



# WindDays 2018: Session E3 INTRODUCTION

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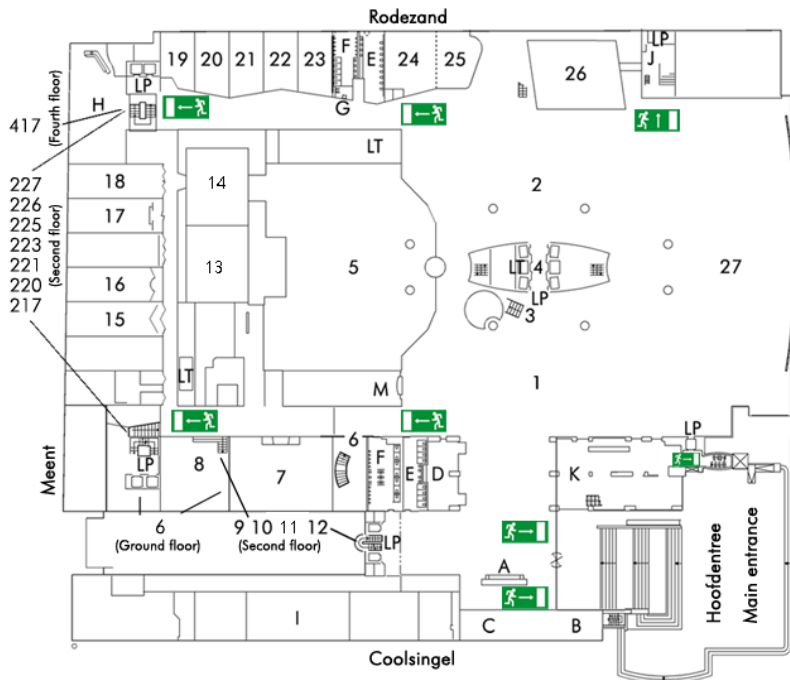
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# Safety Moment

# Safety Moment

 U bevindt zich in deze ruimte  
You are in this room



1. Mercurius Hall	217. Antwerp Room (2nd fl.)
2. Shipping hall	220. Montreal Room (2nd fl.)
3. Stairs to Lloyds Lobby	221. Baltimore Room (2nd fl.)
4. Elevator to 23rd floor, Townhall Room	223. Tokyo Room (2nd fl.)
5. Rotterdam Hall	225. New York Room (2nd fl.)
6. Stairs to WTC Art Gallery and Oscar Auditorium	226. New Orleans Room (2nd fl.)
7. Van Oldenbarnevelt Room	227. NIBESW (2nd fl.)
8. Captain's Lounge	417. Erasmus Room
9. Van Beuningen Studio (2nd fl.)	A. Reception
10. Van der Werff Studio (2nd fl.)	B. Security
11. Van der Mandele Studio (2nd fl.)	C. Business Center
12. Van Hogendorp Studio (2nd fl.)	D. Flower Shop
13. Diamond Room 1	E. Toilet Ladies
14. Diamond room 2	F. Toilet Gentleman
15. Van der Veeken Room	G. Toilet Disables
16. Van Walsum Room	H. Beurs Lounge
17. Blue Room	I. Congres &event Center
18. J.F. Staal Room	J. Day Care
19. Veder Room	K. Restaurant
20. Goudriaan Room 1	LP. Elevator (persons)
21. Goudriaan Room 2	LT. Elevator (transport)
22. Leeuwen Room 1	M. Wardrobe
23. Leeuwen Room 2	
24. Penn Room 1	
25. Penn Room 2	
26. Mees auditorium	
27. Exchange hall	



## Calamiteiten/EHBO

1. Blijf kalm.
2. Licht direct de beveiliging in, bel 203 (toestel in ruimte) of 010 405 4403 en geef duidelijk aan in welke ruimte u zich bevindt.
3. Indien nodig, ontruim de ruimte (controleer of er nog mensen aanwezig zijn).
4. Neem de dichtsbijzijnde (nood)uitgang, aangegeven op het kaartje en verlaat rustig het pand



## Emergency

1. Remain calm.
2. Inform the security immediately, dial 203 (phone in room) or +31 (0)10 4054462 and indicate your exact position within the building.
3. If necessary, clear the room (check if there are any persons left).
4. Take the nearest exit, pointed out on this map and leave the building.

# GROW



# GROW

**GROW is a semi-closed RD&D consortium of Dutch companies and research institutes from all levels of the value chain for offshore wind energy**

- **Partners and objectives:** The consortium currently consists of 19 partners that have committed themselves to ...
  - reduce the LCoE of offshore wind energy
  - create added value in the energy system
  - strengthen the Dutch offshore wind industry



- **Programme lines:** The RD&D programme is structured into eleven programme lines, whereof »lifecycle & decommissioning« deals with an offshore wind farm's end of commercial/design life.

- **Website:** <https://www.grow-offshorewind.nl/>

VALUE CHAIN FOCUS	OBJECTIVES
Design/ System	Reduce LCoE
Installation	Strengthen Dutch Offshore Wind Sector
D&M	Create Added Value
Decommissioning	
Metocean/ Wind Flow/ Windfarm Design	%
Blades	%
Alternative Turbines	%
Monopiles	%
Alternative Support Structures	%
Electrical Systems	%
Installation	%
D&M	%
Lifecycle & Decommissioning	%
Integration In Energy System	+
Symbiosis With Other Sea Users	+

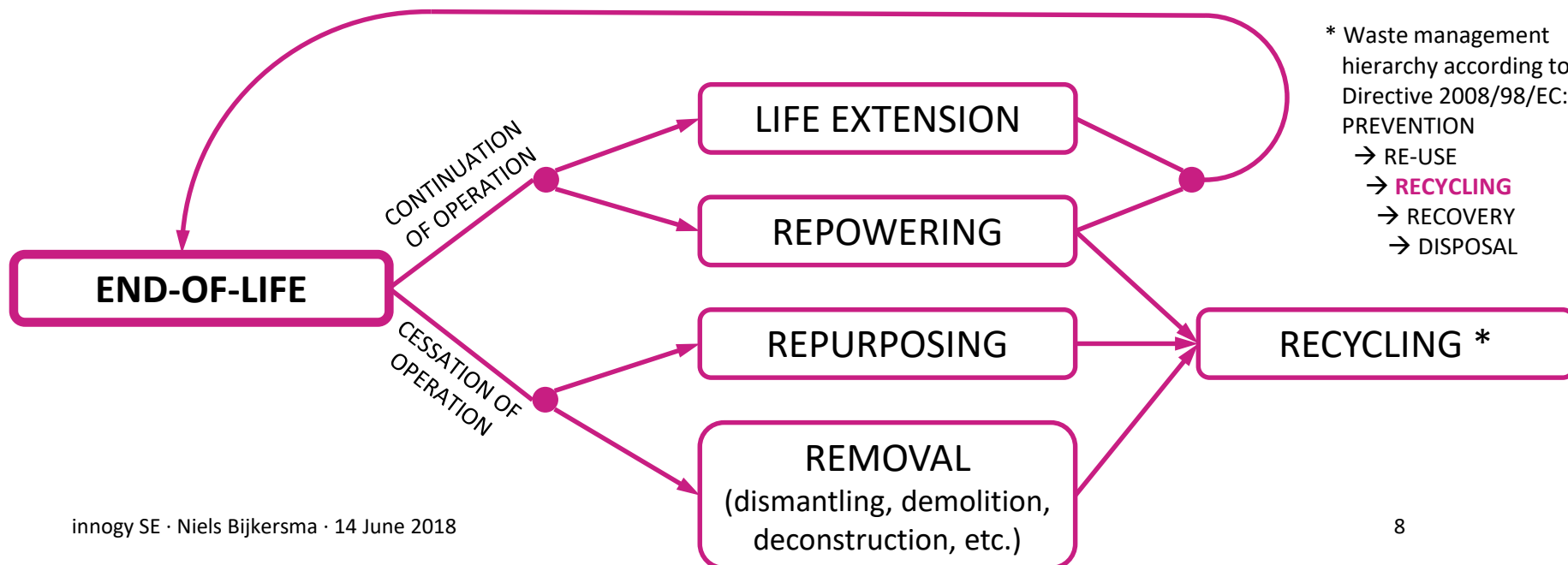
# End-of-Life



# End-of-Life

Wind farm owners can choose from multiple options at the end of an asset's life. Below terminology and structure of end-of-life options is proposed.

- **End-of-life options:**
  - Life extension - Prolongation of commercial/design life (with minor upgrades)
  - Repowering - Replacement with new wind turbines (with better performance)
  - Repurposing - Re-use of site for different purpose (other than power generation)
  - Removal - Dismantling of wind turbines incl. BoP and clearing of site
- **Semantics:** The term »decommissioning« can be misleading because it means different things to different people.





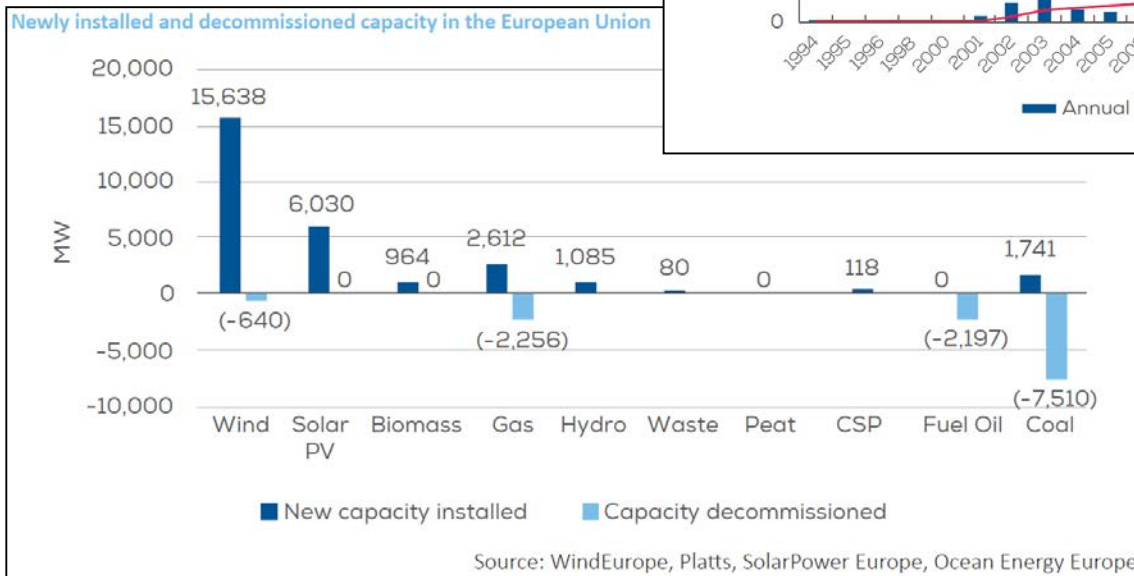
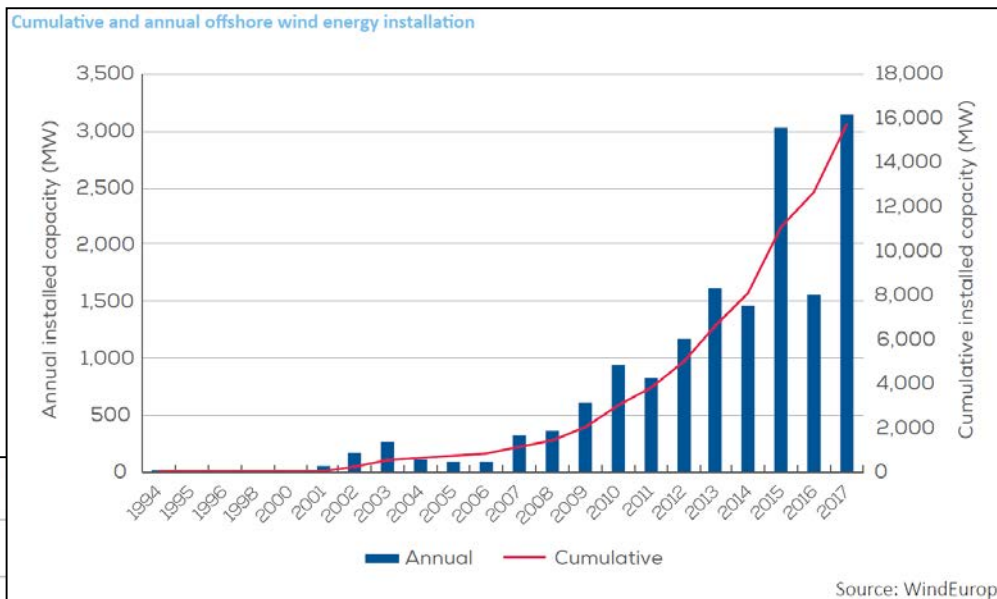
# Future Outlook



# Future Outlook

The market for “decommissioning” services is small today, but massive growth is to be expected with a time delay of 20 to 25 years after commissioning.

640 MW of wind power decommissioned in EU in 2017  
 (source: Wind in power 2017; WindEurope; February 2018)



Step increase of installed offshore wind capacity in Europe  
 (source: Offshore Wind in Europe; WindEurope; February 2018)

# Speakers

# Speakers

Presentations will be given by ...



- **Wiebbe Bonsink**, CEO at HEBO Maritiemservice:  
[www.hebo.eu](http://www.hebo.eu)  
»Decommissioning of windpark Lely«
- **Johan Top**, CEO at Topwind Consultancy:  
[www.topwind.nl](http://www.topwind.nl)  
»What happens to a Wind Turbine at End of Life projects?«
- **Julie Teuwen**, Assistant Professor at TU Delft:  
[www.tu-delft.nl](http://www.tu-delft.nl)  
»Opportunities for Recycling of Wind Turbine Blades«
- **Boudewijn Versluis**, Commercial Manager Decommissioning at Boskalis:  
[www.boskalis.com](http://www.boskalis.com)  
»Experience from the Oil & Gas Industry«

# Poll/Survey

## Poll/Survey (1 of 3)

Please share your opinion with the wind community.

- **Question 1:** What part of a wind farm do you believe is the main limitation of lifetime in terms of durability?
  - a. Rotor blades
  - b. Mechanical/rotary components
  - c. Towers and foundations
  - d. Electrical systems and cables
  - e. Other
  
- **Question 2:** Do you believe wind farms will on average “survive” until the end of their design life as initially planned by owners/operators?
  - a. Actual lifetime > planned lifetime
  - b. Actual lifetime = planned lifetime
  - c. Actual lifetime < planned lifetime

## Poll/Survey (2 of 3)



**Please share your opinion with the wind community.**

- **Question 3:** What do you believe is the greatest challenge in terms of lifetime extension and repowering?
  - a. Assessment of remaining life
  - b. Technical feasibility
  - c. Economic viability
  - d. Public opposition
  - e. Safety
  - f. Other
  
- **Question 4:** What do you believe is the greatest challenge if a wind farm is to be dismantled?
  - a. Recycling of composite material
  - b. Local environmental impact
  - c. Logistics and transport
  - d. Safety
  - e. Other

## Poll/Survey (3 of 3)



**Please share your opinion with the wind community.**

- **Question 5:** Do you believe the wind industry is adequately prepared to cope with end-of-life challenges on a large scale?
  - a. Yes
  - b. No
  - c. I do not know
  
- **Question 6:** Do you believe end-of-life challenges are appropriately considered in the design phase of wind farms?
  - a. Yes
  - b. No
  - c. I do not know



## Contact person

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