

EU support for floating offshore wind

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European Commission

Floating Offshore Wind Turbines
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2030 Framework for Climate and Energy

- A more competitive, secure and sustainable energy system
- Encourage private investment in new pipelines, electricity networks, and low-carbon technology
- Costs: do not substantially differ from the price we need to pay anyway to replace our ageing energy system
- Main financial effect: shift spending away from fuel sources and towards low-carbon technologies
- Targets for 2030
 - 40% cut in greenhouse gas emissions compared to 1990 levels
 - 27% share of renewable energy consumption
 - 27% energy savings compared with the business-as-usual scenario

Energy Union and Climate

- Priority of the European Commission
- Making energy more secure, affordable and sustainable
- One dimension: research, innovation and competitiveness
- **European Strategic Energy Technology Plan**
 - Develop low-carbon technologies and make them economically viable
 - Accelerate uptake of new technologies (reduce costs, increase efficiency)
- **Energy funding under Horizon 2020**
 - Almost EUR 6 billion towards energy projects in the EU's Research and Innovation Programme Horizon 2020
 - Projects aid in creation and improvement of clean energy technologies

Targets for offshore wind

- **SET-Plan – Declaration of Intent: agreed strategic targets for offshore wind**
- 1. Reduce LCoE at FID for **fixed offshore** to
 - less than 10 ct€/kWh by 2020
 - less than 7ct€/kWh by 2030
- 2. Develop integrated wind energy systems for **deeper waters** (>50m, max. 50 km from shore) with LCoE of
 - less than 12 ct€/kWh by 2025
 - less than 9 ct€/kWh by 2030

Floating offshore wind – current status

- Large potential in the European Union: Atlantic Ocean and Mediterranean Sea (about 4000 GW)
- 2030 EU targets for offshore wind achievable by conventional fixed-bottom foundations (water depth < 50 m)
- 2050 decarbonisation targets: floating technology needed?
- Technology not yet demonstrated at large scale
- Over 30 different concepts are under development, small number demonstrated at full scale in offshore environment
- Pilot projects planned in EU, USA, Japan
- About two-thirds of these projects in the EU

Key technological challenges

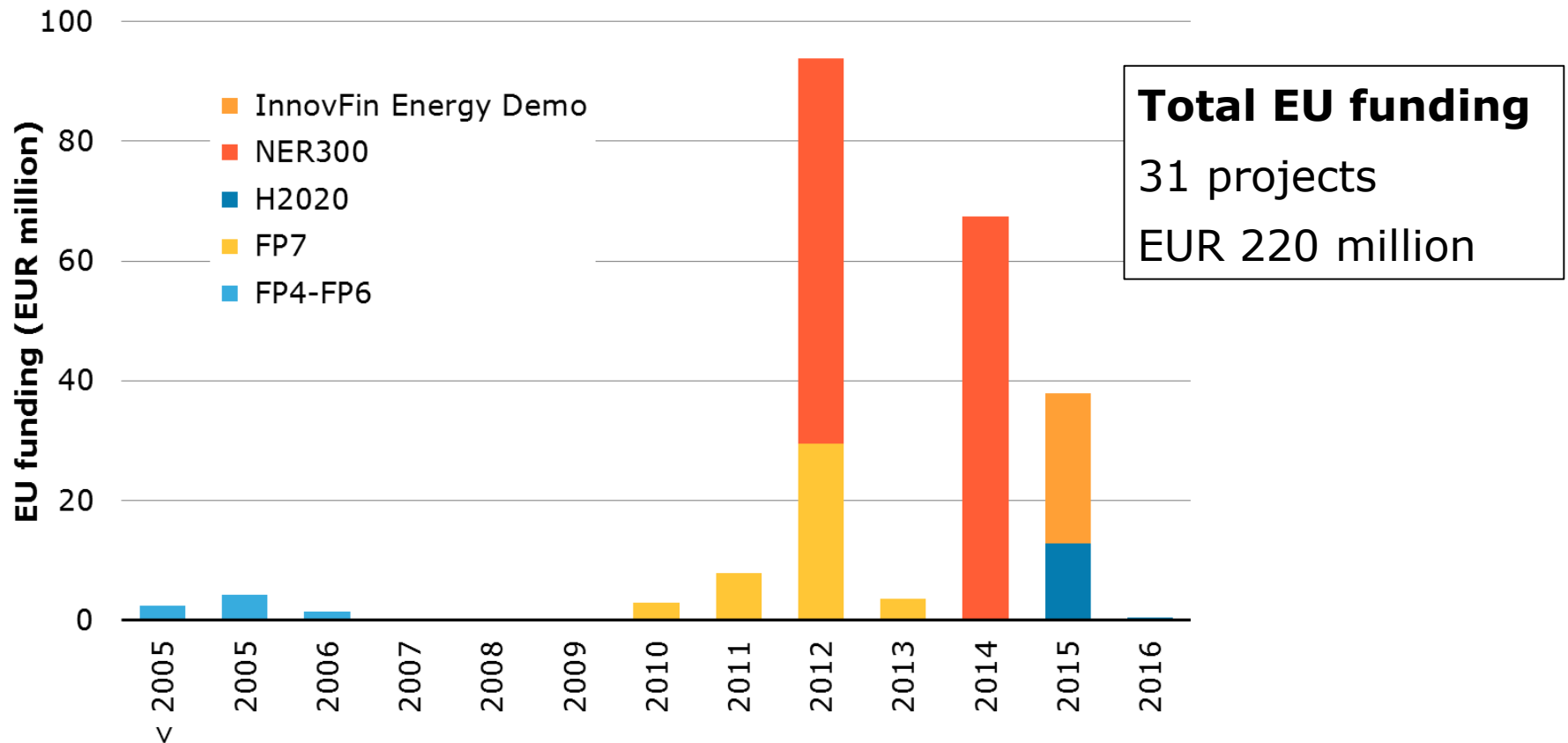
Short term

Commercial scale development

	Challenges
Components	Reduce platform size and weight
	Optimise mooring & anchoring systems
	Develop advanced control systems
Installation	Reduce installation costs

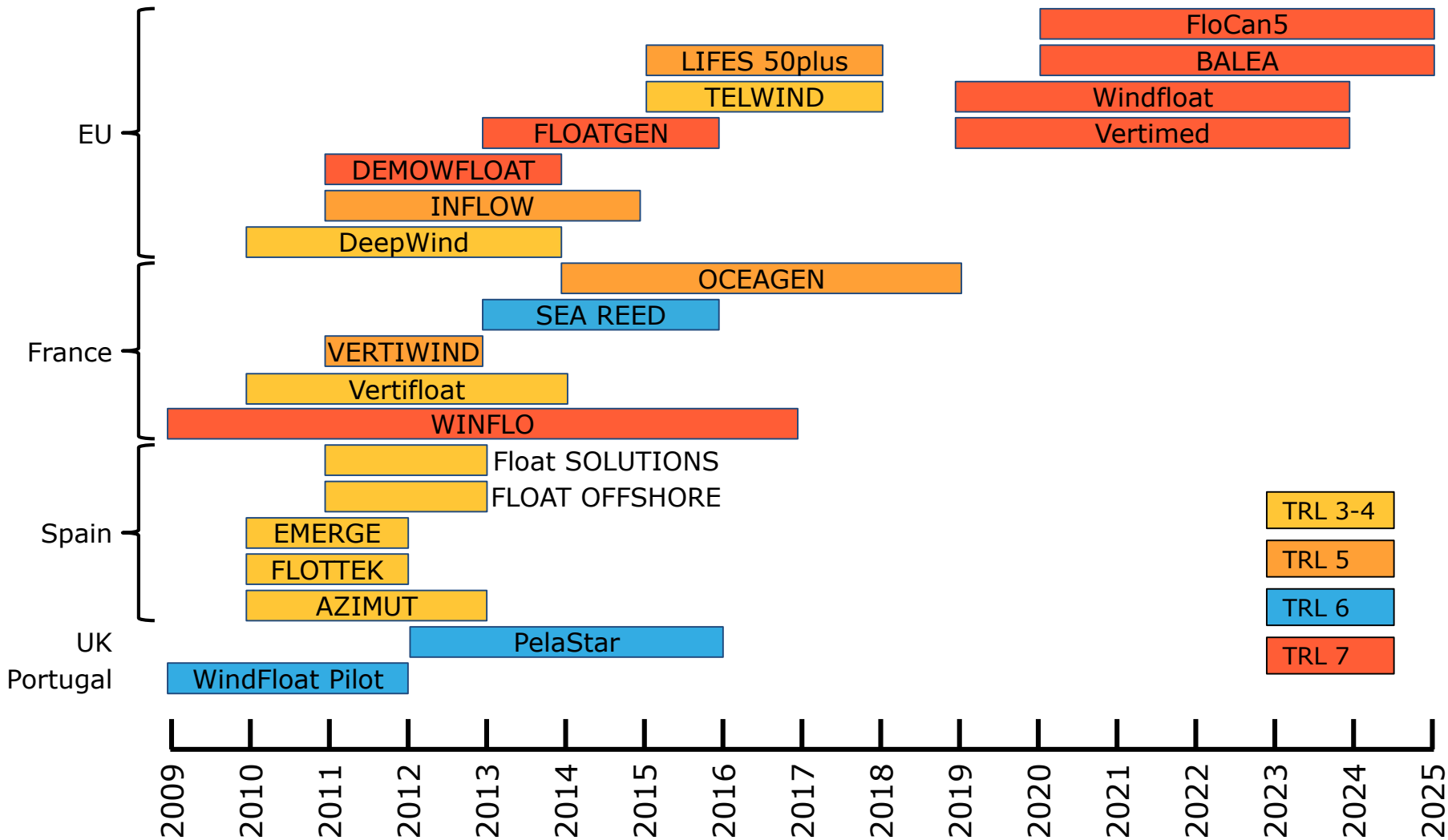
	Challenges	Bottlenecks
Operation	Understand impact of wake effects	Develop cost-effective solutions for floating substations
	Develop maintenance strategies	Develop cost-effective solutions for high voltage export cables
Installation		Tailored installation vessels for certain technologies
		Availability of large dry dock facilities in ports

EU support for floating wind



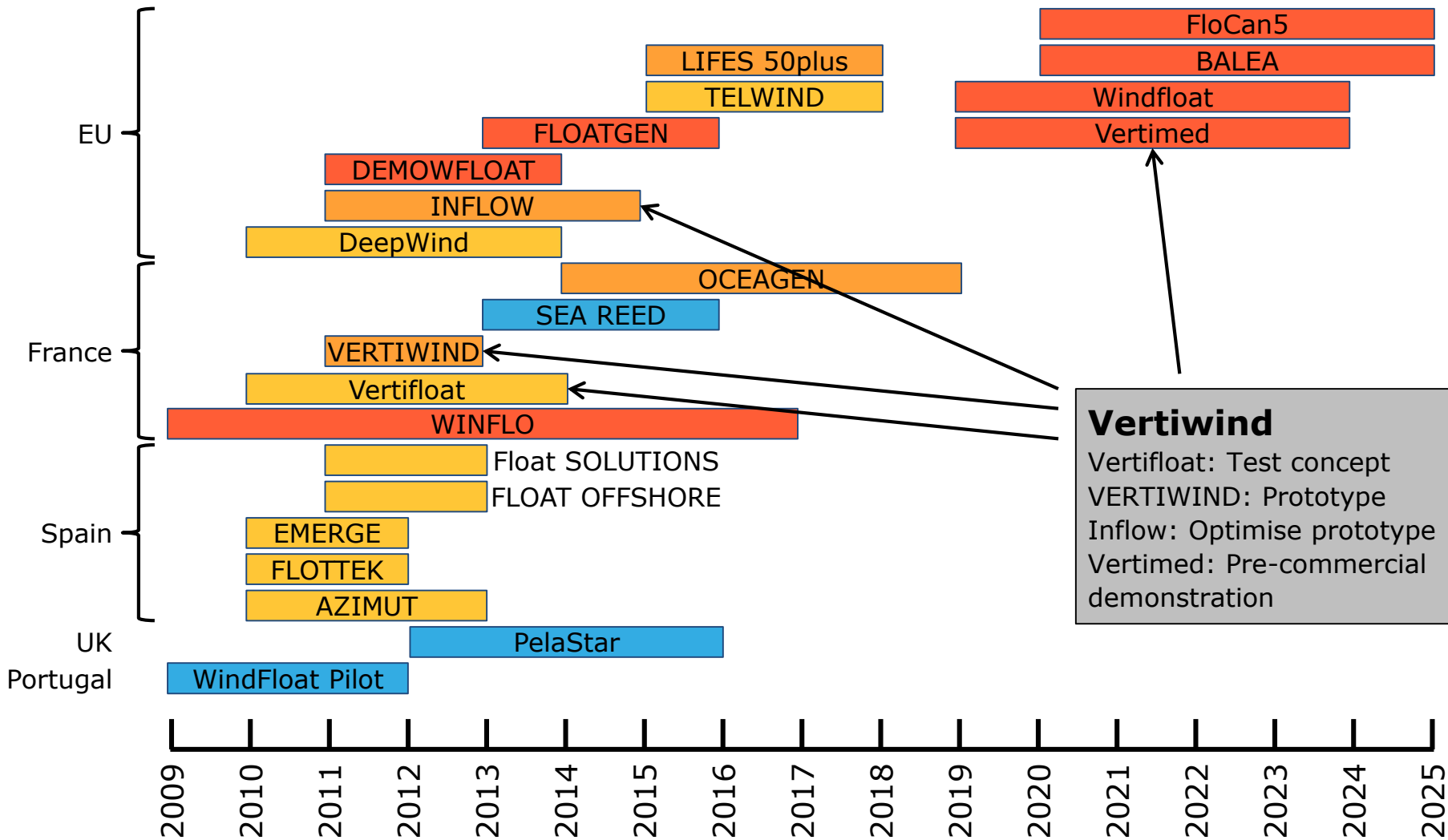


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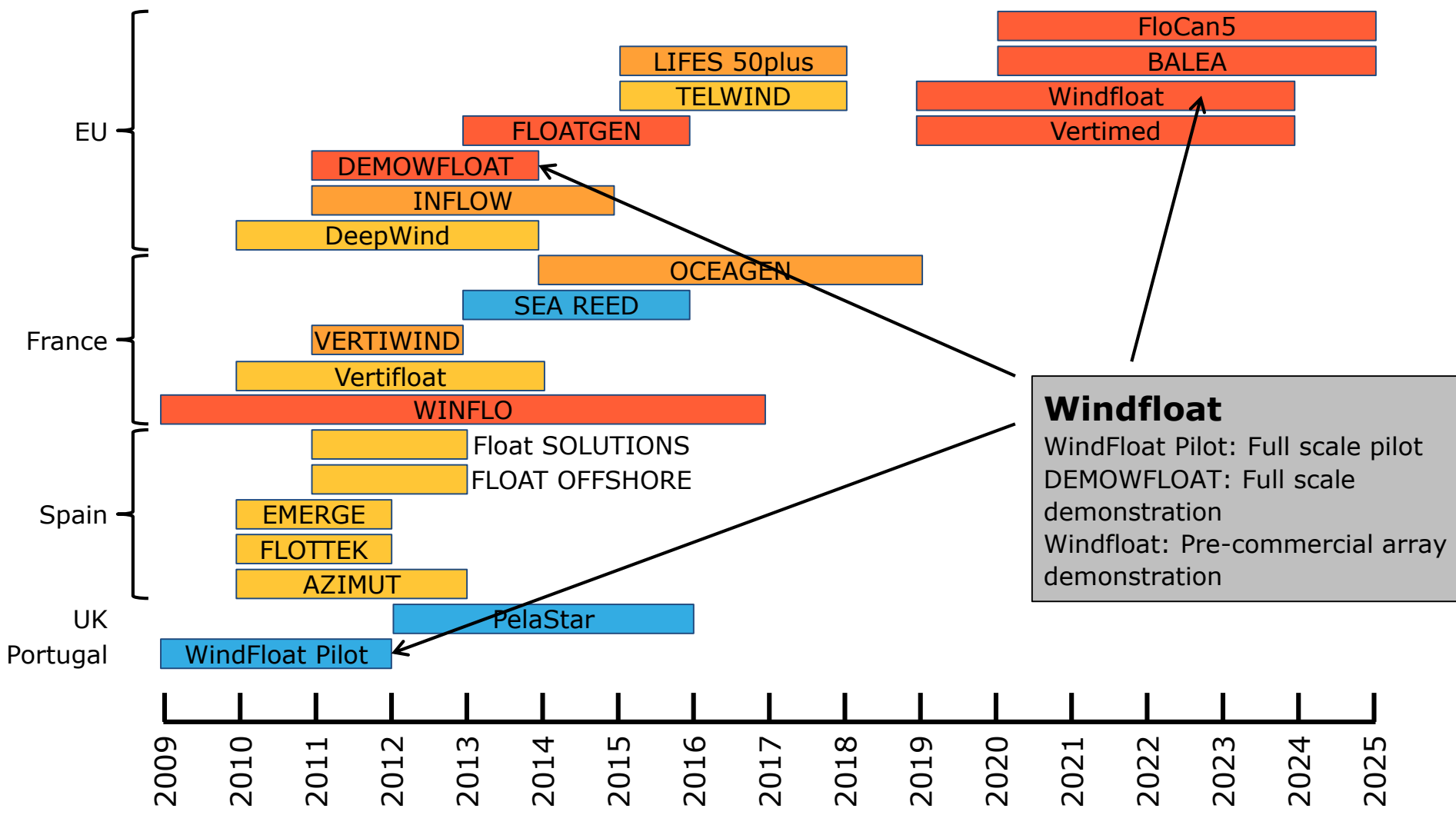




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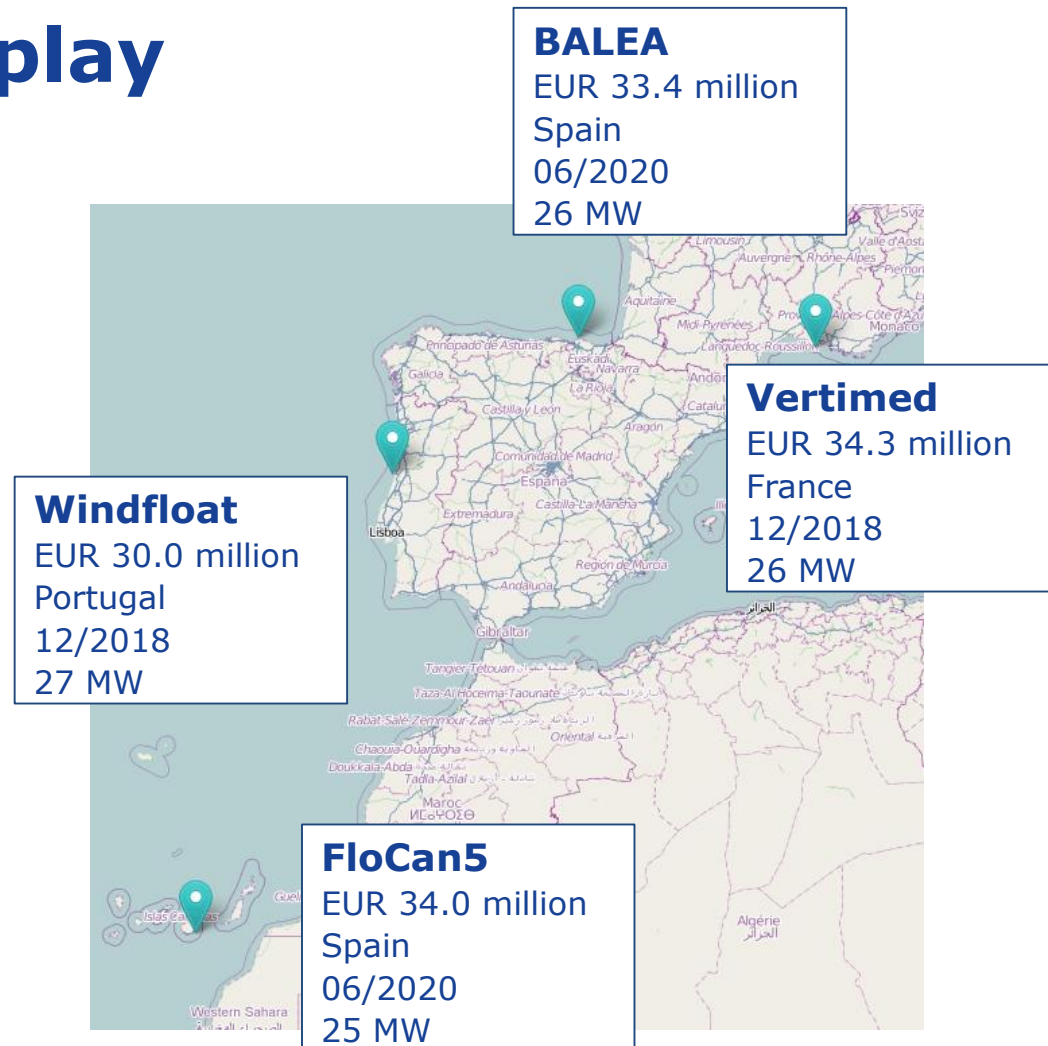
Vertiwind
 Vertifloat: Test concept
 VERTIWIND: Prototype
 Inflow: Optimise prototype
 Vertimed: Pre-commercial demonstration



Windfloat
WindFloat Pilot: Full scale pilot
DEMOWFLOAT: Full scale demonstration
Windfloat: Pre-commercial array demonstration

NER 300 state of play

- Cornerstone in the EU's strategic plan to develop and deploy cost-effective low carbon technologies
- 4 floating wind projects
- Total funding about EUR 132 million



Innovation and impact on LCoE

Project	Main potential innovation	Expected impact			
		Production costs	Transport costs	Installation costs	O&M costs
Vertimed, Windfloat FloCan5	Demonstrate of semi-submersible concept	✓		✓	✓
BALEA	Demonstrate of TLP or semi-submersible concept	✓		✓	✓
FLOATGEN, INFLOW, DEMOWFLOAT	Demonstrate semi-submersible concept	✓		✓	✓
LIFES 50plus	Optimise 2 concepts for 10 MW wind turbines and KPI methodology for floating substructures	✓		✓	✓
TELWIND	Test floating substructure for > 10 MW turbines		✓	✓	
DeepWind	Develop spar-buoy concept	✓			✓

Way forward – future calls?

- **NER 300:** Commission suggests to build on the NER 300 experience when setting up an Innovation Fund (450 million allowances), targeted to innovative RES, CCS/CCU but also to innovative projects in the energy-intensive industry
- **Horizon 2020:** Find information at www.ec.europa.eu/programmes/horizon2020
- Work Programme 2018-2020 is under development
- **InnovFin Energy Demo Projects:** Eligibility questionnaire available at EIB:
<http://www.eib.org/products/blending/innovfin/products/energy-demo-projects.htm>

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