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ESTONIAN ACADEMY OF SCIENCES



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To: Competent Authorities and Points of Contacts of the Espoo EIA in Denmark, Finland, Germany, Latvia, Lithuania, Poland, Russia, Sweden and Estonia

Communication on the current status of the assessment of trans-boundary impacts in the environmental impact assessments of the Nord Stream gas pipeline: the Espoo EIA and the Finnish, Swedish, Danish, German and Russian national environmental impact assessments

As the state of environment of the Baltic Sea is most critical and so far the efforts of the countries surrounding the Baltic Sea in improving it have been insufficient¹, it was a welcome initiative by the Helsinki Commission (HELCOM) to develop in 2007 the action plan² for reducing the pollution charges to the Baltic Sea and to improve the state of its environment by 2021. In particular, Sweden has set an example by integrating the relevant policies to a comprehensive report to the parliament³ on the state-supported actions for protecting the marine environment.

Like Sweden, most of the countries around the Baltic Sea have encouraged their citizens to support safe and healthy environment by promoting environmental awareness. Long-term efforts by the Helsinki Commission (HELCOM) for more than thirty years have resulted in a decrease of the pollution loads and the release of hazardous substances. In this light, the planned large-scale human intervention to the Baltic Sea environment through construction of one of the world's longest and largest underwater pipelines by Nord Stream AG has raised the question of whether the potential adverse effects to the nature are tolerable.

The available documentation of environmental impact assessments (EIA) of Nord Stream AG for consultation under the Espoo Convention (further called „Espoo EIA”) and national EIAs of Finland, Sweden, Denmark and Germany were discussed jointly by the Commission of Nature Conservation, Commission of Marine Sciences and Council of Energetics of the Estonian Academy of Sciences, with the main goal to identify the risks related to potential adverse trans-boundary impacts to Estonia and Estonian coastal waters.

In spite of the voluminous documentation presented by Nord Stream AG, this discussion revealed several major concerns, questions and uncertainties that need to be solved as a prerequisite for planning any significant interference with the vulnerable ecosystem of the Baltic Sea. This brief communication focuses on selected relevant environmental aspects in the context of the EIAs.

¹ WWF, 2008 - <http://www.wwf.fi/wwf/www/uploads/pdf/balticseascocard2008.pdf>

² http://www.helcom.fi/BSAP/MinisterialMeeting/en_GB/Ministerial_Meeting_2007/

³ http://www.riksdagen.se/webbnav/?nid=3777&doktyp=rfr&rm=2008/09&bet=RFR3&dok_id=GW0WRFR3



1. GENERAL CONCERNS

- 1.1. The national EIAs do not contain relevant information of the environmental impact of the gas pipe construction, maintenance and de-commissioning to Estonia and other “only affected parties”, including Latvia, Lithuania and Poland. The statements in the national EIAs that the questions of trans-boundary impact are discussed in the Espoo EIA, are not valid. The Espoo EIA provides only a passing reference to the environmental impacts not longer than two pages for Estonia and for any other affected party, and contains extensive lists of statements that are not supported by relevant data, analysis or discussion.
- 1.2. The examination of the EIA process has suffered from the lack of information on the eastern part of the Gulf of Finland, because the Russian EIA has not been made available for inspection by the affected parties although planned seabed intervention, mine explosion, release of toxic substances through sediment resuspension, and release of large amounts of potentially harmful rinsing solution in the Russian Exclusive Economic Zone (EEZ) involve high risks, similar to those treated in other national EIAs, and are expected to have relevant trans-boundary impact.
- 1.3. According to the Espoo EIA⁴ the explosion of mines in the Russian EEZ is scheduled to June-July 2009. That would not leave time for presenting the information to the affected parties about the extent and location of munitions and appears to ignore any potential feedback on transboundary environmental impact.
- 1.4. As all these actions in the Russian EEZ have trans-boundary impact to the European Union (EU) countries, the whole project fails to meet the EU standards and should be rejected on the grounds of the EU environmental legislation and the United Nations Convention on the Law of the Sea, unless information input from Russia will comply with the Espoo EIA and related EU EIA directive standards in the whole project area.
- 1.5. The Espoo EIA and the national EIAs describe environmental impacts based on parameters of an outdated version of the project from 2007–2008. After canceling building of the platform near Gotland, a new technical project was launched, with the use of considerably higher pressure and temperature in the pipeline. The related risks of technological failures and their environmental consequences are expected to be higher, especially in the Gulf of Finland and in the northern Baltic Proper.

2. MAJOR SPECIFIC CONCERNS

In the context of trans-boundary impacts to Estonia, three aspects of extremely high concern, involving potentially intolerable risk levels and/or direct threat to Estonia or its coastal waters are as follows.

2.1. Incomplete information on dumped conventional and toxic munitions, war toxins, and mercury.

The largest risk for the Baltic Sea in general (with substantial remote effect to Estonia and all other coastal states) form the potential adverse impact through explosion of dumped mines, leakage of chemical weapons and war toxins, and damaging of dumped mercury containers.

⁴http://www.nordstream.com/fileadmin/Dokumente/eia_permitting/Binder_1_Key_Issue_Munitions/Nord_Stream_Espoo_Report_English_Key_Issue_Munitions.pdf, p. 70.



A recent report⁵ reveals the dumping of more than 23000 mercury containers into the Sundsvall Bay at the eastern coast of Sweden between 1950 and 1964 and their re-location from the dump site to unexpected directions. According to the report of HELCOM⁶, only a part of dumping sites and quantities of munitions are known.

A large part of the relevant information is still classified. There is no adequate information about how close the dumping sites of different dangerous materials are located to each other. As the presented data are missing or obscure, an adequate risk analysis can be neither performed by Nord Stream nor evaluated independently by affected parties.

Estonian experts are specifically concerned because of the lack or incompleteness of data about munitions and war toxins in the immediate vicinity of Estonian waters: along the pipeline route in the Russian Exclusive Economic Zone (EEZ), Finnish EEZ within the Gulf of Finland, and in the international corridor in the Gulf of Finland.

Data on the Russian EEZ are missing completely; yet mines and dumped toxins are known to occur in the Russian EEZ, including sensitive areas near Gogland (Suursaari). Data on the Finnish EEZ appear to be incomplete and controversial in different EIAs. The Finnish EIA refers to up to 600–900 mines to be exploded within the anchoring zone of the pipe-laying barge whereas the Espoo EIA only mentions 29–31 mines directly on the pipeline route.

A major concern is the potential damage to these munitions and containers (which otherwise would rest within bottom sediments, and would be gradually covered by new layers of sediments sheltering minor leakages from penetrating into the water column) through explosions of discovered mines.

2.2. Re-mobilization of hazardous substances from the deeper layers of the seabed.

The pipeline is planned to cross an area in the Gulf of Finland, where certain layers of bottom sediments are highly polluted. The construction and even the later presence of the pipeline will inevitably lead to the release of large amounts of extremely toxic substances from these seabed layers into the water column.

According to a recent review article⁷, the highest concentrations of several most hazardous substances, such as dioxins occur within the seabed sediments, at the depths of 8–30 cm where they have accumulated from the 1940s until the 1980s. Left untouched, these layers would not be mobilized even under extreme meteorological conditions. They will be, however, extensively disturbed during the majority of seabed interventions during the cleaning of the route, during laying the pipeline, and, last but not least, during stabilization and subsidence of the pipeline.

⁵http://www.fireconference.se/download/18_ea33603118db4c9c0b80003060/Utreddning+r%C3%B6rande+kvikksilvertunnor+i+Sundsvallsbukten+2008-04.pdf

⁶<http://www.helcom.fi/stc/files/Publications/OtherPublications/1994Report-ChemicalMunitionsDumpedInTheBalticSea.pdf>

⁷ Verta M., Salo S., Korhonen M., Assmuth T., Kiviranta H., Koistinen J., Ruokojärvi P., Isosaari P., Bergqvist P.-A., Tysklind M., Cato I., Vikelsøe J., and Larsen M.M. 2007. Dioxin concentrations in sediments of the Baltic Sea – A survey of existing data, *Chemosphere* 67, 1762–1775.



While the Finnish EIA presents a few relevant geochemical studies of the upper 6 cm of the sediment only, it is alarming that the studies of hazardous substances in the slightly deeper layers are missing. Scientists and experts from Finland and Estonia have repeatedly communicated the relevant potential risks connected with the long-term environmental impact of substances stemming from Kymijoki, the greatest local pollution source of dioxins in the Baltic Sea in the past and a relevant source of methyl-mercury carried to the Gulf of Finland, at the early stages of compilation of both the Espoo EIA and Finnish national EIA.

Moreover, studies of several hazardous substances (including those listed in the EC regulation No 1881/2006 of 19 December 2006⁸, World Health Organization⁹, HELCOM documents and Stockholm Convention) in the Finnish EEZ sediments are missing or incomplete, and entirely missing for the Russian EEZ.

2.3. Cumulative and transboundary impacts of contaminants

The EIAs presented for the public hearings do not contain an adequate analysis of potential cumulative and trans-boundary impacts of remobilization and hydrodynamic re-distribution of contaminants in the Gulf of Finland and their bio-accumulation in natural processes in Finnish, Russian and Estonian EEZ-s.

Anisotropic transport patterns in the Baltic Sea, discovered several years ago in cooperation of Swedish, Finnish and Russian scientists¹⁰, may potentially resuspend toxic materials, chemical waste etc. in unexpected directions. A generic cumulative impact of sediment remobilization through seabed intervention and mine explosion is that sediment resuspended or disturbed by strong impulse loads is more susceptible to resuspension by natural hydrodynamic activity than undisturbed bottom sediments¹¹.

There is, therefore, a very high probability that pollution, toxic materials, chemical waste, etc., that will be resuspended during the construction works will remain mobile for a relatively long time and will be transported close to the southern coast of the Gulf of Finland.

There is no information about how these materials interact with other substances and with the local ecosystem, or how they will be accumulated in organisms and in the entire food chain. The existing generic data suggest that even very small concentrations of the toxic substances such as dioxins are of great risk to the people's health.

The evaluation of cumulative impacts and trans-boundary impact to Estonia cannot be complete without detailed consideration of data and processes in the Russian EEZ. It is

⁸ The Commission of the Communities, Commission regulation (EC) No 1881/2006 of 19 December 2006 setting maximum levels for certain contaminants in foodstuffs, Official Journal of the European Union (2006), p. L 364.
http://eur-lex.europa.eu/LexUriServ/site/en/oj/2006/l_364/l_36420061220en00050024.pdf

⁹ Berg M. van den. 2006. The 2005 World Health Organization Reevaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds. *Toxicological Sciences*, 93, 223–241.
<http://toxsci.oxfordjournals.org/cgi/content/abstract/93/2/223>

¹⁰ Andrejev O., Myrberg K., Alenius P., Lundberg P.A., 2004, Mean circulation and water exchange in the Gulf of Finland – a study based on three-dimensional modelling, *Boreal Environ Res.*, 9 (1), 1–16.

¹¹ Schoellhamer D.H., 1996. Anthropogenic sediment resuspension mechanisms in a shallow microtidal estuary. *Estuarine, Coastal and Shelf Science*, 43 (5), 533–548.



alarming that adequate information on these aspects that are of high concern for Estonia, is almost missing.

3. CONCLUDING REMARKS

As the above list reflects only a part of questions raised during the discussion of the documentation in question, Estonian scientists are concerned because of large uncertainties and partially superficial analysis of the risks of long-distance, trans-boundary impacts caused by the execution and operation of the planned pipeline by Nord Stream AG in the Danish, Swedish and German EEZs.

Another area of concern is related to similar, almost immediate impacts from the Finnish and Russian EEZs, all of which appear to be incompletely estimated in the current versions of the Espoo EIA and national EIAs.

While the most alarming aspect are the gaps in treatment of dumped weapons, war toxics and mercury which have the potential of completely destroying the entire Baltic Sea ecosystem for a long time, the analysis of the information about other hazardous substances in the immediate vicinity of Estonian waters does not meet the requests of best practice of the EIA process. The presented material has gaps in data from certain sea areas, in particular, from the Russian EEZ, which does not allow making of independent analysis of potential threats.

Having in mind that

- (1) the trans-boundary impacts connected with such large interventions into the marine environment should be analyzed adequately;
- (2) plans of large-scale developments and related activities that may potentially affect other coastal states in vulnerable environments should be fully transparent and made available to all affected parties;
- (3) the evaluation of specifically the most critical issues such as the damaging potential of conventional and toxic munitions, and remobilization and hydrodynamic transport of hazardous substances should be based on sufficient data and adequate methodology, and be described in clear and transparent manner, so that they can be verified by independent experts and by potentially affected parties;
- (4) major changes of the technical parameters of the planned activity should be accounted for in the relevant risk analysis,

we conclude that the presented versions of the EIA reports of the Nord Stream gas pipeline provide key information with major gaps or weaknesses, which does not allow to complete the decision process, and requires major efforts to update the information to meet the best practice for the EIAs.

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