World Wildlife Fund

WWF Russia

Summary comments to the Environmental and Social Impact Assessment of the project for construction of integrated complex for extraction and liquefaction of natural gas and gas condensate on the Yamal Peninsula (Yamal LNG Project)

June 2015

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Note. *The Summary Comments is a result of analysis and compilation of expert opinions from representatives of research and non-governmental conservation organizations, performed by World Wildlife Fund WWF Russia (hereinafter, the Fund) in the period February-June 2015. This document reflects the Fund's position concerning the Yamal LNG Project ESIA performed in compliance with international requirements.*

The Fund did not perform any analysis or assessments of other ESIA materials (including those for projects affiliated with Yamal LNG's partners). One of the reasons is absence of open access to such documents.

1. General outcomes of ESIA materials review and discussion issues of the strategic level.

1.1. General comments

The ESIA materials of Yamal LNG Project presented for public review and discussion comply with the best practices of such documentation development in the RF, in respect of their structure and focus. WWF Russia notes with satisfaction that Yamal LNG Project is determined to comply with the norms of the Russian law as well as international standards and principles in the current conditions of the RF industrial development.

The ESIA of Yamal LNG Project developed in compliance with international standards is a comprehensive assessment of impact on the natural and social environments. The comprehensive assessment of the Project's impact is based on the ESIA materials developed for specific facilities according to the requirements of the Russian law and positively evaluated by Environmental Expert Review Board. According to international standards' requirements, additional aspects have been included into the ESIA to expand its informational value.

At the same time, the presented documents are not complete regarding a number of issues. Certain ESIA strategic conclusions require additional discussions and consultations.

Such discussions within the ESIA process will facilitate the efficiency of measures to mitigate the negative impact on the environment from Yamal LNG Project as well as from other projects for development of oil and gas fields in the Russian Arctic.

1.2. Analysis of possible alternative options and optimality of the Sabetta port option.

The assessment of alternative options for infrastructural development of South Tambey Field within ESIA was performed in the order of hierarchy in the framework of the following key aspects:

1) Selection of gas delivery method
2) Rationale for location of the LNG plant and shipment

The ESIA materials provide an analysis of the following possible alternative options:

- Pipelines-liquefied natural gas (LNG);
- As an alternative to LNG – location of the plant and terminal on the Yamal Peninsula or in more favorable natural conditions;

- Possible areas for the option of LNG plant on the Yamal Peninsula: Kharasavey Cape, Drovyanoy Cape, Sabetta.

The number of options presented for consideration is limited. Their analysis provided in the ESIA materials is disputable in a number of cases.

For example, in Section 6.3.1 Gas Pipelines versus LNG, the provided analysis of advantages of LNG tanker shipment from Yamal as compared to gas pipelines is not deep enough. One should keep in mind that currently, relatively close to Yamal LNG Project, the JSC Gazprom is developing the Bovanenkovskoye Field on the Yamal Peninsula, where pipeline system of the produced gas transportation has been chosen.

To prove that Sabetta is the best solution compared to Kharasavey and Drovyanoy Cape, the comparison of distances from isobath 10 m – used for assessment of potential amounts of dredging activities – is given as one of the main reasons. According to ESIA materials, this value for Sabetta option is 3.5 km, for Kharasavey – 5.2 km, and for Drovyanoy Cape – 19 km.

In assessment of the Sabetta option, one should keep in mind that the Project is impossible to implement in practice without construction of a navigational channel 49 km long in the northern part of the Gulf of Ob. Construction of a navigational channel in the Gulf of Ob is being performed as part of the Russian transportation system development implemented by the Federal authorities.

Considering the navigational channel , the values along the whole dredging cycle are changing their order: Kharasavey – 5.2 km, Drovyanoy Cape – 19 km, and Sabetta – 52.5 km.

The comprehensive analysis of the values (Table 6.4 Results of ranking of facilities location) for these three options fails to take into sufficient consideration other environmentally significant factors (extension of the sea routes' distances in the demanding conditions of the Gulf of Ob, possible negative impact on the natural environment of the Gulf of Ob – more details are provided below in 2.1., 2.2.).

1.3. Possible integration of Yamal LNG Project and activities by JSC Gazprom on the Yamal Peninsula

The activities performed by JSC Gazprom in the latest years for development of Bovanenkovskoye Field at a distance of 150-200 km from Yamal LNG Project have already resulted into establishment of infrastructure including a system of trunk gas pipelines. The projects' integration would open possibilities to re-direct the gas flows depending on the time of year and weather conditions, and to locate the LNG plant and the terminal on the Kara Sea coast or in a different

area with more favorable natural conditions, rather than in the Gulf of Ob. However, analysis of such possibilities is not provided in the ESIA materials.

Nevertheless, in the emerged pattern of development of the Yamal Peninsula resources, parallel independent infrastructures for two projects located close to each other are being created again. A similar situation took place on the Sakhalin Island where implementation of the projects Sakhalin-1 and Sakhalin-2 created two independent transportation systems for the products produced on the shelf. This resulted into increase of the projects' costs and additional environmental damage due to creation of excessive infrastructure. The reason for this situation is, first of all, weak government policy concerning application of comprehensive approaches in development of resources, which imply optimization of solutions for infrastructure development, ecosystem-based approach and strategic environmental assessment.

Similar to the situation on the Sakhalin Island, the projects for development of the Yamal Peninsula fields (and, apparently, in the Gydansky Peninsula in future) fail to comply with Item 8.4 Environmental Standards for Operations of Oil and Gas Companies Acting in Russia developed by non-governmental nature conservation organizations[1] (Moscow, 2004) – ***"Company cooperates with other companies, by sharing and commonly using infrastructure necessary for project realization, in order to decrease its impact on the environment"***.

1.4. Analysis of cumulative impact on the Yamal Peninsula and the Gulf of Ob

Creation of the transportation system for Yamal LNG Project may facilitate more active implementation of other numerous projects for development of oil and gas fields in this region by such companies as JSC Yamal LNG, JSC Gazprom, JSC Gazprom Neft etc.

Development of the Novoportovskoye Field and construction of an oil shipment terminal with a capacity up to 6-8 million tons per year on Kamenny Cape (JSC Gazprom Neft) is among the large projects that are already being actively implemented.

A possibility for extension of the railway and construction of a multi-purpose port, rather than a specialized port, in Sabetta is being considered at the top level of the Russian government. [2] [3]

[1] See in Russian http://www.wwf.ru/resources/publ/book/109, in English http://www.wwf.ru/resources/publ/book/eng/109

[2] http://www.kobilkin.ru/press_service/851/

[3] https://proj.edinros.ru/news/proekt-stroitelstva-morskogo-porta-sabetta-predstavili-vladimiru-putinu

The ESIA materials make the main focus on the possible impacts within the license area. The ocean shipment operations and construction of marine channels directly related to the project implementation are regarded as associated facilities and their analysis is not so detailed.

In respect of other projects, they say that presently decisions concerning their implementation have not been made yet, no active operations are expected within the nearest five years, and therefore, their possible consequences are not analyzed.

WWF Russia believes it impossible to agree with such approach. Not only should the possible environmental impact in the current moment or in the nearest five years be analyzed, but also for the whole duration of the project implementation (i.e. until 2035-2040).

Partially, it is done in Chapter 13. Cumulative impacts and impact interactions. However, since other projects' and license holders' informational openness is not equal to that of Yamal LNG, the analysis has a clear tendency to limit the impact analysis zone within 100 km from the license area.

For addressing such problems, the world practices use strategic environmental assessment stipulated by Espoo Convention. This convention is specified on the list of the project's legal framework.

Non-governmental conservation organizations realize that performing such assessment is beyond the capacity and competence of separate companies.

However, as Yamal LNG Project and the infrastructure created for the project are the key elements for further development of the northern part of the Yamal Peninsula and the Gulf of Ob, the government of Yamalo-Nenetsky Autonomous Okrug is recommended to step forth with an initiative and arrange implementation of a strategic environmental assessment. Without it, the ESIA materials of Yamal LNG Project cannot be considered comprehensive and complete.

1.5. Potential impact of the global climate change (especially, on cryogenic and ice conditions)

The global climate change is already having a significant impact on economic activities, including those in the Arctic. This impact is likely to increase in the nearest decades.

Many countries in the world are taking active measures to reduce greenhouse gas emissions and mitigate the foreseeable climate changes. One may expect dramatic increase of attention to such issues in connection with the envisaged signing of new international agreements at the conference of the parties of the UN Framework Convention on climate change in December, 2015 in Paris. The importance of the global climate change and the need for mitigation is considered in China's initiative for development of the Silk Road published in March, 2015. Keeping in mind that the largest French and Chinese companies are participants of Yamal LNG Project, one may expect serious attention to these aspects of the project.

To assess the project's values in relation to the problem of global climate change, it is necessary to provide the values of greenhouse gasses emission and other possible impacts in comparison with alternative options of supplies to the main consumers of natural gas – the EU countries, China, India, South-East Asia, etc. The obvious scenarios are: "doing nothing", use of the existing pipelines to Europe, the envisaged Eastern and Western gas pipeline routes from Russia to China, the arrangement "pipeline - LNG plant located in more favorable natural conditions", LNG supplies from the Persian Gulf and Australia.

Only 7 out of 159 pages in the Section Environmental Baseline are dedicated to climate conditions. Two more pages are dedicated to general description of cryogenic processes. Forecast and analysis of possible consequences of the global climate change is not provided.

In such a complicated and expensive project with a life cycle of 25-30 years, the problem of possible impact of the global climate change should be analyzed most thoroughly.

The complexity and importance of analysis of this issue can be confirmed by existence of two principally different alternative forecasts.

One forecast: due to the global climate change, the temperatures of air, water, ground, and soils will be increasing. In such case, one may expect improvement of conditions for ocean shipments and possibilities for transportation of the Yamal LNG products eastwards. However, at the same time serious problems may emerge regarding operability and stability of onshore structures because of permafrost destruction.

The other forecast: local cooling may take place due to the observed cyclic nature of the Arctic climatic conditions where the cycles last for several decades, or due to reduction of the Gulf Stream's influence resultant from climate changes. In such case, permafrost will stay intact, but the conditions for ocean shipment will be more difficult.

Presently, the ESIA materials are effectively based on the only scenario: no serious climate change will take place in the project implementation region along the routes of product transportation during the implementation period.

The deep negative cryogenic forms of terrain discovered in 2014, possibly of explosive nature (craters) are an example to demonstrate the importance of analysis of this problem. Only in future can scientific research and possible monitoring of these processes suggested by the company give an answer to the question how safety of the constructed facilities will be ensured, especially in the industrial site and port.

2. Issues of special concern

2.1. Consequences of dredging activities

Over 40 million cubic meters of soil will be removed in the course of constructing an access channel to the port and dredging to a depth of 15 m at the bar in the northern part of the Gulf of Ob. This amount is unprecedented for the Russian Arctic. It exceeds the scope of previous operations dozens of times.

Dumping of soil on the bottom of the Gulf of Ob' was selected for the project. According to the provided assessment, the damage caused to the fish stocks in this case will be significantly lower than that in case of soil dumping onshore (Table. 6.6). This conclusion requires valid proof which is not provided.

During the discussion with stakeholders held on April 7, 2015 in the town of Salekhard, the representatives of the local population expressed their concern about the consequences of dredging operations' impact on the fish stocks. Based on the performed research, the Yamal LNG's specialists forecast temporary impact.

One should keep in mind that after construction of marine channels additional dredging will be required for maintenance of the designed depths. However, the environmental consequences of such operations are not analyzed by ESIA at a substantive level.

Dredging at the bar of the Gulf of Ob – which is one of the most productive water areas in the Arctic – may result into emerging conditions for more intensive income of salt sea water.

Such processes are well-known in a number of rivers in North America, Europe, and China. For example, incoming salt water in low-water years makes it necessary to construct protective barriers on the Mississippi riverbed regularly.

In winter, the central part of the Gulf of Ob becomes critically important for conservation of its fish stocks. Consequences of possible combination of mass fish mortality in the southern part of the Gulf and salt water income from the north require thorough analysis.

In connection with construction of a deep-water channel across the bar of the Gulf of Ob, the following additional issues require thorough consideration:

1. Possibility of additional amount of salt water penetrating via the channel during particularly adverse hydro-meteorological conditions (including those emerging once a decade or more seldom).

2. Assessment of risk of erosion of the channel ’s bottom and walls with water current and possible consequences of this process.

3. Impact of the additional salt water income on the fish stocks including that in combination with regular mass fish mortality typical of the Gulf of Ob.

4. System of monitoring of salt water income into the Gulf of Ob, prompt assessment of possible consequences of this process for the fish stocks and ecological status, possible technical measures for a short-term blockade of salt water income.

5. Efficiency of compensation measures, first of all, for the fish stocks.

2.2. Preparedness for oil and petroleum products spill response

Up to 1 million tons of condensate will be shipped from the Sabetta port on achieving the port’s design capacity. In addition, petroleum products required for operation of transport and construction equipment, the airport, etc., are already being delivered.

Summer shipment of oil from Novoportovskoye Field by sea began in 2014; winter delivery started in 2015. According to the plans of Gazprom Neft, annual amount of oil shipment from the Mys Kamenny terminal in the central part of the Gulf of Ob may reach 5-6 million tons by 2016.

The possibility of accidental oil spills in the Gulf of Ob is increasing. To liquidate their consequences for the fragile but utterly valuable, in terms of biodiversity, northern ecosystem (fish, marine mammals, and birds) will be a very difficult task even during the warm season which only lasts for 3-4 months.

During the cold season, as a rule, such operations are impossible, because nowhere in the world proven equipment and technologies are available for clean-

up of a large oil and oil products spill under ice cover. Hard-to-solve problems emerge already at the stage of timely oil spill detection.

Besides the lack of efficient equipment and technologies for oil and oil products spill response in ice conditions, any outdoor operations will be impossible or very dangerous for the personnel during a large part of the cold season because of the weather conditions (Polar Night, fogs, storms, extremely low temperatures etc.).

Lack of proven technologies for condensate spill response in the cold conditions of the Arctic waters is also a large problem.

The ESIA materials fail to provide analysis of these problems, possible accident scenarios and weather conditions etc., but they mention that by the beginning of the LNG plant operation Oil Spill Response Plan will be developed to ensure solving these problems.

As it was mentioned above, some of these problems cannot be solved so far in principle, under the current natural conditions, with the present-day equipment and technologies. Thus, without efficient technologies and methods, insufficient preparedness for oil spill response, especially in the cold time of year, is a significant problem for Yamal LNG Project as well as for other Arctic projects today.

The presented ESIA materials do not provide analysis of a possible impact of such spills on the wildlife of the Gulf of Ob. No information is given to show how consequences of such spills will be liquidated, including measures for conservation of the wildlife.

The ESIA materials should provide data on the following top-priority issues of OSR arrangement:

1. Allocation of responsibility between the operations' participants (Yamal LNG, Rosmorport, Marine salvage service, Atomflot, Sovkomflot, and other companies).
2. Limiting environment conditions for operations (wind, rough sea, ice conditions, visibility, temperature, etc.) for the current status and forecast, for the warm and cold time of year.
3. Seasonal and annual probabilities of exceeding the limiting environment conditions' parameters and, accordingly, impossibility of the main process operations (ships' landfall, mooring, liquid cargos loading etc.) – assessment of "response delay".
4. Procedures of operations termination because of environment conditions.

2.3. Impact on the wildlife including that in the cross-border context

The already existing data and results of comprehensive biodiversity research performed by the Project in 2013-2014 were used in developing the ESIA materials. However, the relevant sections are not sufficiently complete to make confident conclusions about absence of significant negative impacts. The conclusions about absence of certain rare or endangered species are based on short-term observations that include the abnormal, in terms of weather conditions, year 2013.

It is noteworthy that the Kara Sea along the Northern Sea Route to be used for the Yamal LNG products transportation, the Yamal Peninsula, and the Gulf of Ob are of great international importance for biodiversity conservation. This is a part of East-Atlantic flyway, a habitat of rare and endangered species with international status (Atlantic walrus, Siberian sturgeon, Steller's Eider, etc.), or those that serve as an indicator for observation of possible consequences of the global climate change (polar bear).

In this respect, not only deeper and more comprehensive analysis of these problems is required, but also measures should be developed for mitigation of possible negative consequences. Also, mechanisms of control of their implementation should be shown, as well as informing the stakeholders, including the international community.

Section 13.9.2 Avifauna may serve as an example of insufficiency of the provided ESIA materials. In respect of the factor "*loss of habitat through permanent land take*" it recognizes that "*cumulative impact is conservatively assessed as **High**, on the basis that long term species abundance may be affected. Yamal LNG's contribution to this impact is moderate, although nonetheless significant*".

In respect of "*noise impact*" and, specifically, "*in relation to noise disturbance from helicopter*" a conclusion is made that "*Uncontrolled, these cumulative impacts could disrupt breeding inside the License Area and beyond. Given the known decline in breeding numbers in this area, the unmitigated cumulative impact is cautiously assessed as **High***".

The ESIA materials do not tell specifically what measures will be taken in connection with these conclusions, how they will be implemented, and how information about the measures taken and their results will be provided.

Note: *The Fund is aware that presently the Project is paying great attention to development of Biodiversity Conservation Program and Action Plan. It would be reasonable to show in these documents what specific measures will be taken in connection with the ESIA conclusions, how they will be implemented, and how information about the measures taken will be provided.*

3. Other issues

Below is a list of more specific issues that require additional clarification and consideration in the course of further consultations and update of the ESIA materials:

- Insufficient justification of calculations related to water consumption and water disposal (sections 9.6, 9.4.2.4, 9.4.2.5, 9.4.3.2) as well as calculations of crossing over surface waters (section 9.4.2.6) and analysis of hazardous water-erosion processes and hydrological events.

- Reliability of assessment of noise impact during dredging operations, correctness of the mathematical tool applied which does not take into account the shallowness of the Gulf of Ob, and, respectively, the conclusions about noise impact on the mammals.

- Relevance of and compliance with requirements of the documents specified in the section Legislative and Policy Framework.

- A large number of errors and misprints. In certain places the text makes an impression of not a very good translation from English which makes it difficult to understand what the authors are trying to say.

- The document Environment and Social Impact Assessment has been provided as a PDF file, 953 pages in total. According to the best international practices, such documents are usually provided both as a full version and also by separate chapters.

4. Informational openness and public involvement in the discussion

A positive feature of the Yamal LNG ESIA materials is by far a higher level of environmental information openness, the public involvement in the discussion, etc., as compared to the practice established in the Russian Federation.

At the same time, the references to documents of governmental environmental evaluation that still cannot be accessed openly, including via the Internet (documents submitted for governmental environmental evaluation, expert groups' reports, minutes of public hearings etc.) are a shortcoming of the provided ESIA materials.

Also, public access should be provided to the Oil Spill Response Plan that not only is to be developed and approved by the moment of official commencement of the Sabetta port operation (announced by the Ministry of Transport in October 2014), but also is to be approved by environmental evaluation expert board.