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**Report**

**BE-AWARE II Risk Management Conclusions Workshop, Copenhagen, 22 September 2015**

**1. Welcome and Aims of Workshop**

1.1 The Workshop was opened by Mr John Mouat, Deputy Secretary at the Bonn Agreement Secretariat, and Commander Torben Iversen of Defence Command Denmark, who welcomed delegates to Copenhagen and wished them a successful workshop.

1.2 The Secretariat explained that the meeting would consider the results of oil drift modelling, environmental and socioeconomic vulnerability analysis and impact analysis, which had been carried out by COWI. The meeting would then review the results for each scenario for the five sub-regions one by one and discuss the scenario rankings. Each sub-region would need to identify a lead Contracting Party to coordinate discussion on priorities for that region and the workshop would develop preliminary risk management conclusions. The results would then be subject to a two-week consultation period with national administrations before being added to the final report for the BE-AWARE II Final Conference.

**2. Overview of the methodology**

2.1 COWI gave an overview of the development of the project, which had started with the collection of AIS data on individual vessels. BE-AWARE I had established the traffic patterns, mapped the traffic movements of every vessel, modelled the cargo on board and combined this with the accident model. The project collected data on accidents and calculated spill frequencies, the magnitude of spills and the likely locations resulting in a spill probability map. The resulting picture showed a high probability of spills in the main shipping routes including the Dover Straits and the route to the Baltic Sea, as well as some regional hot spots.

2.2 BE-AWARE II had held a workshop on Environmental and Socio-economic Sensitivity Ranking workshop in September 2014. The aim of the workshop had been to agree the ranking of the sensitivity of identified environmental and socioeconomic features (sandy beaches, fish spawning grounds, protected areas, sea grass meadows, tourism and recreations areas, ports etc.) according to the criteria developed by BE-AWARE I. This was done for oil on the water and dispersed oil for the four seasons of the year. The individual feature maps were then combined giving 8 overall vulnerability maps for Bonn Agreement region.

2.3 The vulnerability maps were then combined with the oil spill and response modelling results, expressed in the oil impact of oil on the water, dispersed oil and oil on the coast, to provide environmental and socioeconomic damage maps for the region. The damage (in g oil/km2 weighted) was then used to evaluate and rank the scenarios in each of the project sub-regions.

**3. Scenarios**

3.1 COWI explained the base case scenario for 2020, which included all the risk reducing and response measures in place, or planned to be, before 2020. They then gave an overview of the future scenarios which were assessed in the project: VTS, TSS, AIS alarms in wind farms, E-navigation, new ETVs in Ireland, increased night visibility capacity, further use of dispersants and 50% increase in response equipment. Each scenario changed either the risk level and the underlying frequency of accidents, or improved the underlying response.

3.2 COWI outlined the results for the full Bonn Agreement area. In the VTS scenario there was a 17% reduction of oil on water; in the dispersants only response scenario there was an increase in oil on water and there was a detrimental effect from using dispersants only in the full area. There was little effect to the whole are from the new ETV in Ireland, as expected given its operational area, and increasing usable response equipment by 50% for the full region would not make much difference.

3.3 Germany noted that E-navigation gave the biggest effect in reducing oil due to the reduction in collisions and grounding. The E-navigation scenario included a wide range of services as outlined in the report to the IMO NAV 59 meeting[[1]](#footnote-1). Norway questioned why night vision capability only gave a small improvement. COWI explained that for smaller spills there was a limit to the number of vessels that could respond to an incident. Therefore if there was already night vision capability on vessels in the area the additional capability would not improve the situation markedly.

3.4 The workshop considered the costs for the scenarios. Each scenario represented a combination of efficiency (cost) and effectiveness (reduction in damage) allowing the benefit per euro invested to be calculated. COWI highlighted that the costs for E-Navigation also included the cost of installing equipment on the vessels and therefore were particularly high in comparison to the other scenarios. Also parts of the costs were to be carried by the ship owners and were therefore not to be paid by maritime authorities.

**4. Sub-Regional Results**

4.1 COWI outlined the results for each of the individual sub-regions (see Annex 1) including the provisional ranking. They also highlighted the terms “effectiveness”, which was used to describe the reduced amount of oil present in the marine environment or the reduction of environmental and socio-economic damage per scenario, and “efficiency or cost-efficiency”, which was used to describe the reduced amount of oil or damage per euro invested.

**Sub-region 1: UK and Ireland**

4.2 COWI highlighted that in terms of effectiveness in reducing environmental and socioeconomic damage, e‑navigation was the most effective scenario and the use of dispersants only the least effective. TSS, AIS and 50% more response equipment were the 3 most cost-efficient. The highest ranked scenarios for the sub-region were the TSS in Dublin Bay, AIS alarms in windfarms, 50% more response capacity, starting with the cheapest respectively. E-navigation, dispersants and the ETV scenarios were ranked lower in terms of cost efficiency. Additional night vision capability and VTS were not applicable to sub-region 1, however it was noted that some benefit without cost could be derived from a neighbouring region’s scenario due the spreading of oil spills.



Figure 1: Preliminary ranking for sub-region 1 – cost efficiency

4.3 The UK questioned the negative impact of dispersants in sub-region 1 and highlighted that if dispersants were likely to cause environmental damage then the regulatory authorities would not allow their use in the first place. Sound UK regulations on dispersant use do ensure that dispersed oil does not reach sensitive resources. COWI highlighted that Scenario 9 on dispersants was the use of dispersants only. It replaced the existing situation in the Bonn Agreement area where the recovery of oil was carried out primarily by dedicated oil recovery vessels. In scenario 9 no mechanical recovery was included for oil spills under 15,000 tonnes in the full Bonn Agreement area. The damage analysis also included the environmental impact of dispersed oil in the water column. The Secretariat highlighted that BE-AWARE was a strategic level study looking at the effect of dispersants on all spills within the sub-region. This did not mean that dispersants could not be the most suitable response in relation to individual spills depending upon the situation. COWI agreed to add a clear explanation of the scenario and results for Scenario 9 on dispersants only in the final report.

4.4 Belgium noted that showing both positive and negative effects of scenarios on the y axis of the cost benefit diagram could be confusing for some readers and wondered whether this could be presented in a different way. Belgium agreed with the Secretariat that the report needed to explain the figures as they were based on a strategic model and the results could be different for an individual spill.

**Sub-region 2: UK and Norway**

4.5 E-navigation, VTS, TSS and 50% more response capacity were all very effective. The 50% more response capacity was very costly due to the fact that Norway already had a significant response capability with many vessels meaning that it would not be cost effective to increase it. The highest ranked scenarios in terms of cost-efficiency for reduction of socio-economic and environmental damage were VTS, AIS and E-Navigation. Norway noted it already had TSS on its coast and the additional benefit was from extending this in to the central North Sea.



Figure 2: Preliminary scenario ranking for sub-region 2.

**Sub-region 3: Denmark, Germany, Netherlands, Norway and Sweden.**

4.6 In sub region 3 E‑navigation, VTS and TSS had a similar effectiveness. The sub-region 3 cost benefit diagram showed that VTS, TSS and AIS alarms were very efficient, while the scenarios on dispersants only and increased night vision capacity were less efficient. E‑navigation was still efficient but proportionally less so when compared to the TSS and VTS scenarios for region 3. In the sub-region 3 scenario ranking AIS alarms came out high because although they were not the most effective they were relatively cheap to implement.

Figure 3: Preliminary scenario ranking for Sub-Region 3 – cost efficiency.

**Sub-region 4: Germany, the Netherlands, Belgium, France, UK.**

4.7 COWI highlighted that this was a very high traffic area which already had a high implementation of risk reducing and response measures. E-navigation and increased VTS were the most effective scenarios and dispersants were the least effective. 50% extra response equipment was not viable in this region due to the existing high level response infrastructure. The highest ranked scenarios in cost benefit terms were AIS alarms, due to the large number of wind farms, extended night vision capability, and added TSS. They were all on the same cost efficiency line therefore there was no scenario which was particularly significant for this region.



Figure 4: Preliminary scenario ranking for sub-region 4 – cost efficiency.

**Sub-region 5: France and UK.**

4.8 COWI highlighted that the most effective scenarios were E-navigation and VTS to a lesser extent. In terms of cost benefit only 4 scenarios were investigated, as the costs for VTS and night vision capability were still required. France agreed to send these cost to COWI as soon as possible who would then update the ranking.

4.9 The three top ranked scenarios were AIS alarms, 50% more equipment and E-navigation. The scenarios were in one line indicating the same order of efficiency.



Figure 5: Preliminary scenario ranking for sub-region 5 – cost efficiency.

**Discussion**

4.10 The Netherlands highlighted that the IMO only permitted VTS inside the 12 nm mile and whilst the Netherlands were considering increasing existing VTS and TSS this was something that needed to be considered. Norway highlighted that they used AIS to monitor and advise vessels outside the 12 nm limit and although they were not legally obliged to respond almost all vessels did. The Secretariat highlighted that whilst legally VTS was restricted to 12 nm if the advisory service outside had the same risk reducing effect that was the most important aspect for the project.

**5. Development of Risk Management Conclusions**

5.1 The workshop spilt into three groups to discuss the preliminary scenario rankings and start developing sub-regional risk management conclusions. The Secretariat explained that each sub-region needed to identify a lead country to take the process forward over the coming weeks and to draft risk management conclusions for the final report. Following the discussion each of the sub-regions reported back to the plenary.

**Sub-region 1: Ireland and UK**

5.2 Ireland agreed to lead the development of risk management conclusions for sub-region 1. The group agreed with the preliminary scenario rankings. E‑navigation was the most cost effective and the most costly option however the group felt BE-AWARE had to be based on realistic assumptions and industry’s costs should be excluded.

5.3 The UK agreed to provide text on a footnote on dispersants in relation to their national benefit analysis to be included in the final report as a footnote.

**Sub-region 2: UK and Norway**

5.4 Norway agreed to lead the development of risk management conclusions for sub-region 2. The sub-region agreed the preliminary scenario rankings, however they queried whether VTS needed to be retained, as this was due to drift from neighbouring regions. The UK repeated the request from sub-region 1 above for a footnote on dispersants. Norway noted the costs of 100,000 euros per year for the TSS and said they would check that figure, as it seemed a bit high.

**Sub-region 3: Denmark, Germany, Netherlands, Norway and Sweden.**

5.5 Denmark agreed to lead the development of risk management conclusions for sub-region 3. The sub-region agreed with the preliminary scenario rankings. The group considered that there was a close connection between TSS across the North Sea and VTS in coastal areas in North West Denmark. TSS and VTS were priorities with AIS alarms in windfarms in third place. The group felt that E-navigation needed further development before they could base risk-reducing measures on it.

**Sub-region 4: Germany, the Netherlands, Belgium, France, UK.**

5.6 The Netherlands agreed to lead the development of risk management conclusions for sub-region 4. The group (minus the UK who were not able to participate in this group) agreed in general on the top 3 scenarios: TSS, AIS alarms and increased night visibility. The Group also felt that there should be generic conclusions for e-navigation and dispersants as these applied generically across the whole region.

**Sub-region 5: France and UK**

5.7 The UK agreed to lead the development of risk management conclusions for sub-region 5. The group noted that the risk management conclusion would need to be reconsidered once the VTS and night vision capability scenarios had been fully evaluated. The group also agreed with the UK that dispersants could be a relevant scenario for the sub-region.

**6. Next steps, Final Report and Implementation Plan**

6.1 The Secretariat outlined the next steps for the development of final risk management conclusions, which would be included in the final project report. It was agreed that the sub-region leaders would provide short texts on the output of their discussions at the workshop, explaining the rankings and why they were chosen. Each group should reach a common understanding with their colleagues and submit their text to the Secretariat by Monday 5 October 2015. Following this there would be a webex at 09:00 UK Time (10:00 CET) on Tuesday 6 October to agree the final risk management conclusions for inclusion in the final project report.

6.2 The Secretariat outlined that whilst the project would finish with the development of Risk Management Conclusions the Bonn Agreement was developing an implementation plan to take forward the results over the next few years. A draft outline of the plan would be considered at the Bonn Contracting Parties meeting on the 23-24 September 20125.

6.3 Sweden and Belgium highlighted the need to ensure that the final report was well-written and easy to understand, as it would be considered by decision makers and other organisations which may not have the technical expertise or knowledge of the project. Norway highlighted that depending on the timing implementation of the risk management conclusion could be a topic for the next Bonn Agreement Ministerial Meeting.

1. IMO Sub committee on Navigation, NAV 59-6, Development of an E-Navigation Strategy Implementation Plan, Report of the Correspondence Group on E-Navigation to NAV 59. [↑](#footnote-ref-1)