Chapter 3

Estimation and Development of Oil-gas Resources in the Okhotsk Sea Basin and Sustainable Development in Northeast Asia

Grigory Tkachenko

INTRODUCTION

A cooperative relationship among countries of Northeast Asia has long been weak due to economic differences and an unfortunate history. Despite these challenges, it is necessary for these countries to cooperate in order to achieve a balanced development of the national economic, environmental, and social spheres in each country. The most important area of mutual cooperation is the sustainable development of the region, and the estimation and development of oil and gas resources in the Okhotsk Sea Basin are a very important part of sustainable development of Northeast Asia.

The Okhotsk Sea is on the margin of the northwestern Pacific Ocean. It is separated from the open ocean by the Kuril Island chain and the Kamchatka Peninsula. The Sea's limits are demarked by Hokkaido Island to the south and west and the Sakhalin coast and Asian mainland to the east. The Sea's maximum length and width are 2,463 kilometers and 1,500 kilometers, respectively. It has an area of approximately 1.6 million square kilometers, a coastline of 10,460 kilometers, and a total water volume of approximately 1.3 million cubic kilometers (Arzamastsev et al., 2001). The Okhotsk Sea is connected to the Pacific Ocean by the numerous straits of the Kuril Islands, to the Sea of Japan by the La Perouse Strait, and to the Amur Estuary by the Nevelskoi and Tatar Straits. The Sea depth averages 821 meters but reaches a maximum of between 3,374 meters and 3,521 meters within the Kuril hollow (Dobrovol'skii et al., 1982). The Okhotsk Sea Region is a part of Northeast Asia. The unicity

of the region is confirmed to be of a high level according to international estimations and studies (Fig. 1). The region comprises 66 transboundary territories (Alekseev et al., 2006) and is one of most valuable sea ecosystems in the world (Sherman, 1999).

ROLE OF OIL-GAS RESOURCES IN THE SUSTAINABLE DEVELOPMENT IN NORTHEAST ASIA

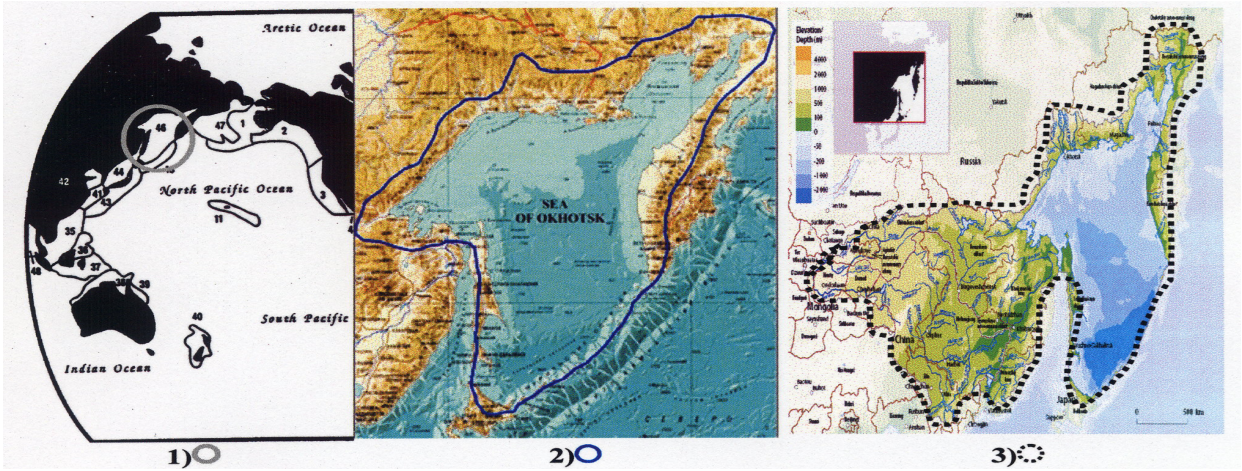
The sustainable development of a region takes place over a long period and involves economic, social, and ecological spheres. This main thesis is generally accepted in scientific literature. According to this thesis, a region in a model of sustainable development should be considered and embraced as an integral natural and economic system (Fig. 2).

Interaction between the natural (ecological) and the production (economic) spheres depends on the development of the social sphere. The economic quality of regional development is the ability of a region due to its own resources to produce a gross income that can provide high levels of consumption and accumulation in the region for a long time. The ecological quality of regional development is the ability of a region to maintain its natural resource potential and high quality of environment for a long time. The social quality of a regional development is the ability of a region, due to its own demographic potential and social infrastructure, to provide a stable population in the region and to maintain a high quality of life in the region over a long time.

Sustainability in the energy sector is said to have three dimensions, namely, economic, environmental, and social. Economic sustainability is closely related to energy supply security. The development of mutually beneficial relations on cooperation oil-gas projects in the Okhotsk Sea plays an important role in the system of sustainable development of the countries of Northeast Asia because:

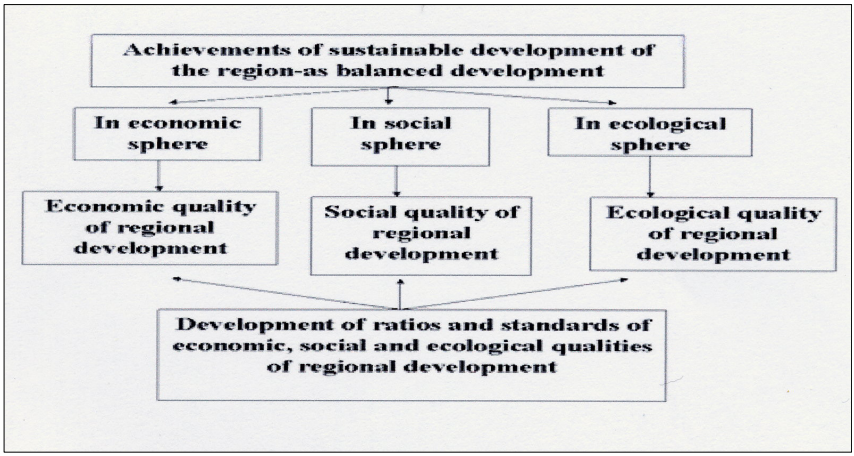
1. Northeast Asia, which in this report includes China, Japan, the Republic of Korea, the Democratic People's Republic of Korea (DPRK), and the Russian Far East, is one of Asia's most dynamic subregions. With the exceptions of North Korea and the Russian Far East, the region has demonstrated spectacular economic growth at various times for more than four decades.

Fig. 1. Basin of the Sea of Okhotsk and Its Unicity



Sources: Compiled by the author from: 1) Geographical location of the Okhotsk Sea Region on the map of Pacific Ocean as one of most valuable sea ecosystems in the world (source: Sherman, 1999). 2) Borders of the Sea of Okhotsk Basin without Amur River Basin (source: Baklanov et al., 2003). 3) Boundaries of the region of the Okhotsk Sea in the Global International Water Assessment (GIWA) project of the United Nations Environmental Program (UNEP) (source: Alekseev, A. V. et al., 2006).

Fig. 2. A Scheme of Sustainable Development of the Region



Sources: Compiled by the author from Baklanov, 2001.

2. Within Northeast Asia, each country's energy demand and supply situation is unique. Oil accounts for one half of the total commercial energy consumption in Japan and South Korea. In these countries, oil and natural gas resources exceed 65 percent of the total energy consumption. However, both countries have a near total dependence on imported fossil fuel energy.
3. The amount of energy reserves each country possesses differs significantly. As shown in Table 1, North Korea and, especially, Japan and South Korea lack primary fuel reserves, having only substantial confirmed coal reserves. In fact, no substantial oil and natural gas reserves have been discovered in these countries. If the Russian Far East is not considered, China is the only energy resource-rich country in the region. China is the only country in the region that has a relatively balanced energy consumption and production structure. Since 1993, China has been a net oil importer, and experts predict that the country will soon join the ranks of Japan and South Korea as one of Northeast Asia's major oil importers.
4. There is a diversification of energy supplies. A key issue regarding the region's oil imports is the dependence on supplies from the

Table 1. Confirmed Energy Reserves in Northeast Asia as of the End of 1997

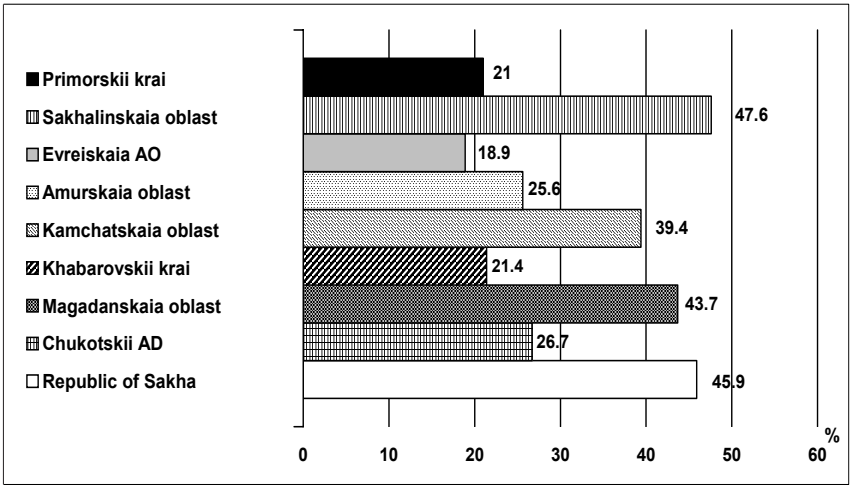
	Coal (million tons)	Oil (million tons)	Natural Gas (billion m^3)
China	114,500	3,300	1,160
Japan	821	–	–
South Korea	600	–	–
North Korea	183	–	–
Far East (Russia)	No data	699 (end of 1994)	2,307 (end of 1994)

Sources: Compiled by the author from Sheingauz, A., 2005.

Middle East. It is estimated that, by the 2020, more than 60 percent of China's oil will come from abroad. In the 1990s, 70 to 80 percent of Japan's oil imports came from the Middle East. More than 70 percent of South Korea's current oil imports also come from this region. It is predicted that the share of Middle East crude oil imports in the Asia-Pacific region as a whole will increase from 75 percent in 1995 to 90 percent and 93 percent, respectively, in 2005 and 2008 (Japan, 2007). Such a high degree of dependence on one region for oil supplies will make Northeast Asian economies especially vulnerable to oil price shocks. Moreover, instability in the Middle East or along the oil transport routes could threaten the security of their supplies.

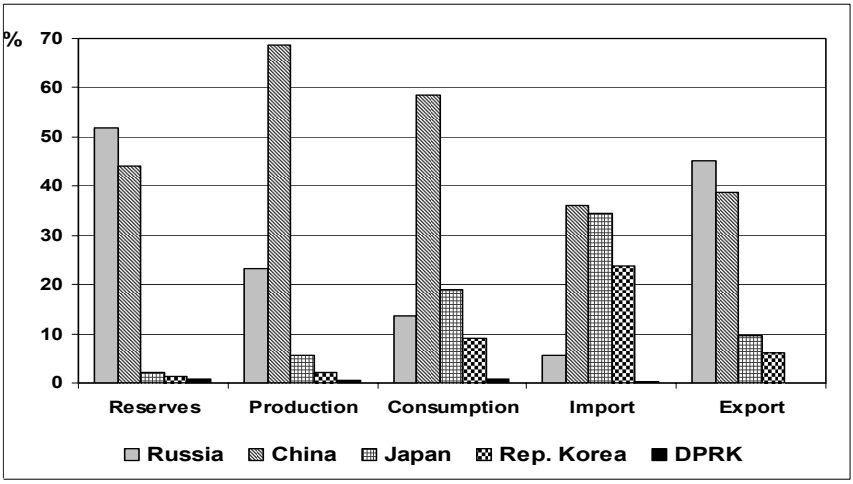
5. The governments of Northeastern Asian countries hope that the Russian Far East, and also Siberia, will become a stable source of energy and other important natural resources. They also hope to promote the development of economic and trade relations through strengthening economic and trade cooperation with the Russian Far East.
6. For the Russian Far East, it is very important to use its natural resource potential with maximum efficiency because the share of the natural resources sector of the Far East economy is very great (Fig. 3).
7. Now, in the past, and in the future, natural resources will be one of the most significant advantages of the Russian Far East (Fig. 4).
8. For Russia, the energy policy represents an integral part of the national development strategy. Oil-gas projects represent a very

Fig. 3. Share of the Natural Resource Sector in the Economies of Far East Territories in 2001, %



Sources: Compiled by the author from Sheingauz, A., 2005.

Fig. 4. Share of Northeast Asian Countries in the Main Indexes of the Raw Mineral Complex (16 Basic Minerals) of the Region, %



important effort by Russia to cooperate with the international community (especially in the Asia-Pacific Region) in developing energy for domestic use and for export. The Eastern Siberia and Sakhalin-Primorie pipelines present an opportunity to develop Siberia and the Russian Far East regions. It is assumed that the Far East demand for natural gas, now 3.68 billion cubic meters a year, will grow to 20.5 billion cubic meters by 2020. Russia needs international participation, investment, and modern technologies in these projects. The Sakhalin projects are a positive example of the integration of the Russian Far East energy sector's comparative advantages and the ramifications for Northeast Asian energy supply and demand. Estimated natural gas and oil production levels and supply schedules to domestic and Northeast Asian markets for Sakhalin-1, -2, and -3 are given in Table 2.

According to these key issues, the Northeast Asia energy demand-supply sector holds significant potential for multilateral resource cooperation. Such interaction goes beyond simple export-import trade relations; the ramifications and implications of such interaction could link the region in an energy community and, thus, contribute to the process of regional integration and sustainable development. Thereby, the Northeast Asian energy cooperation on the base of including oil-gas re-

Table 2. Projected Hydrocarbon Extraction and Distribution under Sakhalin-1, -2, and -3

	Oil and Condensate (Data for Sakhalin-1 and -2 only) (million tons)			Natural Gas (billion m^3)		
Years	Extraction	Export	Domestic	Extraction	Export	Domestic
1997 (actual)	1.7	1.0	0.7	1.8	0	1.8
2010	25.5	20.5	5	36.3	19.0	17.3
2016	16.0	11	5	45.2	24.3	20.9
2020	7	2	5	46.0	24.3	21.7

Sources: Compiled by the author from Sheingauz, A., 2005.

sources of Okhotsk Sea is regarded as one of the main conditions for the general sustainable development of the countries in the region.

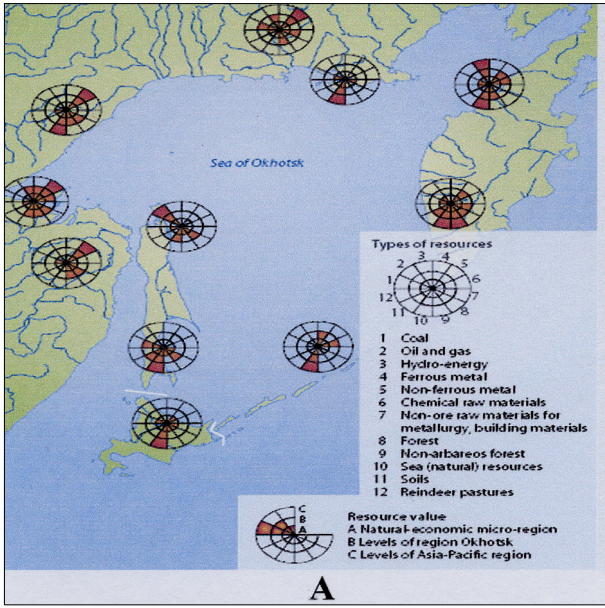
BIOLOGICAL RESOURCES OF THE OKHOTSK SEA IN THE SYSTEM OF THE SUSTAINABLE DEVELOPMENT OF NORTHEAST ASIA

Sustainable development is a long-term integrated form of development that benefits the local population, preserving local livelihoods and sociocultural systems while providing a foundation for the socioeconomic well-being of future generations. A form of development that is close to sustainable development or a rational use of natural resources requires a broad base of economic activity and cannot rely heavily on one or two forms of natural resource use only (such as oil and gas extraction), but, instead, the use of resources must be a complex one, i. e., it does not cause damage to one another. Therefore, it must be assumed that a condition of complex resource development is sustainable development not only for the ecology but also for the economy and, as a result, for society.

The biological resources of the Okhotsk Sea are the most valuable of all resources in the region. Figure 5 shows the distribution of main natural resources in the region, and the matrix characterizes its values. Making up a matrix of relative value of resources, the relative value of different kinds of resources for the region as a whole can be identified. As evident from the matrix, the biological resources of the Okhotsk Sea are the most valuable of all types of resources in the region, and their value is superior to that of proven oil and gas resources.

The Okhotsk Sea subsystem is regarded as the richest fishery in the world. It is the most productive and diverse marine sphere in the world. The volume of biological resources in the Sea constitutes 46 percent of all marine biological resources in the North Pacific. It has an estimated 11 million tons of biological resources, including approximately 7 million tons of cod, 2.5 million tons of herring, and about 1.5 million tons of other seafood (Shuntov, 2001). Approximately 340 fish species inhabit the Okhotsk Sea (Froese et al., 2006). Catch volumes average 1.2–1.5 tons per square kilometer but, in productive years, reach between 8 and 22 tons per square kilometer on the western Kamchatka shelf. In com-

Fig. 5. Territorial Combination (A) and Value (B) of the Natural Resources of the Okhotsk Sea Region



Types of resources	Natural Resources zoning of the Region of Okhotsk Sea											
	Хоккайдо	Южно-Сахалинский	Северо-Сахалинский	Нижнеамурский	Тугуро-чумиканский	Охотский	Сусуманский	Магаданский	Корякский	Камчатский	Курильский	Sum Total of points
Sea natural resources	3	3	2	0	2	3	0	3	3	3	3	**25**
Non-ferrous metal	1	0	0	3	3	3	3	0	2	2	0	**17**
Non-arborous forest	1	1	1	2	2	2	2	0	2	3	0	**16**
Forest	1	2	2	2	2	2	0	0	0	2	0	**13**
Coal	1	2	0	1	0	0	2	1	1	1	0	**9**
Non-ore raw materials for metallurgy, building	1	1	0	1	0	0	2	1	0	2	0	**8**
Hydro energy	0	0	0	0	2	0	2	0	3	0	0	**7**
Chemical raw materials	0	0	0	0	2	0	0	0	2	0	2	**6**
Reindeer pastures	0	0	1	0	2	1	1	0	1	0	0	**6**
Oil and Gas	0	0	3	0	0	0	0	0	0	1	0	**4**
Ferrous metal	0	0	0	0	2	0	0	0	0	0	2	**4**
Soils	0	2	0	0	0	0	0	0	0	2	0	**4**
Sum Total of points	**8**	**11**	**9**	**9**	**17**	**11**	**12**	**5**	**14**	**16**	**7**	

Points: 1 – Natural-economic micro-region; 2 – Levels of Okhotsk sea region
3 – Levels of Asia-Pacific region

B

Sources: (A) Compiled by the author from Alekseev et al., 2006.

parison, fisheries production is about 0.7–1.1 tons per square kilometer in the North Atlantic (The Seas, 1998).

Okhotsk Sea fisheries supply about 70 percent of the Russian Far East catch (Lapko et al., 2000). In 2000, the fishing industry contributed 1.2 billion USD to the economy of the Russian Far-East. It accounted for 18.2 percent of the gross regional product (GRP) in 1999 and as much as 63.5 percent in the Koryak Autonomous Region, 49.3 percent in Kamchatka, 27.3 percent in Primorskii Krai, and 18.3 percent in Sakhalinskaia Oblast. According to Japanese customs statistics, from 1994 to 2002, the total imports of crab and shrimp from Russia to Japan amounted to 643,700 tons for a total sum of US$ 52.5 billion (Arai, 2003). In addition to Japan, Russian Far East marine resources were exported to more than 40 countries worldwide.

The fishing industry is important for the social structure of coastal communities. The role of fish and other marine biological resources is becoming more and more significant to the Sakhalin economy and the lives of the local populations. The fishing industry is the biggest employer in the region – 28.7 percent of the population was employed in this sector in 2000, compared to 21.3 percent in 1990. The fishery contributed 10.5 percent to the Sakhalin regional budget in 2004, only a little less than the contribution of the oil and gas industry (12 percent). The fishing industry is the most important of all regional industries. The fisheries industry, therefore, plays an important role not only for the local economy, with one fisherman creating six to seven workplaces onshore, but also in the development of the social and cultural characteristics of the region (Alekseev et al., 2006). The volume of fish and sea products caught in the Sea of Okhotsk between 1992 and 2003 is given in Table 3. Since 1990, the volume of catches has decreased by one-third due to the depletion of fish stocks. In the area outside the Russian Exclusive Economic Zone (EEZ), and, therefore, out of Russian control, many foreign fishing fleets from countries, such as Japan, Taiwan, North Korea, South Korea, and China, overexploit the fisheries.

The transboundary nature of the marine environments and living resources is a fundamental element that can and will affect the sustainability of humans themselves and marine ecosystems (resources), and this demands international cooperation for their conservation, usage, and

Table 3. Catches of Commercial Fish from the Sea of Okhotsk between 1992 and 2003, thousands tons

	1992	1994	1996	1998	1999	2000	2001	2002	2002
Catches by Russian Fleet	1,511	1,496	2,133	1,878	1,454	1,419	1,258	865	1,060
Catches by Russia and Foreign Fleets	2,353	1,775	2,417	2,030	1,584	1,509	1,309	No data	No data

Sources: Compiled by the author from Alekseev et. al., 2006.

Table 4. Import and export values of fish and fish products (Unit: thousands of U.S. dollars)

Country		1980	1985	1990	1995	1999
China	Import	–	95,390	207,083	957,379	1,146,031
	Export	263,000	267,916	1,301,690	2,926,479	3,064,160
Japan	Import	3,253,210	4,852,280	10,904,945	18,146,582	14,991,704
	Export	937,067	854,365	854,170	754,930	745,812
North Korea	Import	–	–	–	4,390	2,647
	Export	29,290	27,954	65,230	70,223	72,310
South Korea	Import	35,681	99,442	390,913	849,607	1,165,903
	Export	681,607	858,620	1,480,707	1,712,570	1,508,621
Russia	Import	–	–	–	346,190	201,103
	Export	–	–	–	1,635,145	1,247,638
World	Import	16,562,100	19,490,617	39,860,064	57,075,093	58,329,489
	Export	15,514,100	17,180,887	35,674,854	52,007,713	53,108,669

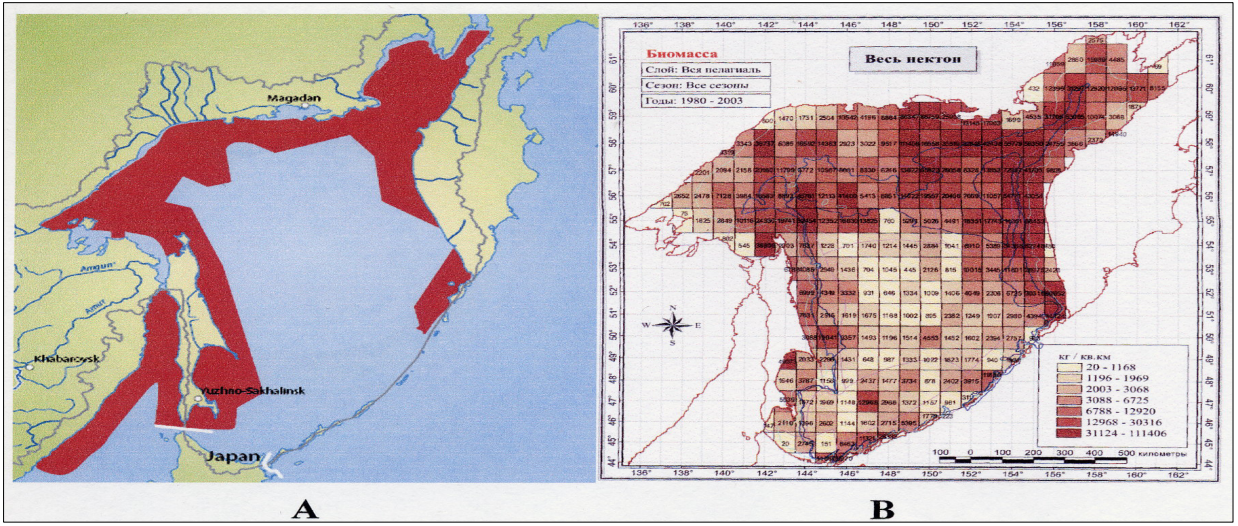
Sources: Compiled by the author from FAO/Statistics. Ftp.fao.org/fi/stat/windows/fishplus/fishcomm.zip

management. The socioeconomic dependency of the Northeast Asian economies on the ocean has increased significantly over time. The countries of Northeast Asia are among the most important nations for fisheries (Table 4). For example, Japan, Korea, and the DPRK have traditionally depended on the sea. Since ancient times, the sea has played a key role in the region's history. Products made of the biological resources of the sea and fresh water areas play a significant role, while the role in the provision of protein to the population is most important in Japan and the two Koreas. For example, fish and sea products provide basic foodstuffs in Japan. Their consumption volume is estimated to be 12–13 million tons a year, and sea products account for 39 percent of the protein consumed by the population. Although Japan is a worldwide leader in catching fish and sea products (up to 15 percent of the worldwide catches), 22–25 percent of the domestic demand is met at the expense of imports. Accordingly, the fish industry is an important economy sector (Table 4).

OIL AND GAS RESOURCES IN TERRITORIAL COMBINATION WITH REGIONAL RESOURCES IN THE OKHOTSK SEA REGION

The significance of biological marine resources for Northeast Asia is considered in territorial combination with oil and gas stocks. In this case, it is noteworthy that the development of sea oil-gas fields is a striking example of action damaging marine bioresources (the development of one kind of resource causes damage to another). The Sea of Okhotsk region includes the Okhotsk oil and gas fields, making its hydrocarbon resources particularly important economically. Significant reserves of oil and gas are predicted to exist in the northeastern and northern shelves of Sakhalin, the western Kamchatka shelf, and the middle and lower reaches of the Amur River Basin. Only a small proportion of the large hydrocarbon reserves of the Russian Far East are exploited. An evaluation of hydrocarbon resources made by Dalmorneftegeofizika in 1994 concluded that the Sea of Okhotsk shelf has the equivalent of 14,462 million tons of fuel. On Sakhalin Island and its shelf, there are estimated to be 324 million tons of oil and 997 million tons of gas. By 2000, 23 oil and gas-oil and five gas fields had been developed.

Fig. 6. Areas of Perspective Development of the Oil and Gas Fields in the Sea of Okhotsk Region (A) and Allocation of the Total Biomass of all Nekton (*Pisces* + *Cyclostomata* + *Cephalopoda* + *Decapoda)* for average data of 1980–2003 years



Sources: (A) Compiled by the author from Alekseev et. al., 2006; (B) compiled by the author from Shuntov et. al., 2003.

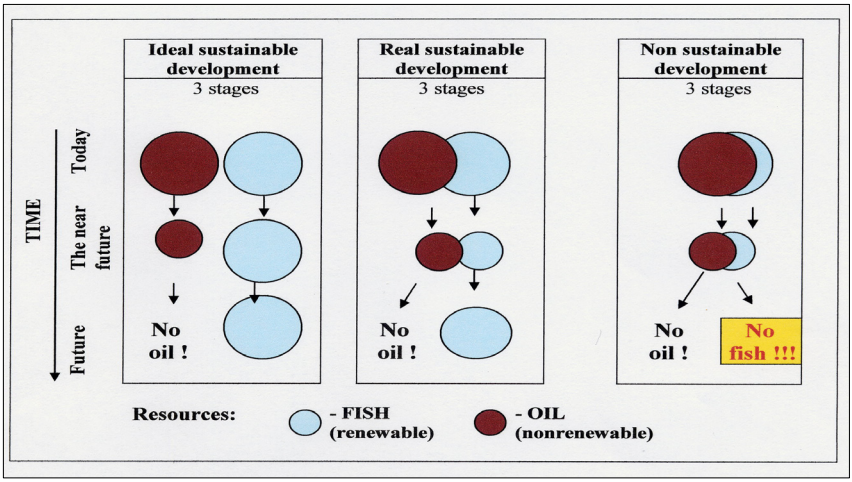
Figure 6 shows the areas of prospective development of oil and gas fields in the Sea of Okhotsk region. The following is a comparison of the territorial combination of the oil and gas stock and the biological resources of the Okhotsk Sea. Existing and planned areas of oil and gas prospecting and production on the shelf coincide or are contiguous with natural reproduction habitats and spawning and habitation areas of young fish of dominant species and invertebrates as well as areas of fish-fattening and benthos communities.

In the future, the total catch in the Okhotsk Sea will be maintained at a level of about 2 million tons and, as a result, will remain the basic fishing basin of Russia (Alekseev et al., 2006). As such, biological resources produce income for more residents of the Far East than does the petroleum industry. With the rational development of marine biological resources, the incomes they produce could exceed those from oil and gas production. Thus, a sharp conflict arises between the aspiration for immediate use of different kinds of coastal resources and the necessity to ensure the long-term preservation of these resources.

The principles of sustainable development assume that the quantity of renewable resources (for example, marine biological resources) or their capacity to produce biomass should not, at least, decrease with time, that is, a regime of simple reproduction should be provided. Theoretically, there are two types of sustainable development: while the ideal one is unattainable, the real one is achievable with effort. In addition, there is another type of development, i. e., unsustainable development, the easiest one. Two models are identifiable when the use of one resource damages the potential of another (Fig. 7). In the first model – the real type of sustainable development – the use of any resource (oil, in our case) causes a certain degree of harm to the potential of another kind of resource (fish resources, in our case) without representing a significant threat to the latter. The development cannot be considered sustainable (second model) when the use of any resource causes irreparable harm to the potential of another kind of resource. In the ideal type of sustainable development, the use of any resource has no negative effect on the potential of other kinds of natural resources. Unfortunately, this is practically impossible.

Exploiting some resources inevitably results in a different degree of destruction than exploiting others. The extraction of minerals, such

Fig. 7. Main Types of Development (and situation when one kind of resource causes damage to the potential of another)



as oil, gas, coal, and ores, from the seabed cannot be achieved with the current level of technology while conserving biological resources at the same time. The importance of the Okhotsk Sea shelf is undoubted a factor of general ecological stability within the Far Eastern marine region in particular and in Northeast Asia as a whole. The extraction of nonrenewable supplies of oil and gas should not render land unattractive from an ecological viewpoint. Water resources are generally self-restoring; however, care should be taken not to exceed that limit.

DEVELOPMENT OF OIL-GAS RESOURCES IN THE BASIN OF THE OKHOTSK SEA REGION WITH RESTRICTIONS OF SUSTAINABLE DEVELOPMENT

The system of territorial ecological restrictions is related, first of all, to the necessity to conserve the biodiversity. As is well known, biodiversity conservation is especially necessary in areas (territories and water spaces) that are the key to the world gene pool. The Okhotsk Sea basin is such a key area in Northeast Asia. Sustainable development can only

be achieved through a compromise between industrial development and nature conservation. However, recent rapid exploitation and the development of oil and gas on the continental shelf of Sakhalin Island have begun to change the features and threaten the ecosystem of the region, particularly the coastal zones. Coastal resources are now seen as valuable for tourism, minerals, agriculture, aquaculture, fisheries, and the marine industry.

Offshore oil and gas developments clearly pose a threat to the marine resources of the Sakhalin shelf, to the coastal waters, the bays, wetlands, reindeer pastures, and to the salmon spawning grounds that make up the delicate human and natural ecosystem of the northeastern coastal region. An oil slick would be catastrophic for both the natural environment and the humans who depend on it. It is important to stress that all the ecological problems and threats of oil and gas projects have an impact first and foremost on fishing, the most important sector of Sakhalin's economy and the one that most closely fits the goals of sustainable development. Fish catches have declined by one third due to depleted stocks.

While many hopes for a stable economic future on Sakhalin lie in development of the offshore oil and gas fields, people fear that these are not being exploited in the interests of the local populations but in the interests of international investors, developers, and consumers, decision-makers in Moscow and Yuzhno-Sakhalinsk, and the upper levels of the domestic oil giant Rosneft-Sakhalinmorneftegas. Sustainable development requires integrated natural resource use planning involving all stakeholders in the planning processes at all stages. This means the broad participation of local populations, who are all too often excluded from or poorly represented in decision-making processes. Sustainable development demands equity of access to resources (especially of oil and gas as one of the main waste factors), which means clarity of rights and adequate enforcement and control.

The extraction of oil and gas in marine environments has been a sector of the global economy for the last 20 years. The negative impact of this industry on marine ecosystems and biological resources is very high. Accidents remain inevitable events for any oil field. The most widespread and dangerous consequence of the marine oil and gas industry is pollution of the environment. In addition, the industry is a

pollution source at all stages of the industrial exploitation of oil and gas deposits (during prospecting drilling, industrial production, and transportation by pipeline and oil tankers). The ecological consequences of accidents are especially dangerous near the coast, in shallow water, or in areas with a slow water exchange (Patin, 1997). The exploitation of oil and gas fields in southern Sakhalin is resulting in the release of oil products in concentrations above the maximum permissible limits into shallow bays. Oil contamination has been recorded along the northeastern coast of Sakhalin. Oil spills in the Okhotsk Sea are considered to be a considerable future threat because, although there has been rather limited oil contamination to date, extensive oil and gas development, particularly on the continental shelf of Sakhalin, and increased shipment of oil across the Sea will significantly increase the risk of spills.

As a result, the system of territorial ecological restrictions and ecological criteria permits, along with available natural resource potential and economic needs, the selection of priority and prohibited kinds of nature management and the territorial restriction of development of particular kinds of natural resources. For the Okhotsk Sea basin, the western Kamchatka coast should first of all come under territorial restriction when developing petroleum and gas. The natural resources of west Kamchatka are diverse, but the biological resources, including two hundred and twenty-seven species of fish and fish-shaped animals, are the most significant and valuable (Baklanov et al., 2003) (Fig. 6). As such, it is expedient to give the west Kamchatka shelf of the Okhotsk Sea the status of a strictly protected territory, which is of major importance for the conservation, reproduction, and migration of valuable species of biological resources, and to exclude any redevelopment of the shelf's hydrocarbon resources until ecologically safe technologies have been developed. The Okhotsk Sea shelf on the Kamchatka side is also rich in hydrocarbon resources and ranks next to the Sakhalin shelf in its stock of 4,570 million tons in terms of standard coal. It could become a strategic reserve for Russia and all of Northeast Asia with regard to increasing mutual economic relations in the region.

CONCLUSION

Understanding the environmental problems of the Okhotsk Sea has led to a growing appreciation not only of the importance of the Sea to social and economic progress but also of its vulnerability.

We believe that regional energy cooperation, once realized on the basis of minimal environmental damage, would greatly contribute to the sustainable development of the region, since it would enhance the energy supply security, overall development, and energy efficiency of the region.

Regional energy cooperation is introduced as an effective tool for sustainable development only when the best environmental technology is employed.

Although the extraction of oil and gas meets the economic demand of the region, attention must be given to the necessity of balancing pressing needs for investment in resource extraction with the development of high-quality processing industries and environmental protection in the Russian Far East because it is in the mutual interests of all members of energy cooperation in the Northeast Asia.

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