Baltic Sea Perspective on
- Building a Gas Pipeline and
- Oil Spills

Dr Juha-Markku Leppänen
Head of the Monitoring and Assessment Unit, Marine Research Centre,
Finnish Environment Institute (SYKE)
Content

1. Process concerning the Nord Stream Pipeline
   • Environmental concerns
   • Legal framework
   • Permitting process

2. Intentional oil spills and accidents
   • Illegal oil spills and their monitoring
   • Impacts on the marine environment
   • Response activities
   • Response organization in Finland
1. Nord Stream Gas Pipeline

- The biggest construction work in the Baltic Sea
- Two parallel pipes
- Length 1.220 km
- Connects Russian gas to the Central Europe
Environmental concerns are mainly related to the construction phase

- Route goes through nature reserves (Natura 2000 sites) and areas with dumped munitions, natural heritage and fishing as well as maritime activities.

- Sea bed interventions during constructions
  - Munition clearance
  - Trenching, dredging and backfilling
  - Placement of fill material, rock (gravel) placement
  - Placement of (prefabricated) support structures
Seabed intervention works in Finnish waters
Concerns

- Increases risk for ship accidents
- Resuspension of bottom sediments and release of pore water
- Bottom sediments contain nutrients and hazardous substances
- Dumped munitions contain toxic chemical warfare agents
- Prevents bottom trawling
- Destroys cultural and scientific heritage
Legal Framework

- An Environment Impact Assessment (EIA) must be completed in order to obtain a national construction and operation permit
  - An EIA is a national procedure for evaluating the potential impact of a proposed activity on the environment
- The Espoo Convention on the Environmental Impact Assessment in a Transboundary Context requires signatory countries to inform one another if a proposed activity might have an impact across national boundaries
  - “Parties of Origin” (Russia, Finland, Sweden, Denmark, Germany)
  - “Affected Parties” (Estonia, Latvia, Lithuania, Poland)
  - First large-scale test in the Baltic Sea
The objectives of the Environmental Impact Assessment (EIA) documentation

- Meet requirements of legislation and environmental standards
- Identify, mitigate and avoid possible negative effects on the environment, human health and welfare
- Ensure environmental factors are considered in the decision-making process
- Develop the best plans for environment management and monitoring
- Inform competent authorities and the public
Nord Stream’s EIA documentation

- **Description of the Project and the route**
- **Physical environment and processes**
  - Water column, seabed and atmosphere
- **Biological environment**
  - Plankton, benthos, fish, sea birds, marine mammals, and nature conservation areas
- **Social and socioeconomic environment**
  - Fisheries, shipping and navigation, tourism and recreation, cultural heritage, offshore industry, and military operations
- **Revisions during the project**
EIA Process

- Interactive process
- National and international consultations
  - Considerable improvements during the process
  - No route alternatives on land
- In Finland
  - EIA according to the Finnish EIA Act
  1. Government’s approval for the activity and to the delineation of the course for the pipe lay (the exploitation right) according to the Finnish Act on the EEZ
     - Ministry of Employment and the Economy
  2. Permit for construction according to the Water Act
  3. Permit for munitions clearance according to the Water Act
     - Western Finland Environment Permit Authority
Regional State Administrative Agency for Southern Finland granted the permit on 12.2.2010 with conditions

- Harm to marine environment small-moderate
- Main harm to fisheries
- Preconditions
  - Harm to the marine environment and its use to be avoided
  - Dynamic pipelay vessel to be used
  - Supporting bottom fillings to be made according to the application avoiding resuspension as much as possible
  - Specific requirements for maritime safety
  - Compensation for fisheries
  - Detailed monitoring programme
2. Oil spills and accidents

- Baltic Sea heavily trafficked
- 15% of the world’s cargo transportation
- 2000 ships at any moment
- Main Russian oil export route through the Gulf of Finland
Boosting traffic is increasing possibilities to major accidents

<table>
<thead>
<tr>
<th>Year</th>
<th>Name of ship</th>
<th>Tons of oil spilled (t)</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>Fu Shan Hai</td>
<td>1,200</td>
<td>Denmark/Sweden</td>
</tr>
<tr>
<td>2001</td>
<td>Baltic Carrier</td>
<td>2,700</td>
<td>Denmark</td>
</tr>
<tr>
<td>1998</td>
<td>Nunki</td>
<td>100 m³</td>
<td>Denmark</td>
</tr>
<tr>
<td>1995</td>
<td>Hual Trooper</td>
<td>180</td>
<td>Sweden</td>
</tr>
<tr>
<td>1990</td>
<td>Volgoneft</td>
<td>1,000</td>
<td>Sweden</td>
</tr>
</tbody>
</table>
Illegal oil discharges in 2008

- Any discharge of oil or oily mixtures into the Baltic Sea area is prohibited (IMO/MARPOL)

- Most parts of the Baltic with regular traffic zones are covered by national aerial surveillance
  - 4603 flight hours in 2008

- CleanSeaNet satellite surveillance service by EMSA
  - 608 satellite scenes 2008

- 210 oil spills were observed
  - Mainly < 1 m³
  - No spills > 10 m³
  - Total amount 63 m³

- 5 m³ of accidental spills

- 21 cases (10%) the polluters were identified

- Finland and Sweden can pose administrative fee

- All waters covered by territorial waters or EEZ
The impacts of oil on the marine environment

- Wide-ranging impacts on the marine environment and human activities
  - serious impacts on ecosystems
  - harming fish farms and sea fisheries, recreation and tourism
  - limiting the use of sea water in industrial processes

- The effects varies based on
  - type of the oil
  - season of the spill – ice cover in winter!
  - geographic area
Response activities

- HELCOM coordinates at the Baltic Sea level to
  - ensure swift national and international response to maritime pollution incidents
  - Combating Manual defines the operational principles
  - ensure that in case of an accident the right equipment is available and routines are in place to respond immediately in co-operation with neighboring states
  - coordinate the aerial surveillance of maritime shipping routes to provide a complete picture of sea-based pollution around the Baltic, and to help identify suspected polluters
Operational response

- HELCOM AIS data
  - Information on the oil

- Aerial surveillance
  - Distribution and amount

- HELCOM SeaTracWeb
  - Information on oil drift

- HELCOM MARIS
  - Information on sensitive areas

Response operations
AIS as a Tool Against Marine Pollution

HELCOM AIS data combined with the oil drifting model Seatrack Web

- increases the possibility to identify the vessels in charge of illegal oil spills
- gives evidence to court

AIS on-line information is used in oil and chemical response operations

- for coordinating the operations
- for warning other traffic about the operations

For guaranteeing most effective response measures AIS information should also include

- the type, amount and location of cargo

Finnish Navy oil response vessels Halli and Hylje
Aerial surveillance photos taken by Finnish Border Guard
MARIS - Maritime Accident Response Information System
Environment sensitivity

- Assess the effects of oil spill on different populations
- Assess the effectiveness of different oil combating methods to safeguard different populations

*(OILECO Project http://hykotka.helsinki.fi/oileco/)
Prioritization of oil combating (OILECO Project)

- Vulnerable species
- Protected areas
- Occurrences of keystone species
- Based on occurrences of 100 species (e.g. insects, plants, algae and birds) evaluated as vulnerable to oil spills
  - Nationally threatened or near threatened and dependant on coastal habitat types
  - Species that have predictable occurrence pattern and can be safeguarded with current methods
OILECO Project  http://hykotka.helsinki.fi/oileco/)
Sensitivity

- All taxa can suffer from the effects of oil, but there are significant differences in the recoverability of populations after the accident.
- There are differences in the effectiveness of oil combating equipment to safeguard different species:
  - e.g. birds are extremely difficult to safeguard with oil booms.
- Specific areas with high number of vulnerable species can be identified in the Gulf of Finland.
Contingency planning

- Detailed and objective analysis of vulnerable species and their occurrences is needed for oil spill contingency planning.
- Oil combating should be prioritized according to conservation value, recovery potential and effectiveness of oil combating methods to safeguard vulnerable species.
Response organisation

- Finnish Environment Institute (SYKE) is the competent governmental pollution response authority in Finland
  - give an order to undertake salvage activities which are intended to avoid or limit the pollution risk
- Finland implements the "Polluter-Pays Principle". In cases when the polluter cannot be identified, the national Oil Pollution Fund can cover the costs for oil pollution response.