Journal of Contemporary Issues in Business and Government Vol. 27, No. 2, 2021
https://cibg.org.au/

P-ISSN: 2204-1990; E-ISSN: 1323-6903
DOI: 10.47750/cibg.2021.27.02.179

Analysis of Ecological and Economic Situation On The Border Territories Of The Prc And The Southern Zone Of The Russian Far East

N.G. STEPANKO

FGBUN Pacific Institute of Geography Far Eastern Branch of Russian Academy of Sciences
7, Radio str., Vladivostok, Primorsky Krai, Russia, 690041
Email: sngreg25@mail.ru

ABSTRACT: In the modern world, cross-border (transboundary) regions acquire special significance for optimizing the economy of the country and its individual regions, as well as for realizing its national interests in the international space. Any economic activity is associated with the use of nature, with the emergence of new or the development of old production and natural relations, which inevitably generate a complex of problems and form the ecological state of the territory. Therefore, the study of the territorial structure of production, production and natural relations, their dynamics is important and relevant, and especially in the border areas, because these territories are affected by their own production and economic activities of adjacent territories. In this paper, we consider the border counties of Heilongjiang Province and the regions of the southern regions of the Far East. The material on the natural-resource potential of the studied territories, their economic activities was collected and analyzed. In addition, the characteristic of the ecological situation of the territories, as well as some calculated indicators (according to the necessary statistical information available), characterizing the ecological status and economic sufficiency of nature protection activity is given. The uneven economic development of the border territories of the regions of the Far East and Heilongjiang Province and, consequently, the unequal impact of the economic activities of the considered territories on the environment are revealed. It is obvious that there are many factors that determine the further effective cooperation. At the same time, it is pointed out the need for joint projects aimed at methodological development on the basis of a uniform reading of the rules of nature management and sanitary norms. It is also extremely important for cross-border territories, in addition to economic joint projects, to formulate and implement joint projects for the protection of the environment and rational use of natural resources.

Keywords: frontier territories, regions of the Far East, Heilongjiang province, production-natural relations, economic sufficiency of nature protection activity.

INTRODUCTION

The trans-border territories are characterized by certain specificity the component part of which includes the integrity, continuity of the geographical environment, integrity of the economical infrastructure [1] as well as integrity of the ecological state of territories as a consequence of the territorial-economic structures functioning. Considering the trans-border territories as a whole, the examination of the border territories is necessary because they concentrate the results of interaction and interinfluence in different spheres. At the regional level, the border territories are individual administrative units. The south of Far East represents the characteristic trans-border territory.

There are three most important factors which determine a position of the Far East in the system of Russian regions. First of all, this is remoteness from basic, most habitable and developed regions of the country. The second factor is a high resource potential of the Far East which ranks among the richest regions of Russia. And the third factor characterizes the economical and geographical position in relation to the APR countries which creates the favorable opportunities for expansion of economic ties with the countries of the Pacific basin. Many of these countries are in need of various raw materials which can be provided by the Russian Far East on mutually beneficial conditions.

MATERIALS AND RESEARCH METHODS

A zone under consideration includes Russia (western parts of Primorsky Krai, southern territories of Khabarovsk Krai, Amur Oblast and Jewish Autonomous Region) and PRC (north-eastern territories of the Heilongjiang province. It is the most developed in economic terms part of the Far East. The basis of the southern zone economy is marine sector, timber processing and mining complexes. At present time, the development is carried out on the way of combination of the key branches of industry with servicing branches and agriculture. The province is in possession of large reservoir of resources: oil, marble, basalt, graphite, coal etc. The coal deposits are largest in the North-East Chine. The annual income from extraction of commercial minerals is also one of the highest in the country. The Heilongjiang province is the most forested territory and largest base of wood production in Chine. Four industries (machinery manufacturing, petrochemistry, energetics and food industry) have provided 88.4% of revenue in 2011 which reflects the low diversification of the economy. The animal husbandry, fisheries industry and vegetable production are essentially developed. The province is one of the leading agricultural producers in PRC. The gold and graphite deposits in the Heilongjiang province are largest in Chine. In addition, there are the large deposits of silver, copper, lead, tungsten, zinc, molybdenum, oil, black coal, soda, quartz, marble and mica in the province [2].

For analysis, we have considered the border districts and counties in the southern regions of the Far East and Heilongjiang province (PRC), namely, natural-resources potential and on-the-day types of economic activity. The collected and analyzed material (Table) allows us to draw the following conclusions: the considered border territories of Russia and PRC have sizeable and diverse natural-resources potential; the natural resources of the Heilongjiang province are used to a greater extent than in the border areas of southern Far East of Russia; consequently, the economic activity on the Heilongjiang province territory is more diverse and considerable.

The economic reforms in Russia have resulted in changes of the territorial-economic structures as well as in changes in the nature management. First, the changes in the production structure have resulted also in changes of tendencies and extent of the technogenic impact and changes in dynamics of using the natural-resources potential. Secondly, the change in dynamics of using the natural-resources potential takes place when new enterprises are created, new technologies are used and the resources are substituted for one another. And, thirdly, destruction of internal ties, change in the domestic market have caused an emergence of contacts with the non-CIS countries (mainly, the APR countries and, to a greater extent, PRC), that is, the need or necessity to share resources or sell them emerged to some place which, in turn, has resulted in changes in quality, quantity and trends of the technogenic impact as well as in change of dynamics of resources consumption and dynamics of the natural-resources potential [3].

In addition, a concept “border region” or “border district” implies that territory being its part is under the significant influence of the state border with the basic barrier, filtering and contact functions. And if, before the nineties, the border territories of regions have accomplished mainly the barrier and filtering functions, then, from the midpoint of this period, the contact function has also appeared.

The border entry points have appeared and zones of border trade arise. In view of this, it became necessary to change the transport routes, engineering constructions and to adjust economy. As a consequence of this, the changes in the regimes, forms and trends of nature management and character of the production-natural relations have taken place.

The basic activities on the trans-border territories include timber exploitation, agriculture and extraction of mineral resources. By the extent of transformation, these territories are estimated within the range of moderately-transformed to highly-transformed. In addition, on these territories, the protected natural features are situated as well as the recreation and tourism promising for both states got active development [5].

According to the variety of activity types and production indicators of the basic types of activity on the border territories, China is ahead of Russia. Besides, the types of economic activity on the border territories of China exert mainly a greater effect on the environment than on territories of Russia (Fig. 1). For reason of impossibility to provide the detailed information with respect to the municipal districts of the Krais and Oblasts of Russian Far East and counties of the Heilongjiang province (China) (too volume table), the information is provided for Krais, Oblasts and districts (Table 1). On the border territories of Primorsky Krai (Khasansky district), Jewish Autonomous Region (Leninsky district) and Amur Oblast (Skovorodinsky, Bureisky and Arkharinsky districts), the economic activity is more

Table : Resource-economic characteristic of the border territories of the southern zone of the Russian Far East and PRC (fragment)

Regions, districts (Russia)	Natural-resources potential	Types of economic activity	Types of economic activity	Natural-resources potential	Districts,counties (PRC)
Primorsky Krai					Districts

			Jixi, Mudanjiang, Shuanshan		
County Yanbian of Korean AR, Jijin province					
Khasansky	mining raw materials, precious metals, construction raw materials, marble, china stone, limestones, sands, turf, coal, therapeutic muds (all resources are little-developed); two reserves	recreational -tourist activity, harvesting and processing of aquatic bioresources, ship-repairing; bp.* Kraskino-Hunchun (PRC); Khasan – Tumangan (DPRK)	transport and logistics hub: Hunchun zone of export processing, Hunchun trade Russian-Chinese zone	coal, gold, non-ferrous metals: copper, tungsten, lead, zinc, tin; nonmetallic ores: siliceous, ceramic, diatomic, marble, basaltic, granite; forest resources; three reserves	Urban county Hunchun
Khabarovsk Krai Districts Jiamusi, Shuangcheng					
Bikinsky	agricultural land resources, forest resources, construction materials; promising occurrences of gold, silver, tungsten, tin, copper, amethysts, turf and brown coal	agriculture, tree felling and processing, food industry, production of constr. mater., light industry, railhead; bp. Pokrovka-Zhaohe	fishing and fish processing, light industry,	agricultural land resources, aquatic bioresources	Raohexian
Jewish Autonomous Region			Districts Hegang, Jiamusi		
Leninsky	agricultural land resources, forest resources, iron, manganese, gold, graphite, magnesites,	agriculture, production of constr. mater., light, food, wood working industry, machinery	fishing and fish processing, mining industry	green gold deposit, coal, aquatic bioresources	Suibinxian
Amur Oblast			Districts Daxinanling, Haihe,Yichun, Hegang		
Skovorodinsky	forest resources, gold, construction materials, SPNR (three game reserves etc.)	gold mining, extraction of construction raw materials, forest resources; bp. Jalinda-Mohe	tree felling, fishing and fish processing	green gold deposit, graphite, oil-and-gas bearing region, forest resources, aquatic bioresources	Mohexian

		(reconstruction)			

*bp. - border point

Fig.1:The intensity of the impact of economic activities of the border areas of the south of the Russian Far East and China on the environment

DISTRICTS AND COUNTIES:

1 – Mohexian, 2 – Tahexian, 3 – Humaxian, 4 – Aihuixian, 5 – Sunwyxian, 6 – Xunkexian, 7 – Jiayinxian, 8 – Luobeixian, 9 – Suibinxian, 10 – Tongjiangshi, 11 – Fuyuanxian, 12 – Raohexian, 13 – Hulinxian, 14 – Mishanshi, 15 – Jidongxian, 16 – Mulingshi, 17 – Dongningxian, 17a – Suifenheshi, 18 - Hunchun xian, 19 - Skovorodinsky, 20 - Magdagachinsky, 21 - Shimanovsky, 22 - Svobodnensky, 23 - Blagoveshchensky, 24 - Tambovsky, 25 - Konstantinovsky, 26 - Mikhailovsky, 27 - Bureysky, 28 - Arkharinsky, 29 - Obluchensky, 30 - October, 31 - Leninsky, 32 - Birobidzhansky, 33 - Smidovichsky, 34 - Khabarovsky, 35 - named after Lazo, 36 - Vyazemsky, 37 - Bikinsky, 38 - Pozharsky, 39 - Dalnerechensky, 40 - Lesozavodsky, 41 - Kirovsky, 42 - Spassky, 43 - Khankaysky, 44 - Pogranichny, 45 - October, 46 - Ussuriysky, 47 - Nadezhdinsky, 48 - Khasansky.

diverse and impacts on the environment is more intense as compared with the adjoining territories of the Heilongjiang province (PRC). The border territories of the Khabarovsk Krai are characterized by the more vigorous economic activity than that on the adjoining territories of the Heilongjiang province.The ecologic indices are heterogeneous: China is a leader by discharges into atmosphere while the Russian regions by disposal of waste waters.

RESEARCH RESULTS

For reason of the ecologic state, all the considered regions of the southern Far East shall not be named favorable and this situation is caused by air and water pollution. The carried out earlier estimates of the economic activity restriction according to index of total pollution per capita allowed us to subdivide these regions into three groups (Fig. 2): eleven of them were included into the group of “partial restriction” (these restrictions concern either water-retaining productions or productions with considerable discharges into atmosphere); two areas (eastern Pozharsky district, Primorsky Krai, and Blagoveshchensky MD (municipal district) and UF (urban formation) of Amur Oblast) made a group of “total restriction”. The remaining areas were included into the group “without restrictions”. These are mainly localities of the agricultural production as well as those having game reserves on their territories.

In speaking of the eco-economic sustainability, it may be concluded that the expenses for environmental protection (EP) and sustainable nature management, investments in EP as well their structure are not answerable to necessary ones (Fig. 2). The index of economic adequacy (IEA) which is determined from the ratio of the amount of current expenditures plus investment in EP and economic optimum of the environmental expenses (8% of GRP [6]) ranges from 0 to 0.3 at optimal value equal to 1.

Surely, for more full assessment of the economic opportunities and environmental restrictions of developing the border territories as well as prospects of the mutually advantageous cooperation between the RFE (Russian Far East) and PRC, an analysis of the eco-economic situation in the Chinese border counties is necessary. Due to lack of necessary information for the counties of the considered provinces of PRC, the environmental characteristic with respect to the Heilongjiang Province is given.

In the materials "Concerning the environmental situation in the Heilongjiang province" [7], it is demonstrated that the ecologic state in the big cities and Heilongjiang province is good as a whole and is acknowledged as among the best in the country. Generally, the contamination of the water resources in Heilongjiang province is low although all the rivers of the Sungari basin are polluted to some extent. The priority pollutants are permanganates. The Heilongjiang Province is recognized by the state to be

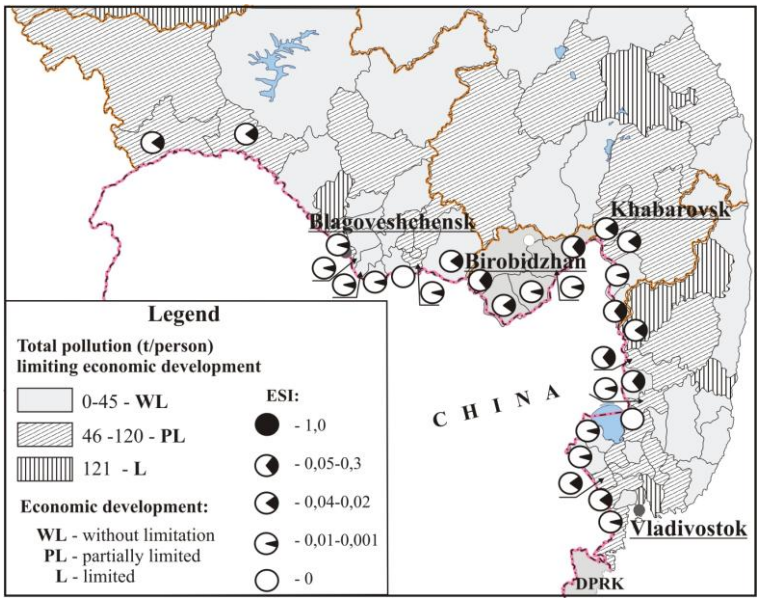

Fig.2:Economic security of environmental activities in the border areas of the south of the Far East

ecologically exemplary. On the territory of the Heilongjiang province, 21 national and 11 provincial exemplary sections are situated. Among the solid industrial wastes, 33.23% are attributed to coal refuse while 24.9% to ash of burning coal. Among the other waste, the refuse coal reaches 33.87% and use of coal comprises 70.06%. In the towns of the district level and higher, a share of days with "good" and "satisfactory" quality of the atmospheric air has increased by 2.1% as compared with 2015. A share of water bodies of category III and higher has increased by 1.8% while a share of water bodies with category of lower than V has decreased by 1.1% as compared with the similar index of 2015 [7]. For the PRC as a whole, the quite active policy in the field of EP and sustainable nature management is pursued. From "Report of implementation of a plan of economic and social development over 2016 and draft plan for 2017": The work on the environment protection and saving of energy resources was stepped up and first results of greening development were obtained. First, new shifts have taken place in the construction of the ecological civilization in a number of provinces. Secondly, the strategy of developing the zones with fundamental ecological functions has aggressively carried out. Thirdly, the work on saving of energy resources and emissions reduction continued to promote. Fourthly, a dynamics of complex environmental management has intensified. The "intensified measures to prevent and liquidate the atmospheric pollution" in the specially assigned areas were brought into use, reduction of coal consumption has continued and, with the purpose of minimization of pollutants emissions, the reconstruction of coal-fired power stations was activated. Fifthly, the work on responding to the climatic changes has permanently intensified (the standardized-pilot projects on creation of the low-carbon provinces, towns (settlements), industrial parks and microdistricts were systematically developed; a performance of program "ten – hundred – thousand" providing for a creation in the developing countries of 10 showcase low-carbon zones, realization of 100 objects pointed at deceleration of climatic changes and adaptation to them and provision of 1000 chances to those who wish to obtain the professional education in the specific field etc.) [8].

CONCLUSIONS

1. It is quite evident that, on the adjoining territories of the southern Far East and Heilongjiang province, two different-scale economic systems have organized. The Heilongjiang province is predominant which is related to a number of factors: enormously larger density and number of population as compared with the Russian regions, existence of the comparatively developed transport infrastructure and industrial production, natural-resources potential.
2. The coupled eco-economic analysis of the adjoining municipal districts of Russian Krais and Oblasts and counties of the Heilongjiang province (PRC) allows us to conclude: the economic activity on the border territories of China is more diverse in structure and, consequently, effects to a larger extent on the environment and forms with maximum activity the ecological situation on the trans-border territories.
3. An analysis of the held activities in the field of the environment protection and sustainable nature management has shown that their economic strength on the Heilongjiang province territory (PRC) is much higher than on the territories of the southern zone of the Far East.

The cooperation between the Heilongjiang province and southern Far East of Russia rises from year to year and has the high potential for growth. To this, the geographical, political, economical, sociocultural and ecological factors contribute. The established practice of the justification for economic projects and types of activity shows that it, up to date, is based mainly on the economic effectiveness criteria. The narrow criteria of economic effectiveness (overhead costs, prime cost of the manufactured products etc.) used for justification for construction scale result in the unfounded expanding manufacturing capacities. And absence of the necessary agreed ecological constituent (ecological capacity of territories, rate and intensity of pollutants utilization by the environment, stability of natural systems (which is very changeable)) as well as inconformity in the interests and actions of the near-border states and presence of difference in nature management principles and sanitary standards will result in new and redouble old ecological problems. For this reason, the joint projects and working-outs on uniform understanding of nature management principles and sanitary standards should become high priority problems. Apart from the joint economic projects, it is also crucial to the trans-border territories to form and realize the joint projects on the environment protection and sustainable nature management.

Acknowledgements

The work was performed within the framework of state assignment of the RF Ministry of Education and Science (No.AAAA-A16-116110810013-5) with financial support from RFBR (scientific project No. 18-05-80006).

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