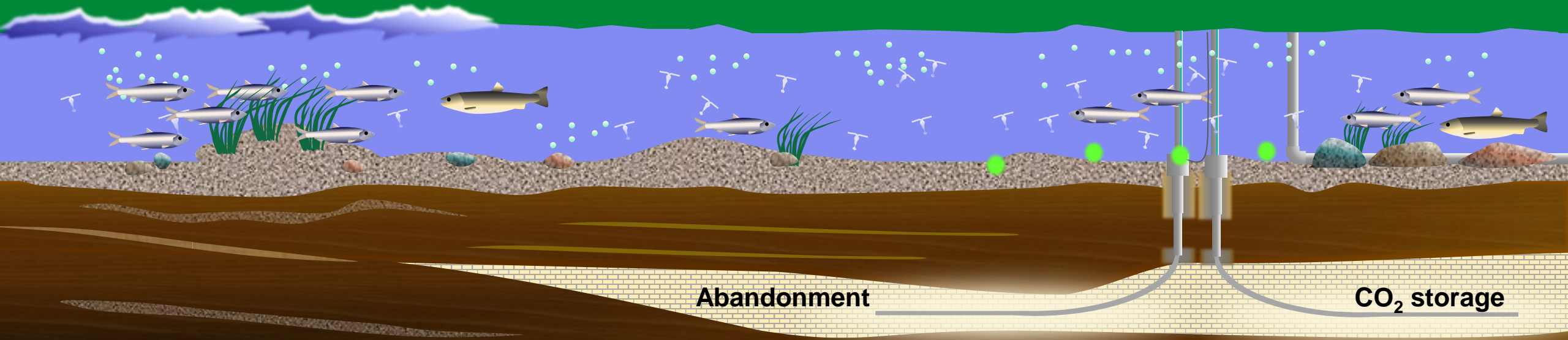
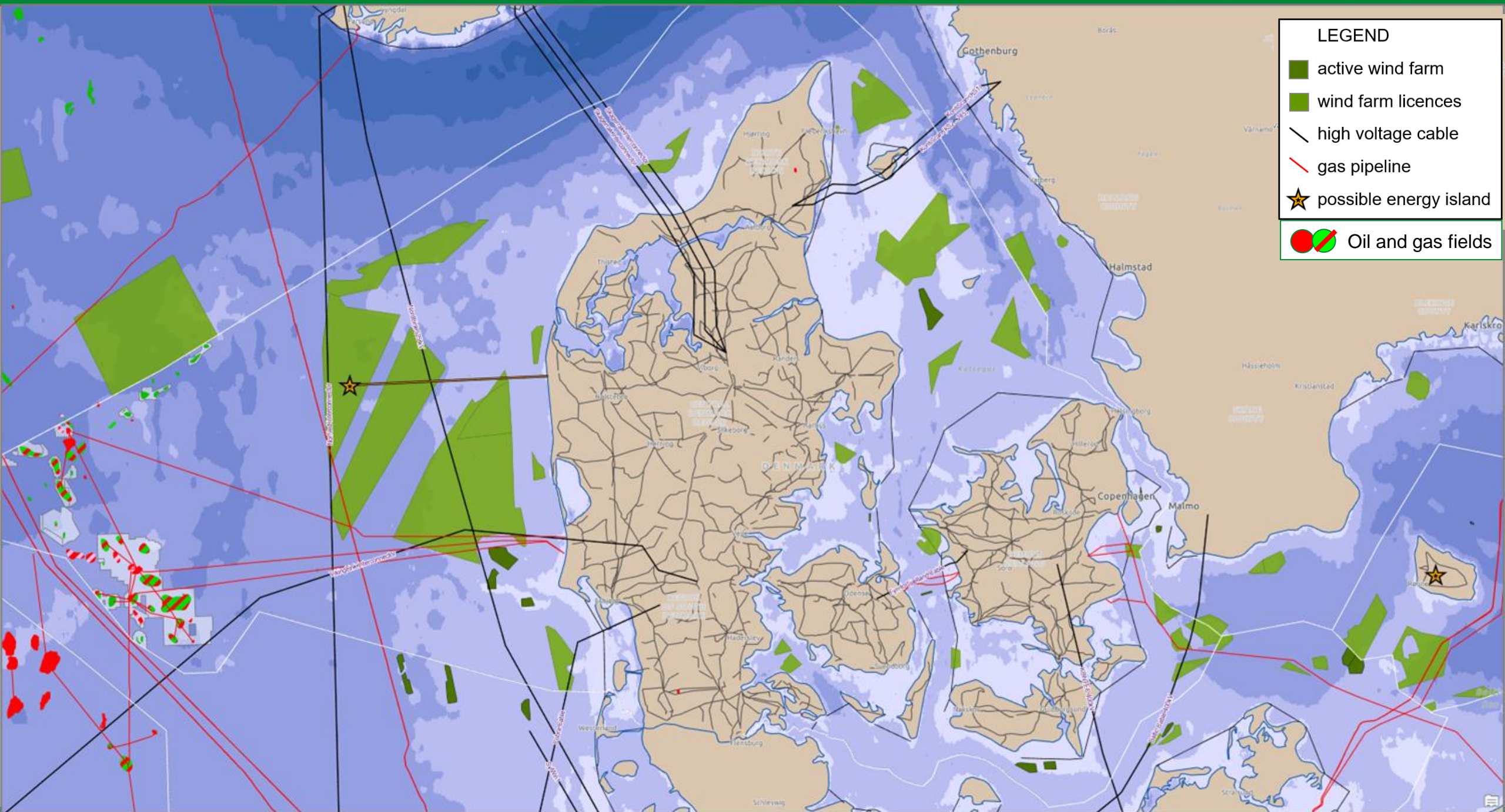


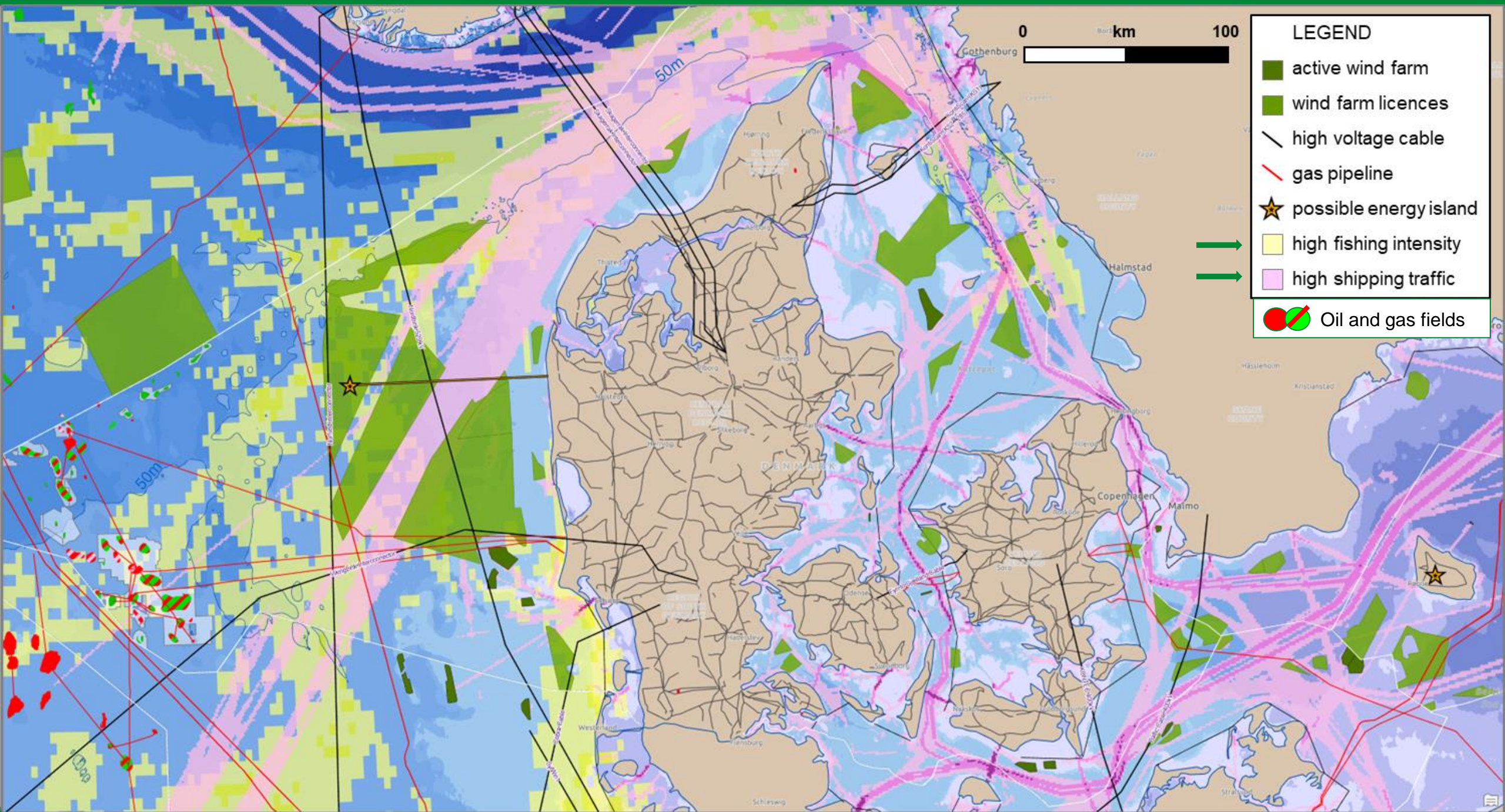
Acceptance Criteria – Zero leak is not zero





LEGEND

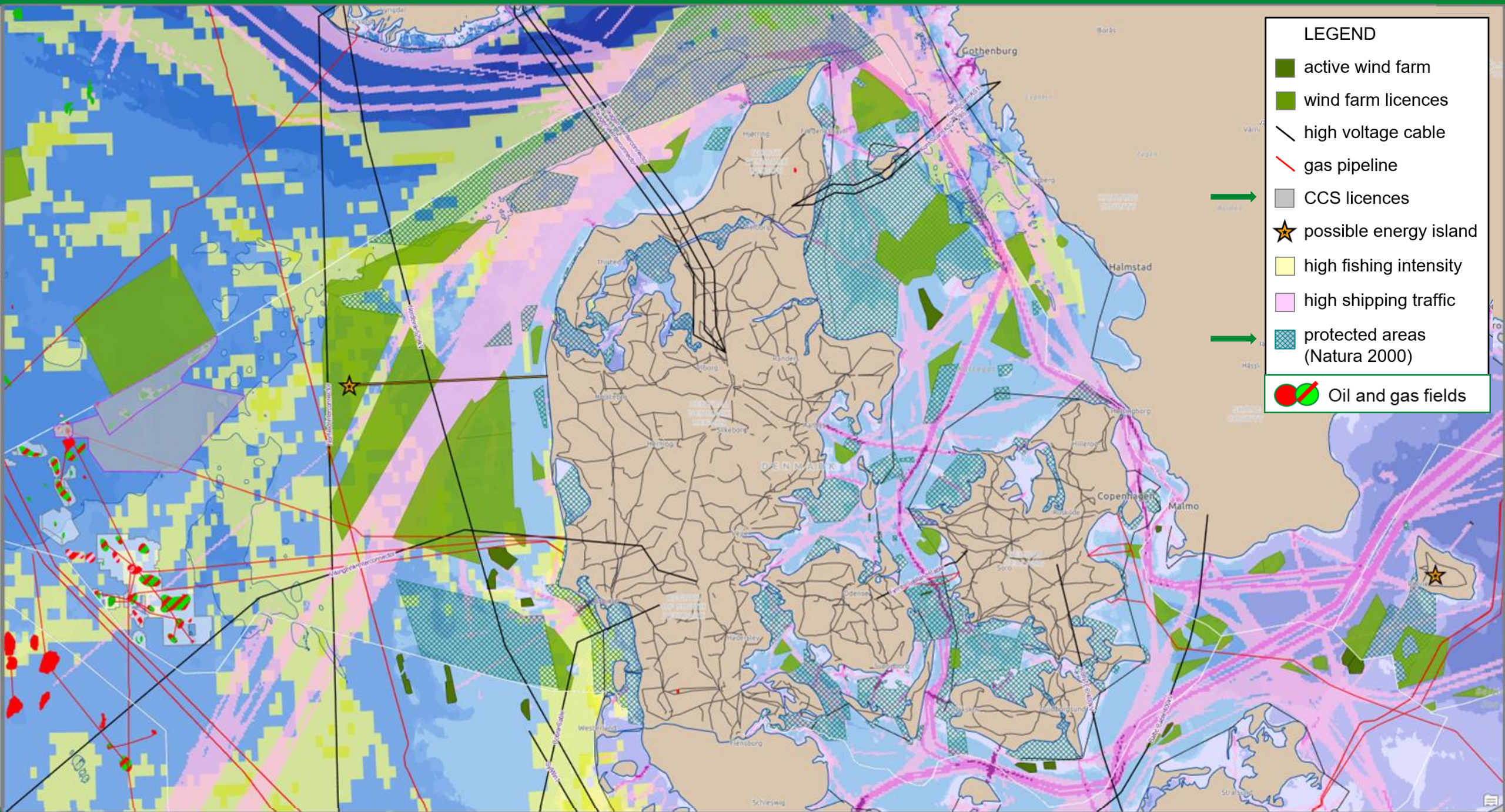
- active wind farm
- wind farm licences
- high voltage cable
- gas pipeline
- ★ possible energy island
- Oil and gas fields



0 km 100

LEGEND

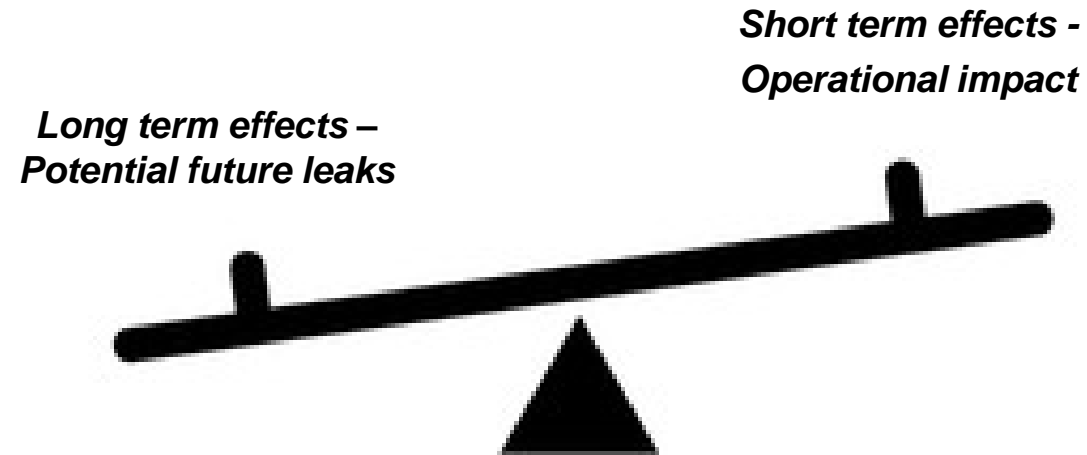
- active wind farm
- wind farm licences
- high voltage cable
- gas pipeline
- ★ possible energy island
- high fishing intensity
- high shipping traffic
- Oil and gas fields



LEGEND

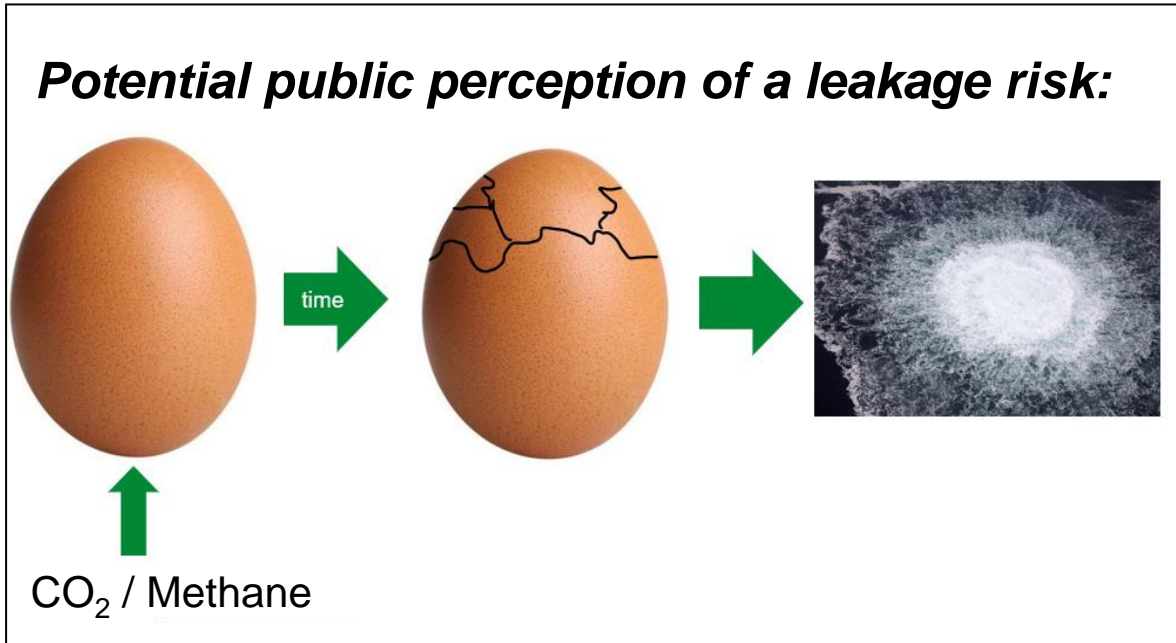
- active wind farm
- wind farm licences
- high voltage cable
- gas pipeline
- CCS licences
- possible energy island
- high fishing intensity
- high shipping traffic
- protected areas (Natura 2000)
- Oil and gas fields

Marine Environmental Impact of Abandonment and CO₂ storage



Similar picture for both Abandonment and CO₂ storage

Monitoring requirements – What if zero leak is not zero?



How should the industry act on the monitoring data collected in the future?

Zero leak is not Zero!

In 2021, EU Commission made report recommending a new EU directive to ensure monitoring of decommissioned oil and gas infrastructure



Similar Requirements already in place for CO₂ storage sites.

Acceptance Criteria - Objectives

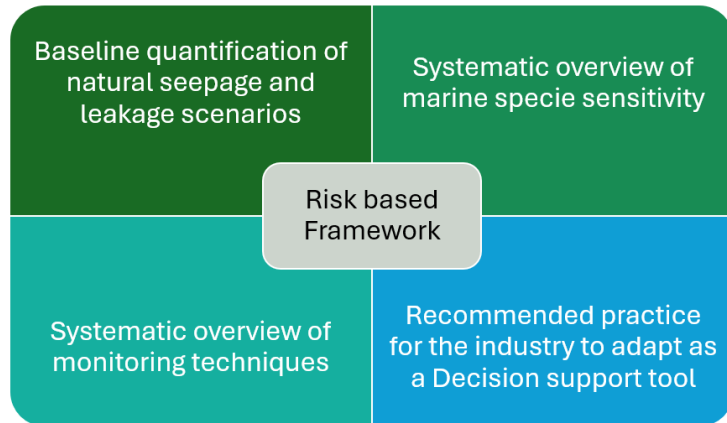
Challenge to be addressed by project:

Zero leak is not zero. When planning abandonment of an Oil and Gas field risk-based approaches are being adopted, however, this is hampered by the lack of a commonly agreed acceptance criteria. Similarly, a risk-based approach can be adopted when evaluating barriers for legacy wells but again an acceptance criteria is needed. Finally, if a leak is detected after abandonment an acceptance criteria is required to evaluate which action is needed.

Objectives:

Develop industry practice and decision support tool for abandoned oil and gas sites

Similar framework can be used for CO₂ storage sites (not incl in this project)

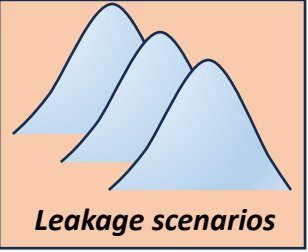


*Framework does not include investigation and comparison of different barrier material.

**Incl. Legacy wells

Project components

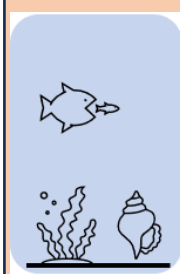
WP2: Scenarios



Leakage scenarios

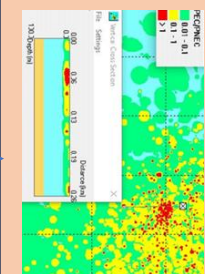
- Species/populations
- Ecological habitat
- Waves/currents
- Temperature
- Leakage rates
- Duration
- Site
- Fluid composition
- Droplet size
- Uncertainty

WP3: Ecosystem



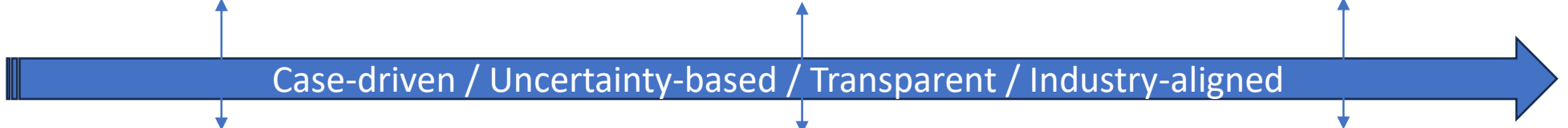
Ecosystem resilience

- Species sensitivity
- Pollutant thresholds
- Uncertainty

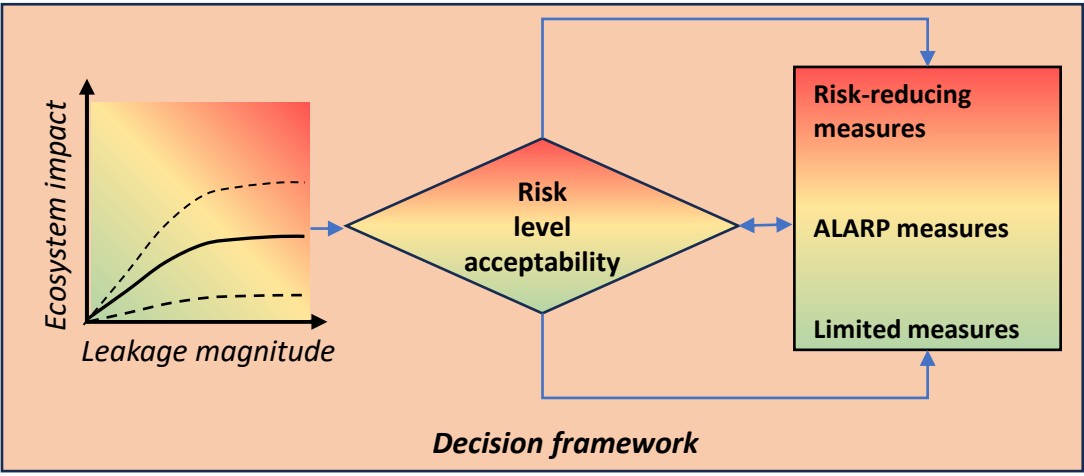


Ecosystem impact

- Species impact
- Bioindicators
- Critical leak factors
- Damage potential
- Concentrations
- Adverse effects
- Uncertainty



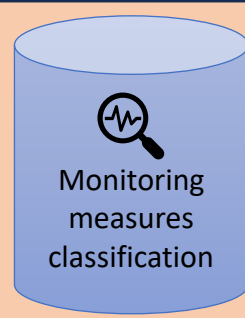
WP4: Acceptance criteria



Decision framework

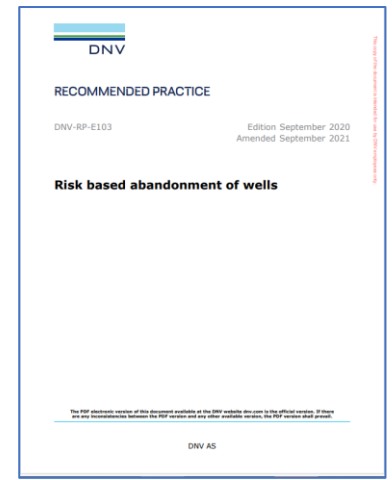
- Risk-reducing measures
- ALARP measures
- Limited measures

WP5: Monitoring




Monitoring measures

- Pros/cons
- Scenario applicability
- Detection limits
- Technology gaps
- Costs
- Data requirements



WP6: Recommendations



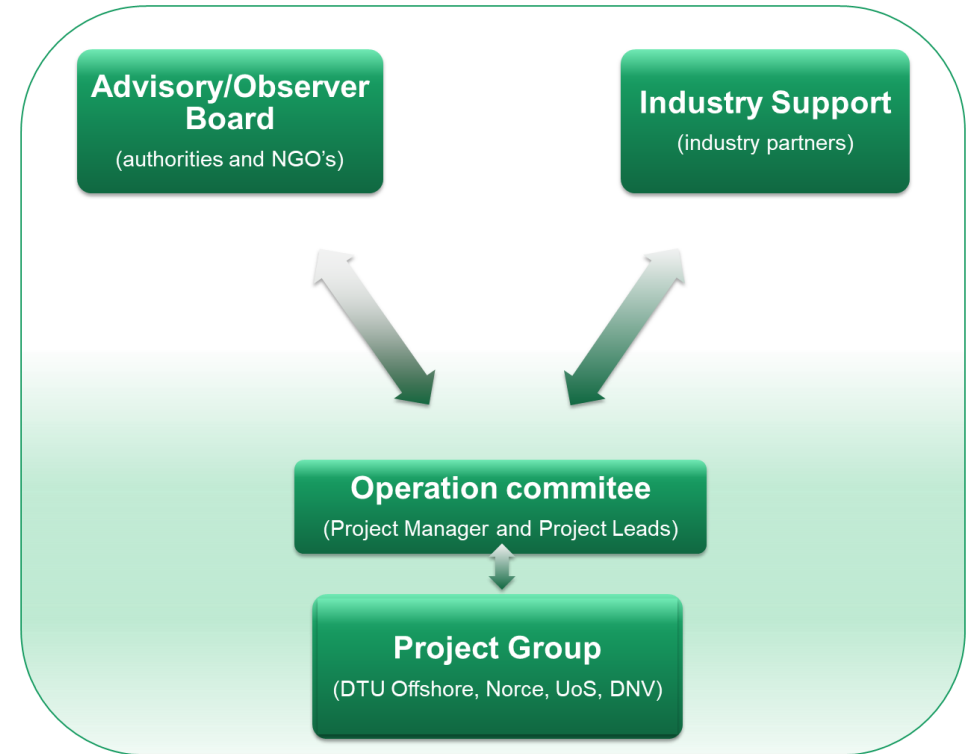
- Risk-based P&A
- Monitoring
- Acceptance criteria
- Ecosystem assessment
- Well integrity
- Decision-making
- Uncertainty assessment

Recommended practice

JIP – Set up

- JIP to be funded by the industry
- 3 years duration
- Advisory committee and industry support
- Need wide industry basis

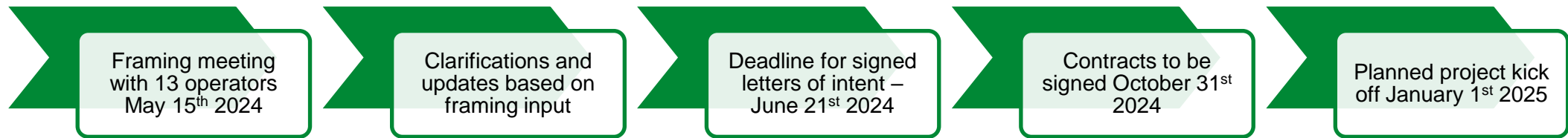
Note: Important that framework and acceptance criteria are adopted by both authorities and industry



Proposed set-up



Way forward



- End May share revised updated project description to interested companies
- Please contact us for comments or questions

Important to have as wide participation base as possible to ensure adaptation