



AGIR pour la
BIODIVERSITÉ

Eolien et biodiversité

Séminaire
2017



21 et 22 novembre

Artigues-près-Bordeaux



ENVIRONMENTAL IMPACTS AND RESPONSIBILITIES

How to foster cohabitation between Offshore Wind Farms and the Marine Environment

Eolien et biodiversité Séminaire 2017, 22. Novembre, Artigues – près – Bordeaux,

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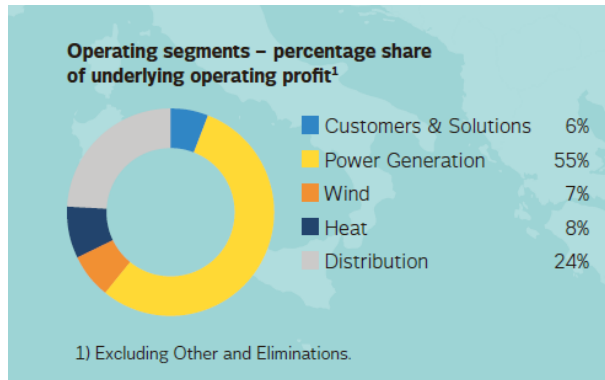
Environmental & Sustainability Unit
Business Area Wind

CONTENT

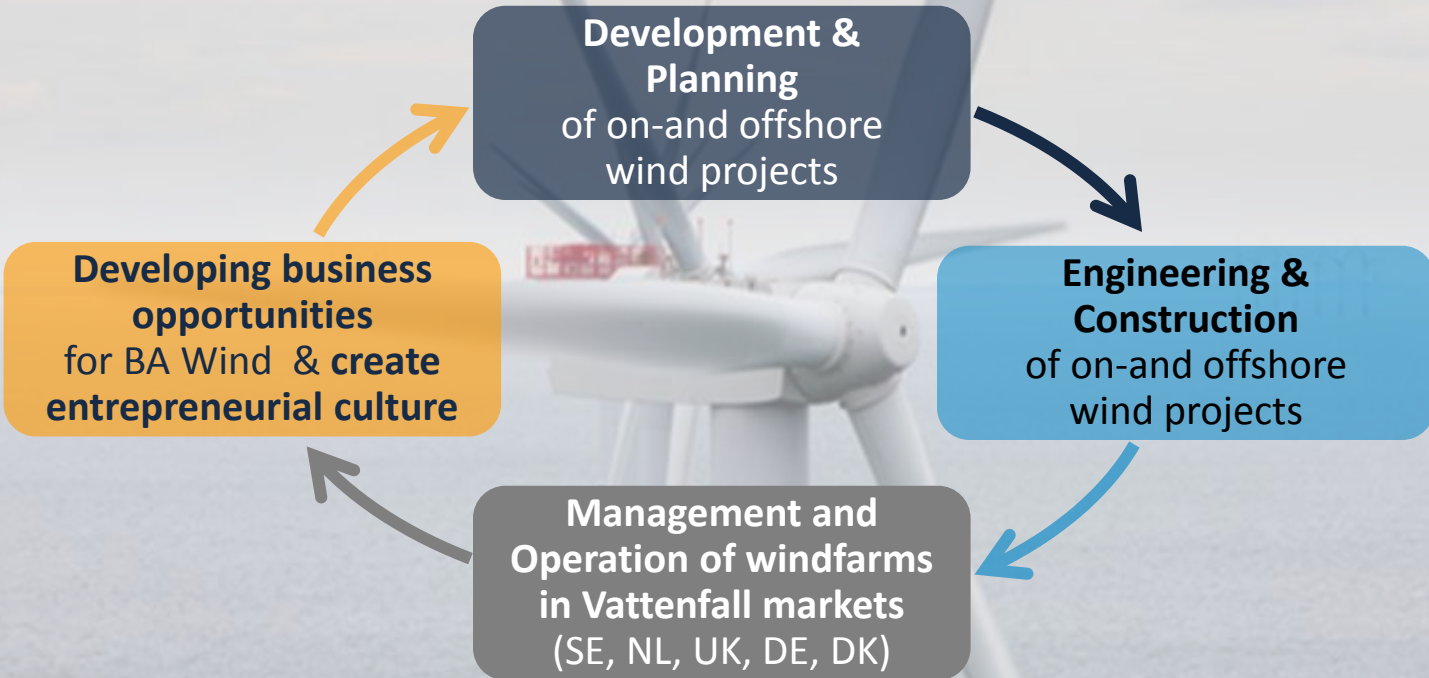
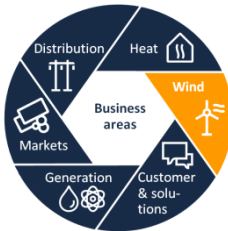
Topic	What
1	Intro Vattenfall Wind
2	Our Environmental ambition
3	Environmental and Sustainability work in BA Wind
4	R&D work
5	Summary – Basic considerations

VATTENFALL AT A GLANCE

- One of Europe's largest generator of electricity and heat
- Vattenfall has approx. 6.2 million electricity customers, 3.2 million electricity network customer and 2.1 million gas customers
- 100% owned by Kingdom of Sweden
- Active mainly in Denmark, Finland, Germany, Netherlands, Sweden, UK and France
- Main products: electricity, heat, gas, energy services
- Business operations: Production, Trading, Distribution, Sales and energy services



VATTENFALL WIND EXPERTISE



https://corporate.vattenfall.com/globalassets/corporate/about_energy/brochure_wind_power_160921.pdf

VATTENFALL FOSSIL-FREE STRATEGY - THE ROLE OF BA WIND

Renewable energy is a key technology for fulfilling Vattenfall's strategy in realising the transition to a fossil free energy system and our goal to be climate-neutral by 2050

Our Environmental ambition in BA Wind

We are strongly committed to achieve our goal of **zero Environmental accidents, incidents & near misses.**

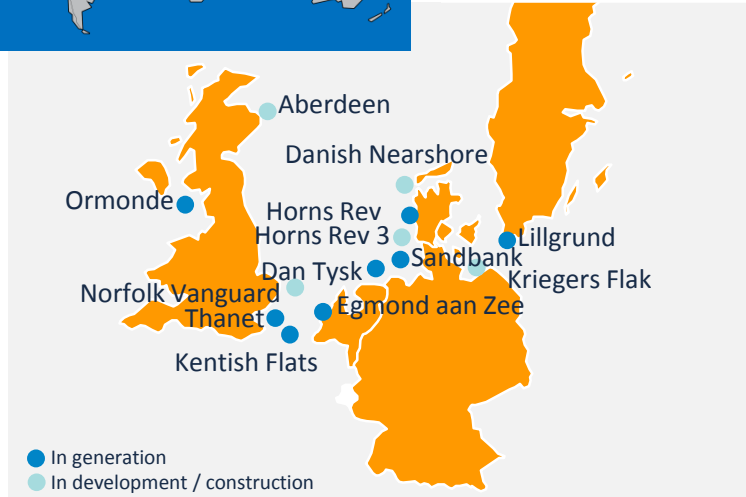
We want to be better than “only” compliant.

Environmental performance is more than following guidelines, it is a **proactive mindset** and a **personal responsibility.**

We do it because we care and are responsible for our people and the environment and believe it is an opportunity for our business.



OFFSHORE WIND FARMS IN DEVELOPMENT & OPERATION



Country	Name	Σ Turbines	Installed capacity (MW)
UK	Thanet	100	300
DE	DanTysk	80	288
DE	Sandbank	72	288
DK	Horns Rev	79	158
UK	Ormonde	30	150
UK	Kentish Flats + extension	45	139,5
SE	Lillgrund	48	110
NL	Egmond aan Zee	36	108
UK	Norfolk Vanguard	tbd	1800
DK	Kriegers Flak	tbd	600
DK	Horns Rev 3	49	400
DK	Danish Nearshore	tbd	350
UK	Aberdeen	11	91

EXPERIENCE IN MONITORING SCHEMES

- We have experience within >15 Offshore windfarms in 5 countries (SE, NL, UK, DE, DK) and related monitoring guidelines. We see that:
- Country specific approaches range from:
 - generic guidelines <-> each time project specific
 - monitoring to be conducted completely from developer/WF owner <-> completely from authority
- Monitoring methods differ between countries
- Monitoring generally stops at country borders but animals don't

WHAT WE NEED:

- Better evidence base and understanding of affected habitats, species and populations!

WHAT IT TAKES:

- Strategic monitoring and strategic research!

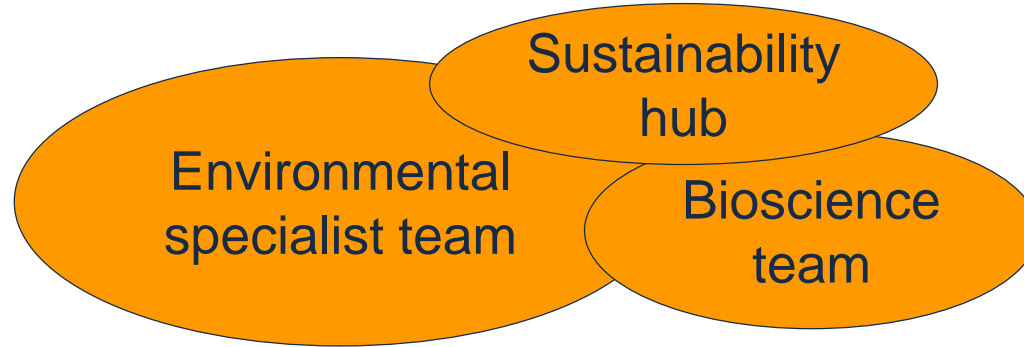
WHAT SHOULD BE DONE

- International alignment and collaboration on strategic efforts
- Divert the focus from traditional monitoring for individual wind farms to strategic studies
- Review of knowledge gaps and identification of the most effective means of reducing uncertainties in impact assessments
- Closer cooperation between regulators, NGO's, science and industry, from early discussions to delivery of strategic programmes and projects.
- Tap into research programmes outside energy sector to contribute to better general understanding of key species and populations
- Transfer of gained knowledge in our operational work



OUR APPROACH: THE BA WIND ENVIRONMENTAL & SUSTAINABILITY UNIT

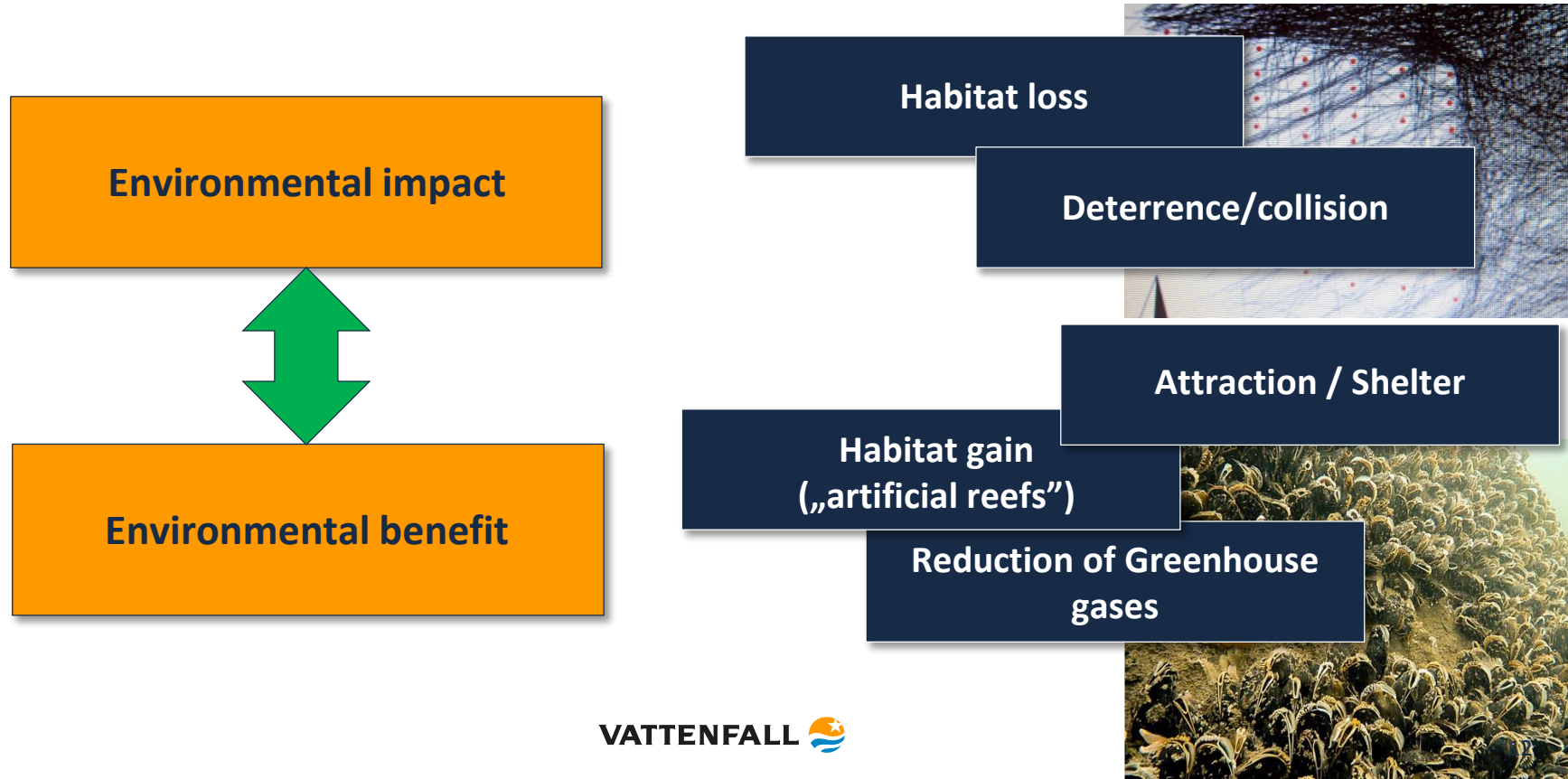
STRATEGIC & OPERATIONAL WORK



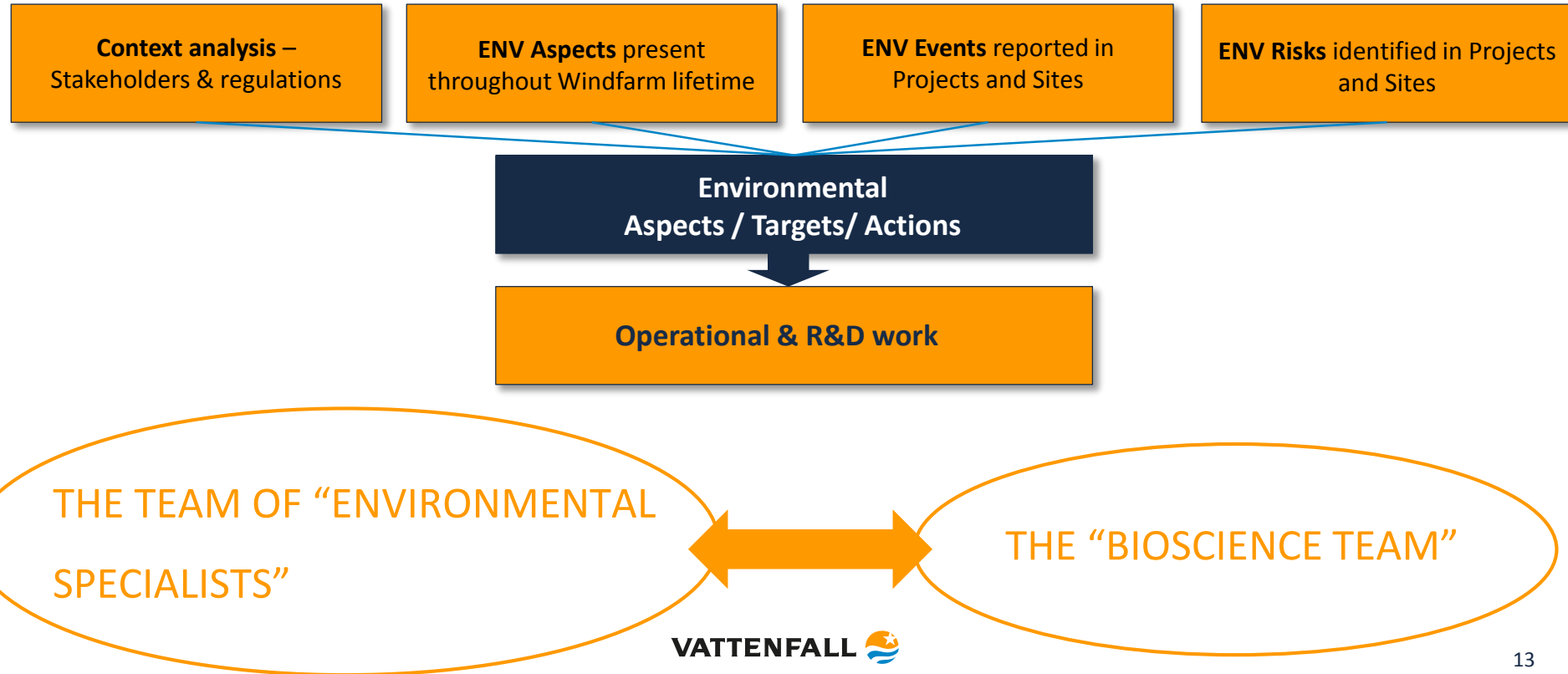
Aim of the Unit:

to ensure that we develop, construct and run our wind, solar and battery projects in an environmentally compliant manner and strive for operational excellence in environmental and sustainability performance.

HOLISTIC ASSESSMENT OF OFFSHORE WINDFARM ENV IMPACT – ECOSYSTEM APPROACH



HOW TO IDENTIFY ENVIRONMENTAL ASPECTS, TARGETS & ACTIONS



OUR R&D WORK

We have the ambition and possibility to play an active role in improving the evidence base on environmental impacts of windfarms, and the mitigation of such impacts – let's make a difference!

- ✓ Competences
- ✓ Resources
- ✓ Funding

European **O**ffshore **W**ind **D**eployment **C**entre - [EOWDC](#)

ENvironmental protection and **W**ind power - ENWI

Better evidence



Less precaution



Better decisions

EUROPEAN OFFSHORE WIND DEPLOYMENT CENTRE (EOWDC)



FIRST PROJECTS COMMISSIONED



Auk migration routes
and wintering areas



Bottlenose dolphin
movement patterns



Salmon and sea trout
migration routes



Socio-economic impact on
the human environment

ENVIRONMENTAL PROTECTION AND WINDPOWER (ENWI)



ENVIRONMENTAL PROTECTION AND WINDPOWER (ENWI) R&D PROGRAMME

While having a largely positive impact on the environment by replacing fossil fuelled alternatives, the construction and operation of wind farms still has local effects.

Knowledge on actual effects on nature and species from wind turbines is often fragmented and associated with different degrees of uncertainty. Aim of the ENWI program is to better understand:



Impacts

- Improving current knowledge and evidence base
- Method development



Mitigation

- Testing and evaluation of technical solutions
- Siting considerations and operational adaptations

ENWI FOCUS AREAS

Bird collisions - onshore



Objective:

Improve knowledge of key sensitive bird species and how they are affected by wind farms.

Bird collisions - offshore



Objective:

Improve evidence base for quantifying collision risks for key sensitive species

Bats



Objective:

Better understanding on bat impacts in different kinds of terrain and landscape.

Displacement and barrier effects



Objective:

Quantification of displacement and barrier effects in relation to wind farms

Underwater noise



Objective:

Improved evidence base on the environmental significance of wind farm noise

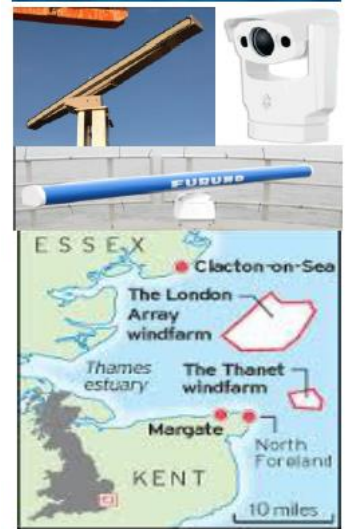
PROJECT EXAMPLE:

BIRD COLLISION AVOIDANCE STUDY

Aim: To improve the evidence base informing bird collision avoidance rates

Project in brief:

- State of the art monitoring equipment was installed by DHI 2014 at Vattenfall's Thanet Offshore Wind farm to monitor micro, meso and macro bird avoidance behaviours Empirical evidence to improve collision risk models and greater certainty on the true risk of bird collisions. Final report end of 2017
- *Vattenfall Contact:* Jesper Kyed Larsen



Research: Niras/DHI Sponsors: DONG Energy, EDF, Eneco, Fluor, Mainstream Renewable Power, RWE, Scottish Power Renewables, Siemens, SSE, Statoil, Statkraft, Vattenfall, DECC, The Crown Estate and Marine Scotland

PROJECT EXAMPLE:

DEPONS - Disturbance effects on the harbor porpoise population in the North Sea.

Aim: Development of an evidence based model to quantify disturbance impacts on the North Sea harbour porpoise population

Project in brief:

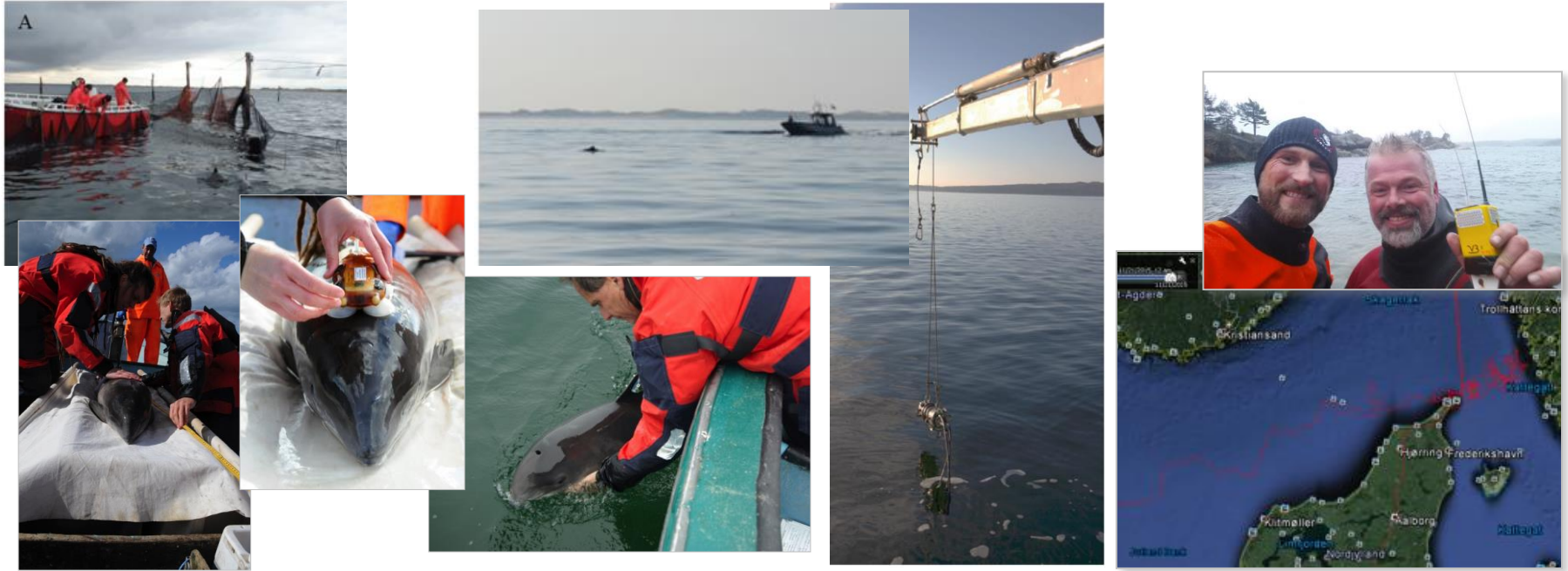
- Development of a new evidence based model to inform impact assessments and planning decisions for wind farm developments in the North Sea. First runs on large-scale development scenarios suggest impacts much less than feared. Final report in 2018.
- Primary papers:
 - Gilles et al. (2016) Ecosphere, **7**, e01367
 - Four more papers currently under publication

DEPONS model 1.1, May 2017: <https://doi.org/10.5281/zenodo.556455> - free to download and use!

- *Vattenfall Contact:* Jesper Kyed Larsen



FIELD WORK IMPRESSIONS





SUMMARY - BASIC CONSIDERATIONS

- Offshore wind energy helps to achieve government climate change targets
- Mitigation measures should be based on a clear evidence based rationale, that can and will be reviewed and updated as new evidence is building up
- Strategic work towards environmental impact assessment and mitigation regulations should include all stakeholders including industry experience of challenges during offshore installation and operation
- Cost / benefit of mitigation measures and renewable energy production should be assessed in an ecosystem/ holistic approach (especially in respect to cost reduction targets)
- Early transparency in regulation is crucial for proper project planning (especially in tender systems)
- High flexibility for developers in terms of means adopted to meet specific regulations important due to project specific needs



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Thank you for your attention



MINISTÈRE
DE LA TRANSITION
ÉCOLOGIQUE
ET SOLIDAIRE

