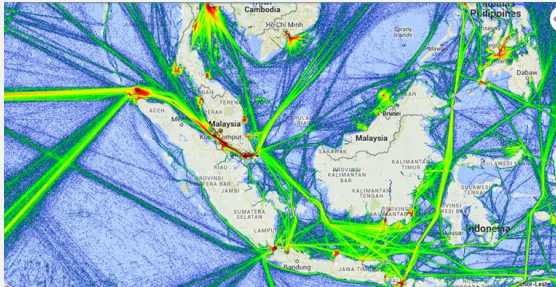


# Strategic Management of Navigational Safety and Environmental Protection

## 9<sup>th</sup> Cooperation Forum

Yogyakarta, 26. September 2016



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Chief Project Manager  
Nature and Environment  
COWI  
Denmark

A systematic, transparent and science based tool to region-wide strategic risk assessment and risk management

# Objectives of a Navigational Safety Project

## > Objective:

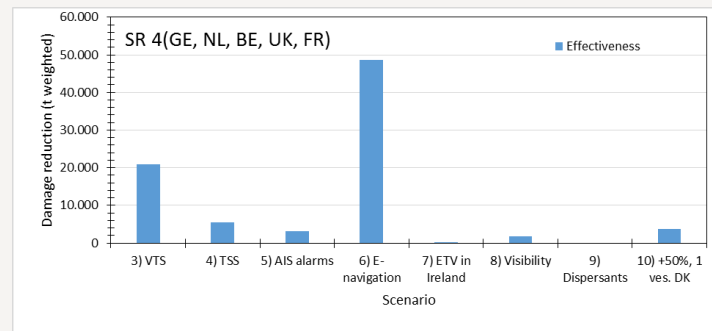
Clear and consistent support to TTEG for management of navigational safety and environmental protection in the SOMS; in particular **Project 10**: "Future Development of Safety of Navigation and Marine Environment Protection in the SOMS"

## > Method:

Model of all major processes that influence risk of accidents and env. damage ("what- if")

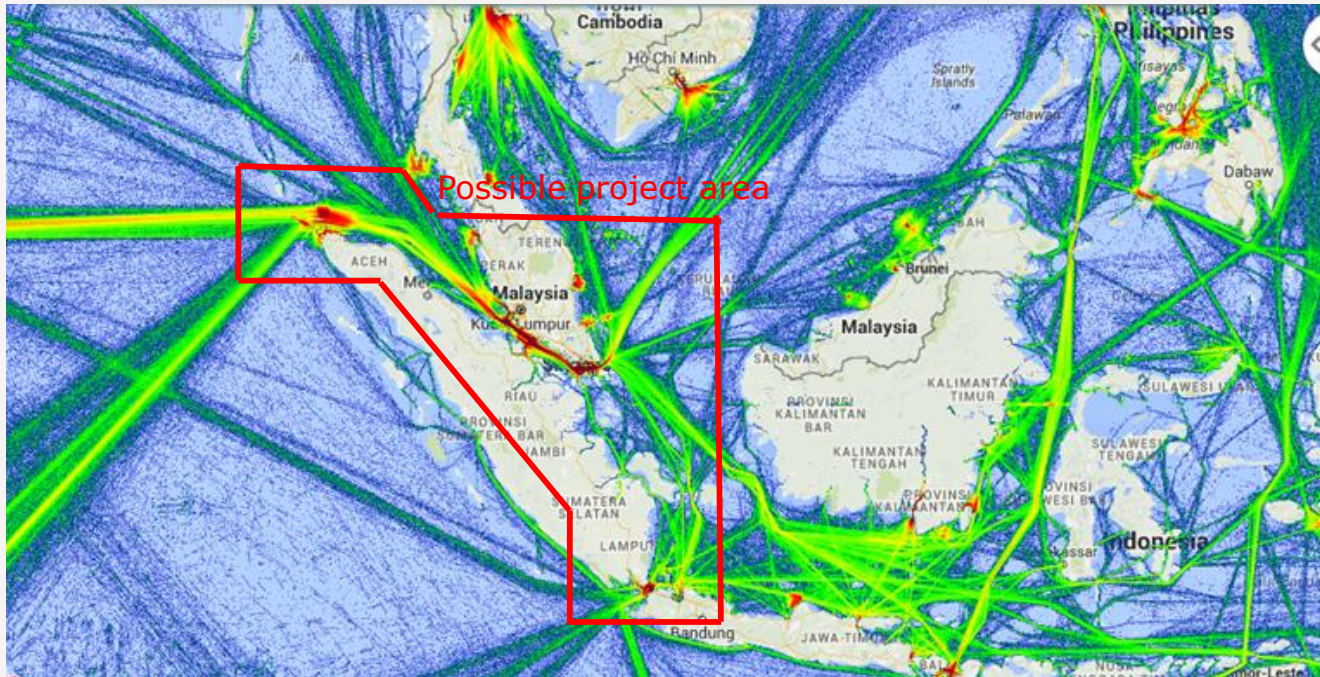
## > Result:

- Quantification of risk for different scenarios (technologies and policies)
- Comparing the scenarios with regard to their effectiveness and cost-efficiency.



## Why strategic risk assessments

**Establish analytical overview on the effect of introducing different technologies and policies**



Experience: Well examined references from 6 projects: Baltic Sea, North Sea, Mediterranean, Timor-Leste.

# Risk Assessment

## Accidents

### > Advanced Accident Modelling:

#### - Collision

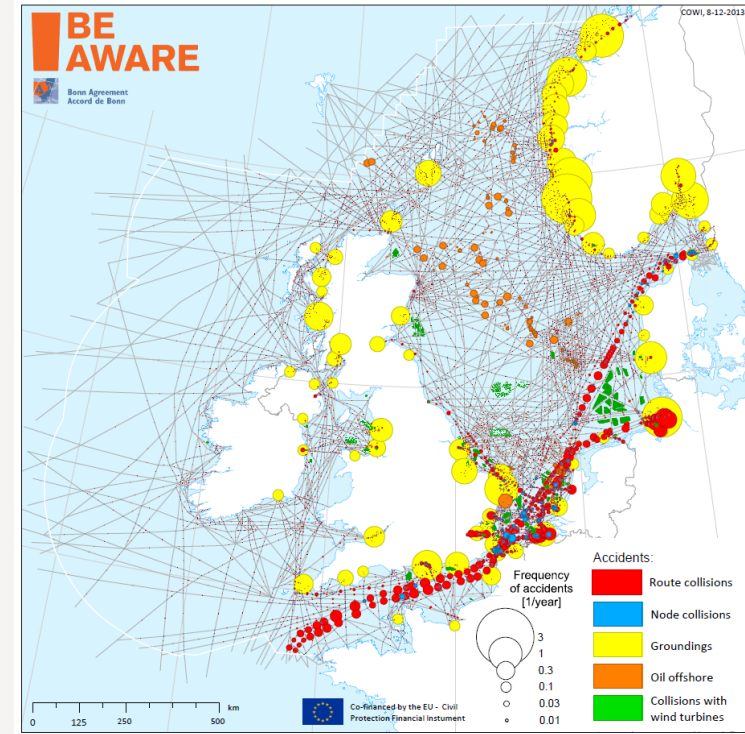
Ship-ship, crossing,  
Ship-ship, en-route,  
Ship-offshore installation,  
wind turbine, anchoring

#### - Grounding

#### - Fire, explosion, capsizing

### > Risk Reduction Measures (VTS, TSS,...)

New issues mentioned at Safety@Sea Conference: "CCC"= Competence/ Cooperation/ Communication, AIS for small craft vessels, Dynamic risk modelling,...)





# Risk Assessment

## Consequence

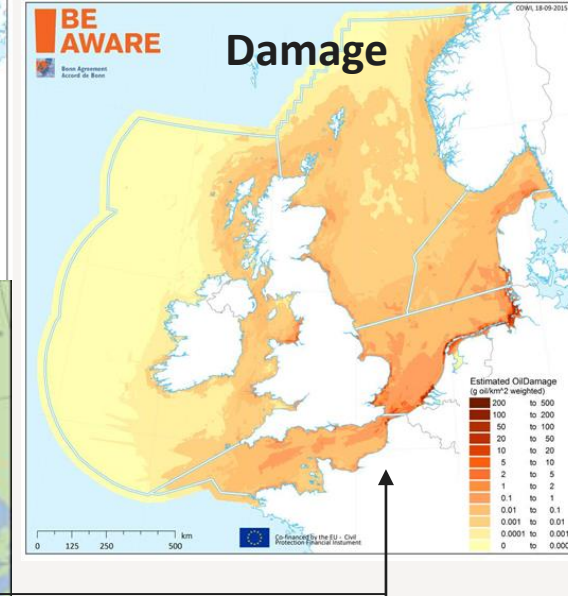
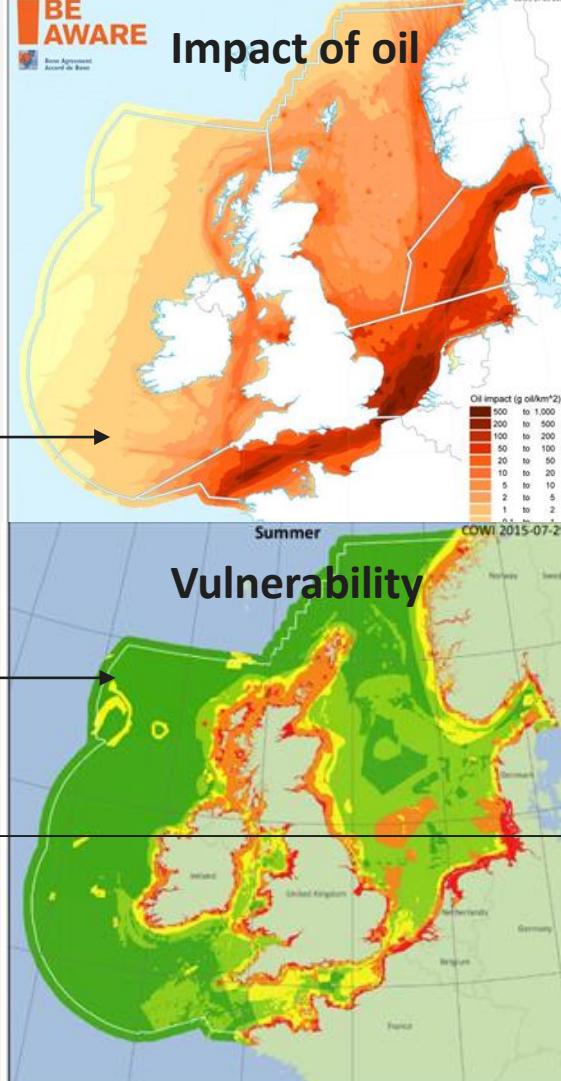
- Risk of spills
- Drift, spreading
- Modelled Response

x

- Vulnerability

=

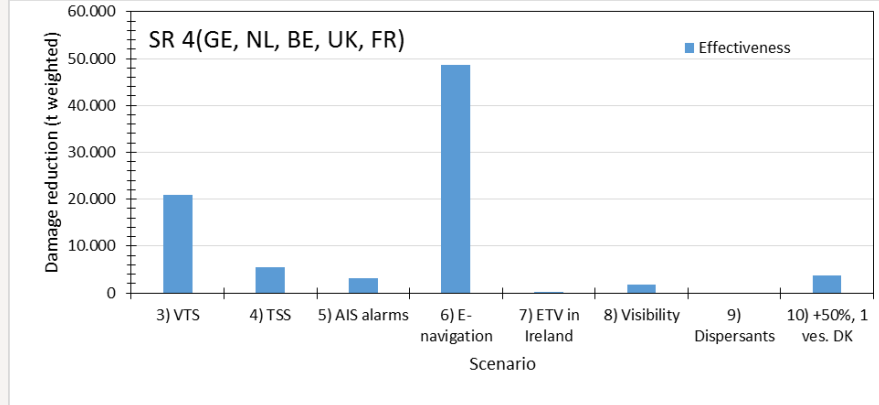
- Risk of Damage

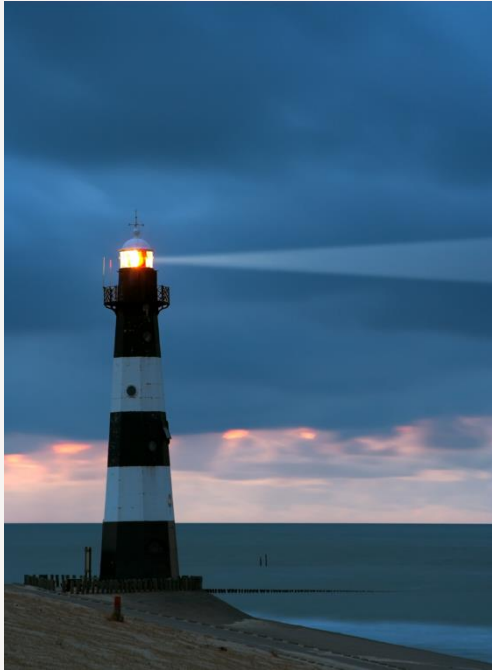


## Risk Assessment

### Results/deliverables

- > Common identification of preferred scenarios
- > Based on effectiveness, cost-efficiency
- > Results applicable for:
  - > Investment planning of preparedness (Modern technologies for risk reduction and response)
  - > Spatial planning (PSSA, alternative routing, infra structure,...)
  - > Policy option evaluation (Navigation, environment, nat. resources)



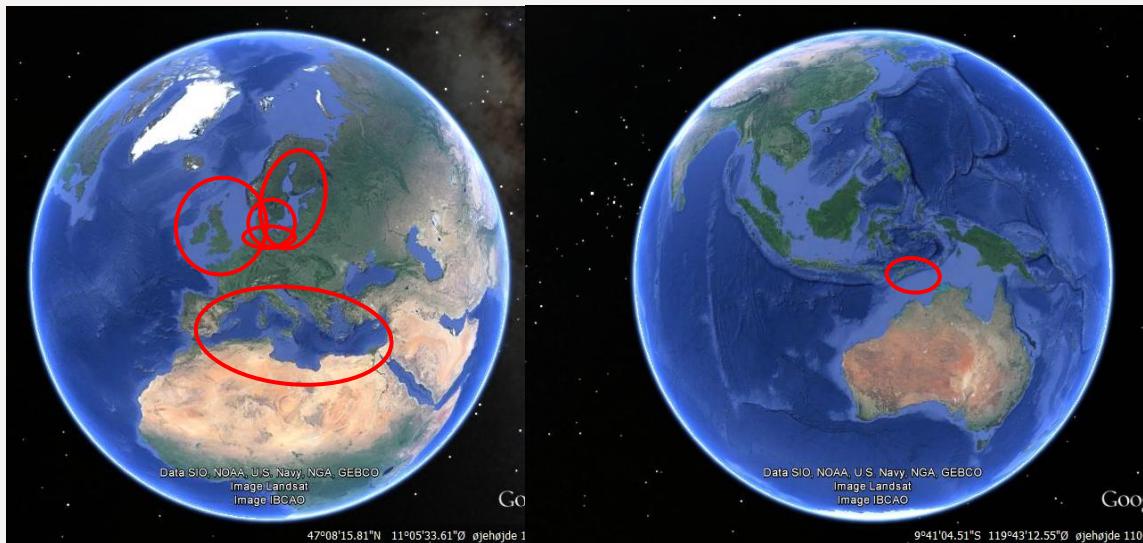


Thank you

## Experience

**Since 2006 COWI carried out six sea-region wide navigational risk assessment projects**

1. North Sea  
<http://www.bonnagreement.org/be-aware/ii/final-report>
2. Baltic Sea  
<http://www.brisk.helcom.fi/>
3. Mediterranean Sea  
<http://www.medess4ms.eu/>
4. Timor-Leste
5. Danish Waters
6. German parts  
North Sea and Baltic Sea





## Close inter-action between all involved parties – working groups

### > **COWI** (Core-team of approx. 15 experts)

- Project management support
- Advanced analysis:
  - Marine traffic, goods traffic, accidents and releases
  - Drift & fate
  - Environmental and socio-econ vulnerability
  - Operational oil recovery, Emergency response procedures
  - Commander, Admiral Danish Fleet, P.S. Poulsen
  - Health, Safety and Environment

### > **Specialist partners**

- Danish Embassies
- Response equipment performance (DESMI)
- DMA (Danish Maritime Authority)
- Regional Scientific Institutions (Universities,...)
- ....

### > **TTEG**

Active dialogue from start to end regarding i.a.:

Scope  
Method  
Input-data / information  
Result evaluation  
Presentation



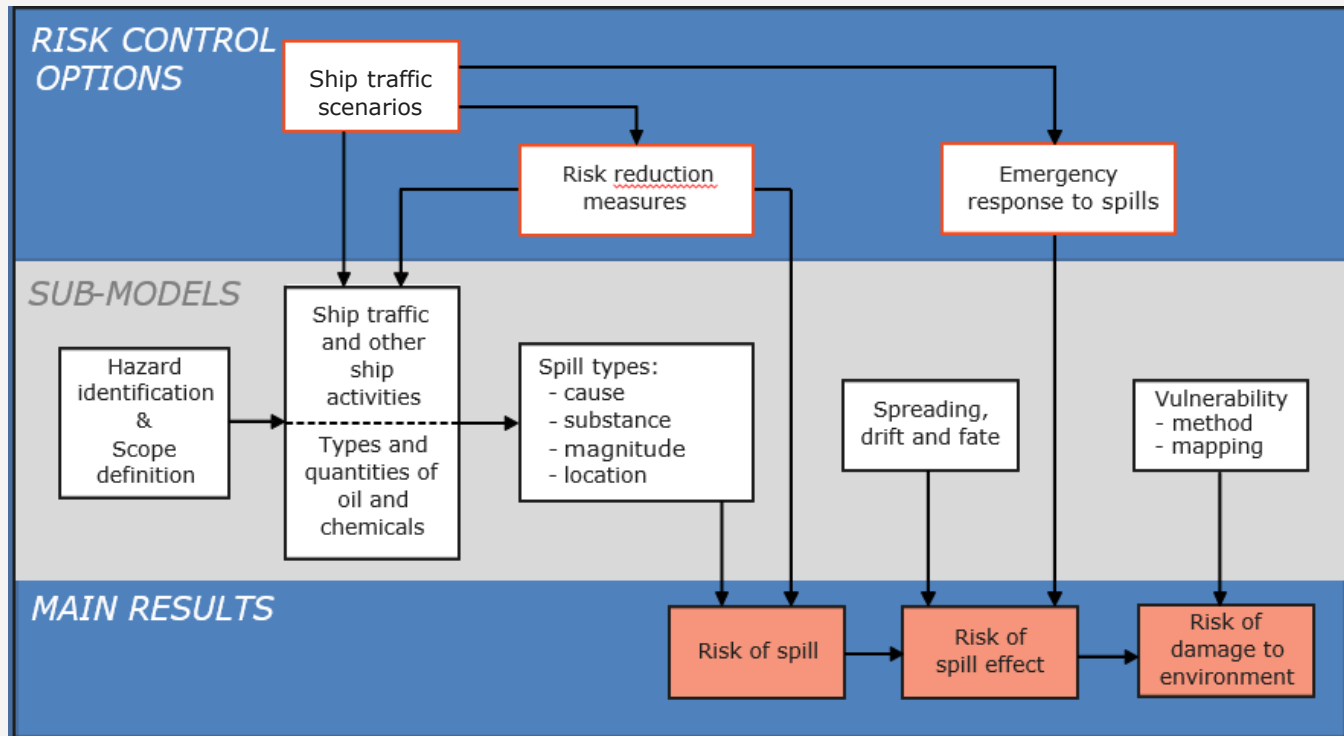
## Method

Scenario  
(Prognosis,  
technologies,  
policies)

Scientific and  
academic  
analysis

Quantitative  
consequences

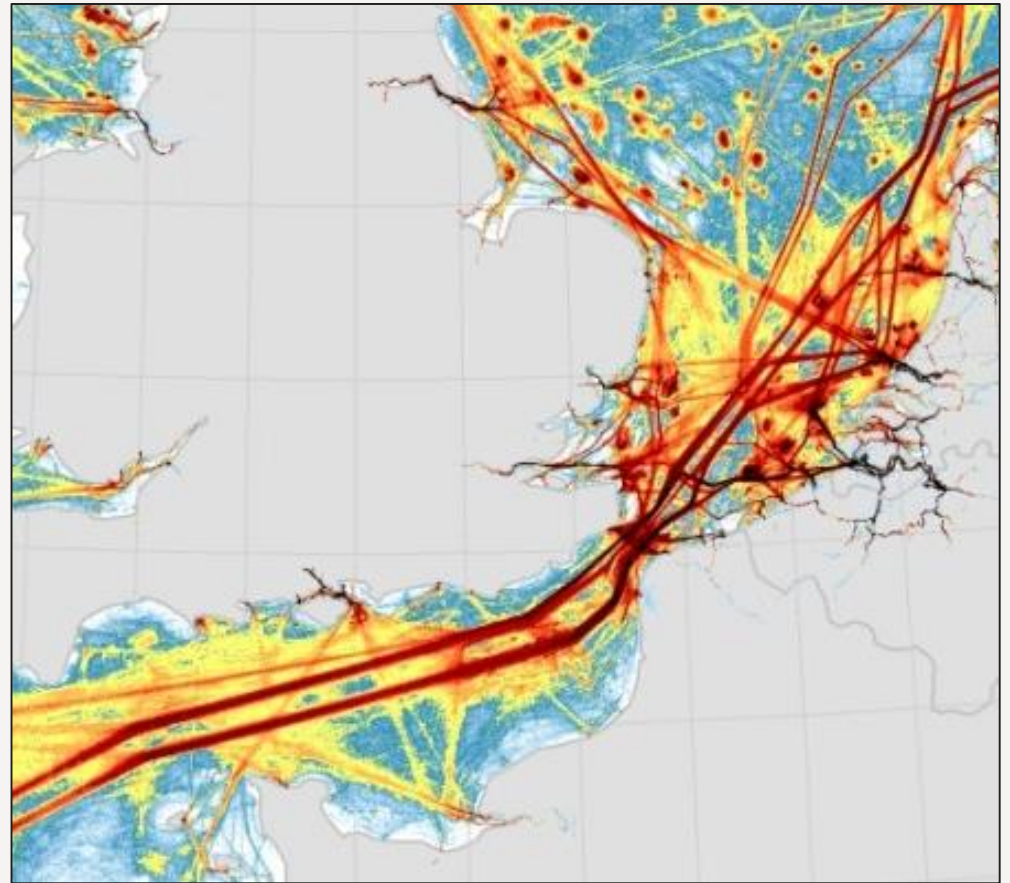
## The basic (unique!) analysis system:



# Risk Assessment

## Data Requirements

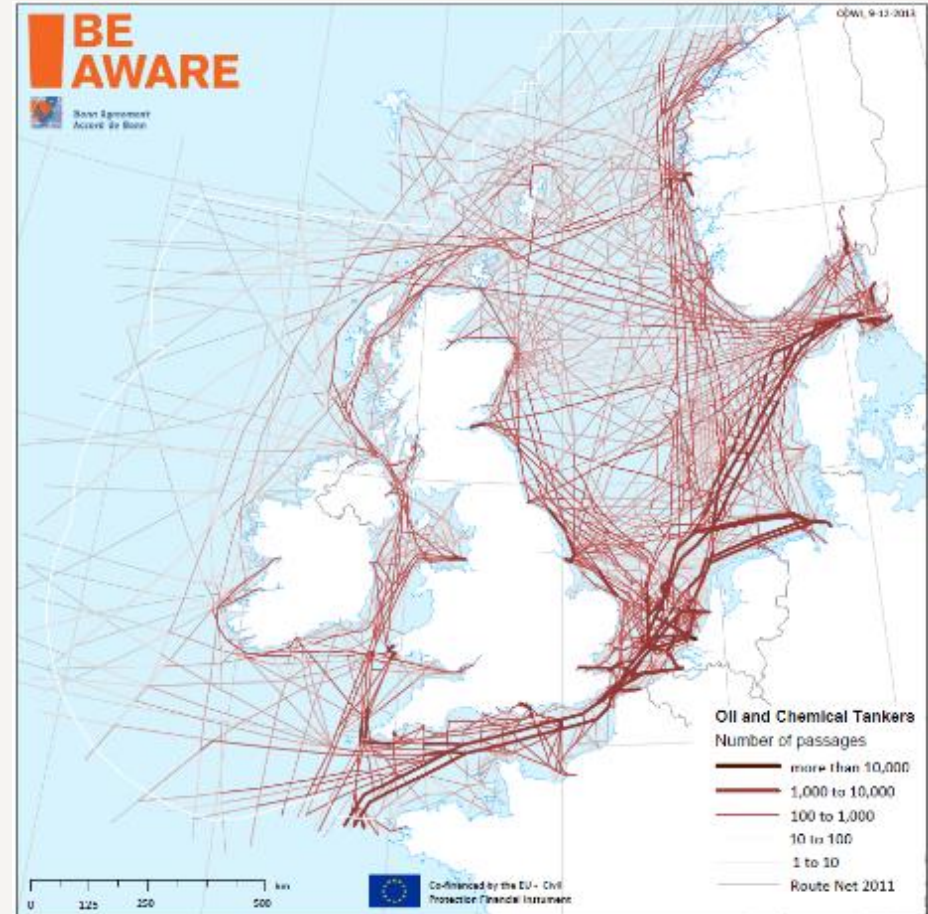
- > AIS data  
Full year, large area, good coverage
- > Cargo database  
Statistics from ports and terminals (STRAITREP)



# Risk Assessment

## Traffic

- › Ship traffic model
- › Model of goods transport
- › Prognosis for ship traffic (size, numbers, goods, routes)



## Risk Assessment

Experience of particular importance:

**Guidance of co-operation between many stakeholders of different interests, languages and cultures**

Organisations: HELCOM, OSPAR, EU, Nordic Council of Ministers

Nations:

- Denmark, Sweden, Finland, Russia, Estonia, Latvia, Lithuania, Poland, Germany.
- Norway, S, DK, G, The Netherlands, Belgium, France, United Kingdom, Ireland.
- Spain, Italy, Bosnia-Herzegovina, Greece, Cyprus, Malta, Tunisia.
- Timor-Leste



norden

Nordic Council of Ministers

HELCOM

COWI