European Commission

IMPLEMENTING THE **SET PLAN**

Progress from the Implementation working groups

SETIS

This document is based on the inputs received
from 13 out of 14 Implementation working groups.

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1. WHAT IS THIS ABOUT?

The SET Plan has confirmed its role as the key EU energy research and innovation initiative that serves the Energy Union goals and delivers the innovations necessary to achieve the European transition to climate-neutrality by 2050. It has put forward a dedicated vision for each technology area by setting ambitious targets to be reached in the next decade(s) with the overall goal to place Europe at the forefront of the next generation of low-carbon energy technologies and of energy efficiency. For each of these technology areas, Implementation Plans have been developed that facilitate the meeting of these targets. The 14 Implementation Plans cover all the Energy Union Research & Innovation priority areas and the SET Plan 10 Actions. They were endorsed by the SET Plan Steering Group* and the European Commission in 2018**.

In order to execute the Research & Innovation activities presented in the Implementation Plans, interested SET Plan countries, and relevant industrial and research stakeholders have formed Implementation Working Groups (IWG). These groups have the task to advance the respective Implementation Plans, reaching collectively the agreed technology targets. "AGENDA 23"*** calls for "each IWG to develop a working methodology based on indicators to monitor the progress of actions under the Implementation Plans and feeding the relevant information to the Strategic Energy Technologies Information System (SETIS)."

SETIS has created a reporting methodology to facilitate this process, based on templates that have been presented in the 12th SET Plan conference in Bucharest and subsequently validated by the Steering Group members. Following a workshop dedicated to this process, the IWGs have been requested to complete these templates, provided by SETIS, which form the basis of the pilot "2019 SET Plan progress report".

This publication, released during the 13th SET Plan conference in Helsinki, offers a concise overview of this pilot phase of the SET Plan monitoring process, presenting the state of the implementation of the SET Plan based on the inputs from the SET Plan IWGs.

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* With the exception of the Nuclear safety implementation plan that was endorsed by BE, CH, CZ, ES, FI, FR, HR, HU, IT, LT, NL, PL, RO, SI, SK, TR and UK.

** https://setis.ec.europa.eu/actions-towards-implementing-integrated-set-plan

*** https://setis.ec.europa.eu/system/files/set-plan_agenda23.pdf

2. SET PLAN IMPLEMENTATION LANDSCAPE

Batteries

H2020 supporting projects
BatteRIes Europe (ENER-2018-453-A7)

Carbon capture, storage & utilisation - CCS-CCU

H2020 supporting projects
IMPACTS9 (JA-2) - *http://www.zeroemissionsplatform.eu/*
SSFZEP (CC-4)

Concentrated solar power - CSP/STE

H2020 supporting projects
HORIZON-STE (JA-2) - *http://www.horizon-ste.eu/*

Deep geothermal

H2020 supporting projects
DG ETIP (LCE 2016) - *https://www.etip-dg.eu/;*
SU-DG-IWG (JA-2) - *https://www.egec.org/set-plan-h2020/*

Energy efficiency in buildings

H2020 supporting projects
SecRHC-ETIP (CC-4) - *https://www.rhc-platform.org/*

Energy efficiency in industry

H2020 supporting projects
ENER-2018-453-A6

Energy consumers

H2020 supporting projects
Energy-SHIFTS (CC-4)

Ocean energy

H2020 supporting projects
ETIP Ocean 2 (CC-4) - *https://www.etipocean.eu/*
OceanSET (JA-2) - *https://www.oceanset.eu/*

Offshore wind

H2020 supporting projects
ETIP Wind (CC-4) - *https://etipwind.eu/set-plan/*
SETWind (JA-2) - *https://setwind.eu/*

Photovoltaics

H2020 supporting projects
ETIP PV – SEC II (CC-4) - *https://etip-pv.eu/set-plan/*
PV Impact (JA-2) - *https://pvimpact.eu/*

Energy systems

H2020 supporting projects
IntEnSys4EU (LCE-2016) - *https://www.etip-snet.eu/intensys4eu/*

Positive energy districts

H2020 supporting projects
Intergovernmental initiative - https://jpi-urbaneurope.eu/ped/

Renewable fuels and bioenergy

H2020 supporting projects
ETIP-B-SABS 2 (CC-4) - *http://www.zeroemissionsplatform.eu/*
SET4BIO (JA-2)

Nuclear safety

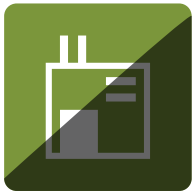
3. STATUS OF REPORTING

TIMELINE OF ENDORSEMENT OF THE IMPLEMENTATION PLANS 3.1

* In April 2019, formal notification of endorsement of this implementation plan was received from: BE, CH, CZ, ES, FI, FR, HR, HU, IT, LT, NL, PL, RO, SI, SK, TR & UK.

3.2 INPUTS RECEIVED

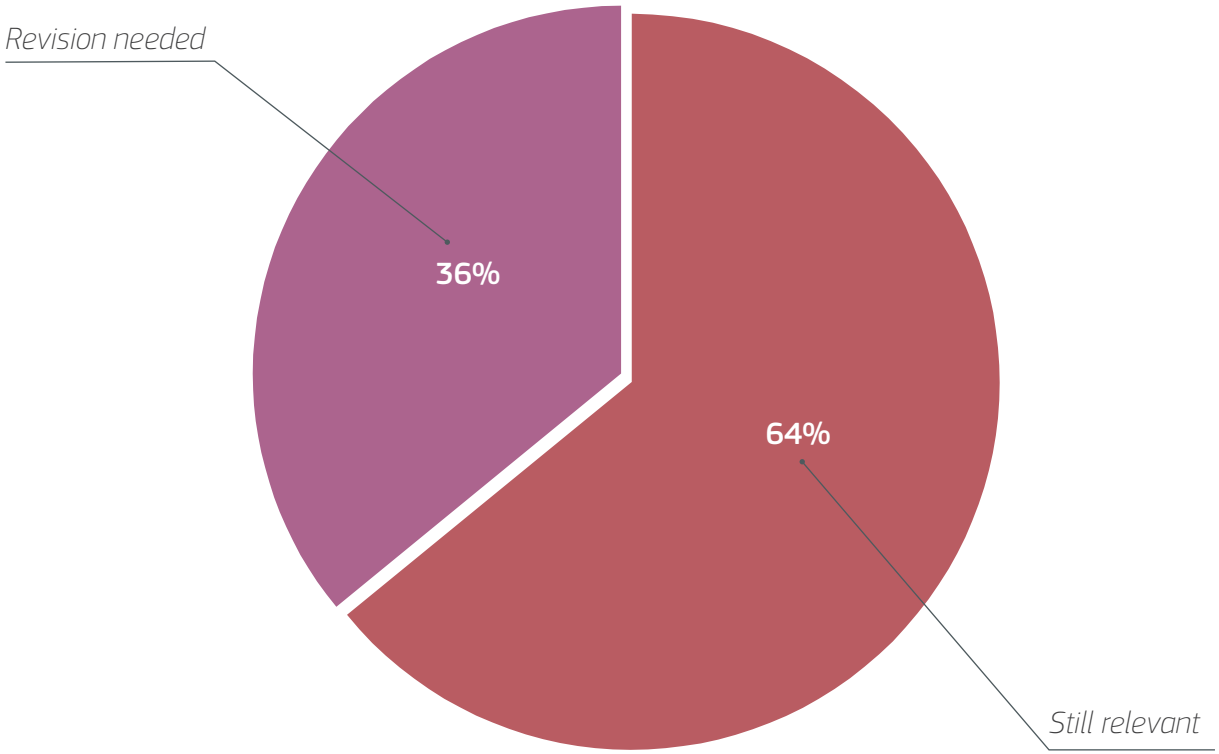
Information partially provided



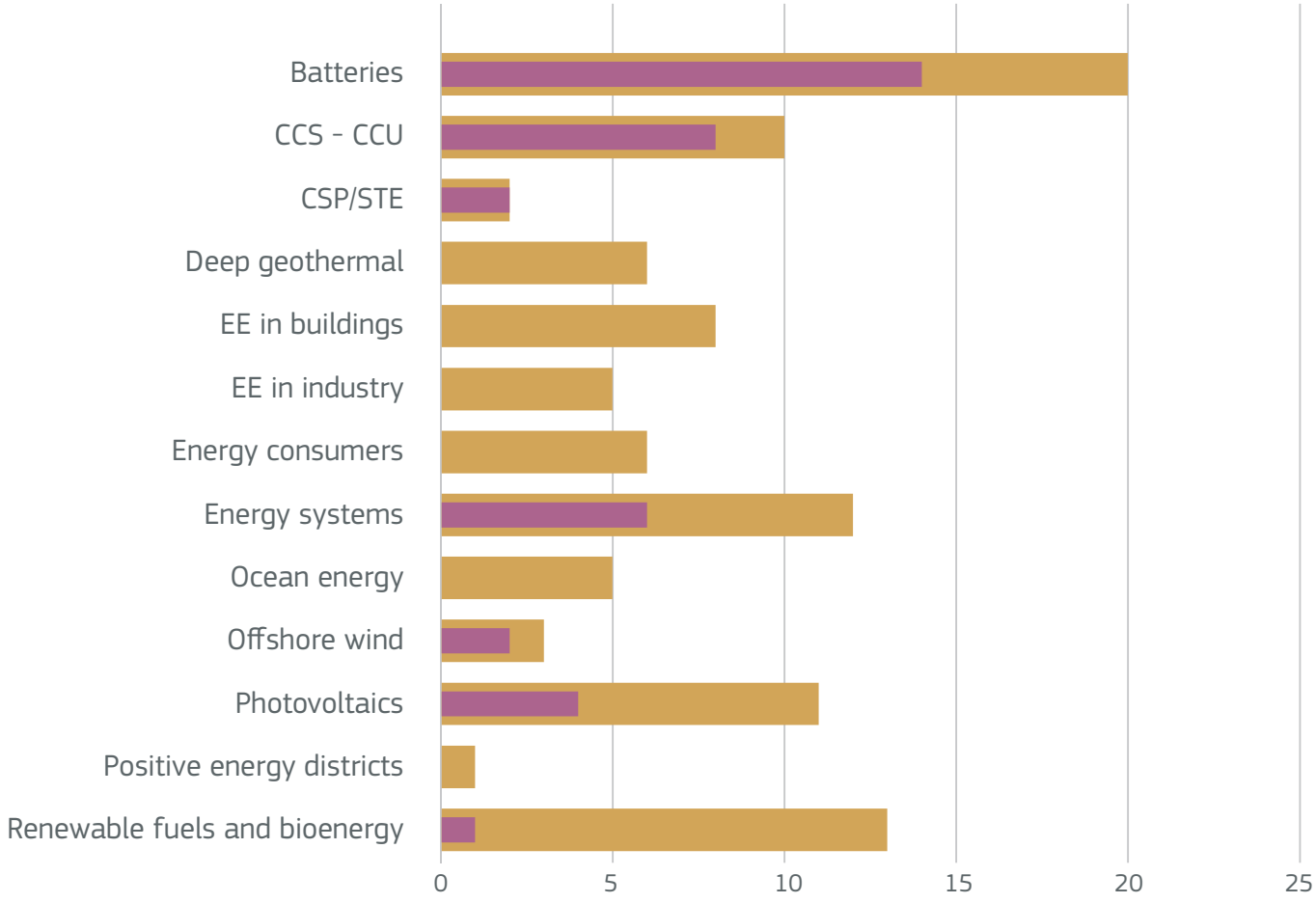
Report not provided

4. ARE THE TARGETS OF THE IMPLEMENTATION PLANS STILL RELEVANT?

4.1 OVERALL RELEVANCE OF TARGETS



RELEVANCE OF TARGETS PER IMPLEMENTATION PLAN 4.2



All of the initial IP targets are still relevant in **6 out of 13 IPs.**

4 IWGs (*Batteries, CSP/STE, Offshore Wind, CCS - CCU*) have already achieved all or more than half of their targets and thus need a revision.

1 IWG (*CCS-CCU*) suggests revision of its targets because of new policy directions.

1 IWG (*Renewable fuels and bioenergy*) suggests that one of its targets is totally unrealistic.

1 IWG (*Energy systems*) suggests the revision of its objectives due to a new orientation in its priorities (update of the ETIP SNET 2020-2030 roadmap).

Non-exhaustive list of relevant national, regional and EU co-funded R&I projects that address the targets of the Implementation plans.

5. ONGOING RELEVANT RESEARCH & INNOVATION PROJECTS

The IWGs have reported 326 R&I projects that, since 2016 the year of targets setting of the SET Plan implementation, have been launched to address the respective IPs. The projects are supported by national, regional and/or EU funds.

Most projects address one or multiple R&I activities foreseen by the respective Implementation Plans. In average 156 mEUR have been invested for each Implementation Plan; for the *Positive energy districts (Action 3.2)* a much greater availability of funds of 1.2 bEUR has been reported.

326

Research & Innovation projects

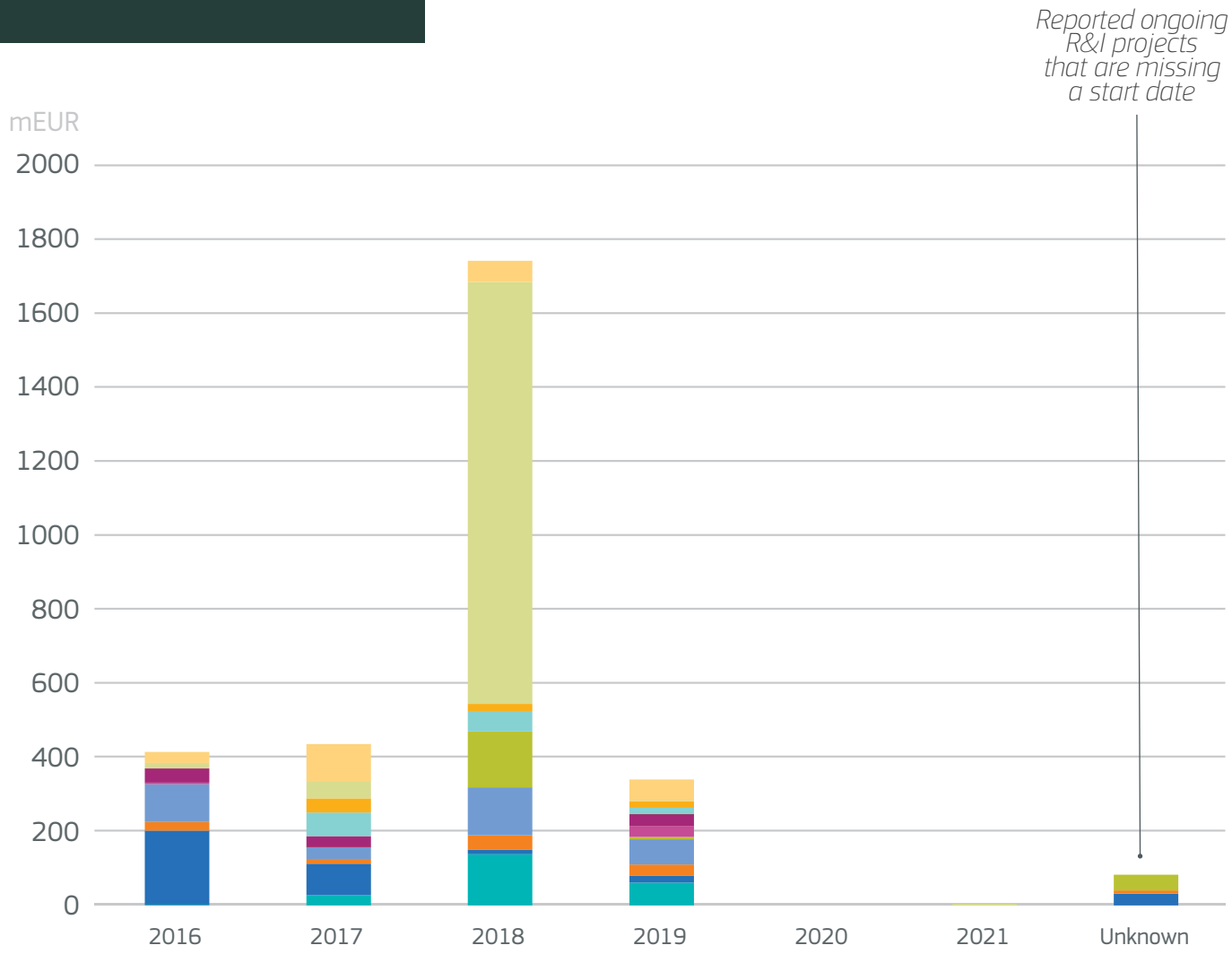
156

mEUR invested in average per IP

5.1 ONGOING R&I PROJECTS ADDRESSING THE TARGETS

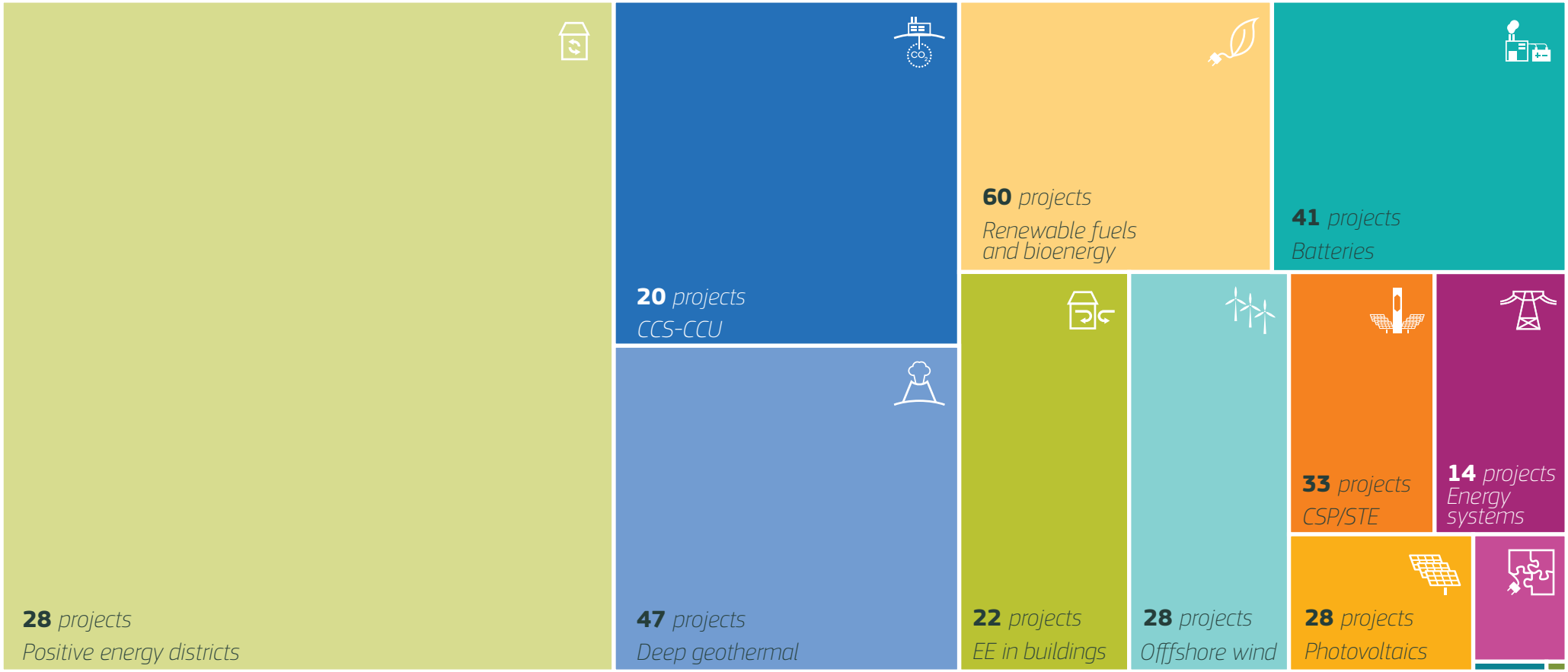
Budgets are associated with the start year of the project.

- Batteries
- CCS-CCU
- CSP/STE
- Deep geothermal
- EE in buildings
- EE in industry
- Energy consumers
- Energy systems
- Ocean energy
- Offshore wind
- Photovoltaics
- Positive energy districts
- Renewables fuels and bioenergy



BUDGET AND NUMBER OF REPORTED ONGOING R&I PROJECTS

Area = budget

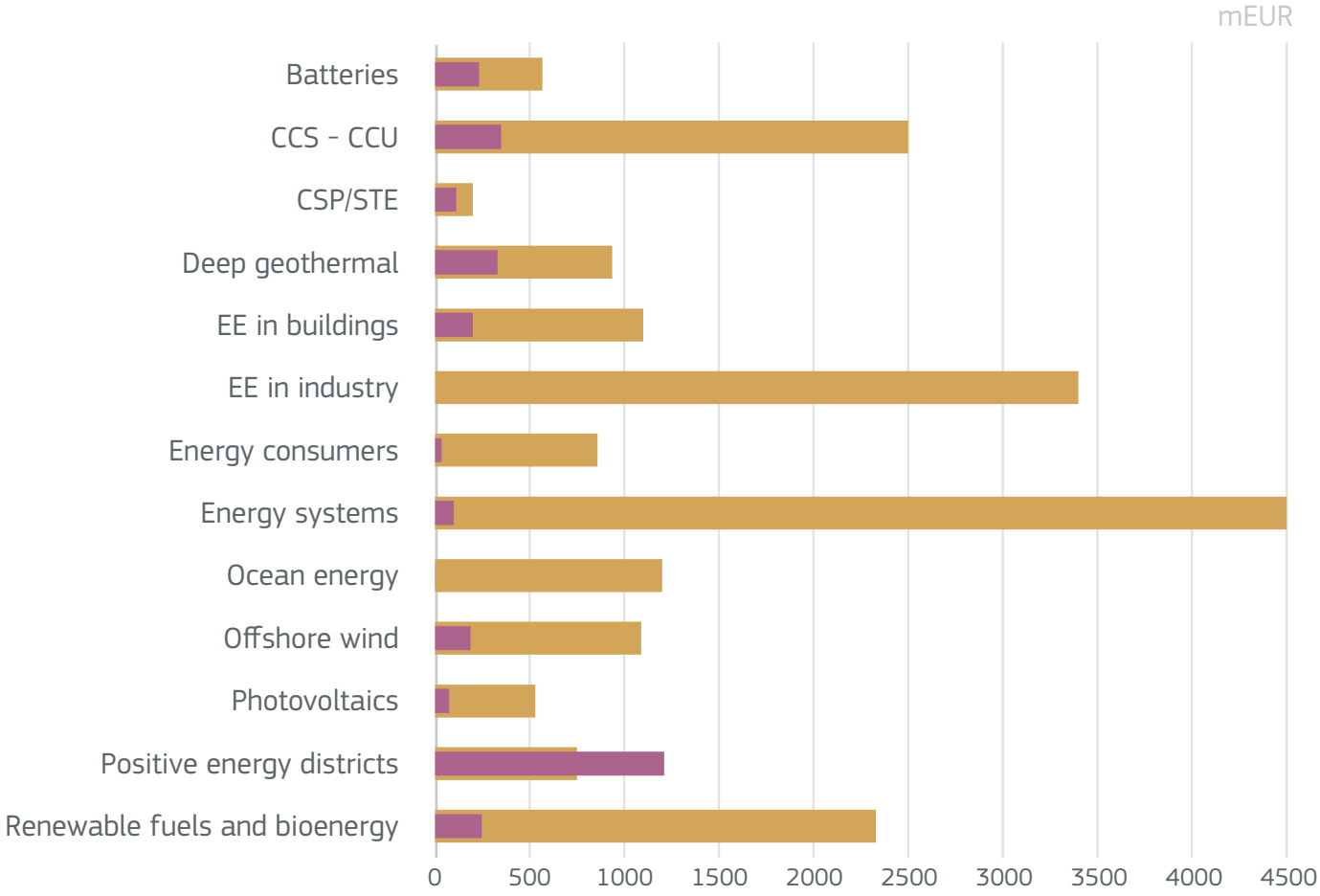


5.3 REPORTED INVESTMENTS *vs* ESTIMATED NEEDS

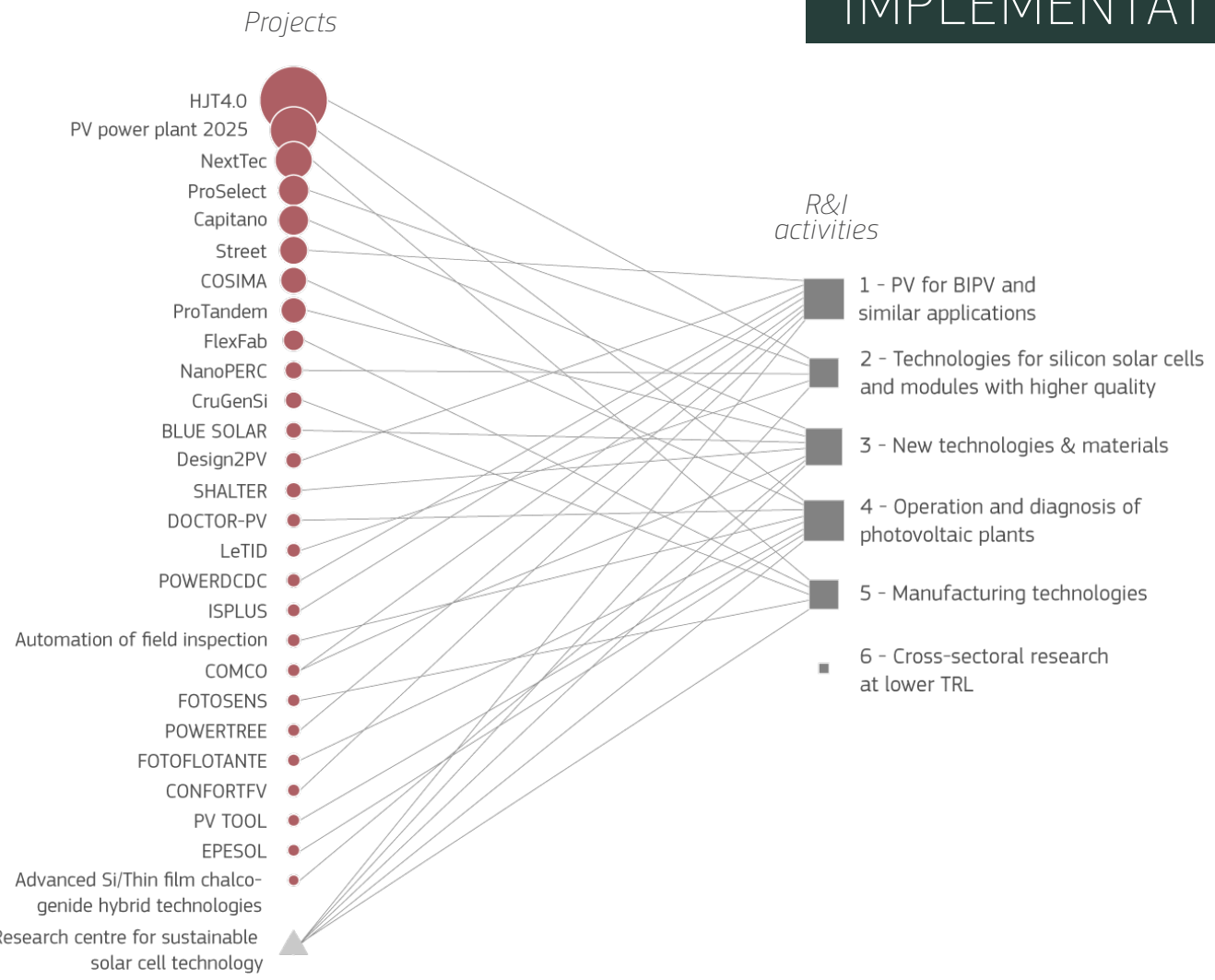
Reported invested funds amount to 3.1 bEUR, representing **15%** of estimated R&I investments needs by IWGs (20 bEUR).

Positive energy districts R&I projects received funding in excess of the estimated 750 mEUR (**161%**).

Energy systems IWG reported the lowest share of committed investments (2%) compared to the estimates stated in its IP.



HOW DO REPORTED PROJECTS ADDRESS THE TARGETS OF THE IMPLEMENTATION PLANS? 5.4

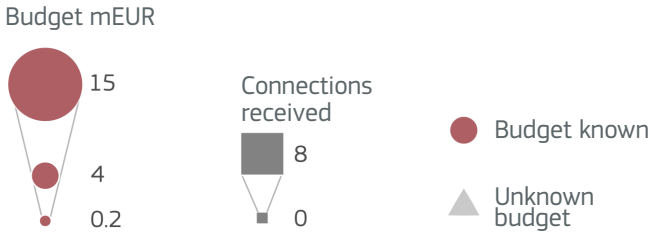


EXAMPLE: PHOTOVOLTAICS

Reported R&I projects address all activities defined in the IP except for activity 6 (Cross-sectoral research at lower TRL).

Each activity is addressed by multiple projects.

Only two projects are connected to multiple R&I activities.



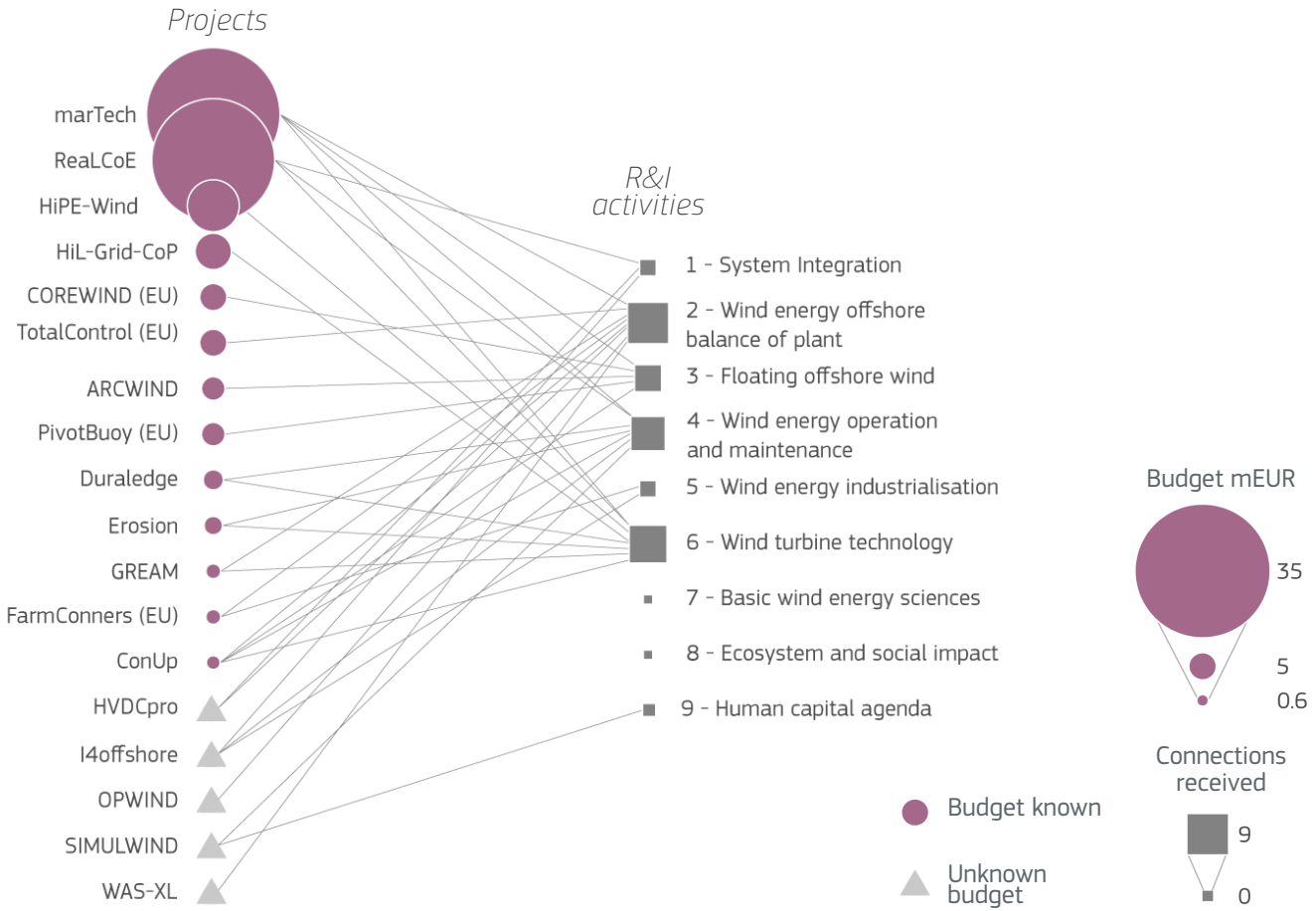
5.5 HOW DO REPORTED PROJECTS ADDRESS THE TARGETS OF THE IMPLEMENTATION PLANS?

EXAMPLE: OFFSHORE WIND

Reported R&I projects address all activities defined in the IP exept for activity 7 (Basic wind energy sciences) and 8 (Ecosystem and social impact).

Most R&I activities are implemented by multiple projects.

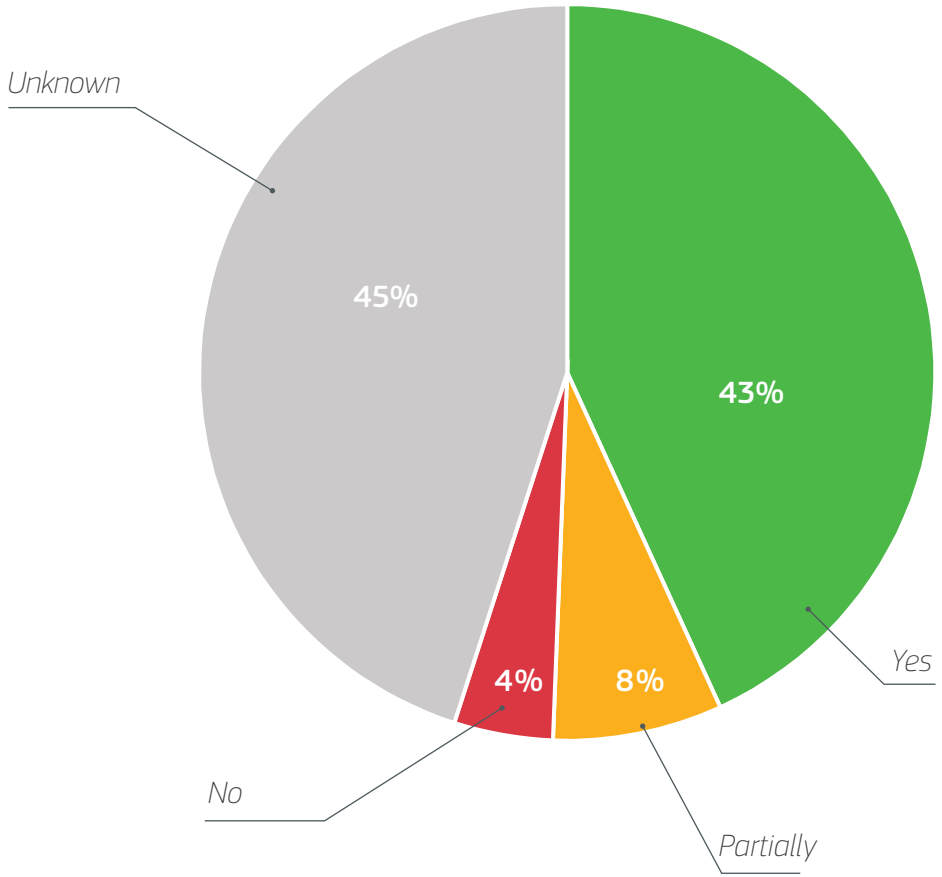
From the reported projects 25% are not clearly linked with any R&I activity of the Implementation plan.



Projects without connections

- Haliade X (NL project)
- Slip Joint Offshore Qualification (NL)
- Stretch (NL project)
- Gentle Driving of Piles (NL)
- DOWA – Dutch Offshore Wind Atlas
- FloatStep (DK)

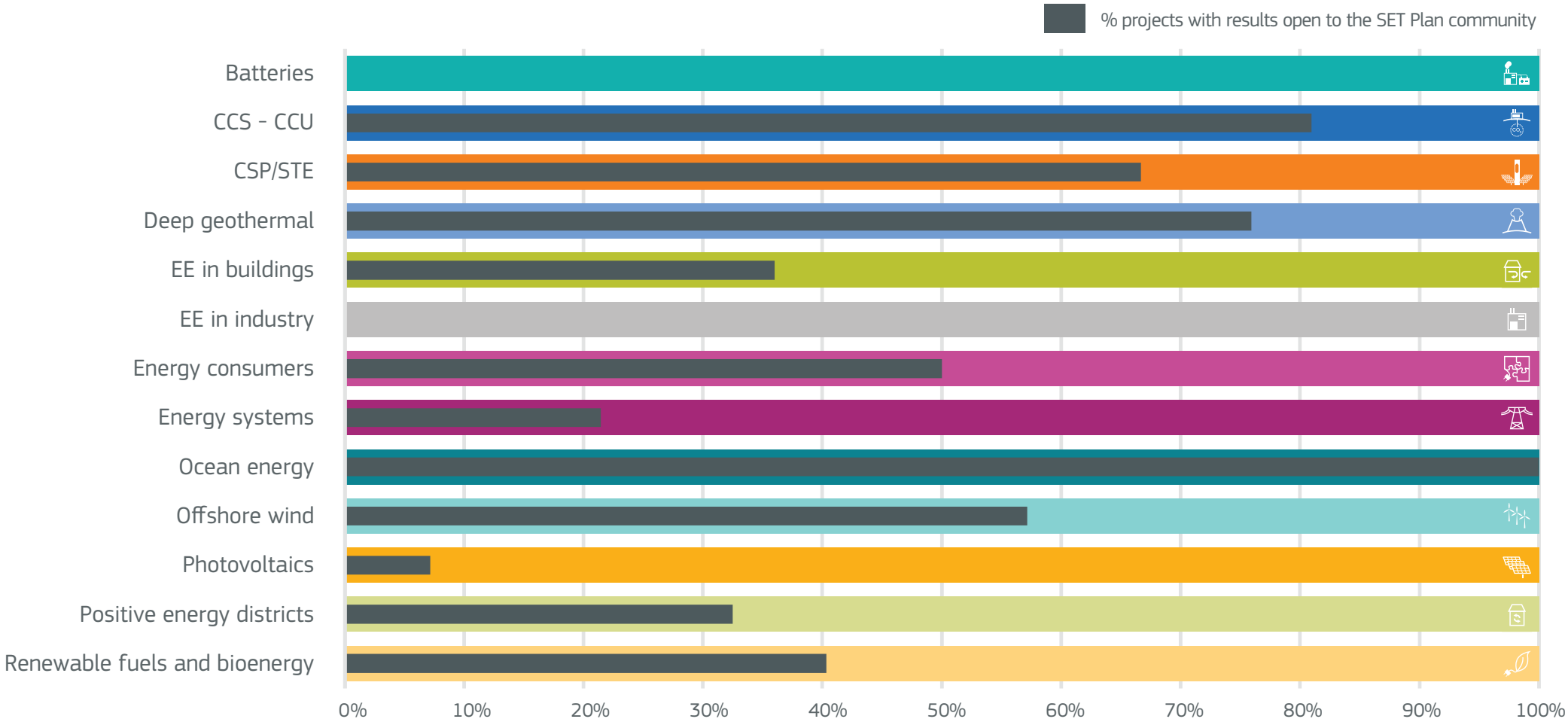
ARE THE RESULTS OF THE REPORTED R&I PROJECTS OPEN TO THE SET PLAN COMMUNITY? 5.6



Of the 326 projects identified by the IWGs, 43% have results that are open to the SET Plan community, whilst 8% are partly open and 4% are bound by confidentiality.

For 45% of projects it is unclear (100% of *Batteries*).

*The share of openness varies by IWG. Concretely, 5 IWGs have reported a share of openness higher than 50 % (**CCS-CCU, CSP/STE, Deep geothermal, Ocean energy** and **Offshore wind**).*
*This information is not available for the IWG on **Batteries** reported projects.*

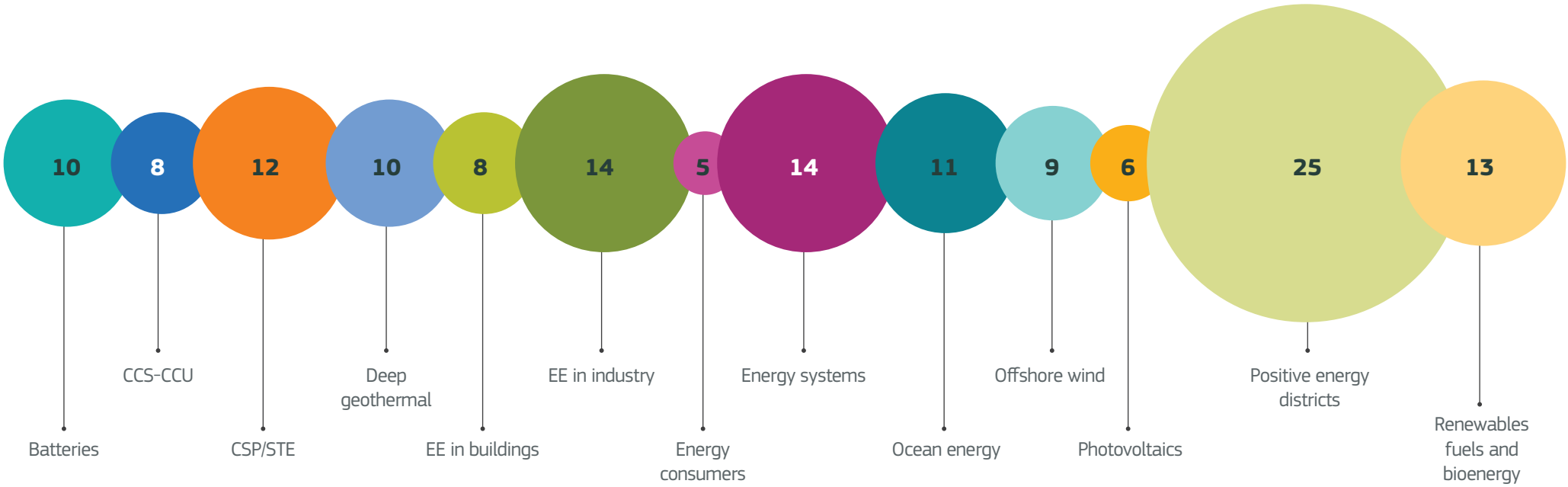


Based on a self-assessment
by the IWGs

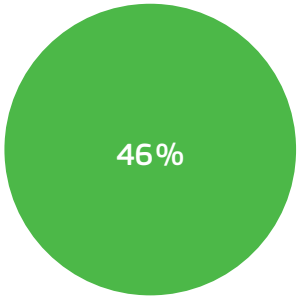
6. ARE WE PROGRESSING WELL?

6.1 ACTIVITIES PER IP

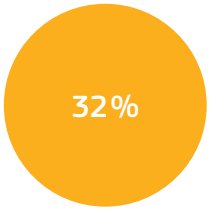
Of the **158 R&I activities endorsed, 78 are considered priority** for 2019-2020.



PROGRESS ON ADDRESSING ALL IP ACTIVITIES 6.2



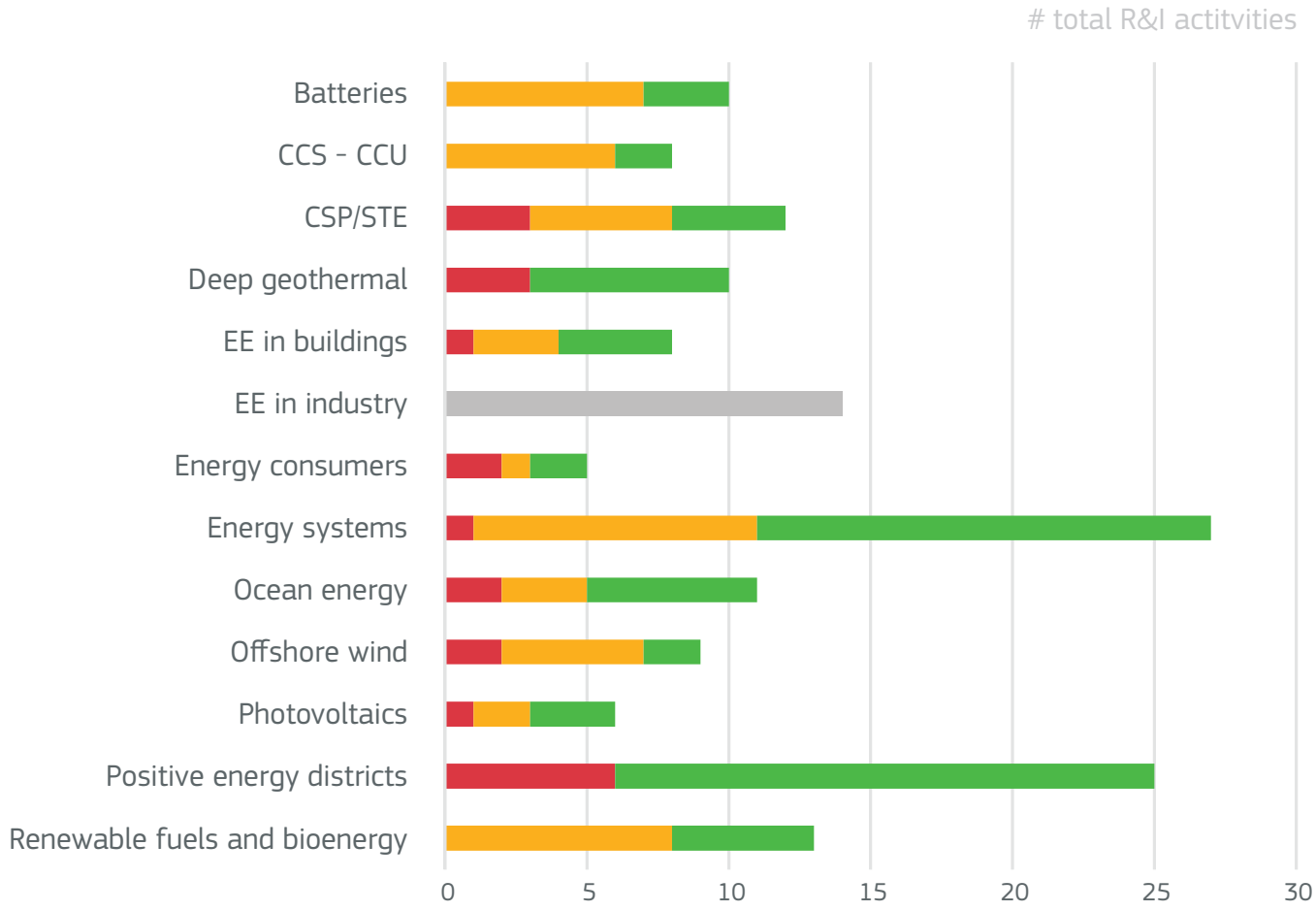
there are ongoing projects addressing these activities



projects expected to take-off in the near future

no activity or progress yet

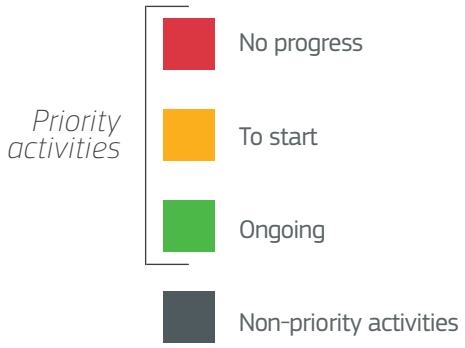
Unknown

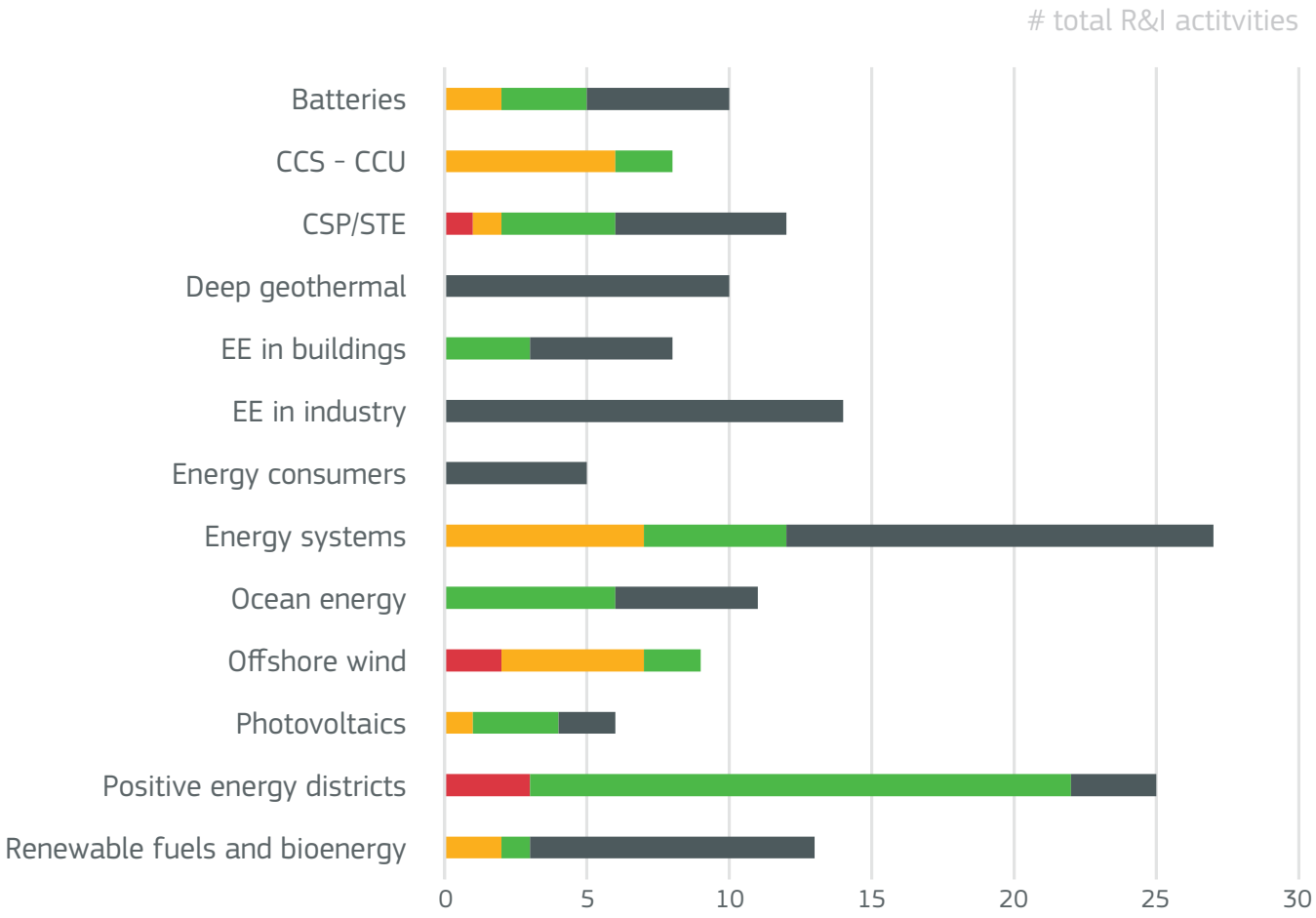


6.3 STATUS OF PRIORITY ACTIVITIES

92% of the 78 priority activities are progressing.

66% of all ongoing activities address priorities for 2019-2020.

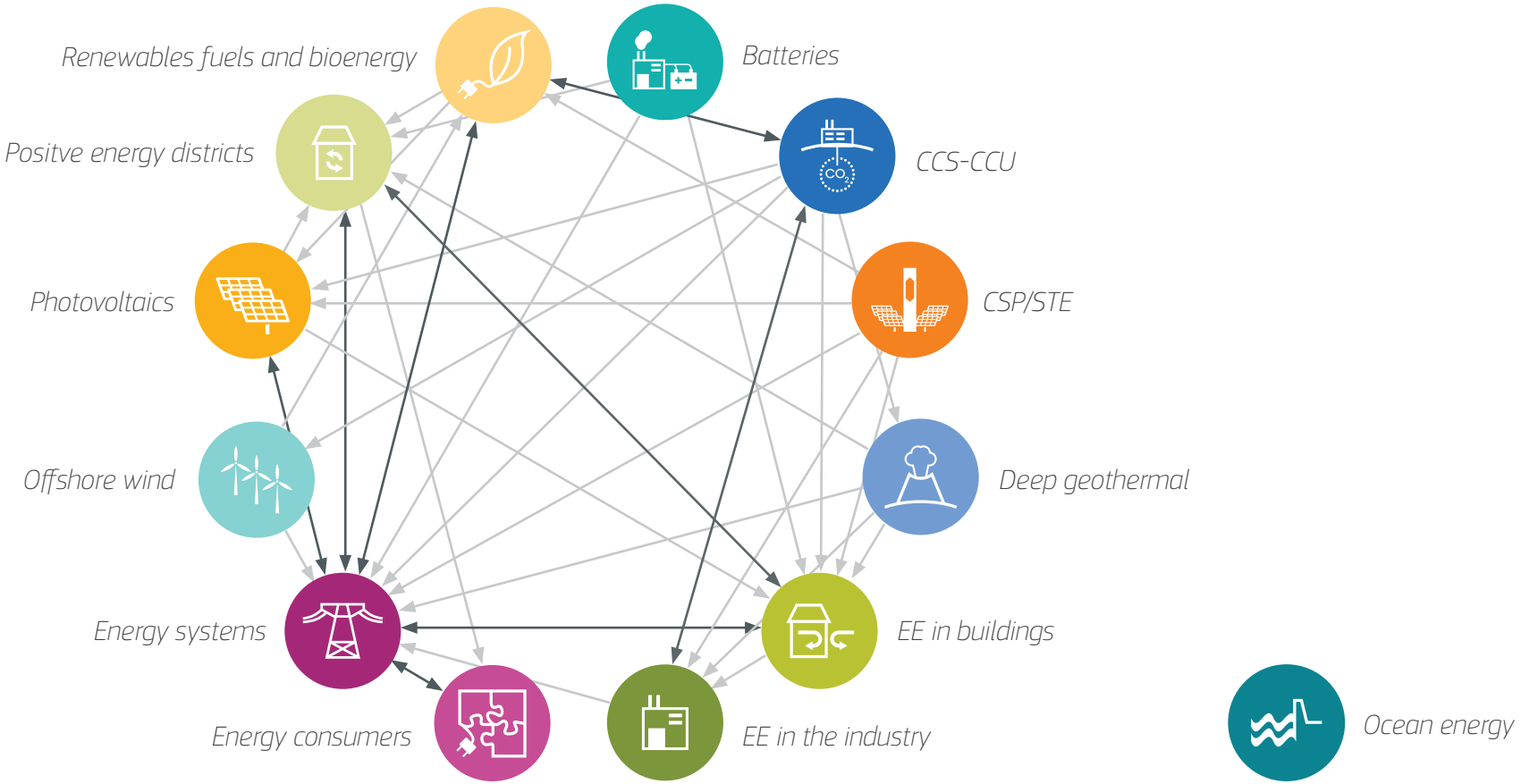




Which other IPs are critically important for the success of your IP?

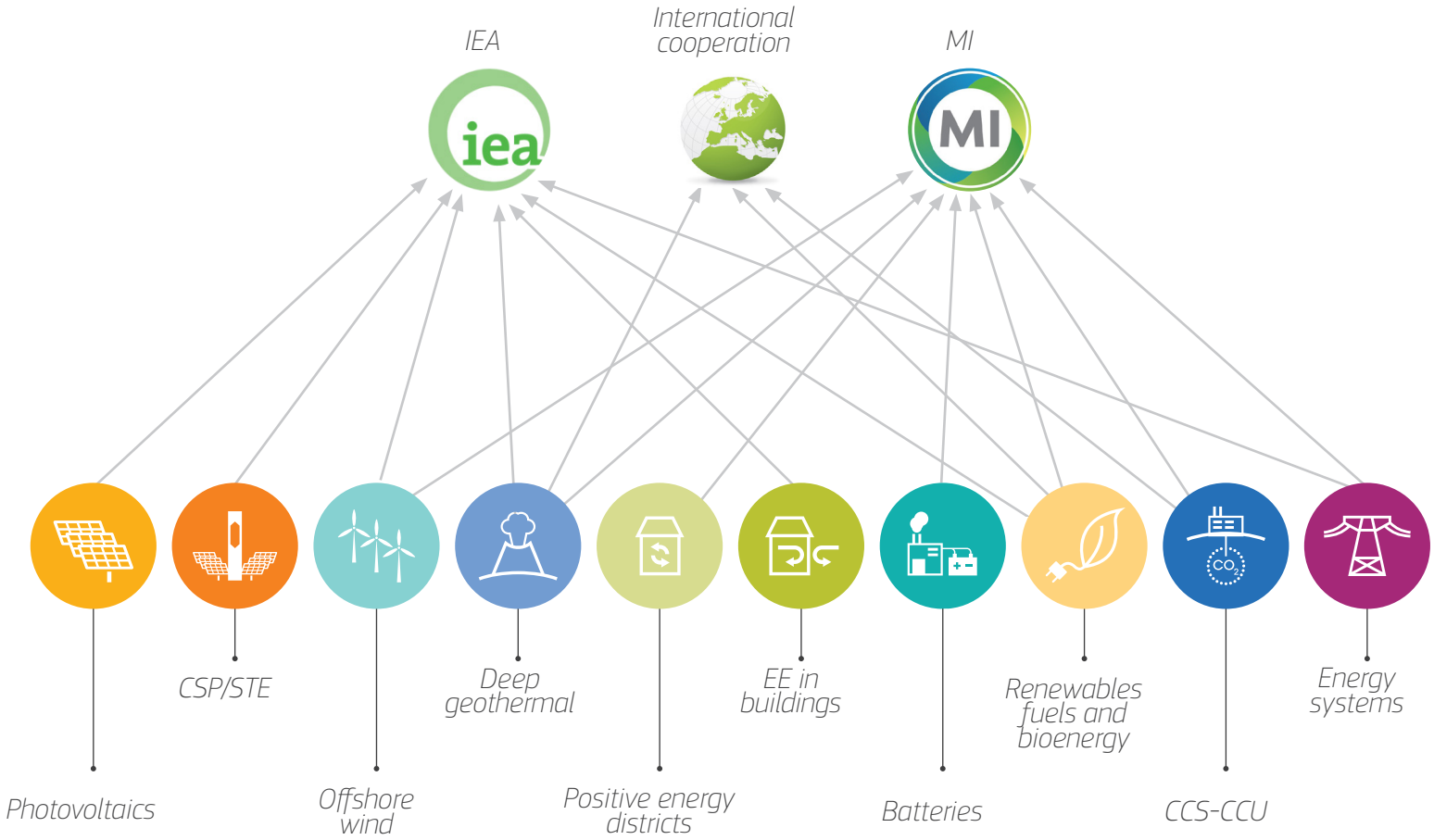
7. SYNERGIES WITH OTHER IMPLEMENTATION PLANS

7.1 SYNERGIES AMONG IMPLEMENTATION PLANS



8. NON-EXHAUSTIVE SYNERGIES BEYOND SET PLAN

8.1 NON-EXHAUSTIVE SYNERGIES BEYOND SET PLAN



9. SUGGESTIONS FROM IWGS FOR ADDITIONAL MONITORING AND REPORTING ASPECTS

9.1 SUGGESTIONS FROM IWGS FOR ADDITIONAL MONITORING AND REPORTING ASPECTS

	Additional aspect to be monitored	*Metric*	*Baseline*	*Comment/reasoning*
Renewable fuels and bioenergy	Take into account preparatory work done in representative organizations previously (EERA Joint Programme FCH)	KPIs defined, budgets estimated and motivated	2018	Much effort has gone into detailing a pathway to a sound EU value chain in hydrogen and alternative carriers and conversion technologies: this should be taken as a reference document for the developing IP.
Deep geothermal	R&D Investment by the public sector (including regional funds)	€ per year	2015	Tracks public investment and level of commitment
	R&D Investment by the private sector	€ per year	2015	Tracks private sector investment, but fiendishly difficult to establish in a systematic manner across Europe
	Share towards NECP (targets for geothermal)	GWh Heat; GWh Power	2020	
Photovoltaics	Key Performance Indicators (see attachment), development together with PV Impact			
Positive energy districts	# of cities connected to the European Positive Energy Cities Platform	# of cities	5-10 cities connected to the PED city panel in 2019	
	# of transnational R&I joint actions, contracted budgets and funded projects dedicated to PED	# of actions; # of project mEUR for projects	1 Call in 2019/2020	
	# of PED Labs	# of PED labs	mapping of PEDs in Europe in 2019	
	# of tools and guides featuring the “PED” label	# of tools	PED Framework in 2019	
	# PED launched according to framework	# of PEDs		

ABBREVIATIONS

bEUR - billion Euro

BIPV - Building-integrated photovoltaics

CC - Cross-cutting

CCS – Carbon Capture and Storage

CSP – Concentrated Solar Power

DG ETIP - Support to the activities of the European Technology and Innovation Platform on Deep Geothermal project

Energy-SHIFTS - Energy Social sciences & Humanities Innovation Forum Targeting the SET-Plan project

ETIP – European Technology and Innovation Platform

ETIP Ocean - European Technology and Innovation Platform for Ocean Energy project

ETIP PV – SEC II - Support to all stakeholders from the Photovoltaic sector and related sectors to contribute to the SET-Plan project

ETIP-B-SABS 2 - European Technology and Innovation Platform Bioenergy - Support of Renewable Fuels and Advanced Bioenergy Stakeholders 2

EU - European Union

H2020 - EU's Horizon 2020 research and innovation programme

HORIZON-STE - Implementation of the Initiative for Global Leadership in Solar Thermal Electricity project

IEA – International Energy Agency

IMPACTS9 - IMplementation Plan for Actions on CCUS Technologies in the SET Plan project

IntEnSys4EU – Integrated Energy System - A pathway for Europe project

IP – Implementation Plan

IWG – Implementation Working Group

JA – Joint Action

LCE - Low-Carbon Energy

mEUR - million Euro

MI – Mission Innovation

OceanSET - Support to the Realisation of the Ocean Energy Implementation Plan of the SET-Plan project

PV - Photovoltaics

PV Impact - Actual execution of the Implementation Plan for Photovoltaics and monitoring the Implementation Plan's delivery

R&I - Research & Innovation

RHC - Renewable Heating and Cooling

SecRHC-ETIP - Secretariat of the European Technology and Innovation Platform on Renewable Heating and Cooling project

SET Plan – Strategic Energy Technology Plan

SET Plan countries – Member States of the European Union, Iceland, Norway, Switzerland and Turkey

SETIS - Strategic Energy Technology Plan Information System

SETWind - Supporting the SET Plan implementation plan for offshore wind energy project

SSFZEP - Support Stakeholders in Zero Emission fossil fuel power plants and energy intensive industry Project

STE – Solar Thermal Energy

SU-DG-IWG - Support Unit for the Deep Geothermal Implementation Working Group project

TRL - Technology Readiness Level

NOTES

European Commission
Joint Research Centre

Printed by the Publications Office in Luxembourg

JRC 118272

Print	ISBN 978-92-76-10353-0	doi:10.2760/145155	KJ-02-19-896-EN-C
PDF	ISBN 978-92-76-10354-7	doi:10.2760/181668	KJ-02-19-896-EN-N

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KJ-02-19-896-EN-N

Publications Office