Innovation through cooperation

Growth through Research, development & demonstration in Offshore Wind

Smart Sea Centre of Excellence
Tallinn, 14 January 2025

Outline

- Who we are
- What we do
- How we do it

Who we are

Who we are

- An industry/research consortium
- 23 Partners plus GROW Foundation
  - 19 industry partners across the value chain
  - 4 knowledge institutes
  - Based and/or represented in the Netherlands
- Funding
  - Programme: partner fees (7.5 to 25 k€/yr)
  - Projects: industry / knowledge institutes / subsidies

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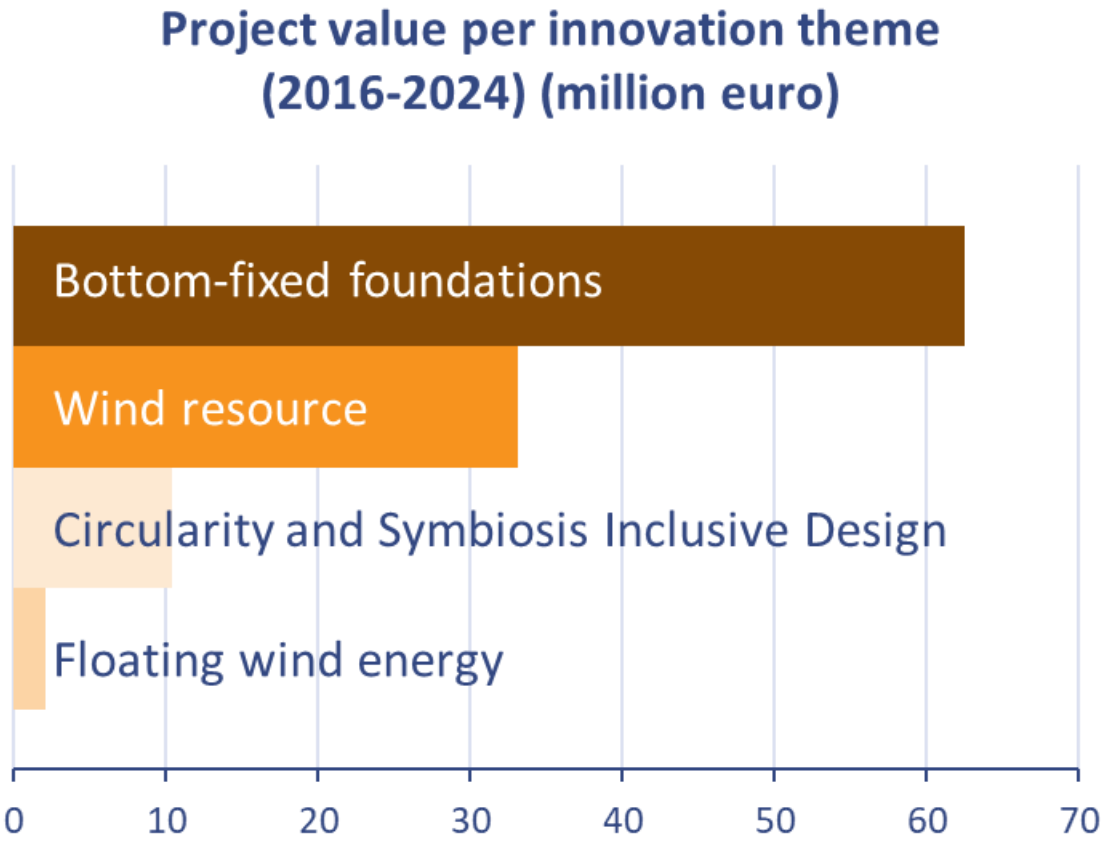
A joint research programme in offshore wind energy

GROW initiates research and accelerates innovations that benefit from a joint effort with partners from across the value chain

GROW Objectives

- Cost-reduction
- Energy system integration
- Circularity and Symbiosis with other sectors at sea (oil & gas, fishery, shipping, tourism, ecology and nature)
- Strengthening the Dutch offshore wind sector



43 projects
> 108 M€ project value

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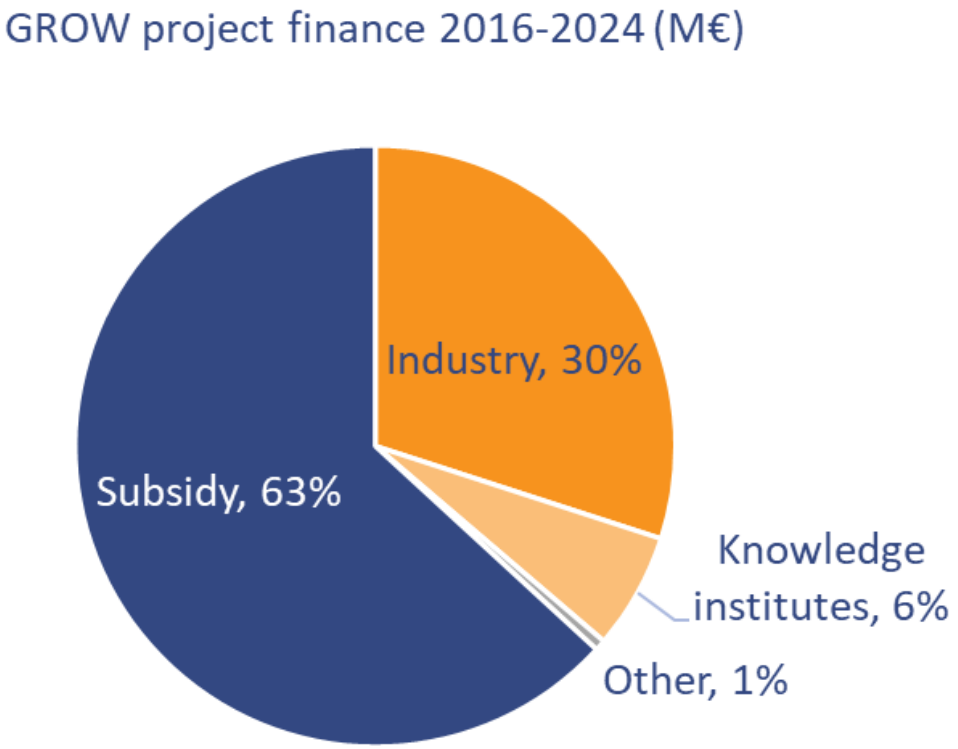
Finance – Project Funding

- Government innovation subsidy instruments
  - Dutch Research Council (NWO)
    - Low TRL
    - National science agenda
  - Netherlands Enterprise Agency (RVO)
    - Mid to high TRL
    - Climate & energy R&D
  - Other (inter)national funds (e.g. EU)
- Own contribution: Industry
- Own contribution: Knowledge institutes
- Other: GROW Common Fund



Project value: ca. 108 M€

Status January 2025

What we do

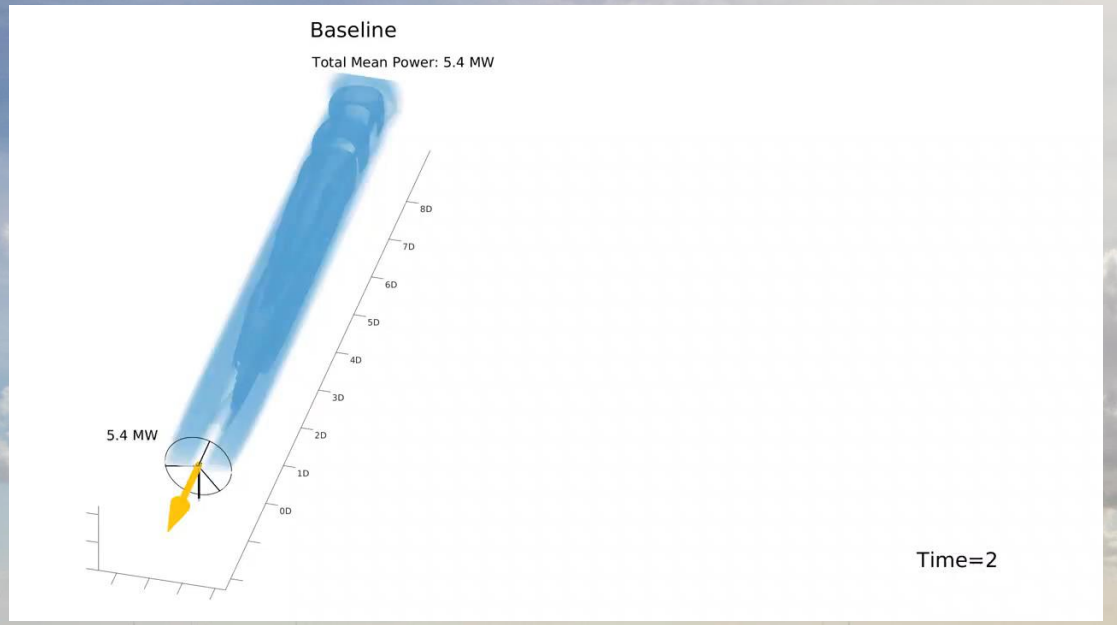
What we do

- (Mainly) Pre-competitive research projects
- Project size: 0.1 – 10 M€ (on average 3 M€)
- Both subsidised and non-subsidised projects

- Open for non-GROW (‘visiting’) partners
  - complementary expertise
  - financial contribution

GROW projects

Examples



Dynamic Wind Farm Flow Control

www.grow-offshore.nl

Dynamic Wind Farm Flow Control

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CROSSWIND

Eneco

SIEMENS Gamesa RENEWABLE ENERGY

TU Delft

This project is supported by the Dutch **Ministry of Climate Policy and Green Growth** and **TKI Offshore Energy**

Slip Joint Offshore Research project (SJOR)

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Bubbles JIP

Bubbles JIP

grow · Boskalis · Heerema Marine Contractors · IQIP · MARIN · seaway7 · TNO · Bubbles · TU Delft · Van Oord Marine ingenuity · Wageningen University & Research

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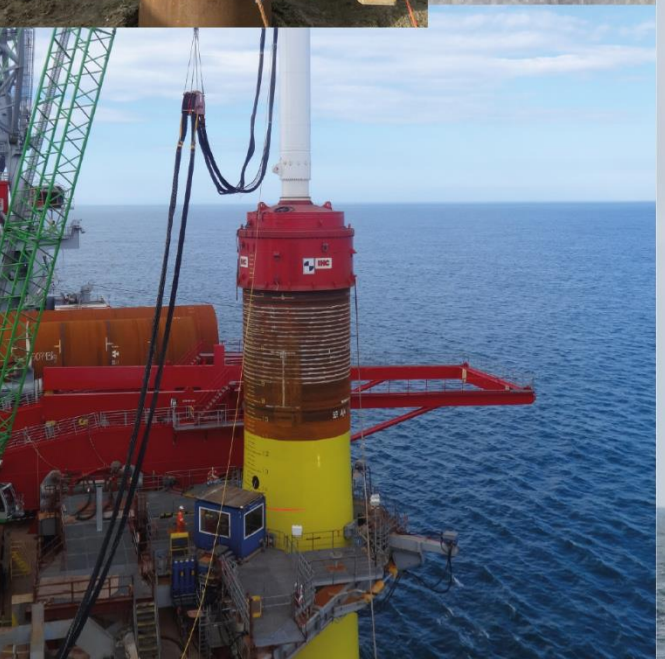


Sustainable Installatio of XXL Monopiles (SIMOX)

WWW.GROW-OFFSHOREWIND.NL

Sustainable Installation of XXL Monopiles (SIMOX)

This project is supported by the Dutch **Ministry of Climate Policy and Green Growth** and **TKI Offshore Energy**

How we do it

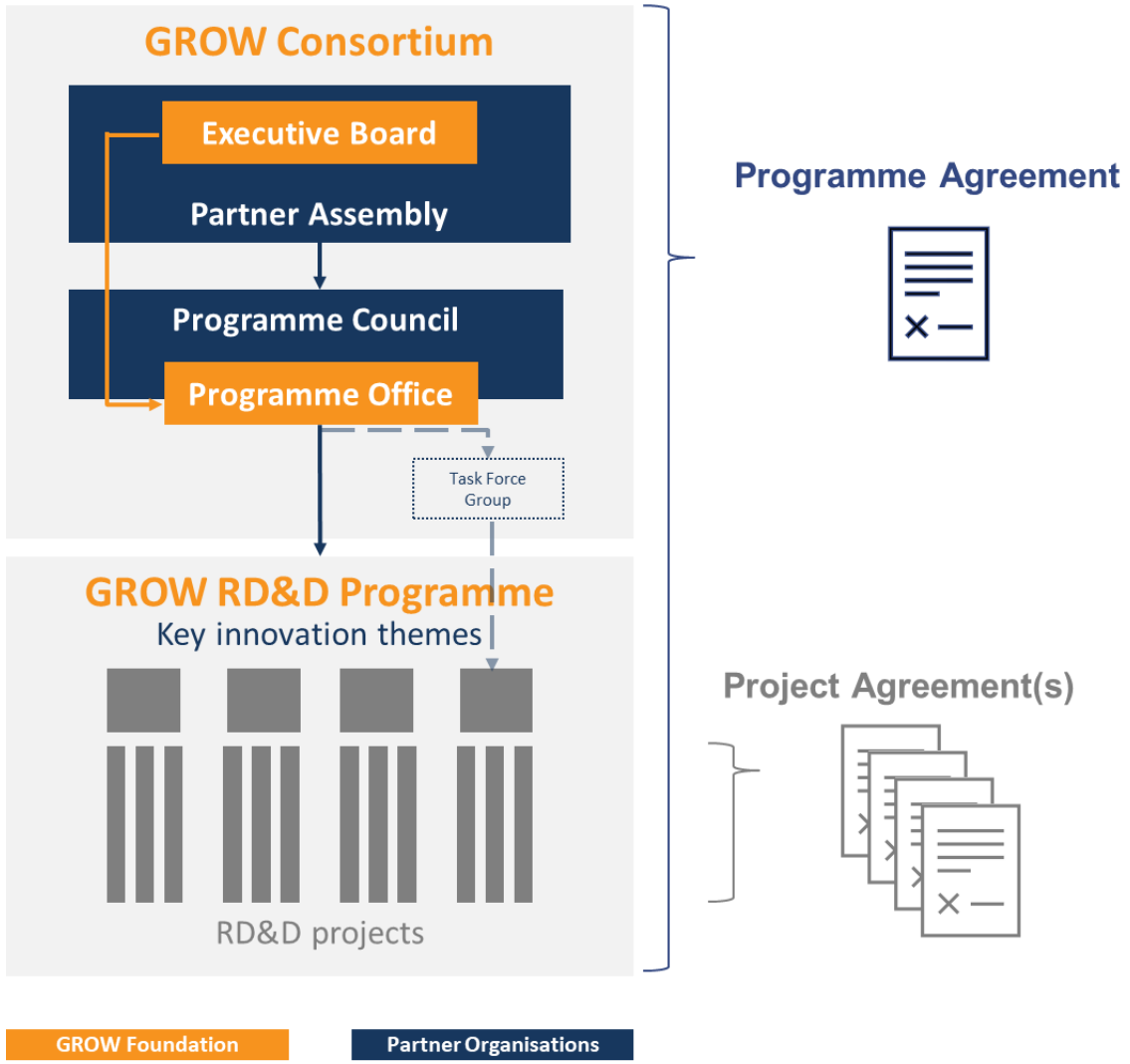
Organisation (formalities)

Overall rules for cooperation is documented in a Programme Agreement

- Processes and procedures, responsibilities, financing, cooperation in projects, classification of information, intellectual property

For cooperation in projects a Project Agreement template has been developed

- More detailed arrangements
- Agreed by all partners (and updated): speeds up contract negotiation process
- Reflects interests of industry (large and small) and of knowledge institutes (e.g. w.r.t. state aid rules)



Organisation (practicalities)

Annual innovation cycle

- Two innovation meetings per year (pitching, matchmaking, brainstorming)
- Thematic groups (e.g. ‘Foundations’)
- Ad hoc Task Force groups
- (Bi-)Monthly stocktaking

Cooperating in and delivering through projects

Dissemination and communication

Key success factors

- Recognition of the importance of offshore wind energy by **policymakers** and **politics**
- Coordination of both **innovation and deployment** policies
  - Linking technological innovations with institutional innovations
  - Creation of a market
- **High-level commitment** from industry partners (in terms of budget and staffing)
- **Creation of a research community**
  - Tools (legal, processes and procedures)
  - People and trust
- **Dedicated team** to support and push the consortium

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Key takeaways for Estonian government

- Create an Estonian innovation roadmap and agenda for offshore energy
- Create dedicated innovation funding mechanisms
- Align the deployment of offshore wind with this innovation agenda (e.g. through non-price criteria)
- Reach out to and learn from European counterparts

Key takeaways for Estonian companies

- Cooperation is key for success (but it takes trust and time)

- Build on key strengths and target solutions for universal challenges
  - Protection of offshore infrastructure
  - Digital protection
  - Monitoring and inspection
  - Ecological solutions
  - Multi-use

- Reach out to European counterparts

Two examples

- Gentle Driving of Piles
- Hydraulic Pile Extraction

Gentle Driving of Piles

- **Industry challenge**: Need for silent, fast, reliable, scalable and low-cost installation technology for monopiles as an alternative for impact pile driving
- **Idea at TU Delft:** combination of vertical and (notably) torsional vibrations

- **Support from industry** (developers, contractors, OEMs) for research projects GDP1.0 →GDP1.2→GDP2.0→..

Project	GDP1.0	GDP1.2	GDP2.0	GDP3.0
Period	2018-2022	2021-2024	2023-2026	2026-..
TRL	TRL 3-5 (sand)	TRL 3-5 (clay)	TRL 4-6	TRL 6-9
Scope	• Lab • Scale-test	• Lab • Scale-test	• New shaker • Upscaling • Scale-test	• Demonstration • Upscaling
Budget (subsidy)	4 M€ (3 M€)	1.1 M€ (0.9 M€)	5 M€ (3 M€)	t.b.d.

SIMOX
2021-2025
TRL 5-7
Lab / Onshore test / Offshore test Technology qualification Noise / Lateral bearing capacity
6 M€ (4 M€)

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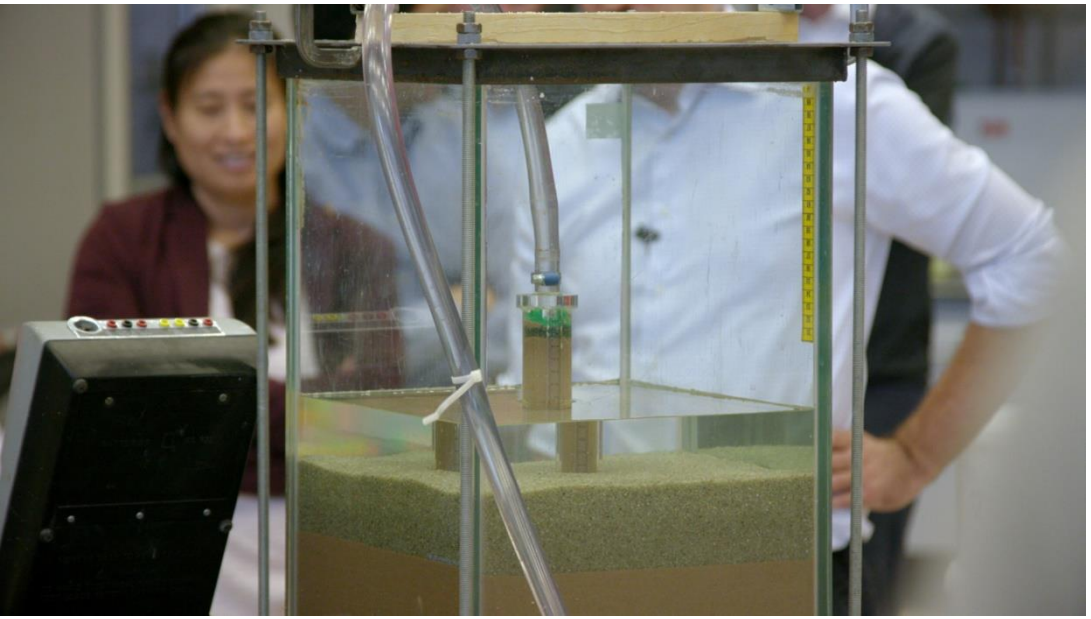
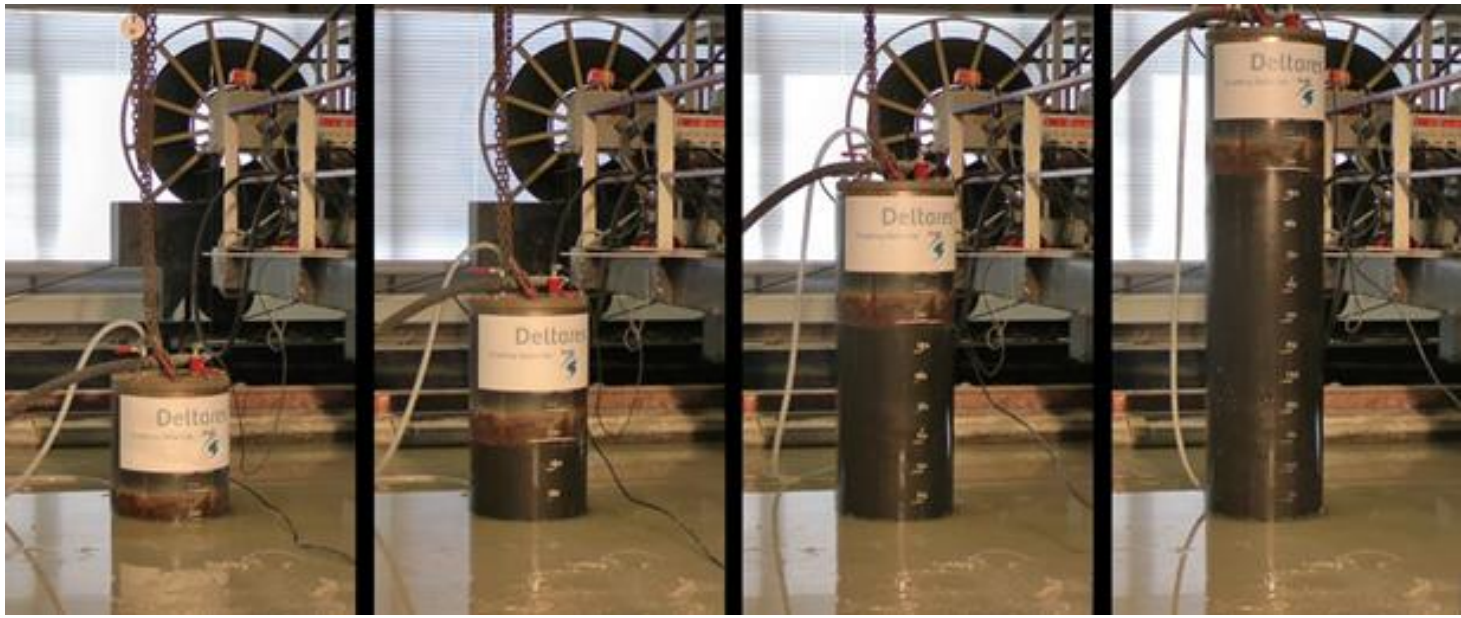
Hydraulic pile extraction

- **Industry challenge:** Sustainable pile removal may be required for future projects
- **RWE:** Hydraulic pile extraction may be an effective and efficient way to remove piles
- **Support from industry:** Cooperation with supply chain partners and Deltares

Project	HyPE-ST	HyPE-ST1.2	HyPE2	
Period	2018-2019	2021-2025	t.b.d.	
TRL	TRL 4	TRL 4-6		
Scope	• Lab test	• Larger lab test (Ø 2.2 m, 14 m)		
Budget (subsidy)	0.9 M€ (0.7 M€)	1.7 M€ (1.3 M€)		






Hydraulic Pile Extra
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Deltares

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Check out our podcast magazine grow to go offshore wind innovation

www.grow-to-go.nl

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