

Cumulative impact and multiple stressors in High North ecosystems

Fram program CLEAN

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Vannforvaltningsseminar, Fram Centre, 14. jan 2025

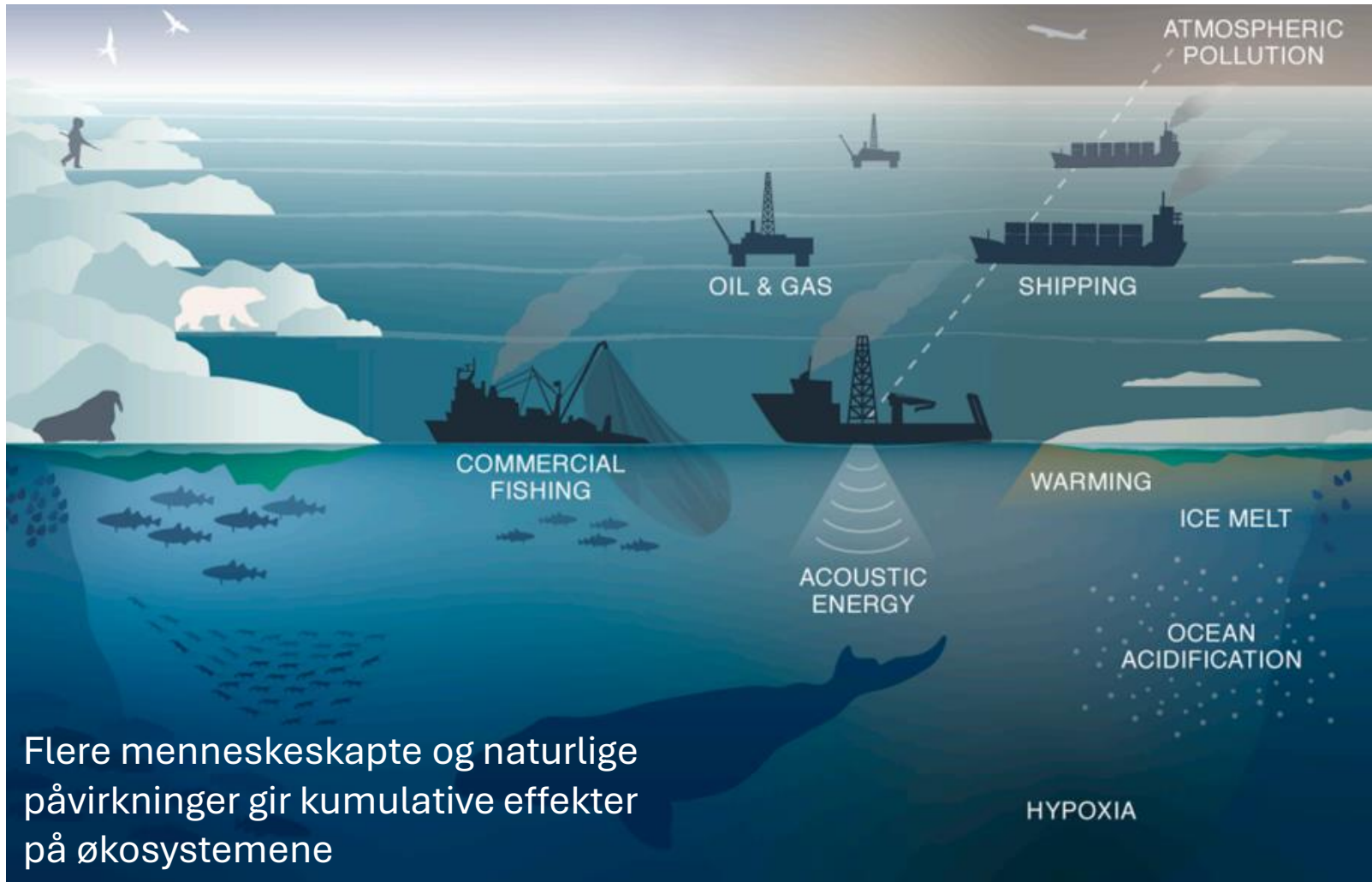


Fersk
vann



Kyst Marine cases

Hva er utfordringen?



Flere menneskeskapte og naturlige påvirkninger gir kumulative effekter på økosystemene

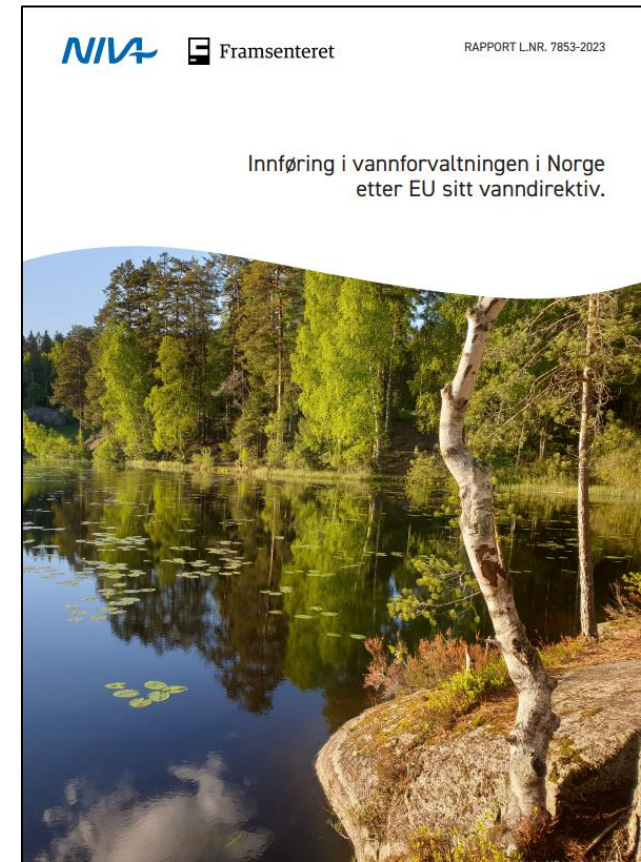
Forstår



Hvordan forvalte?

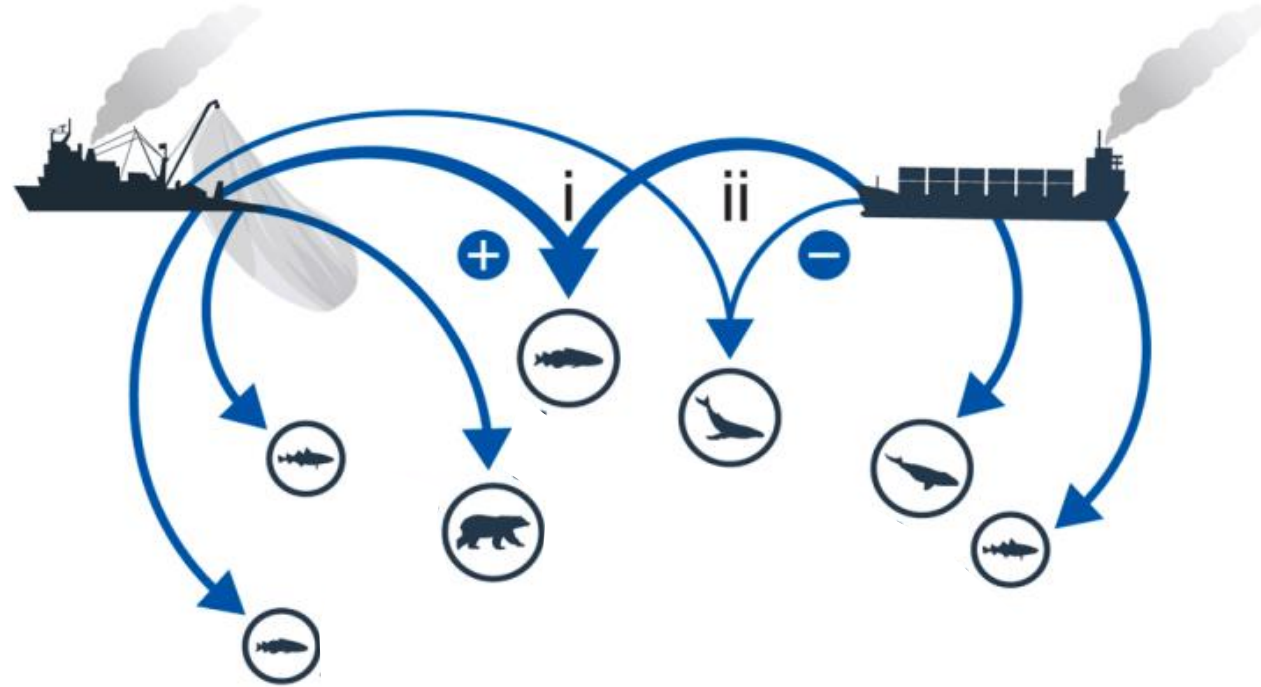
CLEAN og Vannforvaltningen

- ✓ Bedre kunnskap om miljøtilstanden i vannforekomsten i vassdrag
→ case studie ‘Pasvik’, Finnmark
- ✓ Kystforvaltningen → case studie ‘Coast and Fjords’
- ✓ Klassifisering i lys av økosystembasert forvaltning



CLEAN tilnærming

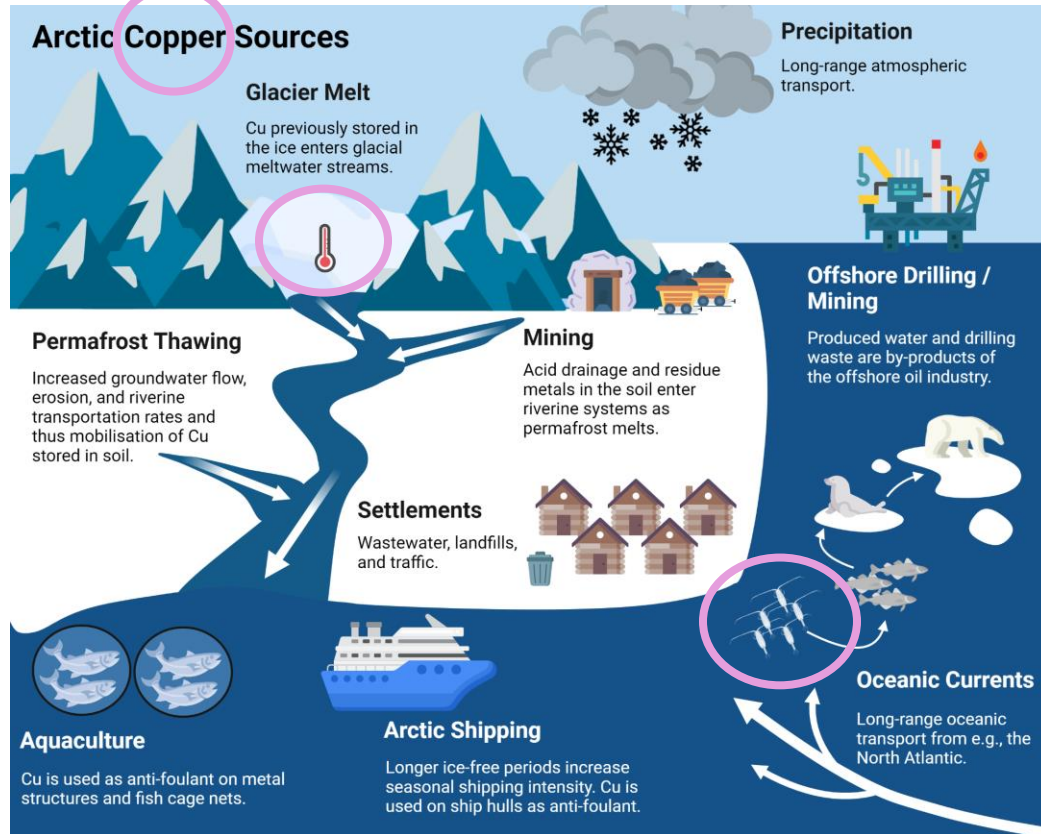
- WP1: stressorer, WP2: eksponering, WP3: sårbarhet



Resultater – arters sårbarhet (WP3)

Stressorer: tungmetall + økt temperatur
 → 2 arter → 2 ulike responser/sensitiviteter

Thomsen et al. in prep



Two copepod species with different traits:


***Calanus* sp.**

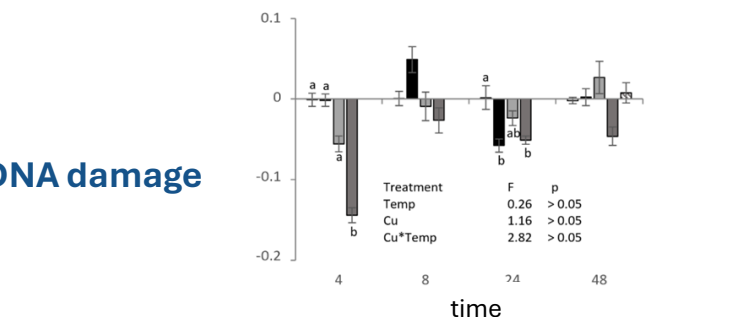
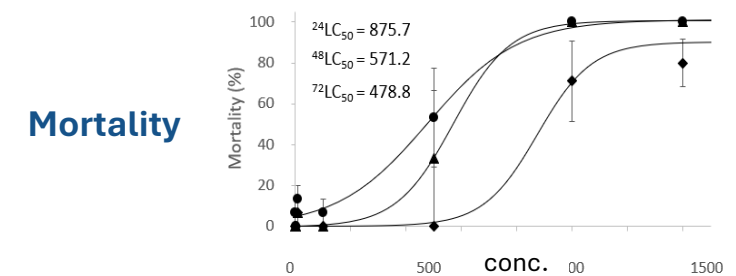
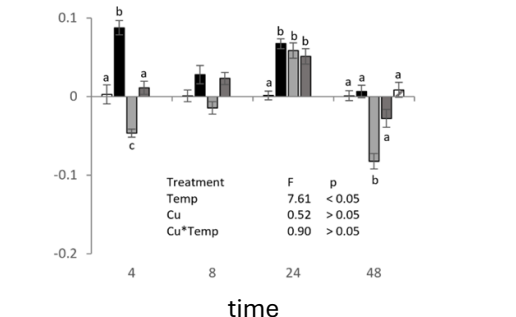
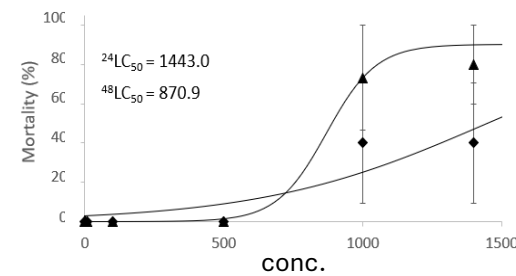
- large (2-4 mm)
- lipid reserves
- more DNA damage



Acartia longiremis

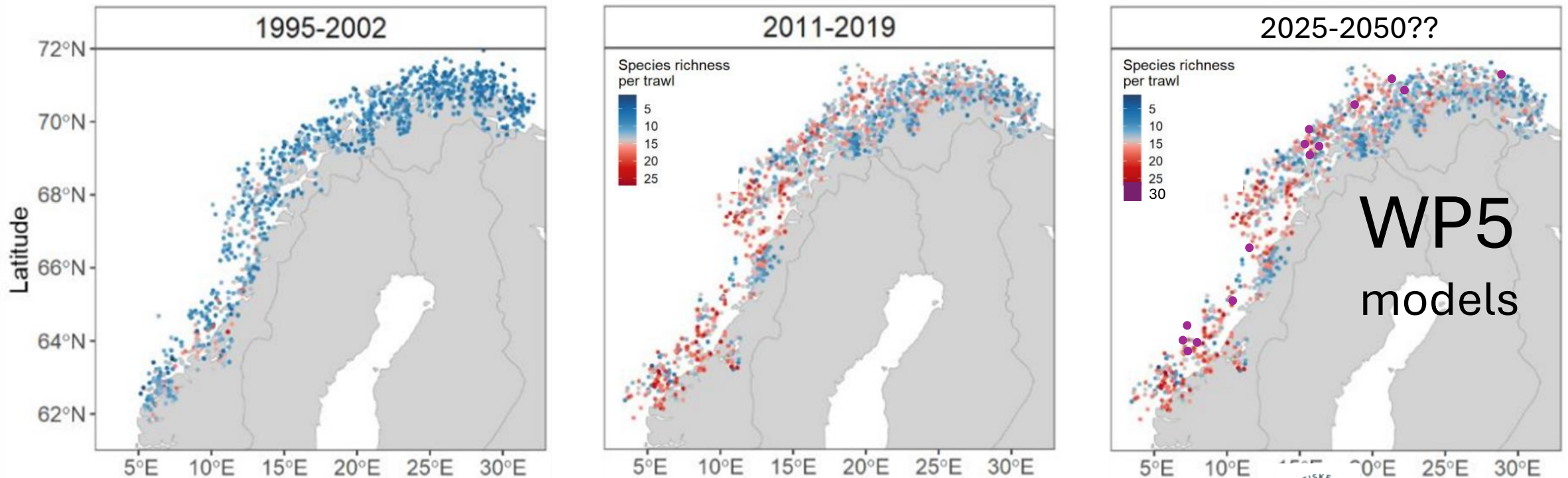
- small (1 mm)
- no reserves
- higher mortality





Resultater – endringer i artssamfunn (WP2/4)

- Klimadrevet omfordeling av fiskearter endrer deres eksponering for flere stressfaktorer langs kysten av Norge



ODEMM metoden (integrated risk assessment)

- Impact pathways:

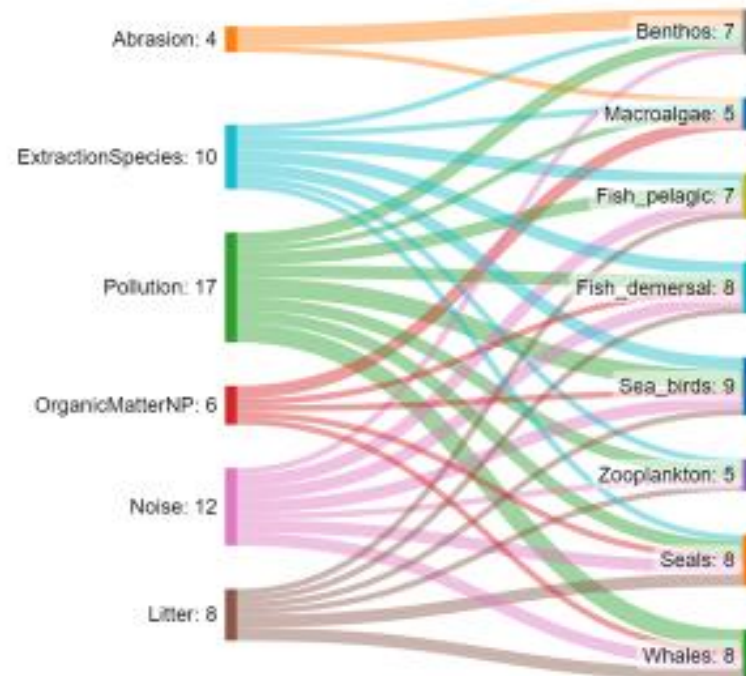
Sector → **Pressures** → **Ecosystem components** → **Ecosystem services**

Shipping

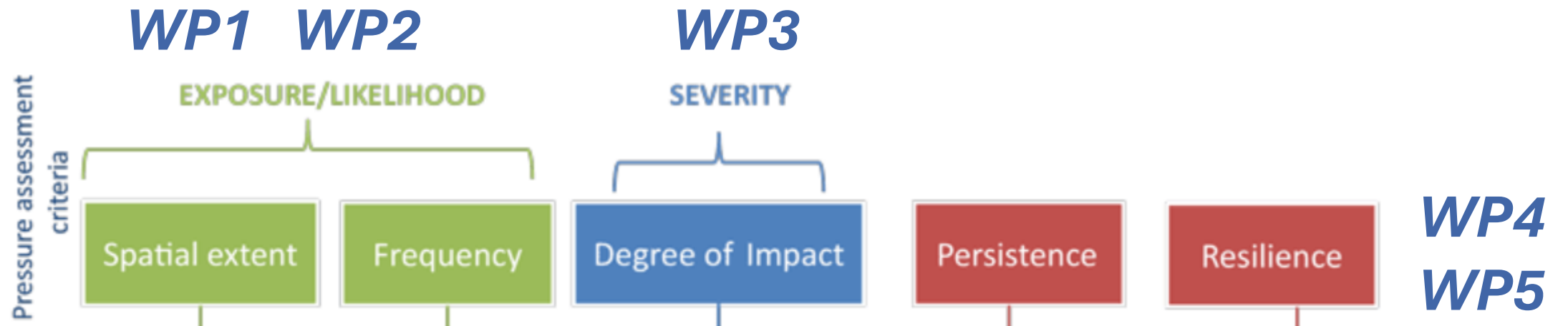
Noise

Fish

Provisioning



ODEMM metoden (integrated risk assessment)



Evaluering av forvaltningsstrategier

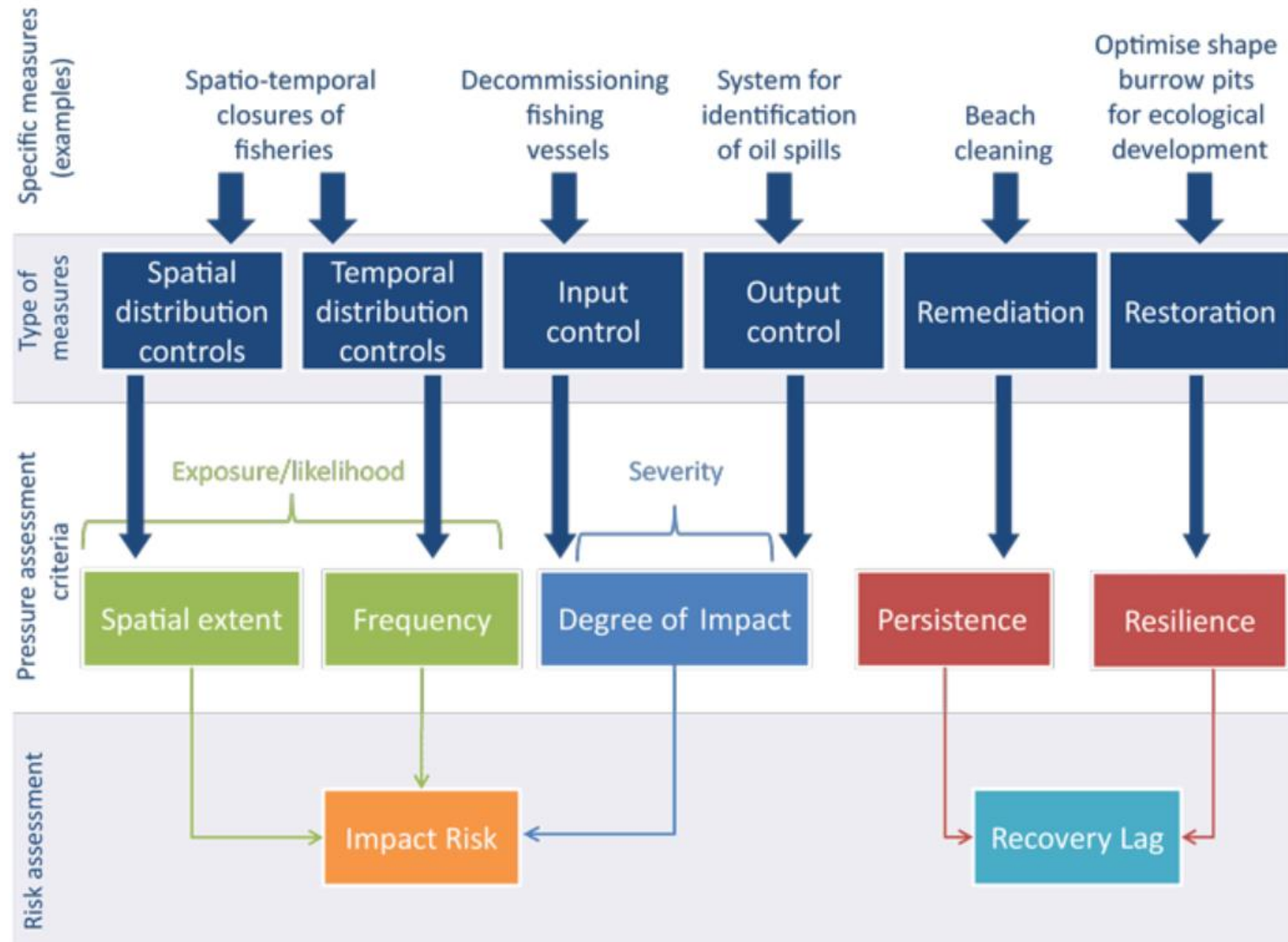
Cases
WP7

WP1

WP2

WP3

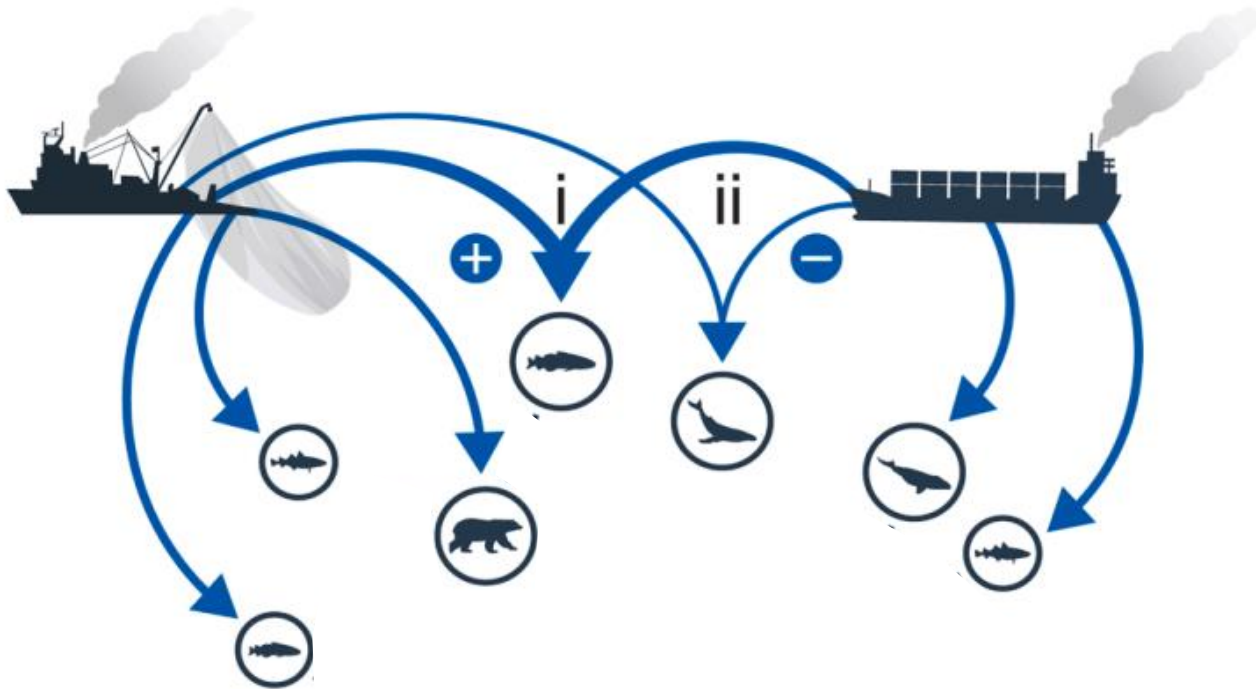
WP6



Tiltak
(Forvaltere)

WP4
WP5

Evaluering av forvaltningsstrategier



- direkte effekter
- indirekte effekter

CLEAN konsortiet

Thank you!



Akvaplan.niva



nilu



NIVA

Meteorologisk institutt

NIBIO
NORSK INSTITUTT FOR
BIOØKONOMI

NIKU
Norsk institutt for
kulturminneforskning

Nofima

UNIS
The University Centre in Svalbard

SINTEF