in comparison with import from
other countries is shown in the Table 6. From 2005, its

Table 5. Geographical structure of fish and seafood export from Russia in million dollars

<table>
<thead>
<tr>
<th>Country</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>Change in % 07/06</th>
</tr>
</thead>
<tbody>
<tr>
<td>World total</td>
<td>456.625</td>
<td>525.383</td>
<td>516.771</td>
<td>–1.64</td>
</tr>
<tr>
<td>China</td>
<td>127.552</td>
<td>189.082</td>
<td>177.511</td>
<td>–6.12</td>
</tr>
<tr>
<td>Japan</td>
<td>94.414</td>
<td>90.548</td>
<td>111.260</td>
<td>22.87</td>
</tr>
<tr>
<td>South Korea</td>
<td>87.085</td>
<td>70.368</td>
<td>57.177</td>
<td>–18.75</td>
</tr>
<tr>
<td>Germany</td>
<td>36.153</td>
<td>40.335</td>
<td>33.926</td>
<td>–15.89</td>
</tr>
<tr>
<td>Kazakhstan</td>
<td>9.270</td>
<td>13.411</td>
<td>17.975</td>
<td>34.03</td>
</tr>
<tr>
<td>Netherlands</td>
<td>7.898</td>
<td>13.835</td>
<td>17.872</td>
<td>29.18</td>
</tr>
<tr>
<td>Portugal</td>
<td>8.797</td>
<td>19.269</td>
<td>15.730</td>
<td>–18.37</td>
</tr>
<tr>
<td>USA</td>
<td>10.825</td>
<td>11.099</td>
<td>15.037</td>
<td>35.48</td>
</tr>
</tbody>
</table>


Table 6. Geographical structure of fish and seafood import into Russia in million dollars

<table>
<thead>
<tr>
<th>Country</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>Change in % 07/06</th>
</tr>
</thead>
<tbody>
<tr>
<td>World total</td>
<td>950.68</td>
<td>1,204.86</td>
<td>1,731.20</td>
<td>43.68</td>
</tr>
<tr>
<td>Norway</td>
<td>448.13</td>
<td>436.90</td>
<td>628.79</td>
<td>43.92</td>
</tr>
<tr>
<td>China</td>
<td>37.49</td>
<td>89.46</td>
<td>174.49</td>
<td>95.05</td>
</tr>
<tr>
<td>Denmark</td>
<td>59.64</td>
<td>82.15</td>
<td>114.82</td>
<td>39.77</td>
</tr>
<tr>
<td>Vietnam</td>
<td>22.31</td>
<td>106.12</td>
<td>113.81</td>
<td>7.24</td>
</tr>
<tr>
<td>Chili</td>
<td>29.91</td>
<td>49.33</td>
<td>88.72</td>
<td>79.83</td>
</tr>
<tr>
<td>Great Britain</td>
<td>34.87</td>
<td>55.11</td>
<td>87.31</td>
<td>58.42</td>
</tr>
<tr>
<td>Canada</td>
<td>33.93</td>
<td>42.49</td>
<td>58.75</td>
<td>38.26</td>
</tr>
<tr>
<td>USA</td>
<td>43.48</td>
<td>44.11</td>
<td>51.67</td>
<td>17.15</td>
</tr>
</tbody>
</table>

sharp growth can be observed. The basis of this increase is comprised of marine products re-export caught by Russian fisheries and processed in China.

**Russian supplies of some types of marine products to China**

**Salmon.** The total import of salmon to China in the last few years exceeded 100 kt (2006—150 kt; 2007—130 kt; 2008—116kt). Now the certified MCS salmon from Alaska comprises the biggest part of the import (34—43%). The supply from Japan is near 30%, but it is decreasing yearly. In the last few years, the volume of Chinese import of Pacific Ocean salmon from Russia has increased substantially. Cheap products are mostly imported: frozen hunchback salmon and chum salmon, the ratio of which is unknown. In 2005 there were imported 40.4 kt and in 2006 about 45 kt. In 2006 the average price rised up to $1.92/kg (in 2005, $1.6/kg). In 2005 600 tons of blueback salmon were imported, and in 2006 — 860 tons. Overall the statistics show a much higher volume of foreign import over the calculated Russian catch of the blueback salmon. Part of the Russian blueback salmon bought by Japan goes to China for processing and re-export. Japanese volumes of import of frozen blueback salmon in the 2000s changed from 16.3 to 24.8 kt per year. The maximum excess of the blueback salmon that went to Jpana over the registered catch was in 2005 and estimated at 9.7 kt (total recoded catch was 23,985 tons that year). In 2002—2006 the total import of frozen blueback to Japan, China, and South Korea from Russia (according to these countries’ statistics) was significantly higher than that total official Russian export of this type of products (average 27%). And in addition it increases the registered blueback harvest (average 20%), which means that there is an illegal harvest of this salmon species and a weak control from the authorities.

**Cod.** Of the 3.32 million tons of the Chinese seafood import in 2006 (which is more than 10% of the world import) cod comprised 17.1% or 590 kt. In subsequent years it declined to some extent. Russia, USA, and Japan supply 80% of the amount (Table 7).

Almost 16—19% of the world harvest of pollack is sent to China for processing. The major share of the total volume of the industry of RF in the Far East makes up Alaskan pollack (up to 50%). In the late 1990s, the officially recorded harvest of pollack reached 1—2 million tons (maximum in 1996—2,439.7 kt), but the real number was much higher. The absence of customs codes in China that distinguish between cod species makes it impossible to have accurate data on the import of each species. Expert assessments of to China imported cod species are twice as higher than official figures given in the Table 8. This is

<table>
<thead>
<tr>
<th>Country of Production</th>
<th>Russia</th>
<th>Japan</th>
<th>USA</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2006</strong></td>
<td>396 508 (67.1)</td>
<td>25 836 (4.4)</td>
<td>34 519 (5.8)</td>
<td>591 134 (100.0)</td>
</tr>
<tr>
<td><strong>2007</strong></td>
<td>344 113 (69.8)</td>
<td>29 957 (6.1)</td>
<td>25 304 (3.1)</td>
<td>492 862 (100.0)</td>
</tr>
<tr>
<td><strong>2008</strong></td>
<td>243 805 (69.1)</td>
<td>13 908 (3.9)</td>
<td>21 445 (6.1)</td>
<td>353 017 (100.0)</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Year</th>
<th>TAC, kt</th>
<th>Export into China</th>
<th>Export of Raw Material, kt</th>
<th>Export share of the TAC to China, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>1097</td>
<td>397</td>
<td>685</td>
<td>62</td>
</tr>
<tr>
<td>2007</td>
<td>1327</td>
<td>344</td>
<td>593</td>
<td>45</td>
</tr>
<tr>
<td>2008</td>
<td>1258</td>
<td>244</td>
<td>420</td>
<td>33</td>
</tr>
</tbody>
</table>

explained by three key words — illegal, unreported and uncontrolled fishing and also by resale to China of Russian fish that is then repackaged and recertified in Denmark, Netherlands, or Korea.

**Scallops, mussels, sea cucumber, seaweed (laminaria).** High demand from the Chinese for these types of MBR has spurred the increase in exploitation, while the lack of regulation led to the growth of the illegal, unreported and uncontrolled fishing. In Russia, these marine bioreources are harvested by divers from the seabed. The exploitation is of such a scale that the Sakhalin and Primorye regions are almost depleted of this resource. According to the Lebedeva Pacific Institute of Geography RAS, the level of the sea cucumber trafficking in the Far East in 2000 reached 1.5 million dollars per year\(^{11}\). The Far Eastern sea cucumber is considered to be one of the most expensive gourmet products. Despite the fact that the coast of China is inhabited by 20 species of sea cucumber, the most valuable is the Far Eastern cucumber, therefore it is in high demand in China, Korea, and Japan. The main consumer of sea cucumber is China.

Illegal, unreported and uncontrolled fishing in the exclusive economic zones (EEZ) of Russia and China.

The Far Eastern basin provides 70% of the marine biological resources in Russia. Fishing industry is the backbone of the RFE economy. Conservation of the fish industry resources in the region should be viewed as a problem of a national importance. At the same time, there is a tendency for an increase in Illegal, unreported and uncontrolled fishing in EEZ of the Far East. Local experts estimate illegal harvests at 40—60% of the reported harvest. Over the past two decades, there was a twofold increase in illegal fishing in the Northwest Pacific, which means an increase in exploitation of Russia’s marine biological resources (see Table 10).

Analysis shows that the main targets for the marine fishing in Russia (cod, pollack, haddock and salmon) are among the most vulnerable fish to illegal fishing. These species make up most of Russia’s export. Evidence appeared in Russia’s media that 90% of the reported catch of pollack (TAC in recent years has been around 1 million tons) is exported. It is believed that China’s rapidly growing processing industry encour-

<table>
<thead>
<tr>
<th>Pacific Ocean Region</th>
<th>Reported harvest by species</th>
<th>Illegal catch, % of the reported</th>
<th>Lowest estimate of illegal harvest (tons)</th>
<th>Highest estimate of illegal harvest (tons)</th>
<th>Lowest estimated value (bln USD)</th>
<th>Highest estimated value (bln USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northwest</td>
<td>7,358,470</td>
<td>32%</td>
<td>1,325,763</td>
<td>3,505,600</td>
<td>1,193</td>
<td>3,155</td>
</tr>
<tr>
<td>West</td>
<td>3,740,192</td>
<td>36%</td>
<td>785,897</td>
<td>1,729,588</td>
<td>707</td>
<td>1,557</td>
</tr>
<tr>
<td>World Total</td>
<td>39,021,155</td>
<td>46%</td>
<td>5,140,928</td>
<td>12,040,052</td>
<td>4,627</td>
<td>10,836</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Northwest</td>
<td>16%</td>
<td>15%</td>
<td>23%</td>
<td>27%</td>
<td>33%</td>
</tr>
<tr>
<td>West</td>
<td>38%</td>
<td>37%</td>
<td>37%</td>
<td>36%</td>
<td>34%</td>
</tr>
<tr>
<td>World Total</td>
<td>21%</td>
<td>21%</td>
<td>21%</td>
<td>20%</td>
<td>18%</td>
</tr>
</tbody>
</table>


ages illegal fishing on a global scale. The volume of fish processed in China indirectly confirm this statement. Experts believe that inspection and monitoring of marine products are ineffective compared to other groups of imported goods and other countries. Despite the fact that the system of inspection and monitoring can determine the source and origin of the raw material, this data of is not documented by PRC. Experts attempted to identify main factors that influence the illegal fishing. The study showed that there the price of fish, size of EEZ, or the amount of MBR caught in the region have no effect on the illegal fishing. However, they have found that there is a correlation between the scale of illegal fishing and the World Bank governance indicators of 2003—when the highest level of illegal fishing was registered. This correlation proved essential in several countries of Africa, Europe, and Asia and other various governance indicators like, for example, the corruption index. Thus it is evident that illegal fishing must be addressed through improving governance, legal practices, law enforcement, developing cooperation between regional actors, creating the system of state control in fishing ports and other means of decreasing economic incentives for illegal fishing, such as sanctions and trade penalties.

**Interaction between customs authorities.** Russia and China signed Memorandum of Understanding between the Federal Customs Service and the General Administration of Customs (GAC) of China on the cooperation in improving customs clearance procedures and controls for 2010—2012 as well as others. Detailed procedure for data exchange was to be provided. Data will be provided on a quarterly basis, usually within six digits of the commodity nomenclature of foreign trade.

For a proper understanding of the statistical data of the export-import, it is vital to consider that the Chinese statistics, as before, still vary greatly from the FCS of Russia: after 11 months in 2008, there was a gap in statistics, as before, still vary greatly from the FCS of export-import, it is vital to consider that the Chinese statisticians of the commodity nomenclature of foreign trade.

**Interaction between customs authorities.** Russia and China signed Memorandum of Understanding between the Federal Customs Service and the General Administration of Customs (GAC) of China on the cooperation in improving customs clearance procedures and controls for 2010—2012 as well as others. Detailed procedure for data exchange was to be provided. Data will be provided on a quarterly basis, usually within six digits of the commodity nomenclature of foreign trade.

In October 2009, GAC set forth three initiatives in order to regulate export-import activity in Russia. These initiatives, directed at destroying the “gray customs clearance,” include:

- mutually acknowledged “certified customs clearance providers”
- creation of a regime that will allow the recivers of goods to get a “certificate in the form of customs declaration” on imported goods;
- simplification of customs bureaucracy for those abiding the law.

As reported, the Russian side agreed to a part of the initiative. In the near future, at the website of the Chinese customs service a list of certified customs clearance providers registered in the Federal Customers Service of Russia will be published. The Chinese businessmen will be able to choose from the list of certified providers that can exercise customs bureaucracy. The businessmen have to demand proof of payment of the customs fees for the protection of their own rights and interests. The proposed measures should eliminate some of the modes of goods withdrawal from customs registration and shed light on the real statistics of foreign trade between the countries.

**Amur Basin.**

**Fishing, fisheries, and the preservation of MBR.** Amur is habitat of more than a 120 freshwater species of fish and it is the only place where 18 species of one genus (Pseudaspius) are endemic to the basin (WWF 2004). Eight species are in the Red Book of Rare Species of RF, including those that inhabit the upper Amur — sturgeon and kaluga.

At least 24 species are known to have been introduced, if the unsuccessful introduction of sockeye in 1920s is counted. Only 17 species were brought on purpose, and others came in accidentally. Eight exotic species have acclimatized, but they do not live outside water bodies where they were introduced. Six species most likely disappeared. And nine species not only acclimatized, but are also very abundant and widespread — possibly interfering with the survival of native species.

Sockeye salmon was introduced unsuccessfully after their release in 1920s. This species did not adapt to local conditions, but it continues to sporadically return to the river. Amur is a real kingdom of anadromous fish. Here one may meet two races of chum, pink, chinook, coho, masu salmon, Dolly Varden char and white spotted char. Anadromous trout is abundant in rivers flowing into the Amur estuary, but it does not go upstream further than 100 km. Some blueback, chinook (last reported catch was in 2001, some 150 km from the mouth) and steelhead salmon can be found in the Amur occasionally. Resident Dolly Varden char (Salvelinus malma) is spread in the Lower Amur basin and it is the only place where 18 species of one genus (Pseudaspius) are endemic to the basin (WWF 2004).

Eight species are in the Red Book of Rare Species of RF, including those that inhabit the upper Amur — sturgeon and kaluga.

12 Xinhua News Agency.

13 www.redlist.org
Siberian taimen, lenoks, graylings, and whitefish are common throughout the basin. At least in the basins of the southern Sea of Okhotsk and Sea of Japan Amur has the highest diversity of salmonids (See map). In the basin probably Argun River has the highest salmonids diversity.

Although in 20th century no species became extinct in Amur, but many populations of fall chum disappeared in the Upper and Middle Amur, and also Ussury River. It is important to note that the Russian efforts to restore historical abundance of salmon in the Amur basin have failed. The efforts are economically ineffective, violate recommendations of ichthyologists not to mix populations, and increase exploitation of donor populations. The return ration of Teplovsko and Bidzhanskogo salmon breeding stations, already operating almost 80 years, has never reached the level of natural spawning. Many populations of Siberian taimen also disappeared. In 20th century all populations of salmonids significantly decreased in abundance, which was very likely caused by overfishing. In the early 1900’s, commercial salmon catch reached 93.5 thousand tons. By the end of the twentieth century it was reduced to 3 tons. Even the local communities’ harvest was up to 9 kt, which indicates the degree of a serious problem.

Amur sturgeon are a freshwater species (sturgeon and kaluga), endemic to the basin, and they are a valuable commercial fishing target. The Zeya-Bureya population is listed in the Red Book of Russia under category 1 as “disappearing population of endemic species.” Both species are listed in the IUCN list of endangered species (IUCN Red List 2004), and the Kaluga trade is regulated by the CITES agreement Kaluga CITES (Appendix 2). The Amur sturgeon feeds in the sea, although it breeds only in the river. In 1891, 1200 tons of Amur sturgeon and Kaluga was caught, and in 2001 — only 100 tons. In 2000—2001, various sources reported that mature specimens of kaluga (over 13 years, length 180 cm, weight not less than 50 kg) were about 60 thousand

Map of the historical habitat of salmonids where there is no more anadromous salmon.


14 Roslui, 1980. 1987 (HabTINRO).
2.6. RUSSIAN-CHINESE COOPERATION IN HARVESTING AND PROCESSING OF FISH AND SEAFOOD

(total biomass — 5.5 thousand tons with an average weight of 50 kg). Recent years report a rapid decline in kaluga numbers. In 2002, HabTINRO evaluated the spawning population of Amur sturgeon to be 1,290 tons and kaluga 2,873 tons.

The so called “controlled” (scientifically) harvest of Kaluga and Amur sturgeon before 2009 reached up to 50—100 tons and was given to commercial firms. There were no “controlled” calculations that year, meaning that the harvest had no scientific purpose and was purely commercial. The sale of product happens under the brand TIRNO. China has confusing data on the sturgeon. The Department of Fisheries of Heylutszyan reports that the population of the Amur sturgeon is declining while Kaluga has already disappeared from the rivers of the province.

The main reason for the decrease in numbers of both kaluga and Amur sturgeon is the licensed harvest and poaching in both countries, Russia and China. The annual illegal harvest in Russia and China is valued at

### Table 11. Harvest of sturgeon in the Russian part of the Amur River from 1980 to 2002

<table>
<thead>
<tr>
<th>Year</th>
<th>Kaluga</th>
<th>Amur sturgeon</th>
<th>Total, tons</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Riverbed</td>
<td>Estuary</td>
<td>Total, tones</td>
</tr>
<tr>
<td>1981</td>
<td>Complete prohibition of river fishing</td>
<td>46.6</td>
<td>46.6</td>
</tr>
<tr>
<td>1982</td>
<td>47.0</td>
<td>47.0</td>
<td>64.1</td>
</tr>
<tr>
<td>1983</td>
<td>60.1</td>
<td>60.1</td>
<td>60.1</td>
</tr>
<tr>
<td>1984</td>
<td>59.5</td>
<td>59.5</td>
<td>59.5</td>
</tr>
<tr>
<td>1985</td>
<td>61.1</td>
<td>61.1</td>
<td>61.1</td>
</tr>
<tr>
<td>1986</td>
<td>62.2</td>
<td>62.2</td>
<td>62.2</td>
</tr>
<tr>
<td>1987</td>
<td>69.0</td>
<td>69.0</td>
<td>69.0</td>
</tr>
<tr>
<td>1988</td>
<td>44.0</td>
<td>44.0</td>
<td>44.0</td>
</tr>
<tr>
<td>1989</td>
<td>61.0</td>
<td>61.0</td>
<td>61.0</td>
</tr>
<tr>
<td>1990</td>
<td>61.9</td>
<td>61.9</td>
<td>61.9</td>
</tr>
<tr>
<td>1991</td>
<td>34.4</td>
<td>60.5</td>
<td>94.9</td>
</tr>
<tr>
<td>1992</td>
<td>13.6</td>
<td>52.9</td>
<td>66.5</td>
</tr>
<tr>
<td>1993</td>
<td>36.5</td>
<td>62.3</td>
<td>98.8</td>
</tr>
<tr>
<td>1994</td>
<td>28.0</td>
<td>35.0</td>
<td>63.0</td>
</tr>
<tr>
<td>1995</td>
<td>11.5</td>
<td>51.0</td>
<td>62.5</td>
</tr>
<tr>
<td>1996</td>
<td>31.1</td>
<td>50.0</td>
<td>81.1</td>
</tr>
<tr>
<td>1997</td>
<td>40.1</td>
<td>50.0</td>
<td>90.1</td>
</tr>
<tr>
<td>1998</td>
<td>21.1</td>
<td>27.0</td>
<td>48.1</td>
</tr>
<tr>
<td>1999</td>
<td>38.9</td>
<td>0</td>
<td>38.43</td>
</tr>
<tr>
<td>2000</td>
<td>60.8</td>
<td>3.0</td>
<td>63.8</td>
</tr>
<tr>
<td>2001</td>
<td>59.4</td>
<td>2.8</td>
<td>62.2</td>
</tr>
<tr>
<td>2002</td>
<td>0</td>
<td>9.5</td>
<td>9.5</td>
</tr>
<tr>
<td>2003</td>
<td>Fishing is allowed up to 10 tons. Official data on the actual catches is not available.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2004</td>
<td>10</td>
<td>20</td>
<td>30</td>
</tr>
</tbody>
</table>


15 Pacific Research Institute of Fisheries and Oceanography.

973 tons. Water pollution also adversely affects the productivity of sturgeons. Logging in the upper tributaries adds to the increasing degradation of the river ecosystems. The trend of kaluga numbers can serve as an example of the impossibility to protect biodiversity with unilateral measures. If there are no jointly implemented Chinese-Russian measures in the near future, commercial fishing will be unfeasible and the sturgeon will face extinction.

In 2010, the Federal Agency for Fishery management has initiated the renewal of commercial fishing of the Amur sturgeon and kaluga in the river section below the city of Nikolaevsk-on-the-Amur. The Coordinating Committee on Sustainable Development on the Amur River basin, presidential representative of the Far Eastern Federal Region, ichthyologists and environmental organizations have actively opposed this resolution for “being premature.”

Both countries are taking active steps in breeding kaluga and the Amur sturgeon in the Amur basin. Additionally in 2002, the Amur-Heilutszyan population of the kaluga and Amur sturgeon were the main source of hatchlings for the sturgeon aquaculture breeding in south regions of the PRC, where 95—99% of hatchlings go to fish farms in Heilutszyan.

Sturgeon breeding in China has intensified since 2003. It must be noted that these actions have no objective economic evaluation of their effectiveness and ability to create commercial herd. Currently, the environmental assessment of these actions in China said that the introduction of cultivated species of sturgeons have a negative impact on native species, suppressing them. More importantly, under the flag of reintroduction the last mature wild specimens are being caught and used mostly to breed in aquaculture production in eastern and south China.

In 2009, Russia followed China and created Vladimirovskiy sturgeon hatchery, as well as equipped a sturgeon department at the Anyui plant in Khabarovsk Territory. The Amurryvbrod plans to create few more plants in the province, and to exchange knowledge with their Chinese colleagues.

In the Amur transboundary basin there are many other important commercial fish species: lamprey, smelt, common carp, crucian carp, Amur pike, carp, skygazer, snakehead, Amur catfish and others. The stocks of many species of fish have been seriously undermined in the mid-twentieth century by overfishing, when officials encouraged the overlap of watercourses and the use of explosives. By the end of the twentieth century, China

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### Table 12. Sturgeon harvest in the Chinese part of the Amur

<table>
<thead>
<tr>
<th>Year</th>
<th>Harvest (t)</th>
<th>Year</th>
<th>Harvest (t)</th>
<th>Year</th>
<th>Harvest (t)</th>
<th>Year</th>
<th>Harvest (t)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1959</td>
<td>49</td>
<td>1971</td>
<td>66</td>
<td>1983</td>
<td>150</td>
<td>1995</td>
<td>211</td>
</tr>
<tr>
<td>1960</td>
<td>72</td>
<td>1972</td>
<td>33</td>
<td>1984</td>
<td>150</td>
<td>1996</td>
<td>164</td>
</tr>
<tr>
<td>1963</td>
<td>33</td>
<td>1975</td>
<td>92</td>
<td>1987</td>
<td>461</td>
<td>1999</td>
<td>145</td>
</tr>
<tr>
<td>1965</td>
<td>20</td>
<td>1977</td>
<td>53</td>
<td>1989</td>
<td>289</td>
<td>2001</td>
<td>50</td>
</tr>
</tbody>
</table>

was an absolute leader on cross-border areas in the number of fishermen and the intensity of fishing. Russians only consume 25 species of fish, and prefer big fish. On the other hand, Chinese consume almost all of the diversity of aquatic organisms and consider fish the size of a match a delicacy. The restoration of fish population in the Amur is made difficult because of the fishing pressure of the Chinese population, which appreciates the wild fish, as well as contributes to the pollution and changes in the hydrological regime of the Amur River and the compositions of the tributaries by the HPPs. To obtain objective data on the dynamics of fish populations is difficult because surveillance is rare and both managing and research organizations have their own interest in fishery, from which their evaluation of the situation is dependent.

National Level Dialogue

Based on the Intergovernmental Agreement of October 4, 1988, an annual session of the Russian-Chinese Commission on Cooperation in Fisheries (Joint Commission) is held. Among other questions, Chinese quotas for MBR catch in the Russian EEZ are granted at the meeting. Based on the agreement of 1988, an agreement between Russian and Chinese governments on “Cooperation in the Field of Conservation” was signed in Beijing May 27, 1994. It concerned the regulation and reproduction of living aquatic resources in the bordering waters of the rivers Amur and Ussuri. The agreement does not cover the largest transboundary lake Hanka, where there are very serious problems of cross-border poaching. Nevertheless the Chinese side has once again said that it is premature to expand the agreements scope to Hanka in 2009. An integral part of the agreement is the fishing rights for the Amur and Ussuri rivers. The rules regulate the fishing of 25 species of fish, minimum size of fish allowed for catch, the sizes of the net, etc. To facilitate the implementation of the agreement a special working and an expert advisory group were created. The created arrangement, although it did not to stop the degradation of marine biological resources, gave the opportunity to exchange information, resolve disputes, and plan joint action. In accordance with Article 4 of the “Fishery Rules... ”, fishing of all species of fish in the Amur and Ussuri rivers from the 11th of June to 15th of July and 1—20th of October are banned. Article 5 highlighted the areas where commercial fishing is prohibited year round. Thus, de jure transboundary protected areas for conservation of aquatic organisms were established. De facto, they do not work and are marked only in some places in China (Lobey county). Nevertheless, it should insist on the implementation of this paragraph of the Agreement, as well as the establishment of the fishery conservation areas based on these waters on the Russian side. Every session of the Joint Russian-Chinese committee for cooperation in fisheries these issues are addressed:

- the protection, management and production of living aquatic resources in transboundary waters of the Amur and Ussuri rivers;
- allocation of quotas on China MBR catch in the EEZ of the RF;
- coordination between scientists of both countries;
- suppression of illegal fishing;
- freshwater commercial fisheries.

The countries cooperate with each other in creating hatcheries for artificial reproduction of salmon, sturgeon, and kaluga products. The stated purpose of cooperation is the restoration of historical abundance of these species. The Russian side provides the material for reproduction and then the Chinese side grows them and releases hatchlings into the Amur basin. There are indications that the Chinese factories are using the product inappropriately—the whitebait is sent to aquafarms in South China. The function of the Russian-Chinese work group on security issues of import and export of aquatic biological resources, is to bring together representatives of Rosselkhoznadzor and the General Administration of Supervision, Quality Inspection and Quarantine of the PRC (AQSIQ). Questions of safe food provision of fishery and aquaculture products. The project of the Memorandum on Cooperation of the export-import volumes of water between the fishing Rosselkhoznadzor and AQSIQ was agreed to in 10.7.2009, its signing should take place shortly. May 31, 2006, the Memorandum of Understanding between the Ministry of Natural Resources of RF and State Environmental Protection Administration (SEPA) on the cooperation in joint monitoring of transboundary water bodies (Amur, Ussuri, Argun, Razdolnaya), was signed. It will enhance the information exchange. It has not been determined, whether other aspects are included in monitoring (except in chemical contamination) or if it should determine all sources of pollution in both countries.

Joint Research Activities

The development of aquaculture and freshwater commercial fisheries in order to preserve MBR basins of the Amur and Ussuri is the main topic of the joint research activities. Both countries pay particular attention to breeding of valuable fish species. Experts’ meetings of
Russia and China are taking place in order to agree on the definition of TAC and to develop a unified methodology for determining the sturgeon supply. In particular, this is due to the fact that unless both counties agree to the limits on sturgeon fishing, neither of them will receive from CITES authorities a quota on international trade.

In November 2007 in Yantai, a Shandong Province (east China), a joint Sino-Russian laboratory of marine biology was founded. The establishment of a laboratory is a joint project of SRI in marine and water resources at the Institute of Marine Biology of Russian Academy of Science. Chinese and Russian scientists will conduct joint research in areas such as habitat specificity of the abyssal and bottom dweller organisms, oceanographic bioengineering, management and restoration of the continental shelves, technology, natural resources rehabilitation, seafood safety etc. The work is based on a principle of integration of projects, personnel, and resources. It became the main platform of the Sino-Russian scientific and technical cooperation in the field of marine biology—an active exchange of scientific and practical training of graduate students. In March 2008, Gosrybtsentr held workshops to train Chinese specialists in vivo technique for obtaining eggs from sturgeon and determining sex early on using ultrasound.

Conclusion

In the field of economic relations, the Russian fishing industry is experiencing an increasingly powerful influence from the PRC economy. Russia is becoming a source of cheap and partly illegally export of raw materials. At the same time, Russia imports from China more and more processed products from the same raw materials. As a result, the industry and the Russian economy in general, are paid substantially less profit per unit of produced product, and thus promotes the irrational use of MBRs.

In the area of water and biological resources management of the Amur basin, there is an increasing total dependence on China. More actively these resources are used and have great investment opportunities in aquaculture, scientific and technical equipment, for the provision of fishing activities, etc. The problems of preserving the integrity of the basin ecosystem can only be solved together, but a lot depends on whose view of the carrying capacity of the population and ecosystem will be taken as a starting point.

The main threats to biodiversity and conservation of the marine and river biological resources of eastern Russia and the Amur basin, and for the implementation of sustainable fisheries are:

- deficiencies in governance, regulation and control of marine and freshwater fishing, and aquaculture industry in Russia and China;
- inadequate reporting and customs documentation of trade between Russia and China;
- lack of commitment from both Russia and China to fulfill bilateral agreements signed during multilateral conventions.

As shown by the Mixed Commission, to achieve the required arrangements with the Chinese partners and their subsequent implementation is not an easy process. Nevertheless, most of the existing problems cannot be solved without the China’s participation and negotiations should be intensified.

Now, there is a question of the vessels operating under the “convenient” flag. For Russia it is important to sign the “Agreement to ensure compliance by fishing vessels on the high seas of international conservation and management measures” (of 04.24.2003) of FAO, 1993,.. Embodied in this agreement are measures aimed at preventing the practice of transportation of vessels under flags of other states (not necessarily related to certain international properties), in order to avoid the compliance with international conservation and management measures of MBR in high seas.

It is necessary to demand from the Chinese to make changes to the system of customs codes on seafood. The main problem can be considered the absence of a system of customs codes or special codes for imports of pollack and salmon. All of the Alaskan pollack imports fall under codes 0302 5000 (fresh or chilled cod) and 0302—5200 (frozen cod). All of the salmon, with the exception of blueback salmon, is under codes 0302—1220 (fresh or chilled Pacific or Danube salmon) and 0303—1900 (other frozen Pacific salmon), which does not allow for the differentiation of other types. Cod and pollack make up the bulk of Russian seafood exports, which are often difficult to trace. Significant volumes of Russian cod from the Barents Sea come to China via the Netherlands and Norway, where they are repacked and get a different certificate of origin. An unknown volume of pollack and salmon pass through the free customs zone of Busan, the cheapest and most convenient for unloading the Russian cargo and fishing vessels, as well as the vessels partaking in illegal fishing in the EEZ of the RF. Due to the lack of control there, fish can get documentation from any country of origin. This existing economic mechanism for an illegal pathway of goods does not allow for an assessment of the size
of illegal catch of Russian commercial fish resources. Refining the data of Chinese imports would significantly clarify the volume of catch and would give a real understanding of the fishing pressure on target species.

It is necessary to establish a ban (moratorium) on fishing in the Amur basin with China on kaluga and on Amur sturgeon and include them both in a bilateral agreement for the protected species. The volume of catch of these species for aquaculture purposes shall be determined jointly based on the number needed to fill the hatchery of sturgeon plants in both countries. This catch should be used as a "control catch" for scientific purposes. "The controlled" fishing in its present form should be abolished. Examination of TACs in the Amur sturgeon must be returned to the federal level, where it should be carried out in accordance with the law (Article 6 of the Federal Law On Wildlife). An honest appraisal of the effectiveness of hatchery operations is required. A plan for management and conservation of sturgeon populations should be developed and implemented based on the existing Agreement of 1994—taking into account the potential negative impact of aquaculture. A joint Russian-Chinese working group should be established with cooperation with the CITES authorities and regulatory bodies. Coordinated monitoring of bodies of water should be sought from the Chinese side. Norms for acceptable impact on bodies of water, taking into account the requirements of aquatic life must be approved. The parties must share information about the impact on water. In Russia, it is vital to accelerate the development and adoption of order in coordination of documentation for the activities of location, design, construction, and commissioning of aquaculture facilities.

A mechanism of interaction between the Federal Agency for Fisheries, Ministry of Agriculture, the Federal Security, the Ministry of Internal Affairs with the executive authorities of the coastal regions of the Russian Federation are not fit to answer the questions on the distribution of powers in the sphere of protection and use of MBRs. The most important question to address is the problem of illegal fishing. This is a matter of getting certificates of origin for the MBR that are caught by fishing fleets in the Russian economic zone.

The current legislation sufficiently regulated the activities of vessels only engaged in production of MBR, and the vessels engaged in receiving, processing, handling, transporting and storing of harvest and by-products of living aquatic resources. They also supplied of fishing vessels with fuel, water, food, packaging, and other materials. They are not required to obtain any permits and may not be equipped with technical verification that provide automatic detection of vessels by the submission to regional centers of the OSM Ship daily reports on their performance. It is necessary to enter into the RF legislation (when concerning internal waters, territorial seas, exclusive economic zones and continental shelves of the RF) the provisions for an additional increase in control over transportation operations of such vessels at sea.
CHAPTER 2. ENVIRONMENTAL COSTS OF INDUSTRIAL COOPERATION BETWEEN RUSSIA AND CHINA

2.7. Illegal trade in wild animals and plants between the Russian Far East and Northeast China

Alexey Vaisman

The Russian Far East is one of the most, if not the most, problematic regions in the country when it comes to illegal trade in wild animals and plants, as poaching as a consequence. The volume of illegal wildlife trade in the region is several times—and for some species ten times—the volume of legal traffic. Some species can be sold and purchased only under the counter. Various environmental, political and socio-economic factors come together in the region, as if by intention, to contribute to illicit hunting, harvesting and black market trade:

- Exceptionally rich concentration of animals and plants. The region is home to northern, Siberian and Manchurian species; Geographical proximity to East Asian countries — traditional consumers of wild animal and plant products; Rising affluence in consumer countries, which is a major driver of demand for wildlife products; Falling income levels, unemployment, ailing industrial and economic enterprises in Russian regions; Crippled fur trade in the Russian Far East. Earlier, fur trade played an important role in the region’s economy. The 1990s, marked a drastic decline of Russian fur trade, prompted by both internal and external factors. This resulted in a sharp drop in yields and put fur hunters and trappers on the brink of survival. Currently, 90% of fur hunters and trappers in the Russian Far East regard illegal procurement and sale to dealers of such wildlife products as ginseng, Siberian musk deer gland, bear bile, antlers, etc., as a good supplement to the meager income they earn by hunting fur-bearing species;

- Radical political changes in the country in the early 1990s. Soviet laws and regulations, so obviously at odds with the new social and political conditions, made customs and environmental agencies largely powerless in the face of illegal wildlife traffickers;

- Weak legislation and inability of regional executive authorities to resolve the issues they are tasked with facilitate illegal trade in wild animal and plant species. Taking advantage of inadequate legislation and law enforcement, numerous criminal gangs of wildlife traffickers sprang up in the region, and exert significant influence on executive authorities, law enforcement and even environmental agencies; As a result, a well-organized system of illegal trade in various wildlife commodities has been set up in the region, with well-functioning and quite safe smuggling channels operating on the border with China and North Korea.

Animal and plant species most affected by illicit trade. Analysis of export and import transaction, as well as of uncovered and prevented instances of illegal trafficking and other customs offences reveals that the main flora and fauna species included in the CITES Appendices and transported across the Russian border (both legally and illegally), include:

- wild ginseng roots;
- sturgeon products;
- cetacean species (live specimens and derivatives);
- polar, black and Asiatic black bears (live specimens, parts and derivatives);
- musk deer (skins, carcasses, and derivatives);
- saiga antelope (horns);
- river otter (skins);
- wolf (parts and skins);
- feline species — Amur tiger, Far Eastern leopard and lynx (live specimens, parts and derivatives);
- falconiform species (live specimens);
- wild tropical animal species (live specimens, parts and derivatives);
- entomological specimens: butterflies, bugs, and spiders.

Many of the species transported from Russia to China are not included in the CITES Appendices, but are just as much affected by insatiable appetites of dealers and poachers. Based on the results of a regional study, experts compiled a list of 10 groups of wild plant and animal species most affected by illegal trade (see Table 1).
### Table 1. Wild plant and animal species most affected by illegal trade

<table>
<thead>
<tr>
<th>Species</th>
<th>Region of origin</th>
<th>Market sector (legal, illegal)</th>
<th>Approximate trade volumes</th>
<th>Type of traffic (export / domestic)</th>
<th>Type of export (legal, illegal)</th>
<th>Volume of illegally exported products</th>
<th>Countries of destination</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Feline species: Amur tiger / Far Eastern leopard / lynx</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Skins</td>
<td>Russian Far East (RFE)</td>
<td>Illegal, Legal (for lynx)</td>
<td>Up to 50/2/over 100</td>
<td>Illegal traffic</td>
<td>Illegal</td>
<td>5 or more / 1—2/10 or more</td>
<td>China, Asia-Pacific countries</td>
</tr>
<tr>
<td>Bones</td>
<td>RFE</td>
<td>Illegal</td>
<td>Up to 50/2/more than 10</td>
<td>Illegal traffic</td>
<td>Illegal</td>
<td>From 5/1-2/10 or more</td>
<td>China, Asia-Pacific countries</td>
</tr>
<tr>
<td>Meat and other</td>
<td>RFE</td>
<td>Legal (for lynx), Illegal</td>
<td>Up to 50/1—2/more than 100</td>
<td>Illegal traffic</td>
<td>Illegal</td>
<td>From 2/1—2/10 or more</td>
<td>China, Asia-Pacific countries</td>
</tr>
<tr>
<td>2. Deer species: sika deer, Siberian stag, reindeer, musk deer</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Unossified sika deer antlers</td>
<td>RFE</td>
<td>Legal, Illegal</td>
<td>Significant</td>
<td>Export, Domestic traffic</td>
<td>Legal, Illegal</td>
<td>Significant</td>
<td>China, South Korea</td>
</tr>
<tr>
<td>Unossified Siberian stag antlers</td>
<td>RFE, Siberia, Altai</td>
<td>Legal, Illegal</td>
<td>Significant</td>
<td>Export, Domestic traffic</td>
<td>Legal, Illegal</td>
<td>Significant</td>
<td>China, South Korea</td>
</tr>
<tr>
<td>Unossified reindeer antlers</td>
<td>RFE, Siberia</td>
<td>Legal, Illegal</td>
<td>Significant</td>
<td>Export, Domestic traffic</td>
<td>Legal, Illegal</td>
<td>Significant</td>
<td>China, South Korea</td>
</tr>
<tr>
<td>Deer antlers</td>
<td>RFE, Siberia, Altai</td>
<td>Legal</td>
<td>Significant</td>
<td>Export traffic</td>
<td>Legal, Illegal</td>
<td>Significant</td>
<td>China</td>
</tr>
<tr>
<td>Deer penises</td>
<td>RFE, Siberia</td>
<td>Legal, Illegal</td>
<td>Significant</td>
<td>Export, Domestic traffic</td>
<td>Legal, Illegal</td>
<td>Significant</td>
<td>China</td>
</tr>
<tr>
<td>Musk deer gland</td>
<td>RFE, Siberia</td>
<td>Legal, Illegal</td>
<td>400—450 kg</td>
<td>Export, Domestic traffic</td>
<td>Legal, Illegal</td>
<td>From 100 to 400 kg</td>
<td>China, South Korea, North Korea</td>
</tr>
<tr>
<td>3. Bear species: brown, Asiatic black polar bears</td>
<td></td>
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<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Gall</td>
<td>RFE, Siberia, Altai</td>
<td>Legal, Illegal</td>
<td>At least 100 kg</td>
<td>Export, Domestic traffic</td>
<td>Legal, Illegal</td>
<td>Up to 50 kg</td>
<td>China, South Korea, North Korea</td>
</tr>
<tr>
<td>Paws</td>
<td>RFE, Siberia</td>
<td>Legal, Illegal</td>
<td>Up to 1,000</td>
<td>Export traffic</td>
<td>Illegal</td>
<td>From 500 to 1,000</td>
<td>China</td>
</tr>
<tr>
<td>Skins</td>
<td>RFE</td>
<td>Legal, Illegal</td>
<td>Up to 500 /from 50 to 200/ about 200</td>
<td>Export, Domestic traffic</td>
<td>Illegal</td>
<td>10 or less</td>
<td>USA, Europe</td>
</tr>
<tr>
<td>4. Birds of prey</td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Gyrfalcon</td>
<td>RFE</td>
<td>Illegal</td>
<td>100 or more</td>
<td>Illegal traffic</td>
<td>Illegal</td>
<td>100 or more</td>
<td>Middle East</td>
</tr>
<tr>
<td>Saker falcon</td>
<td>RFE</td>
<td>Illegal</td>
<td>100 or more</td>
<td>Illegal traffic</td>
<td>Illegal</td>
<td>100 or more</td>
<td>Middle East</td>
</tr>
<tr>
<td>Goshawk</td>
<td>RFE</td>
<td>Illegal</td>
<td>10 or more</td>
<td>Domestic traffic</td>
<td>Illegal</td>
<td>10 or more</td>
<td>Middle East</td>
</tr>
<tr>
<td>5. Fur-bearing species</td>
<td></td>
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</tr>
<tr>
<td>Sable skins</td>
<td>RFE, Siberia</td>
<td>Legal, Illegal</td>
<td>10,000 or more</td>
<td>Export, Domestic traffic</td>
<td>Legal, Illegal</td>
<td>Up to 6,000—7,000</td>
<td>China</td>
</tr>
<tr>
<td>Siberian weasel skins</td>
<td>RFE, Siberia</td>
<td>Legal, Illegal</td>
<td>Up to 10,000</td>
<td>Export, Domestic traffic</td>
<td>Legal, Illegal</td>
<td>Up to 5000</td>
<td>China</td>
</tr>
<tr>
<td>Mink skins</td>
<td>RFE, Siberia</td>
<td>Legal, Illegal</td>
<td>Up to 50,000</td>
<td>Export, Domestic traffic</td>
<td>Legal, Illegal</td>
<td>Up to 20,000</td>
<td>China</td>
</tr>
<tr>
<td>Squirrel skins</td>
<td>RFE, Siberia</td>
<td>Legal, Illegal</td>
<td>40,000 or more</td>
<td>Export, Domestic traffic</td>
<td>Legal, Illegal</td>
<td>40,000 or more</td>
<td>China</td>
</tr>
<tr>
<td>Spices</td>
<td>Region of origin</td>
<td>Market sector (legal, illegal)</td>
<td>Approximate trade volumes</td>
<td>Type of traffic (export / domestic)</td>
<td>Type of export (legal, illegal)</td>
<td>Volume of illegally exported products</td>
<td>Countries of destination</td>
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</tr>
<tr>
<td>Fox skins</td>
<td>RFE, Siberia</td>
<td>Legal, Illegal</td>
<td>20,000 or more</td>
<td>Export, Domestic traffic</td>
<td>Legal, Illegal</td>
<td>Up to 10,000</td>
<td>China</td>
</tr>
<tr>
<td>River otter skins</td>
<td>RFE, Siberia</td>
<td>Legal, Illegal</td>
<td>Up to 1,000</td>
<td>Export, Domestic traffic</td>
<td>Legal, Illegal</td>
<td>Up to 1,000</td>
<td>China</td>
</tr>
<tr>
<td>Arctic Fox Hide</td>
<td>RFE, Siberia</td>
<td>Legal, Illegal</td>
<td>Up to 10,000</td>
<td>Export, Domestic traffic</td>
<td>Legal, Illegal</td>
<td>Up to 10,000</td>
<td>China</td>
</tr>
<tr>
<td>Raccoon dog skins</td>
<td>RFE, Siberia</td>
<td>Legal, Illegal</td>
<td>Up to 10,000</td>
<td>Export, Domestic traffic</td>
<td>Legal, Illegal</td>
<td>Up to 10,000</td>
<td>China</td>
</tr>
</tbody>
</table>

6. Amphibians

| Frog meat                | Primorye region  | Illegal                        | At least 500 kg            | Export traffic                      | Illegal                         | At least 500 kg                        | China                    |
| Frog at                  | Primorye region  | Illegal                        | At least 100 kg            | Export traffic                      | Illegal                         | At least 100 kg                        | China                    |

7. Reptiles

| Chinese soft-shell turtle | Primorye region | Illegal                        | 100 or more p              | Export traffic                      | Illegal                         | 100 or more                            | China                    |

8. Invertebrates

| Trepang                  | Primorye region, Sakhalin | Illegal                        | From 3,000 to 6,000 kg       | Export traffic                      | Illegal                         | From 3,000 to 6,000 kg                  | China                    |
| Jelly fish               | Primorye region           | Legal, illegal                | Up to 30,000 kg             | Export traffic                      | Legal, illegal                 | Up to 30,000 kg                         | China                    |
| Chinese mitten crab      | Primorye region           | Legal, illegal                | Up to 10,000                 | Export traffic                      | Legal, illegal                 | Up to 10,000                            | China, South Korea        |

9. Fish species

| Cold Water Amur Sturgeon | Khabarovsk region, Amur region | Legal, Illegal                | Up to 250 tons               | Export                              | Legal, Illegal                 | 5 tons or more                         | China                    |
| Kaluga (Great Siberian sturgeon) | Khabarovsk region, Amur region | Legal, Illegal                | Up to 250 tons               | Export                              | Legal, Illegal                 | 5 tons or more                         | China                    |
| Sturgeon roe             | Khabarovsk region, Amur region | Legal, illegal                | —                            | Export                              | Legal, Illegal                 | Up to 2 tons                           | China, Japan              |
| Cold water Auha (Chinese perch) | Primorye region, Khabarovsk region | Illegal                      | 500 kg or more              | Export                              | Illegal                         | From 500 kg and more                   | China                    |

10. Plants and mushrooms

| Bracken fern             | RFE               | Legal, Illegal                | Significant                  | Export traffic                      | Legal, Illegal                 | Significant                            | China                    |
| Wild ginseng             | Primorye region   | Illegal                      | Up to 1,000 kg              | Export traffic                      | Illegal                         | Up to 1,000 kg                         | China, Japan              |
| Eleutheroecoccus         | Primorye region   | Legal                        | Up to 10,000 kg             | Export traffic                      | Legal                           | Up to 10,000 kg                        | Europe, USA               |
| Liquorice                | RFE, Siberia      | Legal                        | Up to 10,000 kg             | Export traffic                      | Legal                           | USA                                    |                          |
| Lily of the Valley (Convallaria keiskei) | RFE, Siberia | Legal, Illegal                | Up to 10,000 kg             | Export, Domestic traffic            | Legal, Illegal                  | Significant                            | Europe                   |
| Matsutake mushrooms      | Primorye region   | Illegal                      | 1,000 kg or more            | Export traffic                      | Illegal                         | 1,000 kg or more                      | China, Japan              |
| Chaga mushrooms          | Primorye region, Siberia | Legal, Illegal              | Up to 3,000 kg              | Export, Domestic traffic            | Legal, Illegal                  | Up to 3,000 kg                         | Japan                    |
Illegal export. Between 1999 and 2009, regional customs officers prevented suppressed 522 attempts to smuggle across the Russian border CITES-listed flora and fauna species\(^1\). These were mainly wild plants and animals, as well as their parts and derivatives, used in traditional Chinese, Japanese, Tibetan, and Korean medicine, such as skins of fur-bearing animals, sturgeon products and wild ginseng roots.

Illegal import. Between 1999 and 2009, Far Eastern customs officers suppressed 32 attempts to smuggle CITES-listed species into Russia. However, a domestic market study, undertaken in the Russian Far East, has revealed that the number of plants and animals on sale in pet shops and markets — that fall under the purview of CITES and don’t have documents proving their legal status — sold in pet shops and at markets far exceeds the number of CITES-listed species seized by customs officers during smuggling incidents. Destinations for illegally-traded wildlife products.

Between 1999 and 2009, the main destinations for illegally-traded CITES-listed animals and plants were as follows:

- parts of wild plants and animals used in traditional Oriental medicine, are illegally trafficked mostly to China, North Korea, South Korea, and Taiwan;
- animals, plants (and products made from them), used in Asian cuisine and/or having powerful bio-stimulating properties, such as meat of beluga (European sturgeon) and other cetacean species; bear and wolf meat; Chinese soft-shelled turtles, are usually illegally transferred to China and Japan;
- skins of fur-bearing animals, such as river otter, sea otter, Far Eastern wood cat and wolf, are illegally exported to China, Italy, Turkey;
- sturgeon products are illegally trafficked to China, Japan, the U.K., and the USA;
- animals and plants, as well as their parts and derivatives are usually smuggled into Russia from China and countries of Southeast Asia.

Most of the aborted attempts at illicit cross-border transfers are accounted for by Chinese smuggles. Presently, Russian, Korean and Chinese wildlife dealers successfully operate within the Primorye, Khabarovsk and Amur regions. The ultimate goal of Russian dealers is to resell wildlife commodities to Chinese or Korean dealers. Sellers and buyers of such wildlife products as deer musk, bear bile, and wild ginseng routinely place their ads in print media and on the Internet. Trade in animal parts is most flourishing in such cities and towns as Vladivostok, Khabarovsk, Blagoveshchensk, Ussuriysk, Lesozavodsk, Dalnerechensh, and Kavalerovo.

Law enforcement and environmental agencies are most concerned about Chinese poachers and wildlife dealers who enable illicit activities of Russian poachers. Currently, there isn’t a single area in the Primorye region unaffected by poachers or Chinese wildlife dealers. Their illicit activities are a major driver of illegal harvesting of biological resources, including rare and endangered species. Widespread poaching, with most wildlife products ending up in the hands of smugglers, has been reported by the Ministry of Natural Resources and Environment, the Ministry of Agriculture, and the State Fisheries Committee. Information coming from all across the Russian Far East provides further evidence to the massive proliferation of these unlawful activities. Data on poaching and smuggling attempts in the Russian Far East shows that the heaviest damage is caused to the following animals:

- ungulate species (elk, musk deer, Siberian stag and sika deer);
- predatory species (polar, brown and Asiatic black bears, Amur tiger and Far Eastern leopard);
- bird species (gyrfalcon, white-naped crane);
- fur-bearing species (sable, river otter, sea otter).

The following is a list of most commonly poached species in the Russian Far East (grouped by region):

- Chuckhi Autonomous Area — polar bear, walrus, gyrfalcon;
- Kamchatka — brown bear, moose, gyrfalcon, sable, bighorn sheep, various salmon species;
- Sakhalin region — brown bear, trepan (sea cucumber), various salmon species (there is disturbing data suggesting sea lion and fur seal poaching);
- Magadan region — various salmon species, polar bear, walrus, gyrfalcon;
- Republic of Sakha (Yakutia) — moose, wild reindeer, sable (there is alarming data suggesting saker falcon and bighorn sheep poaching);
- Khabarovsk region and Jewish Autonomous Area — moose, brown and Asiatic black bears, musk deer, sable, various sturgeon and salmon species;
- Primorye region — Asiatic black bear, musk deer, Amur tiger, trepan (sea cucumber), various salmon species (there is disturbing data suggesting Far Eastern leopard poaching);
- Amur region — various sturgeon species, river otter (there is alarming data suggesting Amur tiger poaching rates).

\(^{1}\) CITES—the Convention on International Trade in Endangered Species of Wild Flora and Fauna
A typical modus operandi of criminal gangs specializing in illicit wildlife trade looks as follows: the organizer and main buyer is usually a citizen of China, rarely South Korea, and even more rarely of other countries. Every so often, the buyer brings into Russia a large amount of currency (at least $50,000 USD) to purchase wildlife commodities. Then the customer gets into direct contact with a middleman, who is usually a Russian citizen. The middleman, who may have assistants, travels to sites where poached products can be bought. In certain cases, in order to check the quality of products, the client’s representative — a citizen of China or South Korea — may travel together with the middleman. The purchased commodities are then illegally transported by air, rail, water, or car to storage sites where they are loaded onto final carriers. On the way to storage sites, cargoes are often escorted by corrupt government officials, vested with the necessary authority to resolve all problems that might arise during transportation. The illicit products are loaded onto vehicles equipped with hidden compartments. Secret compartments in trucks are usually made in China; in cargo vessels — while they are being repaired in China or Korea, sometimes by crew members themselves. Before the goods are dispatched, the Russian side resolves all issues related to cargo safety and its secure and hassle-free passage through the customs checkpoint or across the border. The buyer has to deal with any customs control problems in their country, or otherwise find a way to bypass customs and other security checkpoints. A study conducted by WWF and TRAFFIC in the Primorye and Khabarovsk regions allows us to make the following conclusions:

- trade in wildlife commodities, both legal and illegal, has become a widespread phenomenon;
- wildlife dealers and local residents are perfectly aware of seasonal bans on hunting of commercial species and bans on harvesting of rare and endangered species of plants and animals, protected by Russian law;
- existing laws and regulations do not stop people from poaching. In the summer and autumn, people in the Russian Far East, predominantly in rural areas, actively engage in: collection, processing, storage and sale of edible plants, such as bracken and purple-tinged royal ferns, dog rose and berry-bearing plant species;
- collection, processing, storage and sale of valuable medicinal plants, including plants listed in the Red Data Book, such as ginseng, Manchurian Dutchman’s pipe, and so on;
- illegal fishing and sale of salmon and other fish species;
- illegal fishing, cooking, drying and sale of sea cucumbers;
- illegal harvesting, processing and sale of scallops;
- illegal fishing and sale of frogs and snakes to citizens of China;
- collection, processing and sale mushrooms;
- collection and sale of wild decorative flowers, listed in the Red Data Book;
- digging out and sale of wild decorative shrubs, listed in the Red Data Book;
- poaching of wild ungulates, birds and fur-bearing mammals.

Among traditional suppliers of wildlife commodities in the Primorye and Amur regions are:

- farmers, vendors of agricultural products from different corners of the region, coming to the city to sell their goods;
- suburban residents who don’t have a source of steady income to rely on and “live off the land” by hunting wild animals and harvesting wild-growing plants, which they further sell;
- residents of remote settlements and rural areas, specializing in gathering and processing wildlife derivatives for subsequent sale to citizens of China;
- other residents of the Far Eastern and Siberian federal districts, engaged in legal and illegal trade in animals and plants.

In some Far Eastern regions and districts this illegal, or semi-legal, business is engaged in by some 40 to 70% of the population. In isolated areas, poaching of wild animals is flourishing, with most of wildlife products ending up in the hands of smugglers. In the Primorye region, poachers mainly target Amur tigers, Chinese brown frogs, toads, snakes, and Chinese soft-shell turtles. In Magadan, Kamchatka and Chukotka, poachers hunt gyrfalcons. In the Republic of Sakha (Yakutia the main victims of poaching are saker falcons.

Inspections of permanent and makeshift markets, conducted by state law enforcement agencies, as represented by officers from the Ministry of Internal Affairs, are usually cursory or are not made at all, for a variety of reasons. In their turn, environmental agencies lack enforcement powers to exercise any control over illegal trade in protected species of flora and fauna due.

The state of wildlife trade in China

Between March 30 and April 11, 2008 and between September 13 and September 18, 2009, TRAFFIC Europe-Russia, in conjunction with TRAFFIC East Asia-China, conducted a study of Chinese markets, in such cities as Harbin, Qiqihar (Heilongjiang province) and Dalian. Altogether, experts visited four markets, selling pet products and antiques, a bird and poultry market, five agricultural markets, three seafood markets, a wholesale and retail market selling products used in traditional Chinese medicine (in Harbin), as well as 10 shops selling traditional Chinese medicines.
Their investigation revealed that some types of animal and plant products, such as ginseng roots, dried sea cucumbers, deer reproductive organs, bear bile, unossified sika deer or Siberian stag antlers, are supplied to Chinese markets from farms, specializing in artificial breeding of these species, in other words not wild-harvested products.

Nevertheless, market vendors said that some of them overtly sell wild-harvested products, such as sea cucumbers, ginseng roots, deer musks, unossified sika deer or Siberian stag antlers, and saiga antelope, which are prized much higher, than artificially-bred products. Thus, wild ginseng roots cost 30—100 times more than artificially-bred ones. Unossified wild deer antlers cost about twice as much as that of deer bred on a farm.

Investigation of the wholesale and retail market in Harbin revealed a major demand for wild animal products harvested in Russia — both legally and illegally — which are used in traditional Chinese medicine. They primarily include such derivatives as saiga horns, bear bile, and deer musk glands (hunting of musk deer is banned in China, but allowed in Russia).

At the time the study was conducted, one could buy at the wholesale and retail market such products as sika deer and Siberian stag derivatives (unossified antlers, horns, penises, blood, sinews, tails); saiga antelope derivatives (horns, chipped meat, readymade medicines); bear bile; wild-harvested and artificially-bred ginseng roots; sea lion and fur seal penises; dried geckos; dried seahorses, starfish, sea cucumbers; deer musk, toad glands, frog derivatives (dried meat, fat, dried unfertilized eggs; and many other animal and plant products.

Vendors at pet and antique markets sold various objects made of sea turtle shell and elephant tusks, despite the existing ban on such trade in China. On offer are also objects made of parts of preconventional animals, protected by Chinese and international law, indicates that people engaged in this business are perfectly aware of the existing laws that prohibit trade in rare or endangered animal species, as well as wild-growing plants. In China, wildlife commodities are sold overtly, which means that law enforcement and environmental monitoring in the country are less rigorous than in Russia.

2. About 80% of the surveyed Russian and Chinese wildlife sellers trading in Russia were aware that trade in wild animal and plant products requires special permits and licenses, while that trade in endangered animal and plant species is strictly prohibited. In the Primorye region, practically every surveyed seller had heard of the much-publicized trail in 2007 of three Russian and two Chinese nationals, charged with attempting to smuggle to China 480 bear paws, a tiger skin, and a set of tiger bones. (The trial began in the Primorye region shortly before relevant agencies started to monitor regional markets.) This fact shows that media coverage of lawsuits in relation to illegal wildlife trade has positive effects.

3. The study of Chinese markets revealed that most sellers had never heard that trade in products made from wild animals or plants, such as ivory, Chinese turtle shell or deer musk, violates both Chinese and international law. The survey of vendors selling products used in traditional Chinese medicine showed that over 60% of all goods are supplied illegally. This, however, doesn’t prevent them from selling these products overtly.

4. The availability at Chinese markets of wildlife commodities imported from Russia, whose harvesting, processing and sale are banned or restricted by Chines, Russian and international law, indicates the existence of well-established smuggling channels operating on the Sino-Russian border, as well as of international smuggling rings, specializing in wildlife trade.

Conclusions


In recent years, poaching and smuggling have caused huge damage to over 160 flora and fauna species in the Russian Far East, putting in jeopardy such species as: the Amur tiger, Far Eastern leopard, Asiatic black bear, musk deer, Chinese soft-shell turtle, ginseng, Far Eastern trepang, Great Siberian sturgeon, and Amur sturgeon.

It is no secret that there are well-established smuggling channels for wild plants and animals, as well as their
parts and derivatives operating uninterruptedly on the Russian border with China and other Asia Pacific countries. Firms have sprung up in the region specializing in illegal hunting, harvesting, and processing for export of various types of biological resources, including derivatives of wild animals and plants. Illegal wildlife trade has ceased to be a solely environmental and conservation issue. Apart from adversely impacting biodiversity, illegal wildlife trade is also inflicting tremendous economic damage, which experts estimate is reaching $1 billion.

Commercial wildlife trade is a highly lucrative business, driving poachers and smugglers to hunt and harvest wild animals and plants in uncontrollably large numbers. This is a major cause of biodiversity loss and extinction of species. Therefore, introducing legislation regulating trade in CITES-listed wild animal and plant species, both domestically and internationally, will help reduce hunting and harvesting pressure on these species; distribute hunting and harvesting pressure among different parts of wildlife habitats; and control the volume and geography of trade. All these measures will make wildlife trade more sustainable and thus contribute to preserving, on a global scale, the existing biodiversity and natural resources and maintaining a healthy living environment for all of us.

On the other hand, efforts to combat illicit trade in such lucrative commodities as wild plants and animals, as well as various products made from them, will help curb the thriving black market and promote legal trade. The economic benefit is obvious; customs charges paid by legal importers and exporters will increase state budget revenues. To this effect, it is necessary to establish an effective system of flora and fauna monitoring; introduce adequate and realistic hunting and harvesting restrictions; create and maintain an effective enforcement system, both inside the country and on the border.

It is also necessary to introduce changes to the existing regulatory framework for transboundary trade in wild animals and plants. Ideally, to make it possible to sell and purchase wildlife products through auctions, similar to the St. Petersburg Fur Auction.

More efficient tracing of illegal trade in wildlife products and suppressing cross-border smuggling could only be achieved through the concerted efforts of environmental, law enforcement and customs agencies. It is necessary not only to toughen control, but also to improve information exchange between these agencies. One thing is clear, failure to take effective measures will put the unique biodiversity and environmental well-being of the Russian Far East at risk. Therefore, law enforcement agencies and environmental organizations need to work in close cooperation to combat the now thriving illegal trade in wild flora and fauna.

2.8. Development of tourism — a way towards a more sustainable economy in border regions

Svetlana Simonova-Zozulya

When reflecting on approaches towards a more sustainable Sino-Russian cross-border cooperation, one can’t help thinking about the tourism industry. The Russian Far East and Siberia have unique tourism resources—the extraordinarily rich biodiversity and an almost pristine environment, including vast century-old forests, crystal-clear rivers, and majestic mountains. Sikhote-Alin, Kamchatka, and Lake Baikal are among the World Heritage treasures, while many other natural sites rival them in beauty and splendour. Tourism seems to be one of the few fields where win-win cooperation is possible between Russia and increasingly rich but overpopulated China with its polluted rivers, mountains full of pits and mines, and reforested areas. At least, as one Chinese businessman said while visiting a nature reserve in Russia: “You could sell to our tourists the luxury of solitude”. So, instead of mutilating our natural environment with mines and power plants, we must be happy to have an opportunity to “sell” to our neighbors the pristine beauty of nature without destroying it. However, the reality does not always fit our theories and expectations.

Presently, China is the second most popular destination among Russian tourists, followed by Turkey. According to China National Tourist Office, of 1.74 million Russian tourists who travelled to China in 2009, 1.02 million visited the country for recreational purposes, and it is very likely that their holiday included visits to natural sites. The number of Chinese tourists visiting Russia is 10—20 times less, and only a few of them come to see natural sites.

Ecological tourism has become an important phenomenon in the lives of many people in China. The country has already created over 3,000 nature reserves and is the world leader when it comes to the number of forest and wetland parks created specifically for tourism purposes. In 1992, the aggregate revenues from ecotourism in China exceeded 100 million yuan for the first time. In 2003, the revenues from ecotourism reached 5 billion yuan, as 300 million people, or one third of all tourists in the country, chose this type of recreation. The year 2009 was declared the Year of Ecotourism in China.

However, many experts have repeatedly noted that there

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3 Interregional Centre for Business Cooperation (http://www.mcds.ru/).
is no ecotourism in China in the strict sense of the word. The mass character of tourism in China puts natural sites under excessive pressure, resulting into two conflicting needs: a need to meet tourists’ demands and a need to ensure that tourism follows a sustainable path.

In specialized literature, the term “ecotourism” is defined as travel to natural areas for getting a deeper understanding of the local environment and culture, which doesn’t disturb natural integrity of ecosystems, and helps make environmental protection a better source of livelihood for local people. Tourism industry in Sino-Russian border regions faces such serious challenges as safeguarding the integrity of natural ecosystems and maintaining good relations with local communities. Therefore, tourism experts in developed countries would rather refer to this type of tourism as “nature-based tourism”, as it falls short of “ecotourism” in its proper sense. The term “nature-based tourism” is used to refer to any type of tourism experience centered on wild natural environments, natural landscapes, water resources, wild fauna and flora, but not necessarily involving special environmental and social commitments. However, this type of tourism is usually referred to as “ecological” in both China and Russia, and in this chapter we will use the same term to designate a whole range of nature-based tourism activities. Our objective is to better understand how the tourism industry has been evolving in the border areas, what are the main forms of ecotourism in areas along the Sino-Russian border, why residents of the Russian Far East prefer going on holiday to China, and what are the prospects of cooperation between the two countries in the field of ecological and other types of tourism (see Annex for maps of the region).

Ecotourism resources in Sino-Russian border areas

East Russia and Northeast China have similar environmental and geographic conditions, and share a common history. The region boasts extraordinary rich natural diversity and unique cultures of indigenous peoples.

The Primorye region is world famous for the Sikhote-Alin Mountains, a UNESCO World Heritage site and home to the Amur tiger. But residents of northern and inland areas of East Russia are mainly attracted by the region’s warm sea, making beach tourism the main type of tourism in the region. Two national parks established in 2007 — Zov Tigra (Tiger’s Call) and Udege Legend — were intended to make the region, known as a biodiversity hotspot, more attractive to international tourists.

In the Khabarovsk region, the most promising types of tourism are: ecological, adventure, ethnographic and cruise tourism. The Amur River, one of the largest rivers in the world, is a unique natural site capable of drawing visitors from other Russian regions and from abroad. The Shantar Islands in the Sea of Okhotsk also have great tourism potential; there are plans to establish a national park there.

The Amur region has several main tourism and recreation areas, including tourist camps and resorts near Blagoveschensk (Mukhinka), the Khingan Nature Reserve, the Muravyevsky Nature Park, the lotus lakes in the Arkharinsky district etc. Overall, the recreation and tourism industry in the Amur region is poorly developed, and is unlikely to develop without focused support.

The Jewish Autonomous Area, despite its small size, has a relatively well-developed nature-oriented tourism sector, centered on ecological, educational, sports, health, hunting and other types of tourism. On the shores of Lake Lebedinoye, overgrown with beautiful lotuses, environmental trails and viewing platforms have been arranged. The most popular health tourism destination in the region is the Kul’dur balneological resort. The Lesser Khingan Mountain Range is popular among mountaineers and spelunkers. Mountain rivers are ideal for fishing and white-water rafting, while the Khingan gorge on the Amur River attracts those keen on river crises.

The Transbaikal region has great tourism potential as well. The region boasts 64 unique natural landmarks, including glaciers in the Kodarsky Range, thermal springs, lakes, and extinct volcanoes. There are as many as 12 health resorts in the region, including Darasun, Kuka, Molokovka, and Yarmarovka. There are also three protected areas — the Alkhainai National Park, the Daursky and Sokhondinsky biosphere reserves. The region also draws pilgrims: one of the most popular routes takes tourists to Buddhist sacred sites in the Alkhainai Mountains. Tourists coming to the region are offered hiking, walking, hunting, fishing, boat and ski tours. The recently restored population of Mongolian gazelles might also become an important attraction for tourists interested in observing animal migrations, as it is the case in Serengeti or Tibet.

Northeast China hasn’t retained as many undisturbed ecosystems, large wildlife populations, and pristine nature sites as Russian border areas. Nevertheless, the region has incomparably more to offer than the long-exploited provinces in Central and South China. At the same time, there are much more natural landmarks equipped with all amenities for a pleasant tourism experience in Northeast China than in the neighboring Russian regions.

China’s Heilongjiang province shares 3,038 km of its 4,300 km long border with Russia. The province’s climate, different from the rest of the country, makes Hei-
longjiang an ideal winter tourism destination. Just as the Primorye region “sells” its warm sea to residents of Russia’s northern regions, Heilongjiang “sells” snow and ice to residents of China’s southern provinces. The most famous winter attraction in the province is the Ice City constructed annually in Harbin. Apart from the remote Xinjiang, Heilongjiang is the only Chinese region suitable for ski resorts, and they have been sprouting like mushrooms after a warm summer rain. The largest ski resort — Yabuli — was the venue of the 2009 Winter Universiade, and in the future could be included in China’s bid for the Winter Olympics. Forest tourism, actively promoted as an alternative to forest logging, is supported by a well-developed network of forest parks and nature reserves in mountain areas. Tourism services are being developed along the Amur and Ussuri rivers and Lake Khanka, located on the border with Russia, as well as within the province on the banks of Songhua, Mudanjiang and Nenjiang rivers, and at Lake Jingpo. Wetland parks and reserves are even more numerous than forest ones, the most popular of them being the Zhalong Nature Reserve, where visitors are able to interact with domesticated red-crowned cranes.

Jilin province shares a 1,400 km long border with Russia and North Korea. The region offers practically the same types of nature-based tourism as Heilongjiang, but on a smaller scale, and the quality of natural sites is often higher. The main tourist landscapes include steppes in the west, the Changbai Mountain Range in the east, and the Second Songhua river system with a chain of dams in the heart of the province. Just as in Heilongjiang, winter, snow, and ice are important tourist attractions — for example, visitors are shown fabulous groves covered with hoarfrost crystals formed from winter fog near the Fengman Dam, and caves dug out of snow banks on mountain slopes.

The Hulunbuir prefecture is located in the north-eastern part of the Inner Mongolia Autonomous Region, bordering Russia and Mongolia. The prefecture is characterised by a diverse ethnic composition of its population — there are 31 ethnic groups living there, including the Han, Mongols, Buryats, Barguts, Russians, Evenks, Orochis, Orochens, Solons etc. The main tourist attractions of the area include steppes and nomadic herding (in fact, preserved only for the sake of tourism). Local tourism has a clear environmental and ethnic focus — visitors have an opportunity to live in yurts, enjoy steppe landscapes and folk arts of steppe nomads, try their hand at horseback riding, taste traditional local cuisine, etc. Beautiful forests and lakes are less known but also have great tourism potential.

**Boosting tourism in East Russia**

Nowadays, the prevailing type of tourism in East Russia is outbound tourism, which overtakes domestic and especially inbound tourism, although economic considerations dictate that top priority should be given to domestic and inbound tourism. The main geographical features of the Russian Far East that may play a role in boosting recreation services and tourism include the following:

1. Remoteness from Central Russia coupled with poor transport links and high fares. This automatically makes the region unattractive to most Russian residents and prevents those living in the Russian Far East from visiting other, primordially Russian regions. Therefore, domestic tourism services are aimed primarily at tourists living in the Russian Far East.

2. Huge surface area, with most of lands being undeveloped. As a result, the region has large areas of environmentally pristine lands, particularly to the north of the Baikal-Amur Mainline (BAM), which provides ample opportunity to boost recreational tourism and “true” ecotourism.

3. Seaside location. No other Russian region has such a long stretching maritime border. Significant parts of the region can be accessed only by sea.

4. Close proximity to countries of the Asia-Pacific region (APR countries) provides great opportunities for boosting international tourism. APR countries are moving up on the list of world’s most popular tourist destinations. At the same time, quite high costs of tourism services and poor tourism infrastructure in the Russian Far East compared to cheap tourism services in a number of APR countries may result in the Russian Far East becoming a donor in the APR countries’ tourism system.

5. Long stretching land frontier with China — one of the main factors facilitating international tourism. China’s share in outbound tourism in the Russian Far East exceeds 90%; it is particularly high in the Amur region, Jewish Autonomous Area, and Primorye region.

For our analysis we will use regional statistical data published by the Interregional Association for Economic Cooperation “Russian Far East and Transbaikal Region”, which includes all regions of the Far Eastern Federal District, the Transbaikal region, and the Republic of Buryatia. The term “East Russia” is referred to the Russian Far East and Transbaikal region. As can be seen from Table 1, between 2000 and 2008 the sales of tourism services, as well as the number of travel agencies and their staff were generally growing.

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In 2008, the Republic of Buryatia became the leading region in East Russia in terms of sales of tourism services, accounting for 18% of total sales (or 755 million roubles). The Amur region took the second place, accounting for 17% of total sales (712.4 million roubles), or more than double of previous year’s total. The sales of tourism services in the Khabarovsk and Primorye regions amounted to 482 million roubles and 457 million roubles respectively, or 33% and 13% more than in 2007. The revenues of travel agencies in the Jewish Autonomous Area amounted to 36.6 million roubles.

Domestic tourism in East Russia

The recent years have seen a growing interest of Russian people in domestic tourism, particularly in ethnographic, educational, ecological, and recreational tourism. According to Tourinfo news agency, in 2006 the number of domestic tourists in Russia was some 26 million, in 2007—28 million, in 2008—over 30 million. In 2008, like in the previous year, the Primorye region with its warm sea, so attractive to residents of Siberia and North Russia, was the leading regions in East Russia in terms of the number of domestic tourists. That year, the Primorye region drew 460 thousand domestic tourists, the Khabarovsk region—25.3 thousand, the Transbaikal region—19 thousand, and the Amur region—11 thousand⁵.

According to the Interregional Association for Economic Cooperation “Russian Far East and Transbaikal Region”, East Russia’s tourism industry development is hindered by the following problems:

- obsolete hotel and transport infrastructure;
- high costs of services (accommodation, transportation);
- low quality of services;
- complicated procedures necessary to obtain entry documents;
- concerns over tourist safety and security;
- unattractive image of the region in the eyes of international tourists;
- lack of highly-skilled workforce in the tourism sector;
- insufficient investment in the region’s tourism infrastructure;
- insufficient promotion of the region abroad;
- lack of coordination between companies operating in tourism-related industries.

Almost all of these problems also hinder the development of ecotourism in the region. Picturesque natural landscapes are a necessary condition for the development of ecotourism, but not a sufficient one. In addition, many natural tourist attractions in East Russia, despite region’s small population, have been already destroyed or are subject to enormous anthropogenic pressure associated with tourism and other activities. Flocks of so-called wild or unorganized tourists, who often organize outdoor picnics in accessible natural sites, leave piles of litter on beaches, near caves and waterfalls. Another textbook example of a wasteful approach to tourism resources is the degradation of the

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⁵ Interregional Association for Economic Cooperation “Russian Far East and Transbaikal Region” (http://www.assoc.fareast.ru/).
⁶ Ibid.
best beach health resorts in the outskirts of Vladivostok as millions of liters of untreated sewage are discharged in to the waters of the local bay.

Take, for instance, the Amur region. The region would be an ideal place for ecotourism development due to its advantageous geographical location, unique natural landscapes, diverse fauna and flora. However, presently neither inbound nor domestic tourism are being developed there. In 2008, the region was visited by slightly more than 11 thousand tourists, while 92 thousand region’s residents went abroad as tourists. The reason is simple: the region’s road network is undeveloped and public transport is uncomfortable. Private vehicles are extremely expensive to hire — in fact, it is simply impossible to bring tourists to their destinations in a more or less comfortable manner. The Amur region has only one airport, there are no economy class helicopters or small airplanes, and the fleet of buses at tourists’ disposal is quite small too. At the Zeya and Bureya reservoirs, there are no specially equipped beaches, recreational facilities, or comfortable water crafts. The regional tourism development program is still in the pipeline, while region’s residents continue to spend their money at bathhouses and bars in the city of Heihe and ski resorts in Heilongjiang province.

**Russian outbound tourism**

In 2009, the number of Russian citizens who visited China was 44% less than in 2008, supposedly as a result

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**Table 2. Outbound travel by Russian citizens: 2000—2008 (thsd visits)**

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<tr>
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<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>18,371</td>
<td>20,468</td>
<td>24,410</td>
<td>28,476</td>
<td>29,003</td>
<td>34,218</td>
<td>36,538</td>
</tr>
<tr>
<td>China</td>
<td>997</td>
<td>1,372</td>
<td>1,765</td>
<td>2,170</td>
<td>2,352</td>
<td>2,881</td>
<td>3,167</td>
</tr>
<tr>
<td>South Korea</td>
<td>97</td>
<td>114</td>
<td>118</td>
<td>116</td>
<td>118</td>
<td>119</td>
<td>125</td>
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<tr>
<td>Thailand</td>
<td>37</td>
<td>72</td>
<td>96</td>
<td>84</td>
<td>163</td>
<td>263</td>
<td>301</td>
</tr>
<tr>
<td>Turkey</td>
<td>733</td>
<td>1,312</td>
<td>1,756</td>
<td>1,903</td>
<td>1,829</td>
<td>2,395</td>
<td>2,718</td>
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<tr>
<td>Japan</td>
<td>146</td>
<td>177</td>
<td>174</td>
<td>164</td>
<td>149</td>
<td>161</td>
<td>139</td>
</tr>
</tbody>
</table>


**Table 3. Outbound travel from the Russian Far East and Transbaikal region: 2000—2008 (number of tourists)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>China</th>
<th>Japan</th>
<th>South Korea</th>
<th>Thailand</th>
<th>Europe</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>383,631</td>
<td>360,263</td>
<td>5,952</td>
<td>10,620</td>
<td>2,560</td>
<td>785</td>
<td>513</td>
</tr>
<tr>
<td>2001</td>
<td>671,227</td>
<td>618,667</td>
<td>7,362</td>
<td>12,635</td>
<td>3,478</td>
<td>969</td>
<td>22,430</td>
</tr>
<tr>
<td>2002</td>
<td>590,273</td>
<td>554,499</td>
<td>5,042</td>
<td>12,243</td>
<td>3,805</td>
<td>1,025</td>
<td>12,880</td>
</tr>
<tr>
<td>2003</td>
<td>716,649</td>
<td>675,127</td>
<td>11,513</td>
<td>12,545</td>
<td>4,105</td>
<td>2,070</td>
<td>10,333</td>
</tr>
<tr>
<td>2004</td>
<td>937,932</td>
<td>887,293</td>
<td>16,849</td>
<td>20,124</td>
<td>4,819</td>
<td>2,408</td>
<td>4,420</td>
</tr>
<tr>
<td>2005</td>
<td>1,170,255</td>
<td>1,120,463</td>
<td>17,098</td>
<td>19,912</td>
<td>2,994</td>
<td>2,855</td>
<td>4,733</td>
</tr>
<tr>
<td>2006</td>
<td>1,294,325</td>
<td>1,228,764</td>
<td>14,915</td>
<td>21,634</td>
<td>7,472</td>
<td>3,493</td>
<td>11,859</td>
</tr>
<tr>
<td>2007*</td>
<td>1,642,467</td>
<td>1,558,851</td>
<td>14,342</td>
<td>22,879</td>
<td>13764</td>
<td>7,886</td>
<td>14,422</td>
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<tr>
<td>2008</td>
<td>2,032,815</td>
<td>1,937,642</td>
<td>15,840</td>
<td>19,790</td>
<td>17315</td>
<td>7,550</td>
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<td>2008, %</td>
<td></td>
<td></td>
<td>0.8</td>
<td>1</td>
<td>0.9</td>
<td>0.3</td>
<td>1.7</td>
</tr>
</tbody>
</table>

* the 2007 data do not include the Republic of Buryatia.

Source: Interregional Association for Economic Cooperation “Russian Far East and Transbaikal Region”: http://www.assoc.fareast.ru/
of the global financial crisis. Therefore, in the present articles we only analyse data collected before 2009. Between 2000 and 2008, the number of Russians visiting China grew from 1 to 3 million tourists per year (see Table 2). The same period also saw a manifold increase in the number of Russians visiting Turkey and Thailand, two of the most popular resort destinations. In 2008, over 65% of Russians visited China for tourism purposes. Tourism to China accounts for 18.8% of total outbound travel from Russia (see Table 2). In 2008, Russia’s share in China’s inbound tourism was 17.7% — more than any other country’s share.

Let’s look at the regional dimension of outbound tourism. Despite the attractiveness and diversity of tourism resources in East Russia, the number of local residents visiting foreign countries as tourists has been continuously growing (see Table 3). In 2008, a total of 2,033 thousand tourists from the Russian Far East and Transbaikal region travelled abroad; of them 1,179 thousand (57%) travelled from the Primorye region, 412 thousand (19%) — from the Transbaikal region, 238 thousand (12%), — from the Khabarovsk region, and 92 thousand (5%) — from the Amur region. A total of 36.4 thousand tourists went overseas from the Jewish Autonomous Area.

Between 2000 and 2008, China accounted for 93—95% of total outbound travel from East Russia (see Table 3). In absolute terms, the number of Russian tourists visiting China increased 5.5 times, reaching almost one fourth of the total population of the Russian Far East and Transbaikal region by 2008. If you compare Tables 2 and 3, you might suppose that this figure includes all Russian tourists who travelled to China from the Russian Far East and Transbaikal region, except for those who used direct flights from other regions of Russia. Still it is likely that residents of East Russia visited China much more frequently (per capita), than residents of European Russia visited Turkey, the European Union, and Egypt taken together.

If earlier Russian tourists were interested mainly in shopping tours to China, now they are getting increasingly keen on health and educational tours. Treatment at health resorts in China costs less than similar services in Russia, and travellers are still able to buy various other inexpensive goods. In 2009, the most popular types of outbound travel from Russia to China included:

- **Shopping tours.** The most popular type of tourism. For a long time it was closely associated with shuttle trade, but in recent years most shoppers have travelled to China to buy things for themselves and their own families. Most shoppers get to China by buses, which depart from Vladivostok, Blagoveshchensk, Khabarovsk, Chita, and Ussuriysk. The average price of two days/one night tours does not exceed 3,000 roubles. Each additional day adds some 600—1,200 roubles to the total price. Besides shopping, tourists can spend their time in recreation and amusement centers, play bowling (60—70 roubles per game) or billiard (from 20 roubles per game), go to a swimming pool (90 roubles) or a Chinese sauna (from 100 roubles per person), or simply enjoy traditional Chinese cuisine at local restaurants or cafes (20—30 roubles per person). All these services cost on average 3—20 times less than similar services in Russia.

- **Excursions and educational tours** to Harbin, Beijing, and Xian. The tour prices vary from 10 thousand roubles per 7 days in Harbin to 18 thousand roubles per 8 days in Beijing.

- **Tours to seaside resorts** located in Beidaihe, Weihai, and Hainan. Russian visitors to Beidaihe come mainly from the Russian Far East and southwestern regions of the country: Blagoveshchensk, Irkutsk, Ulan-Ude, Chita, Nakhodka, Khabarovsk, Yakutsk, and Sakhalin. Getting to seaside resorts in Northeast China costs less than going to the Black Sea. In addition, Chinese resorts offer a broader range of cheaper services, and have Russian-speaking staff. These destinations are also serviced by charter flights from Moscow, Yekaterinburg, and Novosibirsk. Such tours to Hainan cost on average 38 thousand roubles, including airfare.

- **Health tours** to the Wudalianchi resorts (Heilongjiang province) cost from 16,000 thousand roubles per 15 days; to the resorts of Dalian on the Yellow Sea (Liaoning province) — from 17 thousand roubles per resident of the Primorye region (without travel costs). Similar services provided by health resorts in the Primorye region would cost starting from 25,000 roubles (14 days), of Transbaikal — or 17,000 roubles (without travel costs), recreation on Lake Baikal — 20,000 roubles (excluding transportation costs). A similar situation holds true for almost all regions of the Russian Far East. Many tourists, who used to undergo annual treatment in Russian health resorts, now go to Chinese resorts.

In his interview to China Pro, Feng Litao, head of the China National Tourism Office in Russia, identified several additional reasons why China will continue to draw Russian tourists:

- considerable effort on the part of the Chinese government aimed at improving the quality of tourism services in relation to such events as the 2008 Summer Olympics in Beijing and the 2010 Shanghai Expo;
promotion of China abroad and, in particular, in Russia; the year 2007 was the Year of China in Russia, the year 2006 — the Year of Russia in China. Within the framework of these events, the China National Tourism Office in conjunction with regional governments organized promotional events in different Russian cities almost on a monthly basis. As a result, more Russian residents and travel agencies show interest in China;

it takes little time and effort to get a Chinese visa; there is also an agreement between Russia and China on visa-free travels for tourist groups;

the 2008 Olympics, broadcast all over the world, allowed prospective tourists to see how rapidly China is developing.\(^8\)

**Chinese tourists in East Russia**

What would draw a Chinese tourist to Russia? To Chinese people visiting Russia means experiencing a different, Western European culture. In addition, this is an opportunity to see what has remained of the former “big brother”, which had significant influence on the shaping of the People's Republic of China. It is large historical cities, primarily Moscow and St. Petersburg, and not settlements in the Far East, that attract Chinese tourists to Russia. They rarely come to the country to visit natural sites, although many Chinese tourists are keen on trying their hand at fishing and hunting in Russia. Most Beijing companies providing international tours also offer “recreation at Lake Baikal”. (Thanks to effective advertising campaigns, Lake Baikal enjoys an ever increasing popularity both among Russian and overseas tourists.). As for other regions, in 2008 the Republic of Buryatia received over 300 thousand tourists, with the share of foreign tourists being 5.5%\(^9\). In the last few years, Irkutsk Oblast was visited by an average of 500—700 thousand tourists per year. Before the financial crisis, the region received over 30 thousand foreign tourists per year (the number of foreign tourists is easy to calculate, since they are required to register with the authorities), but in 2009 — slightly more than 20 thousand. Interestingly, European tourists started to stay at Lake Baikal 3 or 4 days longer than in Moscow and St. Petersburg, due to more affordable rates. At the same time, despite China’s close ties with the Irkutsk region, Chinese tourists do not flock to the region. In 2003, between 5 and 8 thousand Chinese tourists visited Lake Baikal, and now the number of Chinese visitors has decreased to just 1.5—3 thousand\(^10\). Irkutsk travel agencies blame stereotypes and insufficient advertising for such state of affairs. Chinese tourists coming to Russia want to see the Kremlin and the Winter Palace; to them, Lake Baikal is something about meteorology. The Siberian–Baikal Tourism Association — an association of travel agencies in the Irkutsk region — plans to organize press tours for Chinese media, photographers and filmmakers. Such tours have once helped promote the region in the European tourism market.

The number of Chinese citizens visiting Russia in 2003—2007 was about 700—800 thousand (see Table 4). In 2008, Chinese tourists accounted for only 15.5% of the total number of Chinese visitors to Russia and for 5.5% of the total number of foreign tourists visiting Russia. According to different estimates, this figure accounts for only 0.3—1.8% of the total number of Chinese outbound tourists.

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<tr>
<td>Total</td>
<td>7,410</td>
<td>8,148</td>
<td>8,661</td>
<td>9,398</td>
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<td>8,347</td>
<td>23,676</td>
<td>2,295</td>
<td>9.6</td>
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<tr>
<td>China</td>
<td>494</td>
<td>680</td>
<td>813</td>
<td>799</td>
<td>764</td>
<td>765</td>
<td>816</td>
<td>127</td>
<td>15.5</td>
</tr>
<tr>
<td>South Korea</td>
<td>61</td>
<td>95</td>
<td>109</td>
<td>111</td>
<td>111</td>
<td>125</td>
<td>101</td>
<td>47</td>
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</tr>
<tr>
<td>United States</td>
<td>199</td>
<td>281</td>
<td>308</td>
<td>281</td>
<td>351</td>
<td>293</td>
<td>305</td>
<td>186</td>
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<tr>
<td>Turkey</td>
<td>103</td>
<td>140</td>
<td>178</td>
<td>198</td>
<td>213</td>
<td>237</td>
<td>239</td>
<td>55</td>
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<tr>
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<td>88</td>
<td>97</td>
<td>84</td>
<td>86</td>
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</tbody>
</table>

Source: Interregional Association for Economic Cooperation “Russian Far East and Transbaikal Region”
http://www.assoc.fareast.ru/

\(^8\) Official website of the government of the Republic of Buryatia (http://egov-buryatia.ru).

\(^9\) Ibid.

\(^10\) According to the Siberian—Baikal Tourism Association.
Among the factors that hinder the development of inbound tourism in the eastern regions of Russia are underdeveloped infrastructure, poor tourist safety and security, and high accommodation and transportation costs. The lack of major cultural and historical sites, most interesting to Chinese visitors, leads to an inadequate price/quality ratio of local tourism products, thus outweighing the favorable geographic location of the eastern regions. As for meals, Chinese tourists tend to eat at illegal or semi-legal Chinese restaurants, where they can order a familiar dish from the menu written in Chinese characters.

Overall, the volume of inbound tourism to the Russian Far East and Transbaikal region is quite modest, to say the least. In 2008, the leading tourist destination in East Russia was the Primorye region, which received 67 thousand foreign tourists (45% of the total number of tourists who visited the Far East and Transbaikal region). Some 74% of all overseas visitors came from China, 11.6% — from South Korea, and 7.2% — from Japan. The Primorye region is followed by the Khabarovsk region — 14% of the total number of overseas visitors (20.4 thousand), the Republic of Buryatia — 13% (20 thousand), the Kamchatka region — 9% (14 thousand), and the Amur region — 8% (11.6 thousand) (see Table 5).

In 2008, the Russian Far East and Transbaikal region were visited by 86 thousand Chinese tourists, who accounted for 58% of the total number of overseas visitors to the region (see Table 5). Between 2004 and 2008, the number of Chinese tourists visiting the region declined threefold, although the total number of Chinese visitors to the region did not change significantly. A combination of factors contributed to this decline, the most important being efforts by the Russian authorities to combat illegal labor migration disguised as tourism. Other factors include: restrictions on travel by Chinese tourists to gamble in overseas gambling houses, introduced by the Chinese authorities in 2008; more stringent control over the use of state funds to cover overseas business travel expenses; abolition of “one-time” passports issued at the border; increase in travel fares; growing interest of Chinese tourists in visiting Central Russia. Chinese economic experts estimate that some 100 new gambling houses were built in the countries bordering China, which brought in about 200 billion yuan of revenue in 2004, making gambling business outside China not only a morally degrading practice, but also a serious economic threat. At present, this revenue apparently comes from the gambling zone in Macao. The statistics also show that between 2000 and 2008 the flow of tourists from other countries was low and showed a declining trend (see Table 5). This supports the hypothesis that the decline in the number of Chinese tourists was a result of the government’s efforts to combat illegal labor migration disguised as tourism, but at the same time this once again underscores the low volume of inbound tourism.

In 2008, the Primorye region was visited by 67 thousand foreign tourists, compared to 110 thousand in 2003. According to A. Stolbikov, head of the travel agency Intour-Khabarovsk, over the last few years the number of foreign tourists visiting Khabarovsk has declined tenfold, despite the fact that the average overnight rate in

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>China</th>
<th>Japan</th>
<th>South Korea</th>
<th>United States</th>
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<td>2000</td>
<td>251,692</td>
<td>223,327</td>
<td>15,905</td>
<td>3,039</td>
<td>5,698</td>
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<td>2001</td>
<td>356,759</td>
<td>228,1,79</td>
<td>21,614</td>
<td>5,198</td>
<td>9,516</td>
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<td>2002</td>
<td>333,000</td>
<td>220,491</td>
<td>18,436</td>
<td>6,177</td>
<td>5,750</td>
<td>4,117</td>
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<td>260,684</td>
<td>207,839</td>
<td>22,290</td>
<td>7,910</td>
<td>5,281</td>
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<td>2005</td>
<td>259,254</td>
<td>193,962</td>
<td>20,888</td>
<td>10,485</td>
<td>12043</td>
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<tr>
<td>2006</td>
<td>190,774</td>
<td>118437</td>
<td>24,032</td>
<td>11,663</td>
<td>9,685</td>
<td>10,663</td>
</tr>
<tr>
<td>2007</td>
<td>153,657</td>
<td>82,218</td>
<td>18,600</td>
<td>9,689</td>
<td>7,871</td>
<td>4,857</td>
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<td>2008</td>
<td>148,204</td>
<td>86,246</td>
<td>16,883</td>
<td>9,787</td>
<td>9,271</td>
<td>9,014</td>
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<tr>
<td>2008, %</td>
<td>100</td>
<td>58</td>
<td>11</td>
<td>7</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

Source: Interregional Association for Economic Cooperation “Russian Far East and Transbaikal Region” http://www.assoc.fareast.ru/

11 Integrated information system “Tourism in Russia” (http://www.rostur.ru)
a Khabarovsk hotel is “just” 100 US dollars. However, high airfares make the Far East an unattractive destination for international tourists. Khabarovsk has been developing rapidly, becoming increasingly more attractive as a city, but even Chinese tourists still find it cheaper to fly to Moscow.

The inbound tourism market in the Amur region, Jewish Autonomous Area, and Transbaikal region, despite the region’s abundant natural and recreational resources, has been showing a downward trend, while the outbound tourism market has been growing from year to year, injecting large amounts of money into China’s economy. The results of this can easily be seen in the Chinese city of Manzhouli. It took less than a quarter century for this small near-border station along the Chinese Eastern Railway to become a modern city with an almost European level of urban infrastructure and services. Every year, over 100 thousand tourists from all cities of the Russian Transbaikal region visit Manzhouli to shop or vacation. At the same time, the Russian settlement of Zabaikalsk, located on the opposite side of the border, changed little over this period. This reflects a profound difference between the Russian and Chinese policies regarding the development of border areas and the use of revenues coming from cooperation in border areas. As part of moves to promote the comprehensive development of its border areas, the Chinese government, has funnelled this money into the development of near-border towns, while in Russia all customs revenues go to the federal budget.

Tourism in Northeast China

China reaps much more benefits from its near-border regions than Russia. The authorities in Chinese near-border towns have been very successful in drawing tourists from central provinces, by supporting the creation and development of tourist attractions and infrastructure. In actual fact, Chinese border regions “intercept” the flow of Chinese tourists, satisfying almost all their demands within the country. Looking from a different perspective, by inviting their compatriots to “centres of Russian culture” on their side of the border, Chinese tour operators indirectly stir up the interest of Chinese tourists in visiting mysterious Russia. Unfortunately, the Russian side doesn’t show enough enthusiasm and hospitality to Chinese guests and fails to “pick up the baton” from the Chinese tourism industry. As a result, the Chinese city of Manzhouli is visited by some 2 million tourists from other provinces of China each year, but only 6 thousand of them cross the border and reach the Russian settlement of Zabaikalsk. In 2009, the number of Chinese tourists in Heilongjiang province for the first time exceeded 100 million, while the total revenue from domestic tourism amounted to 60 billion yuan — almost 20% more than in 2008, or 7% of the province’s total revenue. This is approximately 50 times more than the total revenue from tourism services in the Russian Far East and Transbaikal region, where the tourism sector accounts for less than 1% of the regional economy. (see Table 1). Heilongjiang province is now witnessing a rapid development of tourism infrastructure, in particular landscape tourism zones. The province’s tourism industry offers a variety of tours catering to all types of tourists — winter tours, cultural, ecological, ethnographical tours, and many others. However, when “ecological” tours and routes are launched, the fact that this type of tourism is being developed in China in a way that is very much at odds with the key principles of ecotourism is largely overlooked. To illustrate this point, let us consider a study by researchers from the Institute of Applied Ecology of the Chinese Academy of Sciences, who studied the benefits and problems of ecotourism in the Changbai Mountain Biosphere Reserve, where this type of tourism has been developed for 25 years. Although the development of ecotourism should normally improve the wellbeing of local people, the authors of the study were able to show that the local communities are not involved in ecotourism development and therefore cannot actually benefit from it. Moreover, some communities even express their discontent over the fact that they have limited, if any, access to natural resources. As a result, as many as 100 thousand people were detained within the confines of the reserve over the past 10 years, charged with administrative offences, including illegal logging, hunting, harvesting of wild-growing plants, etc.

and pollution of the natural environment with household waste. For example, after a series of comprehensive environmental compliance inspections, carried out in the Changbai Mountain Biosphere Reserve in 2007, the authorities had to reduce the strictly protected core area, since a part of it had already been built up with hotels. Another example of the “ecotourism” that causes large-scale environmental degradation is taking place in the Hulunbuir prefecture, where leisure boats crisscross the border river of Argun, while its banks are dotted with numerous fish restaurants. Located nearby is the Dalai (Hulun) Lake, the largest water body of the Daurian Steppe, whose shores are lined with beach resorts and restaurants serving local seafood delicacies. When the lake’s shoreline receded with drought, the owners of the resorts and restaurants actively lobbied the proposed Argun — Dalai water transfer project, perfectly aware of the fact that the project would have adverse effects on all water bodies in the region.

Prospects for Sino-Russian cooperation
Under the Northeast China Revitalization Program, the Chinese government intends to funnel 336 billion yuan to accelerate the establishment of “open zones” in near-border areas of Heilongjiang province, encompassing three regions, one island and three areas. At the first stage, there are plans to construct 355 tourist facilities, including 19 star-class hotels, 147 family hotels, and 500 hotel complexes, as well as to purchase 505 aircraft and launch charter flights with the aim of boosting and supporting 48 local travel agencies. The construction will start in 2009 and is scheduled for completion in 2015. According to the Program, the open zones created in the border regions will include 18 border cities and counties, 6 cities and counties where mainland checkpoints are located (Harbin, Mudanjiang, Hunchun etc.), 6 prefecture-level cities (Daqing, Hegang etc.). The zones are expected to attract both domestic and foreign investment enabling the development of high-tech export industries, tourism and green manufacturing technologies.

The Strategy for Boosting Socio-Economic Development of the Russian Far East and Baikal Region through 2025 outlines a set of measures to boost regional tourism, which include enhancing the existing legislative framework, improving transportation and utility infrastructure, creating financial support programs for the industry, as well as developing coherent recruitment and personnel, advertising and image-building policies. The Strategy pays special attention to making the tourism industry in the Russian Far East and Baikal region more competitive. The regions abound in unique natural resources, which will enable local authorities to promote all popular and promising types of tourism, including ecological, sports, marine, cruise, health, cultural, ethnographic, fishing, and business tourism. The development of tourism infrastructure will lead to an overall increase in the number of domestic tourists from European Russia, the Russian Far East and Baikal region, as well as in the number of inbound tourists from China, Japan, Canada, and the US. The Strategy also envisions:

- tourism personnel training and development programs under the auspices of specialized secondary schools and higher education institutions in the Russian Far East and Baikal region, with particular focus on training programs for middle managers and line personnel;
- transport infrastructure development: reconstruction of port facilities in tourist areas; development of small aviation; modernization of airports; and construction of new roads. All these measures may help attract more international tourists from adjacent countries;
- boosting public-private partnership initiatives in order to encourage entrepreneurship in the tourism industry and enable hotel infrastructure development.

Several ambitious projects and initiatives are already under way in East Russia — they have laid or might lay a good foundation for transboundary cooperation in the tourism sector. Among the programs that are being implemented under the Strategy, one that deserves special attention is the creation of the “Baikal Harbor” federal tourist zone in the Republic of Buryatia. Apart from health resorts, the zone will include ski resorts and water-related recreation centers. The federal government is expected to funnel some 10 billion roubles to finance the development the tourism and recreation zone, while at least 35 billion roubles will be provided by private investors, including from China. The regional authorities expect that the new infrastructure will help increase the number of tourists visiting the region fourfold — to one million people per year. The first tourism facilities within the zone are slated to become operational in 2011. Obviously it will be more difficult to attract tourists and investors after the government’s decision in January 2010, to allow the Baikalsk Pulp and Paper Mill to resume its production and thus continue to pollute Lake Baikal.

16 Sun Xiao Qian. Potentialities in the development of tour in the Sino-Russian border area. Institute of Siberian Studies, H. P. Academy of Social Sciences, Harbin 150018, China.
Inner Mongolia is famous for its location along the Great Tea Route, a historic route that passes through 28 Russian cities and 20 cities in China and Mongolia. Stretching for 9,000 km, it is probably the world’s longest continental route, featuring a huge number of natural, historical, and cultural attractions. In addition, Chinese businesses successfully develop tourist attractions featuring Russian ethnic culture — tourist villages, museums, ethnic hotels, centers, and parks — along the border with the Transbaikal region. According to the China National Tourism Administration, 25% of all tourists who came to the Hulunbuir prefecture in 2009 visited local centers of Russian ethnic culture. The largest such center is located in the village of Shiwei, in the country of Ergong. In October 2008, the authorities of the Transbaikal region and Ergong country signed a memorandum of cooperation in the field of tourism. Two months later, the authorities of Ergon organized for representatives of the Chinese travel industry a trip to the Transbaikal region so that they could learn about the Russian cuisine and traditions of hospitality.

The Far Eastern Branch of WWF Russia has been supporting the development of ecotourism in areas surrounding the regional nature reserves since 2000, making selective investments in the most promising eco-tourism projects within the confines of the Khingansky, Komsomolsky, Lazovsky and other reserves. In 2001, WWF organized a trial tour to the Khasan district of the Primorye region for Chinese tourists. As a reciprocal gesture, a visit to the Changbai Mountain National Park (Jilin Province, China) was organized for representatives of the regional authorities, NGOs, and tour operators of the Khasan district. As a result, Chinese tour operators and the Russian “Berkut” travel agency signed a cooperation agreement to organize tours both in China (the Yanbian Korean Autonomous Prefecture and in Russia (the Khasan district).

In 2008, thanks to support from the regional authorities, a number of tourism development projects continued to be implemented in the Khabarovsk region, including such projects as the Sikhote Alin tourism center (the Lazo district), Hehtsir, the Russian Village (the Khabarovsk district), and resumption of international cruises along the Amur River.

More and more people are taking part in another tourism project, “The Oriental Ring of Russia”. The project aims to create a unique cultural and educational tourist route, incorporating historical and cultural landmarks of 38 Russian regions (the Transbaikal, Amur, Khabarovsk, Primorye, Kamchatka, Sakhalin regions, the Jewish Autonomous Area, the Republics of Sakha (Yakutia) and Buryatia, etc.). This route has been included in the Sino-Russian cooperation program and could become a hallmark tourist attraction in East Russia.

The international transboundary route “Golden Mountains of Altai” has also been actively promoted. This is a car tour spanning four countries (Russia, Kazakhstan, Mongolia, and China), sharing many common historical, as well as geographical, cultural, and ethnographic features. The route passes through the Altai region and the Republic of Altai in Russia, Bayan-Ölgii and Khovd aimags in Mongolia, the Xinjiang Uyghur Autonomous Region in China, and the East Kazakhstan province in Kazakhstan. In 2007, an expedition aimed at testing and promoting the route was carried out with the support of the International Coordination Council “Our Home-Altai”. Over the course of the expedition, the team developed the tour itinerary, identified the most attractive landmarks, assessed the state of tourism infrastructure along the route, and identified certain difficulties that may arise while crossing state borders.

The Program for Cooperation between the Regions of the Russian Far East, East Siberia and Northeast China for the period 2009—2018 provides for joint efforts of the two countries to create a tourist and recreation route along the rivers of the Amur basin (known as the Amur-Heilongjiang project), as well as cooperation and coordination of efforts in organizing tours in near-border areas of the two countries, including joint transboundary tours. The Chinese side has repeatedly offered to launch cruises along the Amur River, but the Russian side recently explained that they could do nothing about it at the moment since there were no suitable passenger ships. Therefore, it is likely that Russian tourists will soon be cruising along the Amur River aboard Chinese ships. At least, in this way residents of the Russian Far East will be able to see with their own eyes the scenic Khingan Gorges or “the Three Gorges of the Dragon River” as they are poetically called in China.

Conclusions

The number of Chinese tourists who visited Russia in 2008 was only 6% of the number of Russian tourists visiting China. While China attracted 19% of Russian outbound tourists, Russia accounts for less than 1% of China’s outbound tourism. In 2008, Russia’s share in China’s inbound tourism was 18% — more than any other country’s share, mainly due to a higher quality and lower cost of services than in Russia. For instance, residents of the Russian Far East prefer visiting bathhouses on the Chinese side of the border, as they are less expensive and offer a much higher level of comfort and convenience than bathhouses in Russia. In addition, more
Russian tourists visit more natural landmarks in Northeast China in the course of their educational, health, and recreational tours, than they do in Russia.

As a result of the rapid development of nature-based tourism and unsustainable tourism resource management, China’s border regions are already facing serious environmental problems, such as pollution and ecosystem degradation in protected areas. Although in East Russia excessive tourist pressure on the environment seems to be far removed from the immediate concerns of the regional authorities, it is necessary to ensure that tourism development follows a sustainable path today in order to avoid similar adverse impacts in the future.

East Russia has enormous tourism resources capable of supporting numerous types of tourism. The main factors that hinder the comprehensive development of tourism in the region include: the lack of investment and well-trained personnel, as well as of consistent willingness and ability of local authorities to support the development of tourism. As for the level of infrastructure development, East Russia drags far behind China, therefore a radical shake-up is needed in this regard. Tourism services in Russia are more expensive, while their quality is lower. The lack of a coherent state policy, international cooperation and long-term, stable incentives for the development of Russia’s tourism industry has resulted in an overall stagnation and a dramatic decline in inbound tourism to East Russia. A slight upward trend in the number of domestic tourists gives cause for cautious optimism, since the low quality of services repels all tourists regardless of their nationality.

East Russia doesn’t have that many unique resources for ecological and ethnographic tourism, which are not available in Northeast China, but it has more natural landmarks of a much higher quality (e.g. the Wuadianchi volcanic cluster vs. volcanoes of Kamchatka). The state of affairs in ecotourism is different from the one in hunting, fishing, sports and adventure tourism. In Northeast China, the development of these types of tourism is hampered by high population density, extreme scarcity of game and fish, and the statutory ban on hunting. Some important tourist attractions can be effectively used only within the framework of joint programs, one example being cruises along the trans-boundary Amur River, with stopovers on both sides of the border.

As for the inbound historical and cultural tourism, there are not many sites suitable for such tourism in East Russia, and they are practically unknown outside Russia. In addition, the sites associated with Russia’s conquest of Siberia and the Far East fit awkwardly into the prevailing historical narratives in the neighboring countries. As for ethnographic tourism resources, they are very similar on both sides of the border, and Chinese tour operators are actively promoting ethnographic tourism, including visits to Russian-themed tourist attractions.

It is high time Russia started to apply some of China’s best practices for boosting its tourism industry. However, this requires substantial changes in Russia’s approach to local development, by putting to good use revenues obtained from various projects in near-border areas, including customs revenues. In order to enter the Asia-Pacific tourism market, Russia will have to draw on China’s experience in the field of ethnographic tourism. “Russian ethnic villages” are successfully run in China, some of them employing Russian staff. Similar attractions are yet to be created in East Russia. Particular focus should be made on tourism products and services which could be promoted both within Russia and internationally (e.g. tourist routes passing through nature reserves and national parks). Tours of trans-boundary natural sites might be particularly popular. They might include visiting international nature reserves; cruises along border rivers; transboundary tours following migrating animals, etc. However, the development of such tours would require closer and more effective cooperation between ecotourism agencies in China and Russia, as well as focused support from the local authorities. When these tourist attractions become internationally recognized hallmarks of the trans-boundary region, the efforts put into their development will pay off many times over. A promising initiative is the development of transboundary routes similar to the “Golden Mountains of Altai” route mentioned above. In particular, it seems worthwhile to continue the route “On the Trails of the Amur Tiger and Far Eastern Leopard” on the Chinese side of the border, as well as design other unique tourism products. Another promising initiative is an ecotour of the Daurian Steppes, spanning three countries — Russia, China, and Mongolia.

The successful implementation of all these initiatives depends, in the first place, on effective information exchange between Russian and Chinese ecotourism agencies (directorates of specially protected natural areas, tour operators, etc.). More attention should also be given to marketing, advertising and promotion of tourism products associated with both Russian and Chinese protected areas. It is important to implement joint training and development programs for transboundary ecotourism staff; and, in the future, set up a joint bilingual web-site to promote key ecotourism attractions etc. What is needed is a well-thought-out comprehensive approach to advertising and promotion of ecotourism resources, including publication of bilingual educational and awareness materials— travel guides, maps, brochures and other information materials dedicated to natural resources and ecotourism programs implemented in-border regions between China and
Russia. These materials should be distributed in border cities, tourist centers, and at border crossings to boost sales of nature-based tours.

East Russia offers great opportunities for international hunting and fishing tourism — a sector in which regional competition is very low, if any. River and sea cruises could also draw both domestic and international tourists to the region. This type of tourism will not only allow visitors to see several countries and several unique sites in one tour, but also help avoid a number of problems connected with transportation between locations, flight connections, accommodation and meals in areas lacking in quality hotels and restaurants. Such tours could vary in length and their itineraries could include large cities of Northeast Asia, or picturesque natural sites along the shores of the Sea of Japan and the Sea of Okhotsk. They could also take tourists along the shoreline of Kamchatka, Sakhalin, Japan, Korea, and Alaska.

There is a long overdue need to organize a regional tourist exhibition “East Russia”, as it has been done in China long ago. The largest tourism exhibition “North China”, featuring 10 provinces and direct-controlled municipalities of North and Northeast China, will be held for the 12th time this year. In the future, it would make sense to merge the two exhibitions and organize numerous promotional events as part of this joint exhibition. The pooling of tourism resources and potentials can and will bring the regional tourism industry up to a whole new level.
CHAPTER 3

CURRENT APPROACHES TO GREEN ECONOMY IN RUSSIA AND CHINA
3.1. Approaches to the Formation of Environmentally Sustainable Economies, and Development and Implementation of State Environmental Policies in China and Russia

A. Dikarev

1. China on its way to a national sustainable development strategy

The evolution of China’s environmental policy can be generally divided into two periods. The division line between them lies in the mid-1990s, when the need for transition from an extensive model of development to an intensive one was officially and documentarily declared. These two periods dramatically differ in terms of general approach to environmental factors and their role in the socio-economic development of the country.

We will briefly characterize the first of the two periods:\n
- 1949—1973 — the absence of any pronounced state environmental policy.
- 1974—1978 — China exceeds the first significant environmental limit — the population of the country reaches more than 700 million which, according to most scientists, is a natural carrying capacity of the China’s environment. In 1973, the First All-China Conference on Environmental Protection was conducted at the initiative of Zhou Enlai, the Premier of China. The perception of environmental issues by Chinese leaders was affected by the worldwide “environmental boom” of 1970s; in addition to that, it is at that time that China overcame its international isolation, becoming a member of the UN.
- 1979—1992 — the change of the socio-economic context of the country’s development. In 1983, environmental protection was officially declared part of the state policy and a fundamental political priority of China. The main theoretical and practical dilemma faced by policy-makers was the choice between planned and market economy. The environmental policy reflected the spirit of the time.

On the one hand, in 1988 China adopted a framework law on environmental protection, which had been in pilot mode since 1979 and came into full force in 1989. The law provided for compulsory environmental assessment (environmental expert review) of construction projects at the design stage. Enterprises were required to pay fees for pollutant emissions exceeding established limits. Violation of other environmental standards resulted in fines imposed on the enterprises; persons responsible for major accidents leading to serious environmental pollution faced criminal liability. In addition to the framework law, a number of other environmental acts were adopted during that period, including such laws as On Protection of Environment of Seas and Oceans (1982), On Prevention of Pollution of Aquatic Environment (1985), On Prevention of Air Pollution (1987), On Wildlife Conservation (1988), although the effectiveness of this legislation was very low even according to official sources. Paragraphs on environment were added to the Constitution of China. In 1987, the Fundamentals of Environmental Protection in China were adopted. Environmental Problems of China, a fundamental study by Xu Dixin, a leading Chinese scientist, was published.

On the other hand, the country faced a pressing need to bring 250 million people out of poverty and feed its billion-strong population, which affected the China’s environmental policy. The latter remained, to a significant extent, at the level of declarations during that period\(^\text{2}\).

1992—1997 — the emergence of the concept and strategies of sustainable development. This was a watershed period in the evolution of the China’s environmental policy. The transition to an intensive development model was declared a national objective. During the 1990s, the concept of sustainable development greatly influenced the formation of the national environmental policy. This term entered mainstream political parlance in China and was widely used in the Party’s and government’s documents. In March 1993, the National People’s Congress, the supreme legislative body of China, created a Committee for the Environment and Resources to prepare draft environmental legislation. In April of the same year, a plan for legislative work in the field of environmental law was produced on the basis of government’s reports. During this second wave of legislative activities in the field of environmental protection, a number of important pollution prevention laws were adopted or amended (air pollution, solid waste — 1995, water pollution — 1996, noise pollution — 1996). Also, a large group of laws and regulations in the field of natural resource management, including such laws as


\(^{2}\) In addition, specialists believe that this ineffectiveness was not only a result of the insufficient quality of environmental legislation (which, in general, was reasonable and detailed enough and to a significant extent remains relevant to this day) and the huge scale of problems faced by the country (which is evident). Another factor was the institutional context of the China’s environmental policy at that time (and probably to this day) — the decentralization of environmental protection agencies as part of general administrative decentralization. See: Liu Hunian. Op. cit. P.120; P.M. Mozias. Op. cit. P.225.
On Nature Reserves in China (1994), On Efficient Use of Natural Resources (1997), the Forest Code of China (1998) and other.3

In 1994, China became one of the first countries to publish the National Agenda 21 — the so-called White Paper of Population, Environment and Development of China in the 21st Century. It is important to note that the document set forth the idea of “creation of ethical norms for co-existence of the new man and the nature”4. In March 1994, the State Council of China adopted the Agenda, defining the overall strategy of the implementation of the sustainable development program, the general political line with regard to sustainable development, and the action plan.

The key milestones on the China’s way to sustainable development were defined as follows:

- By 2030 — achieve a zero population growth rate.
- By 2040 — achieve a zero growth rate of natural resource consumption.
- By 2050 (according to other sources, by 2060) — stop environmental degradation.5

This naive, as it may seem, and ambitious plan of the country’s life in the 21st century which was in fact academic (it was proposed by the Chinese Academy of Sciences) was officially approved. It has served as a basis for both theoretical and practical approaches offered by the country’s leaders to the Chinese society in the first decade of the 21st century.

In 1998, the status of the main environmental protection agency of China — the State Environmental Protection Administration — was upgraded to the Chief State Agency (in 2008 the agency was further upgraded to the Ministry of Environmental Protection as part of the overall reform of the government). The State Environmental Protection Administration, the Ministry for Propaganda, and the State Committee for Education adopted the National Program of Environmental Education (1996—2010). The Program became the first long-term plan for the promotion of environmental ethics and awareness in China. Nevertheless, it is still difficult to judge how effectively the system of public involvement and public oversight in the field of environmental protection is being introduced in China. A legal act on disclosing the information on the state of the environment and on public access to this information was adopted only in 2008.

After the adoption of amendments to the Constitution of China in 1999 ensuring the effective implementation of the environmental legislation became the basic priority of the further legislative work in this field. The environmental component began to be integrated in socio-economic development plans and programs. The environmental targets defined by the 9th Five-Year Plan (1996—2000) were met and even exceeded. Everything went seemingly well.

The situation dramatically changed in the late 2002, when the 16th Congress of the Communist Party of China set a national goal to increase the country’s GDP four-fold by 2020 compared to the 2000 level. Absolute priority given to the growth of GDP resulted in a rapid aggravation of environmental issues, since unconstrained growth of GDP and environmental protection are essentially conflicting goals. From that moment onward China has been facing the need to rethink the concept of GDP as the primary measure of economic growth, and all subsequent attempts to elaborate the concept of “green GDP” stem from that need.

The ultra-fast economic growth of the Chinese economy during that period (10—11% per year instead of planned 7%) resulted in a dramatic increase in the load imposed on the environment. Therefore it became impossible to further delay the actual transition to an intensive model of economic development. Therefore the society was offered a new set of ideas: the “scientific view on the development” and the “formation of a harmonious socialist society”. The need for the transition from an extensive development model to an intensive one became one of the main political imperatives of the period after the 16th Congress. It is true that the expansion of the development model has been the main source of all past, present, and future environmental issues faced by China.6

The Third Plenary Session of the 16th CPC Central Committee (October 2003) finally enunciated the concept of “scientific view on the development”.7 Under

4 Ibid. P.104
7 A special role in the formation of the new concept was played by two factors, one extraordinary (the epidemic of atypical pneumonia), and one expected (reaching the GDP level of USD 2000 per capita, which marked a gradual loss of China’s key competitive advantage – cheap workforce). This made it necessary to create a new, different technology basis in order to ensure the transformation of economy’s industrial structure, while maintaining its international competitiveness. Hu Jintao, the new General Secretary of the CPC, declared the need for “balanced, comprehensive, and sustainable development” at the All-China Working Meeting on Combating Atypical Pneumonia on July 28, 2003. It is this wording that was later included in the resolution of the Third Plenary Session of the CPC Central Committee. A week earlier, at another meeting dedicated to the improvement of economic work, Hu Jintao stated that the new concept included coordinated development of the economy and the society, urban and rural areas, different regions, man and the nature. Wen Jiabao, Premier of the State Council, can also be considered a co-author of this concept. At his meeting with the public of Hong Kong on June 29, 2003 he noted that balanced development of all those oppositions is necessary throughout the whole period of modernization. He likened unbalanced development to a disabled person having one long leg and one short leg and facing continuous risk to stumble and fall. This metaphor has become very popular in Chinese media. See: Y.M. Berger Op. cit. Pp.142-143; http://www.peopledaily.com.cn/68/jingji/1037
the general motto “Man is the foundation of all foundations” three development principles were declared: a comprehensive, balanced, and sustainable development. The two latter principles immediately deal with the environment. In particular, the principle of “balanced development” involves “harmonious development of humans and the nature”. The principle of “sustainable development” is essentially based on the internationally recognized concept of sustainable development. The Fourth Plenary Session of the 16th CPC Central Committee (September 2004) raised the question of building “a harmonious socialist society”, with one of the key characteristics of the latter being “harmony between man and nature”. The environmental issues were even more prominent at the Fifth Plenary Session of the 16th CPC Central Committee (October 2005). In particular, it was the first time the environmental issues of rural areas were discussed at such a high level. A special section of the CPC Central Committee’s Recommendations for the Preparation of the 11th Five-Year Plan of Socio-Economic Development of China was dedicated to environmental issues and titled Building a Resource Efficient and Nature Conserving Society. In particular, the document addressed the issues of the recycling economy and the conservation of ecosystems. In addition, for the first time at such a high level, the Plenary Session raised the question of conservation of “key ecosystem areas”, i.e. areas influencing the environmental well-being of the whole country. Based on their resource and ecological potential, four types of areas were identified within the country — the areas of optimal, priority, and restricted development, as well as the areas where economic development was prohibited.

The recommendations of the Central Committee were further detailed in a number of subsequent decisions of the State Council and relevant ministries. The most important document of this kind was the Resolution of the State Council Regarding the Implementation of the Scientific View on the Development and the Strengthening of Environmental Protection Activities (December 2005). Since then, the development has been viewed as a complex multi-faceted social process, which cannot be reduced to economic growth alone.

The distinction between growth and development was not new to China or, to be more accurate, to Chinese scientific literature and media publications. However, the official policy up until that moment had been guided by a reductionist approach, which reduced development to mere economic growth, while viewing GDP as the main, if not the only, indicator of this growth. GDP has been virtually used as the only criterion of both the progress of the Chinese economy at the international level and the performance of individual regions within the country and their leaders. Nevertheless, following the spirit of the “scientific view on the development”, the country began an active search for a system of indicators that would provide an integrated picture of social and environmental achievements as well as economic growth. For this purpose, the Ministry of Human Resources of China created a special workgroup comprising specialists and representatives of local authorities. The group came up with a draft including 33 criteria reflecting, in addition to GDP, the state of the environment, the average life expectancy, the degree to which the needs of the population were met, and other. Certain provinces of China are already stopping the use of GDP as the only indicator of the effectiveness of local governments, not waiting for the approval of respective national guidelines.

The ideological and psychological significance of these activities and attempts to define the so called “green GDP” is obvious. However, the practical use of multiple criteria, which would require prioritizing the criteria and assigning certain importance to each one, will definitely pose serious difficulties. It is unclear, who will make the final judgments, whether the public will be involved, in what way it will be involved, etc. Experts believe that a transition to the “green GDP” indicators in the near future is impossible, since it will face severe opposition from most local authorities. Thus the 2006 suspension of publishing monetary estimates of environmental degradation.8

The Sixth Plenary Session of the 16th CPC Central Committee (October 2006) was dedicated entirely to the issue of building a harmonious socialist society. Among the factors adversely affecting the “social harmony” the Session listed the environmental ones — the ones associated with population growth, deficit of natural resources, and degradation of the environment.

At the 6th All-China Conference on Environmental Protection held in 2006, Wen Jiabao declared current guiding principles of the China’s environmental policy: the principle of balance (equal attention to environmental protection and the economic development, and organic connection between them), the principle of simultaneity of environmental protection and economic development (instead of a model where environmental protection lags behind the development), and the principle of integrated approach (the balanced use of legal, economic and administrative mechanisms instead of the domination of administrative approaches).

To a certain extent, Wen Jiabao’s statement that key environmental targets of the 10th Five-Year Plan (2001—2005) had not been achieved became a wake-up call to China. The optimism of the late 1990s gave way to the period of environmental concerns.9

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Nevertheless, the inertia of the blind faith in GDP still persists. Statistical data published in the recent years clearly show the cost of forced acceleration of the GDP growth. The annual average GDP growth (9.5%) for the 10th five-year planning period was only 0.9% more than the respective value for the 9th five-year period, while the increase in costs (consumption of energy and such basic materials as rolled metal and cement, and other macroeconomic indicators) was obviously disproportionate to the results achieved. This was an indication of the increased resource intensity of China’s GDP. Therefore it was not surprising that the environmental results of the 10th five-year planning period were not viewed as a success by the government and the public of China. According to the State Environmental Protection Administration, the economic damage to China caused by environmental pollution amounts to almost 10% of GDP.10

The most recent breakthrough in the development of the national environmental policy was spurred by the start of yet another five-year planning period (2006—2010). In 2006, the environmental goals of the plan were not reached despite the increasing intensity of environment protection activities. In 2007, China adopted the Integrated Plan for Energy Saving and Pollution Reduction and the National Project for China’s Response to Climate Change. In early 2007, the publication of the General Program for Sustainable Development of China, a fundamental 20-volume work, was started. The publication includes a detailed description of all provinces of the country and their prospects, and is aimed at ensuring security with regard to such sustainability aspects as demography, food, information, energy, health, and the environment.

Only by the beginning of the 17th Congress of the CPC (October 2007) China managed to achieve a certain, albeit modest, reduction of the emissions of the main pollutants. The top officials of the Chinese government, including Wen Jiabao, Premier of the State Council, and Ma Kai, Chairman of the National Development and Reform Commission, assumed immediate leadership in the management of the country’s environmental policy. In particular, Wen Jiabao became head of the National Leadership Group for the Response to Climate Change and the Reduction of Energy Consumption and Pollutant Emissions. It seems that the entire power of the Chinese state has been mobilized in order to address environmental issues faced by the country. The leaders of the state ultimately realized that the environmental crisis should be addressed immediately and that it is extremely difficult to resolve since its causes are “in the people’s heads”, in their mentality which determines their environmental and social behavior. That is why the 17th Congress set the objective of “the formation of environmental culture in the Chinese society”. “We will create the culture of environmental protection by creating an energy- and resource-efficient and environmentally friendly structure of industry, and by maintaining appropriate parameters of economic growth and consumption standards”, — said President Hu Jintao in his address on October 15, 2007.12

In fact, elevating environmental concerns to the status of ideological priorities can be viewed as a direct appeal to the nation in the face of growing threats to the environmental safety. Even the new edition of the CPC Statute contains the requirement to build a resource-saving and environmentally friendly society.13

At the same time, the Congress again set the objective of a four-fold increase in the GDP, this time — in terms of per capita GDP. Again Chinese officials get the message that maintaining an accelerated growth rate is their top priority. And again in China they talk about the malicious stereotype of economic behavior which the country striving for the global leadership is simply unable to overcome. As a result, China remains the indisputable world’s leader in terms of the output of environmentally unsafe industries and the largest area of concentration of such industries. However, speaking about the “leadership in global pollution”, one should consider an important political detail stemming mainly from a demographic factor — the huge population of China. At least, this factor underpins China’s international debates with the “developed consumption societies” regarding the responsibility of individual countries for global pollution and a “differentiated approach” to such responsibility. This factor sheds light on China’s position regarding the Kyoto Protocol and Copenhagen climate drafts and explains why Zhao Baige, Vice Minister of National Population and Family Planning Commission of China, talks about a lower level of “collective responsibility” in the Western countries, where personal “excessive consumption” and associated carbon emissions are much higher than in China. As an example, let us consider the emissions of carbon dioxide — one of the main greenhouse gases.

Among the countries of the world, China is second only to the United States in terms of national carbon emissions (14% of the global amount). However, when expressed in per capita terms, China’s emissions reach only 87% of the global average or one third of the OECD average. In 2003, China emitted only 3.14 tonnes of CO₂ per capita, three times less than Russia and six times less than the United States.14 Even Aus-
Australia performs worse in this regard. At the same time the opponents of the “per capita approach” point to very poor environmental performance of Chinese economy. In this context, more correct approach is to compare specific emissions per unit of GDP. It turns out that this indicator for the Chinese economy exceeds the global average 3.8 times. China emits 5 times more carbon dioxide per unit of GDP than the United States, 9 times more than Japan, and even 1.5 times more than India. According to Premier Wen Jiabao, who presented key parameters of the 11th Five-Year Plan to the National People’s Congress in 2006, the two most important targets were the economic growth rate and saving of energy resources together with environmental protection. In the 11th five-year planning period, environmental protection expenditures were officially included in the state budget; total environmental expenditures were increased to 1.5% of GDP. As a result of discussions, the number of key economic targets for the 11th period was considerably reduced, while the number of social and environmental targets was significantly increased. Moreover, the economic indicators are viewed as a reference, while the social and environmental indicators are set as compulsory targets. There are eight social and environmental targets, including the following five environmental targets:

- reduction of specific energy consumption per unit of GDP (by 20%);
- reduction of water consumption per unit of added value in industry (by 30%);
- maintaining the area of arable land at the level of 120 million ha;
- reduction of emissions of key pollutants (by 10%);
- increasing the area of forests (by up to 20%).

In 2006—2007, the country failed to achieve annual reductions of specific energy consumption envisioned by the 11th Five-Year Plan. In 2008, specific energy consumption decreased by 4.6% compared to 2007, but it is likely that this reduction to a significant extent should be attributed to the global crisis. In 2003—2005 the rate of energy consumption growth considerably exceeded the rate of GDP growth. Therefore energy saving remains an invariable priority of all China’s development programs.

The growing number of environmentally degrading areas resulting from large-scale projects (such as the Three Gorges Dam) or environmental emergencies (e.g. benzene discharges to the Sungari River) made China’s government develop regional environmental programs. In particular, in 2006, a five-year program for the prevention and elimination of environmental pollution in the Songhua (Sungari) River basin and adjacent areas was adopted. The program cost amounted to almost USD 2 billion.

The number of nature reserves or, more accurately, natural protected areas in China is growing, albeit slowly. At the beginning of 2008, China had 2531 natural protected areas with the total area of 151,880,000 ha, including 303 national-level protected areas with the total area of 93,656,000 ha. Thus, about 15% of the total area of the country is under some special environmental protection regime managed at the county, province, or national level. The country continues its large-scale reforestation program — in the 21st century a total of 24.3 million ha of forests will be restored. China already has the world’s largest area of artificial forest plantation (54 million ha).

China has 6 large-scale “forested” programs, which aim to facilitate the conservation and restoration of natural ecosystems, thus maintaining their protective and other important functions. The most widely known programs include:

1) Conservation of Natural Forests — a program to ensure the conservation of the best areas of state forests, while providing those currently involved in forest harvesting with jobs in other economic sectors or in the conservation of ecosystem. The program subsidizes jobs of forest rangers and conservation activities per hectare of forest. In Northeast China alone in 1998—2010 the program helped reduce logging by 7 million cbm per year, ensured the conservation of 30 million ha of valuable forests and provided alternative jobs to 500 thousand people. A total of CNY 50 billion was spent on the program across the country so far.

2) Fields into Forests (and a similar Fields into Wetlands program) — the best known program on the afforestation or reforestation of private lands, aimed at the protecting from erosion, desertification, soil depletion, and at the phasing out of unprofitable farms. Farmers par-

18 http://www.news.xinhuanet.com/environment/2009-06/03/content_114820/
19 RIA Novosti. 27.07.2009 r.
20 Experts in the field reasonably note that China’s protected areas can hardly be considered “nature reserves” in the sense familiar to us; of 15% of the country’s area covered by protected areas, no more than 3% are really protected. For more details see works of E. Simonov, and T. Dikarev: Zapovednoe delo v Kitaye – sostoyaniye i perspektivy. – “Voprosi geografii”, v.l.133. Aktualnaya biogeografiya, 2010.
ticipating in the program receive subsidies (in the form of grain and money) for planting and growing trees on their lands, usually on slopes, inarable lands, and in the locations requiring protection. The products of the planted forests belong to the farmers. Over ten years, a total of 97 million farmers took part in the program. In 2004, the program’s priorities came into conflict with the new “grain security” policy and the implementation of the program has slowed down considerably.

The remaining programs are also aimed at supporting ecosystem services and involve such activities as planting trees at the sources of dust storms, creating three giant tree belts to combat desertification in the north of the country etc.

As a result of the installation of desulphurization equipment at thermal power plants in 2005—2007, about 50% of the country’s thermal generating capacities have been provided with such equipment, while just a few years ago this indicator was about 2%. However, the country still remains the world leader in terms of sulphur dioxide emission, accounting for 31% of the global emissions. Specific sulphur dioxide emission is almost 70 times higher than in Japan and 6 times higher than in the United States — despite the fact that China meets the emission reduction targets for this substance defined by the Five-Year Plan (two percent per year), and performs even better: in 2007 the emissions of sulphur dioxide were reduced by 4.66%, in 2008 — by another 5.95% (COD, a water quality indicator, decreased by 3.14% and 4.42% respectively). The agricultural sector still remains at the periphery of the environmental policy. In the key agricultural regions of the country the environmentally acceptable limits of mineral fertilizer application are exceeded more than two times, reaching more than 500 kg per hectare of arable land.

In 2007, Chinese authorities declare their intent to introduce more stringent requirements for drinking water quality. On July 1, 2007, seventy one new drinking water quality standards were introduced in addition to the existing 35; now there is a single set of standards for urban and rural areas. A special program to improve the drinking water quality for 2006—2020 has been developed.

A new impetus for the greening of China’s economic development was provided by the global economic crisis of 2008—2010, or, more accurately, by the government’s response to it. China and other countries of G20 chose to supplement their anti-crisis stimulus packages with substantial green components aimed at reducing energy and resource intensity of their economies, developing alternative energy sources, and addressing environmental issues. China become the world’s absolute leader in terms of the size of its “green stimulus” — USD 216.4 billion, or 33.4% of the total national stimulus package, which will be spent on the construction of high-speed railroads, the modernization of power transmission networks, the improvement of water supply and treatment systems, as well as waste processing and disposal.

China is also the global leader in terms of the number of CDM (Kyoto’s Clean Development Mechanism) projects, whose overall emission reduction potential amounts to about 3 billion tonnes of CO2-eq. by 2020 (see Chapter 3.4 for more details on “green” projects and investments in China and on the actions of the China’s government aimed at the greening of the national financial sector).

Despite the enormous scale of China’s efforts aimed at keeping the growth of emissions at bay, experts generally tend to believe that the extensive development model of the Chinese economy leads to extensive approaches to addressing environmental issues, aimed at the effects but not the causes. The environmental planning is conducted in a reactive manner instead of a proactive one. All the successes of the recent period were achieved mainly by using administrative mechanisms, and only future will tell whether it is possible to sustain those achievements making them irreversible. Now one can only state that, despite new strategic priorities declared at the turn of the centuries, in the first decade of the new century the country was unable to make a transition to the new paradigm of economic development — “the building of a harmonious society based on a scientific view on development”. At the same time the fact that the country’s leaders begin to recognize the sheer scale and depth of the environmental crisis and are ready to invest in energy and resource efficiency add to the optimism.

Thus, one can conclude that the state of the environment and approaches to natural resource management ceased to be a matter of interest to environmental specialists only, getting serious attention of the top leaders of the country and its economic authorities. The most characteristic feature of the environmental policy of the China’s authorities is an attempt to integrate this

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22 Online encyclopedia: http://baike.baidu.com
23 Zhongguo huan jing bao, 25.10.2007
25 “China Daily”, 02.07.2007
26 “Xin Jiang interpretiruet tseli Kitaya po sokrascheniju vybrosov” http://russian.china.org.cn/exclusive/txt/2009-12/06/content_19016931.htm
policy into the overall context of the socio-economic development of the country. Environmental priorities are beginning to be integrated into virtually every area of the economic and social policy.

However, the central authorities still need to convince officials at all levels of the government and administration that environmental priorities constitute an integral and equally important component of the entire social and economic policy at all levels. This remains a key objective since the existing stereotypes of economic behavior (both of officials and entrepreneurs) are still lacking an environmental component. Therefore only future will tell to what extent China will be able to implement the grand intentions of the new development strategy, which calls the Chinese people “to combine Western material civilization with China’s socialist spiritual civilization in order to give birth to a well-functioning, sustainable, and powerful organism of the flourishing Central Country, tuned to a common rhythm with the nature”.  

Moving from rhetoric of the top authorities to the actual state of affairs, from environmental requirements to their implementation and enforcement, one can make the following conclusions:

The existing constitutional norms and environmental legislation are not complied with to a sufficient extent. The extensive, quantitative economic development continues, while the consumption patterns remain wasteful. Environmental protection measures are lagging behind the degradation of the environment. Public oversight of activities of authorities and businesses is weak. The country has numerous state bodies responsible for overseeing compliance with environmental legislation and environmental protection standards, however, those bodies do not have enough staff to effectively monitor activities of hundreds of thousands of companies. In addition to that, local environmental authorities are often lacking necessary means of transportation and laboratory equipment. But the most important obstacle for effective environmental oversight is the fact that the personnel of environmental agencies at the local level entirely depends on local authorities. No violation of environmental legislation can be investigated and acted upon without an approval and consent of those authorities. This poses a serious threat of a conflict of interests, since under such system local authorities have to oversee themselves. If, for example, municipal officials support or sponsor certain industrial projects, it would be very difficult for the local environmental bureau to insist on environmental compliance of such projects. If the environmental expert review identifies potential adverse impacts of a proposed project, usually it is possible to require improving the project, but not abandoning it completely. Representatives of environmental agencies do not have the administrative power to suspend industrial operations damaging the environment — this requires consent from local authorities. Legal acts often contain more declarations then specific norms, particularly with regard to penalties. Environmental fines are many times less than environmental damage caused by the respective violations. Therefore many companies prefer to pay fines instead of installing pollution control equipment.

At the same time, environmental bureaus themselves often provide paid services to businesses at the project design stage, and then all such projects successfully pass the environmental expert review. As a result, environmental review becomes a part of informal relations between the state represented by local officials at the local level and the business sector. Thus, a significant component of “bargaining” is introduced in the system of environmental oversight. This is only a step apart from well-known corruption, and it does not particularly matter whether the money ends up in the pocket of one official, or are distributed between several “providers of consulting services”, because it is the very idea of environmental compliance that suffers in the end. Uniform standards are adjusted to specific situations, while environmental officials tend to grant numerous “exemptions” to particular companies. At the same time companies, supported by local authorities, often make every effort to avoid the identification of environmental violations, let alone any costs associated with the elimination of such violations. For example, in 2004 there were more than 120 cases when attempts to enforce environmental legislation met violent resistance.

Thus, one can conclude that China has a sound political platform and well-elaborated legal framework for environmental activities of the society, businesses, and the state. What remains is to apply this framework effectively. The effectiveness of the existing policies and legislation depends only on enforcement mechanisms.

In Russia, the situation is somewhat different, since environmental protection has not yet been paid that significant attention at the political level.

2. Russia’s approaches to sustainable development

Judging from fundamental legal and policy documents adopted in the last 10—15 years, Russia has participated in global trends of sustainable development. The concept of sustainable development has been reflected in the Decree of President of Russia “On the State Strategy of Russia for Environmental Protection and Sustainable Development” dated February 4, 1994, the Decree of President of Russia “On the Concept of Russia’s Transition to Sustainable Development” dated


The eight section of the Decree “On the Strategy of National Security of the Russian Federation” states that strategic goals in the field of environmental security and rational natural resource management include elimination of environmental consequences of economic activities as well as conservation of the natural environment and ensuring its protection under the conditions of increasingly active economy and global climate change. The main threats to environmental security of Russia, according to the document, include the depletion of global mineral, water, and biological resources; the presence of regions with environmentally unfavorable conditions in the Russian Federation; the continuation of a large number of hazardous industrial operations; and the lack of legal regulation and supervision of handling of radioactive waste of non-nuclear fuel cycle.

According to the Decree, the main areas of activity of all civil society institutions and agencies responsible for national security include creating strategic mineral resource reserves; the creating conditions for the introduction of environmentally safe production processes; searching for prospective energy sources; and guaranteed meeting of the population’s demand for water and biological resources.

The Decree of the President of Russia “On Certain Measures on the Improvement of Energy and Environmental Efficiency of the Russian Economy” dated June 4, 2008 requires to prepare, within the next few years, draft laws introducing economic incentives for the introduction of energy saving and cleaner technologies, and the liability of economic entities for failure to comply with established limits of environmental impacts.41 In particular, the Russian Ministry for Natural Resources and Environment plans to increase environmental fines imposed on polluters 2.3 times by 2011 and 3.4 times by 2016.32 The Ministry also plans to develop the federal target program “Environmental Security of Russia” by 2012. According to some legislators, the priority measures on the improvement of energy efficiency of the Russian economy to be taken by 2020 should include increasing price of natural gas as the main energy resource, accelerated development and introduction of CCGT (combined cycle gas turbine) power plants (allowing to increase generation efficiency from 32% to 58%), increasing the share of nuclear energy in the overall power generation to 23—25% (by 2030 r.), introducing cleaner technologies for coal combustion, as well as the development of small-scale generation and renewable energy sources.43

The very fact of the adoption of the Federal Law “On Energy Saving and the Improvement of Energy Efficiency and Amendments to Certain Legal Acts of the Russian Federation” shows that the importance of energy saving and energy efficiency has been recognized at the highest levels of the government. In particular, the law defines such means of state regulation and promotion of energy efficiency as the establishment of energy efficiency requirements for goods turnover, the gradual introduction of bans or restrictions on production or trade of energy-intensive goods, and the establishment of tariffs and prices with due account taken of enterprise energy efficiency. Unfortunately, the law is aimed mainly at large energy consumers and does not establish economic incentives for energy efficiency aimed at small customers, including individuals. In any case, since the law establishes only framework norms, which require the adoption of secondary legislation for their implementation, the effectiveness of the law will ultimately depend on how fast the necessary regulations are adopted and which specific requirements they contain.

The experts of WWF Russia believe that the adoption of the law is particularly important since it in fact means the introduction of legal requirements regarding the GHG emission reduction and Russia’s contribution to the mitigation of global climate change34. At the same time, the analysis of changes and trends in the Russian environmental legislation over the recent years allows to make a number of important statements:

1. The recent years have seen an increase in unfavorable attitudes toward the development of natural protected areas among many ministries and agencies. The government has delayed the creation of new nature reserves and national parks, including even those in the prospective list for the period till 2010, approved by the government itself. Unjustified attempts to revise the existing progressive law on natural protected areas (adopted

30 http://www.rg.ru/2009/05/19/strategia-dok.html
33 http://www.rg.ru/2009/06/05/energo.html, June 5, 2009
34 http://www.wwf.ru/resources/news/article/5611
in 1995) are made. In many protected areas insufficient, if any, protection regime is maintained. In this sense, 10—11% of natural protected areas in Russia do not comply with the respective international standards. 35

2. The adoption of a new Federal Law “On Environmental Protection” in 2002 36 triggered a sweeping “reform” of the environmental legislation, which since then has been continued virtually without interruptions. In 2004 alone, amendments were made to more than 500 articles of about 30 laws related to environmental protection. The researches analyzing the whole set of those changes note that they were associated with the general administrative reform and aimed at expanding the powers of local (municipal) authorities with simultaneous strengthening of federal oversight in strategic areas. These trends manifest themselves in:

• the expansion and strengthening of powers of courts and federal executive authorities in the field of the environment, accompanied by the respective decrease in environmental powers and responsibilities of regional authorities. For example, the mechanism of the state environmental expert review is currently regulated entirely at the federal level, with regional authorities being able to initiate a review, but not to conduct it.

• the increase (albeit less pronounced) of environmental powers and responsibilities of local (municipal) authorities, which is supposedly intended to compensate for the decrease in the respective powers at the regional level. 37

Thus, the essence of the recent changes in the environmental legislation is the re-distribution of powers in the field of environmental protection from the regional level to the federal one. For example, serious amendments were made to 22 articles of the federal law on natural protected areas. Nature reserves, national and nature parks, as well as botanic gardens are now considered federal protected areas. The protected areas are financed mainly from the federal budget, while tax benefits for most protected areas have been revoked. This once again emphasizes the essence of the changes: the strengthening of federal oversight and further penetration of private property relations in the field of natural resource conservation and management. 38 Proceeding from the legal framework to a characterization of the institutional system, one should note that, according to a number of experts, the existing Russian institutional framework in the field of environmental protection cannot be considered effective.

In particular, the response to the 2005 Sungari incident showed that, despite years of institutional “reforms”, no positive outcome had been achieved. Over the course of administrative reforms of 2000—2005, effective laboratories of the environmental protection committee were closed down, while the committee itself was disbanded. Costly analytical equipment was discarded or transferred to some peripheral organizations. As a result, Russia had to ask China to sent experts with their own monitoring equipment. As of now, Russia does not have a responsible institution capable of handling complex environmental issues, let alone transboundary environmental accidents and emergencies. According to NGOs and researchers, as a result of administrative reforms conducted in Russia in the recent years, the responsibility for addressing environmental issues has shifted from the regional to the federal level, but at present the country does not have a federal institution capable of addressing environmental issues either in routine or emergency mode. There are no institutions able to adopt and implement international environmental standards, even if this affects country’s relations with its immediate neighbors. 39

3. In the first half of 2008, the draft Special Part of the Environmental Code of Russia commissioned by the Ministry for Natural Resources and the Environment was prepared and accepted by the Ministry. Further work on the preparation and adoption of the Code has stopped after that stage for a number of reasons, including the absence of an official concept of the Code, reorganization of federal authorities, and the economic crisis. In 2009, the Code was not included in the plan for the preparation of draft legal acts; it is likely that the situation will not change in 2010. 40

4. The practice of the recent years shows that some amendments to environmental laws were aimed at removing environmental “obstacles” to activities of investors and other economic entities, rather than at the creation of full-fledged legal mechanisms of environmental protection. For example, as a result of amendments to the Urban Planning Code the list of projects and materials subject to state environmental expert review has been reduced. Some types of documentation, including those most problematic to potential investors,

35 V.V. Dezhkin. Territorialnaya ohrana prirodi v mir i v Rossii. – Rossiya v okrushayushhem mire. Analiticheskij yezhegodnik. М., 2005. P.76


39 Thus all suggestions to demand from China to compensate for the environmental damage caused by the Sungari accident proved unrealistic due to impossibility to produce any grounded quantitative estimate of that damage, which would be a necessary pre-requisite of any lawsuit.

were excluded from the list of documents and activities subject to compulsory state environmental expert review defined by the Federal Law “On Environmental Expert Review”. The materials removed from the list include such documents as feasibility studies and design documentation for the construction of economic facilities, all types of urban planning documentation, and justifying materials for a number of licenses including licenses for the use of subsoil resources (excluded in 2008). Probably this is what was meant by Yuri Trutnev, Minister for Natural Resources and the Environment, when he told that “the legal framework for necessary environmental oversight has been created”.

This trend is generally in line with President’s statements that it is time to stop “terrorizing the business” with numerous inspections “under various attractive slogans, including environmental ones”, and that “if the state needs to intervene, it should do so for truly serious reasons”. However, serious changes to the legislation, in particular, in the field of industrial safety, will inevitably take a long time. For example, according to Yuri Trutnev, the legal framework for the registry of available technologies and the registry itself are planned to be created only by the year 2016. At the same time, the shelved draft Environmental Code already provided for the introduction of environmental regulation based on best available techniques (BAT).

As for environmental rhetoric at the highest levels of Russian government, it is clearly less pronounced than in China, and, judging from that rhetoric, Russian top officials pay much less attention to environmental issues that their Chinese counterparts. However, we have no reason to conclude that those issues are neglected. For example, Russian President Dmitry Medvedev at the meeting with Yuri Trutnev at the end of 2008, when the economic crisis had already begun, said: “A common goal of ours — of the authorities, the civil society, and the business — is to continue the work on improving the environment. And even under the conditions when companies’ opportunities are shrinking, they should not completely abandon this work, continuing to commission new environmentally sound production lines, improve pollution control systems, and reduce emissions. That means that the work must continue non-stop, regardless of external and internal obstacles”.  

In November 2009, at the meeting with President Medvedev, Yuri Trutnev, Minister for Natural Resources and the Environment, made two important points. Addressing the general state of environmental pollution in Russia, he noted that “the situation is somewhat improving in terms of all types of pollution”. At the same time he was reluctant to consider this a large success of the state environmental policy, attributing these changes rather to the effects of the global financial crisis. In fact, this was a direct acknowledgement that Russia was still unable to overcome the trend of the growing “polluting economy” on the national scale. The second important point was that a major reform of the legislation would be necessary in order to effect a radical change of the existing approaches toward the environment in Russia.

Some optimism is warranted by the seriousness of the government’s intents to change the environmental situation in the country, which were reiterated at a recent meeting of the State Council dedicated to environmental issues on May 27, 2010.

Based on the meeting results, President Dmitry Medvedev issued a number of orders on many acute environmental issues outlined above. The addressing of those issues was hampered for many years by various ministries, agencies, representatives of certain major companies, and even some members of the State Duma. The list of measures included virtually all recommendations by WWF voiced earlier and summarized in the presentation of Igor Chestin, Director of WWF Russia, at the meeting of the State Council. In particular, the proposed measures include the restoration of environmental expert review of hazardous facilities, radical improvement of the state environmental oversight effectiveness, the greening of state procurement, and drafting the Fundamentals of the Environmental Policy of the Russian Federation for the period till 2030. In addition, a decision on the improvement of the legal framework in the field of protected natural areas was finally made. The President also ordered to improve the existing legislation in order to ensure better conservation of the marine environment and protection from oil pollution. The respective draft law has been prepared at the WWF’s initiative in spring 2010 and is now being discussed with specialists and members of the State Duma.

WWF’s experts view the President’s decisions as positive, if not revolutionary, but much will depend on the political will to implement all those much-awaited orders.

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41 Ibid. P. 84—85
3. Growth or development? Russia and China in the international arena

The Copenhagen climate summit was a clear failure, judging by its original goal — to adopt legally binding commitments for all countries, more strict than the Kyoto ones in per capita terms (about two times less for the developing countries than for the developed ones).

The good-sounding principle of “common but differentiated responsibility”, to which both Russia and China pay lip service, becomes too vague when it comes to determining specific degrees and methods of this differentiation. Both China and Russia chose to defend their right to economic growth. A characteristic example was the address of the leaders of the Russian science to President Medvedev leaving for Copenhagen. The leaders warned the President to be on the alert and do not allow any infringement of the interests of our country with its oil and gas-based economy. The President promised “to not allow it”; after the summit he characterized its results as “modest”, and later — as simply “zilch”. 47

Although Yuri Trutnev, Minister for Natural Resources and the Environment, characterized the Copenhagen results as “sad”, 48 Russia does not seem particularly sad about its environment — the country still has a lot of it. Of course, as promised by President Medvedev, Russia will address its energy efficiency (as a priority objective) and reduce emissions, but this is still far from the main concerns of the country. It is not surprising that the issue of Russian forests as “the planet’s lungs” is beginning to be raised, albeit still timidly. Why should the countries producing the most oxygen not be allowed to enjoy higher emission caps? Why not apply special coefficients to such countries? But in any way, this is the question for future international debates.

China also used every opportunity to demonstrate its achievements in reducing GHG emissions (and promised to reduce them further — by 40—45% compared to 2005 by 2020, of course, per unit of value added rather than per capita, which means that the emissions will continue to grow, but approximately two times slower). But China is reluctant to accept any binding international commitments, considering the issue of emission reduction an internal matter, at least until an agreement on appropriate compensations from the “developed countries” is reached. 49

Among other climatic debates and disagreements, one deserves particular attention in the context of the growth vs. development dilemma: it was probably the first time when signs of a division between China and small developing countries appeared. Although they used to maintain a consolidated position with regard to climate change, now China is afraid that binding commitments, on which developing countries insist, will undermine its economic growth. This division has become another illustration of the ambiguity of China’s position determined by the nature of its transitional economy and its development strategy. On the one hand, as it was shown above, sustainability rhetoric at the highest levels of government becomes increasingly intense; on the other hand, the country striving for the global leadership is not willing to reduce the rate of its economic growth. Russia, as a state, is now far from dreaming of the global leadership; its huge area still absorbs the most acute environmental pressures, allowing the national economy to continue operating in high-carbon mode. However, insufficient consideration of priorities and realities of sustainable development may lead not only to environmental disasters, but also to the loss of Russia’s international competitiveness and to a slowdown of the economic growth.

49 The special position of China is determined by the fact that it is rapidly gaining weight in the international arena and strives to participate in the development of the global climate strategy on equal footing with the developed countries. At the same time China does not want to adopt commitments that would potentially restrict its economic growth. As a result, Beijing does not oppose the negotiation process openly. Viewing itself as a bridge between the rich North and the poor South, China seeks to utilize the contradictions between them. Before the summit, China’s Premier said that the economic growth is the priority for the developing countries, although somewhat different rhetoric is used within the country.
3.2. System of protected natural territories in the basin of the Amur River as a factor of development of ecosystems management within the border area

Yu. Darman, E. Simonov, E. Egidarev

The basin of the Amur river comprises nearly 2.13 million square kilometers on the territory of Russia, China and Mongolia and consists of 15 ecoregions, 3 of which considered valuable on the global scale. In the basin there are 7 freshwater ecoregions (in comparison with the basin of the Yangtze River with its 2 ecoregions), and it’s considered to be important due to its freshwater biodiversity (See Annex 3, “Globally significant ecoregions of the Sino-Russian border”). Different national approaches and intensity of natural resources utilization affect biodiversity. It is necessary to create and maintain the interdependent system of protected natural territories in order to preserve the biodiversity of the Amur basin. These natural territories should cover at least 15% of all types of ecosystems and especially comprise areas that are critical for conservation of some species.

The development of the protected natural area network on the Russian part of the basin has been covered by many publications. The quantity and the area of natural reserves increased most rapidly from 1995 to 2003, and in 2007—2008 the federal authorities approved 3 national parks. Nearly 3.4 million ha of protected natural parks were organized with the help of WWF. According to the data of 2009, the protected natural territories comprised 9.3% of the basin area (See table 1), whereas in the Primorsky Krai this figure reached 15%, and Zabaykalsky Krai remained at the level of 5%.

In 2009 WWF conducted biodiversity analyses of rare species and of all types of ecosystems in federal protected natural areas of Russia. It was stated that Russian part of the basin lacks pine forests, alpine ecosystems, steppes and wetlands. A list of federal protected natural territories to be created by 2020 was elaborated, now it needs to be approved by the regional authorities. Also we proved the necessity to create the following natural areas in Zabaykalsky Krai — Argunsk cluster in Daursk reserve, wildlife preserves «Gazelle Valley», «Semenovsk» and «Relict forests», broadening of Sohondinsk reserve; in Amur Oblast — Tokinsk national park and Amur wildlife preserve; in Jewish Autonomous Oblast — clusters Pompey and Zabelovsk of the Bastak natural reserve; in Khabarovsk Krai — wildlife preserve «Muchtel lake»; in Primorsky Krai — preserve Usuri. The total area of this projects exceeds 1 million ha, if they are created, the system of protected natural areas in the Russian part of the basin will comprise more than 10%, but still it’s one and a half less than China has (refer to maps of “Protected natural territories in the Amur river basin”)

In China the system of the protected natural territories emerged only after 1979. It is ascribed to different administrative levels and is governed by 10 different bodies. The state administration of forestry plays the

<table>
<thead>
<tr>
<th>Category</th>
<th>Quantity</th>
<th>Area, thousand ha</th>
<th>Share, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nature reserve</td>
<td>12</td>
<td>1495</td>
<td>1.5</td>
</tr>
<tr>
<td>National parks</td>
<td>4</td>
<td>680</td>
<td>0.7</td>
</tr>
<tr>
<td>Federal protected area</td>
<td>7</td>
<td>820</td>
<td>0.8</td>
</tr>
<tr>
<td>Protected zone</td>
<td>10</td>
<td>411</td>
<td>0.4</td>
</tr>
<tr>
<td>Regional protected area</td>
<td>66</td>
<td>5334</td>
<td>5.0</td>
</tr>
<tr>
<td>Natural landmark</td>
<td>226</td>
<td>69</td>
<td>0.1</td>
</tr>
<tr>
<td>Natural parks</td>
<td>3</td>
<td>166</td>
<td>0.2</td>
</tr>
<tr>
<td>Botanic gardens</td>
<td>2</td>
<td>0.2</td>
<td>0.0</td>
</tr>
<tr>
<td>Resorts</td>
<td>12</td>
<td>80</td>
<td>0.1</td>
</tr>
<tr>
<td>Local protected areas</td>
<td>304</td>
<td>481</td>
<td>0.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>646</strong></td>
<td><strong>9536</strong></td>
<td><strong>9.3</strong></td>
</tr>
</tbody>
</table>
Table 2. Protected natural territories in the basin of the Amur river (Chinese part)

<table>
<thead>
<tr>
<th>Category</th>
<th>Quantity</th>
<th>Area, thousand ha</th>
<th>Share, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>National reserves</td>
<td>36</td>
<td>4941</td>
<td>5.46</td>
</tr>
<tr>
<td>Provincial reserves</td>
<td>77</td>
<td>5288</td>
<td>5.84</td>
</tr>
<tr>
<td>Circuit reserves</td>
<td>42</td>
<td>1028</td>
<td>1.14</td>
</tr>
<tr>
<td>District reserves</td>
<td>103</td>
<td>3006</td>
<td>3.32</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>260</strong></td>
<td><strong>14263</strong></td>
<td><strong>15.75</strong></td>
</tr>
<tr>
<td>Protected landscapes</td>
<td>21</td>
<td>No data</td>
<td>No data</td>
</tr>
<tr>
<td>Forests and wetlands</td>
<td>31 national and 17 provincial</td>
<td>No data</td>
<td>No data</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>329</strong></td>
<td><strong>14263</strong></td>
<td><strong>15.75</strong></td>
</tr>
</tbody>
</table>

Table 3. Protected natural territories in the basin of the Amur river (Mongolian part)

<table>
<thead>
<tr>
<th>Category</th>
<th>Quantity</th>
<th>Area, thousand ha</th>
<th>Share, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strictly protected natural territories</td>
<td>4</td>
<td>1218</td>
<td>6.4</td>
</tr>
<tr>
<td>National parks</td>
<td>1</td>
<td>426</td>
<td>2.3</td>
</tr>
<tr>
<td>Natural reserves</td>
<td>4</td>
<td>812</td>
<td>4.3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>9</strong></td>
<td><strong>2456</strong></td>
<td><strong>13.0</strong></td>
</tr>
</tbody>
</table>

most important role and manages 161 of 260 natural reserves in the basin of the Amur River or 70% of the protected area. 17% of the protected natural territories, mostly wetlands, are governed by the Ministry of Environment Protection. We can’t apply the term “reserves” to Chinese parks because the protected natural territories even on the national level aren’t protected as such, they are considered as national parks but are governed by the local government. Most of the parks do not own the land but provide the servitude. Besides natural parks in the basin of the Amur river in China there are also forest and marsh parks, protected natural territories and historic landscapes. The Ministry of China initiated the project of “reserves for protection of the ecological functions” — big territories with one ecological imperative (for example, desertification control). As no executive system is applied yet, we don’t take them into account. Nevertheless, the total area of the protected natural territories in the Chinese part of the Amur river basin reached 15%.

Amongst the forest natural territories the most well-known reserve is the Changbaishan on the Songhua River, with nearly 2000 square kilometers of untouched forests and thousands of tourists visiting annually. Amongst wetland reserves the most popular is Dzhalun near the city of Qiqihar, where 50 couples of Japanese cranes were supported more than 10 years ago, and every spring this is a feeding place for 1/3 of all the Siberian cranes. One more important reserve is Sanjiang where a chain of 8 protected natural territories represents a long corridor along the left bank of the Usuri river.

During 2001—2005 47 new protected natural territories were created on the North-East China, total area — 3.65 million ha, during next 5 years authorities will create 29 protected natural territories with 1.55 million ha. 1.22 million ha were promised by the governor of the province Heilongjiang in accordance with the WWF program “Presents to the live planet”. They are also going to expand the reserve Dong Fang Hong in order to protect Amur tiger near Wanshan Archipelago. Also for that purpose they plan to create a network of reserves in the province Jilin.

The Mongolian part of the Amur river basin comprises 13% of the protected natural territories.

It’s hard to create a fixed protected natural reserve, because animals and birds are constantly moving across the large areas due to cyclic climate fluctuation. There is another problem: conflict with the owners of the
Table 4. Protected natural territories in the basin of the Amur river

<table>
<thead>
<tr>
<th></th>
<th>National</th>
<th>Provincial and local</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Quantity</td>
<td>Area, thousand ha</td>
<td>Share, %</td>
</tr>
<tr>
<td>Chinese part</td>
<td>67</td>
<td>4941</td>
<td>5,5</td>
</tr>
<tr>
<td>Mongolian part</td>
<td>5</td>
<td>1644</td>
<td>8,7</td>
</tr>
<tr>
<td>Russian part</td>
<td>23</td>
<td>2995</td>
<td>3,0</td>
</tr>
<tr>
<td>Basin of the Amur river</td>
<td>95</td>
<td>9580</td>
<td>4,7</td>
</tr>
</tbody>
</table>

mineral prospecting license. All the protected natural territories of Mongolia are governed by 4 small offices, some of them are too far from those territories, some of them lack the necessary transport or staff. There is only one exception — national park Onon-Baldj that became an independent structure and managed to govern more efficiently and collaborate with Sohondinsk natural reserve within the Russian-Mongolian program to create a transnational reserve “Amur river head”.

Thus, on the Amur river basin there is already a developed network of nature conservation preserves, comprising 12% of its total area (refer to table 4).

One territory has a status World Heritage, 11 are UNESCO Biosphere Reserves, 15 are in the list of the most important wetlands. On the basis of some intergovernmental agreements between Russia, China and Mongolia it is possible to coordinate the work of international reserve “Daur” and Russian-Chinese international reserve “Khanka Lake”. All the documents to create Russian-Mongolian reserve “Amur sources” and Russian-Chinese reserve “Leopard land” are almost ready. Besides, there are suggestions to create transnational preserves on the Greater Khingan Range; Lesser Khingan; on the Usuri river and many others.

Russia, China and Mongolia should join their efforts to create transnational ecological network, called “Green belt of Amur” by WWF in 2005. Its concept includes the development of the vast network of protected wetland and forest ecosystems with particular focus on transboundary ecosystems. This system has numerous goals: preserving valuable “green corridors” of wetlands; supporting the migration routes of various species; forest management; conservation of big mammal species; preserving spawning places of rare fish. The scheme is based on the understanding of the interdependence between biodiversity conservation and ecosystems management and preserving key ecosystems’ services. The project is developed on the foundation of the Plan for Conservation of Biodiversity of the Russian Far East Ecoregion supported by the leading NGOs. The theoretical base of the project was developed by the Institute for Water and Environmental Problems of the Russian Academy of Sciences.

The concept of the “Green belt of Amur” was also discussed during the international meetings in Beijing, Moscow, Switzerland and was supported by the WWF Russia, WWF China and WWF Mongolia. In 2010 the Environment Protection Ministry of China prepared its document and now its pending ratification by the Russian side.

For such a collaboration it’s necessary to have a common database and Amur Information Center could become an international platform where a common database for the three countries could be created. For this purpose all available information sources were used, most of the reserves were visited by the authors and also GIS data was collected and analyzed.
3.3. Forest Certification as Means to Ecologize Forest Products Trade between Russia and China

Voropayev A., Smirnov D.

Forest Products Trade between Russia and China

Russian forest products trade with China is typical of developing countries that export rough timber and primary processed timber products to developed countries to later import finished products of woodworking industry therefrom. Now Russia is a source of raw materials, as well as a place harbouring high-polluting facilities mostly belonging to upswinging China rather than to developed countries. Developed markets are gradually terminating Russian timber products export due to its failure to meet international quality and certification standards, as well as its over-corrupted, rough and unstable character. However, that doesn’t mean they no longer want to purchase Russian timber. These days China successfully re-exports Russian timber to developed economies and thus gets add value, which means it profits more than Russia, the owner of the very forest resources.

Forest products trade between Russia and China in contiguous regions of the countries is more than a mere frontier trade, since it determines Russian forest export in general. Simple analysis of the geographic structure of Russian forest products export makes it evident (fig. 1).

China is the largest buyer of Russian forest products, which is twice and a half as much as Finland procures. What’s more, there is a sustainable growth trend in Russian forest products export. Only 2004 was marked by a slight decrease in export, whereas in the same year China’s share in Russian forest products export began to increase (fig. 2).

The year 2009 faced a dramatic change in this situation due to changes in global market. Decrease in Russian forest products export amounted to more than one third. Russian exports to China dropped by almost one third as well. Still, China managed to keep its leadership as the main buyer of Russian forest products, increasing its share up to 32% (fig. 3).

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1 All data concerning Russian export here and below are provided by M_info
In general, there have been dramatic changes in the structure of the major markets for Russian forest products. Finland and Japan being as a rule Russian second- and the third-biggest buyers respectively have decreased their stakes in forest trade with Russia to be found on the third and sixth places respectively. Kazakhstan, Uzbekistan and Egypt have secured their reputation as the biggest forest products purchaser from Russia, with Iran entering the top-ten.

This is not a matter of change in the map of the Russian forest products export only. Earlier, the share of European countries in Russian export began to decrease; in 2003 Germany used to be the fourth market for Russian timber, with Ireland and Great Britain among the top-ten. This is evidence of reorientation from ecologically concerned markets with demand for FSC-certified products and attention to ecologic and social aspects of logging as well as its “legal” status, to less-developed markets. For instance, Kazakhstan, Uzbekistan, Iran and Azerbaijan have no FSC certificates at all, whereas Egypt has only 1, and Ukraine has 8. These countries will not promote development of responsible forestry practices in Russia. In this connection, the role of China as the major buyer able to influence forest sector in Russia and promote responsible forest practices through growth of demand for FSC-certified products (as a means of sustainable forest management) increases. Nowadays China is one of the world leaders in FSC certificates growth. However, some lumbermen from the Far East say, rise in timber export to some post-Soviet countries (Kazakhstan, Uzbekistan) is a consequence of the desire to avoid high customs duty for rough timber in trade with China within the Eurasian Economic Community. The truth is that China is still the final destination point for timber. As a matter of fact, that means, Chinese share in the Russian timber export is continually growing. Moreover, decrease in Japanese and German shares may signify the increase of Russian timber in their markets exported there as finished goods from China.

Russia is China’s major trade partner in the forest sector. However, Russian part in the general Chinese forest products import is not as significant (fig. 4). China doesn’t depend on Russian timber products export (14%) as much as does Russia on Chinese procurement (30%).

The structure of Russian timber products export to China is rather homogeneous and primitive (fig. 5). More than 60% of export falls on roundwood, that is rough timber, or fresh raw timber, which is to be processed and transformed into timber products. It is only natural and reasonable, because China in the first place produces timber goods for export rather than purchases ready-made timber products. China doesn’t want to buy finished products offered, which are at that less competitive than products made in China. China needs raw material for their own facilities, whereas for this purpose Russia is not a unique supplier of exclusive materials, which means, it can be easily replaced by some other supplier.

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2 Meaning FSC Chain of Custody certificates (COC) only, because they ensure that wood products are FSC-certified.
3 It has 1224 COC certificates as of June 1, 2010.
4 Eurasian Economic Community (EurAsEC) is an international economic organization entitled to form common international customs boundaries for its member-countries (Belorussia, Kazakhstan, Kyrgyzia, Russia, Tajikistan, Uzbekistan), as well as to work out a common foreign economic policy, tariffs, prices and other components of the common market.
5 All data concerning Chinese forest products import here and below are provided by FAO.
Wood pulp is second-most important export item to China. Wood pulp surely differs from roundwood and it’s a product of advanced processing and the first stuff used to produce more expensive paper products. Here Russia becomes raw material supplier for China and is highly dependent on its market, which is not the case for China. For the country Russia is only the fifth largest wood pulp supplier with its 11%, following Canada, Chili, Indonesia and US.

Lumber is the third-most important export item to China (slightly above 10%), in particular, worked lumber, sawn, split or sliced timber etc. It is half-finished product again, later processed to produce finished goods.

Another important forest export item to China is paper (3.5%); its share in general is not big with 98% falling on package (kraft paper and kraft board), which are rather cheap and less progressive products of paper sector. Other kinds of timber products account for less than 0.5% of total export.

Figure 6 shows the main trends in the Russian forest export to China. A rather stable growth in Russian roundwood export to China gave way to a nosedive in 2008. This strongly correlates with imposture of export customs duty for rough timber. In 2009 the falling trend in roundwood export continued both due to rise in customs duty and drop in demand for timber products amid the world crisis.

Lumber export sustainably grows. Within 2008 alone it rose by 35%, and in 2009 by 23% more, despite the crisis. However, this increase is less than drops in roundwood export volumes, even in terms of roundwood used to get comparable data. Chinese companies have begun to buy more lumber and even build sawmills in Russia, though it cannot bring big profit or new technologies, the situation is quite the contrary. Chinese companies implement only primary roundwood procession in Russia, for instance, they saw timber. To avoid custom duties for rough finewood export (in the Far East it is ash and oak), Chinese saw mills make raw edged boards scraped from one side giving ground to call it finished timber. Between 2003 and 2009 several facilities for disposable chopsticks production were built in Russia to meet the requirements of volumes processed in Russia.

We consider the efficiency of these measures to be extremely low or even worse after covering all expenses including those for production waste disposal and losses from unsustainable forest management. Even if a facility produces good square-edged lumber and implement their drying, they are still very far from being called technologically advanced. This type of saw mills is usually called “tropic” with a roof only to protect timber from rain. What’s more, these facilities are erected in Siberia. Russian workers don’t want to work in such conditions and for the money paid by Chinese employers. They have different attitude to work, way of life, psychology and language. As a result, Chinese mills in Russia employ Chinese workers.

Lately a number of saw mills in the border regions with China has been built, so as lumber export and export of products falling under this category began to increase rapidly, whereas roundwood export dropped. Chinese forest industry declares its readiness to continue the development of forest industry in Russia on condition that it will preferably employ Chinese workers, because they are less demanding on wages and working conditions. Moreover, border regions lack workforce to provide new productive capacities therewith.
At the intergovernmental level this strategy, however, is embellished with phrases about Chinese intention to invest in different “complexes” and “forest industry centers” for “advanced and wasteless processing” of timber in Russia. The Cooperation Program between the Far Eastern and Eastern Siberia Regions of the Russian Federation and the North-East of the People’s Republic of China (2009—2018) adopted in September 23, 2009 includes the following Chinese investment programs on woodworking in Russia: in the Zabaikalye Territory — timber-processing plant in Chita city, advanced-processing plant in Zabaikalsk village; in the Irkutsk Territory — complete timber processing complex on the basis of Chunsky Forest-Industry Complex, timber processing complex in Ust-Kutsky District, Taishetsky Timber Processing Complex; in the Amur Oblast — timber processing complex in Baikal-Amur Railway based on technological cycle of timber wasteless processing to produce veneer, MDF boards, OSB boards, dry timber; in the Jewish Autonomous Oblast — advanced-processing complexes in Birobidzhan city, Nizhne-Leninskoye and Pashkovo villages; in the Khabarovsk Krai — lumber and components production plant for wood building construction in Sukpai village, peeled veneer production plant in Vyazemsky city; OSB boards production plant in Komsomolsk-on-Amur, timber advanced-processing plant in Amursk city, plywood production plant in Kharpichan city of Solnechny District, MDF boards production plant in Berezovy village, timber-processing plant with annual capacity of 100 thousand cubic meters; in the Republic of Buryatiya — timber advanced-processing plant in Khorinsk village, lumber and components production plant for wood building construction in Taksimo village of Maisky District, OSB boards production plant in Ulan-Ude city; in the Primorsky Krai — timber processing plant in Yakovlevsky District; in the Sakhalin Oblast — timber advanced-processing plant; in the Magadan Oblast — timber processing complex in Srednekansk District; in the Kamchatka Krai — timber processing complexes in Milkovsky District.

Russian wood pulp export to China had been quite stable till 2006, followed by a dramatic rise, and within two years the export has almost doubled. It is good for economy. The share of more sophisticated products in the export rises, however, it should be highlighted again that they are still half-finished products later used to produce paper products, and also the least ecology-friendly part of the pulp and paper production. In 2009 wood pulp export nosedived stronger than roundwood export, which reflects fluctuation in demand on the world market and growth in share of cheaper wood pulp from tropic forests. In general, the structure of Russian timber products export to China has changed dramatically within the year (fig. 7).

Roundwood is still the major export item, but its share has decreased for the first time lately. The share of lumber almost doubled to secure the second place and continue the growth trend. Wood pulp export strongly decreased. This item of export is not prospective, since there is a world trend to shift wood pulp production to tropic countries and lessen paper consumption in developed countries as well as higher requirements to pulp and paper industry sustainability. The share of paper products has risen a bit, whereas its export volumes have partly reduced.

There is a common misconception that Russian timber products export to China is mainly from the Far East, but it is not true (fig. 8).
We consider it to be quite true that nature of the Russian Far East mostly suffers from consequences of trade. It is not correct to analyze the trade impact on forests of constituent territories on the basis of their share in the total timber export to China. Mixed coniferous broad-leaved forests logging in the Far East (sometimes happening the third time) causes stronger damage to biodiversity than logging of pine forest in the Irkutsk Oblast. The share of stolen timber in the Far East is higher due to procurement of finewood (illegal procurement there amounts to 50%).

To make an adequate comparison of different products groups we converted it into roundwood\(^7\) An absolute leader in timber products export to China is the Irkutsk Oblast (57%) and the Eastern Siberia in general (69%). The Far East exports less than 24% with the Khabarovsk Krai in the lead (14%). The European part of Russia (mainly, wood pulp) as well as the Western Siberia are also Chinese suppliers. The Khabarovsk Krai is in the lead with its 33% followed by the Irkutsk Oblast (22%), the Primorsky Krai and the Krasnoyarsk Krai (11% and 10% respectively). Other groups of products have the Irkutsk Oblast at the top. In the Far East export roundwood takes the lead with more than 96%.

Negative effect of Russia-China timber trade for environment
Ecological effect of timber products trade between Russia and China is typical of developing countries as well, and regarding the structure of Russian export to China can be divided into two groups: consequences of unsustainable forest management and consequences of pulp and paper production.

Consequences of unsustainable forest management
In general, sustainable forestry can guarantee both economic viability for timber companies and inexhaustibility of forest resources, and conservation of the main components of forest ecosystems including those creating landscape, forming habitat and preservative, to ensure well-being of indigenous people. These are just general notions, which can be efficient only if we support forest management rather than hinder it.

Unfortunately, Russian forestry legislation does not guarantee, if only declare, inexhaustibility of forest resources, does not interpret forest as ecosystem and habitat. The main declared principles of forest legislation\(^8\), such as sustainable forest management, conservation of forest biodiversity, raise of their potential; conservation of forest habitat-forming, water protection, preservative, sanitary and hygiene, sanative and other useful functions to secure the right of every person on satisfactory environment; forest management with due regard for their global ecological importance, as well as their growth duration and other natural characteristics; forest management procedures that doesn’t harm the environment and human health; as well as people’s and public associations’ participation in working out of decisions that may influence forests management, protection, conservation, regeneration, are not reflected in forestry legislation. Forests are in the first place timber sources used only to make a profit. Even so, a law-abiding company sticking to forest legislation won’t be able to secure inexhaustibility of its forest resources, not to mention preservation of biodiversity, ecosystems, forests of high environmental value and sustainable forest management in general.

To do it forest owners should be willing to participate and invest additional funds in forest management, which will make forest products more expensive. Thus, it will be done either if there is demand on certified products or governmental support. There is no governmental support yet, whereas Chinese purchase of Russian timber products will obviously fail to meet the supply.

Sustainability of forest management is ensured by various voluntary systems of forest management certification. There is only one certification system available in Russia these days, Forest Stewardship Council (FSC). In accordance with this system, more than 25.2 mln. hectares of forests are certified in Russia (about 19% of all lease forests, including more than 8.8 mln. hectares in Siberia and the Far East. This is the world’s second-largest figure after Canada.

The System of Voluntary Forest Certification of the Russian National Council on Forest Certification, accredited by PEFC (Program for the Endorsement of Forest Certification Schemes) has operated in Russia since spring 2009. In March 2010 Russia acquired the first and only PEFC certificate for 180 thousand hectares. However, the prospects of this system in Russia are still vague.

Russian companies sticking to sustainable forest management can meet the Chinese demand for FSC-certified products, especially Siberian one. Still, these products are mostly demanded by Europe and supplied there to.

That doesn’t mean that there is no demand on FSC-certified products in China. On the contrary, China takes the world lead in growth of FSC certificates for Chains of Custody (this kind of certificate allows a company to trademark its products with FSC logo). Certification in China has governmental support as

\(^7\) The coefficient of wood products conversion into roundwood (RWE) shows what amount of roundwood is needed to produce this or that kind of timber goods

Illegal logging is one of the main problems of Russian forestry. Not only companies incur losses from illegal logging and lose their resources, and the state that receives less taxes, but also forest ecosystems, because no rules are observed during such logging, finewood and valuable biotopes are not conserved, not to mention forest regeneration, maintenance etc.

At present the government has realized that illegal logging threatens forests. It is admitted at the highest level: in April 2006 President V.Putin said at the meeting on forest sector development in Syktyvkar that 15% of logged timber is illegal; in February 2007 a representative of Prosecutor General’s Office said at a meeting in Vladivostok that illegal logging amounts to 40%, in May 2007 the head of the Federal Forestry Agency said at a meeting in Chita that illegal logging in the oblast makes up 2 mln. cubic meters, whereas official loggings averaged 3.5 mln. cubic meters, that is 57% etc. The problem doesn’t lie in particular figures, it could be easily solved, if we knew the exact figures and places of illegal logging. Illegal logging hugely damages forest environment and is hard to eradicate. The experts estimate that here the Far East is in the lead, because its share of roundwood in forest products export to China is the largest.

The adoption of new Forestry Code has only aggravated the situation: the notion of “illegal logging” was not included therein, state forest protection was abolished, all bans on commercial logging in protection forests were practically lifted, conservation of biodiversity and forests of high environmental value is not ensured; transition period in reformation of forest management system provided favorable conditions for various violations. Moreover, new Forestry Code charged tenants with more duties making their expenses higher. Surely, this makes illegal logging even more attractive.

It is not that the government does nothing to counteract illegal logging, it exercises space monitoring of logging, works out a state system of monitoring and control of wood flow, strengthens criminal and administrative responsibility for illegal logging and illegal timber circulation, proposes to implement a national certification system, in May 2010 the State Duma of the Russian Federation had parliamentary hearings on this problem etc. However, these measures (even if executed in complex) will hardly settle the issue. Besides, they are costly, and these costs will again be shifted on producers, cause timber cost growth and make illegal logging even more attractive.

The most efficient way to fight illegal logging is to eliminate demand on such timber. It may help together with internal counteraction measures. This was the way chosen by US that amended Lacey Act to tighten control and responsibility for illegal timber import; by Japan that requires additional certification; by EU that works

The situation with Russia-China trade is different, since demand on FSC-certified products is an exception rather than a rule. It is only natural. Russian timber export to China has been exercised so far through dealer chains, usually with three or more participants. As a rule, they are small companies or individuals, usually “one day partners”, solely interested in buying the cheapest timber. It is they who promote the idea of lack of demand on FSC-certified products in China, and spread unreliable information about lack of such timber in Russia. At the same time, there are examples of Russian uncertified timber sold through a dealer chain somehow to become certified and appear on the Western markets with FSC logo.

The solution lies in creating direct connections between Russian mills and reliable Chinese processors, and the majority is large and well-known companies that care about their international image. Such companies are ready to buy FSC-certified timber from Russia and pay for, at that, direct sales release the companies from additional expenses and make the products competitive. However, the first attempts to set such connections were not successful. The reason for that lies in deep-rooted stereotypes: Russian companies consider Chinese partners to be unreliable and ready to buy unreliable products provided that they are cheap, whereas reliable Chinese companies are not acquainted with business dealing in Russia, its legislation and are reluctant to contact with Russian customs bureaucracy. As a result we get obviously understated demand on timber from sustainably managed forests and lack of incentives for Russian producers working for Chinese export to exercise sustainable forest management and certify their leased forests.

In our opinion, the reason for lack of demand on certified timber lies in the fact that Chinese demand (especially, on finewood) mostly exceeds the supply. Benefits from certification of timber products for Russian companies are not so apparent: certification will practically demand to eliminate illegal timber usage, as well as shadow trade schemes with double invoices. What can be offered by responsible Chinese purchasers in return? That might be the reason why there is no sign either of WalMart being a member of GFTN of North America, or the Primorsky Krai having a branch of Dongning Jixin Industry & Trade Group.

Moreover, indirect trade between Russia and China through dealer chains with price being the vital factor amid roundwood custom tariffs growth encourages demand on unreliable products.
out a tougher legislation on illegal logging counteraction not in the member-countries, but in timber exporting countries. Some WWF experts think that the situation is far from being optimistic, for instance, it has been three years since the adoption of responsible state purchase contracts in Japan and it is clear that their efficiency is rather low.

Construction of large processing facilities in the region, including pulp and paper mills, may also become a potential threat. Though it seems that there are many underused resources, there is a perverse incentive to begin their development as soon as possible without sticking to principles of sustainable forestry that may soon lead to degradation of valuable forest ecosystems. In severe climate conditions ecosystems regeneration will take much time and in some conditions become impossible.

Russian regions bordering China are located in the ecoregions chosen by WWF as environmentally valuable for the whole world (see Appendices, “Globally valuable ecoregions on Russia-China border” map). Ecoregions are characterized by a particular species of plants and animals, environmental communities, ecosystem dynamics and environmental conditions. There you can find many endemic, rare and extinguishing species. Of main importance are the cedar broad-leaved forests of Ussuriisk (the southern part of the Russian Far East), since mixed coniferous and broad-leaved forests abound with endemic plant species, including trees, the Amur tiger and the Far Eastern leopard.

Forest management in these regions should be exercised with extreme care. In the Primorsky Krai there is high demand on oak, largely used by Chinese companies to make parquet and other floorings. According to customs statistics, in 2008 the companies there exported 363 thousand cubic meters of rough oak and 30 thousand cubic meters of lumber. In addition, the companies in Khabarovsk exported between 66.6 and 94 thousand cubic meter of rough oak and 4.4 thousand cubic meters of lumber from the Primorsky Krai (it is difficult to trace the exact amount, since not every customs declaration has shipping point stated). In total that makes up about 500 thousand cubic meters in equivalent of roundwood. The companies registered in St. Petersburg exported 94 thousand cubic meters of rough oak and 1 thousand cubic meters of lumber to China (all timber allegedly from the Primorsky Krai). One must have logged about 1700—1800 thousand cubic meters of liquid oak timber to export this volume. It is 6 times more than according to the official export figures.

In general, the share of oak in the trade with China is not big, but its value for the Far East is enormous. Oak as well as Korean pine logging causes enormous damage to tigers’ habitat. Along with poaching it is the most serious threat to the survival of this rare species. Moreover, forestry in the region is far from being sustainable. These rates of forest exploitation lead to oak and cedar depletion, as well as tigers’ and other animals’ habitat loss.

In 2009 amid the world crisis the export of Russian oak (roundwood and lumber) to China dropped to make up 350 thousand cubic meters.

This drop is larger than in timber sector in general. The share of oak in export halved to 1.5%. It cannot be explained by drop in demand only, though it is the main reason. Chinese companies are still interested in oak supply. It seems that WWF experts’ predictions came true: oak timber of high quality have diminished, thus, it is difficult to increase its logging. This is confirmed with the data acquired during fieldwork.

Consequences of pulp and paper production

Pulp and forest production is among the less environmentally friendly industries. It causes air pollution with emissions of various gas compounds, including green gases, water pollution with toxic and organic compounds, and land pollution with solid wastes etc. Even if we do not consider the issue of environmental pollution due to industrial production proper regarding it to be a special task, we should at least take into account that pulp production demands a great amount of timber: to produce an average of 1 ton about 15 thousand cubic meters of timber are used, that means to supply pulp and paper industry with raw material large spaces must be cleared regularly. The volumes produced at pulp-and-paper plants considerably exceed the ones at saw mills and other timber processing facilities.

There are five pulp and paper facilities in the Asian part of Russia, all of them in Siberia. They are pulp and paper mill in Bratsk (more than 20% of the country’s wood pulp for trade) and Ust-Ilimsk (about 30%), belonging to OAO Gruppa Ilim; Baikalsk Pulp and Paper Facility, as well as small Eniseisk Pulp and Paper Facility and Selenginsk Pulp and Paper Facility, specializing in paper products production, all three belonging to OOO Continental Management Timber Company. The former three are located in the Irkutsk Oblast, whereas Eniseisk facility is in the Krasnoyarsk Krai, and Selenginsky facility — in the Republic of Buryatiya.

Direct connection with China can be observed here. China is the largest Russian wood pulp exporter. As we stated above, its share in the total Russian export makes up 63%. And the three largest pulp and paper facilities in Irkutsk share about 85% of export to China. After Baikalsk Pulp and Paper Facility had been closed down it was re-opened in January 2010.

9 It was closed down in November 2008 and reopened in January 2010.
in the late 2008, OAO Gruppa Ilim received its share (13%), and the total share of Siberian pulp and paper companies remained the same, though export volumes to China in 2009 strongly decreased.

All three abovementioned plants are Chinese-oriented: the share of wood pulp export to China at Bratsk pulp and paper facility amounts to 80%, at Ust-Ilimsk plant to 90%, and at Baikalsk plant in 2008 to 99%.

The existing plans to construct new pulp and paper plants in the region are also China-oriented. The most elaborated investment project to build Amazarsk Pulp and Paper Plant in the Zabaikalye Krai envisages direct investments from China.

Chinese purchasers, like their European counterparts, can demand from their Russian suppliers not only high-quality products shipped in due time, but also observance of environmental requirements for logging and timber processing. For this purpose WWF has worked out the Guide to Buying Paper and the Guide to Legal and Responsible Sourcing and Keep It Legal10. It discusses the main consequences of pulp and paper production and suggests the ways out. There is an assessment grid in the guide that helps the client assess the environmental condition of the supplier, as well as helps the company assess environmental-friendliness of its plant and compare it to other companies with better figures.

The management takes into account such indicators as usage of recyclable materials in production, certification of forest management, legality of sources, carbon dioxide emissions of fossil fuel combustion, adsorbable organic halogens (AOH) emission, chemical oxygen demand (COD) in sewage, volume of solid wastes at landfills, environmental management systems usage. The Guide gives information on Russian legal mechanisms to guarantee legality of timber, and on loopholes found by illegal suppliers; it also suggests measures to detect illegal timber, and to limit and eliminate illegal timber from chains of custody.

Chinese procure of wood pulp are facing a unique situation these days. Their two major suppliers, Bratsk and Ust-Ilimsk pulp and paper plants have already got FSC certificates, thus, the largest part of wood pulp exported to China is certified. However, China buys the product without FSC logo on it. Stimulation of demand for certified products in China will directly support further FSC-certification in Russia, and the Guide to Buying Paper will help Chinese clients to solve ecological issues of pulp and paper production.

Conclusion

Forest sectors of Russia and China have tight connections through timber products trade, Russia is more dependent on China. Chinese buyers can and should pay much attention to environmental issues of logging and timber production when buying Russian timber. Ideally, preference should be given to certified products, in Russia it is at present FSC products. In their turn Russian companies should develop forest certification and for that purpose they can and should supply China with certified products, making its market more environmentally-conscious. This recommendation will remain just a vain wish, if only Chinese forest sector won’t receive a clear sign from European and North-American markets to confirm legality (minimum) and responsibility (maximum) of timber used. It seems that benefits from purchase of certified timber products for Chinese companies are much less than benefits from the existing timber purchase schemes from the Far East.

The good idea of the national support to processing timber within the country by growth of custom duties for roundwood export was not quite elaborated. This measure may be efficient if it is accompanied by massive investments in timber processing. The largest part of Russian roundwood export goes to China, in 2008 it amounted to 54%, in 2009 to 76%. Together with Finland their share made up 84% in 2008 and 90% in 2009. However, both countries do not want to move their plants to Russia. China did significantly increase Russian lumber export in 2009, they are active to establish woodworking plants in Russia, though they mostly employ Chinese workers to produce primary converted goods rather than advanced high-quality products demanded by the world market. It results in growth of dependency on Chinese labour force in bordering regions. If China decides to close down the mills, these facilities will be of no value to others and without workers. Meanwhile, Chinese projects to construct more advanced processing plants, for instance, veneer plywood plant in the Irkutsk Oblast, has been waiting for approval for years. Promotion of timber processing within the country must be executed along with some realistic measures to stimulate production, and the priority should be given to advanced processing. The formerly announced governmental policy to gradually introduce custom duties for rough timber led to investments in processing proper in the Russian Far East. Here are some examples: OOO SP Arkaim, OAO Terneiles, ZAO LesExport. These companies managed to build and launch their processing capacities without governmental support. The government still procrastinated with introducing of custom duties, and made the companies be left behind their counterparts. The same

happened to the half-introduced measure to raise duties on rough finewood, but with a loophole allowing suppliers to arrange sale of rough timber in the guise of processed lumber. We consider advanced processing on the Russian territory to be an important stimulus to certify forest management and chains of custody, because suppliers will have to search for other markets, including Europe and North America.

Russian one-way measures to fight illegal logging will bring its fruit, only if they are supported by China. These may include both companies’ initiatives requiring timber legality confirmation from their suppliers, and intergovernmental agreements against illegal logging, which is, for instance, widely-spread between EU members and US, and some African and Asian countries.

Voluntary timber management certification as mechanism of sustainable forest management should be supported on the governmental level. It won’t make the government increase expenses and can be highly efficient. This support can be expressed in various ways: from allowing certified companies to depart from instructions in action, if it is required due to certification procedure, to granting them benefits when drawing up forest lease, and adopting state and local purchase policies giving priority to certified products (such policies are exercised in UK, Netherlands, Japan etc.), and even introduction of ecology tax and release of certified companies from it (it is highly efficient in Romania). In its turn, China could support certified timber products market within the country. It is not quite clear yet what mechanism can be used to “grant benefits to certified companies when drawing up forest lease”. Now there is practically only one way to get a lease, which is by auction (except for ranking a project high priority). It is not clear, if return to the merit system is expedient, allowing for its high corruption potential.

Taking into account the high environmental value of forests in border areas (WWF ecoregions), Russia should work out stricter rules for logging in the region regarding the necessity to conserve forests of high environmental value and their biodiversity, and paying special attention to the tiger habitat in the Far East. Oak procurement should be put under special control, Korean pine logging should be banned, non-timber forest resources should be promoted (cedar nuts) which may bring bigger profit than logging itself. In their turn, Chinese companies should be more responsible when importing oak lumber and ask for confirmation of timber legality, as well as abiding of ecologic requirements for logging, and, what’s more, procurement of certified oak only due to its high environmental value for the region and exhaustion of its sources. China should stop buying Korean pine, because this tree species is not irreplaceable. It can be considered unique in production of exclusive pencils, still, in this case it can be substituted by Siberian pine. In theory, the fact that oak resources, commercially valuable, are dwindling, might make Chinese companies oriented at their processing promote sustainable forest management among their suppliers. If we consider forest management in China and other countries exporting timber to China, we will see a quite different scenario: the demand on these resources promotes irresponsible felling and logging up to the total exhaustion of timber. This terrible scenario can be avoided only if the government imposes some limits on logging/selling of raw materials under the pressure of Russian producers.

Russian authorities in the border regions with China are facing the results of non-introduction of timely measures. The resources are terribly exhausted, which forces the authorities to impose total ban on logging and spend enormous funds to promote forest protection and support alternative economies development in the forest regions, where the level of unemployment is high.

Chinese procurers of Russian timber should be recommended to buy FSC-certified products, all the more that they are already choosing it. If they continue to purchase certified pulp as uncertified, suppliers may lose interest in certification itself, and the quality of logging may decrease. Monitoring of ecological-friendliness of wood pulp production may be a new thing for Chinese companies. The WWF Guide to Buying Paper may help purchasers assess their suppliers and require that they should increase the quality of production to the world level, which will guarantee environmental security of production.

We should work out responsible attitude to construction of pulp and paper plants in the region. It is only natural to develop advanced processing of timber, but, first, finished paper products rather than half-finished wood pulp products should be a priority, second, markets for the products of these new plants should be realistically assessed in the long run. The world paper use will drop due to various reasons, Russian wood pulp (except for particular special types) will lose to its cheaper competitors from tropical plantations, where pulpwod growth takes 5—6 years, or even 2 in some regions. In any case, the projects to build a new pulp and paper plant should take into account ecological-friendliness of production to reduce their effect to minimum from the very beginning rather than to later try to improve the situation. At the same time, it is highly important to orient production to certified timber sources.
3.4. Responsible Finance as an Instrument for Greening Russian-Chinese Cooperation

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(with a contribution from experts of Eurasia Strategics Limited)

The successful development of Russian-Chinese cooperation and the implementation of numerous joint projects, including those envisioned by the Programme of Cooperation between the Regions of the Russian Far East and Eastern Siberia and Northeastern China for the period 2009—2018 (the “2018 Programme”), require considerable financial resources. It is in the interest of sustainable development that such financial resources are provided within a framework which addresses and takes into account the environmental risks associated with the financed activities and that these are allocated in an environmentally responsibly manner. It is well established that using responsible finance mechanisms at the early stages of an investment (i) helps reduce the risk of environmental issues occurring in the future, and (ii) enables NGOs and the public concerned to participate in the investment processes if social or environmental issues arise, in particular by influencing the behavior of the involved entities, for example, via the courts or through their lenders, investors or insurers (the latter of which often proves more effective.

Global trends in the field of responsible investment

Before reviewing the global trends of responsible investment, it is important to understand the differing definitions of responsible investment. Environmentally and socially responsible finance can be viewed in both broad and narrow terms. The broad definition of responsible finance provides that it is understood to be financing that considers and addresses environmental and social risks inherent in the financed projects and which projects are implemented through systems that effectively manage and mitigate those risks. The narrow definition merely includes financial institutions that specialize in granting finance for socially and environmentally targeted projects (such as relating to social housing, energy efficiency, or sanitation), often with applicable interest rates being lower than the market average.

Lenders and investors view responsible finance mainly as an instrument of risk management, since environmental damage associated with financed projects may negatively affect a borrower’s ability to repay their debt and/or the time period within which they can repay the loan (or other applicable financial instrument). It is noted that the Revised International Capital Framework (Basel II) requires banks to “appropriately monitor the risk of environmental liability arising in respect of the collateral, such as the presence of toxic material on a property” (item 510). In addition, financial institutions increasingly view financing “green” projects as an opportunity to diversify their investment and loan portfolios.

Standards of responsible finance

Standards of responsible finance applicable to individual projects can be determined by national legislation, or by way of bilateral and multilateral international agreements. Furthermore, such standards can be developed by a financial market participant themself within the framework of global and regional self-regulation initiatives. While responsible finance standards, which are determined by legislation are compulsory legal requirements, standards and principles of self-regulating organizations are usually formulated in voluntary legal instruments. However, in countries with ineffective legislative enforcement mechanisms, social and environmental requirements which are imposed by lenders and investors assist in adherence to compulsory legal requirements and assist in minimizing relevant environmental and social risks. Thus, it appears that existing responsible finance mechanisms are aimed mainly at the promotion of Western approaches toward managing environmental and social aspects of projects in countries with economies in transition and developing countries.

Over the last decade, several international voluntary instruments relating to environmental and social responsibility were formulated, and have become increasingly accepted globally. Numerous financial institutions from both developed and developing nations have signed up to these instruments. They include: UN Global Compact; the Equator Principles, the United Nations Environmental Programme Finance Initiative (UNEP FI); the UN Principles for Responsible Invest-

2 I. Gerasimchuk, Priroda ne terpit pustoty, Vedomosti., 4 March 2010, see at www.vedomosti.ru/newspaper/article/2010/03/04/227236
3 See www.unglobalcompact.org
4 See www.equator-principles.com
5 See www.unepfi.org/
ment (UN PRI); the OECD “Common Approaches on Environment and Officially Supported Export Credits” (OECD “Common Approaches”); the Coalition for Environmentally Responsible Economies (CERES); the Global Reporting Initiative (GRI); and the Carbon Disclosure Project (CDP). All these initiatives continue to evolve and any entity can join them.

Environmental reviews
One of the key aspects of responsible finance is the environmental review of a project, which involves a detailed Environmental Impact Assessment ("EIA"). For example, the World Bank Group, which incorporates responsible finance standards within its operations, requires compulsory review of World Bank financed projects in terms of their potential environmental and social impact(s). Depending on their potential impact(s) on the environment and/or social issues, IBRD financed projects are defined as either falling within Category A, B, or C. Category A projects are considered to have potentially significant adverse social or environmental impacts that are ‘diverse, irreversible or unprecedented’. Category B projects are considered to have comparatively less adverse potential impacts, whilst Category C projects are understood to have zero or minimal impacts on the environment and/or social issues. Category A and certain Category B projects are subject to a mandatory in-depth EIA in addition to a detailed Environmental Management Plan, outlining actions that must be taken to prevent or mitigate potential impacts of the reviewed project. The policies of the World Bank Group, as well as those of many other lenders and investors, require continuous monitoring of environmental and social impacts throughout the project’s lifecycle.

Responsible finance trends in Russia and China
Unlike in member countries of the Organization for Economic Cooperation and Development (“OECD”), in Russia and China the magnitude of environmental risks relating to given investment projects greatly exceeds the existing risk management procedures in place. Risk management systems, including environmental risk management systems, are only starting to be developed and applied by domestic Russian and Chinese financial institutions. The below discusses the different approaches towards responsible finance taken in China and Russia, including the investment trends between the two countries.

China’s investments in Russia
Economic cooperation between Russia and China was revitalized in the early 1990s. In that decade, two key bilateral agreements were signed that continue to govern investment relations between the two countries to this day: firstly, the Agreement between the Government of the USSR and the Government of the People’s Republic of China for the Promotion and Reciprocal Protection of Investments (1990); and, secondly, the Agreement between the Government of the Russian Federation and the Government of the People’s Republic of China for the Avoidance of Double Taxation and the Prevention of Tax Evasion with Respect to Taxes On Income (1994). Until recently, the prevailing attitude of both the Russian government and domestic business circles was one of concern over giving control to Chinese companies over major Russian assets. For example, it was these concerns that led to the failure of the attempt by CNPC, a Chinese state oil and gas company, to acquire a controlling interest in Slavneft in 2002, when the Russian company was privatized. Thus, initial investment cooperation between the two countries progressed at a relatively slow pace.

This situation dramatically changed in recent years for two main reasons. Firstly, the European Union’s efforts to reduce its dependence on Russian energy resources made Russia look for opportunities beyond the EU and has, as a result, been in redirecting part of its oil and gas exports to the Asian markets. In the seeking to build effective business relations with China, which is the largest consumer of hydrocarbons in the Far East, the Russian government allowed Chinese investors to acquire interests in the Venin block of the Sakhalin-3 project; in companies such as Udmurtneft, Vostok Energy, Suntarneftegaz; and in some other Russian companies holding licenses for the development of a number of small and medium-sized hydrocarbon fields (for more details see below and Chapter 2.2 of this volume).

Secondly, for a number of both economic and political reasons, China happened to be the only country ready to provide financial resources necessary for certain strategic expansion projects relating to Russian state-controlled companies. In particular, in 2005, Rosneft (a Russian oil company) was in urgent need of financial resources in order to repay the funds provided to it by

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6 See www.unpri.org  
7 See www.oecd.org/dataoecd/26/33/21684464.pdf  
8 See www.ceres.org  
9 See www.globalreporting.org  
10 See www.cdpproject.net  
11 http://www.russia.org.cn/rus/?SID=49&ID=756
the Russian government with respect to Rosneft’s acquisition of Yuganskneftegaz (for Western financial institution this was an unattractive transaction due to a number of lawsuits which had been initiated abroad by minority shareholders of Yukos. Rosneft was able to negotiate, on terms not particularly favorable to itself, a USD 6 billion loan from Chinese banks in exchange for supplying 48.4 million tonnes of oil to China until 2010.\(^\text{12}\)

During the global financial crisis starting in 2008, China has remained one of the few countries that has retained its financial stability and the ability to provide loans for the implementation of particularly large projects, including the construction of the East Siberia — Pacific Ocean oil pipeline (“ESPO”). For example, in 2009, the China Development Bank provided a USD 15 billion loan from Chinese banks in exchange for supplying 48.4 million tonnes of oil to China until 2010.\(^\text{12}\)

<table>
<thead>
<tr>
<th>Country</th>
<th>Cumulative as of 31 March 2010</th>
<th>Including</th>
<th>For the reference: investments in Q1 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>USD mio</td>
<td>% of the total</td>
<td>direct</td>
<td>portfolio</td>
</tr>
<tr>
<td>Total investment</td>
<td>265,801</td>
<td>100</td>
<td>102,759</td>
</tr>
<tr>
<td>incl. major investor countries</td>
<td>223,788</td>
<td>84.2</td>
<td>80,794</td>
</tr>
<tr>
<td>incl.: Cyprus</td>
<td>52,184</td>
<td>19.6</td>
<td>37,897</td>
</tr>
<tr>
<td>Netherlands</td>
<td>43,279</td>
<td>16.3</td>
<td>23,345</td>
</tr>
<tr>
<td>Luxemburg</td>
<td>36,384</td>
<td>13.7</td>
<td>1,044</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>20,466</td>
<td>7.7</td>
<td>3,258</td>
</tr>
<tr>
<td>Germany</td>
<td>20,296</td>
<td>7.6</td>
<td>7,780</td>
</tr>
<tr>
<td>British Virgin Islands</td>
<td>15,398</td>
<td>5.8</td>
<td>3,246</td>
</tr>
<tr>
<td>China</td>
<td>10,201</td>
<td>3.9</td>
<td>832</td>
</tr>
<tr>
<td>Ireland</td>
<td>9,051</td>
<td>3.4</td>
<td>463</td>
</tr>
<tr>
<td>Japan</td>
<td>8,499</td>
<td>3.2</td>
<td>717</td>
</tr>
<tr>
<td>France</td>
<td>8,030</td>
<td>3.0</td>
<td>2,212</td>
</tr>
</tbody>
</table>

Table 1. Total cumulative foreign investments in the Russian economy by major investor countries, as of 31 March 2010 (USD million)

Source: Federal State Statistics Service of Russia (see www.gks.ru/bgd/free/b04_03/IssWWW.exe/Stg/d04/37inv27.htm)


\(^{13}\) E. Mazhyeva, “Нефть на 20 лет вперед”, Vedomosti, 18 February 2009 (see www.vedomosti.ru/newspaper/article.shtml?2009/02/18/182314).

\(^{14}\) Comments on methodology, see section “Investments” (see www.gks.ru/free_doc/2007/metod_rus_fig/23-23.htm).

\(^{15}\) ROSSTAT, On Foreign Investments in 2009 (see www.gks.ru/bgd/free/b04_03/IssWWW.exe/Stg/d04/37inv27.htm).
According to this method, in the period 2006—2009 alone, the total cumulative direct investments of Chinese companies in Russia amounted to at least USD 5 billion, while total cumulative loans provided by Chinese financial institutions to Russian companies amounted to at least USD 40 billion. The largest individual transactions included in these estimates are briefly described below.

Direct investments (acquisition of at least a 10% interest)

The fuel and energy sector is the leading sector of the Russian economy in terms of attracting Chinese investments (both with respect to direct investments and loans). In 2006, Sinopec, a Chinese petrochemical company, acquired a 96.86% interest in Udmurtneft Company from TNK-BP through Promleasing, an entity created specifically for this transaction. According to expert estimates, the deal was valued at about USD 3.5 billion. However in the same year, in order to ensure control by the Russian government over this asset, the Russian state-controlled oil company Rosneft acquired a 51% interest in Promleasing from Sinopec. Rosneft (now holding a 74.9% interest in Promleasing) and Sinopec (now holding a 24.1% interest in Promleasing) are also partners in the development of the Venin block (Sakhalin-3 project). In addition, Rosneft created a joint venture, Vostok Energy, with another Chinese oil company, CNPC (Rosneft owns a 51% interest in the venture, CNPC holds a 49% interest).

In autumn 2009, Chinese investors acquired two additional assets in the Russian oil and gas sector. A subsidiary of Hong Kong-based RusEnergy Investment Corporation acquired a 51% interest in Suntarneftegaz for USD 200-300 million, according to expert estimates. The oil and gas fields of Suntarneftegaz are located close to the route of the ESPO pipeline currently being constructed, as well as to the planned gas pipeline to Nakhodka, which will be built along the same corridor. According to the Chinese newspaper Zhongguo Caijing Bao, in 2010-2011 RusEnergy plans to invest another USD 300 million in the development of Suntarneftegaz’s fields.

Furthermore, in 2009, the China Investment Corporation (CIC) (a state investment fund) acquired a 45% interest in Nobel Oil, a Russian oil company, whilst Hong Kong-based Oriental Patron Financial Group (OPFG) acquired another 5% in Nobel Oil; the Russian investors retained a 50% interest in the company. As a result of this acquisition, a new holding company, Nobel Holdings Investments Ltd., was created and an IPO on the Hong Kong Stock Exchange is planned.

Another sector of the Russian economy which receives major direct investments from Chinese companies is the real estate and construction sector. The largest investment project in this sector is the construction of the ‘Baltic Pearl’ — a new residential neighborhood of St. Petersburg. The project is valued at about USD 3 billion and is financed by a consortium of Shanghai-based investors.

Chinese companies also invest in other sectors of the Russian economy. In 2008, the Chinese company Suntech Power acquired an interest in Nitol Solar, a Russian manufacturer of polycrystalline silicon used for the production of photovoltaic panels, for USD 100 million.

Furthermore, Huawei, a Chinese provider of telecom equipment, has created a joint venture with the Russian side for manufacturing digital stations in Russia, and plans to expand its investments.

Portfolio investments (less than a 10% interest)

So far, the overall value of shares of Russian companies in the portfolios of Chinese investors has been negligibly small. However, in the future this situation may change as a result of Russian companies placing their shares on Chinese stock exchanges. UC RUSAL, the
largest Russian metal company, became a pioneer in this regard, practicing IPO methods innovative in the Russian business context. In early 2010, UC RUSAL simultaneously began trading its shares on two exchanges — on the Euronext Paris and the Hong Kong Stock Exchange — thus, providing for almost round-the-clock trading of the company’s shares. Large investors from mainland China did not participate in the IPO, but the Hong Kong company Cheung Kong Holding acquired RUSAL shares in the value of USD 100 million.22

Loans
As was noted above, the largest Chinese lender with respect to Russian companies is the state-owned China Development Bank (“CDB”). In early 2009, the CDB provided large loans to Rosneft (USD 15 billion) and Transneft (USD 10 billion), the latter of which, in exchange each contracted to deliver 15 million tonnes of oil annually to China for twenty years, starting in 2011.

Chinese banks also provide credit financing for projects in other sectors of the Russian economy, although on a much smaller scale. Unlike Western banks, which make their lending decisions relying mainly on the expected financial performance of projects, Chinese banks tend to finance projects which are implemented with one or another form of involvement of Chinese businesses. For example, the Export-Import Bank of China (“China Eximbank”) in addition to financing the abovementioned Black Pearl project in St. Petersburg, in November 2009 provided a USD 277.4 million loan for the construction of a volleyball center in Moscow. Both projects are to be implemented by Chinese developers.

The China Eximbank also signed agreements on financing a number of joint projects by Russian RATM Cement Holding and Chinese Hefei Cement. In particular, the bank plans to provide a 11-year term USD 100 million loan for the modernization of the Angarsk Cement plant at an interest rate of 3.6%. China Eximbank has also provided loans for residential construction projects in Omsk and Sakhalin Regions. According to the China Ministry of Commerce, at the beginning of 2009, the overall value of signed contracts with Chinese contractors for construction works in Russia amounted to USD 10.78 billion, while the total cost of works performed by the contractors to date amounted to USD 5.86 billion. At the end of 2008, Chinese contractors employed a total of 31,093 Chinese workers in Russia (mainly in Siberia and the Russian Far East). According to the Russian Builders Association, in the next few years, Chinese investments in the Russian real estate and construction sector may exceed USD 6.4 billion, particularly taking into account the Affordable Housing Programme currently being implemented in Russia.23

Various other loan agreements have been concluded between Chinese and Russian banks. In particular, in March 2009, the Russian VTB Bank (“VTB”) and China Eximbank signed a loan agreement whereby China Eximbank provided a USD 240 million loan for a term of 7 years in order to finance the acquisition of Chinese equipment by various Russian companies, owned by VTB. In addition, under a credit line opened in 2007 by China Eximbank for the Russian Gazprombank, loans in value of over USD 300 million were provided to Gazprombank which were to be utilized for loans to Russian companies acquiring Chinese equipment. The repayment of these loans to Gazprombank were guaranteed by the China Export & Credit Insurance Corporation (“SINOSURE”). Furthermore, in October 2009, VTB and the Agricultural Bank of China signed an agreement whereby the Agricultural Bank of China provided a USD 500 million loan to VTB for purposes of financing Russian imports from China, also guaranteed by SINOSURE.24

Russian Investments in China
Overall Russian investment in China is less than Chinese investment in Russia. According to China’s Ministry of Commerce, at the end of 2009, Russia’s cumulative investment in China amounted to USD 2,19 billion, including USD 751.77 million of direct investments (see Table 2 above). The overall number of projects involving Russian direct investments in China amounted to USD 2,269 million.25

To date, the largest Russian-Chinese economic cooperation project implemented within China is the construction of the Tianwan Nuclear Power Plant. The construction of the first stage has been completed, with the cost of each generating unit amounting to USD 750 million. The project was completely financed by a 13-year loan provided to the Chinese government by the Russian government at an interest rate of 4% and with the repayment period beginning two years after the commissioning of the first generating unit.26 The second stage will be constructed jointly by Russian and Chinese contractors. The loan amount for the second stage of the construction project concluded between Russian ZAO Atomstroyexport and Chinese partners is in the amount of EUR 1,228 billion. The Chinese companies, which

22 See www.hkex.com.hk/eng/invest/company/profile_page_e.asp?WidCoID=00486&WidCoAbbName=&Month=&langcode=e
23 Rossijsko-kitajskoe sotrudnichestvo v sfere stroitel’noj tehniki”, №2, 2008 (see www.a-s-r.ru/tabid/223/EntryID/11596/Default.aspx)
24 Sel’hozbank Kitaja vydat VTB kredit na 500 mln. 13 October 2009 (see www.rosbalt.ru/2009/10/13/679854.html)
26 Kashin V., Bitva za atom, China Pro, 25 January 2010 (see www.chinapro.ru/rubrics/2/3383/)
will provide and install equipment for the power plant, will require certification by both Chinese and Russian supervisory agencies.27

Prospects for the development of Russia-China investment cooperation

The year 2009 was a significant milestone in the development of Russian-Chinese relations, not just due to the large amounts of loans and investments which were granted, but also due to the adoption and signing of several fundamental programmes and documents in the field of investment cooperation. In June 2009, the Plan for Russian-Chinese Investment Cooperation28 (the “2009 Investment Cooperation Plan”) was signed, intended to establish an intergovernmental mechanism for regulating investment activities, balance investments in different sectors, and strengthen investment cooperation as a whole. The document states that “Russian-Chinese cooperation has reached its highest level in the entire history of its development”, and that its dynamism is based on “the growth and high level of mutual complementarily of the economies of the two countries”29. According to the 2009 Investment Cooperation Plan, priority sectors for cooperation include mechanical engineering, manufacturing of construction materials, the consumer goods industry, transportation and logistics, agriculture, construction, IT and telecommunications, banking and insurance, investments in innovative research and development (“R&D”), the fuel and energy sector, the chemical industry, forestry and mining.

In September 2009, Russia and China adopted the 2018 Programme, which provides for large-scale reciprocal investments in a number of projects implemented within both countries (see Chapter 1.3 of this book for more details on the 2018 Programme). Unlike the 2009 Investment Cooperation Plan, the 2018 Programme contains a special section on environmental matters, which addresses areas of environmental cooperation to be addressed by the Russian regions and their Chinese counterparts, albeit in a very general manner.

In 2010, China planned to invest a total of about USD 60 billion in the economies of foreign countries.30 At an earlier point, China declared its intention to increase its cumulative direct investment in the Russian economy to USD 12 billion by the year 2020.31 The global financial crisis starting in 2008 merely adjusted the priorities of Chinese investments, which are now channelled mainly into natural resources sectors. To some extent, it is true to say that due to China’s strengthening position in the global financial market and the narrowing of Russia’s opportunities in attract capital from other sources, the global financial crisis has increased Russia’s dependence on Chinese investments.

“Environmental footprint” of Russian-Chinese investment cooperation

The concerns of environmental NGOs and the broader public over the rapid growth of financial transactions between China and Russia stem mainly from two factors. Firstly, as set out in the previous chapters of this book, these transactions are mainly taking place in sectors characterized by high environmental risks. Secondly, given the insufficient effectiveness of environmental enforcement mechanisms in both countries and the fact that such transactions are usually approved at the highest decision-making levels, only limited means of influencing such projects are available to the public and the environmental community. For example, in the construction sector there have been no serious issues regarding the adaptation by Chinese contractors to Russian state standards (“GOSTs”) and construction rules (“SNiPs”), but there has been no effective mechanism of environmental expert review of projects undertaken by Chinese contractors in Russia.

Unlike the World Bank Group, the EBRD, the Asian Development Bank and private banks that have adopted the Equator Principles, the organizations involved in Russian-Chinese investment cooperation do not have (nor set) their own requirements as regards social and economic performance of projects they have financed. Therefore, in order to ensure environmental and social safety of projects in Russia financed by Chinese investors and vice versa, it is necessary both (i) to improve national legislation and enforcement mechanisms in both Russia and China; and (ii) to integrate by Chinese and Russian lenders and investors of existing best practices in the field of responsible finance into their respective operations. Recent experience with the introduction of responsible finance practices in Russia and China suggests the need for further involvement of local investment and lending organizations with respect to greening the Russian and Chinese economies.

Chinese financial sector on its way to environmental responsibility

A recent joint report by the People’s Bank of China and WWF concludes that, at present, most Chinese finan-

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27 Na stroitel’stve 2–oj ocheredi Tjan’van’skoj AEJS Rossija vypolnit 30% rabot, ostal’noj ob#em poruchat mestnym podrjadchikam, Gazeta, 9 February 2010 (see www.bigpowernews.ru/news/document14026.phtml)
29 Ibid.
cial institutions are at the early stages of integrating socio-environmental priorities and solutions into their core activities. Nevertheless, there is good reason to believe that competitive pressure in the international markets, combined with policies of the Chinese government, will push China’s financial sector towards a more coordinated adoption of responsible finance practices. In China, the approaches of financial institutions are to a large extent determined by the general policy of the national government, the latter of which has been paying increasing attention to the issues of sustainable development (for more details on China’s sustainable development policy see Chapter 3.1).

Role of the People’s Bank of China and the Ministry of Environmental Protection of China

In recent years, the People’s Bank of China (“PBoC”), the central bank of China has been making statements favouring the strengthening of environmental measures in the banking sector and been promoting the socio-economic responsibility of the banking sector through the use of monetary instruments, including interest rates. In 2007, PBoC created an environmental database on Chinese companies and introduced the requirement for banks to review the environmental history of each potential borrower and to consider this history when making decisions as regards granting a loan and determining the applicable interest rate.

In the same year, PBoC, together with the Ministry of Environmental Protection of China (“MEPC”) and the China Banking Regulatory Commission, also established a green credit system with the aim to restrict the availability of credit to companies that are in violation of Chinese environmental laws.

In December 2009, the PBoC and MEPC signed a Memorandum of Intent, which will determine the PBoC’s environmental policy for the next few years. Xiao Gang, the President of PBoC, emphasized the need for promoting “green loans” and imposing severe restrictions on the financing of energy-intensive and polluting technologies. A recent example of PBoC’s green activities is the provision of a USD 1.5 billion loan for a project involving the construction of a water treatment system.

The environmental policies of the Chinese authorities, in turn, provided an impetus for local stock markets to adopt environmental measures. In particular, in response to the ‘Guidelines for Disclosure of Environmental Policy’ published by MEPC, in 2008, the Shanghai Stock Exchange called upon companies listed on the exchange to disclose information on their sustainability performance. The exchange developed detailed guidelines for voluntary disclosure by these companies. Although environmental and social disclosure is not a compulsory requirement for listed companies, the lack of transparency in this field, as well as serious environmental and social issues associated with their operations, may negatively affect their shares value. The Guidelines for Disclosure of Environmental Policy has also become a major topic of discussion between Chinese businesses and environmental NGOs.

The further step which is aimed at linking the value of shares of Chinese companies to their social and environmental performance will be the compilation of a publicly available ‘black list’ setting out which companies are environmental polluters. At present, MEPC and PBoC are both developing plans to implement such a black list. The next step in connection with a black list of environmental polluters, will probably be the issuing of an order prohibiting all commercial banks from providing loans to companies which violate environmental legislation. Ultimately, the shares of such companies may be delisted by the Shanghai and Shenzhen Stock Exchanges.

It is noted that in October 2009, the State Council of China adopted a decree requiring an environmental audit of any investment project prior to the investors or lenders make a final decision as regards its implementation. This requirement applies to all industrial sectors, as well as to the construction sector, forestry, agriculture, transportation, and tourism sectors.

“Green component” of the Chinese economic stimulus package

“Green financing” in China reached a new level due to the global financial crisis or, perhaps said more accurately, due to the response of the governments of China and many other countries to the crisis. China and twelve other G20 countries chose to include in their anti-crisis stimulus packages significant ‘green’ components aimed at reducing the energy and resource intensity of their economies, at developing alternative energy sources, and at addressing environmental issues (see Table 3). These countries have thereby attempted to provide an integrated single response to the challenges of three crises: the financial and economic crisis, the energy crisis, and the environmental crisis.

32 PBoC and WWF, Towards Sustainable Development: Reforms and Future of China’s Banking Industry (People’s Bank of China (PBoC) and WWF, Beijing: 2008) (see http://wwf.panda.org/index.cfm?uNewsID=146221)
35 Chinanews.ru, 24 August 2009
China is the world’s clear leader in terms of the size of its “green stimulus” package. It amounted to USD 216.4 billion, representing 33.4% of the total national stimulus package for 2009—2010 (USD 647.5 billion). Of this amount, about 45% will be spent on the construction of high-speed railroads viewed as an alternative to carbon-intensive air and motor transport. Thirty two percent of the green stimulus funds are allocated to be spent on the modernization of power transmission networks, while 23% is to be invested in waste processing and disposal plants, as well as in the improvement of water supply and treatment systems. In addition, the Chinese government plans to invest about USD 44 billion to develop the production of hybrid and electric cars over the next five years. In this respect, Chinese banks act as agents distributing multi-billion dollar flows of “green” stimulus financing.

It is also worth mentioning that due to the cheapness of workforce in China many orders for “green” equipment financed by stimulus packages of other countries, mainly the USA, were placed with Chinese companies. Thus, “green” investments in response to the crisis have had a multiplier effect on the development of China’s economy.

**Environmental responsibility practices of individual Chinese banks**

The banks active in the market of mainland China include Chinese banks and foreign financial institutions (representative offices and branches of foreign banks, as well as banks wholly owned by foreign capital and registered in China). Among the banks operating in the Chinese market are, in particular, three of the largest foreign banks that subscribe to the Equator Principles — HSBC, Standard Chartered and Citibank. In 2008, Industrial Bank Co., a major, but not the largest, lender in the Chinese market, became the first Chinese financial institution to join the Equator Principles. The China Construction Bank (“CCB”), one of the Big Four of the Chinese financial industry, also declared its intent to adopt the Equator Principles. It is worth mentioning that the Equator Principles apply only to project finance, which is typically used for funding large and high-risk projects. The Equator Principles are, therefore, irrelevant to many international and Chinese banks, nor to they apply to the bulk of financial transactions, including state and corporate loans, guarantees, transactions involving shares or bonds.

Other international initiatives in the field of responsibility of financial institutions, broader in scope, but less specific in terms of social and environmental requirements, are also beginning to attract Chinese participants. For example, the Bank of Shanghai, China Merchants Bank and Industrial Bank Co. have joined the UNEP Financial Initiative. Chinese banks adopt Western practices in such areas as energy saving, reducing paper consumption or the development of online banking services (“green office” practices). In addition, Chinese banks are starting to disclose their social and environmental performances by publishing corporate social responsibility reports and introducing new “green” banking products for their clients (e.g., “Red Pine” cards issued by the CCB).

The most important aspect of the banking business with respect to environmental impact is the consideration by the credit committee of the environmental risks and impacts of a project when making their lending decisions. In this regard, it is noted that CCB provides loans depending on the environmental parameters of projects it finances. By the end of 2008, CCB had provided almost a cumulative total of USD 22.5 billion in loans (about 4% of the total amount of loans) to projects which develop renewable energy sources. Another of China’s Big Four banks — the Bank of China Ltd. (not to be confused with the PBoC, the Chinese central bank) — practices a similar approach.

**Carbon markets**

China is the clear leader in terms of the number of Clean Development Mechanism (“CDM”) projects it
### Table 3. Green Stimulus in Various Countries as of 1 July 2009

<table>
<thead>
<tr>
<th>Country</th>
<th>Total fiscal stimulus (USD billion)</th>
<th>Green stimulus (USD billion)</th>
<th>GDP, USD billion, 2007 (purchasing power parity)</th>
<th>Green stimulus as percentage of total stimulus</th>
<th>Green stimulus as percentage of GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Low carbon*</td>
<td>Other</td>
<td>Total</td>
<td></td>
</tr>
<tr>
<td>Argentina</td>
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<td>0.0</td>
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<td>0.0</td>
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<td>Brazil</td>
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<td>0.0</td>
<td>0.0</td>
<td>1,849.0</td>
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<td>Canada</td>
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<td>2.5</td>
<td>0.3</td>
<td>2.8</td>
<td>1,271.0</td>
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<td>China</td>
<td>647.5</td>
<td>175.1</td>
<td>41.3</td>
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<td>France</td>
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<td>7.1</td>
<td>0.0</td>
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<td>India</td>
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<td>Indonesia</td>
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<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>843.7</td>
</tr>
<tr>
<td>Italy</td>
<td>103.5</td>
<td>1.3</td>
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<td>1.3</td>
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<td>65,610.0</td>
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</table>

* Includes support for renewable energy, carbon capture and sequestration, energy efficiency, public transport and rail, and improving power transmission grids.

** Under the February 2009 American Recovery and Reinvestment Act only. The October 2008 Emergency Economic Stabilization package also included USD 185 billion in tax cuts and credits, including USD 18.2 billion for investments in wind and solar energy, as well as carbon capture and storage.

*** Only the direct contribution by the EU is included (exclusive of individual EU members’ contributions).

**** Includes the national stimulus packages of non-G20 countries: Austria, Belgium, Chile, Greece, Hungary, Israel, Malaysia, The Netherlands, New Zealand, Norway, Philippines, Poland, Portugal, Spain, Sweden, Switzerland, Thailand and Vietnam.

implements. Under the Kyoto Protocol, the CDM is a financial instrument which enables developed countries and economies to fulfill their greenhouse gas (“GHG”) emission reduction commitments through financing GHG emission reduction projects in given developing countries, which have no GHG reduction commitments. The rationale for the CDM is based on making GHG reductions more cost-effective as the cost of reducing GHG emissions is less with respect to projects being implemented in developing countries. CDM projects typically involve the improvement of energy efficiency, development and introduction of innovative and renewable energy sources, as well as methane capture and recovery.44

At present, over 1,200 CDM projects have been implemented in China, while these projects’ overall GHG emission reduction potential amounts to about 3 billion tonnes of carbon dioxide equivalent units (“CO₂-eq.”) by 2020.45 Even at a relatively low average carbon price (USD 10—15 per tonne of CO₂), the implementation of this programme would mean the inflow of an additional USD 30 billion to the Chinese economy. China’s participation in CDM also makes it safer for Chinese banks to finance “green” projects within the country, thus, creating a multiplier effect for the greening of the economy.

Overall, there is a clear positive trend in the development of financial responsibility in the Chinese financial sector, with the leading role being played by the PBoC. At the same time, in the majority of cases, “green” initiatives within the Chinese financial sector apply only to loans or investments provided to Chinese companies. Therefore, these mechanisms do not apply to the increased financial flows channeled by China towards environmentally sensitive projects in Russia and the countries of the Southeast Asia, Africa, and Latin America.

Development of environmental responsibility in the financial sector of Russia

In Russia, environmental responsibility within the financial sector is less developed than in China. To some extent, this is attributable to the fact that the Russian financial sector has yet to reach a stage of maturity which exists in other countries, particularly in terms of its capitalization. For example, in 2007, total bank assets in Russia represented 68% of the Russian GDP, which is substantially lower than in other countries of the BRIC (Brazil, Russia, India and China) group.46 By way of comparison: total bank assets in China have already exceed the Chinese GDP by 2.8 times.47 The insufficient level of capitalization in the Russian financial sector is primarily due to a low national savings rate, dependence on foreign sources of capital, considerable outflows of capital and the absence of appropriate risk management practices.

There are a number of other factors which cause the slow progress of social and environmental responsibility within the Russian financial sector. Compared to the issue of undercapitalization, these causes, in principle, are easier to manage.

State regulation

Unlike the PBoC, the Central Bank of Russia (“CBR”) takes a passive attitude towards environmental issues. For example, the CBR’s classification of risks in the banking sector (this classification must be taken into account by the Russian banks) does not include environmental and social risks. It is noted that in a country with a large share of state ownership in the banking sector, the leadership of the central regulator is key in influencing the way in which the banks operate. Accordingly, in part due to the absence of leadership of the CBR with respect to environmental issues, the majority of Russian banks do not consistently monitor the environmental and social aspects of their transactions, incorporating environmental points only in very few cases where an environmental risk is included within risk categories which are recognized by the CBR, such a strategic, credit, legal or operating risks.

In addition, Russian central authorities, as a whole, do not provide guidance or incentives that would facilitate the transition of investors’ current behavior which is based on short-term decision making responding to immediate cost pressures, towards a planning approach which includes taking into consideration long-term goals (for more detail see Chapter 3.1). In particular, the Russian central authorities have delayed the adoption of environmental sound technical regulations and standards (e.g., standards concerning the quality of motor fuel); are changing and debating the legal framework relating to environmental fines and EIA/environmental expert reviews; or revoking environmentally sound decisions (such as the revocation of the decision prohibiting the operation of the Baikal Pulp and Paper Plant without a closed-circuit water recycling system in place.

Unlike China, Russia did not use the financial crisis of 2008—2010 as an opportunity to facilitate the greening

44 Ernst & Young. (see www.gaap.ru/biblio/audit/auditcomp/ey/008.pdf)
45 “Sin’ Czjan’ interpretiruet celi Kitaja po sokrawenju vybrosov”, see http://russian.china.org.cn/exclusive/txt/2009-12/06/content_19016931.htm
46 M. Robinson, International Banking: A Unique Opportunity for Russia (2008), Presentation at the St. Peters burg Graduate School of Management, 10 April 2008. Recently, South Africa has been added to the BRIC group (now termed the BRICS group)
47 See www.slon.ru/blogs/grozovsky/post/145254/
of its economy by way of using the instruments of stimulus aid. According to UNEP, the Russian stimulus package does not include expenditures on promoting energy efficiency, developing renewable energy sources, nor does it address environmental issues (see Table 3).

Six years after the ratification of the Kyoto Protocol in Russia (2004), the Russian government has yet to approve a single joint implementation (“JI”) project (the JI mechanism is similar to the CDM, but aimed at developed countries and economies in transition. The lack of approvals of JI projects deprives Russian companies which seek to improve their environmental performance of access to additional international environmental funds. Therefore, unlike in China which consistently focuses on the greening of the Chinese economy, lenders and investors in Russia do not obtain benefits for “green” projects.

Given that the CBR, the Russian Ministry of Finance, the Russian Federal Service for Financial Markets, as well as by the Russian stock exchanges are generally indifferent towards environmental issues, the main regulatory agency seeking to promote “green” investments in Russia is the Ministry for Natural Resources and the Environment (“MNRE”). In particular, the MNRE is developing proposals to amend existing environmental legislation and creating new criteria of environmental performance. It is expected that Russian industries will be required to transition to Best Available Techniques (“BAT”) by 2016. In addition, the MNRE intends to propose new levels of fines for legal entities which have adverse environmental impacts. In particular, existing plans to gradually increase the rates of fines on entities which exceed permitted pollutant emissions and discharge levels by 2011 provide for a five-fold increase in the overall amount of environmental pollution fines compared to 2009, and a twenty-fold increase by 2016.48

At a recent meeting of the State Council conducted on 27 May 2010 which was completely dedicated to environmental issues, Yuri Trutnev, the Minister for Natural Resources and the Environment, confirmed the government’s intent to increase environmental pollution fines by several-fold.49

The MNRE also participates in the assessment of applications by investors for environmentally oriented projects from the largest Russian state-controlled banks — Sberbank and VTB. In particular, Sberbank announced its plans to grant a significant amount of loans (a cumulative total of approximately USD 5 billion) for the implementation of environmental projects of Russian companies in 2010.50 Sberbank’s interest in environmental issues stems both from (a) the government’s objective to increase the energy efficiency of the national economy by 40% by the year 2020, as decreed by the President of Russia, and (b) the fact that, in October 2009, the Russian Government designated Sberbank as the “Operator of Carbon Units” responsible, in particular, for the competitive selection of JI projects to be implemented in Russia. In March 2010, Sberbank completed the review of the first round of JI project applications. A total of 44 applications by 35 companies, with the total GHG emission reduction potential of 77.5 million tonnes of CO₂-eq. were submitted. The projects that are eligible for funding are JI projects in the energy sector, relating to industrial processes, the use of solvents and similar products, agriculture (including forestry) and waste (as defined in the Kyoto Protocol). In late July 2010, the Russian Ministry for Economic Development (“MED”) approved the first group of 15 JI projects to be implemented in Russia, which included approval of the applications submitted by Rosneft, Gazpromneft, Samotlorneftegaz, Irkutskenergo, Ilim Group, and other Russian companies.

### Environmental responsibility practices of individual Russian banks

The Russian financial sector is dominated by large state-controlled banks (such as VEB, VTB, Sberbank, the Eurasian Development Bank, the Russian Agricultural Bank and Gazprombank). Private Russian banks account for a much smaller percentage of the total banking sector. For example, Alfa Bank, the largest private commercial bank in Russia, controls only 5% of banking assets. At the same time, as is the case in China, in Russia there are a number of representative offices and branches of foreign banks, as well as wholly owned subsidiaries of foreign banks, which are registered in Russia.

When reviewing the existence of environmental responsibility in the Russian financial market, one should commence with the positive experience of programmes implemented by the International Finance Corporation (“IFC”) and the European Bank for Reconstruction and Development (“EBRD”) in Russia. With the promotion of sustainable development being their primary mission, these institutions pay particular attention to environmental issues. As a result, their practices and performance standards can be used as a benchmark by the Russian financial sector. The positive results connected to IFC’s and EBRD’s programmes prove that environmentally responsible and sound investments can be made in Russia. In particular, it shows that energy efficiency projects are not just beneficial to the reputation of Russian banks, but also provide profits.51

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49 See http://top.rbc.ru/economics/27/05/2010/412797.shtml
50 Ibid.
Many foreign private banks which operate in Russia, including HSBC, Société Générale, the Royal Bank of Scotland and a number of others participate in various international sustainability initiatives (e.g., the Equator Principles, the UN PRI and UNEP FI). As a result, these banks prepare annual non-financial reports, offer some “green” banking products, and implement given programmes in order to reduce the environmental impacts of their immediate operations (“green office”). However, unlike the EBRD and IFC, these banks have not yet put in place specific lending programmes aimed at financing “green” projects of Russian companies on preferential terms. The factors which contribute towards the absence of such programmes have been discussed above.

As for Russian-owned financial institutions, no such institution has yet joined any internationally recognized mechanisms of social and environmental responsibility as of June 2010. Before the start of the global financial crisis in 2008, Russian private banks showed more interest in corporate social responsibility (“CSR”) than state-controlled banks. For example, according to the registry of non-financial reports maintained by the Russian Union of Industrialists and Entrepreneurs, by May 2010, eleven Russian financial institutions had published at least one CSR report, of which ten were published by private banks. For these banks, an important incentive for adopting responsible finance practices was the desire to use CSR as an instrument of public relations and a means for improving the organization’s reputation in order to ensure better access to international capital markets.

The only Russian state-controlled bank, which has ever published a CSR report is VTB. Other state-controlled Russian banks, such as Sberbank, VEB (the Russian Development Bank), the Eurasian Development Bank, the Russian Agricultural Bank and Gazprombank are also gradually developing their sustainability activities. It is expected that the greening of this group of Russian banks is essentially connected to their expanding international operations and the competitive pressure in the global markets.

At present, the Russian financial sector is taking its first steps toward embracing environmental and social responsibility with respect to their operations. The IFC and EBRD act as pioneers by setting high responsibility standards, which must be upheld by the relevant borrowers and project participants, including Russian subsidiaries of foreign banks. This process is creating some competitive pressure in the Russian financial services market. Russian banks face even greater “green” competition when trying to enter the global markets, be it in connection with seeking loans or trying to attract foreign clients.

Key developments with respect to environmental and social responsibility of businesses in Russia are the announced, but still very vague, plans of state-controlled banks as regards financing environmental projects of Russian companies, which are aimed at the implementation of the government’s policy in the field of energy efficiency. If these plans are implemented, it will be possible to compare them with green stimulus packages of other countries, with the time lag appropriately taken into account. However, until the Russian government sends a clear message as regards the importance of social and environmental aspects of financial activities, in particular, in the form of (i) launching international investment projects aimed at GHG emissions reductions within the framework of the economic mechanisms of the Kyoto Protocol and (ii) requesting the CBR to develop appropriate national guidelines on the assessment of environmental risks — there will be little real incentive for investors and lenders operating in Russia to incorporate long-term sustainability priorities in their practices and decision-making processes.

Possible approaches to the greening of Russian-Chinese investment cooperation

As was noted above, in countries with a major state presence in the national economy, such as exists both in Russia and China, the key drivers to transition to responsible finance practices are the “greening” of national legislation, taxation, approaches to distributing stimulus aid, as well as the improvement of environmental enforcement practices. If this were to occur, appropriate environmental standards are more likely to be considered and adhered to by entities that implement investment projects in Russia or China, regardless of their country of origin and sources of financing. The following specific measures, which implementation could assist with the transition towards responsible finance practices in China and Russia, require the immediate involvement of both the Russian and Chinese government, respectively:

- improving the methodology of the CBR and the PBoC, respectively, to assess investment projects and loan portfolios in order to ensure better accounting of environmental and social risks as a separate risk category — as well as creating a central database on the “environmental history” of companies which apply for loans;
- introducing an EIA system which is compliant with international best practices (e.g., procedures of the...
OECD countries and leading inter-governmental and regional development banks, including the World Bank Group, the IFC, the EBRD and the Asian Development Bank;

- providing state financing, in particular, within the framework of anti-financial crisis stimulus packages, for the implementation of industrial projects on terms which comply with proposed procedures and EIA requirements based on international best practices;
- providing state anti-financial crisis stimulus funds (e.g., loans provided by state-controlled banks on preferential terms) to “green” projects as a matter of priority;
- creating a legal framework which provides for the development of financial mechanisms (e.g., environmental insurance) that guarantee compensation when a project has resulted in environmental damage;
- creating governmental “green” venture funds as instruments to support innovations in areas which improve energy efficiency and the development of renewable energy sources, and which address environmental issues; and
- developing and introducing a legally binding methodology for (i) carbon valuation; and (ii) valuation of ecosystem services to be applied when calculating the long-term financial performance of given investment projects.

Given the existing gaps in the environmental and investment legislation and enforcement practices in both Russia and China, environmental NGOs are also interested in ensuring that responsible finance principles are integrated into all operations of Chinese and Russian lenders and investors, including their international operations. For example, currently, although Chinese financial organizations are beginning to consider the “environmental history” of their potential borrowers based in China, they are not required to do so while assessing foreign borrowers, including those based in Russia.

The best resolution of the above issue would be the adoption by Chinese and Russian financial institutions of such international responsibility mechanisms, such as the Equator Principles, the UN Principles for Responsible Finance, or those relating to the Carbon Disclosure Project. Of particular importance is the adoption of the Equator Principles by VEB and VTB in Russia, as well as by the China Development Bank, the China Eximbank and, probably, some other Chinese and Russian financial institutions which provide export and import finance as well as guarantees.
CHAPTER 4

RECOMMENDATIONS FOR THE GREENING OF SINO-RUSSIAN TRANSBOUNDARY COOPERATION

E. Simonov, E. Shvarts, L. Progunova, WWF Russia
The authors and editors of this collected volume of articles do not claim to possess the sole correct understanding of how to disentangle the complex web of socio-environmental issues characterizing Sino-Russian cooperation, which has developed over time. Therefore, this section is not intended to be a comprehensive list of measures to be taken — it merely sums up certain recommendations, which they consider to need priority attention in order to improve the situation and focus on ways how to resolve the key problems of Sino-Russian bilateral cooperation.

The aim, in particular, is to provide some recommendations which can be used as a basis for (i) drafting the Russian federal program for ‘the Protection and Environmentally Sustainable Management of Water and Biological Resources of the Amur River Basin’, which is currently being prepared at the request of the President of Russia; and (ii) preparing action plans for the implementation of development strategies which have been adopted with respect to the regions of the Russian Far East.

We hope that this volume will inspire the reader to think of further measures that may be necessary in order to bring about a qualitative change in the existing trends of cooperation between Russia and China.

1. Recommendations on the formulation of domestic and foreign environmental policy of Russia

The main recommendation as regards creating a sustainable economy in Russia, as a whole, is the need for faster implementation of a number of legislative initiatives already announced by the Russian Government. These initiatives are aimed at:

- development of economic mechanisms which facilitate the adoption of energy saving, efficient and cleaner technologies;
- introduction of pollution prevention and control approaches, based on principles of Best Available Techniques (‘BAT’);
- strengthening the liability of economic entities for failing to comply with the established limits on environmental impact;
- reinstituting the state environmental expert review of hazardous facilities;
- improvement of the effectiveness of the state environmental monitoring system;
- the greening of public procurement;
- compulsory sustainability reporting of state-controlled companies; and
- the preparation of the draft Foundations of Environmental Policy of the Russian Federation for the Period until 2030.

Cooperation with respect to the ‘green’ economic sectors should be made a priority of the Russian state policy. China has already become the world’s leader in mass production of certain types of environmental equipment and renewable energy sources, and is expanding its cooperation in this area with developed countries, in particular with the USA. At the same time, it is noted that China is actively creating Sino-Russian technoparks for the purpose of involving the best Russian engineers into the modernization and ‘greening’ of China’s industrial sector. For Russia, it also seems advisable at the governmental level to establish incentives for Sino-Russian cooperation in fields such as the development and implementation of environmentally friendly and resource saving technologies, as well as the production of environmental equipment.
Drafting both the Russian federal targeted program which will define a system of measures for the protection of the water and biological resources of the Amur river basin, as well as the Russian federal law on the conservation of the Amur river needs to incorporate a considerably higher level of environmental requirements for the border areas of Russia, based on the following:

- balanced approach towards addressing socio-economic goals and conservation goals of the unique ecosystem of the Amur river basin, based on the concept of sustainable development, as well as transboundary environmental safety;
- compulsory state environmental expert review of proposed economic activities in the border area;
- support of ecosystem services provided by natural complexes, including the “green environmental” buffer zone at the Sino-Russian border;
- providing incentives for accelerated development of “green” and resource saving economic sectors, in particular, within the framework of economic cooperation with China and Mongolia;
- application of the polluter pays principle both to Russian economic entities and within the framework of the protection and management of transboundary water resources.

As Russia has ratified many multilateral environmental agreements, it is necessary to incorporate generally recognized standards and mechanisms of public international law and international institutions in order to assess and address transboundary environmental issues. In the context of Sino-Russian cooperation, this may initially meet with resistance from China.

Nevertheless, the adoption and implementation of internationally recognized and binding requirements, will be the most effective way for Russia to guarantee sound environmental standards in the RFE region. It will, in addition, ensure that any standards of Sino-Russian cooperation in the field of the environment and natural resources management (and any other standard) are governed by international legal instruments, and are not determined by merely the bi-lateral relations of these two neighboring countries. In particular, the mechanisms of the 1992 UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes (the ‘Helsinki Convention’) together with its 1999 Protocol on Water and Health, both of which Russia has signed and ratified (though China has not), should be implemented and applied to the conservation and sustainable management of the Amur river basin.

A further recommendation of the authors is to accelerate the introduction of an environmental impact assessment (‘EIA’) system within Russia, which is compliant with international best practices. These include the procedures of the OECD countries and the leading inter-governmental and regional development banks, including the World Bank, IFC, IBRD, and the Asian Development Bank. In particular, the mechanisms of the 1991 Convention on Environmental Impact Assessment in a Transboundary Context (the ‘Espoo Convention’) should be applied in the region. It is noted that Russia has merely signed the Espoo Convention (not ratified it), whilst China has done neither.

A further recommendation is the regionalization of environmental security and transboundary water resources management. Given the growing importance to China, as an emerging superpower, of its international environmental reputation, it is necessary for China to take steps aimed at internationalizing the greening of the natural resources management system in the Amur river basin. Since Sino-Russian transboundary rivers flow into the Sea of Okhotsk and the Sea of Japan, the list of countries interested in the environmentally sound management of these transboundary rivers (with their tributaries) and river basins include not only Mongolia, but also Japan and both Koreas. This creates an opportunity to internationalize the issues of environmental security and transboundary water resources management in Northeast Asia. Regional steps on the internationalization of the issue may include the following for Russia:

- initiating the creation (before China does so) of an ‘International Institute for Issues of the Amur River’ with the involvement of Mongolian, Japanese, South Korean and Chinese specialists, as well as invited experts from international organizations. This will help raise the information support of the “greening” of activities in the region from a bilateral to a multilateral level;
- attracting to the Sino-Russian border areas, at least one or two large international companies, which have access to green technologies and a positive global environmental reputation — as well as granting them access to the main sectors of natural resources management. This will help create a benchmark of environmental performance in the respective sectors of natural resources management within the region;
- initiating international projects for the environmentally responsible development of the Amur river basin (for example, Sino-Russian-Japanese project on the production of green agricultural products for the markets of the Asia-Pacific Region).
2. Recommendations on the greening of the financial sector in Russia and China

With respect to greening the financial sectors, specific measures, the implementation of which require immediate involvement of the governments of Russia and China, could include the following:

- improvement of the methodologies for the assessment of investment projects and loan portfolios, developed by the Central Bank of Russia and People’s Bank of China (the Chinese central bank), in order to ensure better accounting for environmental and social risks as a separate risk category. Such a methodology and a database on “environmental histories” of companies applying for loans, can be mutually complementary mechanisms;

- providing state financing, in particular, within the framework of anti-crisis stimulus packages, for the implementation of industrial projects only on such terms, whereby compliance with the above outlined procedures and EIA requirements, is assured;

- selecting “green” projects as priority recipients of state anti-crisis stimulus funding, e.g. loans provided by state-controlled banks on preferential terms;

- creation of a legal framework for the development of financial mechanisms that guarantee compensation for potential environmental damage, including environmental insurance, e.g. in case of a particularly large accident;

- creation of governmental “green” venture funds as instruments for supporting innovations in fields such as energy efficiency improvement, development of renewable energy sources, and the addressing of environmental issues;

- development and introduction, in both countries, of a compulsory methodology for carbon valuation and valuation of ecosystem services to be used in calculating long-term financial performance of investment projects.

In addition, considering that there is currently insufficient environmental and investment regulation in both Russia and China, it should be the Russian and Chinese financial institutions themselves that should become responsible for the integration of the principles of responsible finance with respect to their own investment and lending approaches. In particular, these institutions should achieve this through:

- joining international mechanisms of social and environmental responsibility, such as the Equator Principles, the UN Principles of Responsible Investment, and the Carbon Disclosure Project. Of particular importance is the need for Russian banks such as VEB, Sberbank, and VTB, as well as the China Development Bank, China Exim Bank to adopt the Equator Principles. The same applies, probably, to some other financial institutions in Russia and China, which provide export and import finance and guarantees;

- involving, as partners in particular financial transactions, the EBRD, the World Bank Group (including the IFC) and international banks, which participate in the Equator Principles and/or other international social and environmental responsibility initiatives.
3. Recommendations on the improvement of strategic documents on the development of cross-border regions and transboundary environmental policy

The following recommendations are made with respect to the strategic documents on the development of cross-border regions and transboundary environmental policy:

- In order to come to a final conclusion as regards the nature and potential consequences of the Far East and Baikal Region Development Strategy for the Period up to 2025 (the ‘FEBR Strategy’) and the Program of Cooperation between the Regions of Far Eastern and Eastern Siberia of Russia and Northeastern China for the Period 2009—2018 (the ‘2009—2018 Program’), the Ministry of Regional Development of Russia should undertake a systematic assessment of the entire economic component of both these documents and, in particular, assess the associated risks, including the potential environmental and social consequences of their implementation.

- Conduct a strategic environmental expert review (assessment) of the FEBR Strategy and the 2009—2018 Program and — based on the results of this assessment — amend and expand the action plans which implement these two documents and, simultaneously, define specific mechanisms and resources for the minimization of the given environmental and social risks identified by way of the assessment.

- When finalizing the FEBR Strategy, develop an integrated component of the FEBR Strategy, which is aimed at ensuring environmental security and creating incentives for the development of an innovative and environmentally sound economy. Furthermore, should take into account the challenges and opportunities associated with the Northeast China Revival Plan on the basis of the components comprising the concept of sustainable development.

- In order to create a foundation for the negotiation process on the Amur River, it is suggested that the Russian Ministry of Natural Resources and the Environment (‘MED’) should develop, in cooperation with Russian Academy of Sciences, the Federal Agency for Water Resources, the Federal Supervisory Natural Resource Management Serv-
4. Recommendations on cooperation in the mineral resources extractive industry, oil and gas sector, and other export-oriented sectors

The following recommendations are made with respect to developing Sino-Russian cooperation in the mineral resources extractive industry, the oil and gas sector, as well as in other export-orientated sectors:

- Within the framework of the systematic assessment of the 2009—2018 Program the consequences of the implementation of mineral resources projects should be assessed according to the industrial development scenario involving the creation of the “contact industrial and service arc”. The critically important questions within such an assessment relate to the structure (private interests or regional development) and localization (within or outside the country) of “aggregate effects” of mineral resources development in the region. It is extremely important to identify and implement mechanisms for cutting off projects focused solely on the exploitation of the mineral resources of the region.

- Since the main economic players in Far Eastern Russia include state-controlled companies such as Gazprom, Rosneft, and Transneft, the improvement of the environmental quality and the reduction of environmental risks of Sino-Russian cooperation requires that these companies behave in an increased environmentally responsible manner. However, WWF has observed that these companies are not characterized by a particularly high level of environmental transparency. Thus, it is also necessary that there is a considerable increase in the transparency of operations of these companies, as well as in the level of their legal compliance and accountability. This can be achieved, in particular, by means of each of them joining various international voluntary mechanisms related to environmental and social responsibility.

- Stringent monitoring of the construction of the second stage of the ESPO oil pipeline on part of the (Russian) government authorities, non-governmental organizations, and the public is required. It is also necessary to ensure that the ESPO oil pipeline is constructed in strict compliance with the environmental requirements applied to geological exploration and oil & gas production activities in the region. This is particularly important considering the highly vulnerable environment, particularly within the framework of joint projects with Chinese partners (e.g., in the Irkutsk Region and Chukotka).

- It is necessary to insist on the introduction of tight state standards for the quality of petroleum products. Furthermore, it must be ensured that Rosneft complies with these standards and modernizes its refineries in Far Eastern Russia to produce Euro 4 and Euro 5 compliant fuel.

- It is necessary to undertake a review/assessment of the complete range of implemented and planned economic Sino-Russian cooperation projects in order to identify the worst and the best approaches, and to establish acceptable socio-economic requirements and standards for joint projects. The creation of environmental ratings of companies working in the RFE regions will also contribute to the improvement of the overall quality of such joint projects.

- Since Russian companies (e.g., Rosneft and Transneft) already receive large loans from Chinese banks, the greening of China’s financial sector, in particular, through adopting the Equator Principles, becomes of particular importance. It is also important to facilitate the participation of Russian banks in global sustainability initiatives.

- It is extremely important to create the conditions and requirements to attract business partners, which are both viable in environmental and economic terms. Currently, it is mainly obsolete industries or industries which are non-compliant with domestic Chinese requirements and/or do not meet the requirements of the end customers of Chinese products, that migrate from Russia to China.

- There is a need to introduce a practice of formulating tender or bid terms in a way that would give a preferential right to such projects using BATs when using natural resources, including those BATs already introduced in China;

- Also it is important to introduce practices of compulsory orientation (training) for Chinese companies that use Russian natural resources — and for those who are willing to work in Russia and who apply Russian regulatory and environmental requirements when exploiting these natural resources.

- It is necessary to develop and adopt environmental planning and implementation standards (best practices) for large infrastructure projects (e.g., dams, pipelines, large mining complexes) in the context of integrated management and conservation of the natural resources of the Amur river basin — whilst taking into account specific features arising from its border area status, as well as the limits of permissible impacts on the ecosystems.
5. Recommendations in the field of water resources management and energy

Authors recommend that the following steps be taken with respect to water resources management and energy within Sino-Russian cooperation:

■ In order to prevent the potential adverse effects of joint water resources management plans and projects, it is necessary to renounce any plans to construct hydropower projects in the main course of the Amur river. In addition, it is important to analyze the impact of existing and planned dams located on the Amur tributaries on the state and quality of the ecosystem of the Amur main course and tributaries; conduct an integrated feasibility study of the electricity exports and a review of corruption risks associated with the existing and planned electricity export programs; as well as ensure the implementation of the Agreement on the Protection and Use of Transboundary Waters, the Agreement on the Protection of the Argun River Basin and others.

■ From a long-term perspective, given the transboundary status of the Amur river, it is necessary to organize a negotiation process within the framework of opportunities provided by bilateral treaties and agreements signed between Russia and China, as well as international conventions. In addition, it is necessary to establish a multi-lateral Council on Integrated Management of the Amur River Basin and to conclude an agreement governing its role and activities.

■ It is necessary for joint Sino-Russian planning to take place with respect to a program which adapts water resources management and other sectors to issues of climate change. In the upper reaches of the Amur river, such planning should be conducted on a trilateral basis (including Mongolia). It is necessary to define mutually agreed environmentally acceptable flow levels and limits of contamination applicable to the relevant transboundary water bodies, identified by way of using internationally recognized methods.

6. Recommendations on cooperation in the field of the harvesting and processing fish and seafood, and the prevention of illegal trade in wild animals and plants

The following recommendations are made with respect to Russia actions needed in the context of Sino-Russian cooperation in harvesting and processing fisheries, as well as in the prevention of illegal trade of wild animals and plants:

■ Russia should sign and ratify the 1993 Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas (the ‘FAO Compliance Agreement’), which entered into force on 24 April 2003, to prevent the practice of reflagging of fishing vessels in order to avoid the application of international high seas conservation and management measures (i.e., adopting flags of those countries not bound by certain international obligations).

■ Insist on changes in the Chinese customs code system relating to the Alaska Pollock and Salmonids, which account for the bulk of the Russian fish exports. The current system, which is in place makes it difficult to monitor these exports.

■ Jointly with China, Russia should ban harvesting of the Kaluga Sturgeon and the Amur Sturgeon, which are considered protected fish species in the Amur river basin in accordance with a Sino-Russian bilateral agreement. The expert review of total allowable catches (‘TACs’) for Amur Sturgeons should be immediately reinstated at the Russian federal level, where is should be conducted in accordance with Article 6 of the Federal Law “On Wildlife”.

■ In order to improve the joint management of salmon and sturgeon stocks of the Sino-Russian border sections of the Amur, it is necessary to include into the federal targeted Program for the Amur River Basin a system of measures, including: measures on the protection of the Amur’s water quality and the Amur ecosystem; the development of a general strategy for the conservation of species
and population diversity of fish; creation of an effective federal-level subprogram for combating poaching and establishing a single state authority for the protection of aquatic biological resources; creation of a system for the conservation of spawning rivers with the ethnic, economic, and social specifics of the area taken into account, and the improvement of the effectiveness of the system; making amendments to Russia’s federal and regional legislation in order to designate protected natural areas (ichthyologic reserves) and fisheries protected zones aimed at the conservation of salmonids and sturgeons.

■ An important objective of the law enforcement agencies and environmental authorities and organizations of China and Russia is to join their efforts in combating illegal trade of wild animals and plants. This involves joint efforts in strengthening the monitoring activities, as well as increasing the exchange of information. The lack of such effective measures poses a clear threat to the unique biodiversity and environmental well-being of the Russian Far East.

■ The decrease in illegal trade in high-margin yielding products (such as wild animals and plants and their derivatives) contributes to minimizing ‘black market’ activities. The resulted increase in legal trade are followed by increases in customs payments by exporters and importers who are compliant with the law, which in turn brings more income to the Russian state budget. In order to bring about these changes, it is necessary to enforce law in the field of the monitoring of animal and plant resources, ensure the establishment of adequate and realistic taking limits, and establish effective oversight both within the countries and along the border areas. Changes in Russia’s and China’s legal and regulatory frameworks which will impose order in the field of transboundary trade in animals and plants are also necessary. Ideally, such trade should be conducted on the basis of auctions similar to those at the Saint Petersburg International Fur Auction.

7. Recommendations on the development of border tourism

The authors recommend that the Russian government undertake the following activities with respect to the development of border tourism in the Russian Far East (‘RFE!’):

■ When developing the Russian tourist sector in the RFE, Russia should consider the lessons of successful tourism development in the neighboring regions of China. In particular, Russia should channel revenues it generates through customs and in the border areas into the tourism sector.

■ Create the ‘ethnic’ tourist attractions, which will appeal to the markets of the Asia-Pacific Region. For example, the tourism industry in China already operates “Russian Ethnic Villages”, some of which are inhabited by residents recruited in Russia.

■ Tours in the RFE can be marketed both domestically and internationally. Tours to transboundary nature attractions — for example, visiting international nature reserves, cruises along transboundary rivers, cross-borders tours following migrating animals — could be particularly popular.

■ It is noted that certain important tourist attractions can only be used effectively in a transboundary manner, e.g., cruises along the border sections of the Amur river, involving landings on both sides of the river. Another possible tourism project is the creation of trilateral (including Mongolia) eco-tours across the Daurian Steppe. When such tourist features become symbols of the Sino-Russian transboundary region, the efforts to create and promote them will result in large profits.
8. Recommendations in the field of forestry and forest certification

The following recommendations are made with respect to developing Sino-Russian cooperation in forestry and forest certification:

■ It is necessary to establish and maintain direct connections between Russian forest companies and responsible wood processing companies in China, many of which are internationally visible companies mindful of their reputation. Such companies are willing to purchase FSC-certified wood in Russia, paying the appropriate prices. It is noted that such exclusion of intermediaries reduces unnecessary costs and improves the competitiveness of the products.

■ WWF believes that the organization of deep processing of timber will become an important factor in forest management and in the chain of voluntary certification, on the basis that the timber processing companies would have to look for new markets for their products, in particular, in Europe and North America.

■ Given the high environmental value of forests in the Sino-Russian border areas, Russian authorities should adopt stricter rules with respect to deforestation in the region. Such rules should take into account the need for the conservation of forests with high environmental value and of their biodiversity, with particular emphasis on tiger habitats in the Russian Far East. The harvesting of oak should be controlled tightly by the Russian authorities while the harvesting of Korean pine should be prohibited.

■ It is also necessary to promote cooperation with the countries of the Asia-Pacific Region with respect to the use of non-timber forest products from Siberian pine and deciduous forests. This will help diversify the forest economy and reduce the pressure caused by deforestation.

■ It is necessary that Russia takes a critical approach towards plans to construct paper and plant mills (‘PPMs’) in the RFE region. Whilst, priority should be given to end (paper) products, as, in the long-term, the markets for PPM products will shrink, while the resource base in the areas where PPM construction projects are planned may be insufficient for maintaining sustainable forest management on the scale required (for example, in the vicinity of the Amazar Plant in Transbaikalia).

9. Recommendations on the development of the system of specially protected natural areas

Finally, the authors recommend that Russia creates a system of specially protected natural areas (‘SPNAs’) in the context of its cooperation with China, by taking the following steps:

■ In the Amur river basin, there is a pressing need for Russia, China, and Mongolia to join forces in order to create a transboundary ecological network based on the SPNA system (this has been the focus of the Amur Green Belt concept promoted by WWF since 2005). This network should incorporate various aspects of conservation, including the preservation of wetland corridors and bird migration routes, the management of high environmental value forests, the conservation of populations of large mammals, as well as the protection of spawning sites of rare fish species.

■ In the shared ecoregions located along the border, it is necessary for Russia and China to engage in more active cooperation with respect to the development and management of the SPNA network, as well as amongst environmental professionals. In particular, Russia should initiate the creation of transboundary reserves in the upper reaches of the Argun River, in the Greater Hingan Mountains in the upper reaches of the Amur, in the Lesser Hingan Mountains; at the Ussuri River mouth; in the Wandashan–Strelnikov Mountains; and also in “The Land of the Leopard” reserve on the border between the South Primorye and Hunchun County.

■ It is needed to create shared databases and transboundary information projects, similar to the Chinese Amur Information Centre that currently being created. It is being established within a framework whereby a database on protected natural areas of Russia, China and Mongolia has been created on the basis of all available sources, field surveys, and through the use of Geographical Information Systems (‘GIS’) analysis of the respective data.
ANNEXES
Annex 1.
Agreements on environmental issues and harvesting of natural resources between Russia and China

1. Intergovernmental Agreement on Development of Amur Transboundary Water Management Scheme, 1986.
2. Russia-China Cooperation in Protection of the Natural Environment, 1994. Memorandum on Approaches to Transboundary Water Monitoring was signed within this treaty, 2006.
Annex 2.

Map 1. Map of border regions of Russian Federation and China

Map 1. Map of border regions of Russian Federation and China
Map 2. Globally significant ecoregions of the Sino-Russian border
Map 3. Transboundary river basins of Russia and China in the Far East
Map 5. Regional projects as part of the Sino-Russian Transboundary Development and Cooperation Program
Map 7. The alternative Altai gas pipeline route, suggested by NGOs.
ENVIROMENTAL RISKS TO SINO-RUSSIAN TRANSBOUNDARY COOPERATION: from brown plans to a green strategy

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