Integrated Mechanism for Managing the Development of Offshore Hydrocarbon Deposits in the Arctic

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Abstract. Recently, in the Arctic zone, including its marine area, the presence of a number of economic entities has already been observed. This is, first of all, transport, the extraction of biological resources, the extraction of aquatic culture, and, finally, the extraction of mineral and hydrocarbon resources. It is worth noting that in recent years, a number of institutions were formed at the state level in Russia to promote business development in the Arctic zone. These are the created State Commission for the Development of the Arctic, as well as the Business and Scientific Councils created under this commission. At the state level, a number of fundamental documents were also adopted (the Strategy for the development of the Russian Arctic and national security for the period up to 2020, the Marine Doctrine of the Russian Federation), which define the development of the Arctic as one of the main priorities of the state policy. Taking into account different directions of economic activities of these business entities, each of which has its own geography and national-international system of regulation and management, conflict of interests is often observed that can lead to very negative consequences for sensitive ecosystems of the Arctic zone and for the development of individual sectors of the economy. In other words, in contrast to harmoniously created natural ecosystems, human activities on the shelf of the Arctic seas do not have a systematic organization, individual industries (transport, production of bio- and aquatic resources, hydrocarbon resources production, etc.) do not form a single systemic commonality. The search and maintenance of such a balance is the main task of comprehensive management of the development of Arctic marine hydrocarbon fields.

1. Introduction
The total set of connections and economic relations at present does not have the nature of interactions aimed at the formation of an integrally focused useful result. In other words, the complexity of economic activities in the Arctic is not the final result, but a set of parallel processes in the development of marine waters and resources of the Russian Arctic. For this reason, the economic lexicon contains such concepts as “oil and gas complex”, “fishery complex”, “transport complex”, “ship-mounted complex”, etc. [1, 2].

It should be noted that their economic interaction may create a synergistic effect and objective development in certain areas of the Arctic seas, but may not create such effects. Arguing from the standpoint of the economic postulates of the market economy, a greater number of market participants leads to greater competition, which is an obvious advantage, displacing inefficient participants from the market field. In this regard, the need to find a balance between economic efficiency and the ability to...
preserve biological diversity is obvious. The search and maintenance of such a balance is the main task of integrated management of the development of Arctic offshore hydrocarbon deposits.

2. The Concept of comprehensive project management

The development of the Arctic shelf is a relatively new type of activity. At the same time, considerable experience has been accumulated in the Russian Federation in exploitation of oil and gas fields located on the continent; therefore, it seems promising to apply managerial methods developed for oil and gas fields to offshore activities in the Arctic.

In this aspect, we are talking about adaptation and practical application at sea: advanced and operational management. The indicated types of activity are closely interconnected and have a common goal - the harmonization of management decisions aimed at an efficient and safe development of the Arctic [1].

Speaking about the mechanism of advanced management, it is worth noting that it is characterized by the composition of a number of actions performed in a certain sequence: studying the current state of marine systems with subsequent analysis of human economic activities, modeling of upcoming anthropogenic changes in the system and their assessment, selection of optimal measures for mitigation of negative consequences and, finally, the implementation of environmental impact assessment of projects.

The concept of integrated intersectoral management of offshore hydrocarbon resources development consists of four main components [2]:

1. Within the limits of the considered water area, water column, bottom and shores, for management decisions, all relationships and interdependencies between the main components of the ecosystem (biotic and abiotic) are taken into account;
2. Management actions to be taken should be planned and implemented in the context of a long-term development strategy for the considered management entities;
3. The relationship between the various economic entities of the Arctic zone and the social and environmental values and interests interconnected with them should be considered together;
4. In order to achieve a strategic balance between the economic interests of corporations and the preservation of the sensitive ecosystem of the Arctic, all emerging territorial / production contradictions and disagreements in economic matters should be resolved by transforming corporate interests into national ones.

An important feature of the integrated management of the development of offshore hydrocarbon deposits is the systematic accounting of the totality of factors related to the economic entities under consideration, the marine ecosystem, and the coastal zone. The main goal of intersectoral management is the task of developing managerial initiatives aimed at improving the conditions of all types of economic activities, geographically united in the region under consideration. This fact differentiates intersectoral management from generally accepted managerial industry programs - such as the management of oil and gas production, transport, fisheries, aquaculture, etc., which are implemented in traditional regions of human presence.

It should be noted that the coastal zone, including the Arctic, has a number of specific features. Of fundamental importance is the dynamic interaction of processes occurring both at sea and on land. For this reason, within the framework of integrated intersectoral management, a joint review of all ongoing processes is necessary. Therefore, in the framework of an integrated intersectoral approach to management, a comprehensive review of all ongoing processes is necessary.

The concept of sustainable equilibrium or balance in the Arctic marine environment generally accepted for land conditions is replaced by the concept of sustainable development. This approach does not exclude the element of the need to find a balance, but it seems more systematic and is considered as a problem of harmonization, implying finding the most favorable combination of all components of the economic system in terms of the formation of conditions to ensure its sustainable development. Thus, it can be argued that integrated management is not an impact on the processes occurring in nature, but on the organization of human activities in order to harmonize with the nature.
Speaking about extraction, it is worth noting that this type of environmental impact is associated with the process of extraction and depletion of resources, for example, the extraction of hydrocarbon resources, biological resources or aquaculture. The process of processing resources is inextricably linked with the emission of polluting substances into the environment: we are talking about any pollution, including biological ones [1, 2].

The development of new territories leads to so-called occupation of space, or, as some experts classify, spatial competition. This type of environmental impact arises from the multi-vector, sometimes conflicting use of the space of economic entities, resulting in the result in “crowdedness”. It is spatial competition that generates one of the most important tasks of intersectoral management of economic activity in the Arctic - marine territorial planning.

3. Marine territorial planning

Marine territorial planning can be characterized as a process of analysis and distribution of segments of three-dimensional sea space in the Arctic for the specific purposes of economic entities. The obvious goal of marine spatial planning is to achieve economic and social goals, while respecting environmental standards. It should be noted that these goals are, as a rule, the results of a political process.

Social choice, public opinion should become decisive in making decisions on the operation of a particular territory. Achieving this opportunity is carried out by holding public hearings before implementing Arctic projects. It is society that should become the central part of the decision-making process and the investigation of these decisions of actions.

The prospective use of targeted geographic and regional resources in the Arctic should lead to the emergence of traditional approaches to issuing departmental permits in the environmental sector (exploitation of natural resources).

It is worth noting that for territorial planning and decision-making on land, this approach is traditional and standard. However, this is currently not possible in the Arctic. The potential environmental consequences of human activities in the Arctic - emission, extraction and occupation - as a rule, manifest themselves differently in space and time. Thus, extraction of hydrocarbon and biological resources can lead to fishing-fatal and even seismological risks (short-term effect). Emission, as a rule, leads to medium-term and long-term ecosystem disturbances, while occupation has a holistic character, combining all of the above mentioned. Obviously, these factors should be taken into consideration in the framework of the strategic management of the oil and gas sector when exploiting marine sources.

As a rule, when considering management systems, it is advisable to distinguish separate subsystems: managing and managed. It is possible to explore each of them as independent. Thus, the object of management, or managed subsystem, is part of the management system, which is subjected to the systematic, organizational, systematic effects of the control subject at various levels. The subject of management, or managing subsystem, endowed with managerial authority and in this regard called for certain government activities.

In the present work, the oil and gas sector of the Arctic zone acts as the managed object, which represents more than a combination of a number of industries, nature, economy and society. In the oil and gas complex under consideration, the intensity of connections between the elements of nature and industries significantly exceeds the intensity of connections directed from outside or outside the oil and gas sector, or the totality of the elements under consideration. At the same time, the oil and gas sector uses the natural resources of ecosystem, while simultaneously affecting it.

Intersectoral management of oil and gas fields’ development based on ecosystem approaches implies that managerial activities take into account anthropogenic stresses (extraction, emission, occupation) on ecosystems, proposing preventive measures to prevent exceeding certain anthropogenic loads [1, 2].

It is important to note that monitoring of exclusively production activities of sectors transmitted by the feedback channel should be carried out by primarily monitoring the condition of ecosystems. Based on the analysis of information, the governing body (management subject) should provide not
only benefits (and the desire to maximize it), but also the obligation to take into account the comprehensive anthropogenic impact on the ecosystem, which allows temporarily making adjustments to production programs, so that the deviation of the ecosystem from the initial condition did not exceed a predetermined value.

4. Fundamentals of comprehensive management

The fundamentals of comprehensive management suppose establishing a certain institute as a managing subsystem (administrative body), which, in order to achieve its goal, forms a set of influences on the managed object. The concept of integrated management of the development of offshore hydrocarbon fields in the Arctic differs from generally accepted management activities in that it is based on the accounting and management of all factors that are directly or indirectly related to the marine ecosystem and coastal zone under consideration.

In order not to always inefficiently use limited financial resources, in an alien natural environment, one seeks to use the marine space compactly. Efficient activities in offshore seas can be narrowed by a number of factors (depth, hydrometeorology, distance, international delimitation, communications, etc.). For example, the formation of shipping routes creates a good idea of how the existing variety of options for sea routes, as a result of development and optimization, “pulls” in line on the maps. This circumstance leads to high competition “for a place” in the sea. Along with this, it is obvious that marine and oceanic spaces, the use of which will be determined by the development of technologies, will be increasingly included in the direct economic zone. All this can expand the scale of the managed subsystem and the zone of potential conflicts.

Management decisions in the development of the Arctic shelf should be based on sectoral, functional, and strategic environmental assessments, taking into account the results of marine spatial planning (functional zoning of the water area) [3, 4, 5].

By the instruction of the RF Government preparation of a draft strategy for the development of hydrocarbon shelf is carried out by the Arctic Commission. It is advisable to include heads of oil and gas companies, senior officials of ministries, heads of municipal organizations that are part of the oil and gas cluster, and representatives of environmental and public organizations as part of the Arctic Commission. Under the Arctic Commission, a Scientific and Analytical Center should be created, which will provide the scientific substantiation of the strategy and develop within its framework long-term strategic programs for prospecting, exploration and development of offshore oil and gas fields. The implementation of the state tasks established by the strategy, on the instructions of the Government of the Russian Federation within their competence, is carried out by the Ministry of Natural Resources and Ecology of the Russian Federation, the Ministry of Energy of the Russian Federation, the Ministry of Industry and Trade of the Russian Federation, the Ministry of Finance and the Ministry of Economic Development.

Based on the objectives of the strategy, the Ministry of Natural Resources and Ecology initiates and coordinates regional geological exploration, implements a long-term program for licensing subsoil resources of the Arctic shelf, participates in the preparation and improvement of the regulatory framework in the field of marine Arctic subsoil use, and the allocation of financing for SMEs at the level of regional studies, exercises state control over the balance of mineral reserves and resources.

The Ministry of Energy of the Russian Federation carries out the functions of state participation in the management of the fuel and energy sector, including the oil and gas sector on the Arctic shelf.

The Ministry of Industry and Trade performs the functions of state regulation of the petrochemical and gas chemical sectors of the oil and gas sector. In the case of the Arctic shelf, the tasks solved by this department should include measures to organize the production of equipment for the exploration and development of offshore fields and vehicles for delivering oil and gas to consumers.

The main task of the Ministry of Finance in the implementation of the strategy is the accumulation of long-term financial resources to ensure long-term lending to Arctic marine projects [4].

The functions of the Ministry of Economic Development should include state economic and legal regulation of production activities in the field of marine Arctic subsoil use, regulation of the activities
of economic entities by developing regulatory acts and monitoring the results of industrial development of the hydrocarbon base. One of the most important tasks of the Ministry of Economic Development for the oil and gas sector of the Arctic shelf is to improve the legislation on subsoil use. In particular, a legal solution to the problem of free transfer of rights to licensed areas. In this case, the license will receive the status of a security, the value of which will be determined by stock quotes. As a result, the investment attractiveness of exploration activities will increase significantly. Junior companies will appear that will expand the scope of exploration and exploration of hydrocarbon fields on the Arctic shelf.

Monitoring of the implementation of the strategy should be carried out by the NAC, which, on the basis of the analysis of the results obtained by the oil and gas complex, will prepare proposals for adjusting the strategy and submit them to the Arctic Commission with the subsequent submission for consideration by the government of the Russian Federation and adoption of the necessary amendments and clarifications.

As an alternative to the NAC, it can be proposed to establishment the Ministry for development of natural resources of the Arctic shelf, a similar Ministry exists in the Far East [4].

To summarize, it is worth emphasizing once again that integrated inter-sectoral management requires the development of a unified strategy and program of actions for all sectors present in the Arctic. Environmental principles are the main criterion for evaluating such activities.

Thus, efficient and safe development of marine Arctic hydrocarbon fields is to be carried out basing on inter-sectoral management, taking into account interests of the oil and gas sector, the fishing industry, sea transport as well as issues of environmental safety of flora and fauna when exploiting oil and gas resources.

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