

Value beyond the grid: Sector coupling opportunities for ocean energy technologies



**16 October 2019
Halifax, Canada**

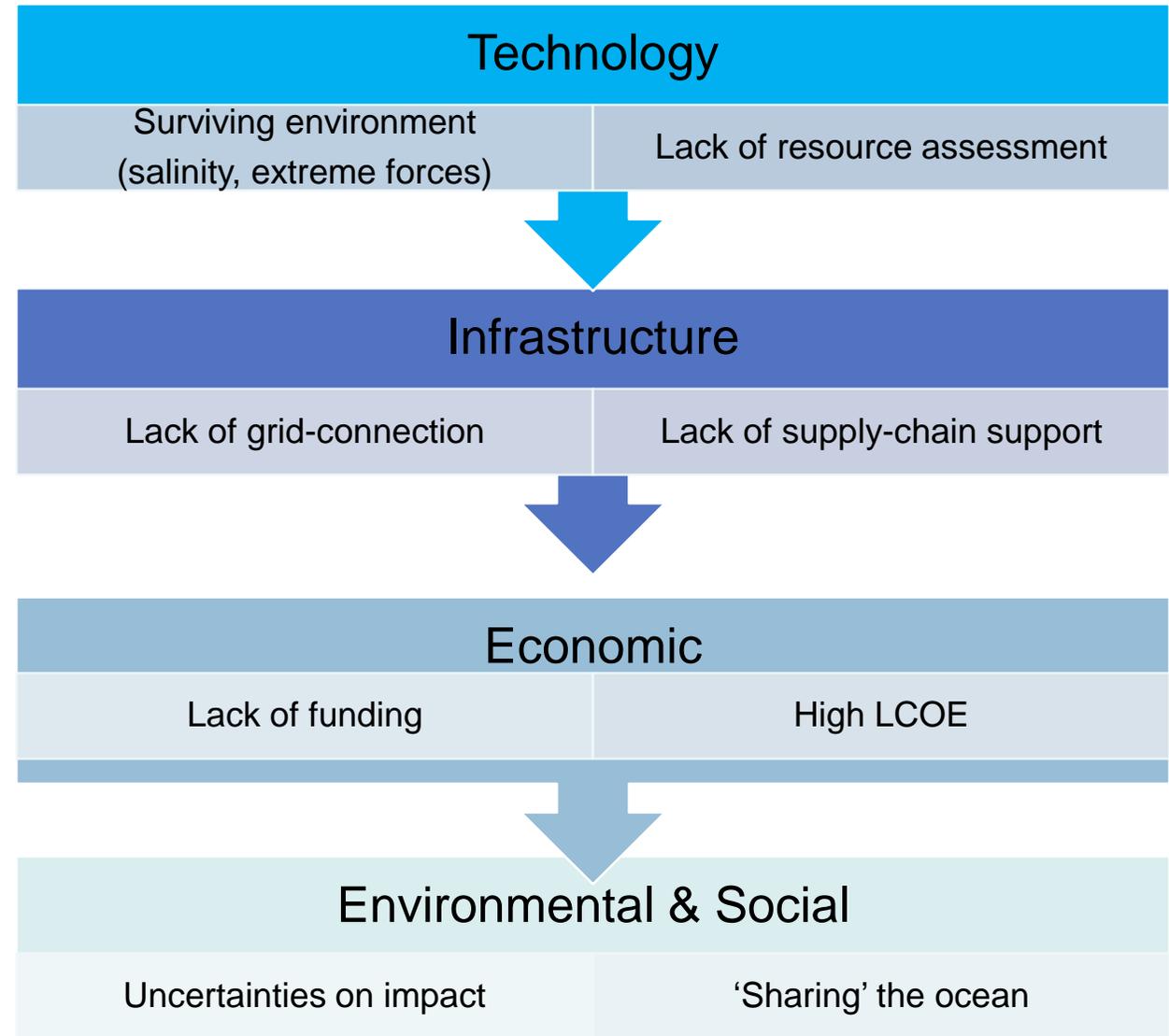
**Alessandra Salgado, Associate Programme Officer –
Innovation, Quality and Standards (IRENA)**

1. Tracking R&D and innovation

- **Patents (IRENA INSPIRE)**
- **Project Inventories and data**
 - **Installed capacity, investments, jobs**

2. Quality assurance-standards (IRENA INSPIRE)

2. 'State of play' study: Main recommendations for each challenge based on global experiences



Key Recommendations

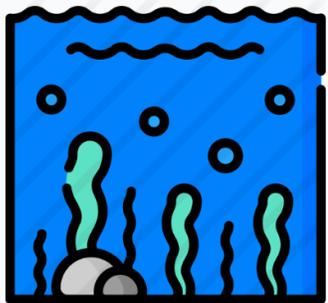
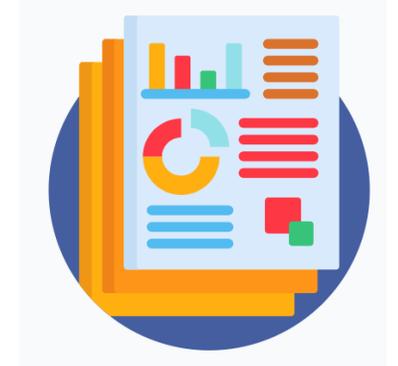


Technology:

- Increase resource assessment campaigns and quality
- Support test centres
- Capital grant funding for R&D
- Include in roadmaps

Economic:

- Promote niche markets
- Quantify additional benefits
- Innovative financial structures
- Premium price MWh



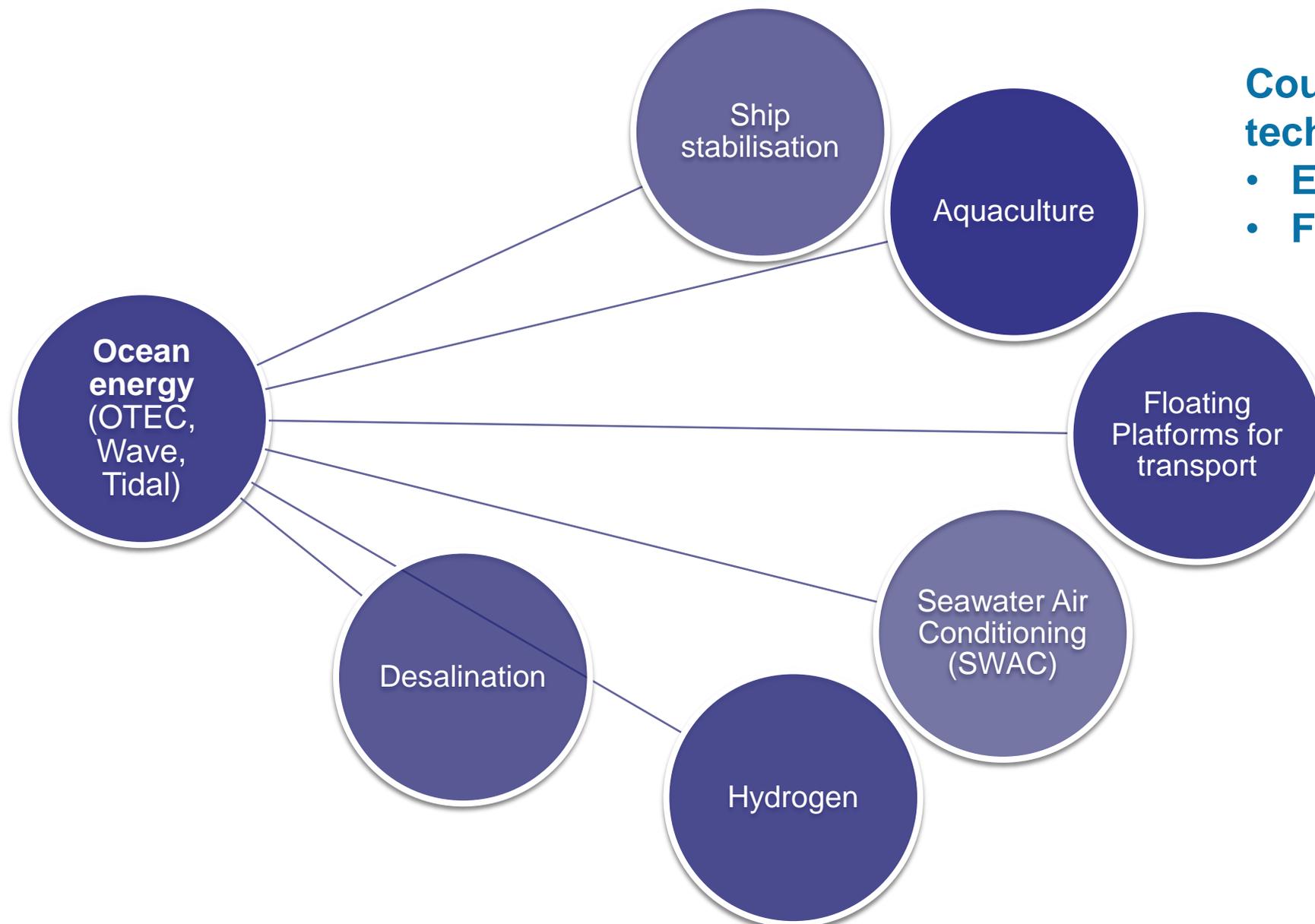
Environmental and Social:

- Improve access to baseline data
- Consult and engage the public early on

Infrastructure:

- Ensure that Network Operators have transparent plans for accommodation of ocean energy technologies
- Engage and inform the emerging supply chain



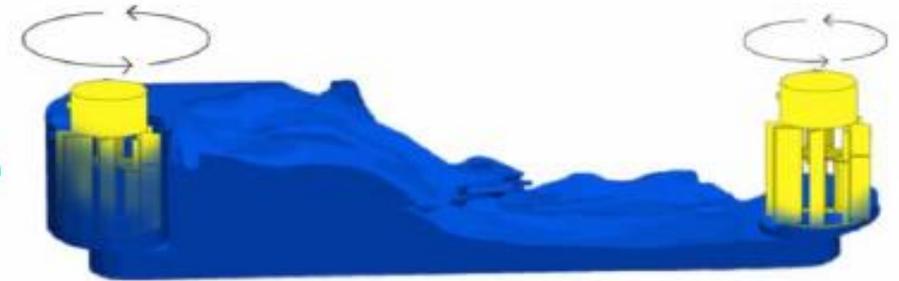


Coupling with other technologies:

- Energy storage
- Floating wind turbines

GEPS Techno (France)

Electricity Generation for ships + ship stabilisation

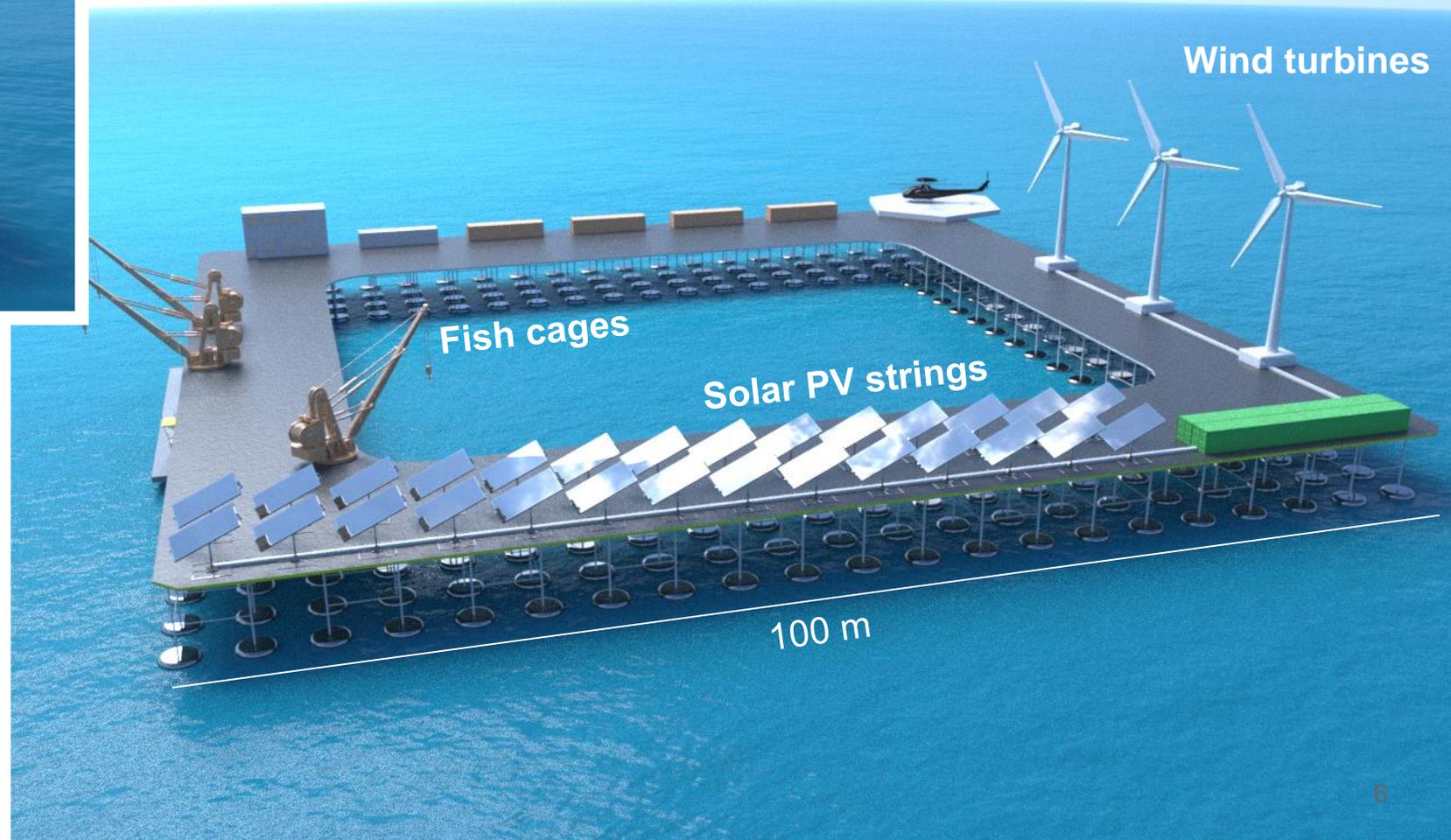


Resolute Marine Energy, Inc. (Cape Verde)

Desalination and Electricity Production with wave energy



SINN Power (Germany) Wave Energy and floating platforms



Sector coupling examples

Okinawa Prefectural Government and a consortium(HI Plant, Genesis, Yokokawa Electric and Nagasaki University) (Japan)

Electricity Generation- aquaculture, seaweed and comestic production

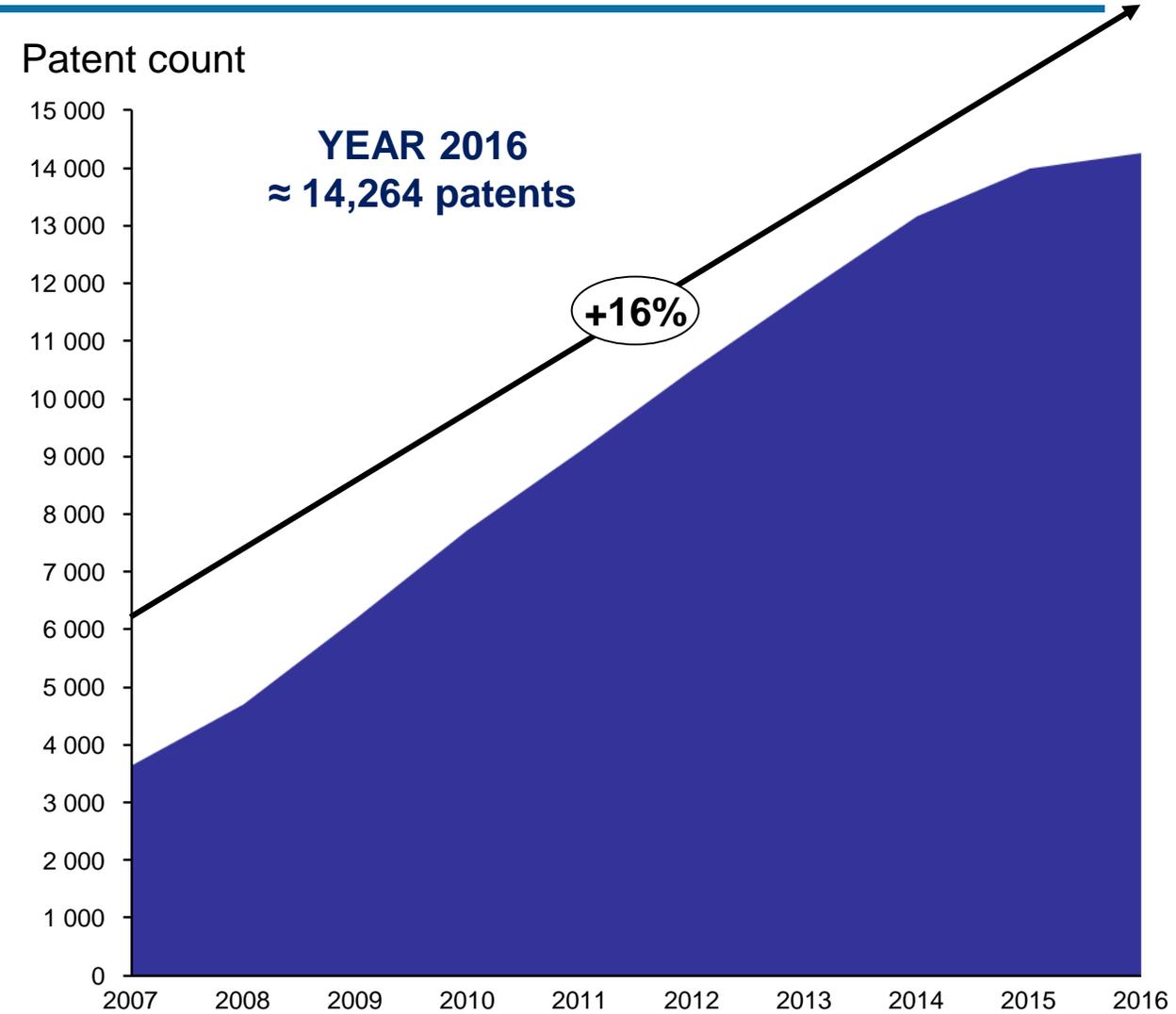
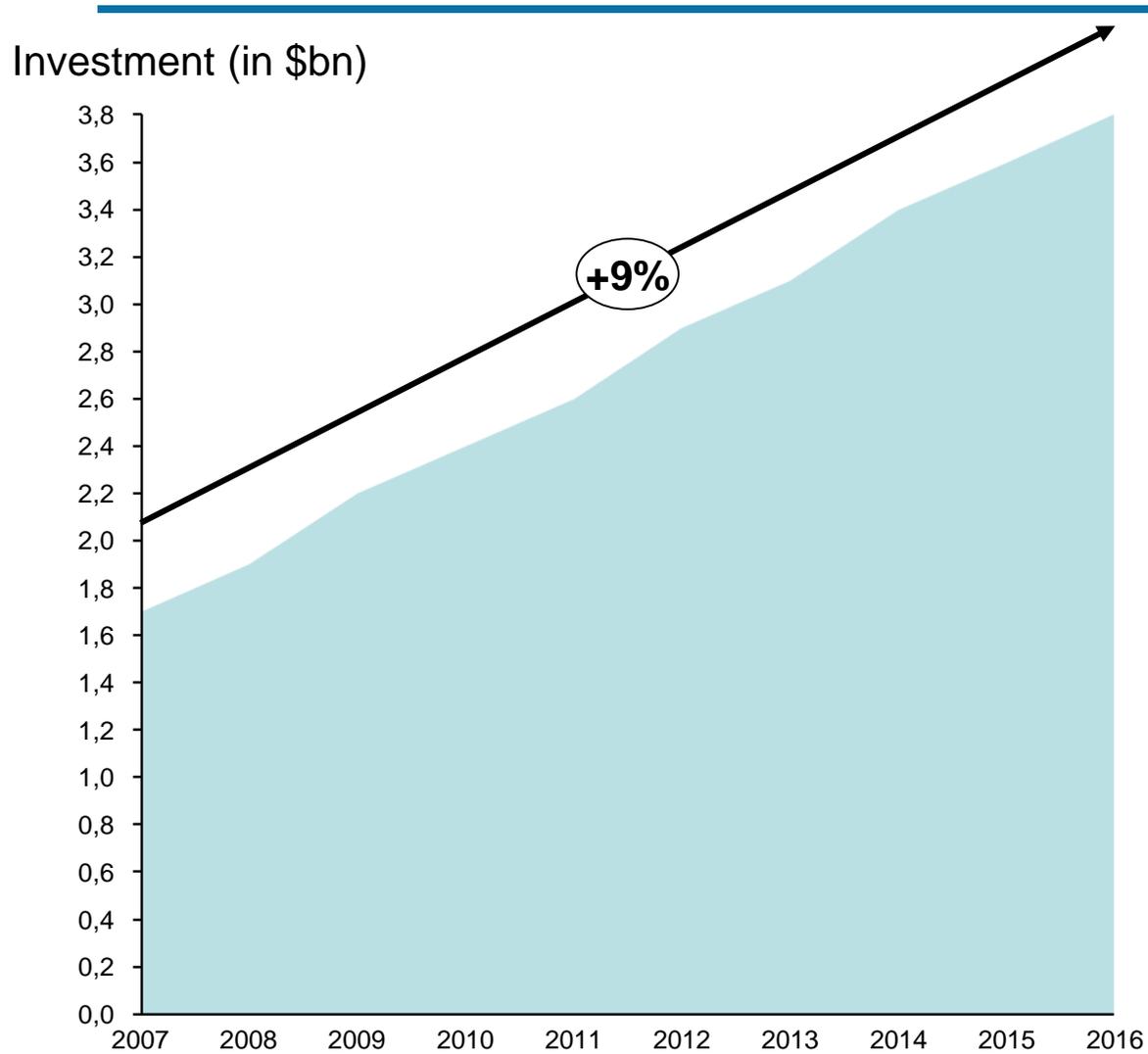




Thank you

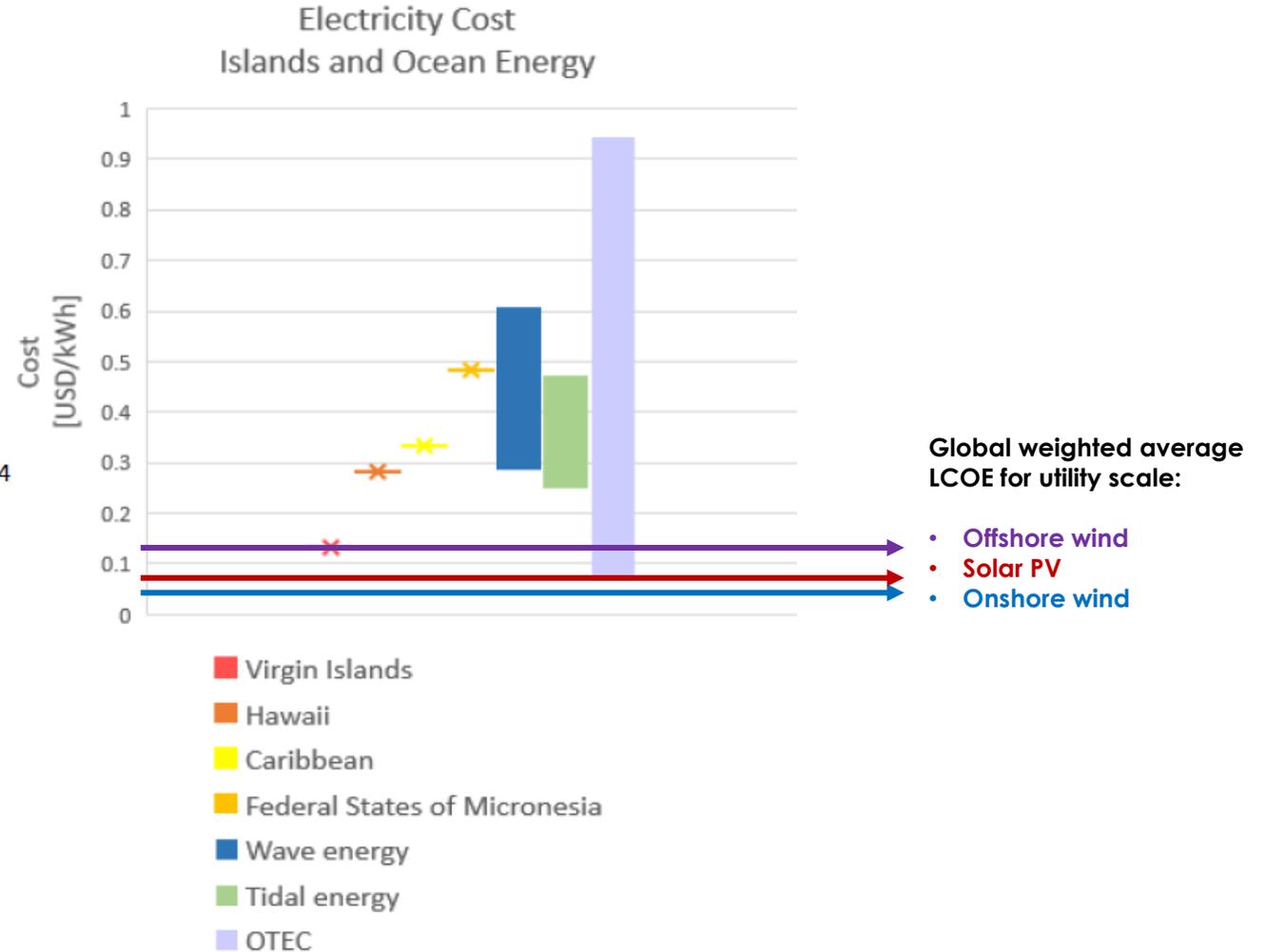
- Back up

OCEAN ENERGY DEPLOYMENT PROGRESS



Still a big gap between the LCOE of OET and other RET – after decades of R&D, no economies of scale yet

- » Cost of electricity for residential use on islands, examples:
 - » Virgin Islands 0.13 USD/kWh¹ ;
 - » Hawaii 0.28 USD/kWh² ;
 - » Caribbean average 0.33 USD/kWh³ ;
 - » Federal States of Micronesia 0.48 USD/kWh⁴



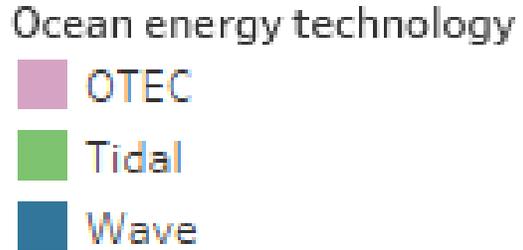
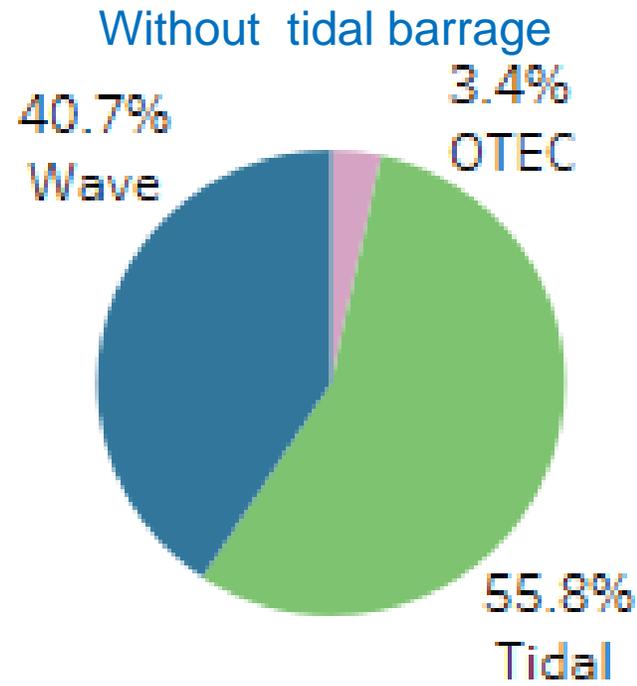
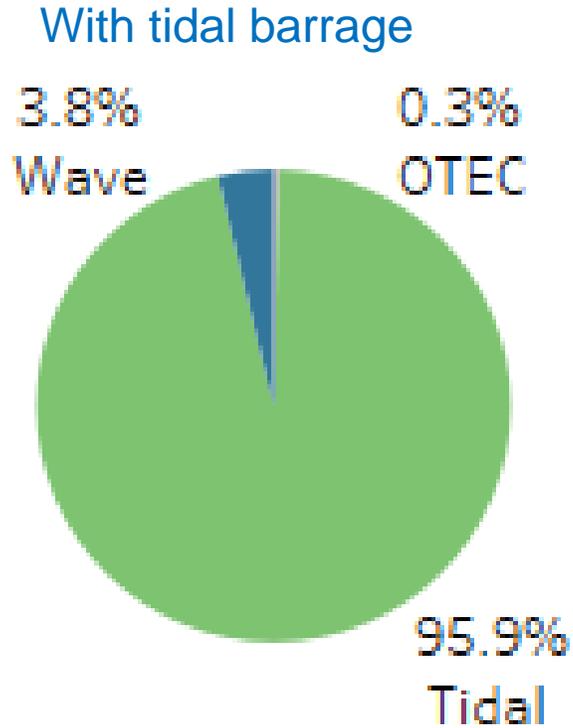
¹ <https://www.eia.gov/state/print.php?sid=VQ>

² <https://www.hawaiianelectric.com/my-account/rates-and-regulations/average-price-of-electricity>

³ <http://www.nrel.gov/docs/fy15osti/62691.pdf>

⁴ <http://www.nrel.gov/docs/fy15osti/64294.pdf>

Global Trends



Within each category there are several different technology designs

Innovation is prolific in OET, but would it be time for technology design convergence and harness economies of scale?