STEP 2

Proposal of common Ranking approach based on BRISK

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'Best practice' in ranking approaches

TWO ≠ APPROACHES:

1. 'Calculation' of Scores ('model')
   - Scores calculated as product of factor values (NO)
   - Scores calculated using quantitative dataset (GE)

☺ 'Objective' approach

☹ Not always easy to 'understand' a Score

2. 'Expert evaluation' of Scores (e.g. BRISK)

☹ More 'subjective' ('rough') approach

☹ Not scientifically 'ideal'

☺ Qualitative/subjective approach not necessarily 'less good'

☺ Simple and easy to understand, transparent

☺ Facilitates national expert validation of assigned Scores

= **More appropriate for use at Regional level**

BRISK Vulnerability Ranking

- **4 Scores:**
  - Score 4 = **VERY HIGH**
  - Score 3 = **HIGH**
  - Score 2 = **MODERATE**
  - Score 1 = **LOW**
- **4 Seasons:**
  - **Winter**: Dec., Jan., Feb.
  - **Spring**: Mar., Apr., May
  - **Summer**: Jun., Jul., Aug.
  - **Autumn**: Sept., Oct., Nov.

Proposal MUMM → apply in BE-AWARE – but maybe slightly adapt (cf. Compensation criteria)

BRISK Ranking process for each feature

1. Define (ecol.) characteristics, significance & location
2. (Qualitative) assessment of vulnerability
   - Based on 2 CRITERIA:
     - FATE OF OIL
     - IMPACT OF OIL on organisms
3. Assign vulnerability ranking (per season)

Proposal MUMM → apply in BE-AWARE, but ADAPT:
+ "3D" vulnerability
+ 'Socio-economic' evaluation (and criteria)

CRITERIA used to assess vulnerability of features **should reflect**:

$$\text{VULNERABILITY} = \frac{\text{EXPOSURE} \times \text{SENSITIVITY}}{\text{RECOVERY}}$$

With:

- **Exposure =** exposure to oil
- **Sensitivity =** intrinsic sensitivity to oil (impact)
- **Recovery =** recovery potential of feature

Criteria to be considered when ranking each feature

(1) FATE of oil

- In terms of oil weathering, degradation and removal
- Varies considerably
- Influences geomorphological, ecological and socio-econ. vulnerability
- Main factors:
  - Wave & tidal energy exposure — Shoreline slope — Substrate type

  → *incl. Artificial substrates: e.g. marinas & ports*

  → *"3D" fate in water column/seabed*
  - *Natural energy*
  - *Dilution potential*
  - *Marine snow*
  - *Seafloor sediment type*

~ EXPOSURE & *(chemical)* RECOVERY

Criteria to be considered when ranking each feature

(2) IMPACT of oil on organisms & habitats

- Effects of oil on organisms
  - Smothering
  - Toxicity
  - Tainting

- Population & life-cycle considerations
  - Densely populated (small) areas
  - Spawning & nursery areas (~fish)
  - Sensitive stages/locations (~birds)
  - Threatened species & habitats, …

~ '*Ecological*' OIL-SENSITIVITY & (*biological*) RECOVERY

MUMM: Suggestion of 3 additional Socio-Econ. Criteria

(3) Length of Interruption

- (!) Criteria used in France for socio-economic Index (***Cedre***)
- Why? Practical Criteria to evaluate socio-economic impact, based on length of interruption of an activity or service
- Important factors:
  - Possibility (or not) to **protect** activity
  - Possibility (or not) to **displace** activity
- 5 Ranks:
  - 1 (day) – 2 (week) – 3 (week-months) – 4 (to 1yr) – 5 (> 1yr)

~ '*Socio-economic*' OIL-SENSITIVITY

(Additional socio-econ. Criteria)

(4) Compensation Possibility

- (!) A key assessment Factor in Norway (***MOB-method***)
- Why? Practical Criteria that is important when comparing *Economic* versus *Ecological (and social)* vulnerability
- Compensation can be seen as '*recovery*' from economic losses

(~ Correction factor)

~ '*Economic*' RECOVERY

(MOB-method) (Norway; DNV; Safety@Sea)

- Environmental resources are assessed based on 4 Factors
  - I - Natural occurrence (Is the resource part of natural system in the area?)
  - II - Compensation (Can the resource be economically compensated?)
  - III - Conservation Value (Environmental value of the resource?)
  - IV - Sensitivity (Sensitivity towards oil? – *incl. recovery*)

- Ranking of ecological and socio-economic features combined
  - ecological features
  - Recreational activities
  - Industries based on natural resources

(MOB-method)

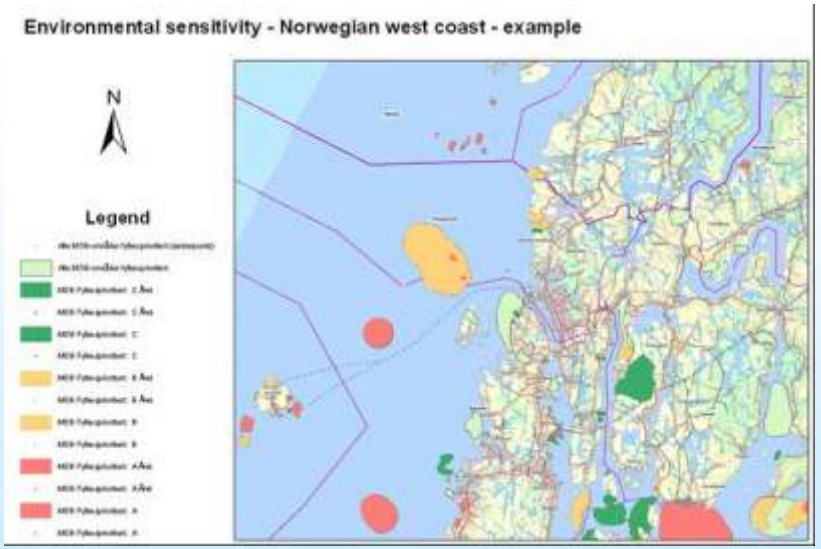
Evaluation		Factor value			
		3	2	1	0
Natural occurrence	I	-	Yes	No	-
Can be compensated economically	II	-	No	Yes	-
Conservation value	III	National/International	Regional	Local	Insignificant
General sensitivity to oil	IV	High	Medium	Low	Insignificant

- The level of priority is calculated with formula:
  - $P=V_I \times V_{II} \times V_{III} \times V_{IV}$

	Priority				
	A	B	C	D	E
Model result	36	24	12	8	2
		(18)	(9)	4	1
				(6)	(3)

(MOB-method)

	Priority				
	A	**B**	**C**	**D**	**E**
Model result	36	24	12	8	2
		(18)	(9)	4	1
				(6)	(3)



(additional socio-econ. Criteria)

(5) Social nuisance

- Term used by ITOPF to describe social impact
- Why? Maybe useful as '***social sensitivity***' Criteria
- Criteria to assess:
  - Public concerns about spill-impacted area
  - Public health issues
- Is factor of:
  - Coastal population densities
  - Degree of communities/activities based on natural resources
  - Impact on Sites with high ecological or heritage value

~ 'Social' SENSITIVITY

STEP 2 – SUMMARY

PROPOSED RANKING PROCESS FOR EACH FEATURE:

(1) Define characteristics, significance & location

(1) Assess vulnerability, taking into account 5 Criteria:

1. FATE OF OIL ~exposure; chemical recovery
2. IMPACT OF OIL ~ ecological sensitivity; biological recovery

+ 3 additional socio-economic criteria

3. LENGTH OF INTERRUPTION ~ socio-economic sensitivity
4. COMPENSATION ~economic recovery
5. SOCIAL NUISANCE ~social sensitivity

(1) Assign vulnerability ranking (per season)

Assigning Vulnerability Ranking → BRISK scores & seasons to be applied in BE-AWARE?

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BE-AWARE Vulnerability Ranking: or instead, 3 (econ.) to 5 (ecol.) Scores?

- **Scores Economic features:**
  - Score 3 = HIGH
  - Score 2 = MODERATE
  - Score 1 = LOW
- **Scores Ecological features:**
  - Score 5 = VERY HIGH
  - Score 4 = HIGH
  - Score 3 = MODERATE to HIGH
  - Score 2 = MODERATE
  - Score 1 = LOW

cf. Compensation criteria

Or e.g. simply X2 for ecological Scores when drafting maps??

And now time for discussion…