



#InvestEUresearch

Horizon 2020 Work Programme for Research & Innovation 2018-2020

Wind energy

Nuno Quental
DG RTD – Policy Officer

Research and
Innovation

Climate neutral Europe by 2050

- Europe can lead the way to **climate neutrality** by investing into **technology**, empowering citizens, and aligning action in key areas such as industrial policy, finance, or research – while ensuring social fairness for a just transition.
- **93% of Europeans believe climate change to be caused by human activity** and 85% agree that fighting climate change and using energy more efficiently can create economic growth and jobs in Europe.



R&D matters

- **Acceleration of technological innovation** (...) can limit the risks from global warming of 1.5°C – ‘high confidence’ (*IPCC, 2018, ‘Global Warming of 1.5’*)
- Only **4 out of 38 energy** technologies/sectors **on track** to meet **long-term climate goals**, energy access and air pollution goals; 23 ‘in need of improvement.’ (*IEA, 2017*)
- In 2007-2014, a 4-fold rise in EU public and private R&D funding EU led to a 5-fold increase in patents filed (*EC / JRC*)



R&D matters

- Relatively **high spending of wind industry on R&D** (3-5% of turnover vs 2% economy-wide) probably explains EU's leadership and positive trade balance of EUR 6 billion in 2015
- Feed-in tariffs and public R&D spending stimulate patenting activity in renewable energy technologies (*OECD, 2017, 'The empirics of enabling investment and innovation in renewable energy'* – based on more than 70 explanatory variables across multiple countries)



- Both ‘learning by doing’ (deployment) and ‘**learning by searching**’ (R&D) are important to achieve **cost-reductions** – R&D often more. Significant correlations also found between cumulative R&D expenditures and subsequent cost reductions (*Rubin et al., 2015*)

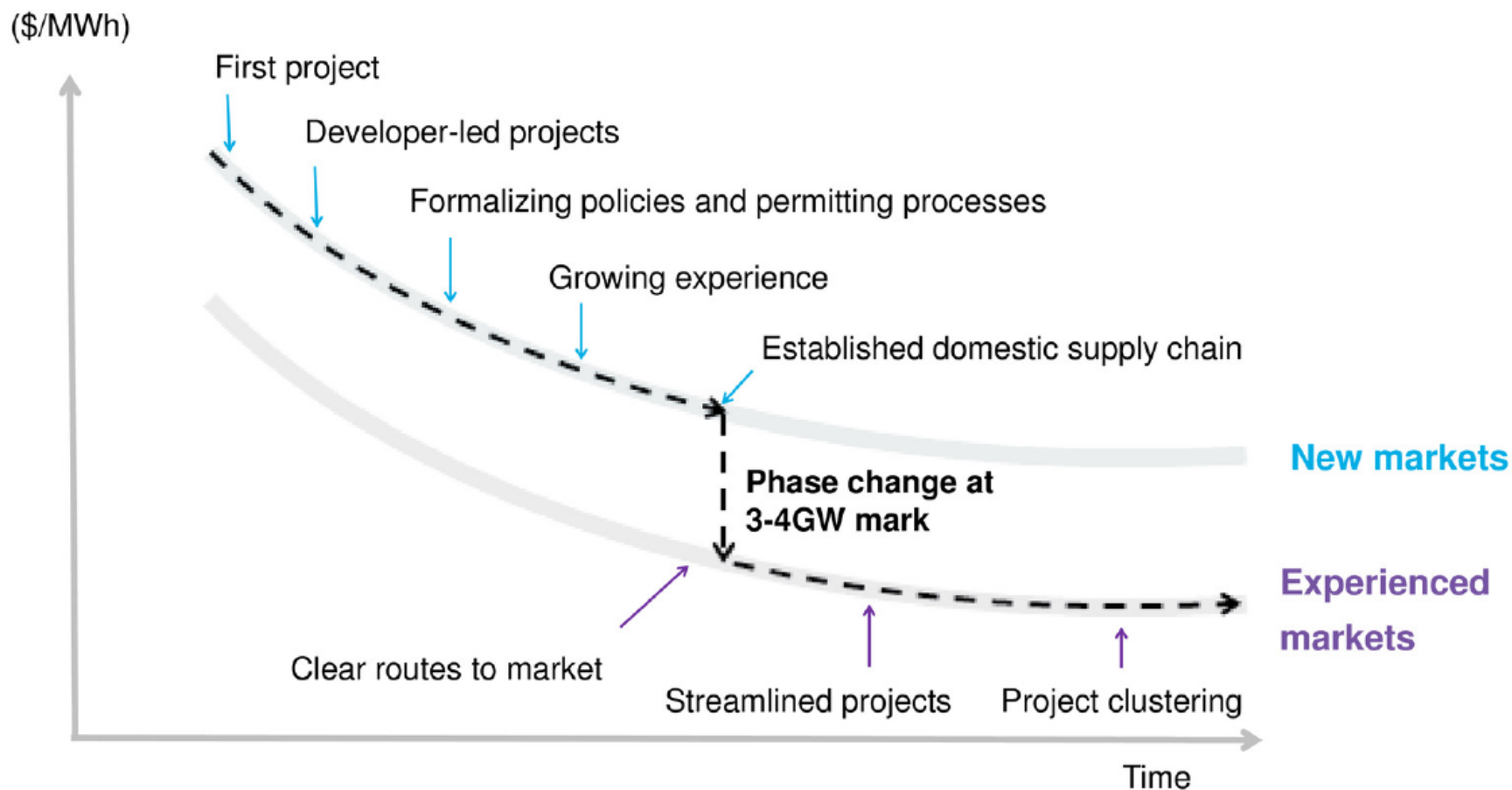
Table A2

Multi-factor learning-diffusion models for wind power.

Study	Time period	Region	Scope	Learning rates ^a
Jamasb and Kohler (2007)	1980–1998	Global	Wind farm	LBD = 13.1%, LBR = 26.8%
Klaassen et al. (2005)	1986–2000	Denmark, UK, and Germany	Wind farm	LBD = 5.4%, LBR = 12.6%
Miketa and Schrattenholzer (2004)	1979–1997	Global	Turbine	LBD = 9.73%, LBR = 10%
Ek and Söderholm (2010)	1986–2002	Global	Wind farm	LBD = 17%, LBR = 20%
Söderholm and Klaassen (2007)	Varies by country	Global based on data from Denmark (1986–1999), Germany (1990–1999), Spain (1990–1999), Sweden (1991–2002), and UK (1991–2000)	Wind farm	LBD = 3.1%, LBR = 13.2%
Jamasb and Kohler (2007)	1994–2001	OECD	Offshore wind farm	LBD = 1% LBR = 4.9%



From new to established markets



Offshore wind Implementation Plan

SET PLAN



#H2020Energy

Research and
Innovation

SET Plan goals

- Transform the energy system by **accelerating the development and deployment of low-carbon technologies**
- Maximise impact of public investments by **coordinating national & European efforts**
- Promote **cooperation** amongst EU countries, companies, research institutions, and the EU itself





N° 1 in Renewables

70 €/MWh or less for the cost of offshore wind energy by 2030



Energy efficiency in buildings

60% savings of buildings' energy consumption by 2025*



Flexible energy system

25% peak load reduction from demand-response by 2030*

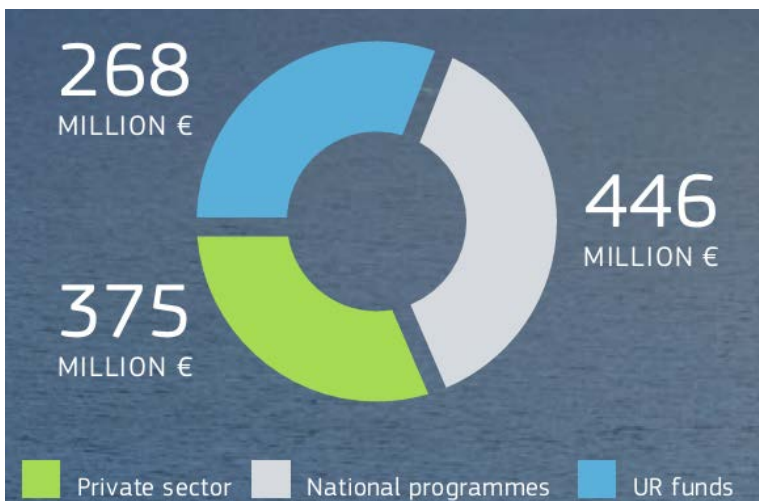
Offshore wind targets

- **Reduce the levelised cost of energy for fixed offshore wind** by improving performance and efficiency over the entire value chain, leading to a no-subsidy deployment situation
- Develop the **floating offshore wind** subsector to **reduce the LCoE to <12 ct€/kWh by 2025 and <9 ct€/kWh by 2030**



-
- SET PLAN DELIVERING RESULTS:**
- # The Implementation Plans
- Research & Innovation
enabling the EU's
energy transition

Offshore wind Implementation Plan



12
COUNTRIES



STAKEHOLDERS

3 (representing together 88 organisations):
European Technology and Innovation
Platform on Wind (Co-Chair, representing
26 organisations), European Energy Research
Alliance – Joint Programme on Wind
Energy (representing 52 organisations), and
European Energy Research Alliance – Joint
Programme on Ocean Energy (representing
10 organisations)





ETIPWind

- Coordinator: WindEurope
- Timeline: Jan. 2019 – Dec. 2021
- Budget: €726 thousand
- Goal
 - Support to R&I policy and SET Plan implementation (stronger industrial focus)
- Main deliverables
 - Technology roadmap
 - Strategic research and Innovation agenda
- Others: workshops, webinars, fact sheets, video



#H2020Energy

Research and
Innovation



SETWind

- Coordinator: DTU
- Timeline: Mar. 2019 – Feb. 2022
- Budget: €1 million
- Goals
 - Organising cross-border research projects
 - Support to R&I policy (stronger research focus)
- Main deliverables
 - Cross-border research projects (10)
 - Criteria to evaluate the impact of wind energy R&I
 - Mapping of R&I policies and priorities for offshore wind
 - Rolling R&I agenda / updated Implementation Plan
 - Proposal for a European Lighthouse project



#H2020Energy

Research and
Innovation



Coming soon...

- Re-establishing the Working Group / Steering Group and make it more inclusive
- Ensure coordination and cooperation between ETIPWind and SETWind, and with the DEMOWIND ERA-Net
- Achieve measurable results



#H2020Energy

Research and
Innovation



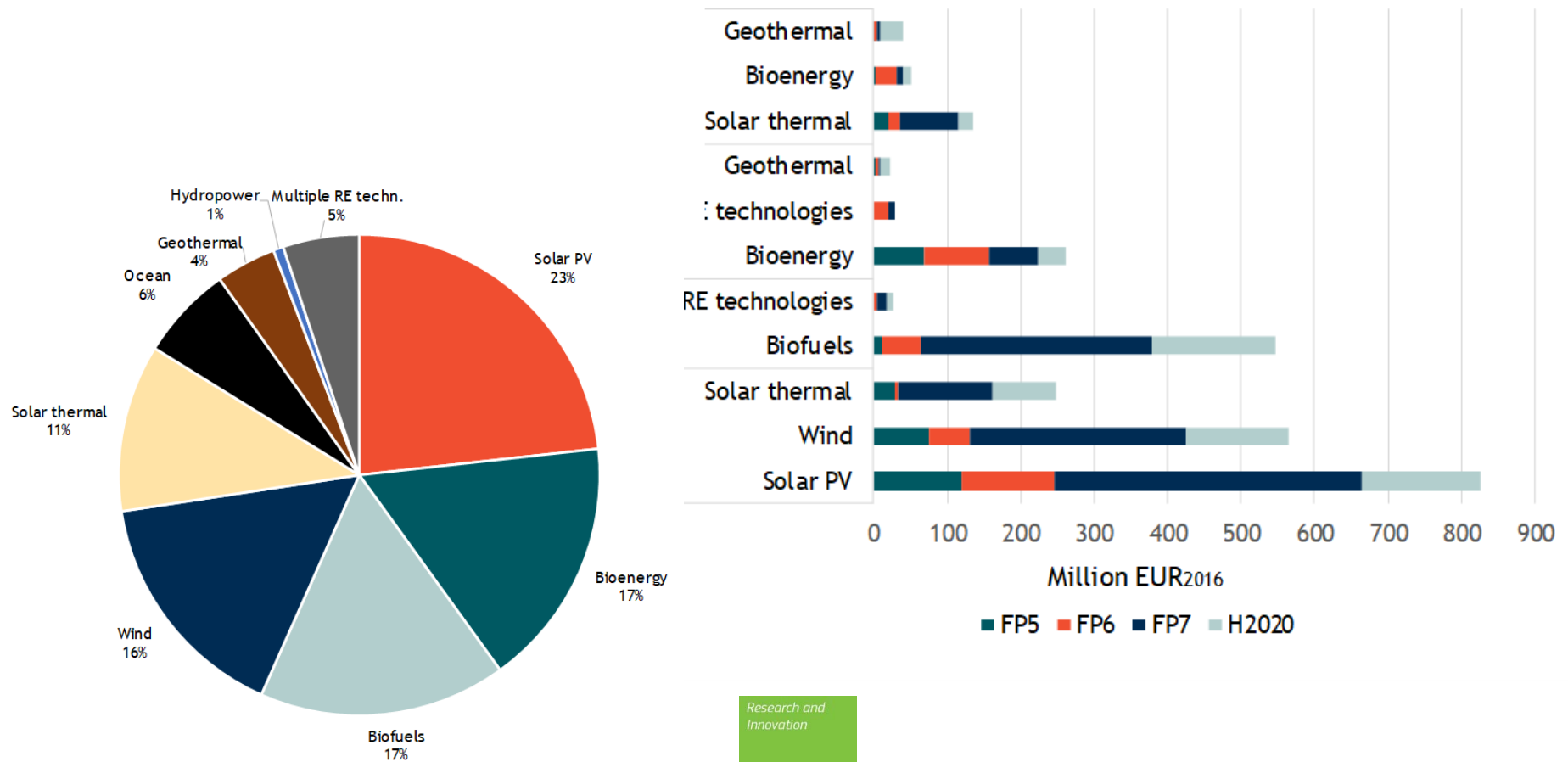
HORIZON 2020



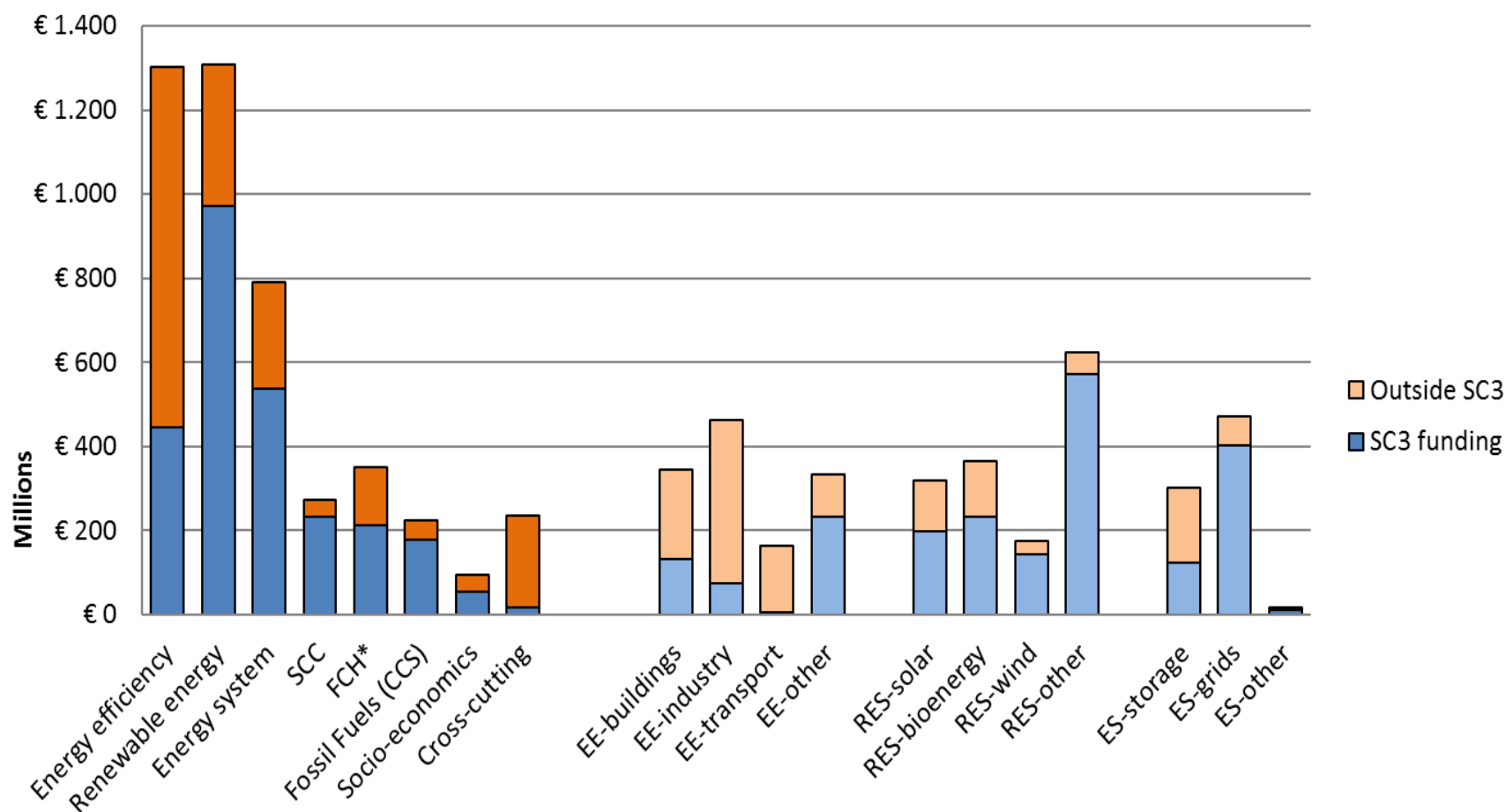
#H2020Energy

Research and
Innovation

Wind vs others across framework programmes

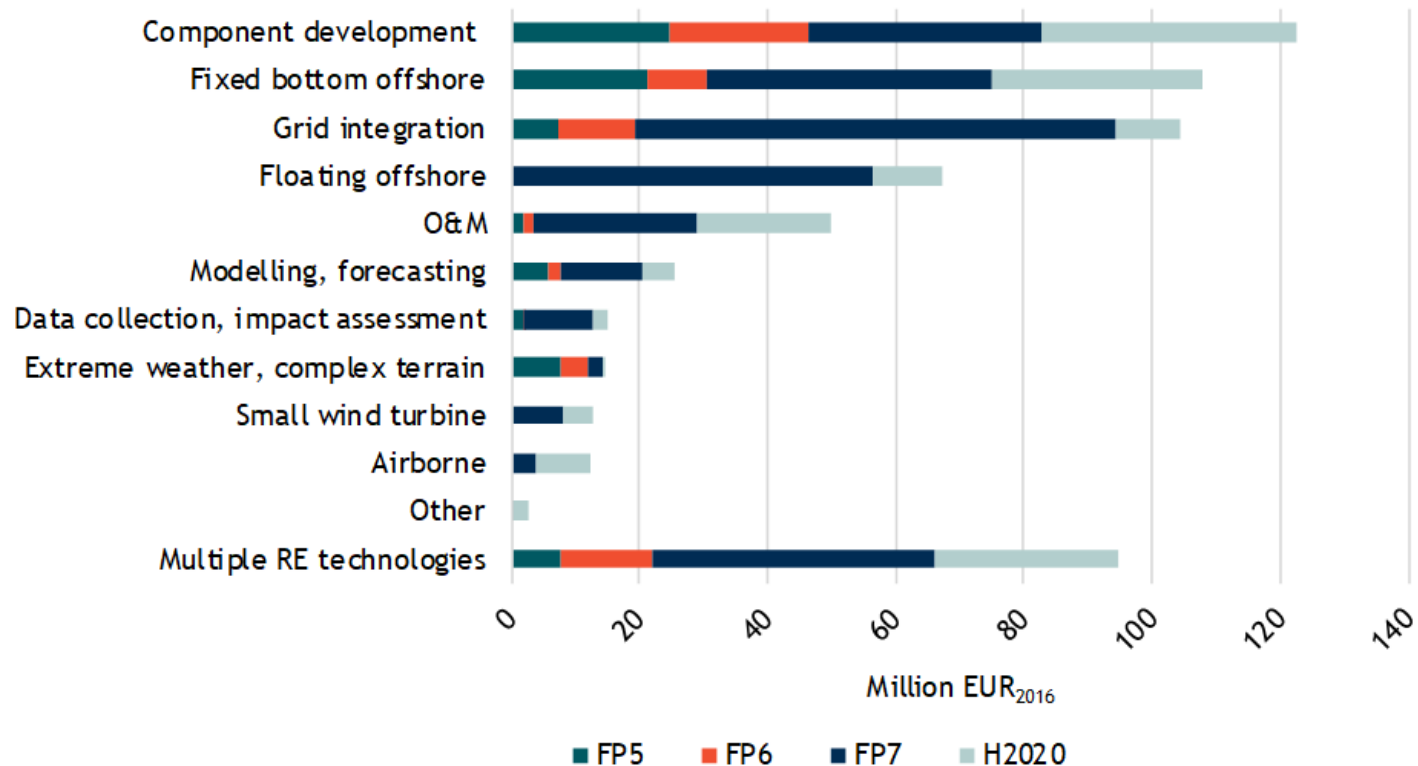


Wind vs others in Horizon 2020



Wind energy across framework programmes

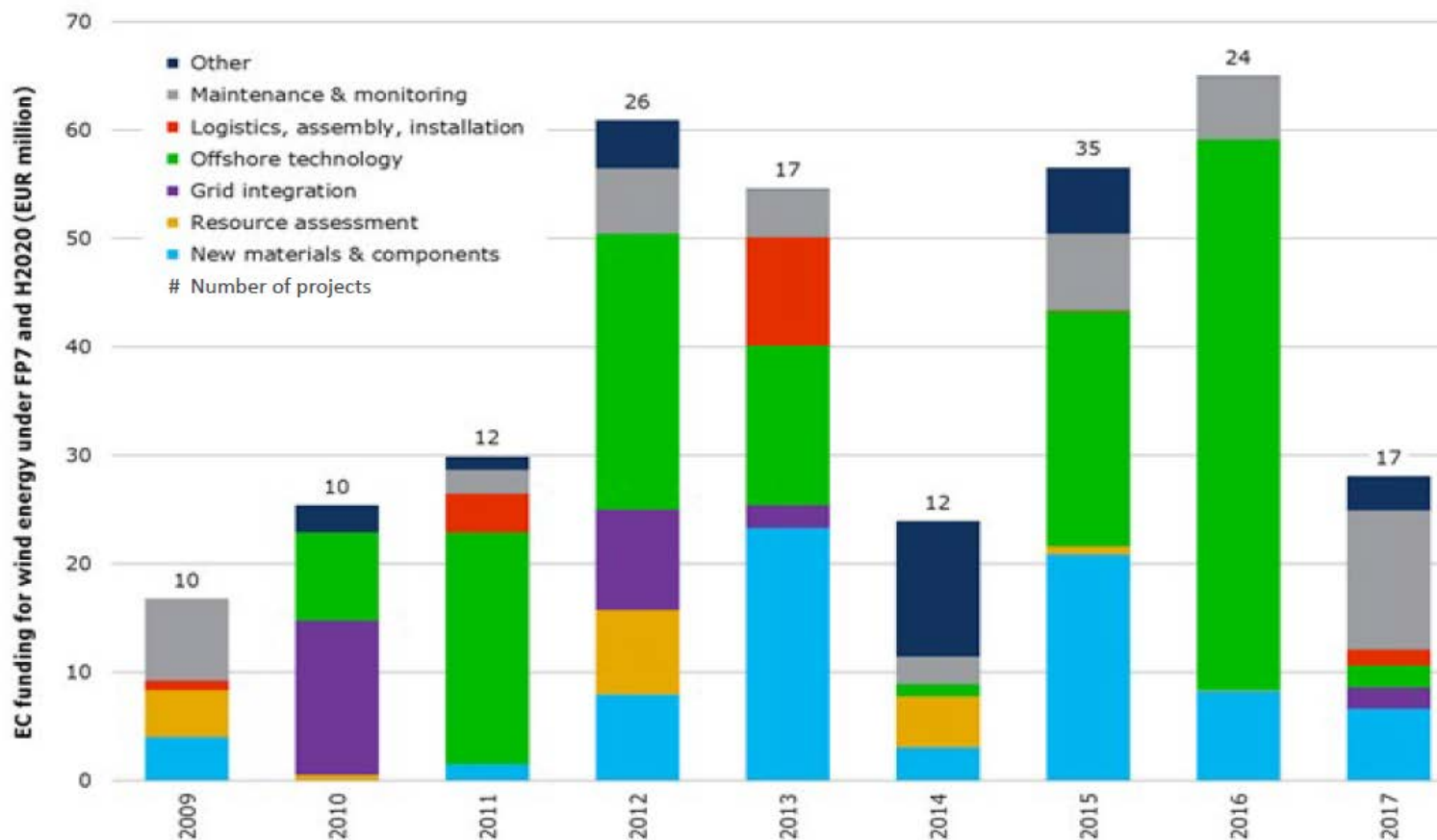
Figure 2.1 EU funding per sub-technology/area (2016 Million Euro)



Source: CORDIS (2018)

The area 'multiple RES technologies' includes projects in which wind is one of multiple RE technologies.

Wind energy in Horizon 2020



Wind topics in Horizon 2020

2016

O&M (offshore)

2017

- Demonstration of large >10MW wind turbine
- Wind energy science
- Market uptake



2018

- Manufacturing, installation and O&M (offshore)
- Anchoring and mooring, dynamic cabling, installation and O&M (floating offshore)
- Turbine technology (onshore)
- Testing methods and design tools



2018

- ETIPWind
- SETWind (execution of the SET Plan)
- EERA
- Market uptake

2019

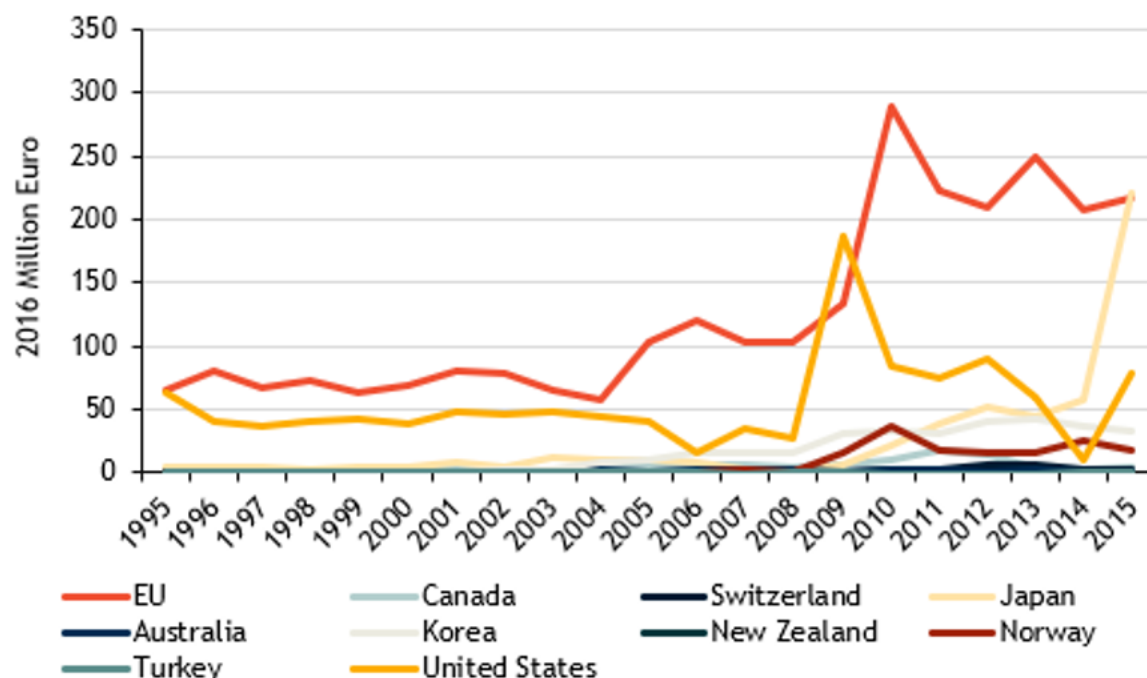
- O&M (offshore)
- Big data for energy
- Opening up of research databases



2020

- Design models and tools for 20MW
- Basic wind science technology (mostly offshore)
- Demonstration of innovations (e.g. floaters, moorings, cabling, monitoring systems, integrated systems) to scale-up rated power to >10MW (floating offshore)
- Materials (offshore)

International R&D funding for wind energy



Source: OECD/IEA (2018).

Note: EU covers EU and MS funding. National budgets for 2016 were excluded from the analysis because they are early estimates and lack reliability/coverage. Data covers 20 EU countries: the EU15 and Czech Republic, Estonia, Hungary, Poland, Slovakia and the European funding programmes FP5, FP6, FP7 and H2020. For countries outside the EU, national budgets were available for Australia, Canada, Japan, Korea, New Zealand, Norway, Switzerland, Turkey and the USA. Data for Italy was not available for 2010 and 2015, and data for the UK was not available for 2008. China was excluded from the analysis as reliable data for the time period of interest was not available. Projects under 'wind energy and other RE technologies', as mentioned in the introduction of section 2.1, are not included in this analysis.

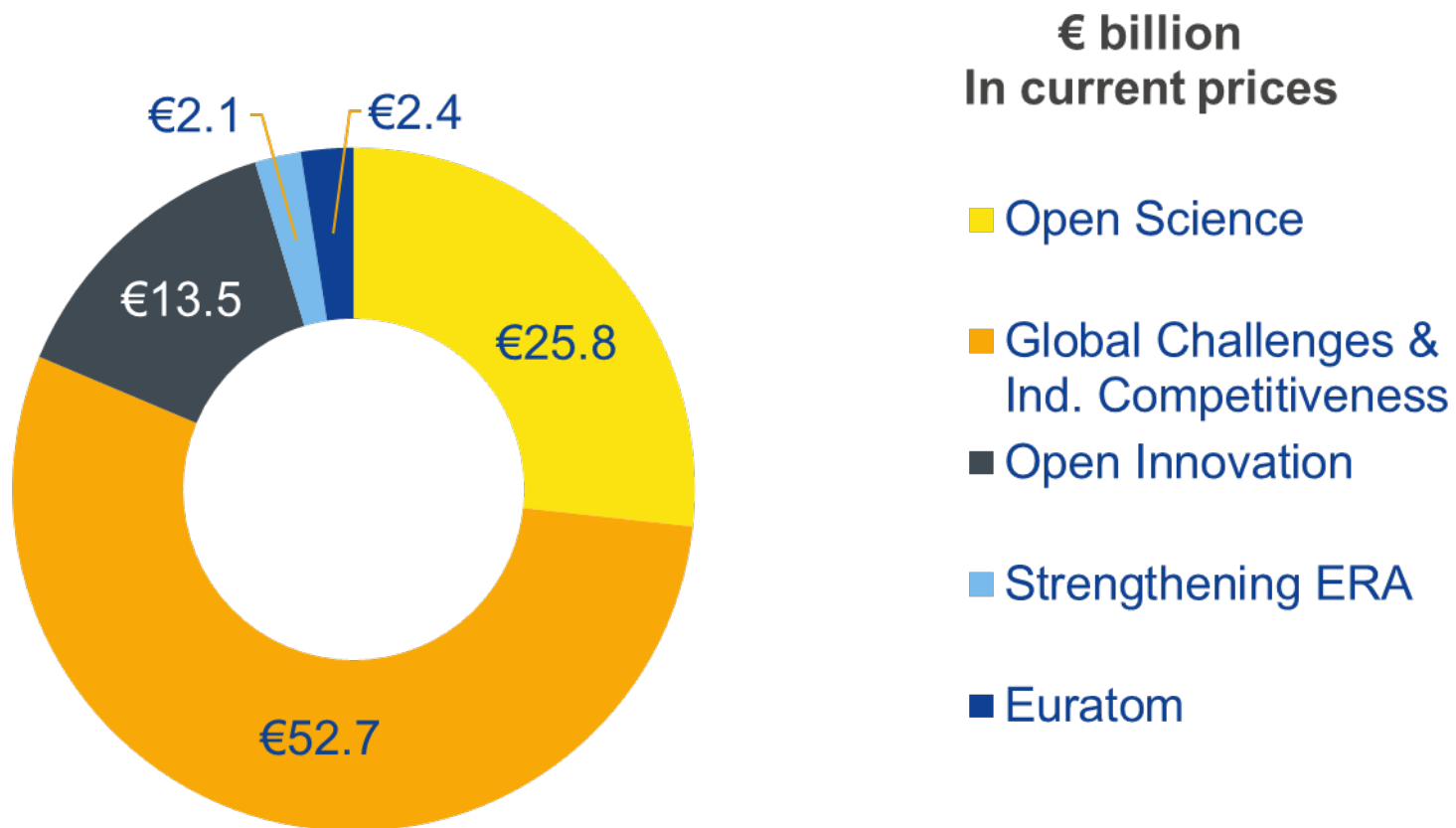
HORIZON EUROPE



#H2020Energy

Research and
Innovation

Horizon Europe





Horizon Europe

Pillar 2

Global Challenges & Industrial Competitiveness:

boosting key technologies and solutions underpinning
EU policies & Sustainable Development Goals

Clusters implemented through usual calls, missions & partnerships	Budget (€ billion)
Health	€ 7.7
Inclusive and Secure Societies	€ 2.8
Digital and Industry	€ 15
Climate, Energy and Mobility	€ 15
Food and Natural Resources	€ 10
Joint Research Centre supports European policies with independent scientific evidence & technical support throughout the policy cycle	€ 2.2



European Innovation Council

The EIC will support innovations with breakthrough and disruptive nature and scale up potential that are too risky for private investors.

**European
Innovation
Council**

**Helping innovators create markets of the future,
leverage private finance, scale up their
companies,
Innovation centric, risk taking & agile, pro-
active management and follow up**

Two complementary instruments bridging the gap from idea to investable project

Pathfinder: grants
(from early technology
to pre- commercial)

Accelerator:
grants & blended finance
(from pre-commercial
to market & scale-up)

CHALLENGES



#H2020Energy

Research and
Innovation

Challenges for EU R&I funding on wind power

- Be targeted and mission-oriented without over-prescribing
- Avoid funding research that would take place anyway
- Be more impactful ('more bung for the buck')
- Make more data available for research
- Adapt to Horizon Europe rules, governance and processes
- Seize other FP Challenges / Clusters and profit from research in neighbouring areas
- Create synergies with innovation funding (e.g. innovFin Energy Demonstration Projects, EIC, Innovation Fund)





Thank you!

#H2020Energy

EU Participant Portal

www.ec.europa.eu/research/participants



#H2020Energy

Research and
Innovation