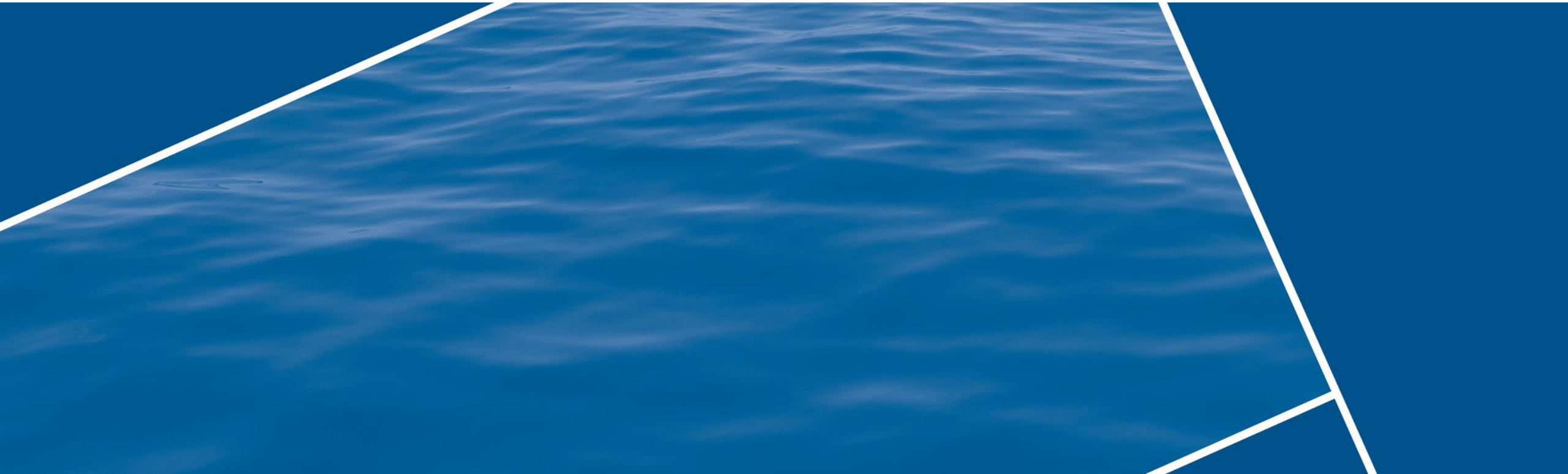
CIA in the German EEZ - A Tailored Framework and Its Application to Marine Mammals

Federal Maritime and Hydrographic Agency of Germany
Hamburg, July 2nd 2026
Presented by Antje Gimpel & Constanze Staab



Conceptual Approach

1. RISK IDENTIFICATION

Identify main anthropogenic threats

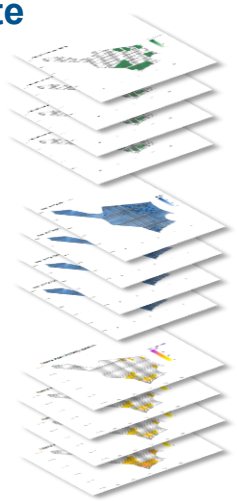
- *Description of activities and exerted pressures on significant ecosystem components*

Linkages_FEP

2. RISK ANALYSIS

Compile database & Calculate potential impact

- *Estimation of vulnerability:* Exposure (due to pressures) x Sensitivity (to pressures)
- *Estimation of likelihood of impacts:* Likelihood of interaction x vulnerability
- *Estimation of uncertainty*



3. RISK EVALUATION

Evaluation of management options

- *Evaluation of impacts on ecosystem components under alternative management scenarios (mitigation & restoration measures)*

Mitigation

4. RISK TREATMENT

Support transparent decision-making

- *Communication of risks, uncertainties & effects of management decisions during consultation*

5. MONITORING & EVALUATION

Criteria catalog

Activities & pressures

9 Activities

18 Pressures (~ 43)

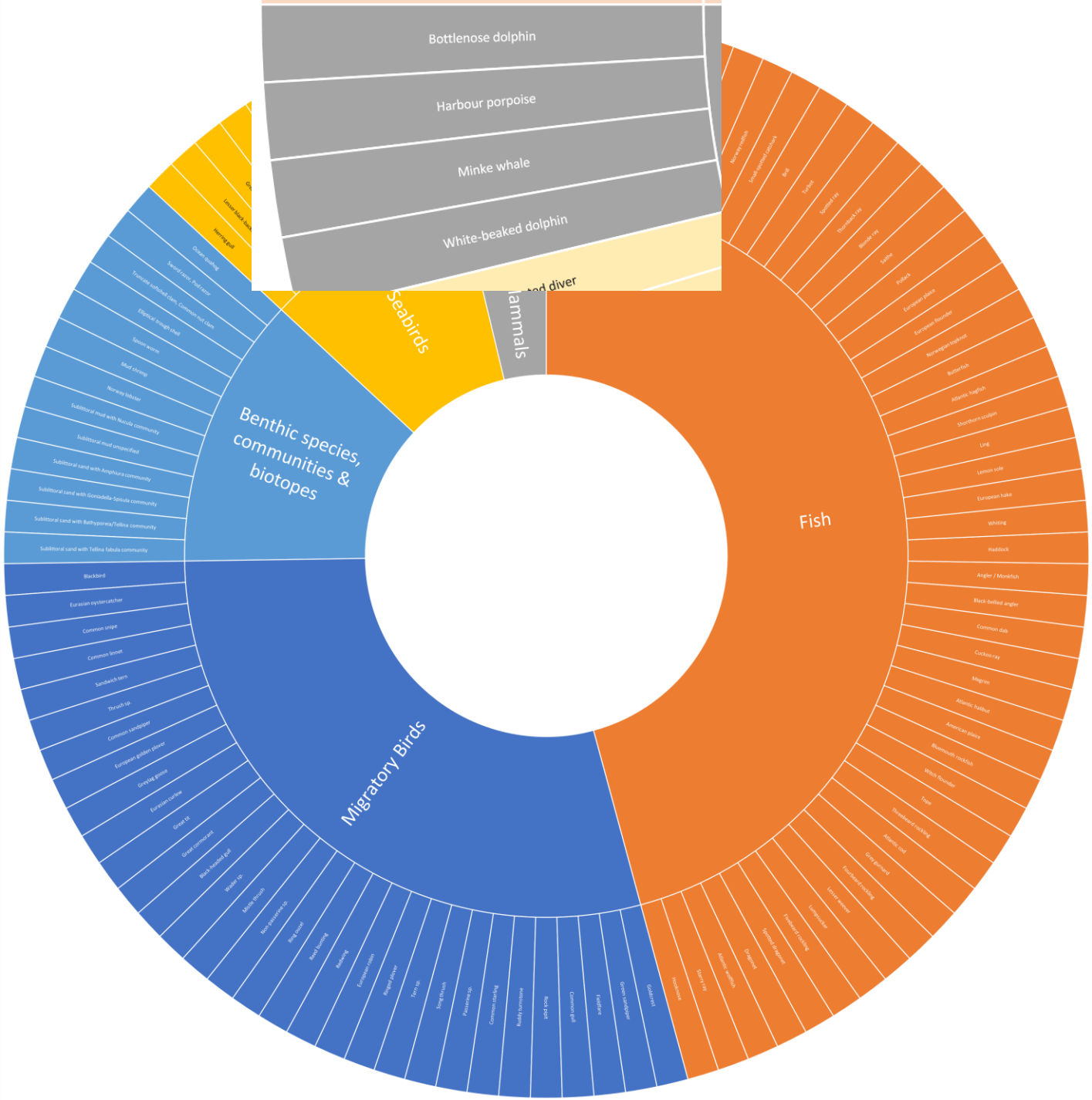
4 Pressure categories:

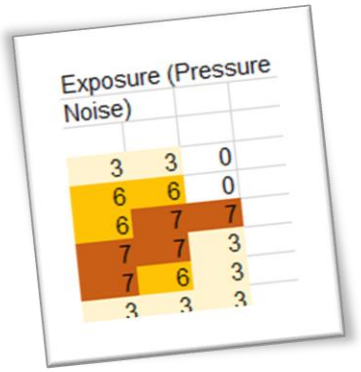
- Biological (species/ habitats)
- Chemical (substances)
- Physical (hydrographic)
- Energy emissions (noise)

Criteria catalogue

Ecosystem components

5 Taxonomic groups
114 Species





Pressure		Geographic extent	Frequency of effect	Duration of effect	**Exposure**
	Noise	2	3	1	6
	Obstruction	1	3	3	7
	Siltation	1	1	1	3
	Smothering	1	3	3	7

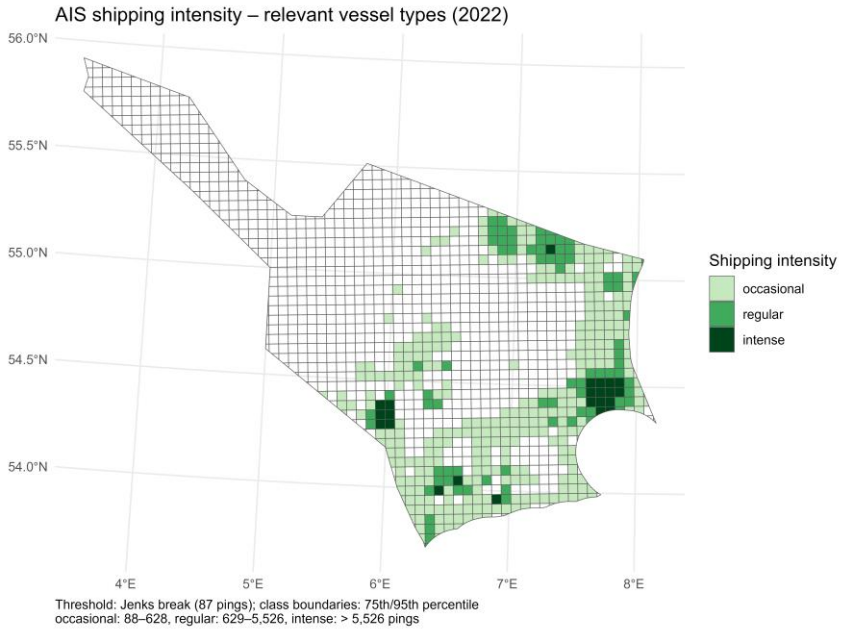
Example: Pressure „Noise“

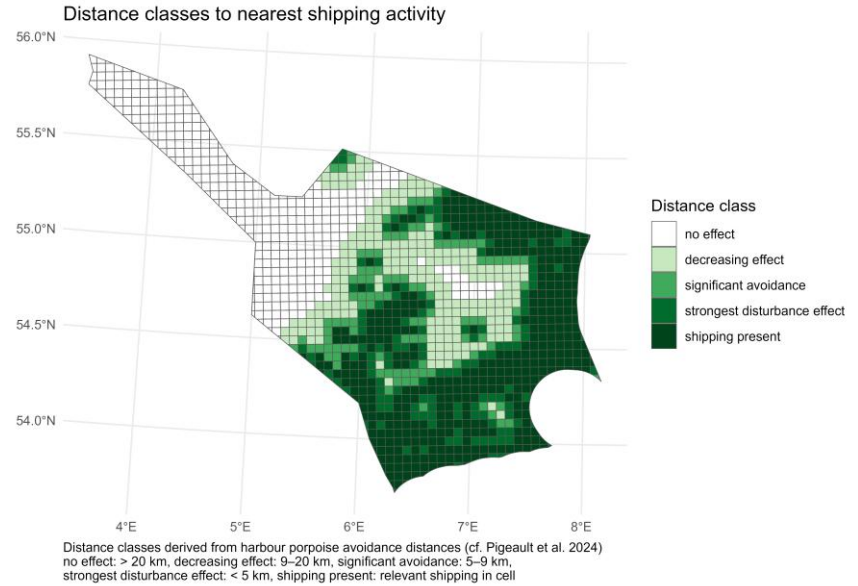
Excerpt current criteria catalogue

Pressure	Activity	Data Source	*Geographic extent*	*Duration*	*Frequency*	Exposure	Literature
Underwater noise	Wind energy	OWP data construction, noise input	3	1	3	7 (medium)	noise protection concept and literature therein, Noise Register
Underwater noise	Wind energy	OWP data operation, noise input	1	3	1	5 (medium)	noise protection concept and literature therein, Noise Register
Underwater noise	Shipping	AIS data, noise input	1-3	2	1-3	4 - 8 (medium - high)	Pigeault et al. 2024

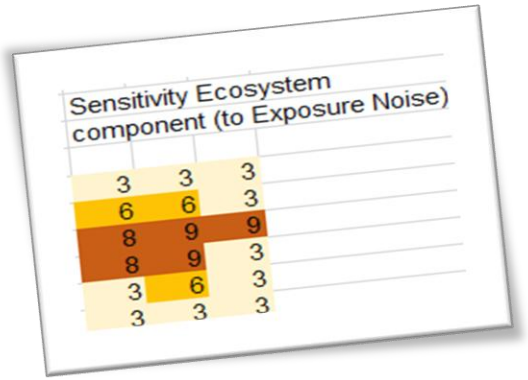
Frequency of effect & Geographic extent
Noise from shipping around OWPs

Geographic extent





Frequency of effect



Sensitivity to Pressure		Rarity	Resilience	Regeneration Potential	**Sensitivity**
	Noise	3	2	3	8
	Obstruction	3	1	1	5
	Siltation	3	3	3	9
	Smothering	3	1	2	6

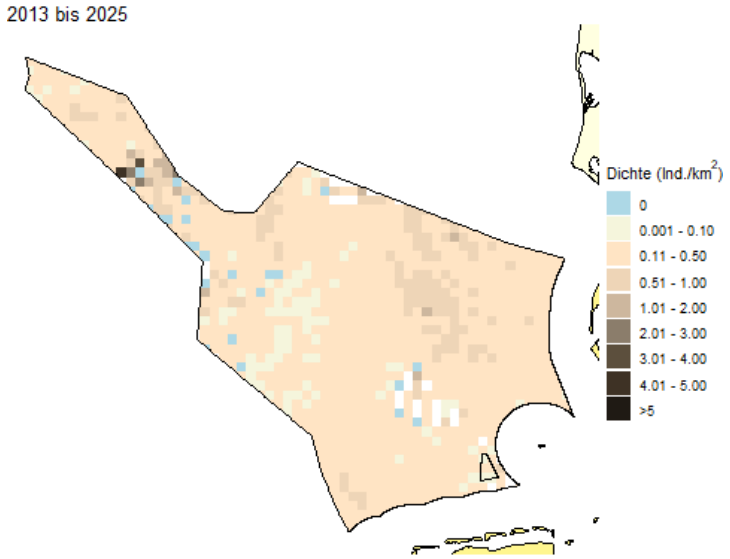
Example: Sensitivity Harbour porpoise *(Phocoena phocoena)* to pressure „Noise“

Excerpt current criteria catalogue

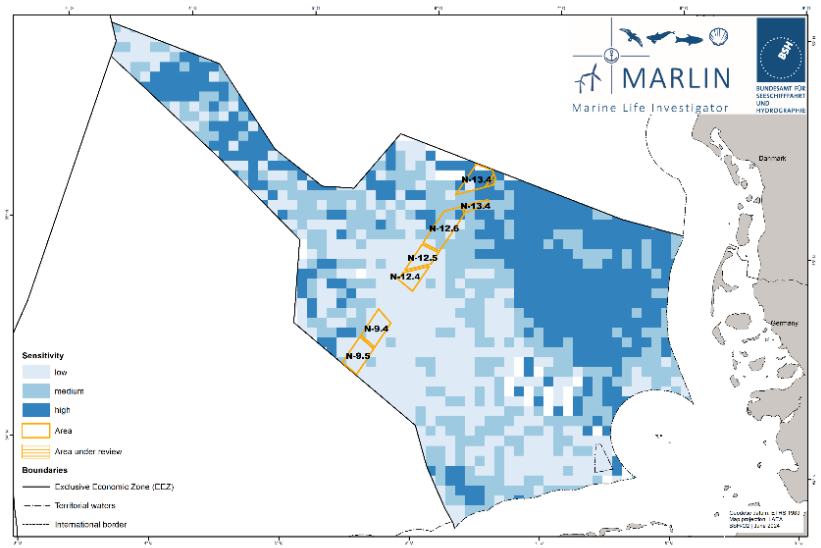
Sensitivity/ Pressure	*Rarity*	*Resilience*	*Regeneration*	Literature
Noise (construction)	3	Density (ind./km²): 1 = < 1st tercile; 2 = > 1st to < 2nd tercile; 3 = > 2nd tercile	0 = no calf sighting; 3 = calf sighting	BMU 2013, noise protection concept and literature therein, MARINE EARS Noise Register
Noise (construction, mitigated)	3	ibid.	0 = no calf sighting; 2 = calf sighting	BMU 2013, noise protection concept and literature therein, MARINE EARS Noise Register
Noise (operation)	3	ibid.	0 = no calf sighting; 2 = calf sighting	BMU 2013, noise protection concept and literature therein, MARINE EARS Noise Register
Noise (service)	3	ibid.	0 = no calf sighting; 3 = calf sighting	Pigeault et al. 2024

Resistance & Regeneration potential
Harbour porpoise

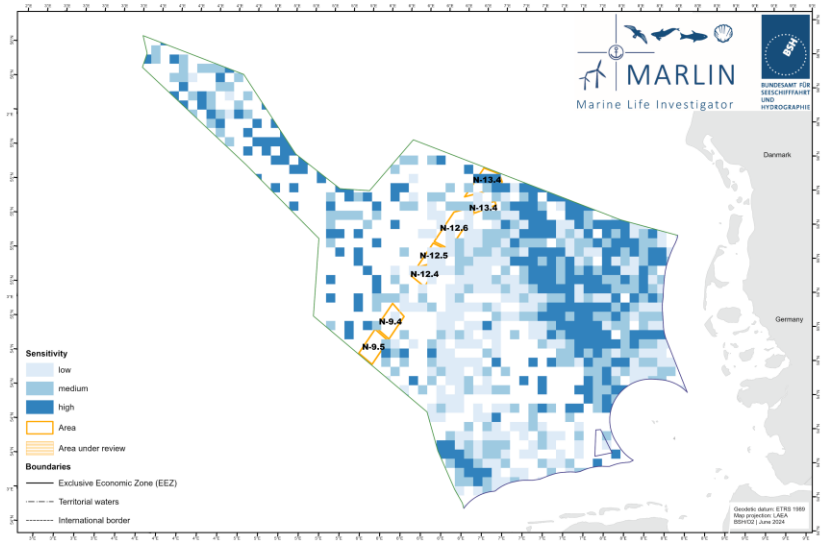
Regeneration potential



Harbour porpoise
Density (ind/km²)



Harbour porpoise
Sensitivity (low – high)

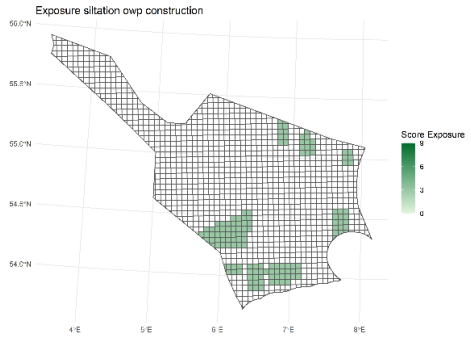


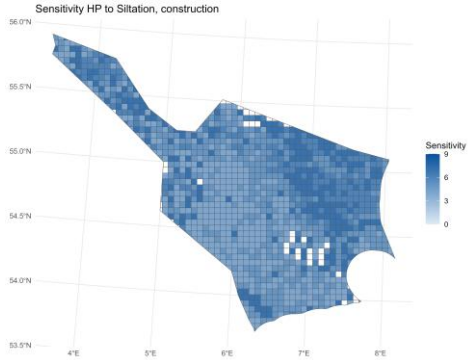
Harbour porpoise
Hot spots of calves (low – high)

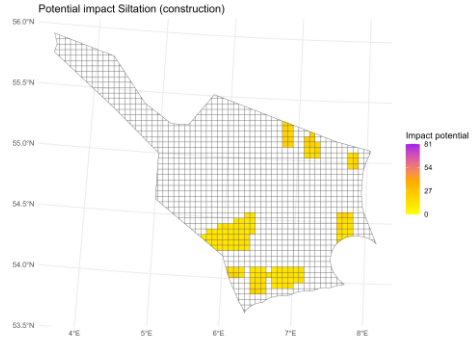
Resilience

Construction Phase (nonmitigated)

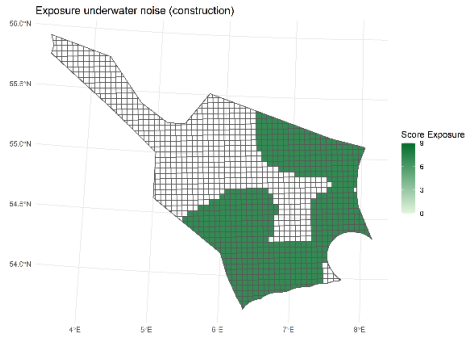
Siltation

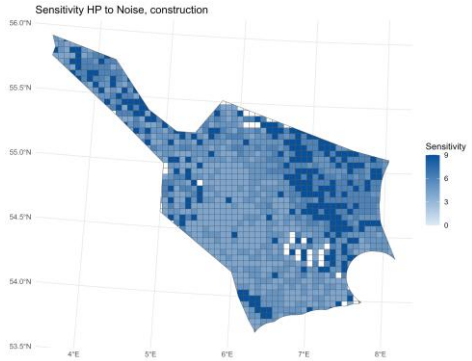


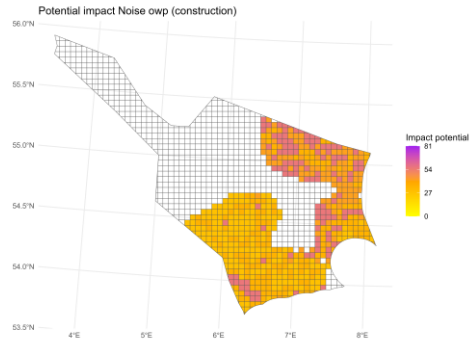


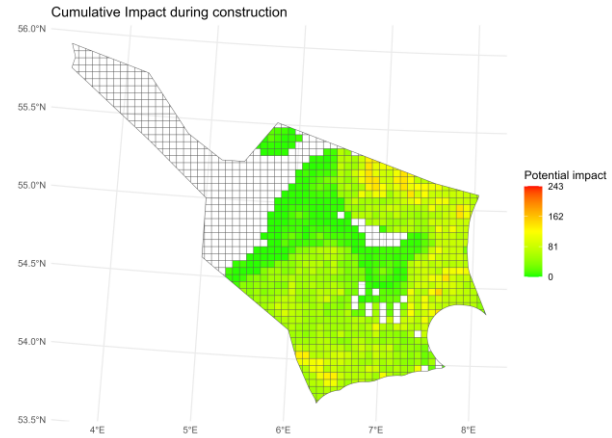


Noise (owp construction)

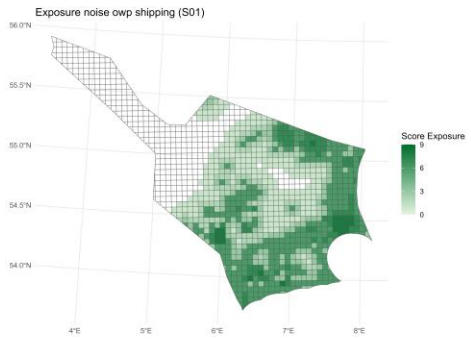


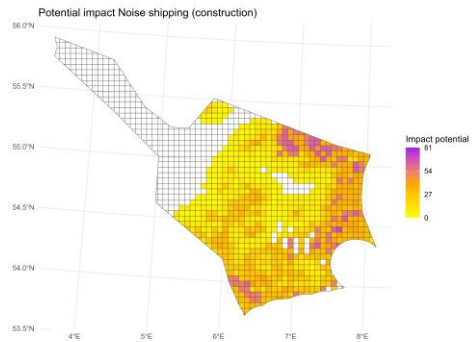






Noise (shipping)

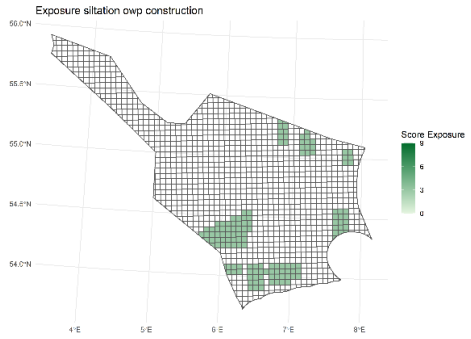


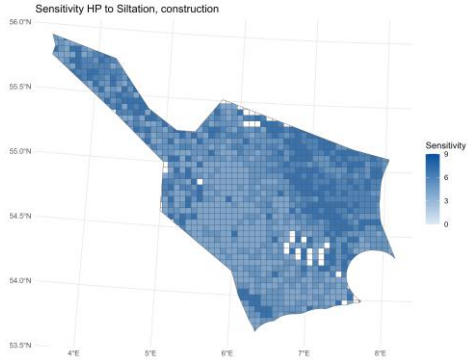


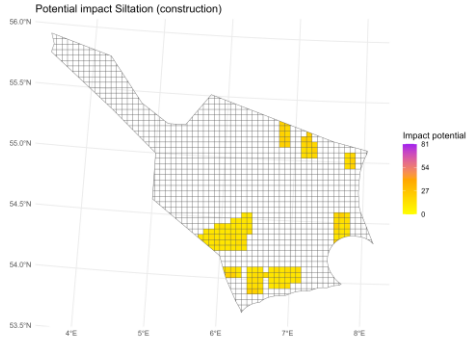
Exposure | Sensitivity | Potential Impact | Cumulative Impact

Construction Phase (mitigated)

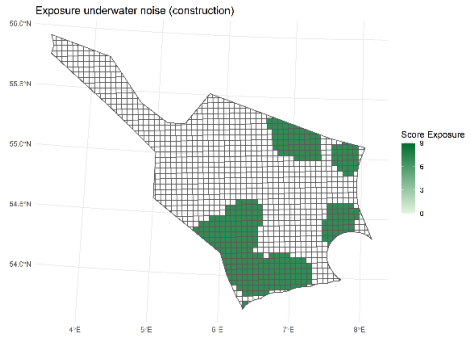
Siltation

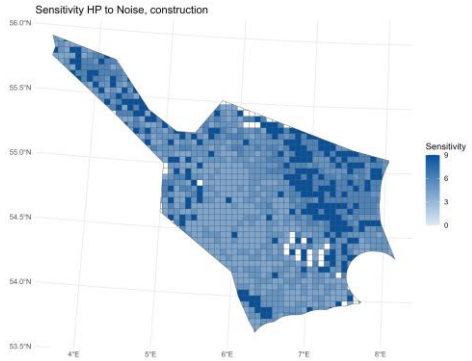


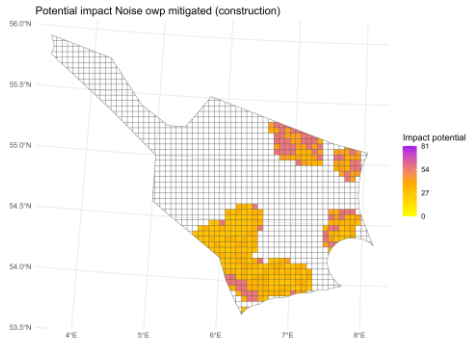


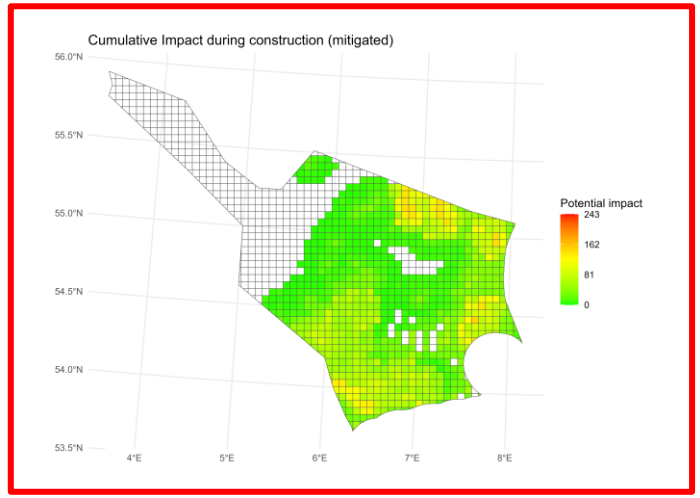


Noise (owp construction)

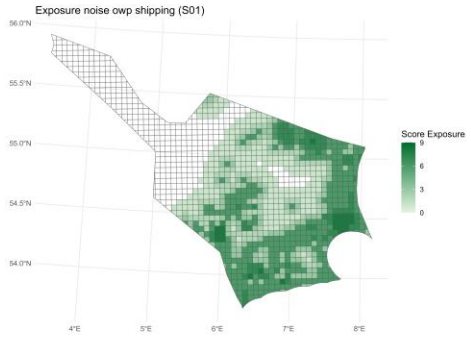


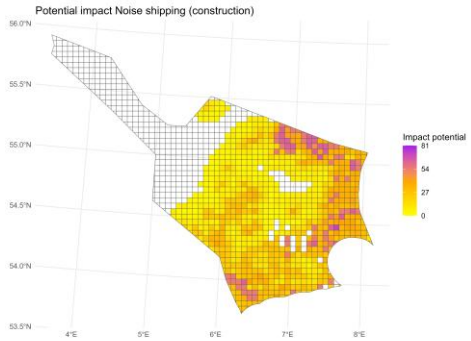






Noise (shipping)

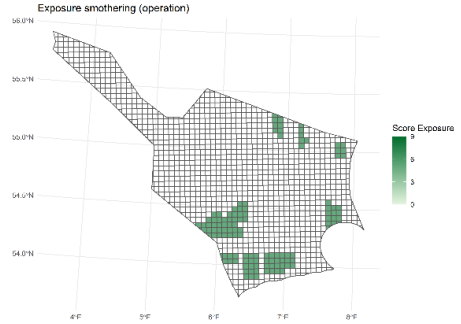


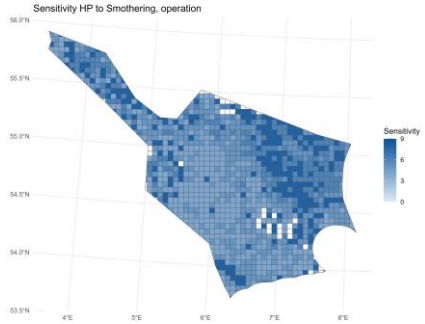


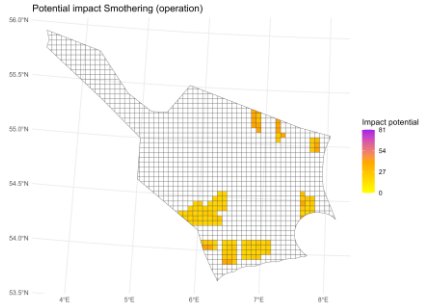
Exposure | Sensitivity | Potential Impact | Cumulative Impact

Operation Phase

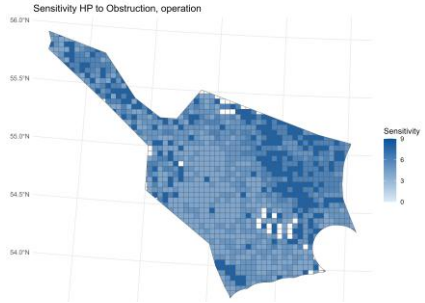
Smothering

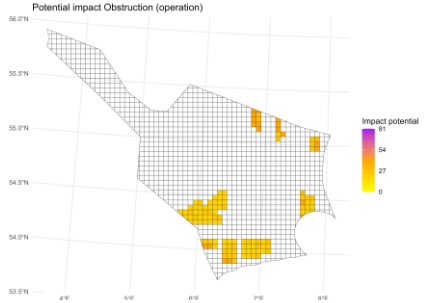




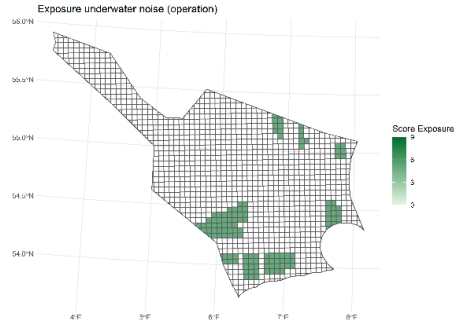


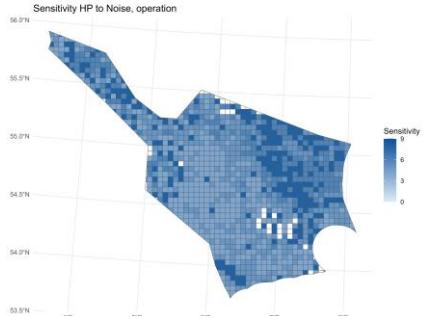
Obstruction

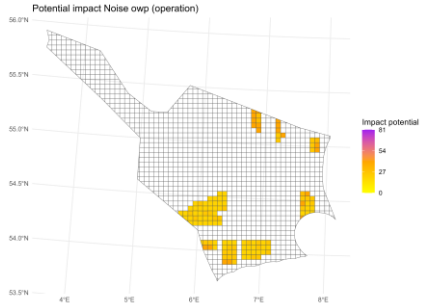




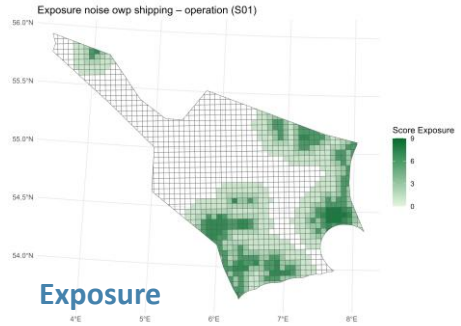
Noise (owp operation)

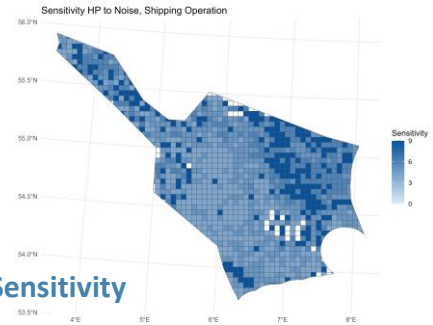


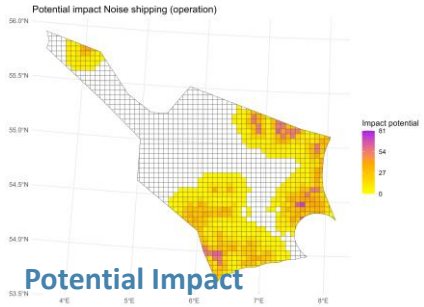


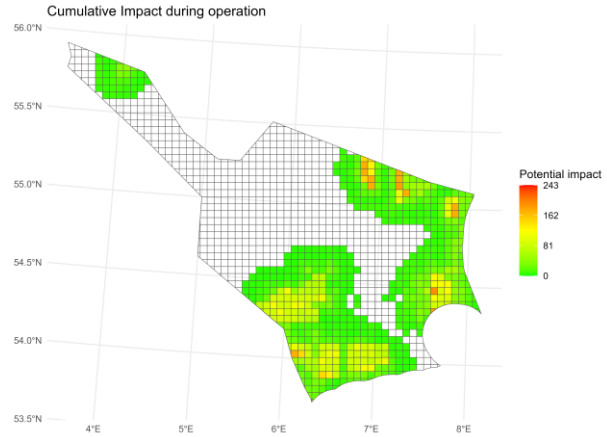


Noise (shipping)









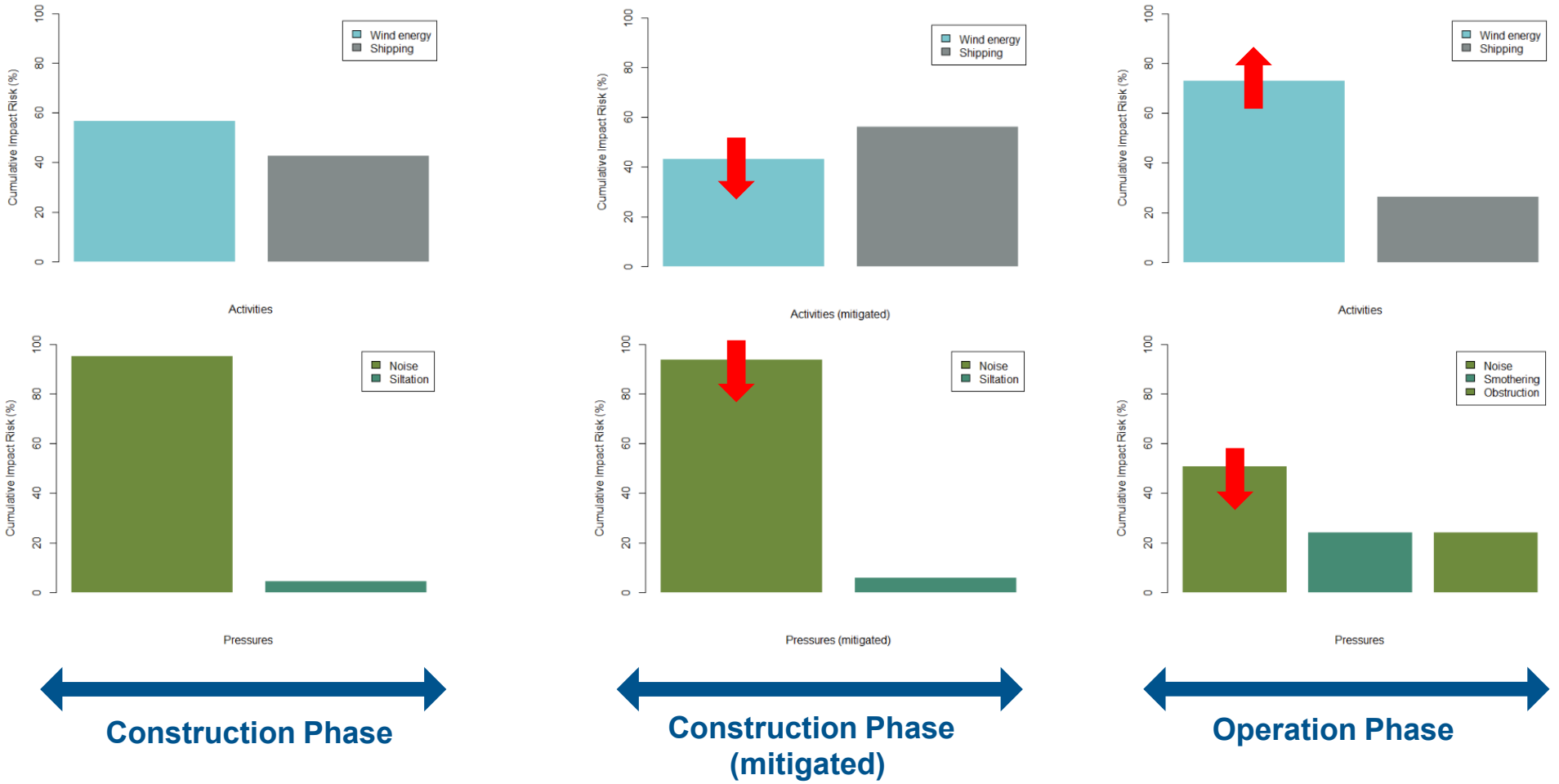
Exposure

Sensitivity

Potential Impact

Cumulative Impact

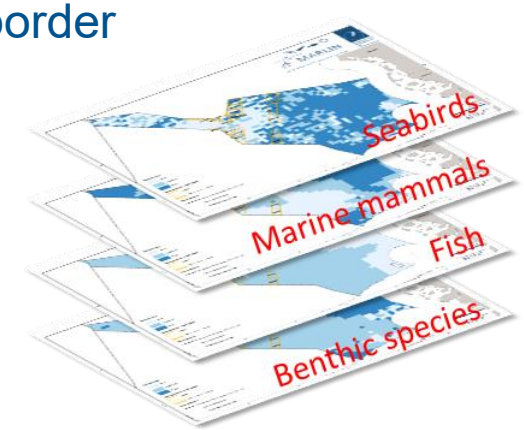
Cumulative Impact Risk (%) by Scenario*



* Share (%)of individual activities & pressures to the overall cumulative impact risk for each scenario

Communication of risks, uncertainties & effects of management decisions during consultation

- Need of communication of risks on species level or taxonomic groups of concern
- Analysis of ecosystem-based sensitivity
- Testing of effectiveness of management options already implemented
- Testing of further management options for future decision making
- Preparation of data sets to be implemented in further tools/frameworks (e.g. GES4SEAS Toolbox etc.) for cross-border assessments



…followed by… 5. MONITORING & EVALUATION

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Thank you

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