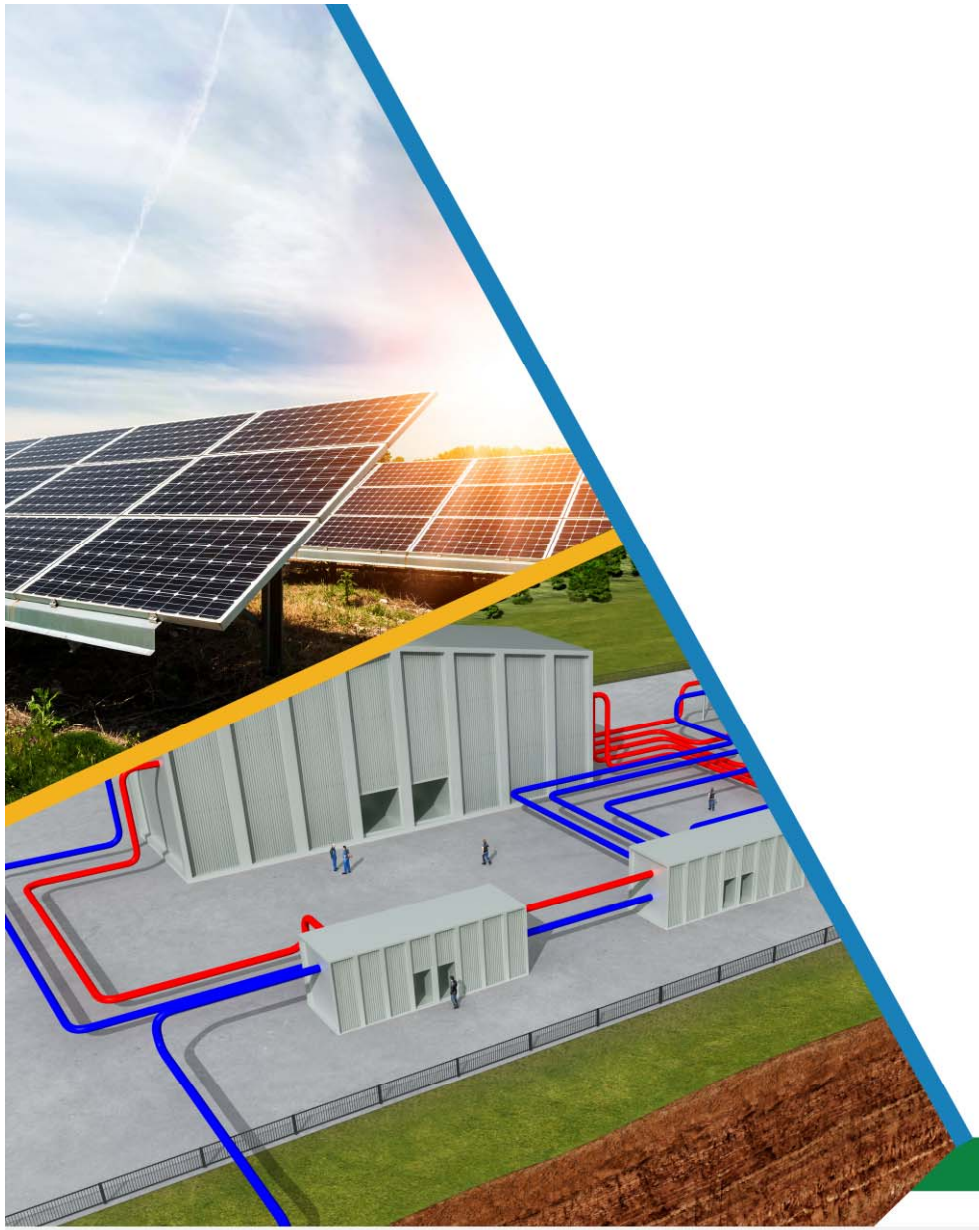


GSS-VET

Geothermal and solar skills - Vocational education and training

PV Market
Status and outlook

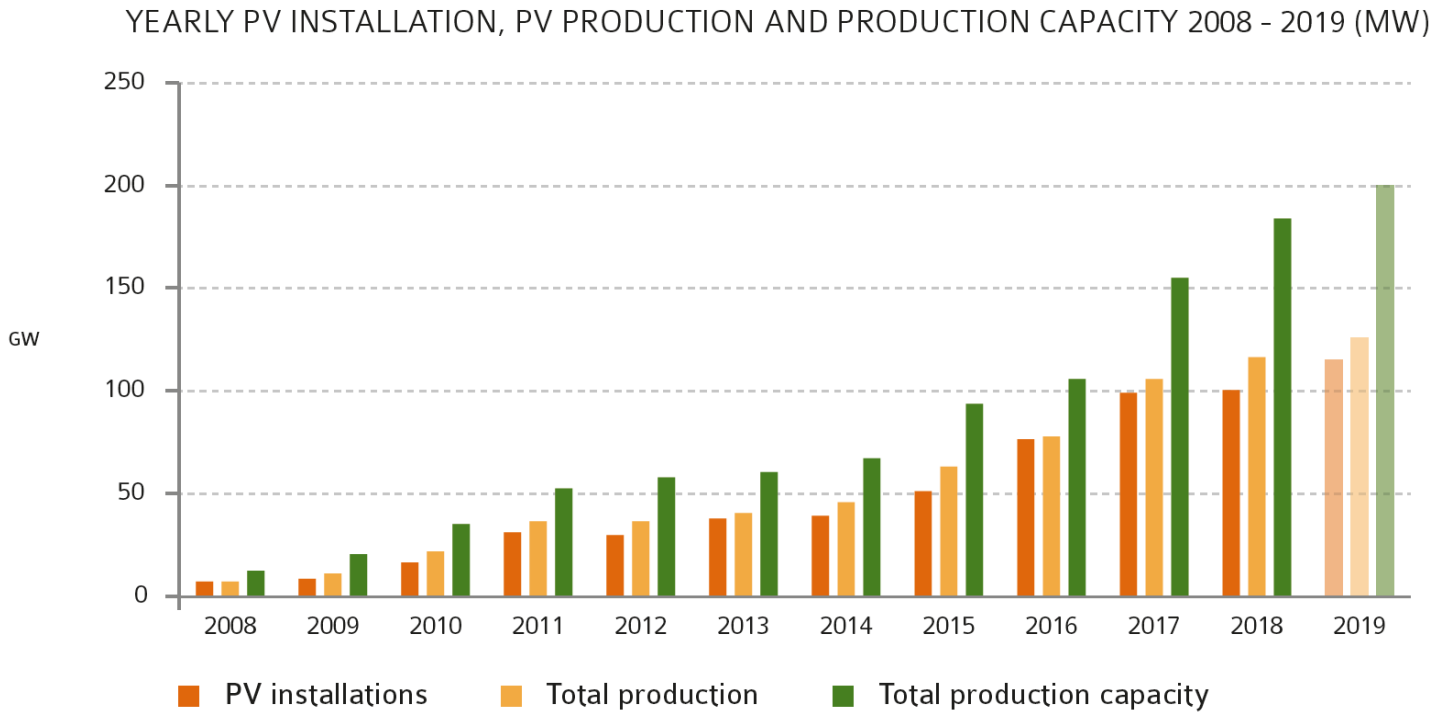
Stelios Psomas

Policy Advisor, HELAPCO

13.2.2020

Funded by the
Erasmus + Programme
of the European Union

A global view of the PV Market

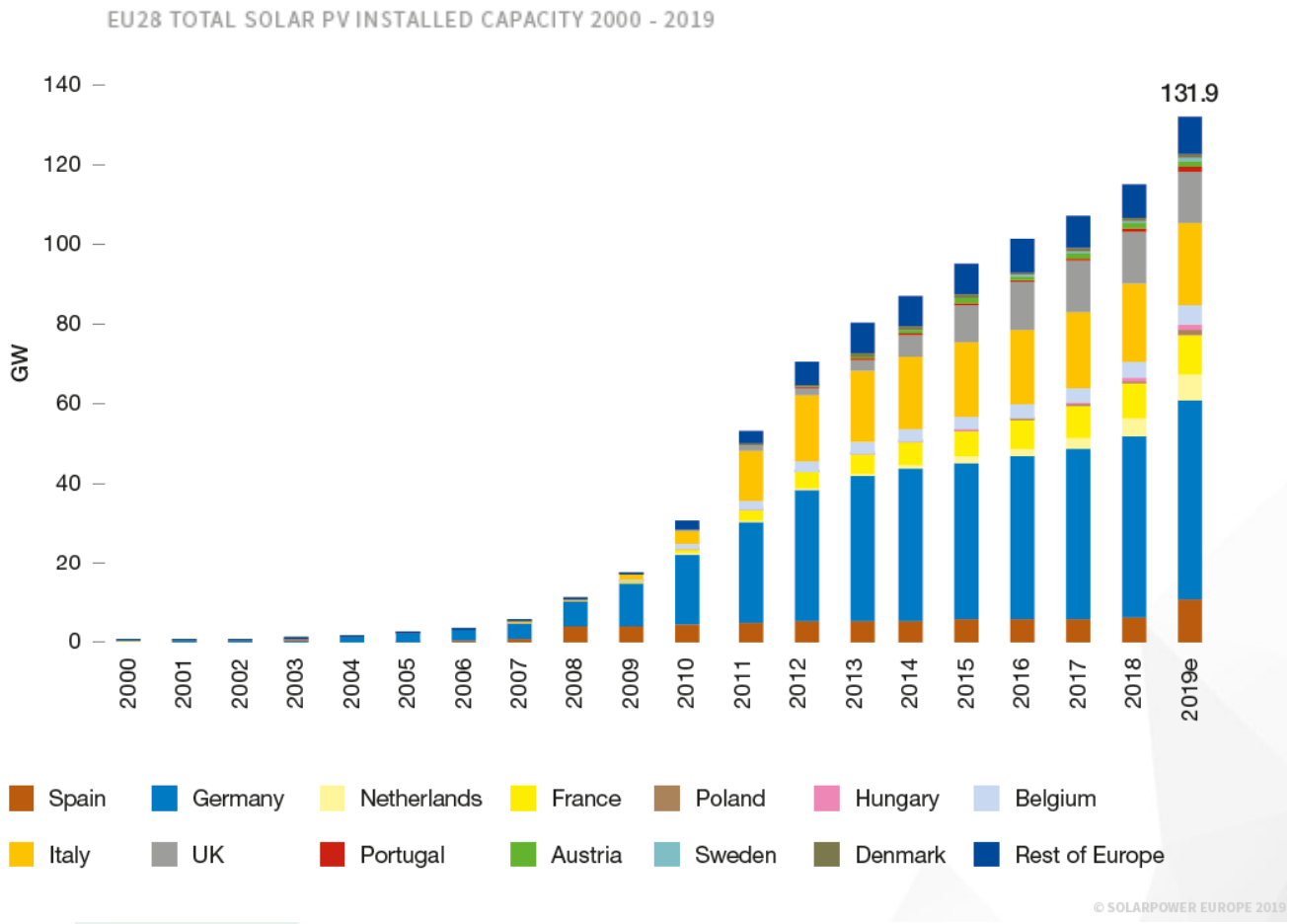


Source: IEA-PVPS, 2019

Funded by the Erasmus + Programme of the European Union

GSS-VET

A European view of the PV Market

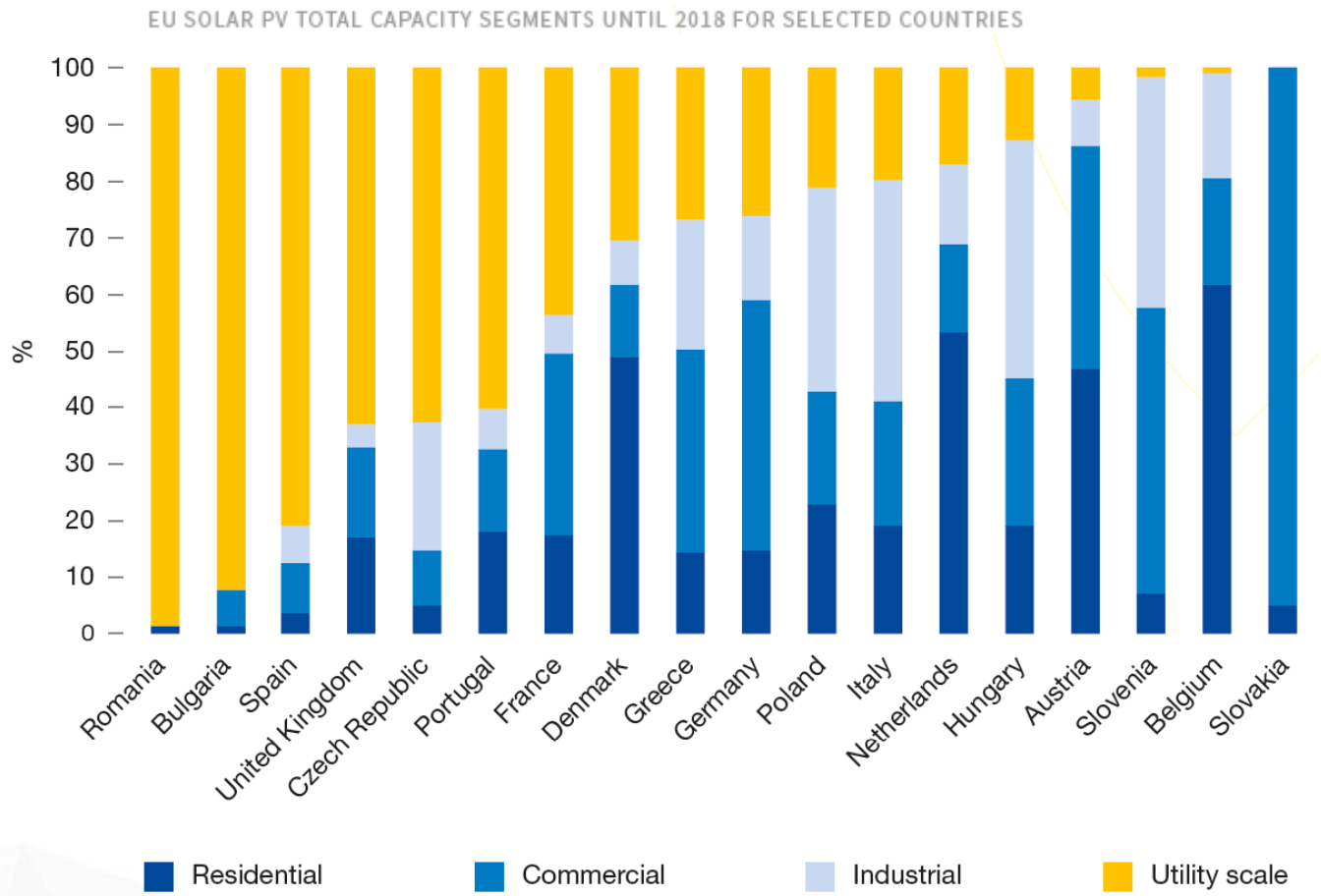


Source: SolarPower Europe, 2019

Funded by the Erasmus + Programme of the European Union

GSS-VET

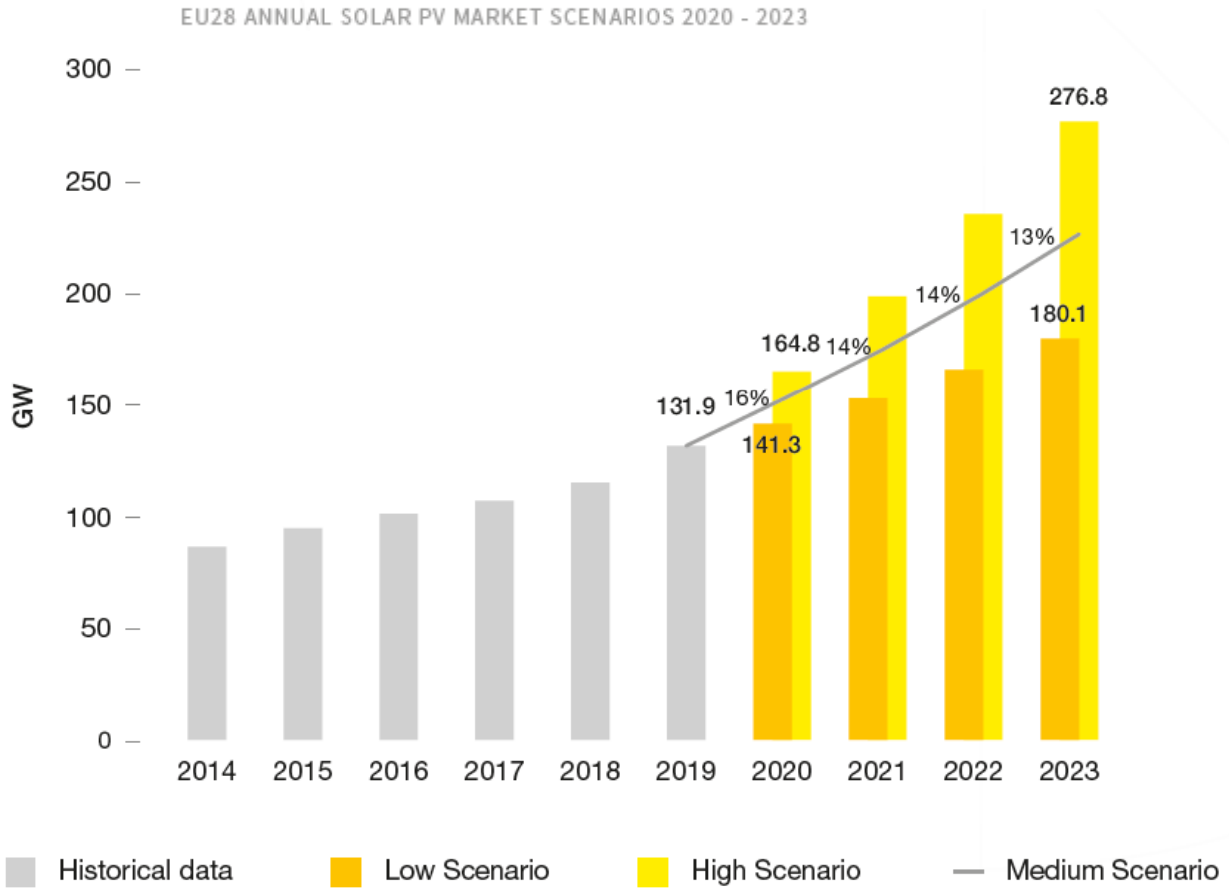
A European view of the PV Market



Source: SolarPower Europe, 2019

Funded by the Erasmus + Programme of the European Union

Outlook of the European PV Market

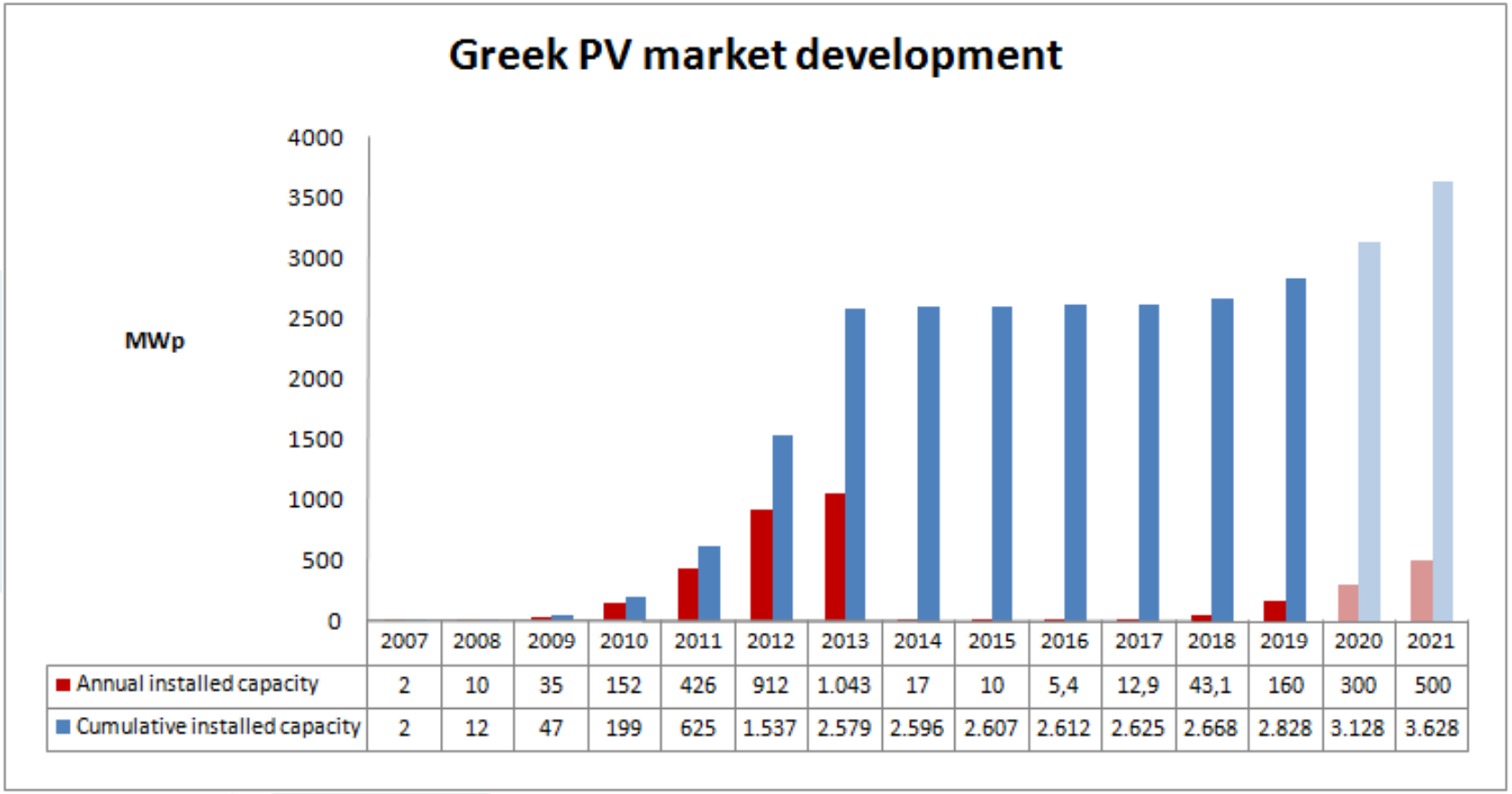


Source: SolarPower Europe, 2019

Funded by the Erasmus + Programme of the European Union

GSS-VET

The Greek PV Market



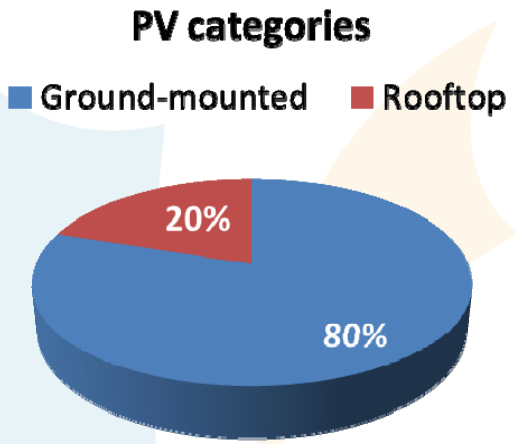
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Annual installed capacity	2	10	35	152	426	912	1.043	17	10	5,4	12,9	43,1	160	300	500
Cumulative installed capacity	2	12	47	199	625	1.537	2.579	2.596	2.607	2.612	2.625	2.668	2.828	3.128	3.628

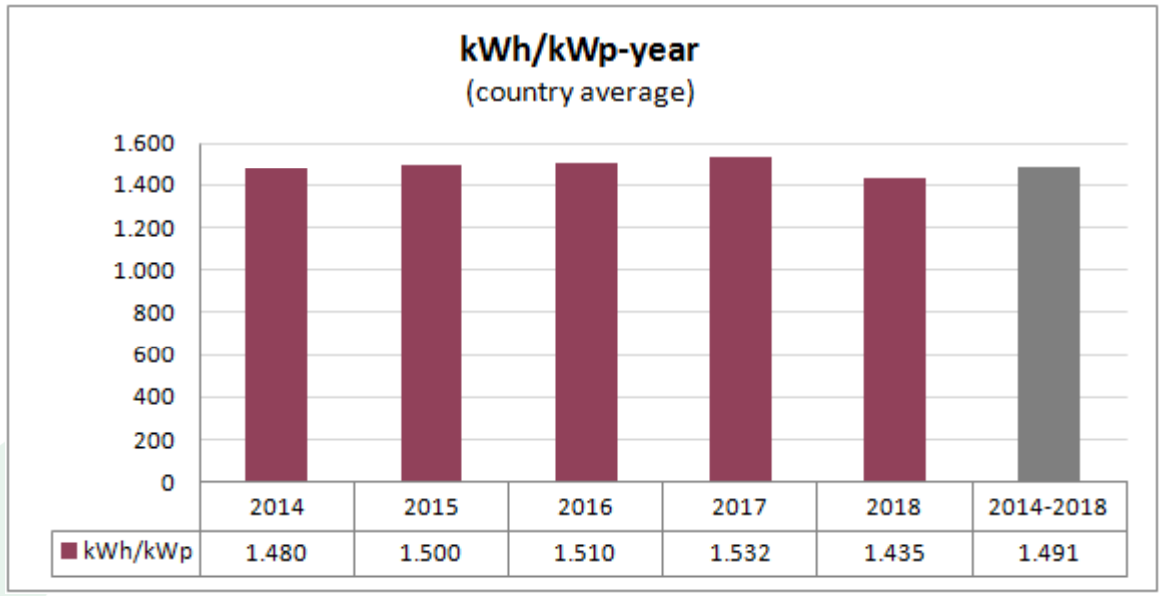
Source: HELAPCO, 2019

Funded by the Erasmus + Programme of the European Union

GSS-VET

The Greek PV Market





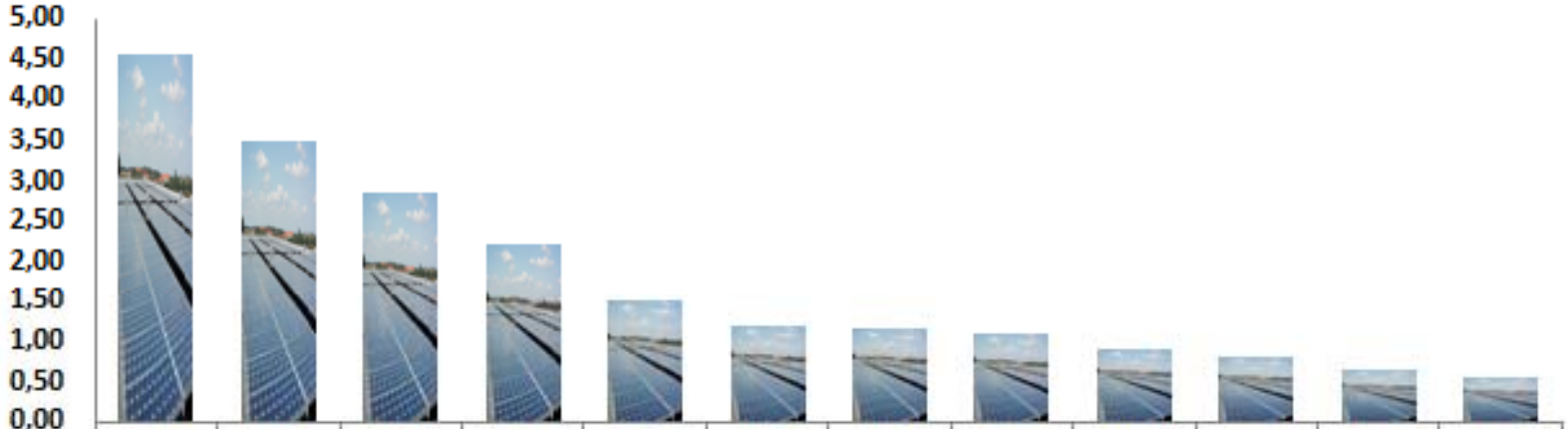
Source: HELAPCO, 2019

Funded by the
Erasmus + Programme
of the European Union

GSS-VET

The Greek PV Market

Average PV CAPEX in Greece (systems > 1 MWp) including grid connection



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
€/Wp	4,55	3,50	2,85	2,20	1,50	1,20	1,15	1,10	0,90	0,80	0,65	0,55

Source: HELAPCO, 2019

Funded by the Erasmus + Programme of the European Union

PV has become competitive

PV has become the least cost power option available!

- The levelized cost of new PV energy in Greece is lower than the levelized cost of new lignite and gas-fired power stations. This was unimaginable a few years ago.

- Greece has also a **self-consumption scheme (net-metering)** in place for residential and commercial applications systems (up to 1 MWp), as well as a **self-consumption scheme for commercial-industrial prosumers** (no capacity limit – up to 20% of produced energy can be fed to the grid with compensation).

Funded by the Erasmus + Programme of the European Union

GSS-VET

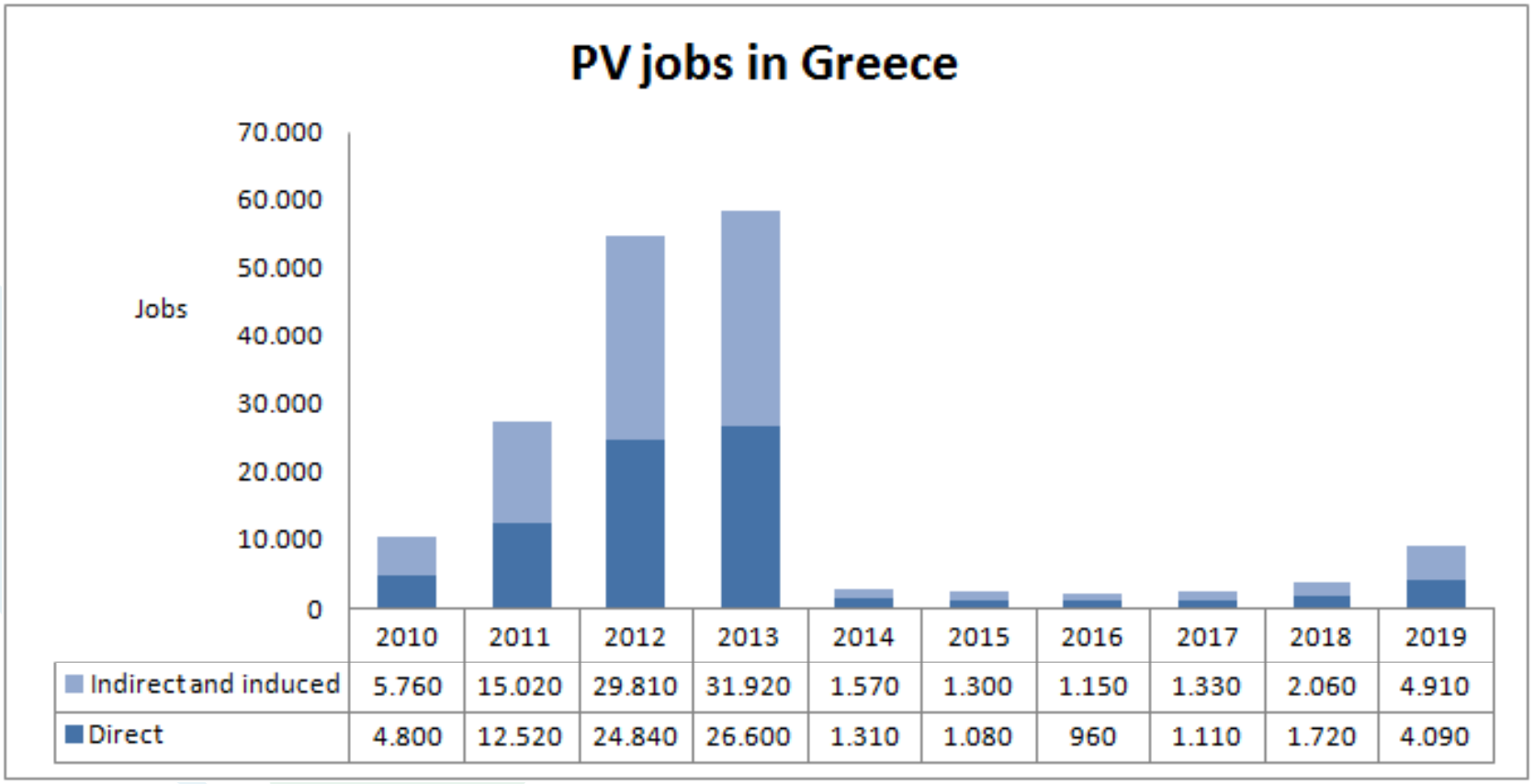
Long-term energy planning

- A long-term energy planning has been decided in Greece for the period 2020-2030.
- National target for cumulative PV capacity till 2030: **7.7 GWp**
- This translates to an average annual market of ca. 500 MWp (2020-2030).

Funded by the Erasmus + Programme of the European Union

GSS-VET

PV jobs in Greece



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Indirect and induced	5.760	15.020	29.810	31.920	1.570	1.300	1.150	1.330	2.060	4.910
Direct	4.800	12.520	24.840	26.600	1.310	1.080	960	1.110	1.720	4.090

Source: HELAPCO, 2019

Funded by the Erasmus + Programme of the European Union

GSS-VET

The most valuable asset

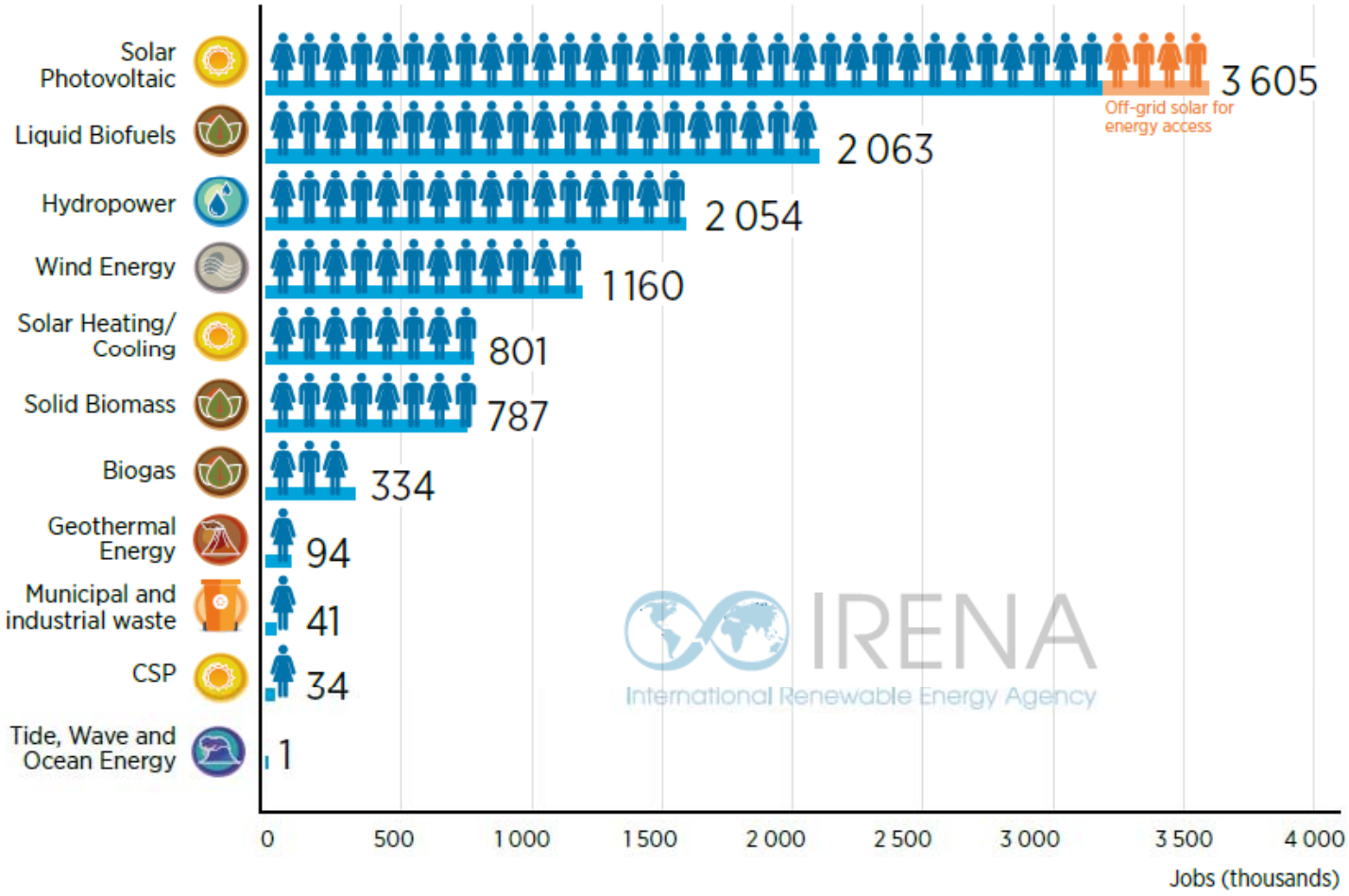
Greece produces mounting systems and trackers, transformers, cables, telemetry software and communications equipment needed for PV deployment.

The most valuable asset however is the **experienced companies and staff with know-how in developing and delivering PV projects**. Greek PV companies are currently active in Turkey, Romania, Bulgaria, Italy, US, Latin America, Australia, Africa and the Middle-East.

Funded by the Erasmus + Programme of the European Union

GSS-VET

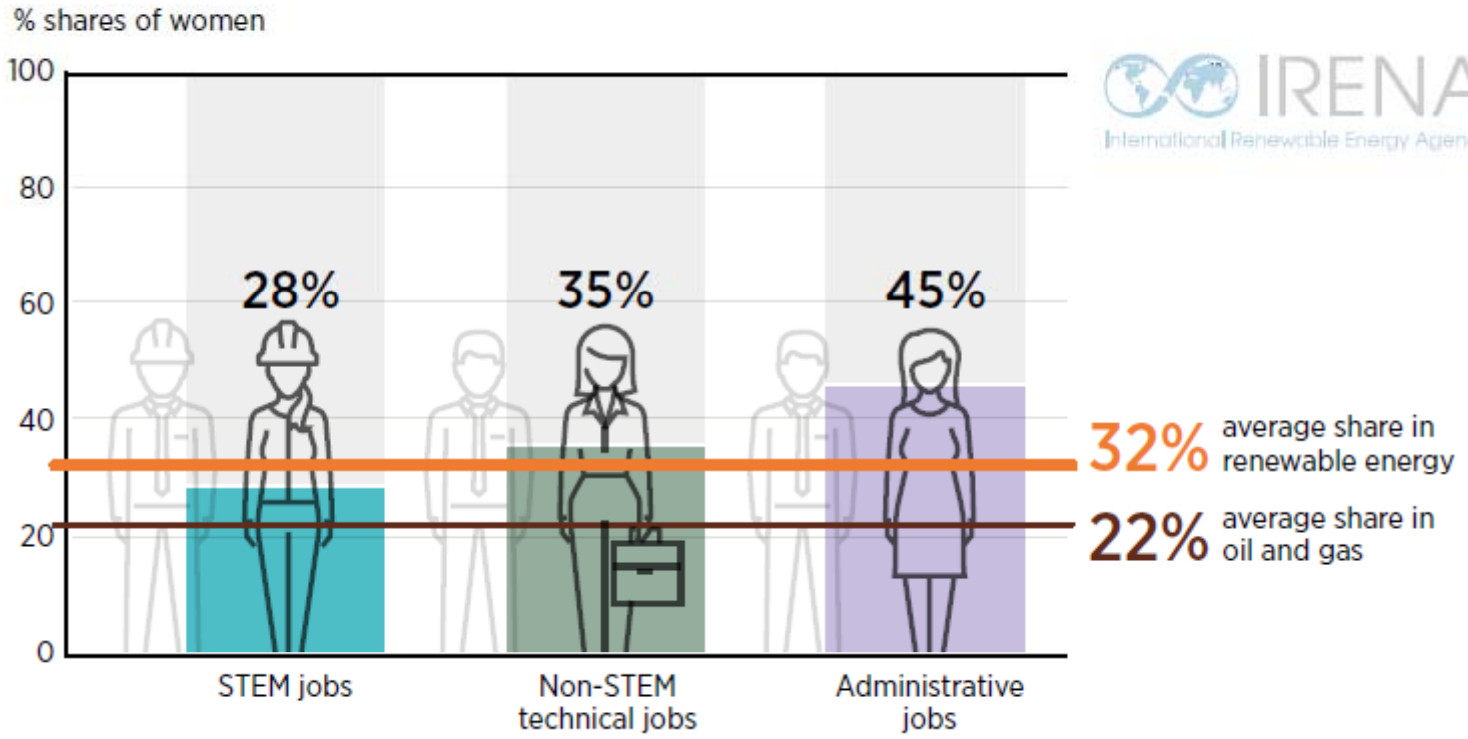
Global RES jobs



Funded by the Erasmus + Programme of the European Union

GSS-VET

Global RES jobs



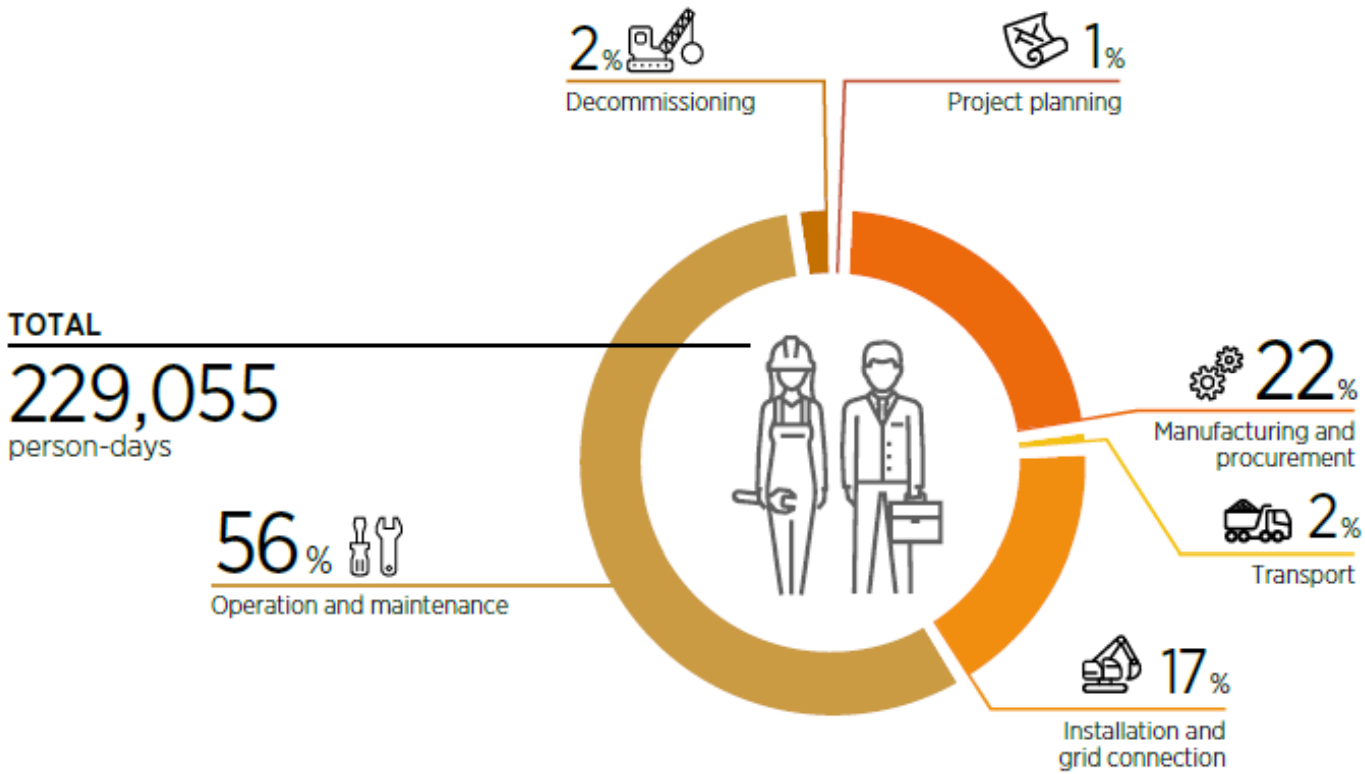
Source: IRENA, 2019b.

STEM = science, technology, engineering and mathematics.

Funded by the Erasmus + Programme of the European Union

GSS-VET

Jobs along the value chain



Distribution of human resources required along the value chain for the development of a 50 MW solar PV plant, by activity (source: IRENA, 2017)

Funded by the Erasmus + Programme of the European Union

GSS-VET

Jobs along the value chain

Source: Direct and indirect jobs supported by the solar industry in the EU in 2016.
EY & SolarPower Europe, 2017

Funded by the
Erasmus + Programme
of the European Union

GSS-VET

Jobs along the value chain

The sector also highlights the **importance of small-scale projects** and regional development. In 2016, for example**, rooftop PV installations supported almost 3 times as many jobs and GVA than large ground-mounted installations.** This can be explained by their installed capacities and labour needs for installation, maintenance and operations.

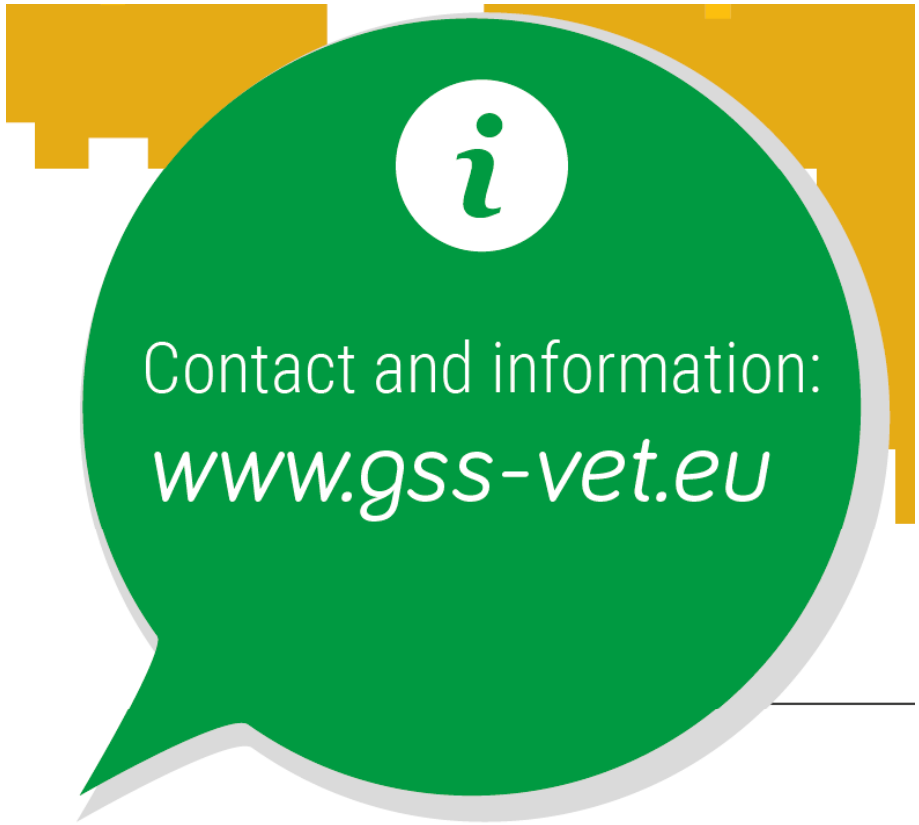
Category	Manufacturing (Job-years/MW)	Construction & Installation (Job-years/MW)	O&M (Jobs/MW)	Decommissioning (Job-years/MW)	Total Job-years/MW in 25 years of operation
Utility scale	6.7	13	0.7	0.8	38
Rooftop	6.7	26	1.4	1.21	68.9

Source: Ram M., et al (2019) Global Energy System based on 100% Renewable Energy –Power, Heat, Transport and Desalination Sectors. Study by Lappeenranta University of Technology and Energy Watch Group, Lappeenranta, Berlin, April 2019. http://energywatchgroup.org/studies

Funded by the Erasmus + Programme of the European Union

GSS-VET

Contact and Information



HELAPCO

www.helapco.gr

Funded by the
Erasmus + Programme
of the European Union