

22-26 JUNE 2020  
**EU SUSTAINABLE ENERGY WEEK**

BEYOND THE CRISIS: CLEAN ENERGY  
FOR GREEN RECOVERY AND GROWTH



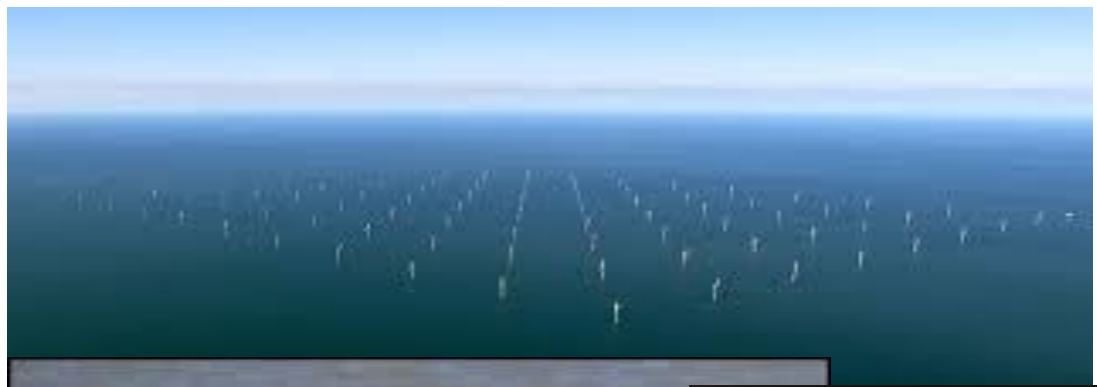
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Ministry of Infrastructure and the Environment



Ecological monitoring and research of the ecological effects of offshore windfarms on ecology: the Dutch way....

Rijkswaterstaat, Ministry of Infrastructure and Environment,

Commissioned by: Ministry of Economic Affairs and Climate Policy, Ministry of Agriculture, Nature and Food Quality

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- > Legislation
- > Monitoring
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- > International and national collaboration, stakeholders



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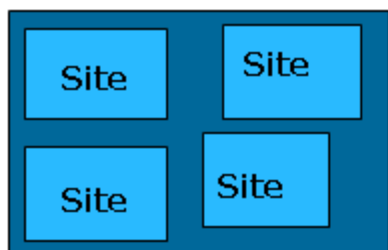
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# Legislation: Offshore Wind Energy act

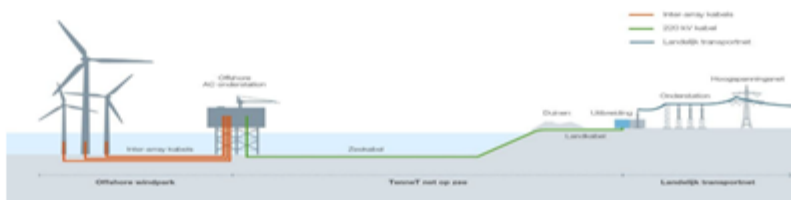


Step 3: tender

Step 4: construction en exploitation of the wind farm

Step 1: National Water Plan: assigning wind farm zones

Step 2A: Wind farm site decisions: location specific regulations



Step 2B: Grid connection by TenneT



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# Legislation: Procedure Wind farm site decision

1. Publication draft decision and Environmental Impact Assessment
2. 6 weeks: anyone can react
3. Publication final decision and responses to the point of views from the general public, NGO's and stakeholders
4. 6 weeks: appeal at the Council of State (only interested parties)
5. Decision on appeal
6. Irrevocable decision

## Mandatory plans Wind Farm Site decisions

- Nature inclusive building plan
- Economy enhancement plan
- Piling plan
- Curtailment plan birds
- Curtailment plan bats
- Archaeology and cultural history
- Monitoring plan only if there are very specific local ecological differences



# Monitoring



Why coordinated ecology program?

- Reducing uncertainties,
- Advance insight about the mitigating measures in the regulations
- Level Playing Field
- No separate costs for wind farm owners due to a coordinated national research program



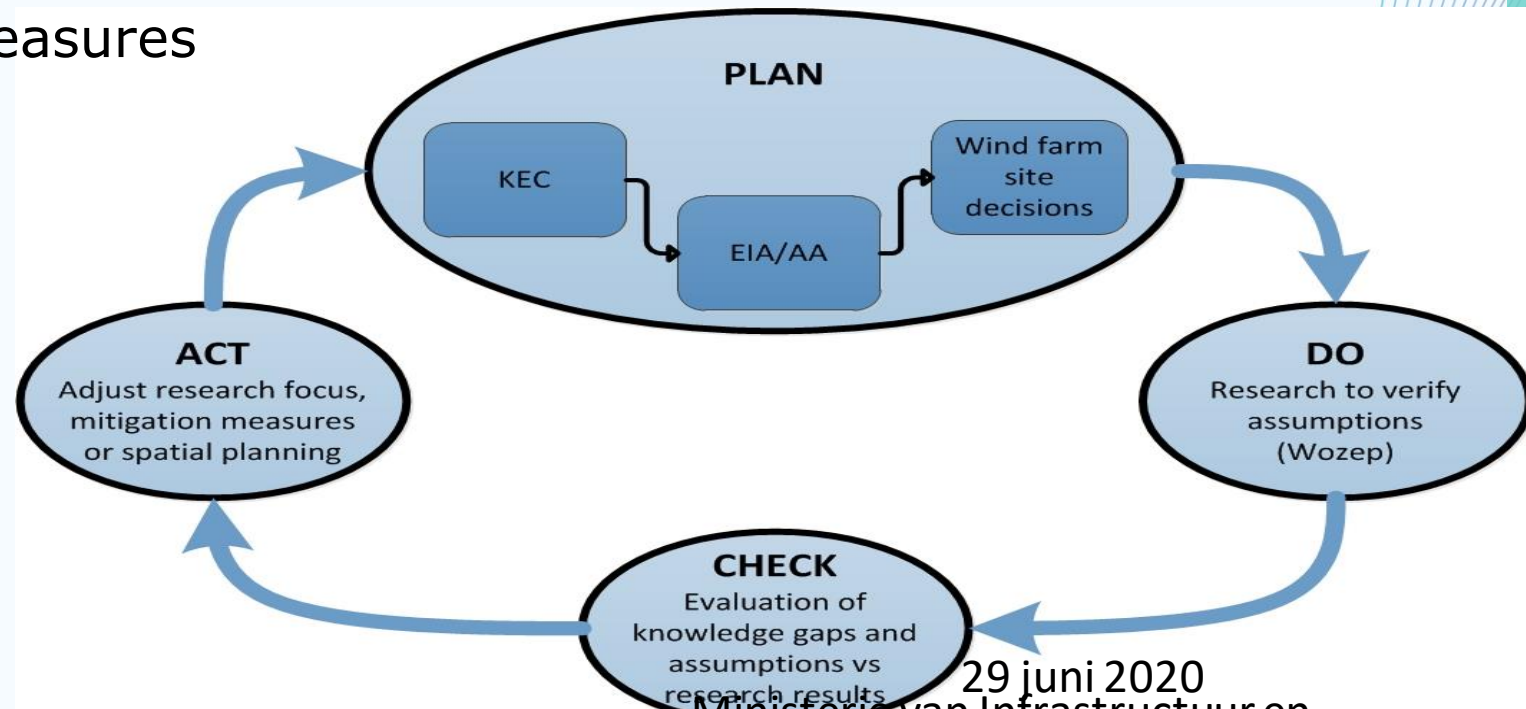
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# Monitoring: PDCA

Coördinated research program conducted by the Government

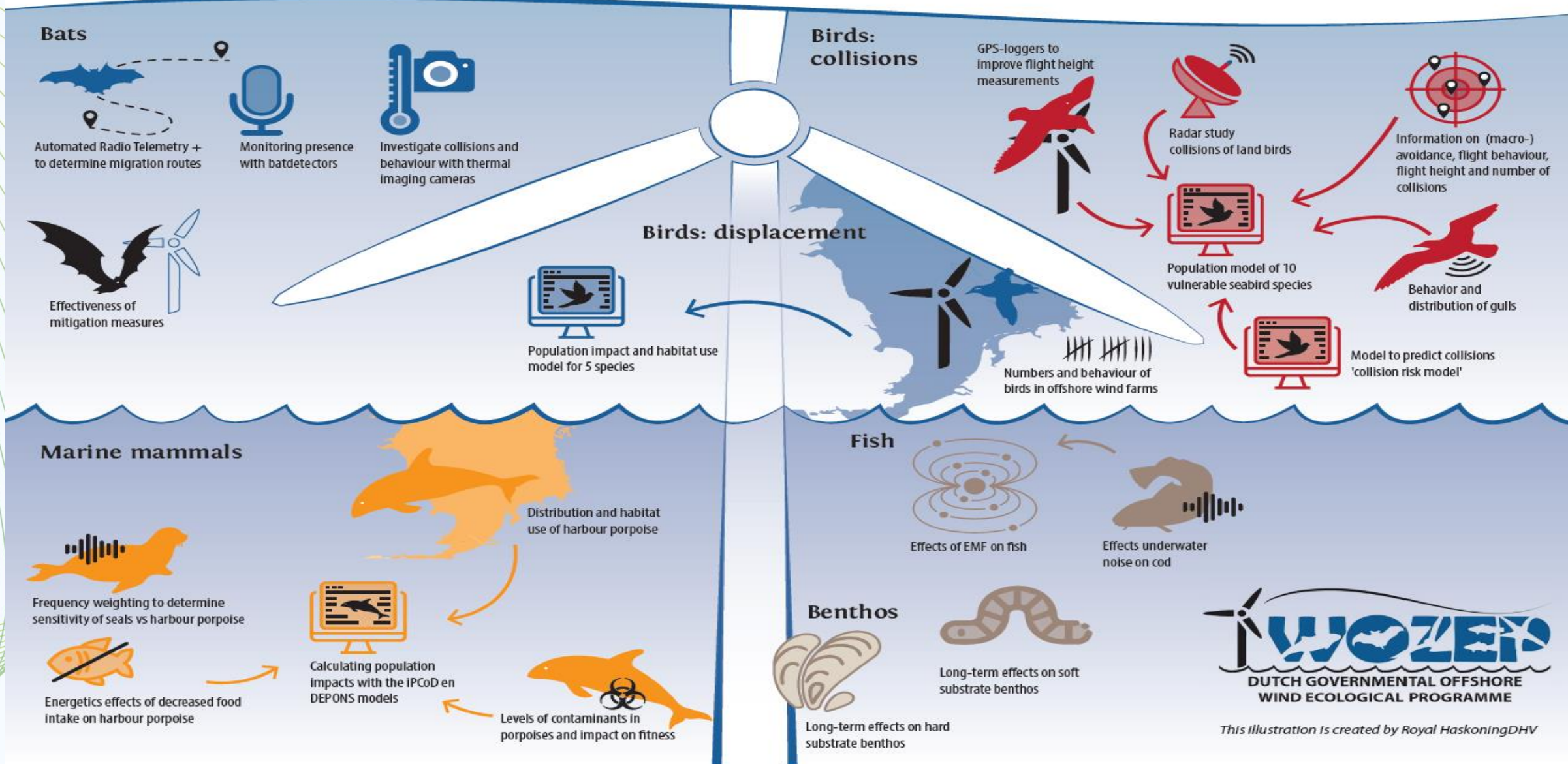
Project Wind at Sea Ecology:

- 1) Knowledge gaps ecology and mitigation (WOZEP)
- 2) Framework Ecology and Cumulation (KEC)
- 3) Operationalize mitigating measures





# Effects offshore wind energy on ecology



This illustration is created by Royal HaskoningDHV

# Effects offshore wind energy on ecology

## Monitoring and research:

- Birds, collision and displacement
- Bats, migrating subpopulation, collision
- Marine mammals, under water noise
- Benthos 'long' term development soft and hard substrate
- Ecosystem effects
- EMF



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# Scope Wozep research program

First Shortlist, VUM (2010-1015)

Then Wozep (2016-2023)

Goals of Wozep research programme:

1. Reduce uncertainties in knowledge gaps and assumptions in EIA/AA and KEC
2. Reduce uncertainties in upscaling offshore wind energy after 2023
3. Effectiveness and necessity of mitigation measures

# Cumulative effects of offshore wind farm development? -KEC

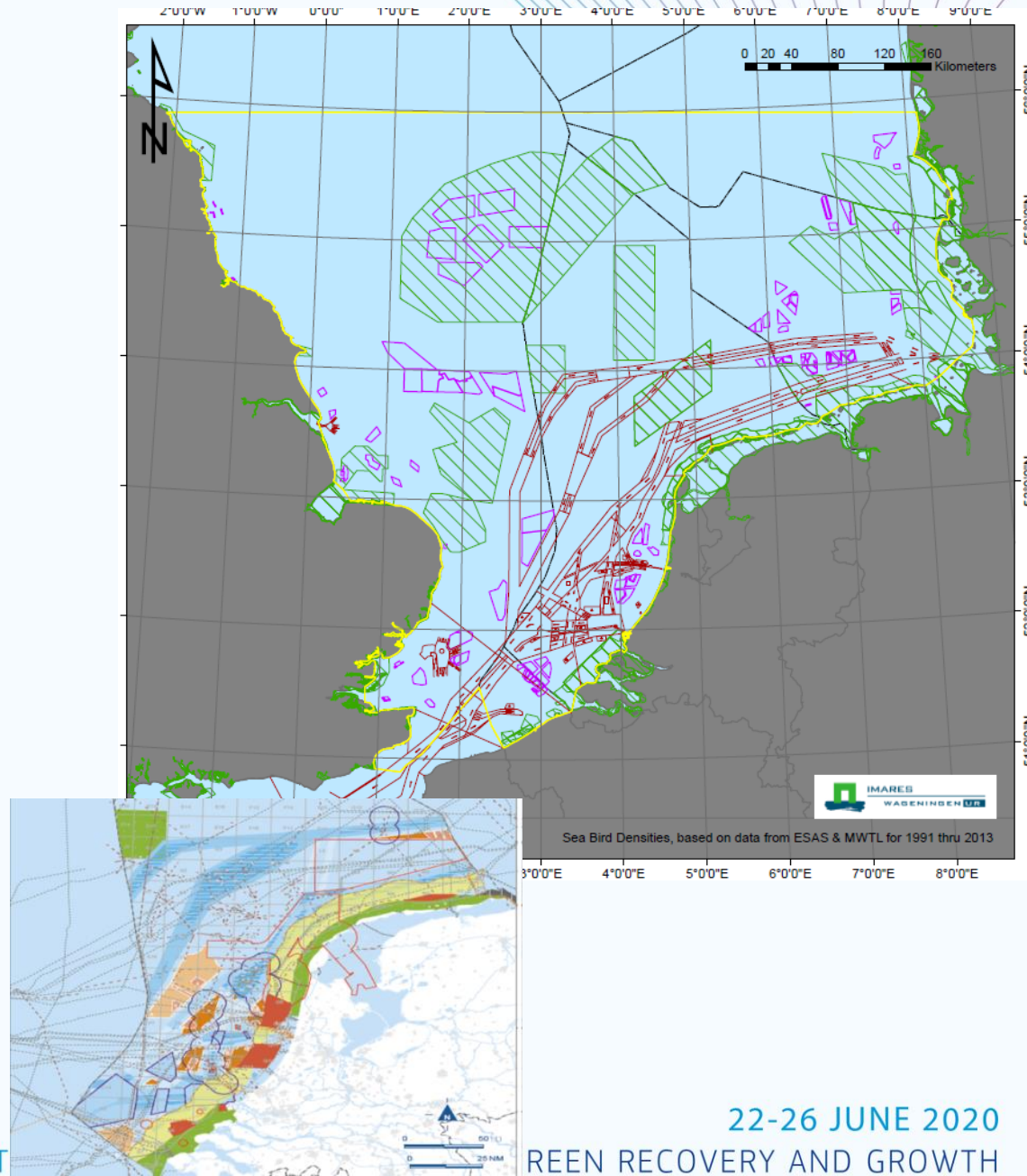
Plans for OWF in the entire Southern North Sea area

Need of a clear framework for cumulation stressed by Netherlands Commission for Environmental Assessment

No cumulation on a permit by permit base, but all windfarms together

- > no unpleasant surprises,
- > no uncertainty
- > reducing costs (?)

Better for ecology, better for windfarm-owners



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# KEC: use of knowledge

## Goals:

- Detailed methodology for determining cumulative effects of offshore wind farms
- Advice regarding regulations for Wind Farm Site Decisions (on ecology)
- Overview of knowledge gaps – basis for monitoring and research on offshore wind

## Based on:

- Transparency
- Precautionary principle, but realistic worst case
- The use of expert judgement for filling knowledge gaps
- Only published information / models used
- Living document, new knowledge, new KEC



KEC 3.0 (2019) on [www.noordzeeloket.nl/functies-gebruik/windenergie-zee/ecologie/cumulatie/kader-ecologie/](http://www.noordzeeloket.nl/functies-gebruik/windenergie-zee/ecologie/cumulatie/kader-ecologie/)

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# Mitigation in the Wind Farm Site decisions: Use of Monitoring results in KEC

## Birds:

- >10 MW (collision seabirds)
- Start-stop (migrating birds) (see next slides)

## Bats:

- Start-stop

## Seamammals:

- ADD
- Noise-threshold
- Slow start
- As short as possible, as low noise as possible

- Nature Inclusive building
- Monitoringprogramm and the obligation to collaborate

Every windfarm in Roadmap 2030: same mitigation -> same costs -> level playing field



# Stakeholdermanagement

## 4 Golden stakeholders

-  NGO's
-  Windsector
-  Tennet
-  Government

## 2 Silver stakeholders

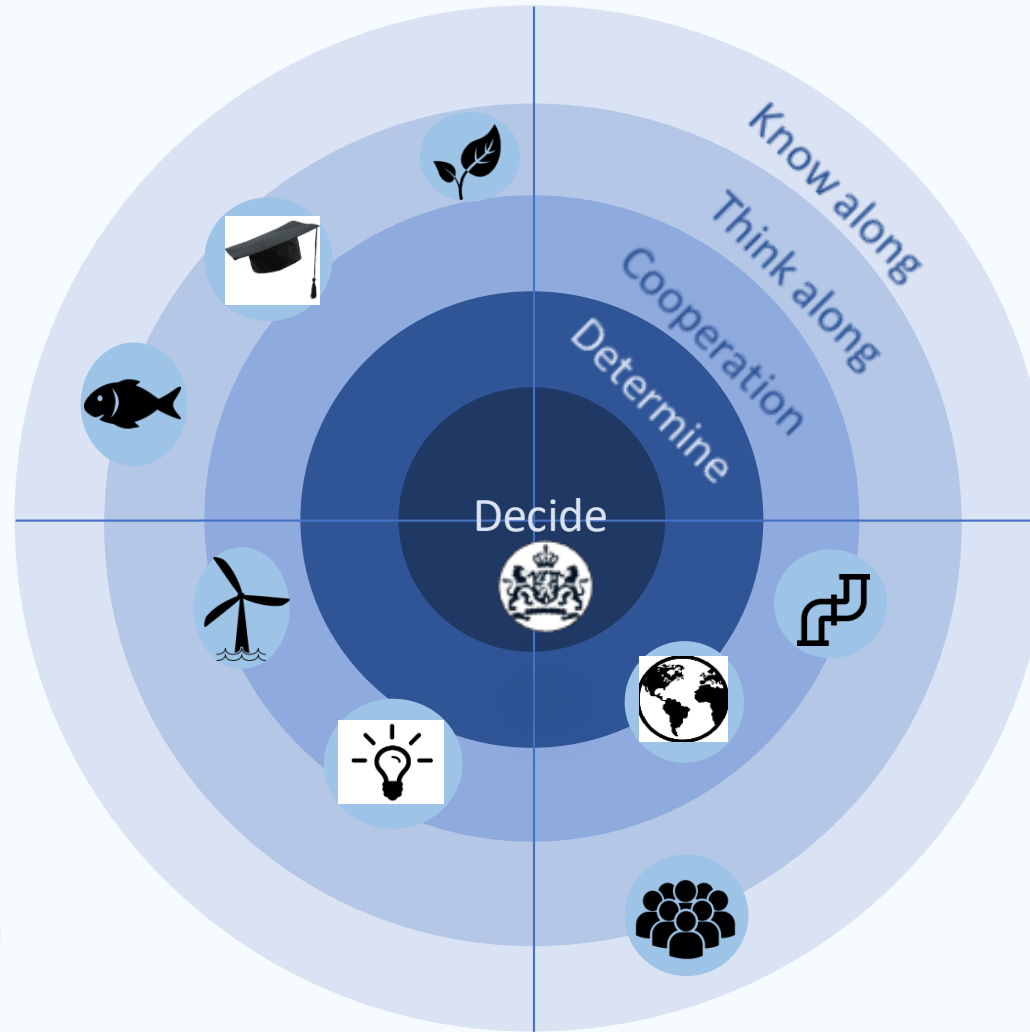
-  CEAF partners
-  Fishery

## 3 Bronze stakeholders

-  Science, university
-  Knowledge Institutes and research-companies
-  Related projects

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# International and National collaboration, stakeholders

In Wozep and KEC:

- National collaboration -> governance, science, research, stakeholders
- Also international collaboration and seeking for more cooperation
- CEAF/SEANSE ("International KEC")
- (Inter)national Data-use, Data-exchange and Knowledge-exchange
- Data management, open for re-use transparency, reproducible, Open data, Emodnet
- Noordzeeloket.nl (also in English) -> all reports
- Twice a year Stakeholdermeeting, update research and implementation new knowledge, Newsletter





vildaphoto



*Syfoia*



Questions?





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- Extra



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# Wozep research marine mammals

Marine mammals b.e.

1. Underwater noise - acoustics
2. Effect of noise on seals and harbour porpoise
3. Effect of noise on populations of marine mammals
4. Spatial distribution seals



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# Wozep research birds and bats

## Birds and bats

1. Validation of collision model and population effects
2. Validation of assumptions habitat loss birds (modelling and field work, scenario's)
3. Insight in bat population (size, migration)

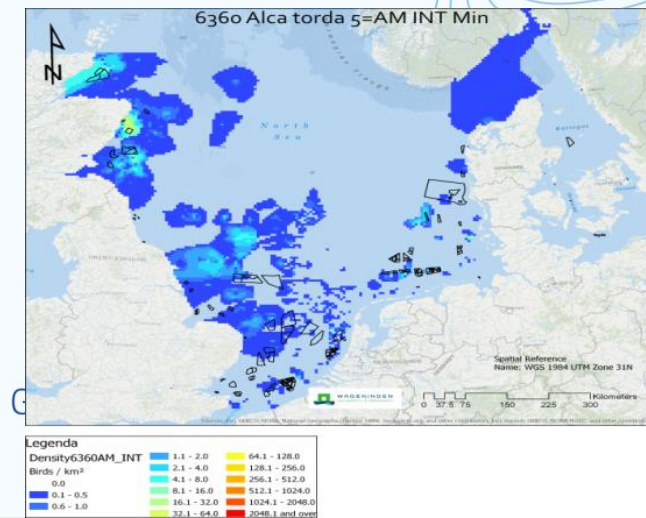


# Wozep research benthos and fish

1. Habitat change in the wind farms?
2. Absence of fisheries, long term development
3. Effect of electro-magnetic fields on fish

## Knowledge gaps and uncertainties birds

- Behaviour in windfarm;
- Density maps & monitoring;
- Population-estimations;
- Avoidance and collision risk (Orjip);
- Band model very sensitive to avoidance rates;
- More information migrating birds fluxes and flight heights and flight behaviour;
- PBR, population modelling.





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