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CONTENTS

EDITORIAL

The concept of the "Silk Road Economic Belt" (SREB) embraces many countries of the Eurasian continent and some countries of North America. It was first formulated by Xi Jinping in Kazakhstan in 2013. The concept provides for the deepening of economic cooperation of the participating countries and their political and humanitarian rapprochement, in the long-term leading to a more efficient model of economic relations. In the new geopolitical conditions of Eurasia, the Great Silk Road affects the interests of many countries. Undoubtedly, the creation of new multinational corridors of cooperation (transport, economic) will lead to a significant structural adjustment of geographic space of the entire Eurasian continent, change vectors of spatial development, and substantially influence the process of transformation of natural and social-economic systems.

In 2015, Russia and China have signed a joint statement on cooperation within the framework of the Eurasian Economic Union and the SREB trans-Eurasian trade-infrastructure project. The Russian approach to the creation of SREB is based on the idea of linking it with the Eurasian Economic Community, with a focus on the creation of the single Eurasian Economic Space.

The XX collaborative session of the Joint Academic Council on Fundamental Problems of Geography of the International Association of Academies of Sciences and the Academic Council on Fundamental Problems of Geography of the Russian Academy of Sciences, dedicated to the issue "West and East: Spatial Development of Natural and Economic Systems," took place in Ulan-Ude, September 19–23, 2016. A round-table meeting "On the Great Silk Road Project," led by V.M. Kotlyakov, was among the key activities of the session. The outcomes of the Joint Session were incorporated in the following proposals: to (1) analyze the state and prospects for the potential integration of China's initiative "New Silk Road," Mongolia's initiative "Steppe Road," and Russia's initiative on the trans-Eurasian transport corridor; (2) formalize interaction with scientists from academic institutions of these countries; and (3) develop proposals for the creation of a federal research program on the implementation of the SREB mega-project on Russia's territory.

Following the discussion, GES Journal has prepared a special issue dedicated to the issues related to the creation of SREB and sustainable development of countries in the zone of its influence. The authors whose papers are published in this issue are from Russia, China, Mongolia, and Kazakhstan. Their work examines geographic aspects of the "Belt and Road" initiative (V. Kolosov et al.), development of transport infrastructure (A. Tulokhonov; N. Bekturganov and A. Bolaev), prospects of the creation of investment environment (Li Yu et al.), innovations in autoindustry (G. Ferrara), potential of geoinformation support of tourism related activities in the Great Silk Road zone (V. Tikunov et al.), and characteristic features of "green economy" advancement (Dong et al.).

By publishing this special GES Journal issue, the magazine's editorial board hopes to continue the discussion on the most pressing problems of the New Silk Road and related initiatives.

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THE CHINESE INITIATIVE "THE BELT AND ROAD": A GEOGRAPHICAL PERSPECTIVE

ABSTRACT. "The Belt and Road" is a long-term comprehensive strategic program for the development of Eurasia and the world, which has been promoted by China beginning in 2013. Its multi-dimensional features (in-country, regional, and global) are inclusive (multi-vector, the participation of all sectors of the economy) and have a strong non-economic component ("soft power"). The strategy is aimed at solving the problems of the Chinese economy with the help of foreign-policy methods and consolidation of China as an engine for the global economy. By virtue of its scale, the consistent implementation of the strategic provisions put forward in China would result in significant industrial and geographical transformations of the existing international division of labor. Active and proactive participation of Russia in the new course of China allows realization of the export and transit potential of Russia's economy and helps mitigate imbalances in development between its parts. The authors discuss the concerns and risks associated with the implementation of initiatives.

KEY WORDS: the Belt and Road, initiative, geographical perspective, industrial and geographical transformations, the global economics engine.

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INTRODUCTION

"The Belt and Road" is the largest international initiative ever put forward by the Chinese leadership. Over the past two or three years, it has gradually occupied an important place in the international projects of the Chinese leadership and now actually plays the role of a full-fledged strategic and foreign policy in most areas of China's affairs [Debin DU, Yahua MA, 2015]. At that, the institutionalization of the process is gradual and has not been completed to date, and the strategic objectives and methods are being gradually refined over the course of its implementation [Uyanaev, 2016].

First proposed by China's President Xi Jinping in 2013 [Chinanews.com, 2013], the initiative of a broad economic and trade cooperation in the zone of the land and maritime Silk Road routes, that is, in fact, the entire Eurasia and Africa, has immediately aroused interest in many countries. Because at the initial stage the proposal of China's leader did not have

a clear-cut framework, the assessments of its scope and potential area of implementation differed. Some researchers regarded the "Belt and Road" idea as a confirmation and consolidation strategy of developing the western regions of China [Larin, Matveev, 2014]. Others thought that its main purpose was establishment abroad, especially in the neighboring areas, of transport infrastructure, facilitating the export of Chinese goods to the world market. The roots of the initiative, thus, were seen in the ongoing, for more than a decade, Chinese "outward" business strategy [Sazonov et al., 2015].

The speech by China's President at the Boao Forum in March 2015 and the subsequent publication of the document "Vision and Action on the Joint Construction of the Silk Road Economic Belt and the Maritime Silk Road of the 21st Century," prepared jointly by the National Development and Reform Commission, Ministry of Foreign Affairs, and the Ministry of Commerce of the People's Republic of China, have clarified many issues [Vision and Actions…, 2015]. It became clear that this is a long-term project of global proportions, which may involve the states of three continents – Asia, Europe, and Africa. The "Belt and Road" can be regarded as a concept of China's response to advancement of the previous US administration's projects of the Pacific and trans-Atlantic partnership. There is also a desire to make greater use of external economic ties to boost economic growth and ease the situation with the overproduction of many types of investment products in China.

With all the abundance of publications and presentations on the topic of "The Belt and Road," this concept is still cannot be considered in its final shape. And in China and beyond, there are different views on the concept's content, spatial coverage, objectives, and ways of achieving them. The country has more than a hundred of expert centers specializing in the problems of the "The Belt and Road" [China's Belt and Road initiative …, 2016]: researchers in international law, political scientists, economists, and social scientists regularly share their views on the essence of the project with the leadership and the public. This institutional latitude affects outside assessments of the project and its parts. Chinese geographers also participate in the process; they are actively involved in the formulation of the national policy and provide scientific support for the development of specific intergovernmental agreements. Topics of their work in the area of the "The Belt and Road" strategy mainly relate to issues of geopolitics, geography of foreign countries, trends and practices in foreign direct investment and foreign trade, as well as transport geography [Liu W.D., 2015]. The Chinese government encourages research aimed at supporting the most effective options for the implementation of the strategy. The goal of this study is to discuss the global geo-political and geo-economic importance of the China's initiative and its main focus and to outline some geographic problems of scientific support.

"THE BELT AND ROAD" AS A NEW PHASE OF GLOBALIZATION

The scale of the initiative put forward by China does not allow ignoring its geo-political significance for the world economy as a whole. Formation of the international geo-economic and geo-political landscape is often associated in geography with the alternation of integration and disintegration of the world economy development cycles [Sintserov, 2000]. Thus, any integration, according to B.N. Zimin, is forming around a leader who shapes it largely as "he/she sees fit." The first global integration cycle – *PaxBritannica* – lasted from the middle of the XIX century to 1914. It was followed by the first global cycle of disintegration that involved the two world wars with two decades in between. The second cycle of global integration – *PaxAmericana* – began in 1945, when the US economy accounted for half of the world's one. The crisis of 2008 may be roughly assumed to represent its end. It is possible that after about two decades of turbulence in the "multipolar world," *PaxSinica* may be

established on the planet. The "The Belt and Road" strategy is precisely, in many ways, the first attempt to outline features desirable for China in the new phase of globalization and to find the ways for its practical implementation.

What are the characteristic features of "The Belt and Road" concept considered in a wider aspect than just the strategy of strengthening regional integration in Eurasia and as a fully-fledged alternative model of globalization? According to a number of Chinese authors [Liu, Dunford, 2016; Du Debin, Ma Yahua, 2015], the promotion of the "Big" strategy means the completion of a stage where China influenced the course of globalization passively, merely by the fact of its participation in it. The major declared principles of "Chinese-style globalization" are peace, cooperation, development, mutual benefit, and, most importantly, diversity and justice. China intends to transition to the new stage not through the demolition of the old model but through its gradual improvement towards the enhancement of the free movement of goods and capital across the globe. The five major areas of international cooperation are coordination of economic policies, infrastructure integration, removal of trade and investment barriers, and drawing together peoples and cultures.

In the new phase of world economic development, China strives to modernize its industry and to renounce environmentally harmful low-profit industries in favor of production of cleaner products with higher added value. For other developing countries, it is an opportunity to host the industry removed, hold export-oriented industrialization, and achieve the same success in the fight against poverty, which has been gained in China. However, for this, these countries must have the appropriate financial and institutional capacities. China is ready to provide partners with cheap money and institutional assistance (development planning, management training, consulting, etc.) in exchange for benefits for Chinese companies that export their business and their participation in all stages of the modernization of the partners's economy, from roads and seaports construction projects to technology clusters management. In the construction projects overseas with the use of Chinese labor and Chinese funds, money may not even travel outside of China, and therefore, the economic effect is nearly identical to the implementation of projects within the country. Therefore, the market for Chinese goods and services may be expanded, and the Chinese economy will move up the value chains – from production to the foreign asset management. Among other things, the growth of the wealth of people in developing countries will create a powerful additional demand for low- and medium-price segment consumer goods produced by Chinese firms.

Of course, the export of production from China to other countries is gaining momentum even without the intervention of the state, but the "The Belt and Road" strategy aims to ensure the leading position of Chinese companies in the process. This means a new stage of development of the country, when it is gradually emerging not as a "world's factory" but as a global investor. It took more than three decades for China to achieve a development-management and business-skills level acceptable to do business overseas and to prepare a significant number of suitably qualified staff. The success of the strategy will trigger a second wave of migration of labor-intensive industrial production in the world economy, this time from China to other developing countries and regions. Inevitable (due to the aging population and the increase in wages) reduction in the number of workers in China will be offset by the industrialization of less developed countries (according to some estimates, the introduction of advanced agricultural technology would free up more than 1.5 bln people).

With the consolidation of its position, China aims to offer to the world community its own approaches to the solution of global problems of economic development that are largely based on the theoretical understanding of

the experience of economic transformation in China [Borokh, 2016]. The world economy, especially in developing countries, needs to reject the neoliberal economic model which led to an increase in global inequality. Lessons from Latin America and Eastern Europe show that the only countries able to take full advantage of globalization were those that retained strong state regulation of development in the interest of the public and did not follow the ways of minimizing government intervention. In China, due to the gradual reform, institutions that allowed effective integration into the economic globalization were formed. Instead of the neoliberal globalization that is associated with the policy of laissez-faire, unbalanced development, growth of global inequality, deregulation of international markets, individual responsibility, and competition between unequal partners, China offers a new "inclusive" globalization, built on the principles of equitable development, mutual benefit, and shared responsibility, to create a more equitable global economic order. Developing countries should not reject market methods of regulation but supplement them with governmental mechanisms ("visible" and "invisible" "hands").

In terms of geopolitical dimension, the key principle of China's proclaimed approach is to abandon the political demands in the course of implementation of joint projects at the international level. No less important aspect is the increasing role of developing countries in global economic governance both through the changing role in the already existing institutions (IMF, World Bank) and the creation of new structures (AIIB, NBI, the Foundation of the Silk Road). Most likely, such a course of events would lead to greater dependence of the world economy on the situation in China.

The "claim" of China that it "leads" globalization has become particularly noticeable against the background of a number of important victories of Western politicians representing the interests of the population and sectors of the economy dissatisfied with globalization, including the victory of D. Trump in the US presidential election and Great Britain's exit from the EU. If there is a turn to protectionism in the United States, which for decades has been the most important driver of globalization and free trade, it will benefit China that is ready to pick up the baton [Why China could lead…, 2016].

GEOGRAPHICAL COVERAGE AND CONTENT OF "THE BELT AND ROAD" INITIATIVE

The unequivocal answer to the question of the spatial boundaries of the "The Belt and Road" strategy does not exist. Chinese authorities stress that the project expressed a desire to involve more than 100 countries and international organizations, and 30 of them have already signed relevant agreements [Xi calls for…, 2016].China welcomes the cooperation with all developing countries, including Central and South America. In practice, the "Belt and Road" region is assumed, as a rule, to include Asian countries (often with Japan and the two Koreas), Central and Eastern Europe (and sometimes the entire Europe), and North Africa (sometimes the entire Africa). For example, such an approach is used in the work of the Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences. These scientists include in the "Belt and Road" 69 countries that account for 43 % of the land area (67.7 mln sq. km), 4.4 bln population, and 38.2 % of world GDP ($US 27.4 bln) [Dong Suocheng et al., 2016]. At that, it is necessary to take into account the vast differences in economic weight of the countries that create the objective conditions for a much greater dependence of most of the "Belt" countries on China than China on any of them.

The "Belt and Road" concept has its domestic component in addition to the international one; the concept is considered as a tool of regional policy to reduce the gap between the prosperous coastal part and the rest of the regions. Regional authorities and agencies are using the historical, geographical, and

institutional arguments to justify their key importance for foreign economic sphere of the entire nation and to raise additional funds for development [Zuenko, 2015]**.** One of the documents of the Chinese Ministry of Foreign Affairs refers to the following regions important for the implementation of the "Belt and Road" strategy: practically the entire northern part (Xinjiang, Gansu, Shaanxi, Ningxia, Qinghai, Inner Mongolia), the northeastern part (Heilongjiang, Jilin, Liaoning), the central part (Chongqing, Chengdu, Zhengzhou, Wuhan, Changsha, Nanchang and Hefei), the southwestern part (Yunnan, Tibet and Guangxi), Fujian, and the key coastal cities (Shanghai, Tianjin, Ningbo, Guangzhou, Shenzhen, Zhanjiang, Shantou, Qingdao, Yantai, Dalian, Fuzhou, Xiamen, Quanzhou, Haikou and Sanya) [Vision and Actions…, 2015]. Despite the abundance of geographical names mentioned by the officials, the experts agree that the most important element of the "Belt and Road," taking into account the national security matters, is the Xinjiang Uyghur Autonomous Region [Trops, 2016; Bazhenova, 2016.].

Thus, the specificity of the Chinese initiative is its multi-dimensional nature. South and Central America can only participate on a global level, while the Eurasian countries, in addition to national, are involved in regional projects. Neighboring states also participate in border projects tied to the development of the peripheral parts of China. Russia has supported the Chinese initiative and suggested its "coupling" with the creation of the Eurasian Economic Union (EAEU) [The Joint Statement…, 2015].

Let us now consider the key areas of the Chinese strategy, especially those of interest to Russia in terms of cooperation.

Transport. Despite the multiple aspects of the Chinese project, which includes a large number of industry-specific components, the transportation component has gained special significance in Russia and other post-Soviet countries. Apparently, this is due to deeply entrenched notions about Russia as a natural bridge between Europe and Asia, coupled with understanding of the insufficient level of development of transport infrastructure to fully implement this role. Open and specialized press actively discusses "where the new Silk Road will be." [see, for example, Zuenko, 2016].

The two key components of China's policy in the transport sector are: the construction of a new and modernization of the old road and rail transit routes between Europe and East Asia, as well as an overall increase in transport connectivity between the countries of the region. Despite its name, the "New Silk Road" has little relation to the actual historical routes of more than a thousand years ago. At present, China is in the process of creation and modernization of Euro-Asian transport routes in several directions simultaneously [Sazonov, 2016].

According to China's estimates, the total length of railways in 65 countries of the "Belt and Road" is 454.2 thou km with 1.33 trn tons and 5.6 trn person-kilometers of cargo turn-over and passenger traffic, respectively [Dong Suocheng et al., 2016]. However, in most countries of transit, the potential is not sufficiently realized. After completion of the construction of the railway Urumqi (Xinjiang) – Alashankou – Dostyk (formerly Druzhba, Kazakhstan) in 1990, it became possible to establish through railway service between sea-port Lianyungang on the coast of the East China Sea, through the Alashankou, the territory of Russia, and Rotterdam. The recent completion of several major highways has opened up new ground for the outputs of the Chinese exports to the countries of Central and Southwest Asia, Transcaucasia, and Europe. In 2012, a second railway line between Kazakhstan and China, through checkpoints Khorgas and Altynkol, was completed. In 2014, traffic started from the western part of Kazakhstan through Turkmenistan to northern Iran, bypassing the territory of Uzbekistan.

However, the transport connectivity of the center of Eurasia, including western China,

is still far from sufficient. The priority task in China is the construction of railways Korla–Golmud (will connect Xinjiang and Tibet) and Lanzhou-Chongqing; reconstruction of branches Jining (Ulanqab)–Erenhot in Inner Mongolia; development of the projects Aksu Kashgar,Hotan–Charklyk-LopNur, and Kashgar-Khunjerab pass (the border of China and Pakistan). Overseas, China intends to speed up the development of the construction of railways China–Kyrgyzstan-Uzbekistan and China–Pakistan, and also calls for early modernization of the Trans-Siberian and Mongolian Railways [China Railway Express Development Plan…, 2016].

The main obstacle for the development of the transcontinental rail freight traffic is its relatively high cost. Costs of marine transport are lower, although the journey time by sea, depending on the location of the cargo receiver, is two to three times longer, on average. According to calculations by China's scientists, the development of land-based logistics is most advantageous for the relations between the central and western regions of China, the Central Asian countries, and Russia, and, in the long term (as infrastructure improves and costs are reduced), with the countries of Eastern Europe [Mo et al., 2015]. However, taking into account the readiness of the Chinese government to subsidize the international railway transport capacity, the potential of land transit can be so much greater.

For the development of international rail freight traffic along the Silk Road, a single national operator has been created in China – China Railway Express (CRExpress). From 2011 to June 2016, the company transported 1881 freight trains with goods totaling $US 1.7 bln. Currently, there are 23 freight routes (Table. 1). The task by the year of 2020 is to increase the number of freight trains to 5000 per year and the overall share of the bilateral routes (now many only work in one direction). The plan includes the creation of three regular transport directions – eastern, central, and western. The eastern route will serve customers in northeastern and eastern China via Manzhouli checkpoint and the Trans-Siberian Railway. The central route will be in the central and southern parts of China through the checkpoint Erenhot, Mongolian Railway, and the Trans-Siberian Railway. The western route which will benefit the regions of the central and western part of the country consists of several major routes that pass through the checkpoints Alashankou and Khorgas on the Chinese-Kazakh border: China–Kazakhstan–Russia, Kazakhstan–Turkmenistan–Iran–Turkey (with an option Kazakhstan–Azerbaijan–Georgia–Bulgaria, using marine sites). As part of the westbound direction, the route China–Kyrgyzstan–Uzbekistan to Turkmenistan, Iran, and Turkey is being worked out.

In addition to freight routes, China also actively promotes projects to build high-speed rail. The country has managed to achieve significant progress in the technology, having built the largest network of this kind (more than 20 thous km). Chinese companies are involved in various ways in the construction of high-speed lines (HSL) in Turkey, Thailand, Indonesia, and Russia (Moscow-Kazan). Expansion of the Chinese HSL network in South-East Asia (Singapore-Kunming), Far East, Eastern Siberia, and Central Asia (Urumchi-Alma-Ata) has been mentioned. A construction of the Moscow-Beijing route is being worked out.

In the future, the Northern Sea Route may represent a certain alternative to the existing route between China and Europe. The distance by sea is 1.5–2 times shorter than the southern Eurasian bypass. However, the start of its regular use, in particular in the eastern section from West Siberia to the Bering Strait, most difficult in terms of ice conditions, has encountered a number of technological and environmental difficulties.

China supports the increase of not only transport, but also the **information connectivity** in Eurasia [Cheng Hao et al., 2016]. This refers to the development of

Table 1. Routes of Chinese cross-border freight trains (as of mid-2016)

Start Point	End point	En route border crossings
Chongqing	Duisburg (Germany)	Alashankou, Khorgas
Shenyang (Liaoning)	Hamburg (Germany)	Manzhouli
Chengdu (Sichuan)	Lodz (Poland)	Alashankou, Khorgas
Zhengzhou (Henan)	Hamburg (Germany)	Alashankou, Khorgas, Erenhot
Suzhou (Jiangsu)	Brest (Belarus), Warsaw (Poland)	Manzhouli
Wuhan (Hubei))	Pardubice (Czech Republic), Hamburg (Germany)	Alashankou, Khorgas
Wuhan (Hubei)	Tomsk (Russia)	Manzhouli
Yiwu (Zhejiang)	Madrid (Spain)	Alashankou, Khorgas
Yingkou (Liaoning)	Zabaykalsk (Russia)	Manzhouli
Chongqing	Cherkessk	Manzhouli
Changsha (Hunan)	Hamburg (Germany)	Manzhouli
Lanzhou (Gansu)	Hamburg (Germany)	Alashankou, Khorgas
Beijing-Tianjin	Ulaanbaatar (Mongolia)	Erenhot
Lianyungang (Jiangsu), Qingdao, Jinan (Shandong) Urumqi (Xinjiang), Xian (Shaanxi), Hefei (Anhui), Dongguan (Guangdong)	Alma-Ata (Kazakhstan)	Alashankou, Khorgas

Besides, the following routes are being worked out: Shijiazhuang-Minsk; Kunming-Rotterdam;Guiyang-Duisburg; Xiamen-Lodz; Korla-Duisburg; Taiyuan, Nanjing, Nanchang-Moscow; Taiyuan, Nanjing, Nanchang-Alma-Ata; Nanning-Ulan Bator; Nanning-Moscow; Harbin-Biklyan; Changchun-Schwarzheide; Dalian-Hamburg; Yinchuan-Tehran, Xining-Alma-Ata; Xining-Duisburg; Baotou-Tehran; Baotou-Duisburg; Linyi-Alma-Ata; Linyi-Ulan Bator; Wuwei-Alma-Ata; Yiwu-Tehran; Lianyungang–Istanbul; and Tianjin- Moscow. The press has also mentioned routes Zhuzhou-Hamburg; Yiwu, Xian-Warsaw; Chongqing, Dongguan, Wuhan-Moscow; Yingkou-Gomel; Zhengzhou-Ilichevsk; Harbin–Ekaterinburg; Baoding-Minsk; Yiwu-Chelyabinsk; Xian-Farap ("Chang'an"); and Lianyungang-Tbilisi.

Compiled after: The CR Express development plan 2016–2020. [The National Development and Reform Commission …, 2016].

telecommunication infrastructure, such as high-speed Internet, mobile networks, satellite services, and others. The existing gaps in the level of development of these services between the different parts of Eurasia prevent the strengthening of economic cooperation and cultural understanding. This puts forward a number of specific priority areas: satellite telecommunications, fiber optic networks (including intercontinental submarine), "smart city" technologies, and cross-border e-commerce. This is a good opportunity for the Chinese telecommunications sector firms (ZTE, Huawei, ChinaTelecom, ChinaUnicom) to strengthen their position in the global market with the support of the state.

The second of the two most important components of the SREB project is **investment cooperation** [Li Yu et al., 2016]. China is considering transition of its companies to the international level (export of services and capital) as a precondition for continued economic growth and is aiming to create a favorable environment. Chinese experts have recommended the government to deepen the study of business climate and investment law regime in the SREB countries and to actively work to improve business climate through international negotiations and bilateral agreements to protect the rights of Chinese investors. Chinese investors, in turn, are encouraged to enhance the interaction with the governmental authorities of the host country and to study these issues

at preliminary project stages, taking into account the specifics of the host country. In Russia, the investment priority areas are aerospace and other high-tech industries, recycling of resources, and development of projects in Eastern Siberia and the Far East. Investments are not always considered from a purely economic point of view: for Central Asia, for example, this is a means to increase social stability and prevent threats to China's security [Zheng, Liu, 2015].

Another important area of cooperation is **agriculture** [Li Fujia et al., 2016]. According to the Chinese geographers, intense international agricultural cooperation in Eurasia will ensure food security of China and give an impetus to the development of agriculture in other countries. In most of them, agriculture suffers from low efficiency, poor technical equipment and experience, and investment hunger. Productivity lags behind not only the EU and the US, but also China (in particular, the production of grains). Therefore, for these countries, cooperation with agricultural China is attractive.

China has large export of vegetables, fruits, and other labor-intensive products to Russia, Mongolia, and the countries of Central Asia. Russia sells to China animal feed, oilseeds; demand for Russia's dairy products has increased also. During 2005–2013, export of China's agro-products increased from $US 0.14 bln to 1.1 bln, while import increased from $US 0.4 bln to 1.3 bln. The Chinese scientists note positive features of Russian agriculture such as high diversity of crops and the rapid growth, in the last decade, of the production of wheat, potatoes, sugar beets, melons, and animal feed. At the same time, they note the high level of dependence of Russia on imports of finished products and seeds, the backlog of technical equipment and infrastructure, difficulties in the selection of personnel, and Western sanctions.

With the growing demand for legumes, cotton, corn, wheat, rice, sugar beet, and other land-intensive (as opposed to labor-intensive) crops and the lack of own space, China strives to safeguard foreign supply. "Integration" of Chinese companies in the value chain may contribute to the stability of supply and facilitate foreign trade cooperation. Russia, Mongolia, and the countries of Central Asia, through the cooperation with China, will be able to compensate for the lack of human resources, technology, and investment.

Recommendations of China's experts to their government include: encouraging participation of foreign landowners in the capital and switching from import of products and lease of land to the "import of the land," actively developing agricultural cooperation; encouraging the purchase of foreign agricultural enterprises, food companies and trading companies; and jointly developing land resources abroad. One of the recommended areas of cooperation is the creation of high-tech agricultural clusters. They can be used to develop the most suitable model of co-management, to adjust the technology in accordance with local conditions, and to train personnel to carry out applied research in the field of biotechnology, genetic engineering, pharmaceuticals, etc. The initial phase would be based on a few joint pilot projects leading to the establishment of an intergovernmental organization in the field of agricultural cooperation.

Chinese researchers have noted that in recent years, cautious attitude of host countries towards China has been growing. In response, the Chinese leadership in its declarations gradually shifts the emphasis from a sufficiently non-specific "mutual benefit" to a more understandable "for the benefit of the foreign partner." Most clearly this was expressed in the speech of President Xi Jinping at the workshop on the Silk Road in August 2016, where it was stated that "the creation of "Belt and Road" should be to the benefit of the citizens of these countries."[Xi Seeks to Address…, 2016]. Even before this event, Chinese researchers have noted that one of the necessary accents of cooperation

is the creation of the social base for joint projects support.

CONCERNS, EXPECTED POSITIVE EFFECTS, AND THE MAIN DIRECTIONS OF JOINT RESEARCH

The concerns of experts mainly relate to the possible China's export to foreign countries of excess and obsolete capacities of industries with a high load on the environment, e.g., ferrous and nonferrous metallurgy, petrochemical, pulp and paper, cement, electricity based on coal, etc. The interest to SREB in a number of countries that significantly lag behind China in terms of per-capita GDP, foreign investment, and new jobs, may cause them to turn a blind eye to the deterioration of the natural environment. In recent years, the Chinese government gives great importance to the environmental situation, directing major investments to the environmental sphere. According to some Western authors, Chinese companies may also become encouraged to increase the exploitation of natural resources and imports from the neighboring countries and to move polluting industries outside. Thus, the ban on industrial logging in the forests of China has created a greater demand for timber imports from South-East Asia, Russia, and other regions of the world, particularly from those where illegal harvesting is common. Analysis of satellite images of 2000–2014 [Kolosov et al., 2017] shows that even before the adoption of active conservation measures in China, logging in the Russian regions of Eastern Siberia and the Far East were concentrated along the border, due to the massive exports of timber to China. According to WWF experts, half of it falls on illegal logging. Weak state control, along with the rapid growth of China's timber demand, leads to degradation of the most valuable forests and the loss of species [Russian-Chinese cooperation…, 2010].

The routes of the New Silk Road pass through areas traditionally specializing in sectors based on intensive use of natural resources (mining, distant-pasture cattle breeding). Newly designed and reconstructed highways cross the areas of settlement of indigenous ethnic groups whose way of life is closely linked to the traditional land-use which plays an important role in the preservation of natural and cultural diversity. It may be damaged as a result of the implementation of resource-intensive projects and the creation of large agricultural and livestock farms (agro-clusters), for example, industrial pig farms with several hundred thousand heads, the construction of which is radically changing the land tenure structure within a large radius around them. Traditional culture and identity of small ethnic groups could also be threatened by the inflow of workers and specialists engaged in the construction of transport hubs and new enterprises, and spread of mass culture and cosmopolitan consumption patterns.

There are also concerns associated with the well-known "tunnel effect" when modern highways connect only large units, without giving any incentive to the development of sparsely populated transit areas and only accelerating the migration of their inhabitants to the big cities. Moreover, contributing to social stratification, economic growth does not necessarily cause an increase in the population's welfare. New projects should provide sustainable employment to the local population, add to the regional and local budgets (and not only to the state budget or the budget of the region in which the registered headquarters of private and public companies involved in investments are located). It is important to arrive at beneficial to all the parties involved proportional distribution of risks and benefits of the project and to avoid a situation where the environmental and social costs are geared towards one partner while the benefits are enjoyed by the other.

Other risks include potential conflicts caused by the unevenness of economic growth and its associated political dynamics in the countries of "Economic Belt" and their regions. Significant differences in the level of economic development between the border regions

can be the source of the sharp asymmetry of relations and high-conflict relationships between neighbors.

Due to the large capital-intensive and complex "Economic Belt" initiative, the states will represent the drivers in its implementation which is associated with megalomania risk, i.e., emphasis on extra-large projects with long payback periods, caused by political reasons. International scientific expertise helps, in such cases, see the less capital- and resource-intensive alternatives, for example, investments in energy savings, rather than increasing energy production, especially at large power plants, upgrading existing infrastructure instead of building new, etc.

Development of new territories, which opens up prospects for the realization of China's initiatives, should be based on the principles of "green economy": GDP growth and improvement in other economic indicators not only should not increase the burden on the environment, but on the contrary, should be accompanied by its reduction per unit of production [Glazyrina, Zabelina, 2016]. Evaluation of the effectiveness of new projects should be based not on the indicators of output, or establishment of foreign economic relations, but on the impact on the level and quality of life, the environment, health of the population, preservation of traditional culture, and vitality of local communities.

Welfare of the population can be enhanced by overcoming the "continental curse," through the construction or reconstruction of the "Asia–Europe" transport axes, caused, in the words of the famous geographer L.A. Bezrukov, by the ultra-continental position of many regions of Siberia, Mongolia, Western China, Kazakhstan, and Central Asia, located at a distance of more than 2000 km from the oceans. L.A. Bezrukov proved that the low accessibility of these regions from ports significantly increases the cost of their exports, especially mineral commodities, often making them uncompetitive in the global market, preventing import, and directly affecting the standard of living of the population [Bezrukov, 2008]. It can be expected that the construction of new transport corridors as a result of the "The Belt and Road" initiative will enhance the formation of linear systems of settlement led by the major cities. The process of migration of the population to the towns and villages along the main road that crosses the country from south to north currently has been clearly manifested in Mongolia, even prior to its reconstruction [Batbuyan Batjav, 2016]. The linear nature of the resettlement reduces the average distance of transportation, as if it were bringing the cities closer [Kolosov, Treyvish, 2013].

Founding China's initiative solely on the development of a new mineral and raw material base and reinforcing agricultural specialization of the inland areas of North-Eastern Eurasia would be a mistake. The initiative should lead to restructuring of China's economy, its diversification, renewal of the technological basis, and an appreciable multiplier effect. Economic recovery and the strengthening of communication would soften sharp contrasts in wealth between the border regions of the "The Belt and Road" countries and promote solution to ethnic and territorial conflicts on the borders between member-countries of joint projects.

Due to the multi-dimensional nature of the initiative, the implementation of its projects should strengthen the integration processes at the regional and local levels (urban areas and agglomerations) and boost the cross-border cooperation.

Long-term prospects of the initiative and the possible fundamental effects of its implementation determine the high relevance of international cooperation to provide scientific and technical project support in order to avoid conflicts and to find mutual compromises and coordination of the interests of all parties involved and at different levels (individual states, regional authorities, private businesses, etc.). In our

view, the priorities of scientific cooperation in North-Eastern Eurasia include:

- inventory of resources, demographic and economic potential of the regions, local markets, and the ways of life along transport corridors (the proposed new and reconstructed existing); the creation of joint databases, making heterogeneous and often incomplete information compatible; better information visualization and presentation in a practical user-friendly format;

- ways of moving towards sustainable development of cross-border natural systems, including river basins; identification of areas with the most acute environmental situation requiring immediate joint intervention; investigation of harmonization of the specially protected natural territories network and approaches to strengthen it;

- coordination of approaches to joint strategic environmental impact assessment of new projects (Strategic Environmental Assessment, SEA) and evaluation of their impact on the environment (Environmental Impact Assessment, EIA), the strategic spatial planning tools recognized by the international community.

CONCLUSIONS

The "Belt and Road" concept fits into the overall strategy of the further development of China and meets its objectives in many specific areas. In the economic sphere, it corresponds to the task of transformation of the economic growth model, helping to reduce excess capacity in a number of traditional industries through their export to other countries. In the diplomatic sphere, this concept is a "socially useful product" offered by China to the world community, which helps build its "soft power." Overall, this means a wider range of instruments and scope of China's economic diplomacy, especially within the framework of cooperation with developing and least developed countries all over the world in the South-South format.

China proposed the "New Silk Road" ("Belt and Road") that represents a multi-dimensional project aimed at the gradual transformation of the world economy and the country's place in the international division of labor. This is, in fact, the foreign component of the government's policy to modernize the country's economy. China intends to use the opportunities of globalization and foreign trade to solve its own social and economic problems; however, the "Belt and Road" provides the potential for development for all other participants, whose range is virtually unlimited. A symbolic metaphor of the "Silk Road" makes it possible to succinctly convey the general principles of the new policy to the foreign audience. "Belt and Road" is an important part of a new stage of China's economic openness and export of Chinese capital. A charitable desire to improve the lives of the people along the ""Belt and Road" may represent Keynesianism and a new "Marshall Plan" of the world scale: the calculation that the increase in the aggregate demand in developing countries in conjunction with the free international trade, in the long-term, would mostly benefit the Chinese economy.

Russia's accession to the Chinese project takes place both through the intensification of the bilateral relations, as well as through the "pairing" with the creation of the EAEU. Russia should actively cooperate with China in the framework of its new foreign economic policy, put forward Russia's own initiatives aimed at realization of the export and transit potential of the country, and eliminating regional development imbalances. China's planned development of continental routes corresponds to the objective needs of modernization of transport infrastructure in Russia. Of course, today it is difficult to predict all the details of the interaction between the two countries in both the coordination of the EAEU and SREB programs and the implementation of specific projects. The

initiated practical work is focused on a long-term perspective. In this connection, it is necessary to fully take into account that the gap of the absolute values of China's and Russia's GDPs in the coming years will increase: according to the IMF estimates, from 5.6:1 in 2014 to 7.8:1 by 2020 (when converted from yuan and rubles into dollars at the current market rate) and from 4.9:1 to 6.7:1 (in terms of the purchasing power of the national currencies). As outlined in the Joint Statement of Russia and China on deepening the comprehensive strategic partnership and promoting mutually beneficial cooperation (May 8, 2015), in this particular situation, it is especially important to act always in the spirit of "strengthening equal cooperation and mutual trust."

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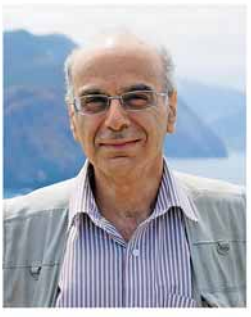

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INTEGRATED ASSESSMENT OF INVESTMENT ENVIRONMENT AND ACTIONS FOR THE "BELT AND ROAD" COUNTRIES

ABSTRACT. "The Silk Road Economic Belt" and "the 21st-Century Maritime Silk Road" initiative aims at promoting regulated flow of economic factors, allocating resources efficiently, integrating markets, and developing a broader, higher, and deeper level of regional interaction to create an open, inclusive, balanced, and widely beneficial regional economic cooperation framework. Comprehensive and objective assessment and research on investment-climate geopolitical strategy of the countries in the "Belt and Road" zone would help improve security and stability of China's foreign economic and trade exchanges along with its political and economic influence. Based on Delphi technique, the investment environment evaluation system of the "Belt and Road" countries has been developed and used to comprehensively analyze social and economic development, traffic infrastructure, informatization, resources, and political and security environment, all of which are the important conditions for investment environment of the "Belt and Road" countries. The results show that Russia, Mongolia, Pakistan, Central Asia, Germany, Netherlands, Italy, and Hungary represent the attractive investment areas. Eastern Europe, India, and Iran represent the key investment areas. Based on the analysis, investment strategy steps for the "Belt and Road" countries have been formulated. We hope our research can provide the scientific foundation for decision-making in China in relation to the "Belt and Road" foreign investment strategy.

KEY WORDS: the Belt and Road, investment environment, actions.

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INTRODUCTION

The National Reform Development Commission, the Ministry of Foreign Affairs, and the Ministry of Commerce have issued the joint statement (that coincided with the Boao Forum for Asia [27 March 2015 Hainan]) "Vision and action plan to promote the joint creation of "The Silk Road Economic Belt" and "the 21st-Century Maritime Silk Road." The document stressed that the "Belt and Road" strategy is aimed at promoting free but managed mobility of economic factors, the efficient allocation of resources, deeper market integration, and joint development of balanced, favorable for all participants, architecture of regional economic cooperation [Vision and action, 2015]. Together with other countries, the implementation of the "Belt and Road" initiative should become a key element of China's "moving outward" policy proclaimed by its government at a new phase of globalization.

However, with the strengthening of the economic power of the country and the increase of Chinese investments abroad, there is a growing concern worldwide associated with the extent of investments of Chinese companies, which can exacerbate restrictive measures and numerous inspections of Chinese investors. Most of Chinese investments abroad go to developing countries of Asia, Africa, and Latin America. In some countries, the political situation is unstable. Competition for the use and development of resources is growing. Investment attraction policy changes often and there are large differences between individual countries. Relationships between the investors and the local population are not always favorable. There are other factors that increase the risks to Chinese enterprises investing abroad. At the same time, some Chinese investors are not fully aware of the investment climate in various countries. Therefore, Chinese investments in the "Belt and Road" countries should be based on a comprehensive scientific foundation [Liu, 2015].

The goal of this paper is to provide an objective assessment of investment environment in the "belt" countries to establish the scientific substantiation for Chinese foreign investment decision-making in the course of implementation of the "moving outward" strategy.

A SYSTEM OF INDICATORS FOR ASSESSING THE INVESTMENT ENVIRONMENT OF THE "BELT AND ROAD" COUNTRIES

In 1968, American scientists I. Litvak and P. Banting first proposed the concept of "investment environment" and theoretically justified it. Investment environment is defined as the "external conditions, including material and immaterial environment" [Li, 1993]. The investment environment is also called the investment climate, i.e., a complex of all necessary conditions and requirements for construction projects and business activities [Chinese Encyclopedic…, 1999]. Actually, investment environment is a complex set of favorable or unfavorable conditions and factors that have a direct or indirect impact on the investment in a particular area, e.g., geographical location, natural resources, infrastructure, availability of raw materials, level of market development, competition, human resources, information channels, finance circulation, tax burden, social services, economic policy, applicable law, social order, and political situation. Thus, the investment environment covers all aspects of public life: economy, politics, culture, and law, including the physical and geographical conditions, infrastructure, information, and policies in a country [Wu, 2002].

Since the 1960s, in China and abroad, a number of studies to assess the environment for foreign investment have been conducted. Among the main approaches discussed, are a comparative analysis of "cold" and "warm" countries [Litvak, Banting, 1973], ranking factors that determine the investment environment in accordance with their weights [Stobaugh, 1969], including by means of multivariate and principal component analyses [Jian et al., 1987], and assessment of investment risks in different countries

[Robock, 1971]. In recent years, the main directions in the investment environment evaluation have been established. Research was primarily aimed at the optimization of the parameters and methods. Thus, D. Kaufman et al. [1999] used six parameters; S. Goberman and D. Shapiro [2002] relied on such complex variables as indices of human development (human development index), management, environmental sustainability (environmental sustainability index), and regulatory load.

In this paper, the investment environment assessment of the "belt" countries is brocken into six sections: socio-economic, transport infrastructure, informatization, strategic resources availability, political situation, and security. The level of socio-economic development assumes the combination of such factors as the size of the economy (GDP), its growth rate, and GDP per capita. Transport infrastructure includes engineering objects, used for the organization of public transport, that provide public services of goods and people transport for public production and livelihoods of the population. Infrastructure development generates a "multiplier effect," that is, it can be several times more effective than the share of investments for these purposes in the aggregate demand and national income. Infrastructure represents the important basis for the long-term and stable growth of the national or regional economy. Informatization level is now a major, after GDP, comprehensive indicator of the economic strength of the country. It can be assessed by a general index, reflecting the availability of information resources, development of information networks, use of information technology, production of information products and services, availability of informatization personnel, informatization development environment, etc, overall, by six groups of 20 indices. Some authors figuratively name this index the "national IQ" (NIQ). Strategic resources is a term for labor and resources, both natural and man-made, that play an important role in the event of war. Availability of strategic resources depends on the geographical location of the country, the size of its territory, the size and quality of the population, topography, and subsurface resources structure, along with rational development potential, transportation, storage, distribution, and consumption of resources. Strategic resources represent an important factor in the national economic and military strategy. The political situation is a political background at a certain period in a country or region, reflecting various factors such as the frequency of change of government, political agenda's stability, etc. The national security factor encompasses external political, economic, and military conditions affecting the security of the country. They may be of global, regional, or peripheral character. Security environment reflects the national interest, the situation in the country, and the state of intergovernmental relations.

INTEGRATED ASSESSMENT OF INVESTMENT ENVIRONMENT

The level of socio-economic development

Development of the "Belt and Road" countries is very uneven in terms of the total amount of gross domestic product (GDP) and GDP per capita, the number of population, the state's expenditures (in % of GDP), and exports and imports of goods and services (in % of GDP). All these data were taken from the World Bank database. In 2013, these countries were divided into several groups. The group with the highest levels of social and economic development included Russia, Germany, Saudi Arabia, India, Malaysia, and Indonesia. The next group included Kazakhstan and Iran. The lowest level included five Central Asian countries (Fig. 1).

Transport infrastructure

Four parameters, i.e., roads, railways, ports, and air transport, were used to assess transport infrastructure with the help of the data from the "Global Competitiveness Report 2014-15" published by World Economic Forum [http://reports.weforum.org/global-competitiveness-report-2014-2015/] Each

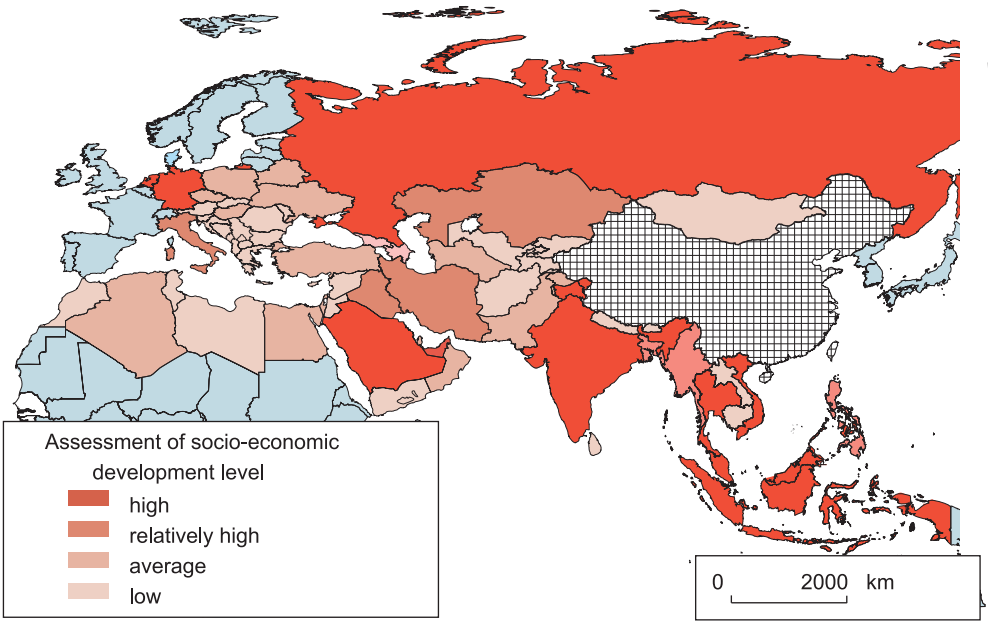

Fig. 1. Spatial distribution of the "Belt and Road" countries by level of socio-economic development in 2013

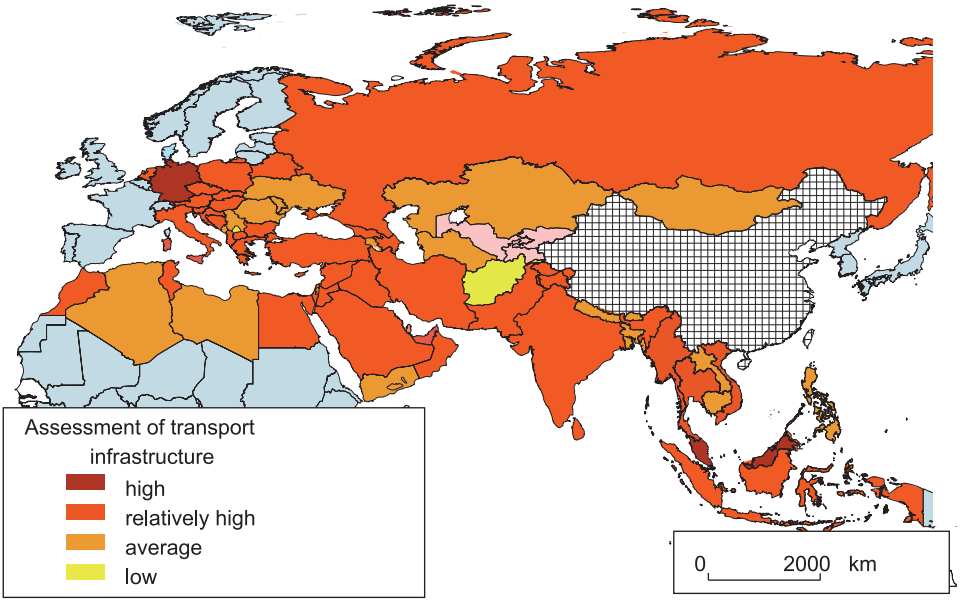

Fig. 2. Spatial distribution of the "Belt and Road" countries by level of transport infrastructure development in 2013

indicator was converted to a comparable form by its ranking on a scale from 1 to 10, 1 being the lowest score. Furthermore, all normalized indicators were summarized with the following weights: 0.6 for marine transport, 0.2 for air transport, and 0.1 each for highways and railways. The smaller the final value, the lower is the level of development of transport infrastructure. Northern and many southern "Silk Road Economic Belt" countries (Germany, the United Arab Emirates, Malaysia, Russia, the majority of countries in West Asia, Eastern Europe, South, and South-East Asia) were characterized by a relatively high level; five Central Asian countries had low level. Eastern Europe and Mongolia occupied the intermediate position (Fig. 2).

Informatization level

Two parameters were used to assess informatization level: the number of mobile phones and internet-users per 100 persons. This information was drawn from the World Bank database. These parameters for each country were normalized from 1 to 10. Their average values represented countries' informatization level indices. Fig. 3 shows that the values decreased from west to east. Germany is the country with the highest level of informatization; it is also relatively high in Russia, Kazakhstan, Saudi Arabia, Malaysia, and some countries of Eastern Europe. Informatization of the countries of Western, Central, and South Asia is average or low.

Availability of strategic resources

Evaluation of availability of strategic resources was conducted for five types: energy, arable land, forestry, food, and water, based on the World Bank data. Specific indicators included arable land area, forest area, renewable freshwater resources per capita, and proven oil reserves. After normalization of separate parameters for calculating the degree of the overall availability, average values were calculated. Countries rich in strategic resources included Russia, Eastern

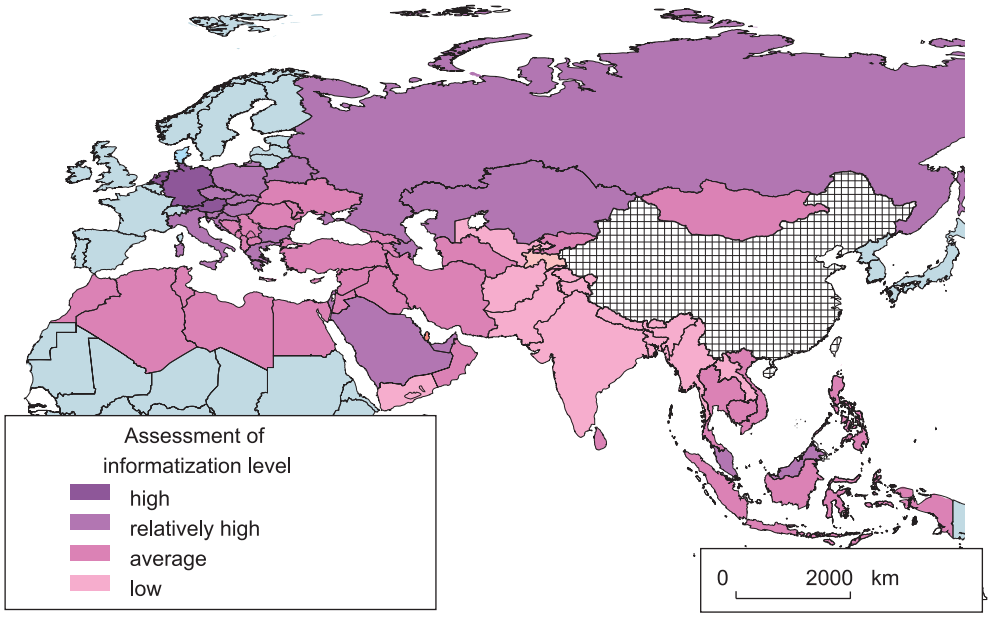

Fig. 3. Spatial distribution of the "Belt and Road" countries by level of informatization in 2013

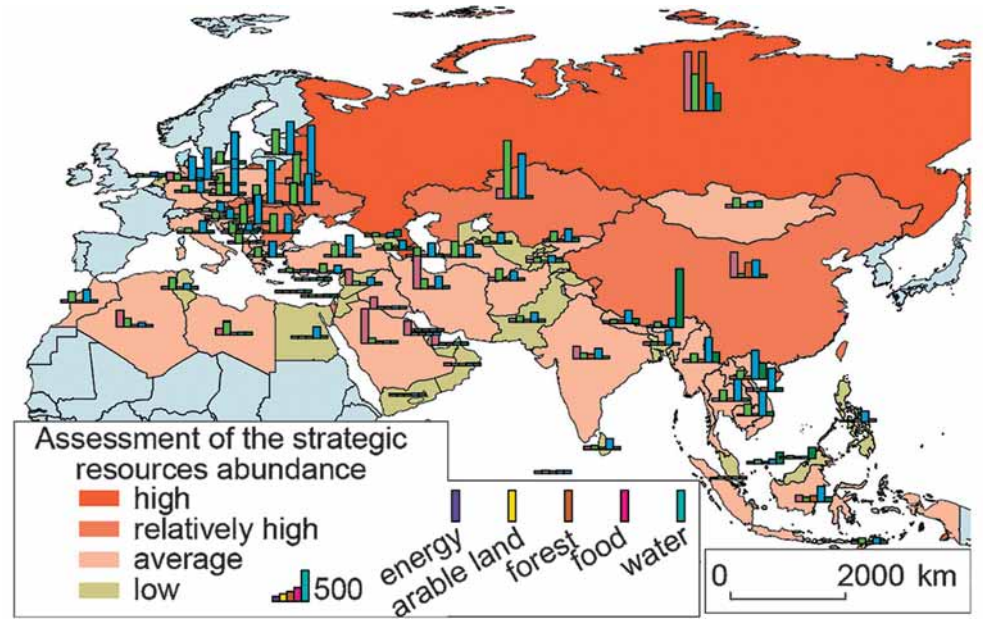

Fig. 4. Spatial distribution of the "Belt and Road" countries by level of strategic resources availability in 2013

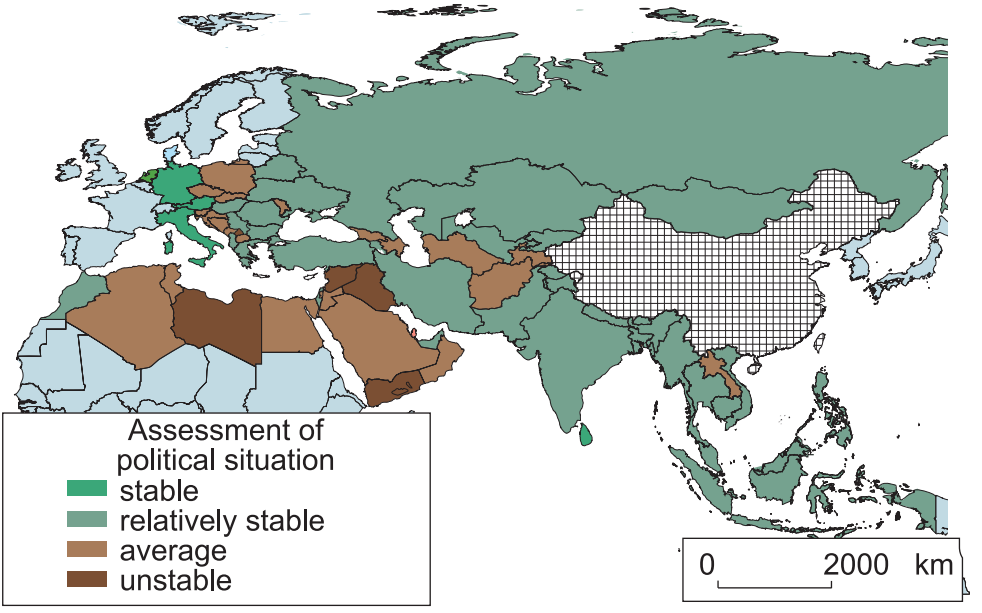

Fig. 5. Spatial distribution of the "Belt and Road" countries by political situation in 2013

Europe, Central Asia, Kazakhstan, and the Middle East. Russia is the richest "Belt and Road" country: its total index is much higher than in other countries (Fig. 4).

The political situation

Political situation in the "Belt and Road" countries was assessed based on the summarized results of the evaluation of indices of policy, the perception of corruption (The Corruption Perceptions Index), and the rule of law (The Rule of Law Index). It appeared that stable situation exists in the countries of Western Europe and Russia. Relatively stable regions include Central Asia, Eastern Europe, and Southeast Asia. Syria, Iraq, Yemen, and Libya are countries with unstable political situation (Fig. 5).

Security environment

Assessment of security was based on terrorism index for individual countries in 2014. "Secure" countries are concentrated in Europe and Central Asia, including Mongolia. Afghanistan, Pakistan, India, Syria, Iraq, and Yemen are considered hazardous (Fig. 6).

THE INVESTMENT STRATEGY IN THE "BELT AND ROAD" COUNTRIES

The assessment based on Delphi technique allowed us to determine the weights of all parameters to calculate the integral index: economic and social development, transport infrastructure, information technology, availability of strategic resources, political situation, and security. They were, respectively, 0.2, 0.15, 0.15, 0.2, 0.15, and 0.15. The weighted indices were summed. The "Belt and Road" countries were divided into the priority, key, and potential investment and risk zones based on the values of the integral index (Table 1, Fig. 7).

Russia, Mongolia, Pakistan, five countries of Central Asia, and European countries (Germany, Netherlands, Italy, and Hungary) were included in the priority investment zone; countries of Eastern Europe, India, Iran, and several other countries were included in the key zone.

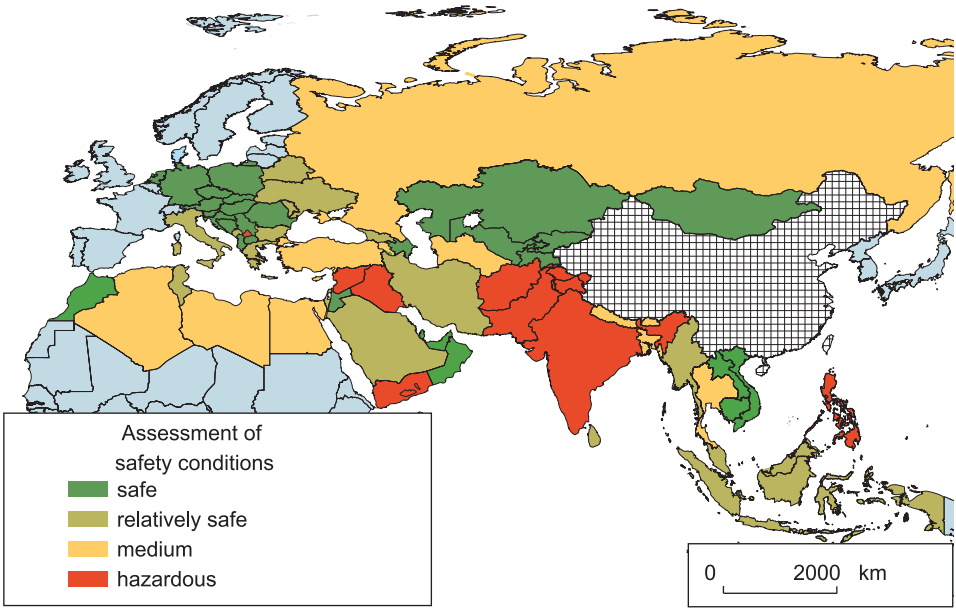

Fig. 6. Spatial distribution of the "Belt and Road" countries by security in 2013

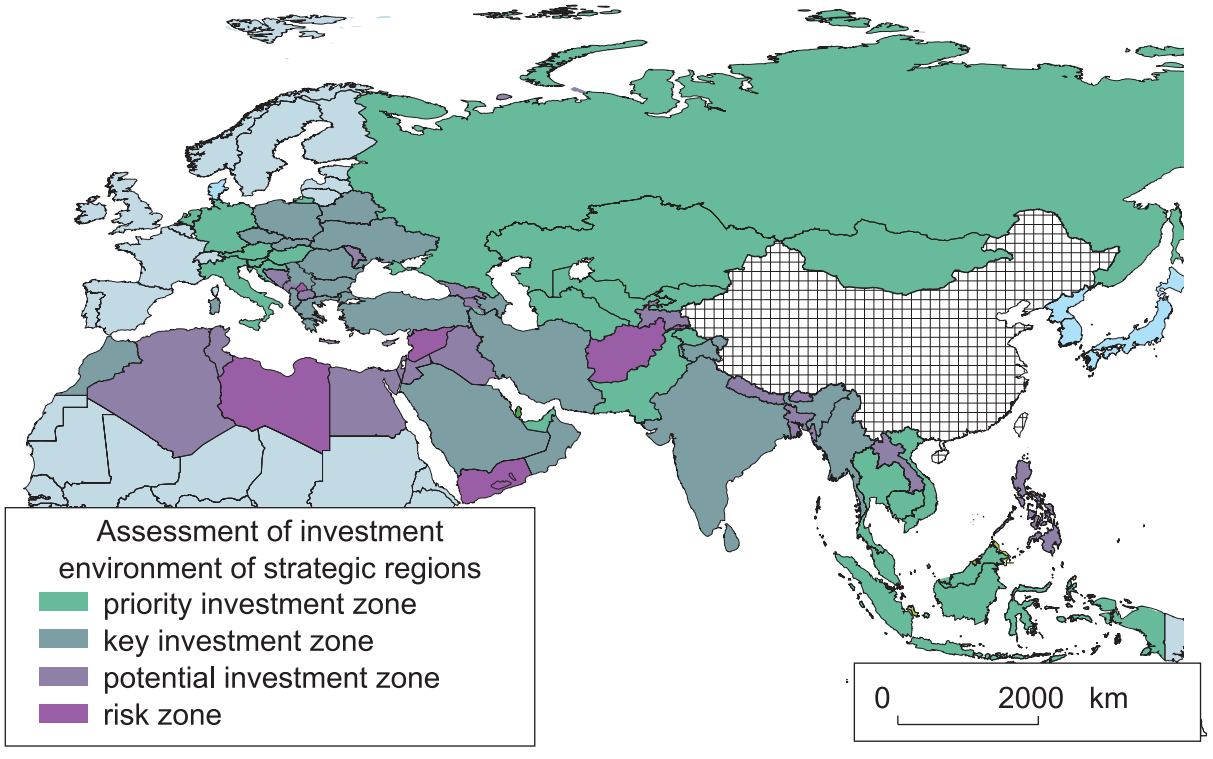

Fig. 7. Spatial distribution of the "Belt and Road" countries by strategic regions of investment environment in 2013

Table 1. The grouping of the "Belt and Road" countries by the integral index of investment environment

	Asia	Europe	Africa
Priority investment zone	Pakistan, Kazakhstan, Turkmenistan, Kyrgyzstan, Uzbekistan, Malaysia, Thailand, Singapore, Vietnam, the United Arab Emirates, Indonesia, Mongolia	Russia, the Netherlands, Germany, Austria, Italy	
Key investment zone	SaudiArabia, Iran, Qatar, Cambodia, Myanmar, Israel, Oman, Kuwait, Bhutan, SriLanka, India	Ukraine, Hungary, Poland, Serbia, Turkey, Czech Republic, Croatia, Slovakia, Slovenia, Romania, Bulgaria, Belarus Albania, Greece, Azerbaijan, Armenia	Morocco
Potentialinvestment zone	Tajikistan, Bahrain, Maldives, Nepal, Lebanon, the Philippines, Laos, Jordan, Bangladesh, Brunei, Iraq	Cyprus, Georgia, Macedonia, Montenegro, Bosnia and Herzegovina, Moldova	Tunisia, Egypt, Algeria, Libya
Risk zone	Afghanistan, East Timor, Syria, Yemen	Kosovo	

ACTIONS FOR THE DEVELOPMENT OF CHINA'S INVESTMENT STRATEGY IN THE "BELT AND ROAD" COUNTRIES

(1) Considering the attractiveness of investment environment, it makes sense to apply the principle which states that while a "big country is important, the periphery is even more important." Government agencies, industry associations, large enterprises, and the relevant administrative authorities of the "Belt and Road" countries could combine their efforts to support basic science and technology, including the study of investment environment, and create a joint center for the study of investment sources [Li et al., 2015]. They could work together to increase the human capital and enhance exchange of investment, taking into account differences in local conditions, investment climate, and permissible loads on the environment.

(2) Based on the positive experience of the Shanghai Cooperation Organization in the creation of favorable conditions for businesses, regional organizations "moving outward" of the "Belt and Road" countries should coordinate economic policies to develop the institutions of multilateral cooperation, such as the China-ASEAN (10 + 1), Asia-Pacific Economic Cooperation (APEC), Asia-Europe Meeting (ASEM), Asia Cooperation Dialogue (ACD), Conference on Interaction and Confidence-Building Measures in Asia (CICA), China-Arab States Cooperation Forum, China-Gulf Cooperation Council (GCC) Strategic Dialogue, Greater Mekong Subregion Economic Cooperation Program (GMS-EOC), and Central Asia Regional Economic Cooperation (CAREC). It is necessary to strengthen the links between the regional organizations and to explore mechanisms for conflict resolution and reduction of investment risks.

(3) The Chinese government should actively promote entering into or renewing regional agreements with countries of potential investments on admittance and protection of investments and on insurance of legal rights and long-term development of companies with Chinese participation. Emphasis should be given to the creation of specific structures for collaborative development of institutions for continuous interaction and investment safeguards that promote sustainable economic and social development of the "Belt and Road".

(4) It is feasible to actively promote the study of inter-state differences in the legal field and training of highly qualified personnel to work in multinational investment companies. It is necessary to thoroughly study the investment legislation and other areas of social life in the countries targeted for investments, including culture, tradition, religion, and information about changes in the policy

of the different countries, thus avoiding "blind" investment and assessing, in a timely manner, emerging risks.

(5) Investors need to strengthen cooperation with the appropriate government authorities of the countries targeted for investments, to determine and take into account the opinion and recommendation of the governments, and to strictly adhere to the laws of the host countries, thus ensuring ability of enterprises to establish relations with the governments and communities.

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THE EURASIA CANAL AS A FACTOR OF ECONOMIC PROSPERITY FOR THE CASPIAN REGION

ABSTRACT. The Eurasia Canal is a proposed direct water transport connection between the Caspian Sea and the Azov and Black Sea basin. The completion of construction of the Eurasia Canal will significantly increase non-oil and gas export, and it will lead to the emergence of more than 200 thousand jobs in the South of Russia, Kazakhstan and other countries of the Caspian region. A significant part of the cargo traffic between China and the countries of the European Union, which have ports on the Mediterranean Sea, will be transported via this new trans-Eurasian route that includes the Eurasia Canal.

KEY WORDS: Eurasia Canal, Caspian Region, Russia, Kazakhstan, China, The Belt and Road Initiative.

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INTRODUCTION

The Caspian Sea is the largest enclosed body of water on our planet, rich in hydrocarbons and other resources; however, due to the geographical features, this region, which has huge economic potential, does not have convenient transportation access to the world market. Moreover, the analysis of the potential freight base of Caspian countries suggests the need to increase the capacity of the unilateral transport system by more than 75 million tons, linking the Caspian and Black Sea region.

Accordingly, the President of Kazakhstan, Nursultan Nazarbayev, in 2007 made a proposal to create a direct water transport connection between the Caspian Sea and the Azov-Black Sea basin, a shipping canal which became known as the Eurasia Canal [Nazarbayev: the Eurasia Canal... 2007].

According to Russian President Vladimir Putin, a new water transport connection between the Caspian Sea and the Azov-Black Sea basins "would not simply give Caspian Sea countries access to the Black Sea and the Mediterranean, that is to the World Ocean, but this qualitatively changes their geopolitical status and allows them to become maritime powers" [Annual Address of the President of Russia... 2007].

In September 2013, in Kazakhstan, Chinese President Xi Jinping suggested the joint creation of the Silk Road Economic Belt, forming the strategic concept of the "One Belt and One Road". The concept of the Silk Road Economic Belt is a strategy for developing economic cooperation, especially in the construction of transport and other infrastructure, and implementing investment projects of Chinese companies and enterprises from Central and West Asia, the Mediterranean basin and Europe, as well as Russia and Kazakhstan. The Eurasia Canal construction project is consistent with the spirit of the One Belt and One Road initiative, as the route "Western China – Kazakhstan – Caspian Sea – Eurasia Canal – the Black Sea" will be the shortest between China and the European Union [Bolaev, 2016a].

SOURCES OF CARGO

Some of the most important types of goods that need to be transported from the Caspian region to the Black Sea region are oil and oil products. There have been more than 20 oil and gas fields proved and identified more than 250 promising oil fields on the Caspian shelf. The oil reserves were estimated at approximately 24–26 billion tons, which is 6–10 % of the world's oil resources (270 to 400 billion tons). Potential natural gas reserves have been estimated at approximately 8.3 trillion cubic meters in the Caspian [Volkov, 2010].

A comparative analysis of oil reserves and oil production's volume in the Caspian region and the forecast of expansion of transport systems indicate that in the next few decades, in the absence of implementation of new major projects for the transportation of oil and oil products, there will be a lack of freight transit capacity of the system for the transportation of oil and oil products in excess of 50 million tons per year. Thus, for example, such companies as "Lukoil" and "KazMunaiGaz", which own refineries in the Black Sea basin with a total processing capacity of 20–25 million tons of oil a year, could be interested in creating a water transport connection between the Caspian Sea and the Azov-Black Sea basin even at the present time [Volkov, 2010].

The annual existing cargo traffic, representing the trade between Kazakhstan and the other countries of Central Asia and the countries of Europe and the Mediterranean basin not associated with the export of hydrocarbons, has been estimated at 20–25 million tons [Alekhova, 2009].

In contrast to pipelines, water transport can carry all kinds of goods, including hydrocarbon processing products which cannot be transported by existing pipeline systems. Efficient water transport connection between the Caspian Sea and the Azov and Black Seas basins, and the included port infrastructure (involving the quay system along the navigable route, which can be constructed within the framework of the project) would significantly increase non-oil related exports from the South of Russia (Republics of Kalmykia and Dagestan, Stavropol and Krasnodar Territories, Rostov and Astrakhan Regions), Kazakhstan and other countries of the Caspian region. This includes ferrous and nonferrous metals, grain and other agricultural products, construction materials, coal and other local products. For example, the freight cost of wheat between the cities of Aktau (Kazakhstan) and Izmir (Turkey) through the existing transportation system is more than double the estimated cost by waterway transportation through the Eurasia Canal [Bolaev, 2015].

Analysis of the impact of the project on the social development of the South of Russia, Kazakhstan and the Caspian Sea region as a whole, suggests that completion of construction of the Eurasia Canal will created about 32 thousand new jobs, mostly highly paid, in the manufacturing sector. It means creation of about 200 thousand jobs in service industries and will significantly contribute to economic growth and improve the tax base in the region [Bolaev, 2015]. This contribution, in terms of the additional volume of nominal

GDP of the Russian economy in 2015, according to the IMF assessment, can be estimated at approximately US $ 3.9 billion. Besides, it is necessary to consider the positive effects brought to the economies of Russia, Kazakhstan and other countries of the Caspian region by increasing export potential of almost all industry sectors, benefiting agriculture and increasing significantly revenues for the transit of Chinese goods and the related tax revenues [Bolaev, 2016b].

The cargo traffic transported by Kazakhstan railways from 2008 to 2010 can be estimated at 17.2–23.6 million tons [Alekhova, 2009]. As a rule, waterway transport is far more advantageous than the standard railroad transport. Thus, the sender and the recipient countries have a convenient outlet to the sea and better timing of cargo shipping via Eurasia Canal, which is far more competitive compared to railroad and automobile transportation. Therefore, it is assumed that cargo, which is transported, for example, from Kazakhstan to Italy or Tunisia, or in the reverse direction, most probably would be transported via Eurasia Canal. Respectively, goods transported from Kazakhstan to the Baltic States, Poland, Germany, etc., are more likely to be transported via land routes.

Also, undoubtedly an important factor for the potential additional cargo for the transportation via direct water transport connection between the Caspian Sea and the Black Sea regions is the development of port infrastructure along the Caspian Sea coast. For example, the port of Aktau is currently focused primarily on operations of transport corridor "TRACECA" [The Seaport of Aktau, 2014], but surely it would be able to become the most important cargo port, servicing new transport corridor via the Eurasia Canal.

An important part of the potential cargo of the Eurasia Canal is the production of goods from the South of Russia, primarily in the regions of the Russian Federation, located in the vicinity of the intended route of the waterway. For example, in the Stavropol region in 2014, about 8.7 million tons of wheat were harvested [Vladimirov... 2015]. Approximately 4.5 million tons from this amount was exported [The Stavropol... 2015] (as a rule, the main importer was Egypt [Cherezo, 2014]). Goods from the Stavropol region, as well as from other regions of the Russian Federation, may be transported through the Eurasia Canal if the quay walls system along the route of the shipping canal is constructed as part of the project.

Thus, after the completion of the Eurasia Canal, cargo traffic not directly related to the already-existing transport of hydrocarbon products from the Republic of Kazakhstan by pipelines, may exceed 45 million tons via the direct water connection between the Caspian Sea and the Azov-Black Sea basins, and the direction of movement would be be mainly from east to west. Current oil and oil product cargo can be estimated at 25–50 million tons per year. This volume would increase with the growing share of hydrocarbons processed (and not exported as raw material) in the South of Russia, Kazakhstan, Azerbaijan and other countries of the Caspian region. The direction of movement of this type of cargo is also primarily from east to west.

Another interesting component of our study is the data on the structure of cargo transit through Ukrainian ports from other countries; for example, in 2011, 71.8 % of the total amount of cargo transit was from Russia (34.2 million tons), 20.2 % from Kazakhstan (9.6 million tons), 5.7 % from Belarus (2.7 million tons) and 2.3 % from other countries (1.1 million tons) [Il'nitskii, 2012]. There is a very high probability that the goods from the Republic of Kazakhstan, which were transported through the ports of Ukraine, would be loaded on vessels in the port of Aktau after construction of the Eurasia Canal.

However, we did not take into account that the construction of the Eurasia Canal itself would be a significant factor of the emergence of new industrial facilities and additional cargo sources in the region.

An oil pipeline with a throughput capacity of 60 million tons of oil per year, in addition to several railroads, may represent an alternative to the Eurasia Canal; however, the cost of construction, lack of advantages over the water transport (primarily, the price of transportation) and, in this case, the increase in the land area affected (because the route should go around the Caspian Sea) allow us to consider the Eurasia Canal as a vital project for the Caspian region.

At the same time, there is a high probability that a significant part of the cargo traffic between China and the countries of the European Union, which have ports on the Mediterranean Sea will be transported via the new trans-Eurasian route that includes the Eurasia Canal. It should be noted that at present time almost all trade between China and Europe is carried out by maritime transport. The vessels have to go around the entire Eurasian continent, and sometimes even around Africa. Meanwhile China is the third country in the world by the size of land area and a significant part of the cost of goods in Sino-European trade is railway transportation costs, which reflects the distance from Chinese cities to the coast. The distances from the central and western provinces of China to the Caspian Sea coast are comparable with the distances from them to Chinese ports [Bolaev, 2009].

According to recent data, Chinese ports annually handle more than 7 billion tons of cargo. According to expert assessment, the annual trade between China and the European countries of the Mediterranean (Italy, France, Greece and other countries) exceeds 45 million tons. Therefore, a significant part of this cargo volume can be transported via territories of Russia and Kazakhstan after construction of the Eurasia Canal [Bolaev, 2015]. The proposed route of the Eurasia Canal is located on the shortest way between China and the European Union. After the construction of the Eurasia Canal, one half of this way will be by water. This way will be considerably shorter and faster than the ocean route; besides, it will be comparable in cost due to the use of water transportation. The construction of the Eurasia Canal will allow increase export to the countries of the European Union from the Western and Central regions of China.

The issue of the Eurasia Canal construction draws attention of many Chinese experts. In particular, the results of the research on this issue by the Chinese Sinohydro Corporation show that after the opening of the Eurasia Canal, Chinese export cargo traffic through Russia and Kazakhstan would increase significantly. Thus, according to the research of the Sinohydro Corporation, the Eurasia Canal would be an important factor in diverting Chinese transit traffic from the ocean route to the territories of Russia and Kazakhstan. With the opening of the Eurasia Canal, the annual traffic mentioned above would be 24–30 million tons by 2030 and 43–51 million tons by 2050. The experts of Sinohydro Corporation conclude that in long-term the Trans-Eurasian transport corridor through the Eurasia Canal would be a comfortable, safe and highly effective route from China to Europe, and it would create favorable conditions for the development and opening of the China's western regions and for the development of trade logistics of the central regions of China. It would also have a positive impact on international multimodal transportation in Sino-European trade and would play a catalytic role in the development of regional economy in China [Wang, 2016].

Considering long-term costs of rail freight through the territory of Kazakhstan, the cost of transport of a standard container from Alashankou to Aktau would be about US $ 2,700 assuming that one container holds 14 tons of cargo, on average. By transporting 25 million tons of Chinese export goods annually by rail, the Kazakhstan economy would receive approximately US $ 4.822 billion export revenue annually.

PARAMETERS OF THE CANAL AND ENVIRONMENTAL IMPACT

The estimated volume of cargo traffic, which can be transported by the Eurasia Canal, and geographical features of the region allow us to assess the main parameters of the Eurasia Canal.

The plans of construction of the Eurasia Canal mean creating a direct waterway between the Caspian Sea and the Azov and Black Seas basins. The watershed between the Azov and Caspian Seas with a height of about 27 meters on the western slope and 54 meters on the eastern slope represents a barrier, but it can be overcome through the construction of three shipping locks of low pressure on the western slope and a combination of three medium-pressure or six low-pressure shipping locks on the eastern slope. The water feeding from the area of stable fresh water in the delta of the Volga-river (fresh river water already flows into the Caspian Sea, but it remains fresh for tens of kilometers from the confluence of the Volga to the Caspian Sea) can be considered as the primary option for the Eurasia Canal's water supply [Bolaev, 2008]. The volume of fresh water needed for sluicing process on the Eurasia Canal can be minimal if the latest world technologies of shipping locks construction are used.

In general, the length of the Eurasia Canal without sea sections is estimated at 650–700 kilometers (including sea sections, up to 750–800 km, depending on the selected depth of the canal [Bekturganov et al, 2009]). The Eurasia Canal can be linked with the Caspian Sea on its coast near the town of Lagan in Kalmykia. Then the route of the canal ascends to the watershed in the area of the Chogray Reservoir (this reservoir may accumulate water resources during floods and supply locking process in dry seasons).

On the western slope of the watershed Chogray Reservoir, the entire way to the Sea of Azov is already covered by several bodies of water, including the Manych River (another name is the West Manych, a left tributary of the Don) and man-made lakes and reservoirs, created during the construction of the Manych Waterway in the Rostov oblast, Stavropol krai and Republic of Kalmykia. In geomorphological terms, the route of the Eurasia Canal is located in the Kuma-Manych Depression, mostly represented by the Manych valley. The current state of relief and geomorphology of the valley of the West Manych River is the result of the hydrological characteristics of the ancient Manych Strait, which connected the Caspian Sea and the Azov and Black Seas basins thousands of years ago, forming the morphological structure features of the Kumo-Manych Depression [Paleohydrological Reconstruction... 2011].

Subsequently, the existence of the Manych Strait in the relatively recent past and the presence of the Kumo-Manych Depression make the valley of the Manych very suitable for construction of the western section of the Eurasia Canal. However, there are still two options: the route of the canal can pass through the existing man-made lakes and reservoirs (by deepening them), or the waterway can be constructed at a some distance from existing water bodies (for example, to avoid impact on the ecosystems and making possible reducing the mineralization level of these reservoirs if necessary).

A completely separate constructive project would seem to be a much more opportunistic venture, completely unrelated to the mouth of the Don River. It would be a separate canal flowing into the Azov Sea and not related to the Don River. The alternative is the confluence of the Eurasia Canal to the lower reaches of the Don River (but as already mentioned, the Don River does not have sufficient depth for the vessels passing through the Eurasia Canal).

During the design stage of the Eurasia Canal, it is very important to conduct appropriate studies on the issue of the environmental impact, including the impact of waterway transport connecting the Caspian Sea to the Azov and Black Seas basins. According

Table 1. Possible design parameters of the Eurasia Canal

Parameters	Type of vessel 1	Type of vessel 2
Length of vessel, m	164	226.0
Width of the vessel, m	18.4	24.0
Vessel draft, m	5.0	7.15
Deadweight of vessels capable of using the waterway, thousand metric tons	10	20–26
The length of the waterway	750	750
Quantity of shipping locks	8	8
The time of vessel passing the canal, days	2.5–3	2.5–3
The duration of the navigation, days per year (if no using of icebreakers)	280–330	280–330
The depth of the fairway	6.5	9.3
The width of the canal at the level of the depth of the fairway	48	63
Cargo throughput, million tons per year for each direction (if duration of the navigation is 280 days per year)	90	153
Estimated construction cost (the prices of 2016, including 18 % VAT), billion US dollars	10–11	26.5–27.5
Annual operating costs (the prices of 2016, including 18 % VAT), million US dollars	125–136	345–374

to the opinion of the scientific secretary of the Southern Scientific Center of the Russian Academy of Sciences Dr. Sergei Berdnikov, the Eurasia Canal project is "probably the first infrastructure project in the Southern Federal District, when the opinion of ecologists is taken into account" [Volkov, 2010].

When determining the possible design parameters of the Eurasia Canal the scientific community, as a rule, proposes the use of "river-sea class" vessels with deadweight of about 10 thousand tons or more [Bekturganov et al, 2009]. The analysis of possible technical parameters of the shipping canal was primarily focused on using already the existing in Russia types of "river-sea class" vessels. Thus, for example, the draft of the proposed vessels was about 5 meters. In this regard, the question is if it is possible to use vessels designed especially for the new waterway.

For example, the vessels that can be used on the St. Lawrence Sea Way can reach a length of about 227 m, their draft can be about 8 m and deadweight can be over 28 thousand tons (the St. Lawrence Sea Way is the system of locks and canals, allowing ocean ships to sail from the Atlantic Ocean to the Great Lakes in North America; the length is about 2.5 thousand km, the number of shipping locks is 15, including 7 shipping locks on the

St. Lawrence River and 8 shipping locks on the Welland canal) [Seawaymax 2011, Taylor et al 2007, The Great Lakes... 2014]. Increasing the design parameters of the Eurasia Canal (including the dimensions of shipping locks and the shipping route) will allow using much larger vessels than currently used in the Caspian Sea. That could seriously affect the efficiency of water transport in the entire Caspian region.

CONCLUSIONS

The Eurasia Canal will be one of the most important factors of the industrialization of the Caspian Region. In contrast to pipelines, water transport can carry all kinds of goods, including hydrocarbon-processing products that cannot be transported by existing system of pipelines. Construction of the Eurasia Canal and port infrastructure, including the quay system along the navigable route, which can be constructed as part of the project, will significantly increase non-oil and gas export from the South of Russia, Kazakhstan and other countries of the Caspian region. This applies to ferrous and nonferrous metals, grain, other agricultural products, construction materials, coal and other local products.

A significant part of the cargo between China and the countries of the European Union, which have ports on the Mediterranean Sea, will be transported via the new trans-Eurasian route that includes the Eurasia Canal. The proposed route of the Eurasia Canal is located on the shortest way between China and the European Union. After the completion of the Eurasia Canal, one half of this way will be using water transportation. This way will be considerably shorter and faster than the ocean route; besides, it will be comparable in cost due to the use of water transportation. Also, the Eurasia Canal will become an important factor of economic development of Western and Central regions of China and an important project within the China's concept of the Belt and Road Initiative. ■

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GEOINFORMATION TECHNOLOGIES IN THE PROMOTION OF TOURIST DESTINATIONS IN THE ZONE OF THE GREAT SILK ROAD

ABSTRACT. To date, travel portals represent the most promising tool for promoting tourist destinations. Compared to traditional print media, their main advantage is the ability to access a wealth of information, services, to make online reservations, to create package-tours, and to obtain interactive representation of tourist sites. The paper discusses tourism demand for destinations of the zone of the Great Silk Road applying key statistics of the Yandex search engine queries. A comparative analysis of tourist destinations portal data has been conducted based on the following criteria: availability of multilingual information, interactive maps, self-guided tour planners, and information about attractions, tours, and accommodation facilities. In order to attract a large number of tourists and to successfully implement the project "Silk Road," it is necessary to establish a common trans-national tourism portal which would include information on tourism opportunities in all countries.

KEY WORDS: travel portals, GIS in tourism, geoinformation monitoring in tourism, tourism of the Great Silk Road.

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INTRODUCTION

The Great Silk Road played an important role in the development of world civilization. Besides the basic functions, e.g., trade, the Great Silk Road was the conductor of technological developments connecting different cultures and religions.

The interest in the history of the Great Silk Road has being growing from the beginning of the 1990s with the emergence of the idea of international cooperation in the field of economy, science, and tourism. In 1994, the World Tourism Organization (UNWTO) in cooperation with UNESCO, hosted the first international meeting

"Great Silk Road," the results of which were incorporated in the Samarkand Declaration, defining the main directions of development of tourism. In the same year, the UNWTO unfolded an aggressive promotion of the "Silk Road" project at the largest international tourism fairs: FITUR (Madrid), ITB (Berlin), and WTM (London). The international forums in China and Japan also became important events; there, the marketing plan of the project has been established and a tourist brochure has been created based on the results of the research on tourist and recreational potential of the territories [Mirzaev, 2004]. The UNWTO General Assembly in Istanbul (Turkey) adopted a proposal for a 26–episode movie-series about the sights and roads of this ancient way.

According to the UNWTO, it is the longest tourist route in the world. It covers Europe, Asia, and Africa, and connects three oceans: Pacific, Indian, and Atlantic. The route passes through the countries whose area is 55.4 million sq. km, or 43 % of the land area of the Earth, the population is 4.7 billion people (66.9 % of the world population), and the combined GDP is 27.4 trillion dollars (53.6 %) [Aleksandrova, 2015]. The strong point of the project is a combination of unique historical, cultural, and natural resources, which create the basis for an extremely diversified tourism potential under the umbrella brand "Silk Road" [Aleksandrova, 2015].

Russia has also been included in its implementation. The Ministry of Culture of the Russian Federation in 2013–2018 has committed to provide for the formation of historical and cultural tourist route "Great Silk Road" by engaging in tourist turnover monuments of history, culture, and archeology.

Despite the efforts made by international organizations and individual states within the framework of the project "Silk Road," at the present time there are a number of problems related to visa procedures, tourism infrastructure, and information support for tourists.

Information availability for tourists became enhanced with a quite rapid integration of information technologies in the sphere of tourism (the emergence of reservation systems for tickets, hotels, and tours, and tourist websites and portals). With regard to tourism, there is even a special term – *E-Tourism*, which refers to the introduction of information technology to improve efficiency in the field of tourism activities [Buhalis and Deimezi, 2004].

MATERIALS AND METHODS

Modern tourists seek information about destinations that they want to visit and plan their trip in detail, using search engines. Statistics on key phrases used by search engines allows assessing the demand for a destination and its tourist appeal.

Tourist queries in the Yandex search engine from 12.01.2015 to 12.01.2016 provided the statistical base for the study. Since the target audience of Yandex is users of Russia and the CIS countries, the statistics reflects the tourist attraction destinations for these countries only. After processing the request, the search engine produces a list of major sites. As a rule, tourist information about the destinations is located on the countries' travel portals.

Travel portals represent an advertising platform and have three main functions: to provide information on tourism opportunities in the territory, to facilitate the initial interest of potential tourists, and to plan travel. In addition, tourist destination portals have a certain number of advantages over other methods of promotion of tourist destinations, namely:

- coverage of a large number of potential customers;
- low cost of advertising and, consequently, the funds spent on client attraction;
- combination of different types of information (text, graphics, audio, video);
- ability to quickly update information;
- capability to communicate with the customer;
- direct internet sales; and
- absence of time-of-day restrictions.

Fig. 1. The routes of the Great Silk Road Source: http://cf.cdn.unwto.org/sites/all/files/silkroad-map-unwto.jpg

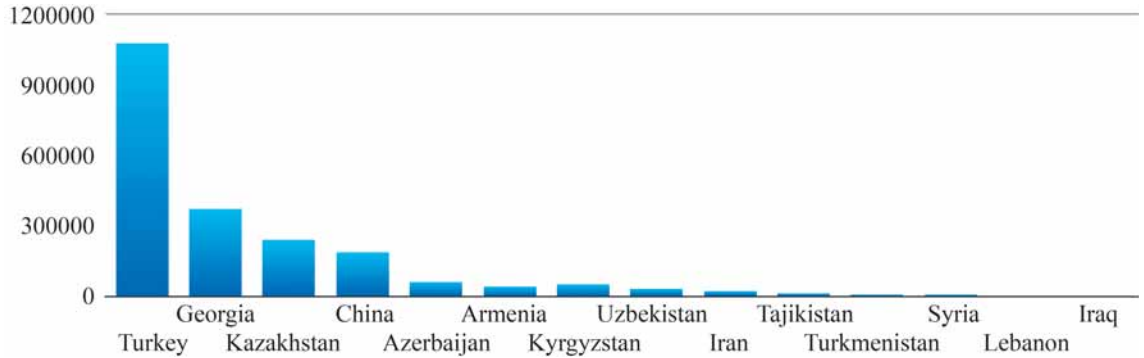

Fig. 2. The Yandex search engine tourist key requests

For the end-user, i.e., the tourist, a tourism portal must serve as a site of a detailed planning of the trip. Therefore, the most comfortable travel portals are those that provide information about the main attractions of a destination and have online booking of hotels and tours, interactive maps, and planners for self-guided tours. The paper analyzed the travel portals based on the criteria listed above.

The territorial scope of the study is limited to the main section of the Silk Road presented on the site of the UNWTO, which includes fourteen countries: Azerbaijan, Turkey, Armenia, Georgia, Kazakhstan, China, Kyrgyzstan, Uzbekistan, Iran, Tajikistan, Turkmenistan, Syria, Lebanon, and Iraq (Fig. 1).

RESULTS

Searches for tourist destinations of the Great Silk Road are distributed unevenly. Four groups of countries can be distinguished among them. Turkey belongs to the first group with 1,077,008 queries (Fig. 2). Five destinations in this country comprise 66.8 % of all queries related to tourism in Turkey: Kemer (287,003), Side (204,927), Alanya (103,897), Marmaris (80,292), and Bodrum (44,394). All of these destinations have a combined form of tourism, which consists of beach-bathing, historical, and cultural. The destinations of historical and cultural tourism include Ankara (42,850), Pamukkale (30,398), Cappadokia (12,906), and Denizli (10,067).

The second group of countries includes Georgia, Kazakhstan, and China. They account for 37.8 % of all travel requests for the Great Silk Road. Georgia is the second most popular country among all the countries surveyed and the first in its group; it had 370,647 queries. The most of search queries associated with this country are for vacations in Batumi (150,806), gastronomic (7,606) and wine tourism (17,603), historical and cultural destinations of Tbilisi (12,182), and Rabati Fortress in Akhaltsikhe (3,846).

The searches of the third group of tourist destinations account for 6.8 %. These include Azerbaijan (59,704), Armenia (41,755), Belarus (50,176), Uzbekistan (31,042), and Iran (21,337).

The fourth group of destinations does not enjoy tourist attraction for several reasons:

- unfavorable location relative to countries generating tourism flows;
- low level of development of tourism infrastructure; and
- difficult political situation.

There is no common transnational portal for the Great Silk Road; only an interactive map of the cities along the Great Silk Road exists. However, Table 1 shows that virtually all of the participating countries have their own travel portals. The exceptions include Iraq and Syria, information about which can be found on other travel sites, e.g., tripadvisor.com and lonelyplanet.com. The rest of the countries have at least one travel portal and, in some cases, three (Georgia, Turkey, and Tajikistan).

An important condition for attracting foreign tourists to a destination is the availability of information translated into different languages. In this regard, portals targeting a wide range of foreign tourists are: azerbaijan.travel (Azerbaijan), visitgeorgia.ge (Georgia), and welcomeuzbekistan.uz (Uzbekistan). In addition to English, they present information in German, French, Russian, Spanish, and other languages. This expands significantly the geography of potential tourists.

Information about the sights allows tourists to learn more about tourism features and their history and to see their images. In the end, it serves as a tool to attract tourists, showing the main advantages of the destination relative to the others. The lists of attractions are available on the most portals discussed.

Marketing through web sites provides unlimited potential for advertising, where

Table 1. The list and functionality of travel portals of the countries in the zone of the Great Silk Road

	Web sites	Languages	List of the main tourist attractions	Availability of an interactive map	Independent travel planner	Tours	Accommodation facilities
Azerbaijan	http://azerbaijan.travel	Azerbaijani, English , Russian, French, Turkish, German, Chinese	+	+	+	+	+
	http://www.atoz.az	English	+	+	+	–	+
Armenia	http://tourismarmenia.org	English	–	+	–	–	+
	http://www.armeniainfo.am	English	+	–	–	–	+
Georgia	http://georgia.travel	Georgian, English, Russian	+	–	–	–	–
	http://www.exploregeorgia.org	English	+	+	+	+	–
	http://www.visitgeorgia.ge	English, German, Italian, French, Spanish, Russian, Japanese	+	–	–	+	+
Iraq	–	–	–	–	–	–	–
Iran	http://iranstravel.com	English	+	–	–	+	+
Kazakhstan	http://visitkazakhstan.kz	Kazakh, Russian, English, German	+	–	–	+	+
Kyrgyzstan	http://www.kyrgyzstantravel.net	Russian	+	–	–	–	–
	http://www.triptokyrgyzstan.com	English, Russian	+	+	–	+	+
China	http://www.chinatravel.com	English	+	–	+	+	–
	http://www.chinatraveldepot.com	English	–	–	+	+	+
	https://www.travelchinaguide.com	English	+	–	+	+	+
Lebanon	http://www.destinationlebanon.gov.lb	English, French, Arab	+	–	–	–	–
Syria	–	–	–	–	–	–	–
Tajikistan	http://www.traveltajikistan.net	English	+	–	–	–	–
	http://tajiktourism.com	English	–	–	–	–	+
	http://visittajikistan.tj	English, Russian, Tajik	+	–	–	–	+
Turkmenistan	http://turkmen-travel.com	English	+	–	–	+	+
Turkey	https://turkeytourtravel.com	English	–	–	–	–	+
	http://www.travelturkey.com	English	–	–	–	–	+
	http://turkeytravelguide.com	English	–	–	–	–	–
Uzbekistan	http://www.visituzbekistan.travel	English	+	–	–	+	+
	http://www.welcomeuzbekistan.uz	English, German, French, Spanish, Korean, Russian	+	–	–	–	+

the text can be combined with images, interactive maps, animations, video, and audio. The basic idea is to create the desired image of a specific tourist destination in the minds of potential visitors. One of the best ways to achieve the best visual effect is realized with the help of maps. Maps represent essential resources for spatial transmission of information and creation of location images [Kraak and Brown, 2001]. That is why the maps play an important role in the transmission of information about the world. There is a great variety of the uses of maps in the travel portals. However, some websites of the countries where tourism is the main source of income are still not using maps; or for the most part they are very simple, static. Scanned paper maps, despite their shortcomings, are still in high demand, but it is only a matter of time. In the near future, static maps will become rare, as they will be transformed into interactive formats [Vasiljevic et al., 2009]. Modern technology, including computers and the Internet are a very effective means for the presentation and dissemination of geospatial data. The main advantage of the Internet in respect to tourism business is that it allows the client to access much easier and directly a very large volume of relevant information and to visualize a destination [Vasiljevic et al., 2009]. For example, tourists can plan their route and points of interest, get addresses of restaurants and hotels and photos, or move on to other sites [Kraak and Brown, 2001]. As a result, an interactive travel map allows the end-user to make a virtual tour without leaving home [Kariotis et al., 2007]. And now there is indication that a growing number of tourism organizations recognize the usefulness of interactive maps on the Web.

In our study of the 24 examined portals, interactive maps can be only found on five: azerbaijan.travel, atoz.az (Azerbaijan), tourismarmenia.org (Armenia), exploregeorgia.org (Georgia), and triptokyrgyzstan.com (Kyrgyzstan).

A self-guided tour planner provides a service of automated construction of routes with a choice of tourist facilities. It focuses more on automobile and flashpacker tourism. This function is implemented on all of China's and Azerbaijan's portals, as well as on exploregeorgia.org (Georgia).

Online services for booking tours and hotels are not represented on these tourist portals. Therefore, we analyzed the availability through the potential to use third-party sites. Countries with a low level of interaction of travel agents with the state include: Armenia, Lebanon, Tajikistan, and Uzbekistan, because the portals of these countries do not provide information about travel agencies, travel services, and vacation packages.

CONCLUSION

The most effective method of promoting the creation of tourist destinations is portals on the Internet. To attract a large number of tourists and to successfully implement the project "Silk Road," it is necessary to create a transnational tourist portal which would include information on tourism opportunities in all the countries involved. At the present time, it is necessary to use several travel portals that differ in the amount of information, design, and functionality, to plan a "Silk Road" journey.

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GREEN DEVELOPMENT MODES OF THE BELT AND ROAD

ABSTRACT. A number of countries are concerned, to a certain degree, about the prospects for the implementation of the Chinese strategic initiative for the joint creation of the "Silk Road Economic Belt" (SREB). These concerns relate to fears of the transfer from China to the "belt" countries of excessive capacities of the polluting primaries industries, possible environmental degradation, and the destruction of the traditional way of life as a result of the implementation of mega-projects, and the fragility and vulnerability of many ecosystems along the routes of the prospective throughways between the eastern provinces of China and Europe [Bezrukov, 2016]. Environmental problems are clearly of key importance for the prospects of China's initiative. The initiative's program documents have stressed the need to take into account the interests of all parties and act solely on the basis of mutual benefit. The authors briefly consider the variety of natural and socio-economic conditions in the SREB zone and the sharp differences in the degree of economic development of the territory, which require close attention and scientific justification for political and economic decisions. Particular differences include temperature regime, precipitation, modern atmospheric circulation, transport of particulate matter and contaminants, soils, vegetation, land use, and risks of desertification in the SREB zone. The potential of complementarity of the natural resources of China and a number of neighboring countries may be realized. The paper also discusses China's present policy in the transition to sustainable development and its underlying concepts and achievements, especially at the level of regions and cities, including the concept of "ecological civilization" and the six stages of greening of cities. The authors believe that tourism related activities should be coordinated specifically at the city level as part of "green development." It is necessary to create free economic zones in the "economic corridors" along the planned transcontinental lines and utilize the existing national special zones. Such zones are particularly effective in border regions and cities. In conclusion, it is recommended to develop international research networks in the SREB zone, to establish an International Data Center, and to collect, organize, exchange, and publish jointly scientific information on the problems of transition to sustainable development.

KEY WORDS: green development modes, the Belt and Road initiative, ecological civilization, Chinese experience.

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INTRODUCTION

The "Silk Road Economic Belt" (SREB) zone (the "Belt and Road" initiative) encompasses many countries, practically all of Eurasia and Africa. The implementation of this initiative involves solving complex environmental problems. Many areas in this zone are rich in resources, but their environment is fragile and vulnerable. These areas are often arid and have high risks of adverse and dangerous natural phenomena (earthquakes, sandstorms, and severe water and wind erosion). There are sharp interstate and interregional economic differences that could potentially contribute to the transfer of polluting industries to poor countries and the degradation of their natural environment.

The initiative is systemic in nature and is based on the principles of integrated development adopted by the international community, i.e., the United Nations; it meets the long-term interests of all countries. The five main priorities of the initiative include coordination of economic policies, strengthening of transport connectivity, elimination of trade barriers, financial integration, and strengthening of contacts between people [Li Zehong, et al., 2015]. Territorial structures and local environmental conditions had a significant impact on the configuration of communications and the functioning of the Silk Road in the past. They are also very important for the practical implementation of the SREB project at the present time. Thus, a careful analysis of such factors as relief, temperature regime, precipitation, modern atmospheric circulation, transport of solid particles and pollutants, soils, vegetation cover, land use, physical-geographical zoning, etc., is necessary.

The paper discusses the diversity of natural and socio-economic conditions in the SREB zone and the sharp differences in the degree of economic development of the territory that require scientific substantiation for political and economic decisions, and considers some of the concepts underlying the modern Chinese policy of transition to "ecological civilization".

DIVERSITY OF NATURAL AND SOCIO-ECONOMIC CONDITIONS IN THE SREB ZONE

The SREB zone is characterized by high temperatures and low precipitation, which predetermine the high probability of desertification processes. It is experiencing a significant impact of climate change. According to 2011–2014 research, the spring wind regime is determined by western transport in the middle and upper troposphere, which causes the transfer of dust and pollutants from North Africa, Europe, the Middle East, and Central Asia to East Asia (Fig. 1). The study of the optical density of aerosols, including sulfates, (Aerosol Optical Depth) showed that frequent spring dust storms contribute to the transfer of pollutants mainly from East and South Asia and Europe. The sources of sulfate, organic carbon, and black carbon are associated with East and South Asia, Europe, and North Africa (particularly). The most significant source and recipient of sulfur-nitrogen and phosphorus emissions is East Asia-Western Europe and North Africa-Middle East, respectively (Figs. 2–4).

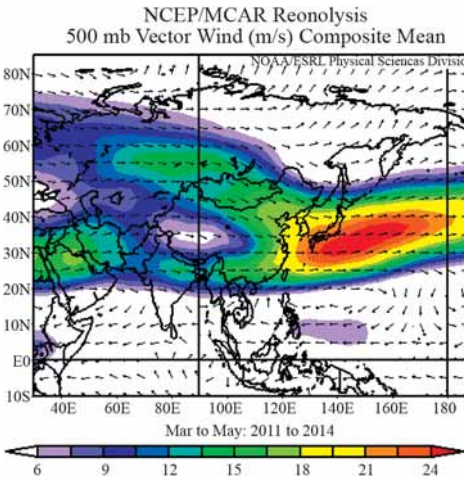

Fig. 1. Spring wind field in the SREB zone

The most common group of soils in the SREB zone is Leptosol-LP (very shallow soils over hard rock or in unconsolidated very gravelly material) (Fig. 5). Land cover in the

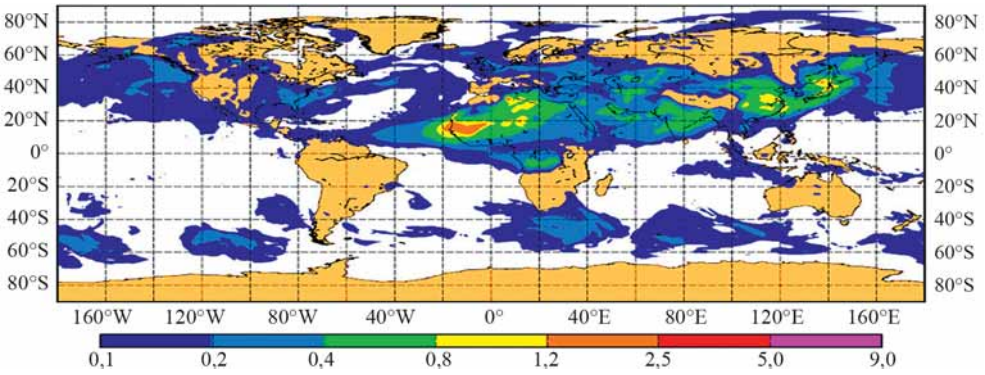

Fig. 2. Total Aerosol Optical Depth (May 24–29, 2014)

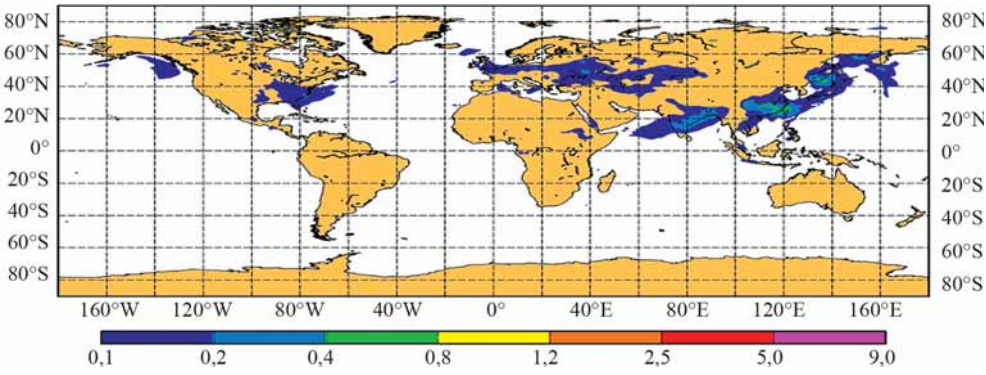

Fig. 3. Sulfate Aerosol Optical Depth (May 24–29, 2014)

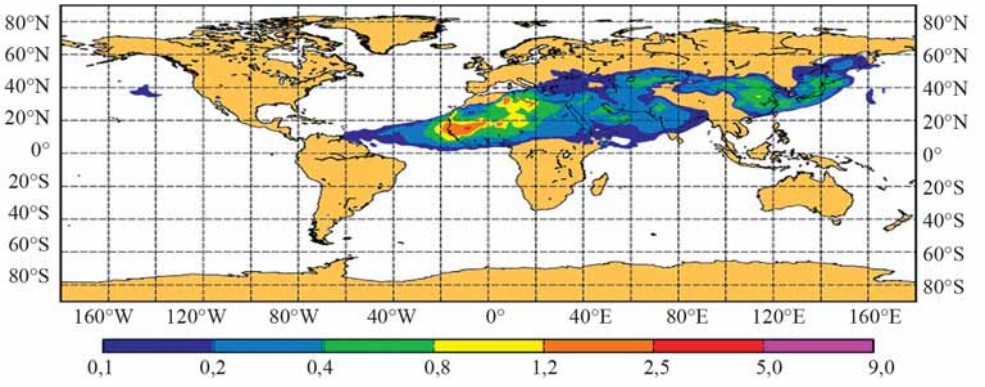

Fig. 4. Dust Aerosol Optical Depth (May 24–29, 2014)

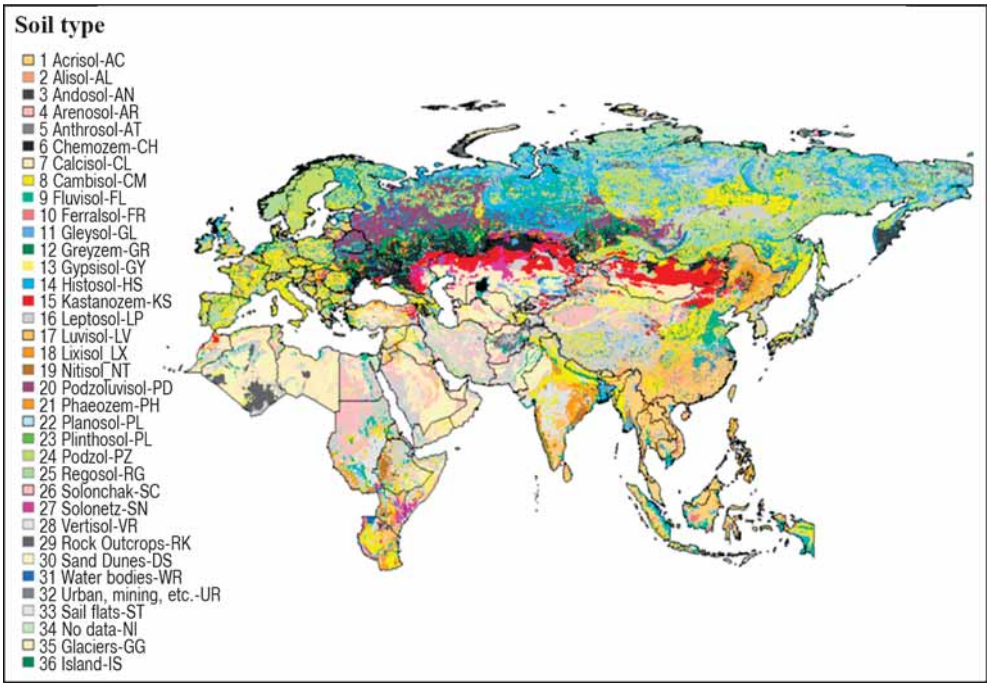

Fig. 5. Soil types in the Silk Road Economic Belt zone

western and eastern parts of the SREB zone with a relatively high level of socio-economic development is represented by pastures and forests, while the less developed central part is occupied by barrens and shrublands.

China, the countries of Central Asia, Russia, and Mongolia are rich in mineral resources, including non-ferrous metal ores. Their use in China is extremely high, especially of tungsten, lead, molybdenum, and antimony. China is the world's largest producer and consumer of steel (76.9 % and 80.7 % of all SREB countries, respectively). The areas of production and consumption of copper and aluminum in the SREB zone do not coincide, which determines a certain complementarity of the natural resources of its countries [Guo Peng et al., 2014; Yu Huilu et al., 2014].

China is the world's largest consumer of ferrous and non-ferrous metal ores, especially iron and copper ore and raw materials for aluminum production [Wang Zhe, 2015]. However, at the current level of consumption of raw materials for the production of ferrous metals, copper, and aluminum, the stocks available in the country will last no more than 30 years. At the same time, in other SREB countries such as Russia and Kazakhstan, the rich reserves and mining of ore resources exceed the relatively limited consumption of ferrous and non-ferrous metals. Thus, emerging market economies, especially China and India, constitute a vast market for other SREB countries, for metals and raw materials for their production.

According to the level of economic development, the SREB countries can be divided into three groups corresponding to gradients between the east, center, and west of the zone [Dong Suocheng et al., 2015]. In its eastern part, there are growing large economies of China, Russia, and India, which are increasingly involved in the international division of labor and are undergoing institutional reforms. The central part is divided into two subtypes: countries that have rich mineral resources,

due to which they have high revenues, such as oil exporters in the Persian Gulf, and less developed countries, generously endowed with natural resources, but located at the initial stage of industrialization (for example, the countries of Middle Asia with relatively low rates of economic growth). The states of the western part of the SREB zone have reached the post-industrial stage of development; their economic development is based on technological innovation, but due to the international financial crisis, growth rates are low (Table 1).

The economic specialization of the three parts of the SREB zone predetermines the potentially high degree of complementarity [Dong Suocheng et al., 2014]. The industrial system of the eastern (Chinese) part (i.e., the "world factory") is considerably complete and has large-scale financial, human, and technological resources; it contains the main exporting regions of manufacturing products, with the majority of manufactured goods being in the peak part of the life cycle. However, China faces the problem of excess capacity and urgently needs to expand the market.

The countries of the western part of the SREB zone, which are part of the EU, have advanced technologies and a developed industrial base, and their export goods enjoy stable demand in the world market. These countries are leading in scientific research, they have well-known brands and important intellectual property, but they have to import the main natural resources and need additional development resources. The countries in the central part of the zone, located in the Middle East, Central Asia, and North Africa, are generously endowed with natural resources, but their economic development is highly dependent on oil exports, which determines their high vulnerability to fluctuations in prices and external environment. These countries need to increase the competitiveness of their economies by making fuller use of their natural resources.

The most developed and industrialized regions in the east of the "belt" gravitate towards the coast of the Pacific and Indian oceans. It is also possible to distinguish eight highly urbanized bands along major rivers, as well as linear structures of urban settlement along transcontinental lines. In general, the urbanization is reduced from the northwest to the southeast of the SREB zone. The main gradient of population density is directed from the southeast to the northwest.

Vast differences in natural conditions in the SREB zone, the level of socio-economic development, GDP per capita, the combination of low-comfort, for humans, and scarcely populated areas with particularly vulnerable ecosystems and highly urbanized areas with a huge load on the environment dictates the need to focus primary attention on environmental factors. The implementation of large-scale projects, including the construction of high-capacity throughways thousands of kilometers long,

Table 1. Economic development differences across the three zones

	Income level	GDP per capita (US $)	GDP proportion (%)	Non-agriculture proportion (%)	Growth rate (%)
West zone	High	37419	48.9	98	0.34
East zone	Upper high	7210	31.6	90	5.32
Middle zone	–	–	–	–	–
Petroleum exporting countries in Middle East	High	43939	4.2	99	4.99
Other developing countries	Low	4955	15.3	86	3.55

the commissioning of new mineral deposits, and inadequate construction of cities and other settlements is fraught with significant negative environmental consequences. Large-scale construction and the emergence of new industries are usually associated with a massive migration of labor from other areas and countries, which can undermine the traditional way of life and threaten the identity of local residents [Li Yu et al., 2016]. In turn, this can lead to aggravation of social conflicts and emergence of new discrepancies [Yu Huilu et al., 2015; Zhao Minyan et al., 2016], especially in the case of unequal partners and an unjust and unequal distribution of costs and benefits. Such a situation can take place, for example, in the implementation of large-scale projects in the agrarian sector, which are poorly compatible with the traditional way of life and agriculture (e.g., creation of modern milk or pork enterprises, designed for thousands of livestock heads and requiring an extensive feed base). Another possible situation is the export of obsolete, "dirty" technologies and management schemes [Glazyrina, Zabelina, 2016; Laruelle, 2015; Diener, 2015; Tracy et al., 2017].

China is well aware of such risks. The program document "Vision and action aimed at promoting joint construction of the 'Silk Road Economic Belt' and the '21st Century Maritime Silk Road' " has emphasized that China's initiative is based on strict observance of the "principles of mutual benefit and win-win strategy." The document notes the need to "take into account the interests and concerns of all parties, seek common ground and common denominator for cooperation, demonstrate the wisdom and creativity of each side" [Vision and Action..., 2015].

CHINA'S EXPERIENCE ON PROGRESS TOWARDS SUSTAINABLE DEVELOPMENT AND ITS IMPORTANCE FOR INTERNATIONAL COOPERATION IN THE SREB ZONE

Although the pockets of considerable ecological tension remain in China, first of all, in large agglomerations, increasing attention is paid to environmental rehabilitation. Market instruments of environmental regulation are used. Moreover, many Chinese companies under the influence of the market have gone beyond the officially established standards in their environmental policy. In 2015, environmental legislation has been supplemented by rules aimed at strengthening public control over its compliance and the availability of information on the state of the environment. China is increasingly participating in international environmental activities on the basis of bilateral and multilateral cooperation. The Chinese government has undertaken a commitment to reduce greenhouse gas emissions. The country has become the world's leading manufacturer of wind turbines and photovoltaic panels. The National City Programs have been adopted to reduce energy consumption and pollutant and carbon dioxide emissions [Tracy et al., 2017].

China has proclaimed the "Eco-Civilization Building Strategy" which should be implemented in four stages: (1) strengthening of property rights in the use of natural resources; (2) establishment of threshold parameters, whose exceedance dictates the need to protect different types of landscapes and land use; (3) creation of a system of compensation for environmental impact; and (4) reform of environmental management [Wang and Fan, 2016].

Based on the experience of the previous five-year program (2011–2015), the new policy aims to improve eight environmental indicators, such as the share of non-fossil fuel in primary energy consumption affecting the compliance of carbon dioxide emissions in relation to GDP [Hu 2015]. This policy also provides for more efficient use of energy, a program for the restoration of ecosystems, and the removal of the most "dirty" industrial complexes from the territory of China [Xinhua news 2015b]. The latter task involves the transition to a post-industrial economy, i.e., the restructuring of the country's economy, aimed at expanding the less polluting industries

and services with the possible transfer of harmful industries abroad. Thus, considerable experience has been accumulated in solving environmental problems at different levels.

One of the declared goals of the initiative is to contribute to the improvement of the environmental sustainability of the SREB countries. Thus, it is important to identify the mechanisms that can address this goal; the mechanisms should correspond to regional, natural, and socio-economic conditions, geopolitical situation, and resources. The main principles for the development and application of these mechanisms should be the strengthening of solidarity and mutual trust of neighboring countries, including the development of socio-economic and territorial plans, achieving the profitability of their implementation for all parties involved, "green growth" (i.e., economic development without increasing the load on the environment or with its reduction), and scientific validity.

The agrarian and industrial civilizations have been associated with conflicts between nature and society. The time has come for a transition to an "ecological civilization" based on the harmonization of nature-society relations and the ideas of sustainable development [Li Zehong et al., 2014]. "Ecological civilization" presupposes a harmonious relationship between society and nature. Its ideology is based on respect for nature, adherence to its principles, and its protection [Wang, 2014, Wang and Fan, 2016]. Such a civilization is impossible without the greening of the economy and advanced ecological culture. The SREB "ecological civilization" is based on the "six in one" system, the essence of which is presented in Fig. 6.

For the SREB countries, including China, it is vitally important to develop four types of economic and environmental cycles: within enterprises (companies), industry, regions, and social sphere. These cycles must provide for environmentally sustainable development throughout the production and exchange

Fig. 6. Ecological Civilization Mode

and consumption process and be consistent with the principles of green and low-carbon economy and reduction, reuse, and recycling of natural resources (Fig. 7).

From 2005 to 2015, more than 300 projects have been implemented or are currently being implemented in China; they target the greening of enterprises, primarily the production of structural materials – the metallurgical and chemical industries. These projects include three main elements: (1) mandatory environmental audits of enterprises whose pollutant emissions exceed norms; (2) the introduction of submerged arc furnaces in the production of ferroalloys and calcium carbide, allowing recycling of carbon monoxide and thermal energy; and (3) a complete transition to dry coke quenching and the use of coke oven gas for electricity production.

After 2005, the government adopted several projects that target more complete use of resources, energy conservation, and industrial ecology in cities specializing in the production of calcium carbide, polyvinyl chloride, and other products of organic chemistry based on coal. Such projects are aimed at recycling and use of waste, including water, industrial gas, and coke tar. Another group of projects relate

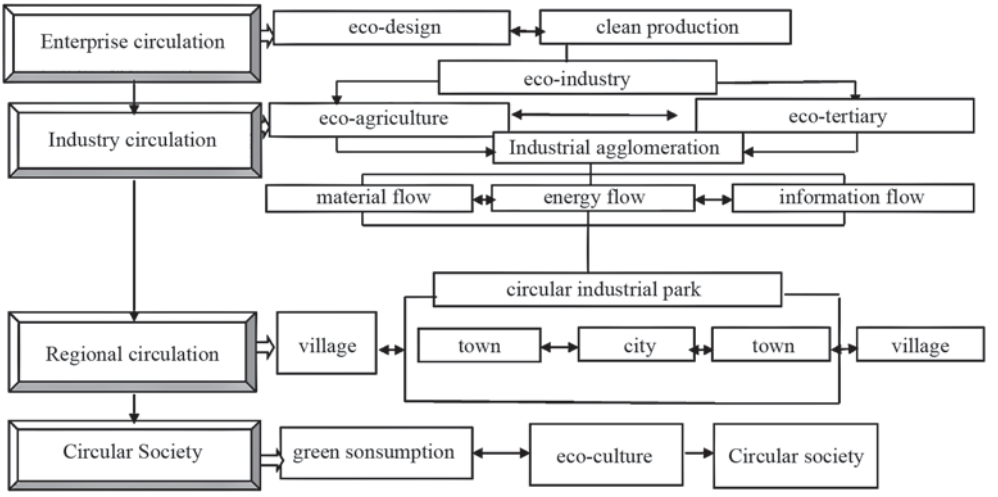

Fig. 7. Diagram of the four circular economy practices

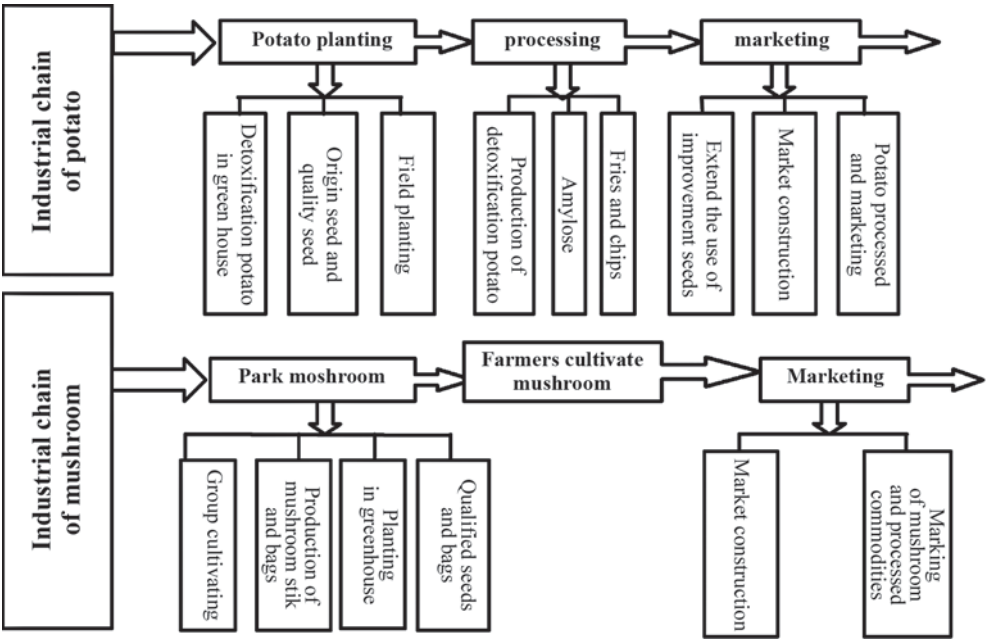

Fig. 8. Technological chains in the agro-industrial complex of Dingxi

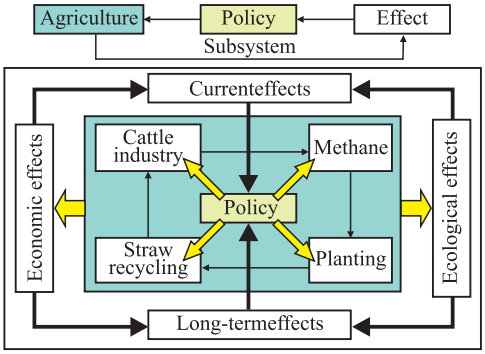

Fig. 9. Logical framework of AEP-SD model

to the deepening of processing of agricultural products (Fig. 8).

For the integrated prospective assessment of the implementation of the Strategy of Ecological Civilization in Agriculture in the period from 2009 to 2050, a model "AEP-SD" was created (Fig. 9). Given the current conditions and trends, the calculations show a rapid improvement of the situation until 2027, following which it will gradually degrade. The model allows identification of certain defects of the modern agrarian system, such as excessive increase in slaughtering, instability of methane production and unsatisfactory structure of energy balance, slow development of organic farming, etc. [Li Fujia et al., 2016].

The model allows developing some recommendations and avoiding potential risks. It is expected that methane production in the agro-industrial complex will constantly grow, and by 2030 the potential for generating methane-based electricity may exceed 500,000 tons in oil equivalent. "Clean" energy will quickly displace coal. By 2022, coal as a source of primary energy, theoretically, will be completely replaced by other types. As a result, carbon dioxide emissions will decrease from 320 thousand tons to 125.7 thousand, and the average annual reduction of carbon dioxide emissions will be 17 times greater than without these measures.

China is rich in wind energy resources, estimated at 3.2 billion kW. The installed capacity of wind power generation can reach 253 million kW, which will make the country the largest wind-energy producer in the world and will ensure the implementation of large-scale economic projects, in particular, in Western China. However, the currently installed wind power capacity is only 0.11 % of all power generation capacity (Table 2).

One example of the successful implementation of local projects for the transition to sustainable development is the city of Shizuishan. Its authorities have focused their efforts on the implementation of three tasks: (1) the recycling of waste and the formation of technological chains for the regeneration of resources in four major industrial parks; (2) the gradual establishment of an ecological system that integrates regional management of production, consumption, and utilization of waste; and (3) the creation of an "ecological community" in the districts of Dawukou, Huinong, and Pingluo.

Projects at the city level play a special role in the transition to sustainable development. There are six stages, each corresponding to specific tasks. The pinnacle on the path to "ecological civilization" is the achievement of the "harmony city" stage (Fig. 10). This is preceded by the "innovation city" stage founded on socio-economic structures based on scientific developments, pioneering technologies, and the accumulation of human capital and its rational use. An "innovation city" is characterized by favorable conditions for life and business. Its preceding stage, in turn, is a "green city" as the core of ecologically sustainable landscape. It is based on closed industrial technological chains, modern ecological agro-landscapes, and ecological services as an auxiliary system of a "closed" economy (a "circular city"). A "convenient city" is a city, whose transportation services mainly consist of public transport organized in three-dimensional space. The initial stage on the path to the "harmony city" is a "safe city" where public order is established,

Table 2. State Eco-Industry Pilot Parks (SEPP)

No.	Names	Time	Province	Types
1. State eco-industrial pilot parks of governmental authentication				
1	Suzhou industrial zone-SEPP	2008	Jiangsu	Comprehensive park-National economic and technology development zone (NETD)
2	Suzhou Hi-tech industrial development zone-SEPP	2008	Jiangsu	Comprehensive park-National Hi-tech industrial development zone(NHID)
3	Tianjin economic and technology development zone-SEPP	2008	Tianjin	Comprehensive park-NETD
2. State eco-industrial pilot parks with construction agreement				
1	Guigang (sugar industry)-SEPP	2001	Guangxi	Industrial park (sugar industry)
2	Nanhai-SEPP	2001	Guangdong	Comprehensive park (environmental protection industry)
3	Baotou (aluminum)-SEPP	2003	Inner Mongolia	Industrial park (electrolytic aluminum)
4	Huangxing,Changsha-SEPP	2003	Hunan	Comprehensive park (provincial industrial zone-PIZ)
5	Lubei chemical groups-SEPP	2003	Shandong	Industrial park (salt chemical industry)
6	Fushun mining groups-SEPP	2004	Liaoning	Industrial park(mining)
7	Dalian economic and technology development zone-SEPP	2004	Liaoning	Comprehensive park-NETD
8	Kaiyang national eco-industries pilot zone of phosphorous coal	2004	Guizhou	Industrial park (phosphorous coal engineer)
9	Yantai economic and technology development zone-SEPP	2004	Shandong	Comprehensive park-NETD
10	Weifang oceanic chemical HID-SEPP	2005	Shandong	Industrial park (oceanic chemical engineer)
11	Shangjie district, Zhengzhou-SEPP	2005	Henan	Industrial park (aluminum oxide)
12	Baotou steel-SEPP	2005	Inner Mongolia	Industrial park (steel)
13	Antai,Shanxi-SEPP	2006	Shanxi	Industrial park (coking plant)
14	Qingdao new world vein industry zone	2006	Shandong	Industrial park (vein industry)
15	Zhangjiagang free trade zone-SEPP	2006	Jiangsu	Comprehensive park-National free trade zone
16	Kunshan economic development zone-SEPP	2006	Jiangsu	Comprehensive park-NETD
17	Mawei, Fuzhou-SEPP	2006	Fujian	Comprehensive park-NETD
18	Wuxi new district-SEPP	2006	Jiangsu	Comprehensive park-NHID
19	Paojiang economic zone, Shaoxing-SEPP	2006	Zhejiang	Comprehensive park (PIZ)
20	Rizhao economic zone-SEPP	2006	Shandong	Comprehensive park (PIZ)
21	Shenzhuang industrial zone, Shanhai-SEPP	2007	Shanghai	Comprehensive park (PIZ)
22	Shibei new industries zone, Qingdao Hi-tech zone -SEPP	2007	Shandong	Comprehensive park (PIZ)
23	Yangzhou economic development zone-SEPP	2007	Jiangsu	Comprehensive park (PIZ)
24	Shanghai Jinqiao export processing zone	2008	Shanghai	Comprehensive park-NETD
25	Nanjing economic and technology development zone	2008	Jiangsu	Comprehensive park-NETD
26	Huayuan zone, Tianjin NHID-SEPP	2008	Tianjin	Comprehensive park-NHID
27	Kunming NHID	2008	Yunnan	Comprehensive park-NHID

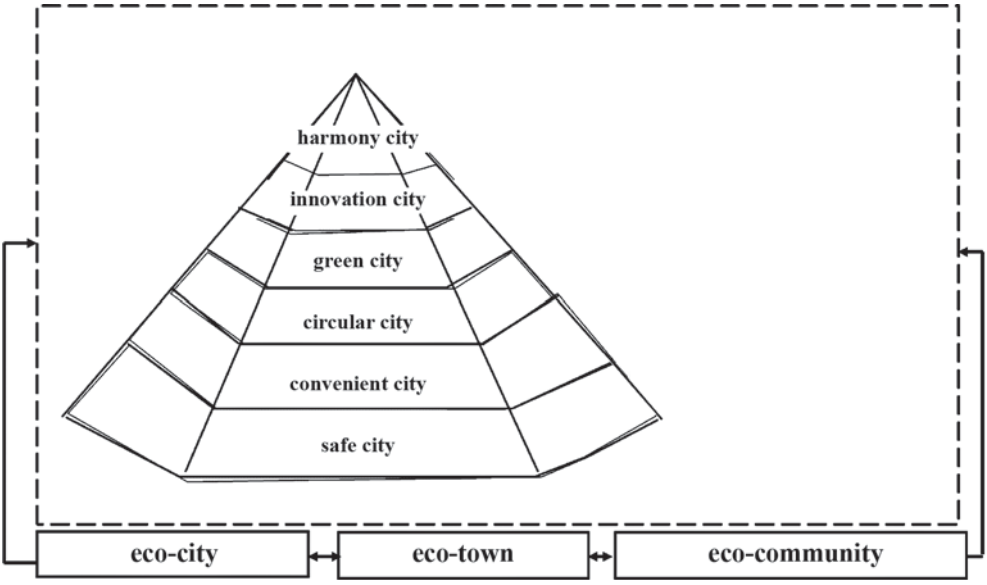

Fig. 10. The six steps of ecological sustainability of the city

the infrastructure is in excellent condition, and a reliable system for preventing natural disasters and man-made accidents is created.

Coordination of tourism related activities as part of "green development" should be conducted precisely at the city level. The SREB regions have a rich potential for tourism and rapid development of tourism related industry [Dong Suocheng, Zhao Minyan et al., 2016]. A barrier-free tourism space and special tourism economic zones should be created as instruments of regional economic integration within SREB.

The construction of high-speed railroads, in particular, between Russia, Mongolia, and China, together with international tourism, will contribute to the solution of this task [Dong Suocheng, Cheng Hao et al., 2016]. It is necessary to create free economic zones, utilizing the existing national special zones (e.g., in Russia, "territories of advanced development"), in the "economic corridors" along these high-speed railroads. Such zones are especially effective in border areas and cities located close to each other (for example, Kyakhta—Suhbaatar, Erlian-haote–Zhamyn–Uud, Manzhouli–Chita, Hongchun–Vladivostok–Hunchun).

CONCLUSION

The success of the Chinese SREB strategic initiative largely depends on ensuring "green growth" in the implementation of related projects, that is, developing the economy without increasing or even reducing the burden on the environment. The solution of this task requires fundamental scientific justification [Sun Jiulin et al., 2015] – large-scale interdisciplinary research throughout the SREB zone aimed at deeper understanding of the laws of interaction between nature and society in the face of global changes and international economic integration. It is crucial to consider the experience of environmental programs and projects, accumulated in recent years in China, where the goal of transition to "ecological civilization" has been proclaimed.

These studies cannot be successful without extensive international cooperation. Its

priority area at the current stage should be a permanent communication network between the scientific institutions of the SREB countries and regions and publication of joint research on sustainable development. Such a network structure can be alternately headed by "on duty" institutes or departments backed by a permanent secretariat. One of the objectives of cooperation in the field of sustainable development can be organization of joint expeditions, exchange of researchers, especially young talents, and utilization of international expertise.

It is necessary to establish an International Data Center and joint collection, systematization, exchange, and publication of scientific information [Cheng Hao et al., 2016]. Joint research should be based on a special scientific platform and a system for making collective decisions, including automated systems. ■

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DIRECTIONS, CONDITIONS, AND RISKS OF IMPLEMENTATION OF THE TRANSPORT MEGA-PROJECTS "NORTH-SOUTH" AND "EAST-WEST" UNDER THE NEW GEOPOLITICAL REALITIES

ABSTRACT. The paper discusses the prospect of the development of Russia's transport infrastructure mega-projects in the context of the Eurasian Economic Union and the Shanghai Cooperation Organization formation. The paper focuses on the country's interests in the area of influence of the Silk and the Tea Roads. Economic cooperation with the countries of the Asia-Pacific region on the Trans-Siberian Railway-Mongolia-China direction, with diversification of transport routes to all four oceans and five continents, is the most effective policy for Russia.

KEY WORDS: directions East-West and North-South, sanctions, environmental management, transboundary rivers, water conflicts, desertification, Northern Sea Route, Trans-Siberian Railway, food safety, high-speed road, minimizing risk, transit countries, the northern corridor.

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INTRODUCTION

Modern geopolitical and economic situation dramatically changes the whole system of traditional relations in the triangle "Europe-United States-East." In the conditions of globalization, all countries striving to join the ranks of world leaders are actively using the benefits of their geographical location and creating new economic and political blocks. A not-too-long-ago unipolar world is becoming increasingly differentiated according to the territorial concerns of the countries.

Recent events associated with Crimea's reintegration into Russia and Western sanctions against our country, served as a catalyst for new integration processes. In a relatively short historical period, Russia became an active member of the Shanghai Cooperation Organization (SCO), BRICS, and the Eurasian Economic Union. With the entry into SCO of India and Pakistan member-states, the organization brought together about half the world's population and more than 60 % of the territory of Europe and Asia, significantly surpassing the United States and the European Union in the aggregate GDP.

It is crucial to note that SCO's expansion also essentially changes geographic vectors of development of its members. There is a potential to access the Indian Ocean with

its vast market for goods, sources of raw materials, and labor resources [Akimov et al., 2015].

However, all cooperation projects should be provided with the necessary calculations and mechanisms and, above all, have a common economic space. Especially important is this factor for Russia with its significant area of underdeveloped territories. It is no accident that transport costs account for at least 20 % of Russia's GDP. In China, this figure does not exceed 15 %, and in EU – 5.7 %. In the CIS countries, the length of roads per thousand sq km is 456 km in Belarus, 280 km in Ukraine, 276 km in Moldova, 193 km in Uzbekistan, 120 km in Turkmenistan, 92 km in Kirghizia, 57 km in Russia, and 34 km in Kazakhstan.

Regardless of the length of the road network and the volume of traffic, the formula "speed, safety, cost," remains constant in the transport economy, which is primarily determined by the interests of the producer and the recipient of the goods.

THE NEW "GREAT SILK ROAD"

The famous Chinese expression says: "if you want to be rich – build roads." Therefore, China's leadership in recent years embarked on a new project of the Great Silk Road, which was traveled by ancient caravans from Europe to China. Effectively, it is about creating a system of global trade routes in the interests of the Chinese economy. In 2014–2015, the volume of transit cargo in the direction China-Europe-China increased twofold, and the transportation of goods by rail will increase in 2020 by a factor of 1.6 compared to 2015.

Today, China is the main trading partner for 123 countries of the world. For comparison, the US has such relations with only 64 countries. The bulk of Chinese cargo is transported by sea (90 %), which is the most economical but it significantly increases the time of delivery. Meanwhile, in the age of globalization, products with minimal delivery times have competitive advantages, which can only be achieved through the use of modern aviation, road, and rail transport.

For the Asia-Pacific region countries the shortest route for transport of goods to Europe is through Russia and Kazakhstan. At various events and at the highest level, various options for construction of transit roads crossing the country are being discussed [Akimov et al., 2015; Zheleznyakov et al., 2011; Cui Weihong et al., 2014].

Historically, the Great Silk Road, described as far back as in Marco Polo's works, passed from Europe through Persia, south of the Caspian Sea, and in the south of Central Asia. Modern political and economic conditions and armed conflicts in these countries practically nullify the probability of existence of large-scale transit traffic and especially the organization of cargo hubs. Therefore, the Chinese authorities adopted a project to implement the road construction project from China to Europe via Kazakhstan, Russia to St Petersburg, and with branches to Belarus. From China's borders, its length along the western route will be 8,445 km. It would take 10 days for heavy trucks to cover this distance, which is almost 1.5 times faster than by rail and more than four times faster than by sea. A large part of Kazakhstan's tracks of 2,787 km has been already functioning.

The Russian part of the road "Western Europe-Western China," with the cost of about $US 6 bln, has a length of 1,956 km from the Kazakhstan border. The construction company for the project "Russian Holding Company" plans to launch the entire route in 2019. This route by-passes the central part of Russia and has direct access to Belarus, which significantly shortens the path to Europe with regard to the transit of goods, compared to St. Petersburg's route. In addition, it is possible to transfer part of transit cargo to the Caspian and Black Sea ports, located on the sea routes to southern Europe, the Mediterranean countries, and the Persian Gulf.

Construction of this road is focused primarily on the development of central and western China, especially Xinjiang Uygur Autonomous Region, which produces a GDP comparable to the volumes of all products in Kazakstan. It is clear that in this case, transport of goods to European consumers with transshipment through the East China ports are not very profitable.

The greatest prospects in the development of trade relations between East and West are associated with the rail [Zheleznyakov et al., 2011]. In this sphere, China holds a leading position in the world. Suffice it to say that today China has 120,000 km of railways occupying the second place after the United States (Russia has 88,000 km). China is the world leader in the length of electrified roads (50,000 km) (Russia and Germany have 43,000 km and 21,000 km, respectively) (http://moscowbeijing.ru/ru/).

High-speed delivery of containerized cargoes from one of China's largest cities Chongqing to Duisburg, in western Germany, has been in operation for nearly two years (in total, 26 major Chinese cities have trade relations with Western Europe). During this time, more than 600 trains, each with 41 supersize containers, covered the distance of 5,430 km in 5.5 days, setting the absolute record of rail freight. China has 22,000 km of high-speed roads and, in the next 5 years, plans to build another 11,000 km, which will link 80 major Chinese cities. In the end, a passenger will be able to get from Beijing to either end of the country in less than 10 hours. If the way from Beijing to Shanghai (1,200 km), in the 1980s, took almost one and a half days, after the completion in 2011 of the new road, it will only take 4.5 hours to move between the major Chinese agglomerations.

Therefore, the interest of China in participations in the construction of high-speed railways to transport goods to Europe is understandable. However, unlike roads, railway lines and the more so high-speed railways require much greater cost for the construction of rolling stock and new tracks that have different gauge in China and Europe. From this point of view, it is economically feasible to use existing railways and upgrade them to meet the current requirements. According to the information from Chinese colleagues, the financing of high-speed roads is classified as long-term investments that cannot be recovered in a short time, even for the transport of passengers between the cities with a million-plus population. Therefore, their construction is most often determined not so much by economic considerations but by many other factors, like the Olympic Games in Sochi and the Student Games in Kazan. Even high-speed road Moscow-Kazan is unlikely to be profitable in the nearest future and can be regarded more as a satellite project for the organization of the upcoming FIFA 2018 World Cup.

Despite the nearing completion of the construction of highway "Western China-Western Europe," countries geographically remote from the Great Silk Road take interest in participating in the project. For example, scientists from over 30 countries, including Kenya and Egypt, participated in the November 2016 meeting of heads of academies of sciences of the countries in the zone of influence of the Silk Road. At the same time, the political interests of individual countries clearly outweigh the economic calculations. Representatives of the Baltic States, Azerbaijan, etc., have been repeatedly participating in international economic forums in Astana, where they discussed the participation projects in the transit of Chinese goods without taking into account Russia's interests.

For example, Ukraine has already started a pilot project for transport of goods to China via the Black Sea, Georgia, and Azerbaijan. On this route, Ukrainian containers must pass several customs and transshipment to two ferries and change to the European-standard gauge. Even according to "Ukrainian Railways" [http://www.uz.gov.ua/], the cost of transporting one container

is $US 7,927, while the cost across Russia is $US 4,110. Besides, the ferry routes across the Caspian Sea are overloaded by existing cargo-and-passenger flows. A certain alternative to such proposals may be the implementation of a fundamentally new project by the Ministry of Transport of the Russian Federation on the construction of the railway with a 1,520 mm gauge to Bratislava and Vienna. However, the realization of this project requires Russia-Ukraine fence-mending, so it is likely to be put off to a distant future.

In the search for new partners, China also considers the southern route of the Great Silk Road with access to the Persian Gulf. The Chinese participants of the 33rd International Geographical Congress, held in Beijing in August 2016, discussed the location of this route to the south of the Caspian Sea through Turkey to Europe, which excludes any participation of Russia.

THE INTERNATIONAL TRANSPORT CORRIDOR "NORTH-SOUTH"

In this context, the development of the international transport corridor "North – South," which would intercept part of transit goods of westerly direction and, in turn, provide access to the Indian Ocean, has a special importance. And Russia could become the only country in the world that has access to the four oceans and five continents [Golubchikov et al., 2012; Cui Weihong et al., 2014].

In general, such a path represents a multi-modal route of transportation of passengers and cargo with a total length of 7,200 km from St. Petersburg to the port of Mumbai (India). The basis of this project is the Inter-Governmental Agreement on International Transport Corridor "North – South," signed by Russia, India, and Iran in St. Petersburg (September 12, 2000) at the 2nd International Euro-Asian Conference on Transport. Later this agreement was joined by Belarus, Kazakhstan, Oman, Tajikistan, Azerbaijan, Armenia, Syria, Bulgaria, Turkey, and Ukraine.

Currently, part of the said corridor includes routes from Finland, with branches to Astrakhan and Novorossiysk, a latitudinal route Yekaterinburg-Belarus-Warsaw-Berlin, river transport systems of the Volga and the Don, including channels to the Baltic Sea and the White Sea, and the Caspian Sea ports. A large part of the route runs via the Russian southbound railways and continues to the Caspian Sea. An alternative to sea transport may be the construction of the railway on the western coast of the Caspian Sea (Qazvin-Rasht-Astara) and along the eastern shore of the Caspian Sea (677 km) through Kazakhstan, Turkmenistan, and Iran.

Unfortunately, at the present time due to the small volume and multiple cargo transshipments, this corridor is unprofitable and mostly works for the transport of goods in one direction – from India to Russia. Nevertheless, precisely this corridor is the shortest way to a huge market of goods in India, to the raw material sources of African countries, and to the richest financial resources of the Persian Gulf. In contrast to the maritime transport through the Suez Canal, this transport corridor reduces the length and cost of container transportation more than twofold.

THE DEVELOPMENT OF THE NORTHERN SEA ROUTE

Among the most important Russian transport priorities is the development of the Northern Sea Route (NSR) which is, as climate warms up, could become a real competitor for transport through the Panama and Suez Canals. For example, the distance between Hamburg and Yokohama via NSR is 6,920 km, which is almost 4,000 km shorter than the path through the Suez Canal and the 7,000 km shorter than going around the African continent.

Global warming rapidly reduces the area of ice cover in the Arctic. For Russia, the expansion of the Arctic traffic zone means that the transit routes from Asia to Europe can move significantly further north of the

Russian waters, into international waters. Because of the spherical geometry laws, under progressive melting of ice cover of the Arctic, transit vessels will seek routes closer to the pole. The length of the coastal route from Murmansk to the Bering Strait is 3,500 mi, while the high-latitude routes are 500 mi shorter, and the shortest orthodromic route is less than 2,700 mi. Far from the mainland, there is no need for pilotage and vessels can move without draught limitations. Thus, with the reduction of ice cover, the main Northern Sea Route will shift to the pole, and eventually Russia may completely lose control over NSR.

Therefore, many experts suggest denouncing the 1982 The United Nations Convention on the Law of the Sea and returning to the principle of the sectoral division of the Arctic, which brings Russia's Arctic geopolitics closer to the position of Canada, Denmark, and Norway. It is necessary to undertake all possible measures to ensure that the maritime border in the Russian Arctic passes through the meridians of the northernmost and the easternmost geographic locations of Russia converging at the North Pole. This will include all the inland seas, territorial waters, exclusive economic zone, continental shelf, as well as international waters near the poles. In this case, all the NSR routes will pass in the waters subject to the jurisdiction of the Russian law.

OTHER "EAST-WEST" ROUTES

To some extent, this option reduces the strategic importance of the Trans-Siberian Railway. This consideration calls for strengthening of other East-West transport projects with a strategic priority for Russia. From this point of view, the Memorandum of Understanding between the Russian Federation, the People's Republic of China, and Mongolia to develop programs to create economic corridor China-Mongolia-Russia, signed by the heads of state in Ufa (July 9, 1915), is fundamentally important.

The aim of this program is to provide conditions for the development and expansion of tripartite cooperation between the states through the implementation of joint projects aimed at increasing the trade, ensuring the competitiveness of products, and facilitating cross-border transport infrastructure. By analogy with the Great Silk Road, the proposed economic corridor transforms the ancient Tea Road, with its capital in merchant Kyakhta.

The first item in the list of the Program for the creation of the Northern Economic Corridor in China is a position on comprehensive modernization and development of the Central Railway Corridor (Tianjin-Beijing-Erlian-Ulan Bator-Ulan-Ude) with a total length of 2,200 km, including the study of the economic feasibility of the construction of the second track and electrification. There is also a consideration for the construction of the western (with access to Tuva) and eastern (in Choibalsan-Zabaykalsk) railway corridors and of a high-speed railway Moscow-Beijing via Mongolia.

To date, test freight trucking across the two borders has already taken place. The new route does not require cargo transshipment and additional clearance of customs documents; the length of the path from the south of China to the European part of Russia has decreased by 1,400 km and the travel time has decreased to four days. According to calculations by the Federal State Institution "Agency of Automobile Transport" (the FSI "Rosavtotrans"), by 2020, freight traffic on this route will increase by 17–20 %, which corresponds to the average annual increase in the volume of trade between Russia and China. It is also important that the existing transportation is effective in both directions.

In implementing this Memorandum, Mongolia is becoming a key player in the transit of goods from China to Europe, and this is equally of interest to all its participants. During the construction of railways through Mongolia, the high-priority issues are the width of the track and the organization of a logistics center. Chinese participants suggest the construction of a through narrow-gauge up to the Russian border, which does not quite satisfy

the Russian side. A logistics center in Ulan Bator is the most probable option and it satisfies all stakeholders, and especially Russia, which would be able to transport and handle a significant volume of cargo coming from the Asia-Pacific region, through the Trans-Siberian Railway.

In addition to growth of rail and road transport, the construction of main transit gas pipeline to China through Mongolia has been proposed along with the increase in the capacity of the electricity transmission line. This would create favorable conditions for gasification and electrification of the main industrial centers of Mongolia and especially of its capital Ulan Bator. In addition to solving socio-economic problems, it would be possible to "pull the plug" on the construction of hydropower plants on the Selenga, and thereby to eliminate the emerging environmental threats to the ecosystem in the Lake Baikal basin, which would inevitably arise when hydrological regime on the main tributary of Lake Baikal changes.

CONCLUDING REMARKS

Regardless of the choice of direction of railways and throughways, there are certain conditions to increase their effectiveness.

First of all, the economies of all the transit areas for transport of goods and passengers would improve through the creation of industrial clusters, transportation hubs, and other employment centers. It is impossible to agree with the opinion of Stolypin's opponents [Strukov, 2012] who argued that the Amur railway is a "road to nowhere." Indeed, Siberia and the Far East at that time represented a vast empty space with a sparse population. But one could only imagine the way Asian Russia would develop had the construction of the through Trans-Siberian Railway been postponed for better times, on the advice of such "well-wishers."

Another condition for raising the efficiency of the main ways is to provide a counter- flow transit between two endpoints. Now, the volume of transit traffic from Asia to Europe through the territory of Russia is exactly two times the volume of traffic in the opposite direction, i.e., half of the units move to the east unloaded, which has a negative impact on the producer price policy.

In a market economy, pricing is largely determined by the level of industry competition. For this reason, the real competition to rail transport is road transport. The construction of oil and gas pipelines will greatly reduce the volume of oil transport, which once made up almost half the volume of railway cargo, which makes railroads reduce the nomenclature and increase the cost of transport services. Today, the government has practically distanced itself from the pricing in strategic infrastructure development; however, the situation must be considered in all federal and regional economic programs.

The suggested options for the development of Russia's transport industry allow for diversification of the transport of goods and passengers in all strategic directions. At the same time, it is not about competition between the main transport ways but mostly about achieving the synergistic transport effect, increasing strength of the Russian State.

PROPOSALS AND SUMMARY

1. The most important wealth of the Russian state is its territory as a legacy of past generations; its preservation and improvement have priority.

2. For Russia with its vast territory and the latitudinal expanse, the solution of transport and logistical problems is a defining condition of sustainable development of regions, primarily located in the Asian part of Russia, preserving the country's territorial integrity with the ultimate goal of becoming one of the world's geo-political leaders.

3. In the context of globalization and rapid development of the world political and economic processes, Russia should have a diversified transport system, ensuring its interests in all strategic directions.

4. The construction of transport infrastructure is not an end in itself, but the development of the regional economy and creation of a cumulative effect for Russia's strength.

5. A necessary condition for improving the efficiency of the economy is the search for the common benefits of competing means of transportation and directions and the organization of counter cargo-and-passenger flows in the interests of individual companies and the entire country.

6. In the context of Western sanctions, for the Russian economy it is essential to diversify and increase the foreign east and south trade relations, where new transnational financial centers are emerging.

7. Global warming and the existing conflicts in the eastern and southern borders of the European Union increase the importance of the Northern Sea Route as the shortest shipping route between the ports of Asia-Pacific and Western Europe. ■

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GEOGRAPHIC PATTERNS IN THE AUTOMOTIVE INDUSTRY

ABSTRACT. This article aims to develop some concept on new economic geography. The authors presented a case study of a newborn carmaker that applies an innovative business model in auto industry. The current business environment is analyzed, problems of sustainability discussed, and a new business model proposed.

KEY WORDS: economic geography, automotive industry, China.

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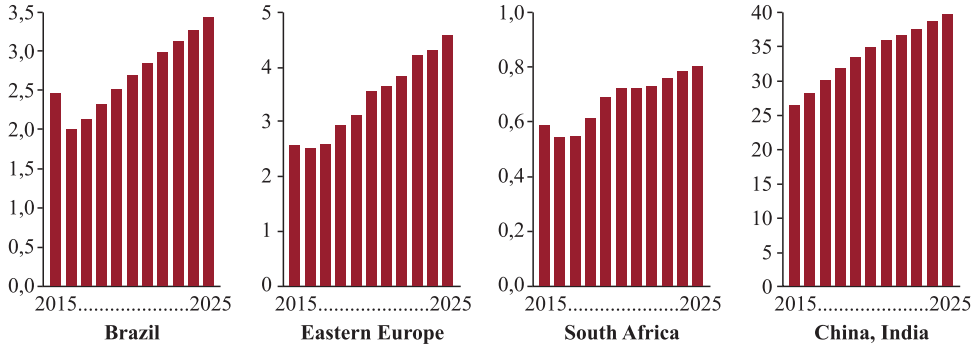
THE CHANGING GEOGRAPHY OF AUTO INDUSTRY

The automotive is a global business in which brands compete in the international arena. Global automotive sales for 2016 could hit 88 million vehicles, a 2 % increase from the previous years that would continue a five-year growth streak, according to consulting firm IHS Automotive [2017]. China is one of the world's two largest auto markets (Fig. 1). According to McKinsey, the market for premium cars in China increased at 30 % per year in the last decade, faster than the 25 % annual growth in the overall Chinese passenger vehicle market during the same period [IHS Automotive, 2016]. China is expected to boast annual vehicle sales of more than 30 million by 2020. Smart joint ventures with Chinese companies that can be counted on for consistent returns and increased but highly managed production of more profitable, pricier models will be essential for automakers that want to take advantage of potential vehicle sales growth.

The opening of China's auto industry to foreign investment dates back to the mid-eighties. The first foreign companies that decided to produce in China in joint ventures with local partners, were the American Motors



Source: PWC, 2017

Fig. 1. Emerging markets in the next decades

Corporation which started in 1983 the production of the Jeep Cherokee in a joint venture with the Beijing Auto Works (BAW), Volkswagen which in 1984 began producing the Santana model in a joint venture with Shanghai Automotive Industrial Corporation (SAIC) and Peugeot which in the same year began the production at a plant located in Guangzhou. These European and American pioneers remained for a decade the only foreign manufacturers in China. Until the '90s, China's automotive industry was dominated by Dongfeng Auto, First Auto Works (FAW), and Shanghai Automotive Industry Co. (SAIC). They relied heavily on partnerships for branding and technology: Dongfeng partnered with Peugeot and Honda, FAW with Volkswagen and Toyota, and SAIC with GM and Volkswagen [Holmes, 1983, 2004].

A second phase in the Chinese automotive industry opened in the mid-nineties, when the government adopted a targeted industrial policy to the development and consolidation of a sector considered strategic. The objective of the new policy was to encourage the growth of a small number of domestic manufacturers endowed with adequate financial resources and advanced technologies [Coe, et al 2008; Dyer, 1996; Egeraat, Jacobson, 2005]. At this aim, it was promoted the establishment of joint venture joint between the main national manufacturers, almost all controlled by the government, and large foreign groups, to which it offered a potentially huge market, but it also required investment and the transfer of technologies and managerial knowledge. At this stage, after long and complex negotiations, some European and American producers were able to form strategic alliances with Chinese partners, but the big Japanese car makers were once again at the window, or were simply excluded from negotiations.

In the late 1990s, private carmakers such as Geely and BYD entered into competition. Through imitation and low-end market positioning, they put downward pressure on passenger car prices and triggered a new wave of consumer demand. Some years ago, Chinese carmakers were perceived as weaker in technology, experience and branding, than their foreign competitors [Depner Bathelt, 2005; Gertler, 1996, 2001; Edensor, 2004; Frigant, Lung, 2002].

As Chinese consumers used to think homegrown cars were of lower quality, international brands like Volkswagen, Buick and Hyundai commanded a bigger share of the Chinese market. Thus, over the past decade, China's auto manufacturers have been struggling to develop their own brands through imitating, buying technology through acquisitions or allying with their global partners (Table 1). A relatively successful brand was Roewe, which was primarily based on technology that SAIC Motor acquired from the defunct British carmaker MG Rover.

Chinese car buyers are becoming more and more sophisticated in terms of design, quality and features. The new generations of buyers view cars as expressions of their identity and personality, and consider style the most important factor influencing shopping decisions. Innovation and sustainability were the other two major factors to follow design [Nielsen China, 2011]. These changes in the markets have led to the development of newborn carmakers able to implement a new business model that combines design, innovation and sustainability.

Table 1. Localization Approaches

	National	Cross-National
Collaboration	Local joint ventures Chery, Geely, BYD	Joint ventures FAW-VW
Competition	Local players Chery, Geely, BYD	M & A Geely-Volvo, SAIC-Rover (Roewe)

While traditional Chinese automotive firms have applied a business model focused on manufacturing that considers sale of vehicles as primarily source of profits. In such firms incremental technological improvements do not led to environmental impact reductions. In the newborn car marker an innovative business model has to combine economic and environmental sustainability. This model is the result of an innovative strategy that shifts the center of business from the design and sale of physical products, to the offer of product and service systems that are together able to satisfy a particular demand.

The innovative business model has to focus on offering satisfaction rather than sell products, and it can be described as an integrated mix of products and services, delivered by one or more socio-economical actors, and capable to fulfill a given demand of satisfaction. This model has the potentiality to bring to radical environmental impact reductions. The following text illustrates the case of this newborn carmaker that has applied this innovative business model in the automotive industry to achieve general benefits connected with innovations and sustainability.

METHODOLOGY

Considering the exploratory nature of our research objectives, we present a case study. To build an initial understanding of the case, we first conducted web-based database research (Google Scholar, ProQuest, etc.). Then we verified our findings with several external consultants and scholars to refine our analysis.

CASE STUDY

Chery Automobile Co., Ltd. was founded in 1997 as State-owned auto manufacturer with headquartered in Wuhu of East China's Anhui Province. It began the automobile production in 1999. Chery's main products were passenger cars, minivans, and SUVs. It was one of China's largest automaker and passenger car exporters. As an independent domestic automaker, Chery has been aggressively seeking a global partner with financial strength and international influence to build an international brand. In 2007 it formed a joint venture with Israel Corporation. Founded in 1968 by the Government of the State of Israel, Israel Corporation Ltd was one of Israel's largest holding companies and a global player with over 70 % of its consolidated revenues derived from worldwide operations [Israel Corp, 2016].

Qoros, as a standalone brand, operated independently with ample investment and strong support from its two parents. The new company spent two years in strategic planning with McKinsey Co. and then another two years in designing the first prototype. After another two years of production model development, auto parts development and trial production, it went on its first public appearance in Geneva in March 2013 and went on sales in November 2013.

As an international automotive manufacturer originating from China, Qoros started from scratch and is staunchly dedicated to providing consumers with high-quality products that meet international standards [Qoros, 2016]. Qoros was determined to take a completely new path, which seemed to be more time-consuming and expensive. Instead of buying an existing brand, it started from scratch to build a new brand in China. This presented Qoros an opportunity to do things right from the very beginning without the complexity of legacies. Thus, Qoros since beginning has focused on a sustainable model base on innovation in human resources, design & engineering, manufacturing, supply chain, marketing & sales (Fig. 2).

Qoros integrated talents from around the world and created a team with extensive automotive industry experience. Thanks to the financial crisis, Qoros was able to recruit engineering and managers from major OEM's including Volkswagen, GM, Opel, Volvo, SAAB,

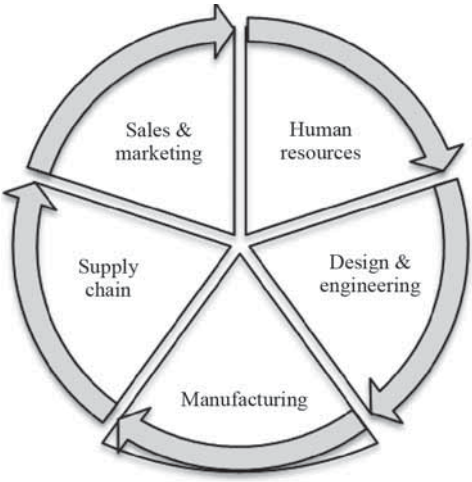


Fig. 2. Drivers of success

Ford, BMW and etc. There were nearly 200 international staff members, representing 25 nationalities. Despite of the Qoros team came from different countries and backgrounds, they worked as one team with shared values and aspirations. Thus, with a team of global experts who had led R & D for 2–3 car models, the company was able to utilize state-of-the-art technology and international best practice to fulfill its ambitions within a short period of time.

The international team of specialists and new automotive talents was also involved in design and engineering. The Qoros design studios in Munich and Shanghai conducted extensive consumer research on consumers in China and Europe. Qoros adopted forward engineering, which was the traditional process of moving from high-level abstractions and logical, implementation-independent designs to the physical implementation of a system.

Through this team of specialists Qoros made continuous efforts in improving manufacturing for responding to buyers' needs, which gave them advantages over larger rivals. However, whether Chinese consumers will buy into this new concept could only be answered by solid sales figures. Qoros had its factory in Changshu, a prosperous city in Jiangsu province, about 80 kilometers from Shanghai. It exploited and enhanced Changshu's profile as an important hub in China's automobile industry. The city also housed Chery, Jaguar Land Rover, and an Automotive Industry Park hosting several major automotive suppliers including Benteler and Lear. Qoros also operated an operational hub in Shanghai, Munich and Graz.

Manufacturing was also supported from external suppliers. Qoros had from its earliest days been committed to producing cars that met global standards of quality. It would not be able to achieve this goal without partnering with the world's best automotive suppliers.

In a fast-changing, highly competitive landscape, Qoros collaborated to innovate with materials makers, parts suppliers and manufacturers, to help achieve greater sustainability in the automotive industry. And it was seeing results, in higher performance engines to interiors using finishes that incorporate renewably sourced materials. Qoros selected world-leading technology and service companies with R & D strength and advanced quality control capabilities as its suppliers. These included top industry players such as Magna Steyr, TRW, Continental, Bosch, Getrag, Benteler, Lear, Microsoft, Harman, Neusoft-Alpine and Iconmobile. Through extensive strategic outsourcing, Qoros had remained flexible and lean, and retained a fixed cost base estimated to be far less than half that of the large, established car manufacturers. With previous industry experience and personal influence among major suppliers, Qoros' management team was able to communicate effectively with these suppliers about its strategy and reassure them for its future. In this way, Qoros gained support from these top suppliers and built long-term relationships with them (Qoros, 2016).

Finally, Qoros worked hard to create an exceptional market position, brand identity and product positioning clearly distinguishable

from other domestic car manufacturers and international joint ventures. Qoros developed vehicles that were differentiated in their design, safety, and connected services and that exhibited international standards of quality. At the aim to achieve a competitive advantage Qoros worked hard on positioning, branding, product, pricing, dealership strategy, and promotion. A new brand image was expected to help diminish the negative effects generated by association with its parent brand and Made-in-China.

In developing this innovative business model Qoros has considered a number of best practices that will foster business sustainability, and will help organizations move along the path from laggards to leaders. These practices include stakeholder engagement, environmental management systems, reporting and disclosure, life cycle analysis.

Since beginning company has learned from customers, employees and their surrounding community trying not only about pushing out messages, but understanding opposition, finding common ground and involving stakeholders in joint decision-making. It also planned structures and processes aimed to help embed environmental efficiency into a firm's culture and mitigate risks considering both industry-specific and country-specific standards. Firm also implemented measurement and control for sustainable practices. Company collected information in a transparent way with outsiders. Finally it has worked considering the environmental and social impact of the products they produce through life cycle analysis. Adopting such business model, Qoros is trying to build a global reputation of company innovative and adaptive to its environments.

CONCLUSIONS

The issue of sustainability is highly relevant in automotive industry. Thus, the most successful automotive companies in the world are recognizing that environmental responsibility is not only good for their business, but it is becoming an integral part of the way their vehicles are marketed, purchased and driven.

Qoros, which was founded in 2007, has its factory in Changshu, a region of high importance in China's rapidly growing automobile industry, where its all-new, highly efficient and environmentally sustainable assembly facility is ramping up series production of the Qoros 3.

Qoros Auto Co. Ltd. went on public debut with its first model the Qoros 3 Sedan in Geneva International Motor Show 2013. The year later it achieved a five-star rating in the Euro NCAP crash tests, making it the first Chinese car to achieve such a rating. Following this major breakthrough, the company won a series of international accolade, including Red Dot Award and Universal Design Award.

After its first appearance in front of the Chinese public during the 15th Shanghai International Auto Show in April 2013, Qoros received widespread attention from the public, media and counterparts to its unique innovative business model. With the vision of becoming an international brand, Qoros has started to test the waters in East Europe even before the official launch in China market.

In September 2013, it opened its first European dealership in Bratislava, Slovakia, as part of an initiative to develop a full-scale European distribution operation. The experience in Slovakia would be very useful for Qoros to increase its presence in Central and Western Europe as well as Middle East.

In the growing Chinese automobile market, Qoros has an exceptional position, with brand identity and product positioning that is clearly distinguishable from domestic car manufacturers and international joint ventures.

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INSTRUCTIONS FOR AUTHORS CONTRIBUTING TO "GEOGRAPHY, ENVIRONMENT, SUSTAINABILITY"

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