



# Leadership in renewables Power generation: the impact of EU R&D funding

Power | Heating & cooling | Transport

## **OBJECTIVES**

A comprehensive study of renewable power generation research and development (R&D) support within the EU over the past 20 years

1

Identify the impact of EU R&D support for the renewable power generation sector

Understand how the renewable power generation sector has developed

**METHODOLOGY** 

**EFFECTIVE DATA** COLLECTION ACTIVITIES USING A RANGE OF **METHODS** 





2











# **EU R&D FUNDING**

**KEY FIGURES:** 



**Programme projects** 

projects for renewable power

1127

€2 533 m

for renewable

33 % for solar PV

949 projects for only renewable

for renewable power generation combined

power generation

with heating & cooling

**178** 



power generation

power generation only

€2 193 m

for renewable

for renewable power generation combined with heating & cooling

€340 m

22 % for wind

**15%** 

9% **10** % for concentrated solar power (CSP)

for geothermal

4 %



**Top technologies funded** 

More than €160 million/year in Horizon 2020 (H2020) and Framework Programme 7 (FP7) – up from less than €90 million/year in FP5 and FP6

**IMPACT ON KNOWLEDGE GENERATION** 



In 2014, the EU share of global patents was

highest in the ocean energy sector (13 %) and lowest in the solar PV sector (4 %)

**Publications** EU share of global patents in renewable power generation technologies declined between 2000 and 2014 EU has retained a leading share of global publications for renewable power generation In 2017, the EU share of global publications was highest in the ocean energy sector (51 %) and lowest in the solar PV sector (26 %)

## 950 000 GWh 29.6%

**IMPACT ON SECTOR DEVELOPMENT** 

### In 2016, hydropower represented 37 % of renewable power generation,

of annual power generation from

renewables in 2016

wind 32 %, bioenergy 18 %, solar PV 11 %. CSP, geothermal and biofuels were 1 % each

730 000

220 000 new jobs since 2008





of gross final electricity consumption

from renewable sources in 2016

EU renewable power generation sector turnover in 2016

In 2016, wind accounted for 48 %, bioenergy 27 %, solar PV for 13 %,

hydropower for 11 % and CSP and

geothermal for the remaining 1 %

€80 billion





### In 2016, wind accounted for 43 % of jobs, bioenergy for 32 %, solar PV for 13 %, hydropower for 10 % and the other technologies for the remaining 2 %



Production technology to achieve low Cost and Highly Efficient phOtovoltaic

An ongoing H2020 project developing very high-performance/low-cost PV devices based on emerging perovskite technology 25.2 % with silicon and perovskite-based

tandem cells and demonstrated how the

efficiency could increase to over 30 %. It

Perovskite Solar cells (CHEOPS)

- developed a cost-efficient and simple production process – compatible with existing manufacturing lines - integrating a perovskite cell directly on top of a standard silicon-based cell. It also introduced a unified standard for measuring and testing perovskite-based
- PV devices to strengthen reliability and comparability The project partner, Oxford PV, and its subsidiary, Oxford PV Germany, received €15 million financing from the European Investment Bank in 2017. This is to support the transfer of the perovskite technology from laboratory to industrial-scale manufacturing, fostering the EU technology leadership in the field

Demonstration of the WindFloat Technology (DEMOWFLOAT) FP7 project that demonstrated the

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WindFloat uses innovative floating structures that enable the harvesting of abundant wind resources in deep waters

performance and reliability of the WindFloat technology with a 2 MW pilot

turbine in Portugal

- where bottom-mounted foundations are not feasible • EU also supports the technology on its
  - path to full commercialisation through the 25 MW WindFloat Atlantic project. It benefits from a EU-backed loan of €60 million by InnovFin Energy **Demonstration Projects**