

## Protecting the Baltic Sea's Environment – Nord Stream's Exemplary Environmental and Social Management during Permitting and Construction

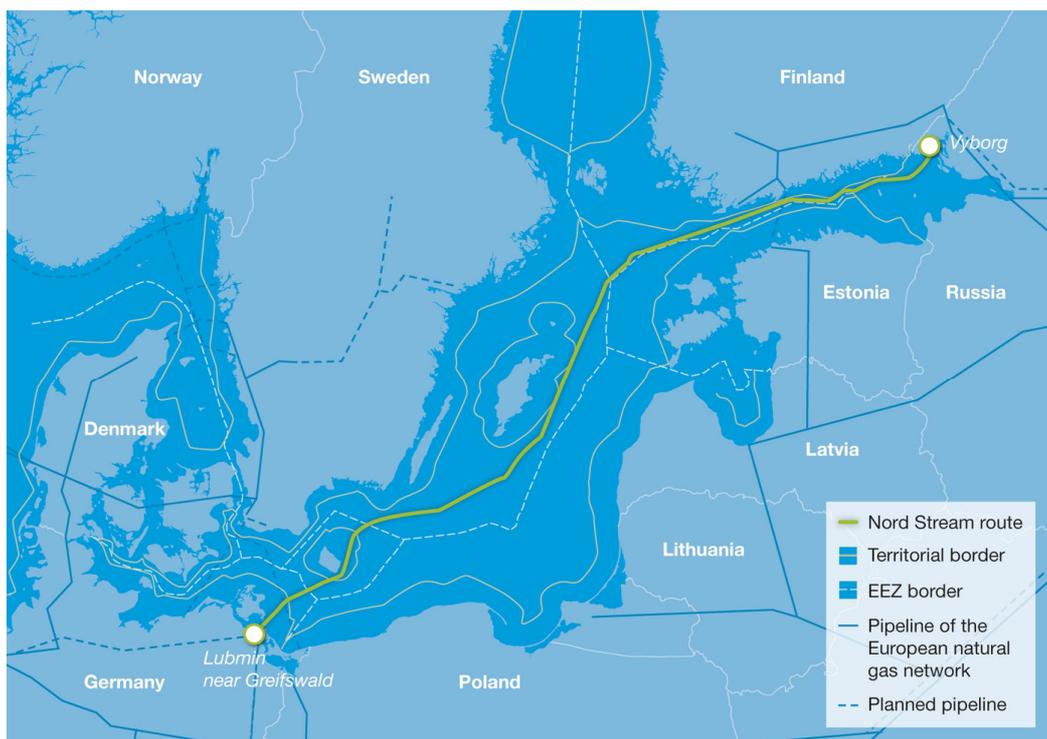
Werner Zirinig and Bruno Haelg, Nord Stream AG, Zug, Switzerland

Keywords: large gas transmission infrastructure project, environmental and social management, environmental impact assessment, stakeholder engagement, communication and grievance mechanisms, Espoo convention, Equator principles, IFC Performance Standards

### Background

On 8<sup>th</sup> November 2011 heads of governments and other political and business leaders were among more than 400 guests who gathered in Lubmin, Germany, at the landfall of the newly built Nord Stream natural gas pipeline. They came to celebrate the arrival of Russian natural gas through the new gas supply route for Europe and its entry into the European gas grid through which it will reach consumers all over Europe. Nord Stream did provide this key energy infrastructure (Figure 1) on schedule and on budget, contributing to a lasting commitment in the energy partnership between the European Union and Russia.

When fully operational, the Nord Stream twin pipelines through the Baltic Sea will have a transport capacity of 55 billion cubic metres of natural gas a year. That is enough to satisfy the energy demand of more than 26 million European households.



**Figure 1:** The Nord Stream pipeline route through the Baltic Sea.

Since April 2010 three pipe-laying vessels had been building that first leg of the Nord Stream 48-inch twin pipelines which came on stream in November 2011. The second leg is scheduled to be ready one year later in the last quarter of 2012.

The Nord Stream route, 1,224 kilometres long and entirely offshore through the Baltic Sea, passes through the Exclusive Economic Zones of Russia, Finland, Sweden, Denmark, and Germany and through the Territorial Waters of Russia, Denmark, and Germany with landfalls in Russia and Germany. These five nations had to give their approval before pipeline construction could start.

Because of the cross-border (or transboundary) nature, the Nord Stream twin pipelines and their possible impact to the Baltic Sea's environment were subject to extensive consultations with governments, authorities, nongovernmental organisations and members of the public in all the nine countries bordering the Baltic Sea. Nord Stream went into an extensive and open dialogue with all stakeholders to ensure that the different national laws of the five countries concerned and the relevant international conventions were met in the permit applications and that all sensitive issues with respect to the planned offshore natural gas transmission pipeline were discussed to the extent necessary.

The Baltic Sea, being a large body of shallow brackish waters with limited water exchange with the open sea, is a vulnerable eco-system and unique in terms of its flora, fauna, and human activities. Nord Stream has carefully studied these factors and taken them into account in the pipeline route planning. More than 100 million Euros have been invested in route alternative surveys and environmental impact assessment studies to ensure that the routing and the design of the twin pipelines through the Baltic Sea would minimise any possible adverse environmental impact. Extensive national focused Environmental Impact Assessments (EIA) and the international consultation process governed by the Espoo Convention (UNECE Convention on Environmental Impact Assessment in a Transboundary Context) had been key elements in the Project's permitting process.

Furthermore, as an essential part of the successful Project financing, the establishing and the effective use of an appropriate Environmental and Social Management System were demonstrated to the lenders group. The Equator Principles and the Performance Standards of the International Finance Corporation (IFC) have been met and will be maintained throughout the whole lifetime of the Nord Stream pipeline project.

## Aims

In addition to presenting a state-of-the-art technical pipeline design, Nord Stream has to demonstrate to the national authorities, the lenders, the nongovernmental organisations, and the public in all countries around the Baltic Sea that it is committed to a sustainable management of environmental and social impacts and risks which are associated with the implementation of the pipeline project. All pipeline construction work and the future pipeline operation have to be carried out in an environmentally and socially responsible manner aiming at protecting the unique eco-system of the Baltic Sea.

The national EIAs and the international public consultation process governed by the Espoo Convention have to be completed to receive national construction and operation permits from the five countries through which waters the Nord Stream twin pipelines pass.

As an essential part of the Project financing it has to be demonstrated to the lenders that the IFC Performance Standards and the Equator Principles are met. By establishing and maintaining an effective Environmental and Social Management System (ESMS) the company has to provide evidence of promoting a sound and sustainable environmental and social performance in a structured way. Environmental and Social Monitoring Programmes,

Environmental and Social Construction Management Plans, and Environmental and Social Operation Management Plans have to be put in place for fulfilling the obligations and commitments outlined in the national permits, in the lenders' sustainability framework, and in national and international standards and regulations.

## Methods

### Environmental and Social Impact Assessment

In all countries concerned a comprehensive EIA is a pre-requisite for a successful permit application to construct and operate a major gas pipeline system. Such assessments have been performed for Nord Stream by national and international well-acknowledged environmental experts according to the procedures established in national and international legislations and prescribed amongst others by the Espoo Convention and the European Union EIA Directive. International expert workshops have been organised to define common standards and key topics especially for the transboundary Espoo EIA consultations.

The environmental and social components associated with the Nord Stream offshore pipeline project are:

- Physical and chemical environment comprising water column, seabed sediment, atmosphere, and physical processes
- Biological environment comprising plankton, marine benthos, fish, sea birds, marine mammals, and nature conservation areas
- Social and socio-economic environment comprising fisheries, shipping and navigation, tourism and recreation, cultural heritage, offshore industry, existing cables, military operations, and dumped conventional and chemical munitions.

The types of planned Project activities with potential impact on these environments include seabed intervention works, mine clearance, all construction, vessel movements and anchoring, test water discharges, operation, and pipeline decommissioning. Unplanned events, though highly improbable, include fuel and oil spills, disturbance of dumped conventional and chemical munitions, and pipeline failure.

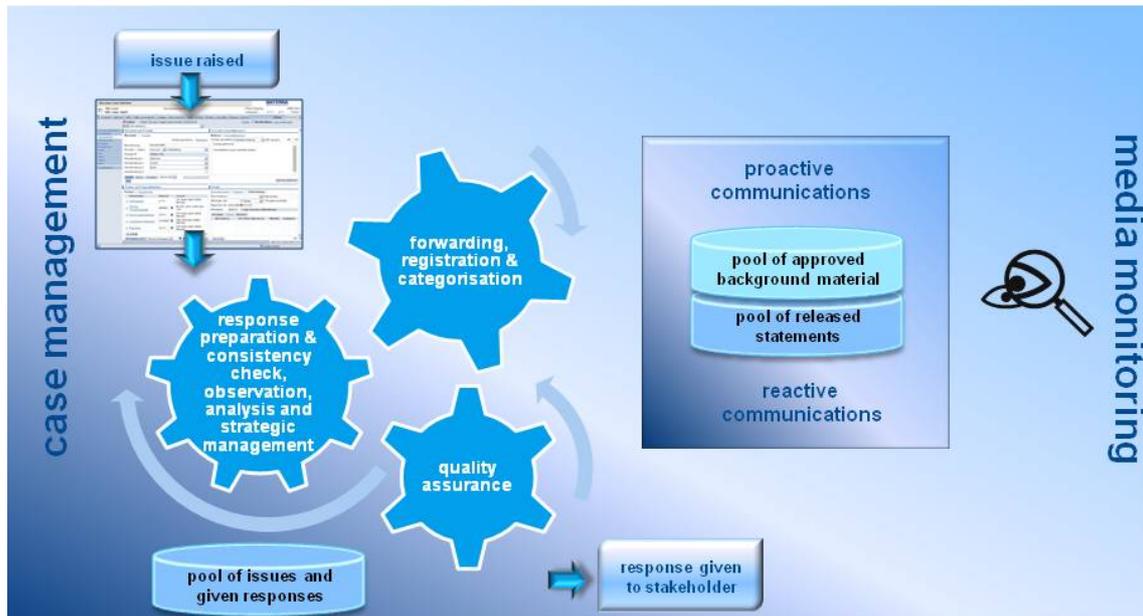
### Communication and Grievance Mechanisms

Nord Stream is a Project with important geopolitical dimensions. Every step of the Project is the subject of political and public debates and closely followed by the media, which have to be accurately monitored to allow appropriate reactive communication. To disseminate full information about the Project, Nord Stream established an extensive and transparent communication strategy using various communication channels. Nord Stream's website serves as a constantly updated project information platform for all stakeholders. Additional means of providing information on the project include regular newsletters, press releases, and a truck-mounted mobile information exhibit which was travelling to towns at and near the Baltic Sea coast.

Members of the public, nongovernmental organisations, contractors and their workers, and other interested parties might certainly like to contact Nord Stream throughout the Project. Therefore, a structured communication procedure for issue management has been developed by using customised Customer Relationship Management (CRM) software. This tool makes it possible to record, manage and respond effectively any grievances arising from stakeholders across all functions and during the whole Project lifetime (Figure 2).

Nord Stream consulted widely with governments, authorities, experts and stakeholders in all Baltic Sea countries to ensure that the design, routing, construction and operation of the twin pipelines will be safe and environmentally sound. This international dialogue began in 2006 and over 400 presentations, exhibitions, stakeholder events and meetings occurred until the

last permit was granted in February 2010, including some 25 official public hearings organised by the national authorities of the nine Baltic Sea countries. To give easy access to a broad public during the synchronised public participation phases in all countries around the Baltic Sea the Espoo transboundary environmental impact assessment documentation and selected national EIA documents were translated into the nine languages of the Baltic Sea bordering countries.



**Figure 2:** Overview of Nord Stream's issue management process, which is supported by a customised Customer Relationship Management System (CRM).

### Environmental and Social Management System

After national permits had been granted by the five nations concerned an Environmental and Social Management System (ESMS) was developed as integrated part of Nord Stream's Health, Safety, Environmental and Social Management System (HSES-MS). The ESMS (Figure 3) provides the framework for the Company's performance standards and procedures for every stage of the Project. That ensures that everyone engaged in the stages of the Project, including surveying, construction, pre-commissioning, commissioning, and operations, has a consistent approach towards the environment, social matters, standards, and requirements.

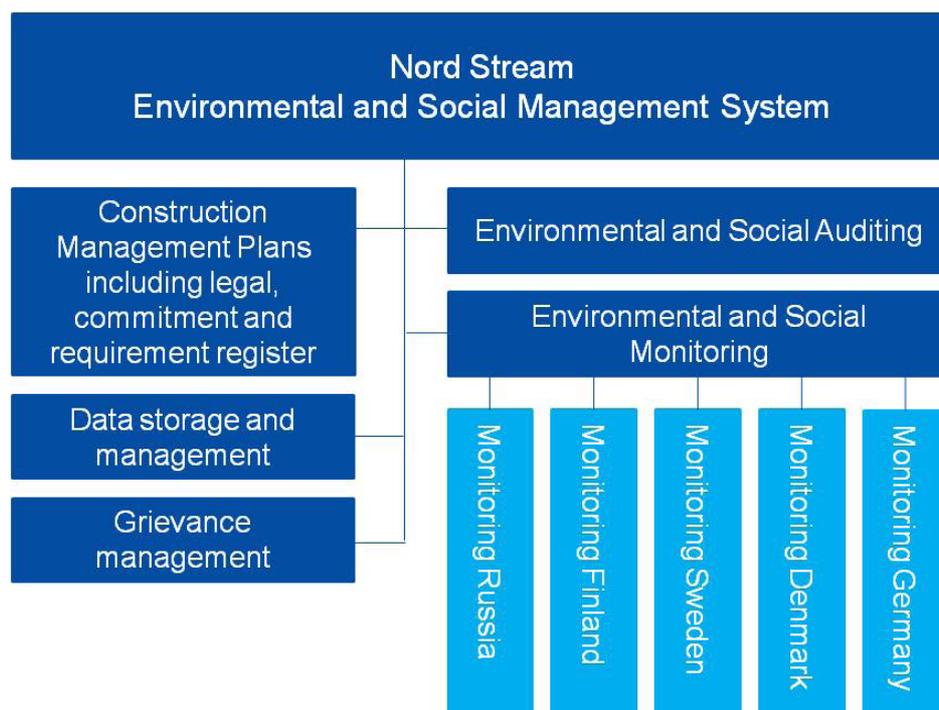
Within the ESMS all commitments from the national and transboundary EIAs and all obligations defined in the permits from each country are registered and the correspondent environmental and social management and monitoring actions are implemented through the development of a series of topic- and activity-specific Construction (CMP) and Operations (OMP) Management Plans.

Each Management Plan identifies

- necessary mitigation measures and management actions
- environmental and social monitoring and survey requirements
- relevant Key Performance Indicators (KPI) and methods for assessing performance against them
- verification procedures to ensure that objectives are met.

A lot of work is carried out by contractors and subcontractors. They were required to develop and implement Contractor Implementation Plans (CIP) that document how the management and monitoring activities are implemented into their daily work and monitored.

Further, regular internal and external auditing by Nord Stream's ESMS team and quarterly/yearly reporting to authorities and lenders are key activities to follow-up all environmental and social impact mitigation activities during the Project's whole life-cycle.



**Figure 3:** The elements of Nord Stream's ESMS during the Construction Phase.

### Environmental and Social Monitoring

With main focus on the Construction Phase country specific tailored Environmental and Social Monitoring Programmes (EMP) have been developed and agreed with the national authorities. Nord Stream did continue the national approach from the permitting process in order to ensure compliance with the requirements of the respective jurisdictions of the five countries concerned. However, the international Espoo consultation process had also enacted some environmental monitoring of transboundary impacts, which then was covered within the programmes of the respective countries.

Such environmental monitoring is a direct response to the impacts assessed in the national EIAs. The EMPs are designed as a means of verifying the conclusions reached in those EIAs. Through consideration of the 'source-pathway-receptor' linkages, Nord Stream has for each significant construction activity identified environmental monitoring requirements that are connected with

- the scale and nature of the activity
- the duration of the potential impact
- the assessed potential level of impact
- the sensitivity of the local environment within the zone of influence of the activity.

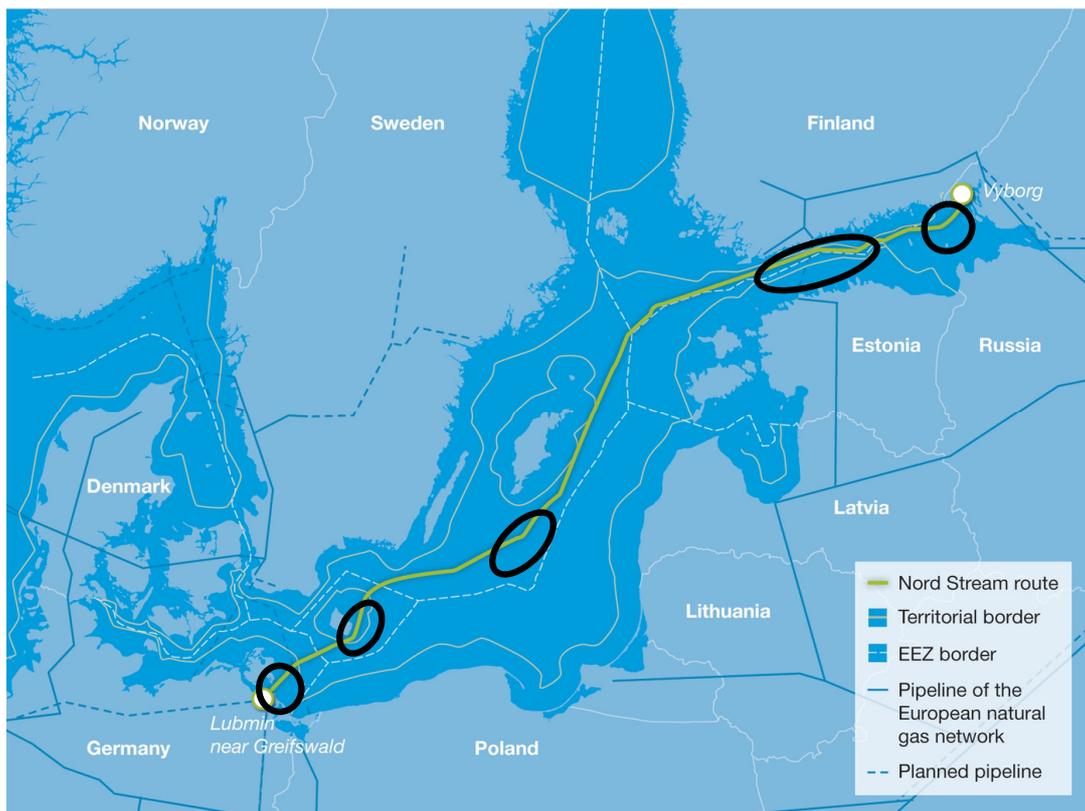
The environmental monitoring requirements associated with each activity also vary geographically and temporally according to any seasonally dependent sensitivity.

Overall, the environmental and social monitoring scope comprises

- Baseline studies prior to construction dealing with turbidity, sedimentation, contaminants, fish, benthic fauna, and hydrographic effects
- Environmental change monitoring during munitions clearance and construction activities measuring seabed morphology, turbidity, sediments, and contaminants
- Recovery monitoring after pipelay and during operation describing seabed morphology, recovery of benthic fauna, fish and fishery, and hydrographic effects.

The resulting environmental monitoring activities focus on sensitive and selected areas, like Russian landfall, Gulf of Finland, shallow areas in Sweden, East of Bornholm, and shallow areas in Germany (Figure 4). All in all more than 20 renowned environmental survey companies are involved in Nord Stream's EMP at an overall investment of around 40 million Euros.

Approximately 1,000 fixed sampling stations monitor 16 scientific parameters during pipe laying activities and during the first years of operation, and they establish a framework for mitigating and reporting the Project's interference with its natural and social environment.



**Figure 4:** Areas shown in black circles are selected for the country specific tailored Environmental and Social Monitoring Programme: Russian landfall, Gulf of Finland, shallow areas in Sweden, East of Bornholm, and shallow areas in Germany.

## Results

“The gas pipeline came, but the Gulf of Finland was saved”, one day in June 2011 this was the headline of the main editorial in “Helsingin Sanomat”, the biggest daily newspaper in Finland. It headed a highly positive editorial on the completion of Nord Stream’s Line 1 offshore construction, focusing on Nord Stream’s successful minimisation of environmental impacts. The newspaper notes that according to initial assessments, the impact has been as expected as or even smaller than expected. Furthermore, the editorial emphasises the exceptionally extensive environmental evaluations carried out for the Nord Stream project. The newspaper applauds the fact that regarding Nord Stream risks were carefully analysed and even the route of the pipeline was adjusted during the environmental evaluations. According to the newspaper, the minimisation of environmental impact indicates that communications have been handled effectively in the project. Furthermore, the editorial demands that risks should be minimised also in other projects affecting the seabed. The editorial concludes that the construction of Nord Stream has mobilised much less nutrients and toxins from the seabed than the continuously increasing dredging related to harbours and shipping routes.

Environmental and social concerns were central to the Nord Stream project. Will the pipeline project affect spawning areas for fish, seal breeding grounds, or migratory patterns for birds? Could war-time munitions dump sites be disturbed, and what impact will mine clearance have? Will the pipelines on the seabed block bottom trawling routes of the Baltic Sea commercial fishery community?

The Project’s five national EIA reports, its overall Espoo Documentation and the comprehensive Environmental and Social Monitoring Programme give answers to these and many other questions and provide an exhaustive analysis of the Baltic Sea eco-system and the seabed along the pipeline route. The EIA reports and the discussions with the competent authorities address the consideration of pipeline route alternatives and the selection criteria for the Nord Stream route, which led to a safe and environmentally acceptable pipeline route through the Baltic Sea.

The EIA findings show that the greatest effects from the pipeline project are limited to the pipelines’ construction phase only. It is assessed that all risks arising from Nord Stream’s offshore activities are acceptable according to international environmental standards and that the majority of impacts are insignificant and will have no long-term effects on the Baltic Sea environment.

All results of the environmental monitoring surveys, which are up to now carried out during the activities of pipeline construction in 2010 and 2011, are in line with the assessed conclusions in the EIAs. Each quarter Nord Stream reports the environmental monitoring results to the national authorities and agrees upon any necessary adjustment of the monitoring programme. The results of Nord Stream’s environmental monitoring activities received very positive feedback from the authorities, and they conclude that Nord Stream’s construction so far has not caused any unforeseen environmental impact in the Baltic Sea. The actual values measured confirm that the environmental impacts from the Project are minor, locally limited and short term only.

Nord Stream has implemented the Project in accordance with the relevant national and international laws and regulations and in conformance with the IFC Performance Standards, the Equator Principles, ISO 14000ff, and the OECD Common Approaches. Construction and Operation Management Plans and country specific Environmental and Social Monitoring Programmes are in use and cover all Project relevant commitments and obligations during the Project phases of construction and operation.

Regular quarterly and yearly reporting towards authorities, lenders and the public demonstrates in a transparent way the Project's progress against its environmental and social requirements.

### **Summary/Conclusions**

Nord Stream consists of two natural gas pipelines through the Baltic Sea, directly linking the European Union to some of the world's largest gas reserves in Russia. In close cooperation with the competent authorities and the lenders the project has set new benchmarks for international teamwork and collaboration between stakeholders across Europe and Russia. Transparent communication with focus on dialogue and respecting stakeholders' concerns was essential to overcome reservations and to keep the project timeline.

As the Baltic Sea is unique in terms of its flora, fauna, and human activities, Nord Stream has carefully studied all these factors and taken them into account in the planning of the pipeline route and the construction activities. The implementation of an exemplary Environmental and Social Management System enables Nord Stream to closely follow up all commitments and obligations, and by this ensures a well received reporting to authorities and stakeholders.

The results from Nord Stream's Environmental and Social Monitoring Programmes after completion of Line 1 are encouraging: Nord Stream's pipeline construction so far has not caused any unforeseen environmental impact in the Baltic Sea. All the monitoring results show that the impacts are minor, locally limited and short term only.