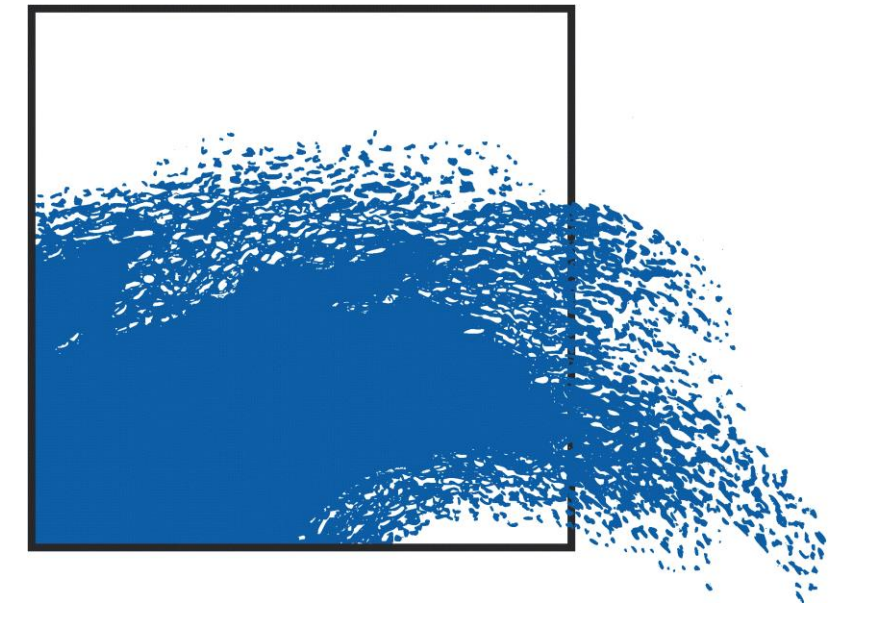# Assessing the environmental impact of offshore wind farms in the Belgian part of the North Sea

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Introduction

By 2020, renewable energy sources should account for 13% of the Belgian electricity consumption. Offshore wind farms are expected to contribute to this with ~2000 MW installed capacity in the Belgian part of the North Sea. Here we illustrate how the environmental impact of every different project is assessed in the process of applying for an environmental permit.

Procedure

Before being granted or denied, every project has to pass through an environmental permit procedure, pursuant to the law on the protection of the marine environment (January 20th 1999) and two Royal Decrees.

1. *The Royal decree concerning the procedure of permit and authorization of certain activities in the marine areas under jurisdiction of Belgium (September 7th 2003)*
2. *The Royal decree concerning the rules of the environmental impact assessment (September 9th 2003)*

Project developer

1. Develop a new project for an offshore wind farm

2. Apply for a domain concession in the zone designated for the production of electricity from wind, water or currents (Figure 1).

Domain concessions are granted based on various criteria, including expected energy production/km², use of innovative technology, feasibility of the project, added value with regards to competing projects….

3. The domain concession is granted to your project?

No → Go back to 1.

Yes ↓

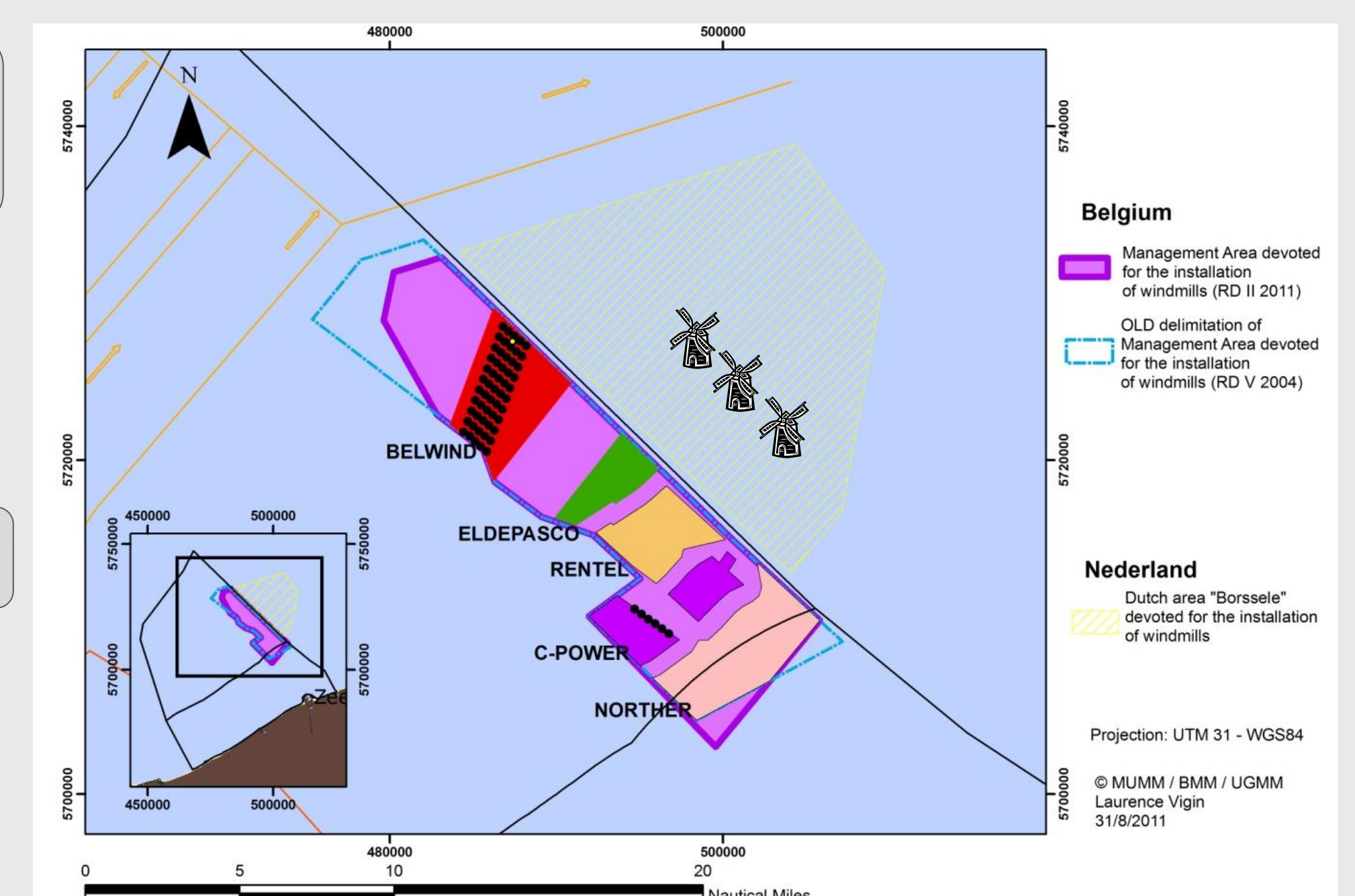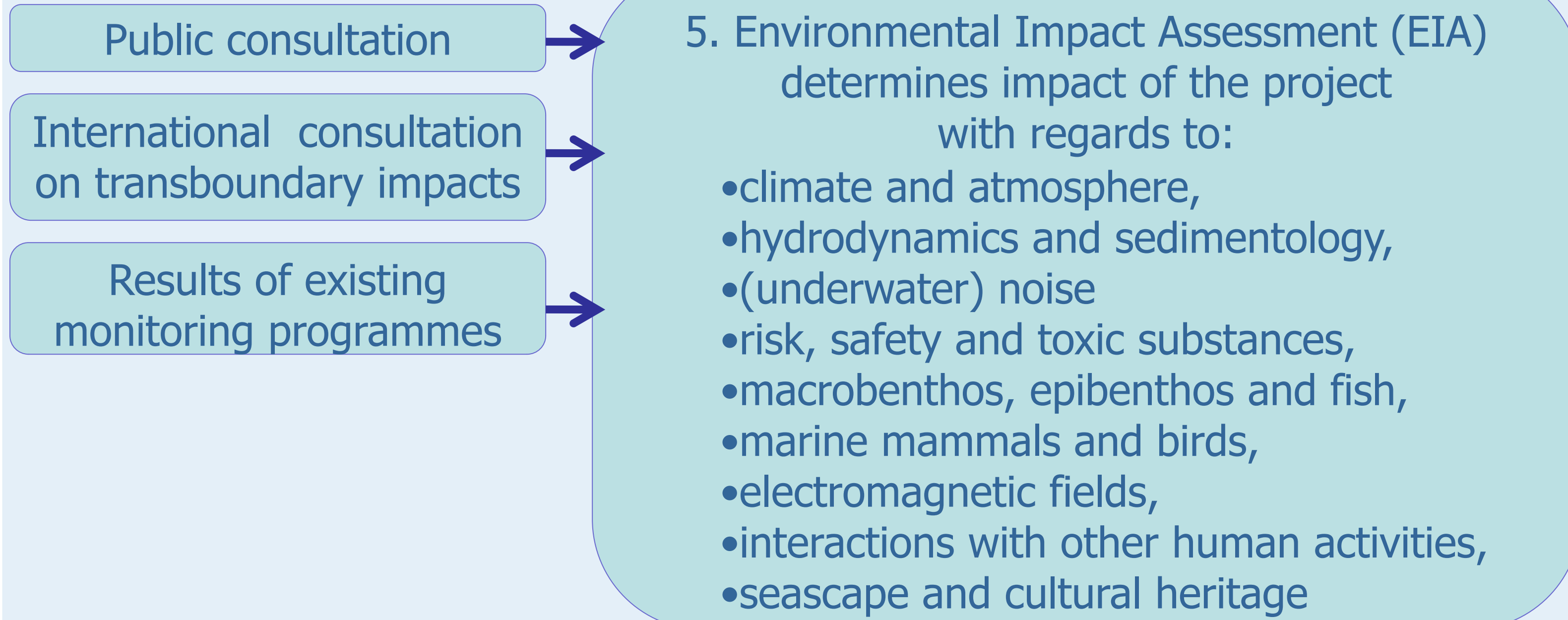4. Compose an Environmental Impact Study (EIS) and apply for an Environmental Permit

Figure 1. Overview of the domain concessions for offshore wind farms in the Belgian part of the North Sea, with indication of the nearby Dutch zone for offshore wind farms.

MUMM

Public consultation →

International consultation on transboundary impacts →

Results of existing monitoring programmes →

5. Environmental Impact Assessment (EIA) determines impact of the project with regards to:
- climate and atmosphere,
- hydrodynamics and sedimentology,
- (underwater) noise
- risk, safety and toxic substances,
- macrobenthos, epibenthos and fish,
- marine mammals and birds,
- electromagnetic fields,
- interactions with other human activities,
- seascape and cultural heritage

6. Is the env. impact of the project acceptable?

No → 7. Can mitigating measures be used to sufficiently reduce the env. impact of the project?

No → Go back to 1.

Yes ↓ (from 6)   Yes ↓ (from 7)

8. Positive advise to the Minister to grant an environmental permit to the project!
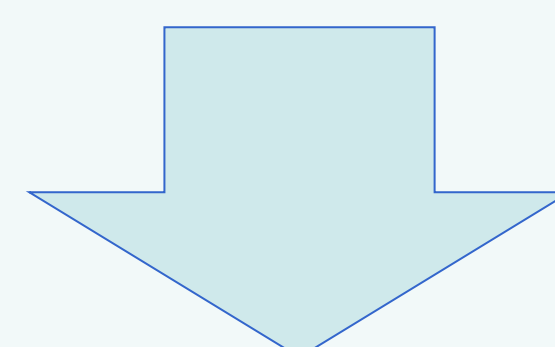
Results

➤ Since 2004, four offshore wind farm projects, totaling ~1200 Megawatt installed capacity, have been granted environmental permits

➤ Site- and Project-specific mitigating measures have been defined for each project

➤ An integrated monitoring programme has been drafted to:

1. Determine the extent of the environmental impact of the projects

2. Evaluate the effectiveness of the mitigating measures

3. Monitor the compliance of the wind farm projects with the mitigating measures defined in their environmental permit

Resulting in an **adaptive** management of the environmental permit

aimed at **reducing the environmental impact of existing and future offshore wind farms**.