

Environmental Risk from ship traffic along the Norwegian Coast

INTERSPILL, London 13-15 March 2012

Odd Willy Brude



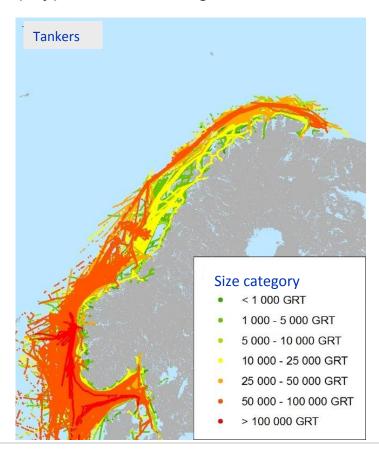
Content

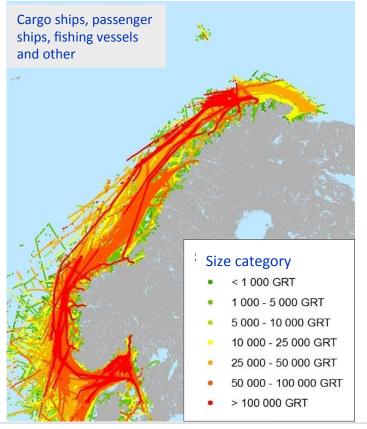
- Process on how to establish an environmental risk picture
 - Establish ship traffic pattern AIS data on ship movements
 - Mapping of spill probability and impact potential
 - Incl. Measures to reduce accident probability
 - Analysis of environmental risk
 - Mapping of environmental sensitivity
 - From potential damage to consequence
 - Establish the risk picture
- Results
 - and use of results as input to oil spill response planning

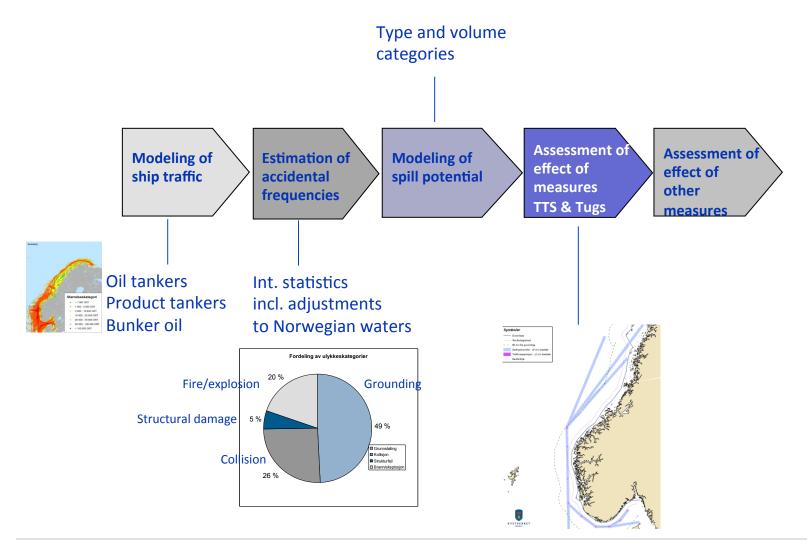


Work performed for The Norwegian Coastal Administration in 2010-11

- Establish a traffic pattern based on Automatic Identification System (AIS) data from ships
 - Ship types & size categories

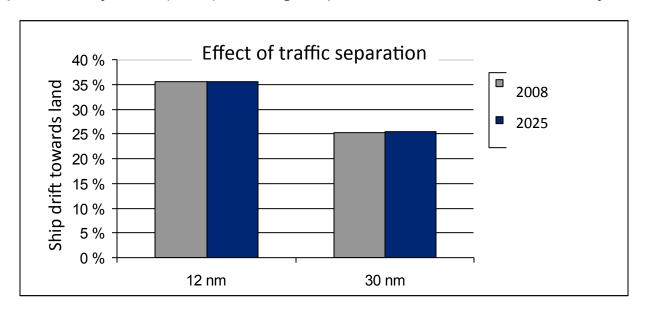






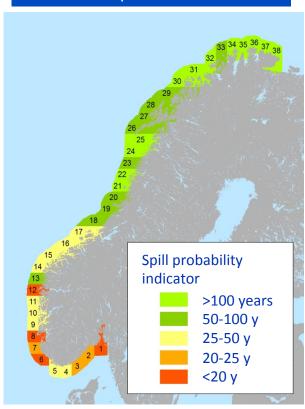
Effect of measures

- Traffic separation system (TSS) moving ships from 12 nm to 30 nm away from the coast

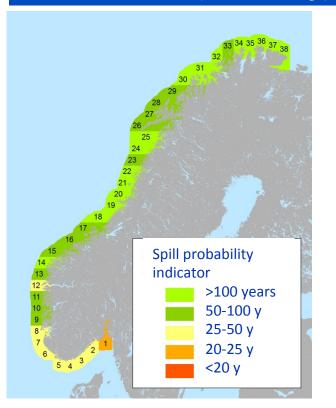


- Vessel traffic service (VTS)
- Tug response

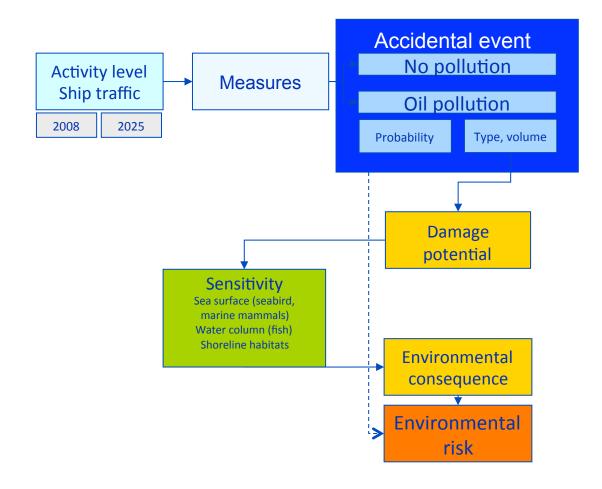
2025 with implemented measures



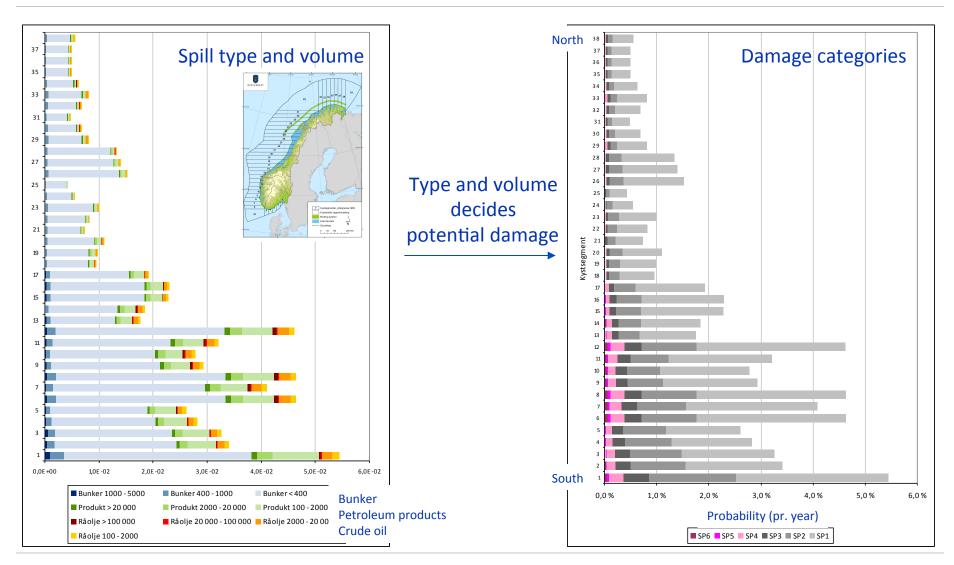
2025 with all measures (TTS, VTS & Tugs)



Environmental risk analysis



Environmental damage potential



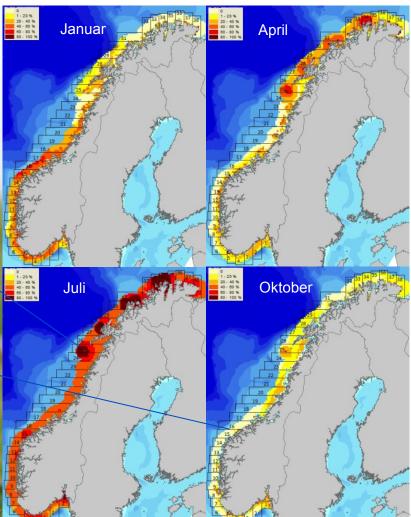
Environmental damage potential

Sea surface impact		Damage potential category					
(seabirds / marine							
mammals) +							
shoreline	Spill volume (tons)	DP1	DP2	DP3	DP4	DP5	DP6
Crude oil	100-2000			X			
	2000-20000				Χ		
	20000-100000					Χ	
	> 100000						Χ
Light refined oil products	100-2000	Χ					
	2000-20000		X				
	20000-			Χ			
Heavy refined oil products	100-2000			Χ			
	2000-20000				Χ		
	20000-					Χ	
Light bunker oil	< 400	Χ					
	400-1000	Х					
	1000-5000		Χ				
Heavy bunker oil	< 400		Х				
	400-1000			Х			
	1000-5000				Χ		

Environmental sensitivity

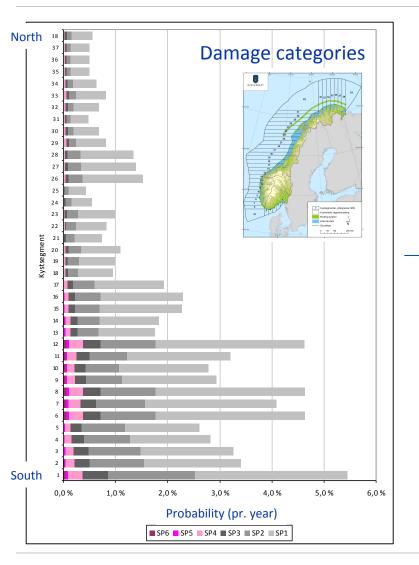
diust notential damage with Seabird vulnerability maps April

Adjust potential damage with environmental sensitivity to conclude on consequence Higher consequence (ex. Damage potential c goes to equence catego wer consequence es to C2) Additional adjustment Small spills impact 1 coastal segment Moderate spills impact 3 segments Huge spills impacts 5 segments

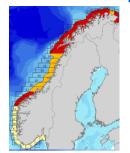


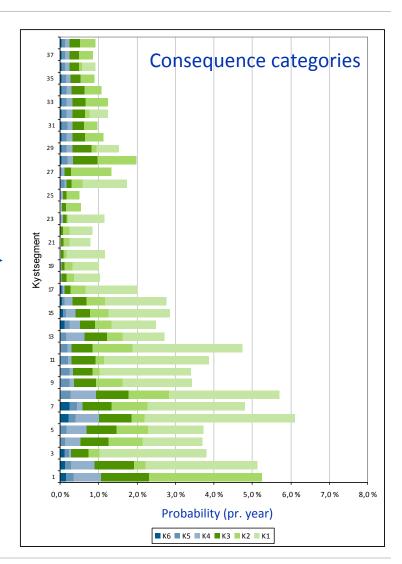
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From damage potential to environmental risk



Environmental sensitivity adjustment

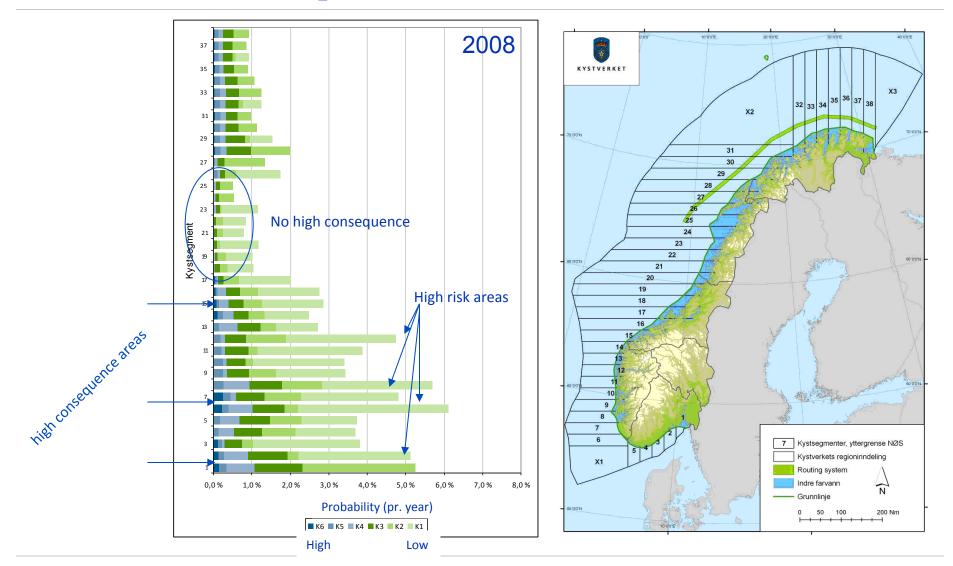




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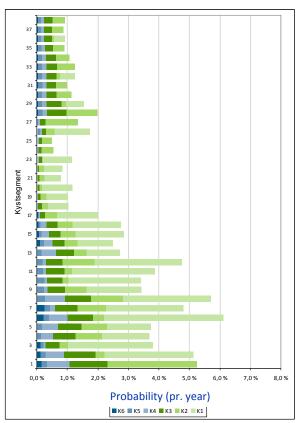


Environmental risk picture

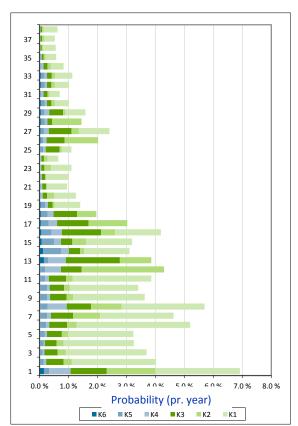


Risk picture for different kind of environmental resources

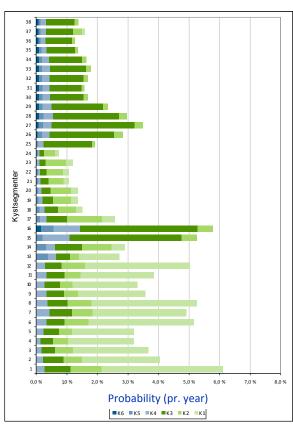
Seabirds



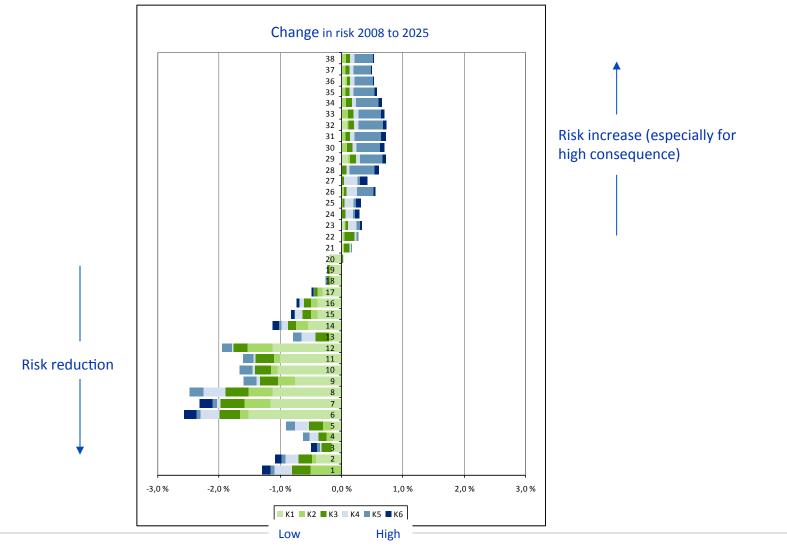
Marine Mammals



Fish



Change in risk related to future traffic



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Thank you ☺

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