European Commission

IMPLEMENTING THE **SET PLAN**

MAKING THE SET PLAN FIT FOR THE EU GREEN RECOVERY

2020 REPORT

Joint Research Centre

JRC122587

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Introduction

Through commonly agreed R&I priorities and targets for clean energy solutions, the SET Plan plays a key role in the delivery of the European Green Deal*. The alignment of national R&I programmes with our common SET Plan agenda will make Europe a global leader of clean energy and energy efficiency technologies and thus contribute to EU's growth strategy.

The COVID-19 pandemic presents critical challenges, and many opportunities for the EU to boost the recovery towards a greener, more digital and more resilient Europe through the Next Generation EU initiative, and the SET Plan will deliver the necessary R&I agenda.

* https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en

Scope of the progress report

The 2020 SET Plan progress report, released during the 14th SET Plan conference in Berlin, represents the state of implementation of the SET Plan by mid-2020. It describes how the SET Plan activities of the Implementation Working Groups (IWGs) are adjusted to align with the European Green Deal and the Next Generation EU.

The results presented in this publication will contribute to the *update* of the SET Plan.

This report relies exclusively on the inputs that SETIS received from the IWGs. SETIS did not seek for additional evidence to substantiate the findings of the progress review.

The monitoring methodology was agreed with the IWGs Chairs in a co-creation workshop organized by SETIS in February 2020.

Inputs received


Batteries

Carbon Capture and Storage-Carbon Capture and Utilisation (CCS-CCU)


Concentrated Solar Power/Solar Thermal Electricity (CSP/STE)


Deep geothermal


Energy efficiency (EE) in buildings


Energy efficiency (EE) in industry


Energy systems


Nuclear safety


Ocean energy


Offshore wind


Photovoltaics


Positive energy districts


Renewable fuels and bioenergy

All 13 IWGs have contributed to the SETIS Monitoring and Reporting exercise 2020.

The activities of the Energy Consumers Working Group (action 3.1) have been merged with IWG4 – Energy systems.

SET Plan implementation landscape

	ETIP	CSA
Batteries	ec.europa.eu/energy/topics/technology-and-innovation/batteries-europe	
CCS-CCU	zeroemissionsplatform.eu/	www.ccus-setplan.eu/
CSP/STE		www.horizon-ste.eu
Deep Geothermal	www.etip-dg.eu/	www.deepgeothermal-iwg.eu/
EE in Buildings	www.rhc-platform.org	
EE in the Industry		setis.ec.europa.eu/implementing-integrated-set-plan/energy-efficiency-industry-ongoing-work
Energy Systems	www.etip-snet.eu/	www.etip-snet.eu/intensys4eu/
Nuclear Safety	www.snetp.eu	
Ocean Energy	www.etipocean.eu/	www.oceanset.eu/
Offshore Wind	www.etipwind.eu	www.setwind.eu
Photovoltaics	www.etip-pv.eu	www.pvimpact.eu
Positive Energy Districts		
Renewable Fuels and Bioenergy	www.etipbioenergy.eu/	www.etipbioenergy.eu/set4bio

ERANET	Industrial association	Additional project/group or other European coordination group
	www.eba250.com/	
www.act-ccs.eu/		www.ccusnetwork.eu/
www.csp-eranet.eu	www.estelasolar.org	
www.geothermica.eu	www.egec.org	
	www.spire2030.eu	
www.eranet-smartenergysystems.eu/		
	www.foratom.org	
www.oceancofund.eu/	www.oceanenergy-europe.eu/	
www.demowind.eu/pages/home-5.html	windeurope.org/	
www.solar-era.net/		
		jpi-urbaneurope.eu/
www.eranetbioenergy.net, eranetbestf.eu/	bioenergyeurope.org/, hydrogeneurope.eu/	

STATUS OF THE SET PLAN

Validity of the implementation plans, targets, and of the activities developed to meet the targets. Success stories and revision needed.

The SET Plan implementation structure – a reminder

- 13 IWGs.
- 107 targets to be achieved.
- 143 R&I activities pursued to meet the targets.

	Number of targets	Number of activities
Batteries	20	10
CCS-CCU	10	8
CSP/STE	2	11
Deep geothermal	6	10
EE in buildings	8	8
EE in the industry	5	14
Energy systems	12	28
Nuclear safety	10	10
Ocean energy	5	11
Offshore wind	3	9
Photovoltaics	11	6
Positive energy districts	1	5
Renewable fuels and bioenergy	14	13

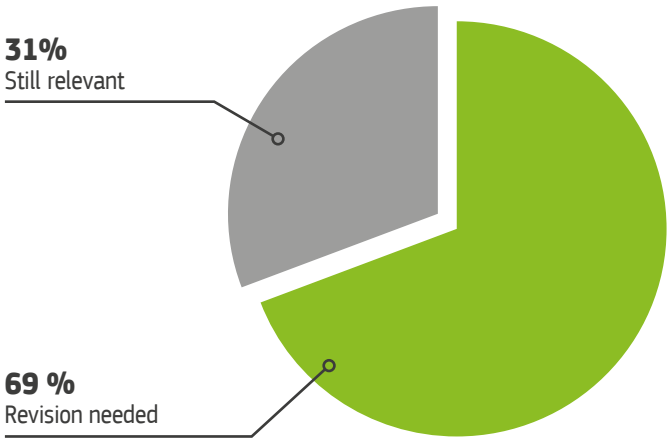
ALIGNMENT OF THE IMPLEMENTATION PLANS WITH THE EUROPEAN GREEN DEAL OBJECTIVES

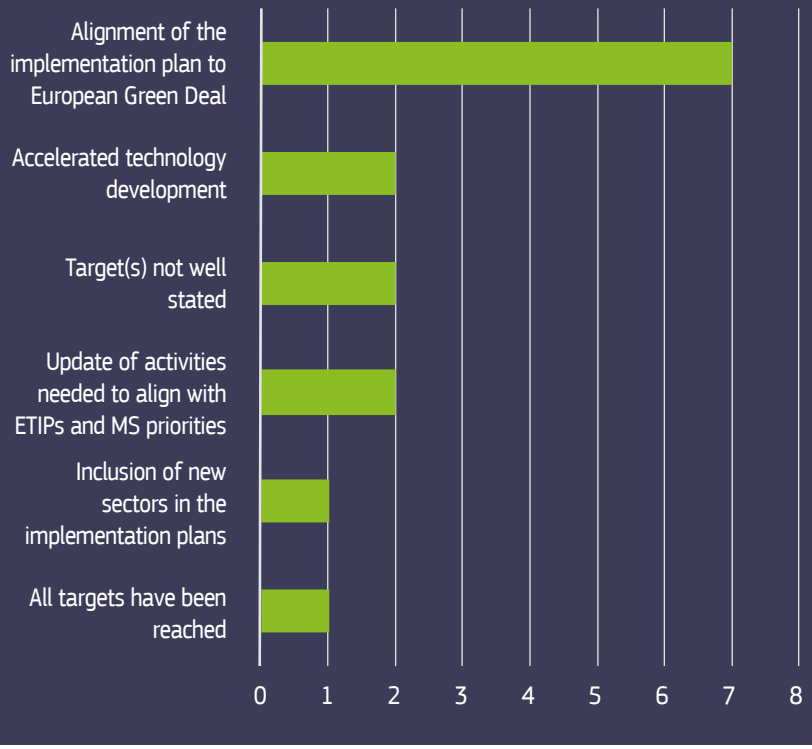
Overall relevance of implementation plans

The European Green Deal is reshaping the European clean energy R&I agenda.

9 of the 13 IWGs suggest that their implementation plan need to be revised (the revision of one has been approved):

- Batteries;
- CCS-CCU;
- CSP/STE;
- Deep geothermal;
- EE in the industry;
- Energy systems;
- Ocean energy;
- Offshore wind;
- Renewable fuels and bioenergy.





Reasons for revision of the implementation plan

The need to align current work with the ambitions of the European Green Deal is the primary reason to revise implementation plans.

6 IWGs are already in contact with the SET Plan Steering Group to discuss the revision.

IWGs are acting on the evolving policy and technology scenarios to be more future-proof.

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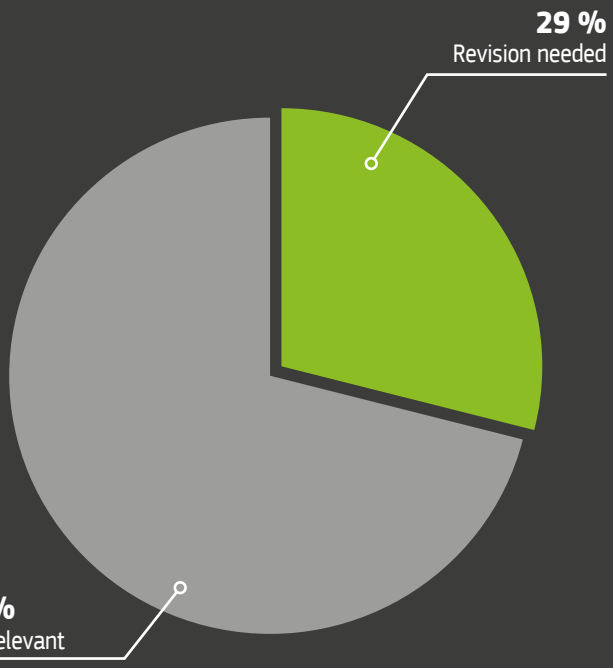
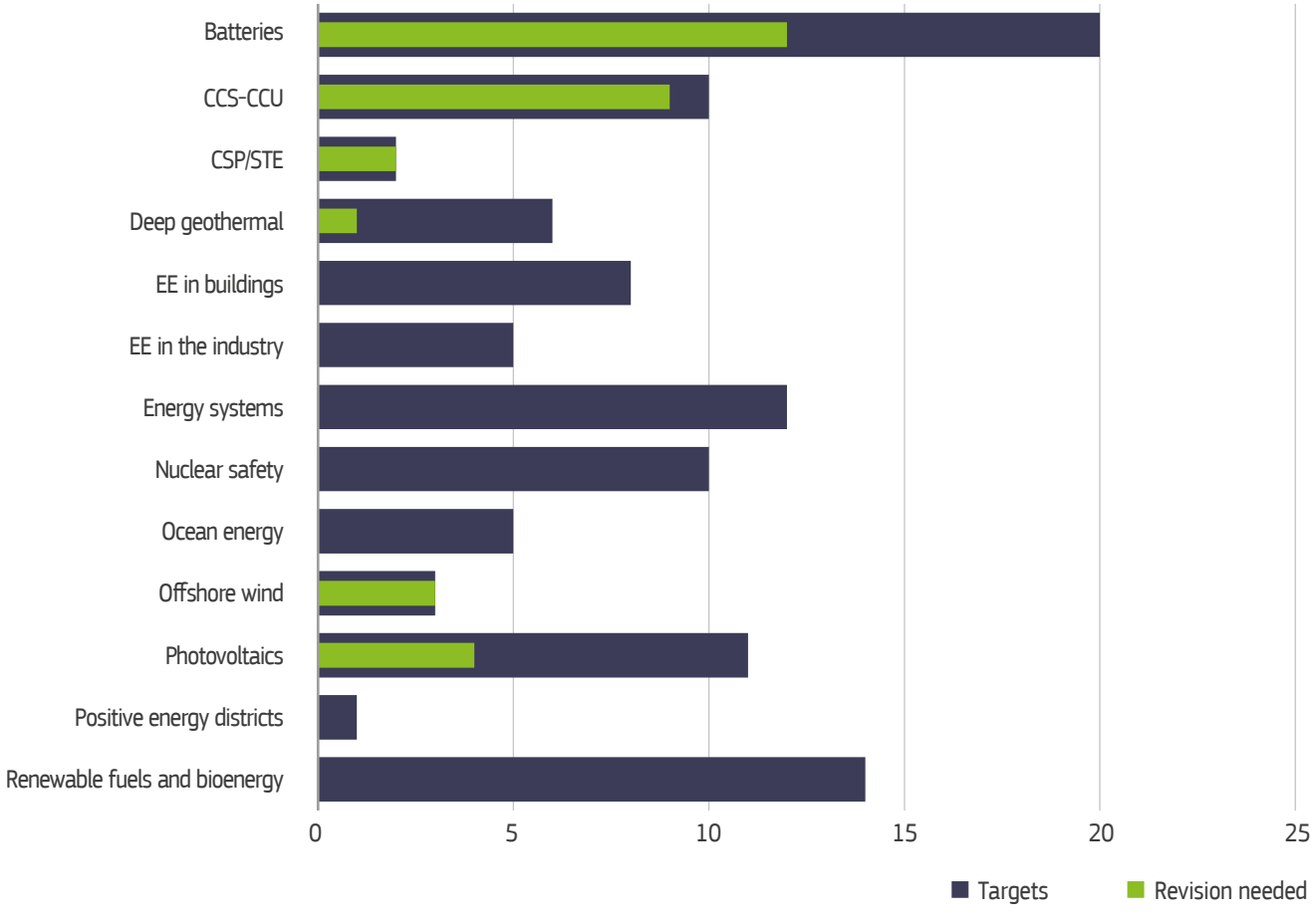
RELEVANCE OF THE TARGETS OF THE IMPLEMENTATION PLANS TO THE EUROPEAN GREEN DEAL

Relevance of targets

- 29 % of the SET Plan targets need to revised (36 % in 2019).



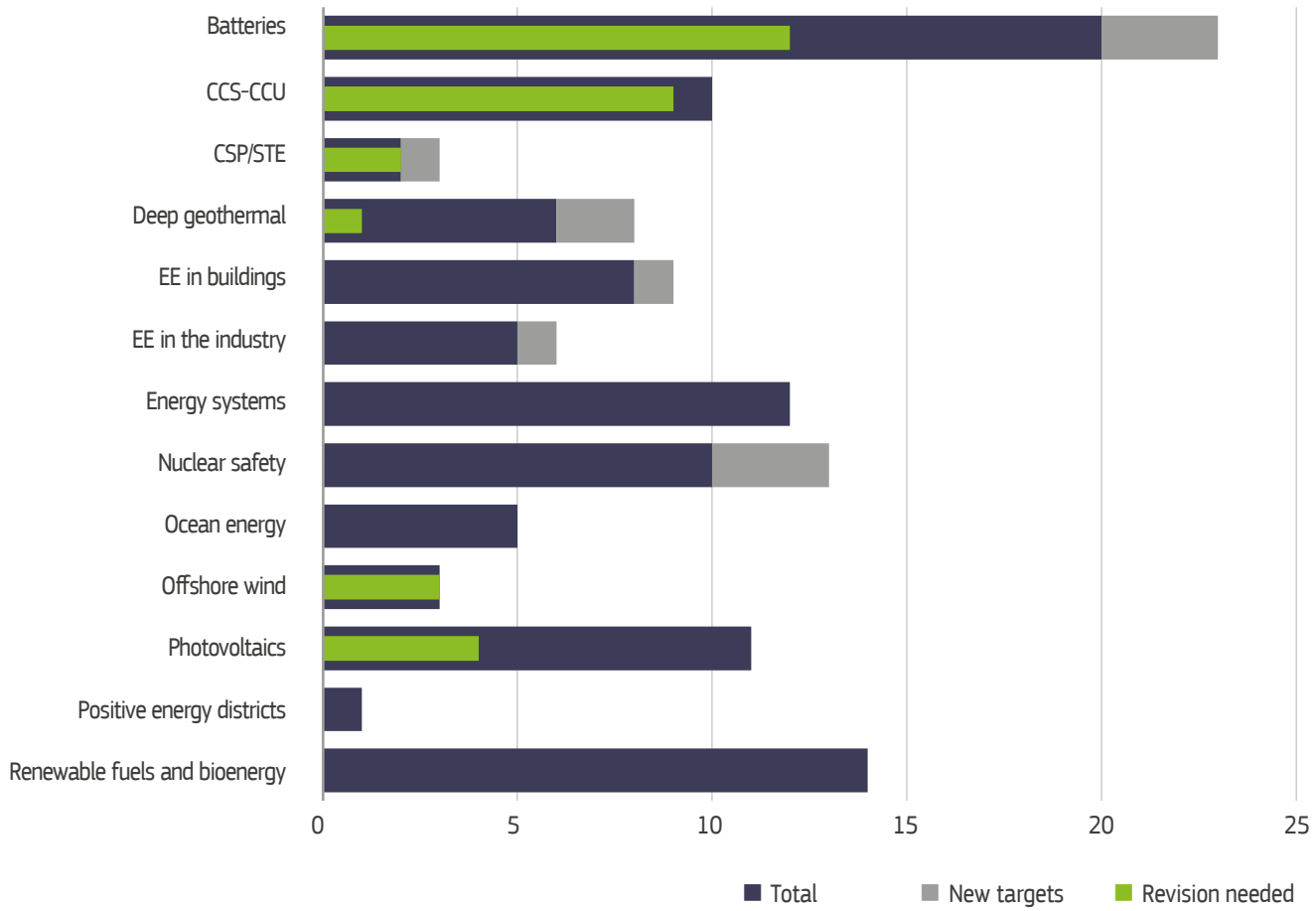


New targets

6 of the 13 IWGs want to set new targets to align their implementation plans to the European Green Deal and to the Next Generation EU.

The 6 implementation plans setting new targets are:

- Batteries;
- CSP/STE;
- Deep geothermal;
- Energy efficiency in buildings;
- Energy efficiency in the industry;
- Nuclear safety.



The SET Plan contributes to the acceleration of the green transition: ***Examples and success stories***

Offshore wind met all targets set in the Declaration of Intent.

Batteries: A new Strategic Research Agenda has been proposed by BatteriesEurope, with requirements for R&I along the entire value chain.

Deep geothermal is developing new R&I activities focusing on geothermal energy for heating, cooling and subsurface storage.

Energy efficiency in industry has included new sectors in their scope: Forestry – Cement Industry.

CCS-CCU has finalised a new implementation plan reflecting the need for revising most of their targets.

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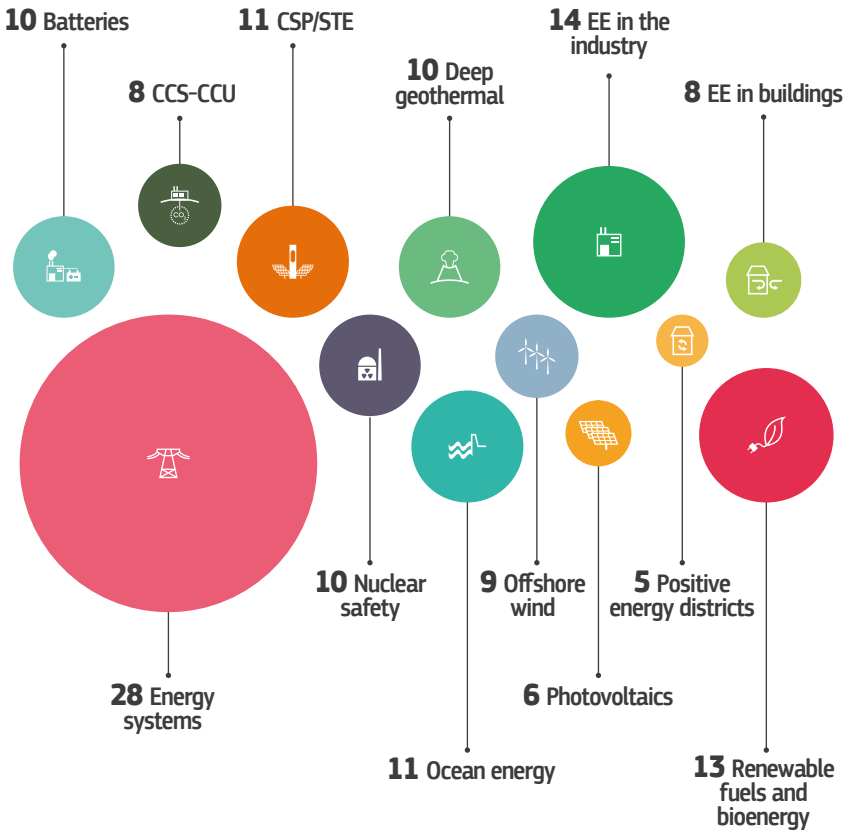
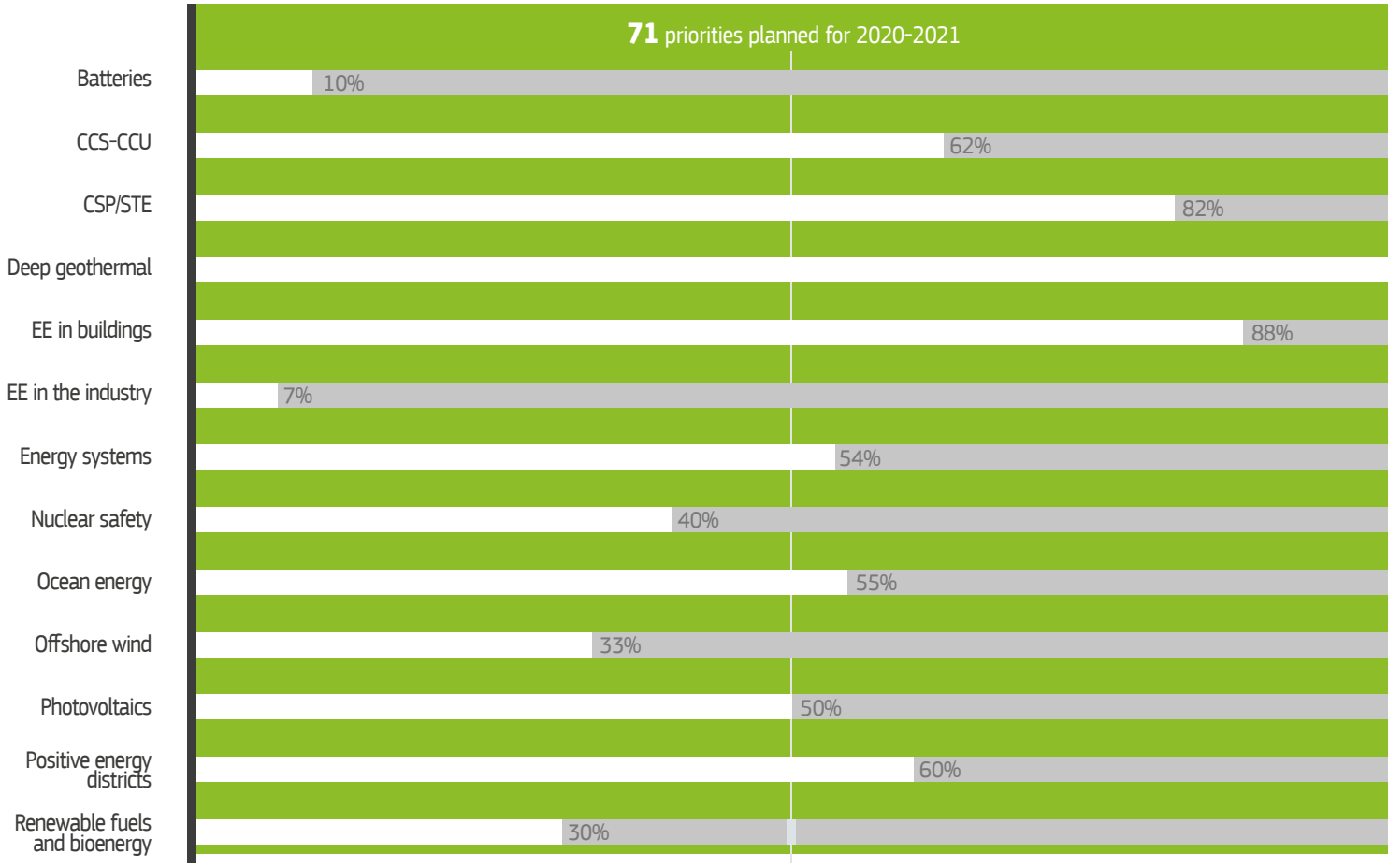
ARE WE PROGRESSING WELL?

Review of the activities based on a self-assessment by the IWGs

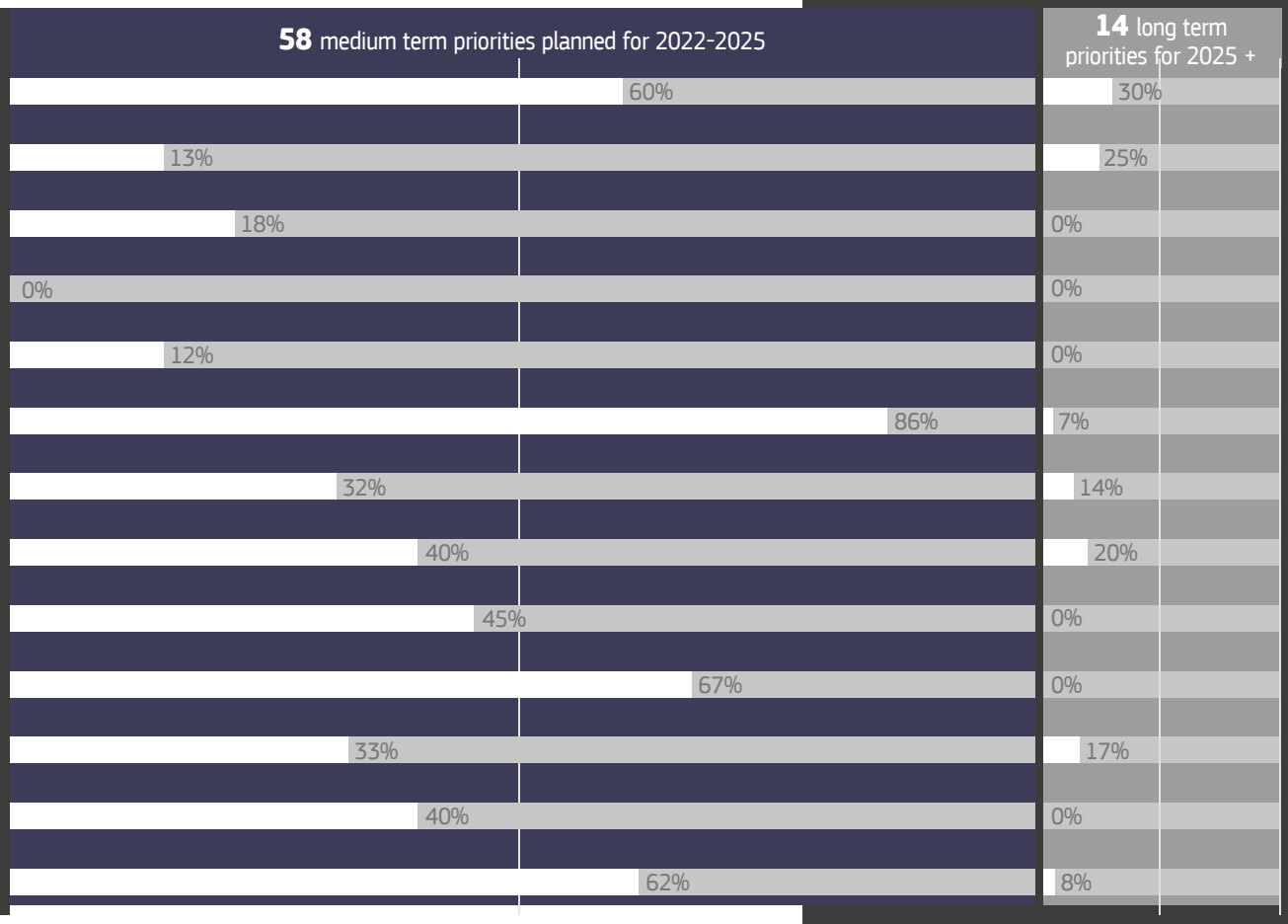
Activities

- 143 activities endorsed to meet the targets of the implementation plans.
- 71 activities are considered priority for the period 2020-2021.



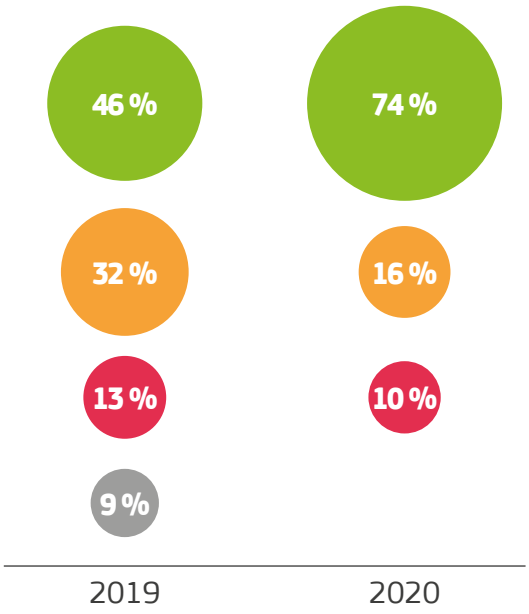


- 50 % of the activities will have started by the end of 2021.
- 40 % of the activities will be executed in the period 2022-2025.
- 10 % are long term priorities for 2025+.



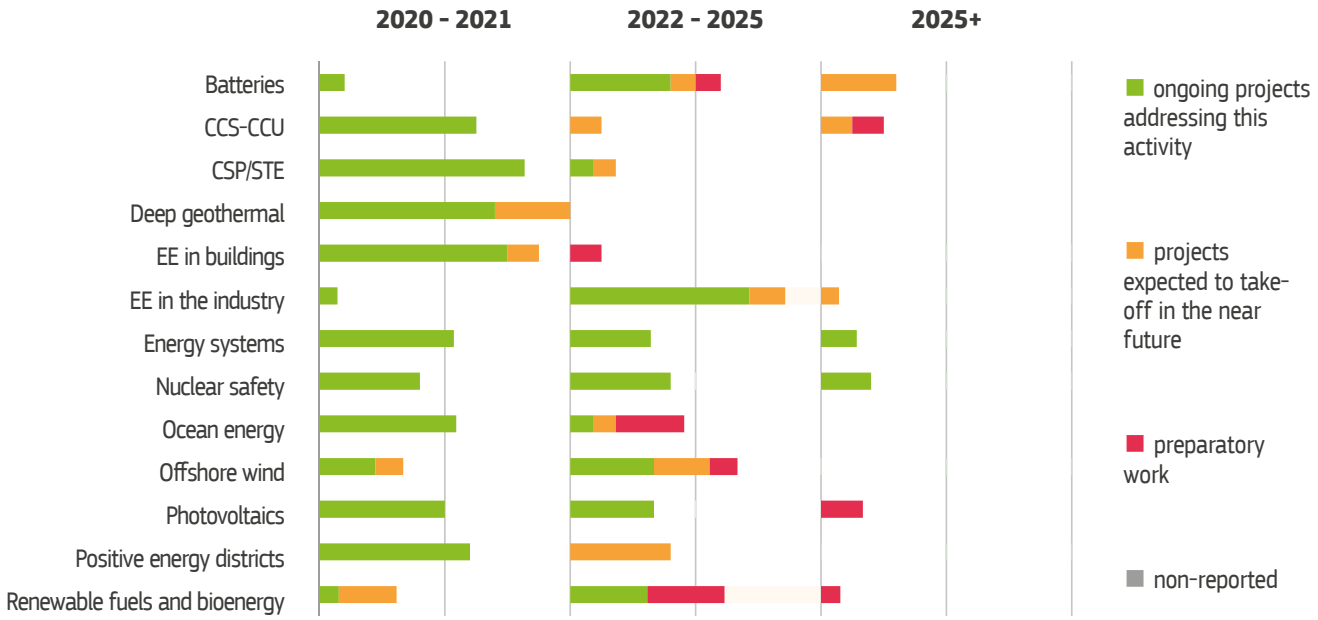
Status of activities: the share of ongoing activities has increased

- An increasing number of activities have projects ongoing, jumping from 46 % in 2019 to 74 % in 2020.
- There is increased convergence between R&I projects and IWG activities.
- This is consistent with increasing alignment between National and SET Plan R&I priorities as shown in the National Energy Climate Plans (NECPs).



Status of activities per IWG

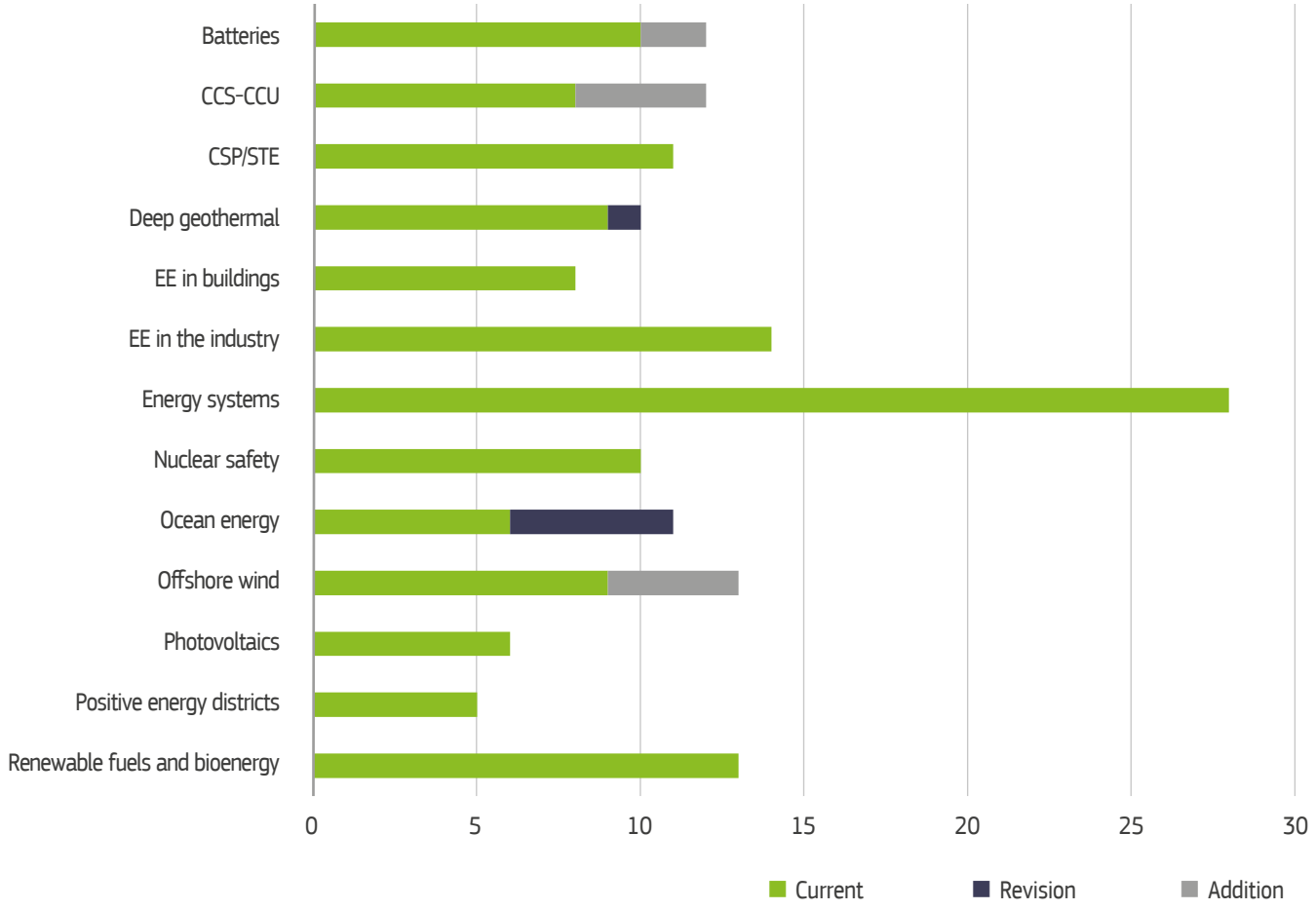
- 88 % of the activities prioritised for 2020-2021 are addressed by ongoing R&I projects.
- The remaining are to be addressed by projects expected to take-off in the near future.
- The preparatory work and launch of projects for activities prioritised for the medium term (2022-2025) needs to advance faster.



Revision or additions to the implementation plan activities

5 IWGs indicate that either a revision of activities or additional activities are needed in order to meet their implementation plan targets:

Batteries: Alignment of activities with Batteries Europe strategic research agenda;
CCS-CCU: 4 new activities;
Deep geothermal: Revision of 1 activity;
Ocean energy: Revision of 5 activities;
Offshore wind: 4 additional activities.



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ONGOING RELEVANT RESEARCH & INNOVATION PROJECTS

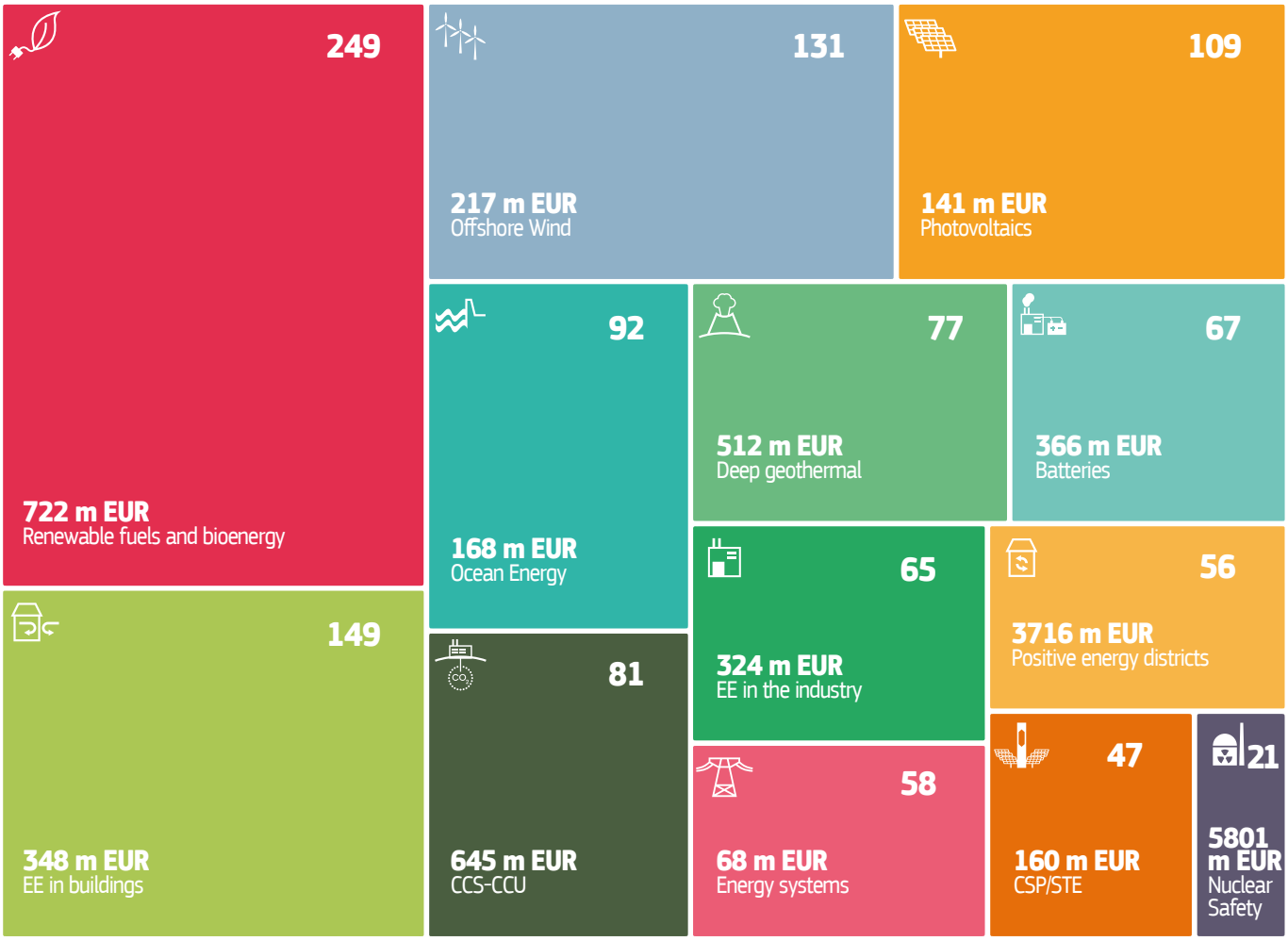
Non-exhaustive list of relevant national, regional and EU co-funded R&I projects, as reported by the IWGs, that address the targets of the implementation plans

IWGs were asked to focus on reporting activities predominantly at national and transnational levels.

Ongoing relevant R&I projects

- The IWGs have reported 1203 R&I projects that have been launched since 2017 to address the implementation plans.
- Most projects address one or many R&I activities foreseen by the respective implementation plans.
- Given the importance of R&I projects and their funding sources for the implementation of the SET Plan there need to be additional efforts to improve this particular aspect of the reporting process.

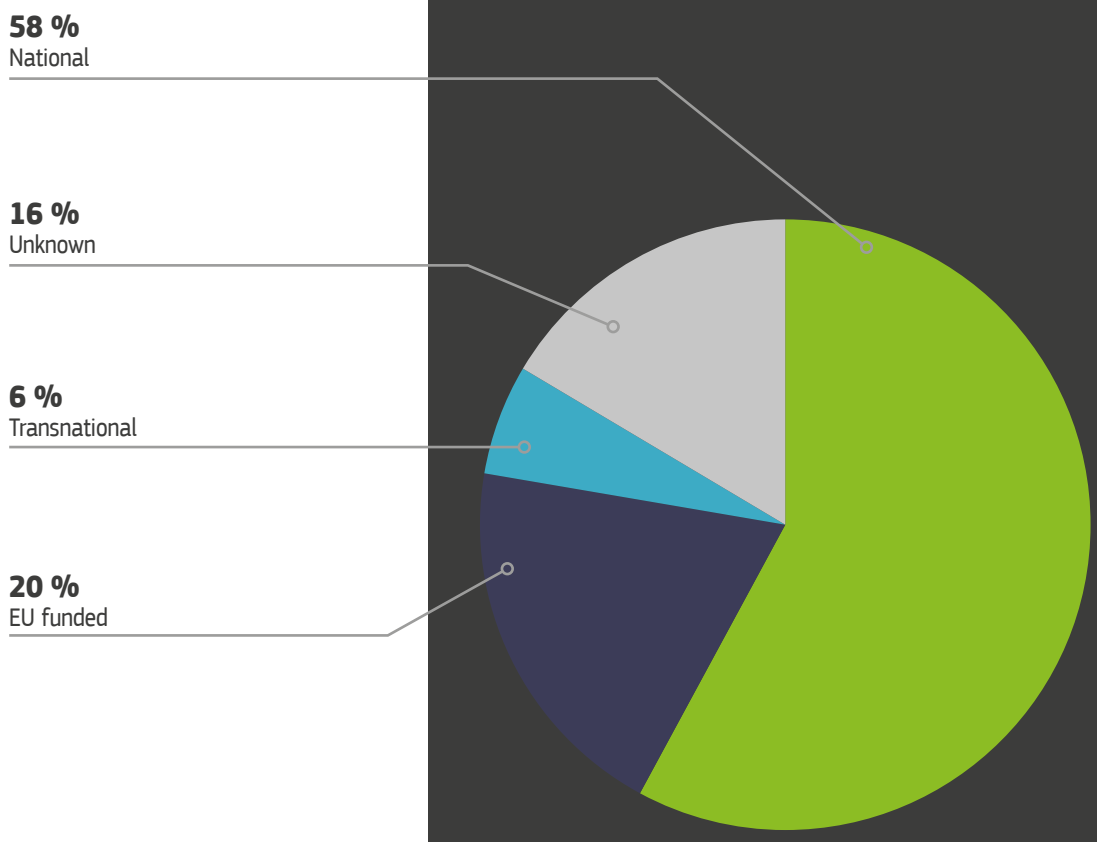
Projects implementing the SET plan



Area is proportional to the number of projects reported

Funding of projects

- The reported 1203 projects are supported by national, regional, transnational and/or EU funds, mobilising EUR 13.2 billion.
- 60 % of the reported projects are funded by National authorities.



Projects delivering the SET Plan

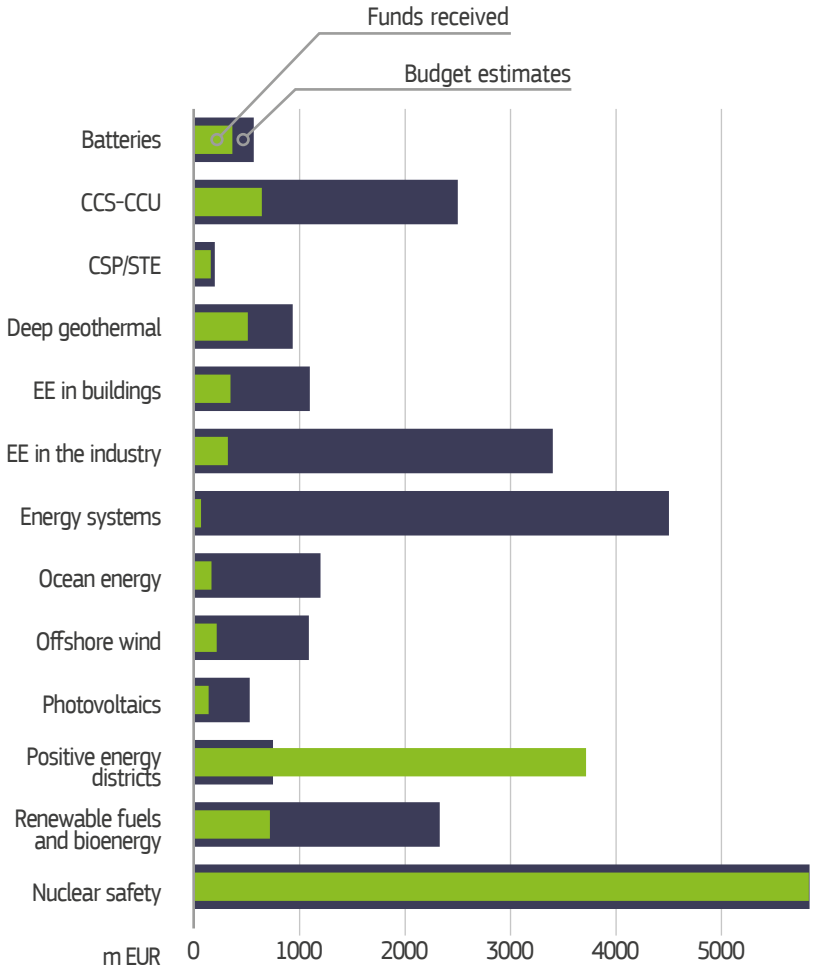
The 1203 projects reported by the IWGs mobilised EUR 13.2 billion.

Invested funds amount to EUR 7.5 billion (when excluding Nuclear safety activities).*

The budget of these projects account for 37 % of the estimated R&I needs for the execution of all 13 implementation plans, marking a significant increase from 16 % in 2019.

Positive energy districts R&I projects received funding in excess of estimated EUR 750 million.

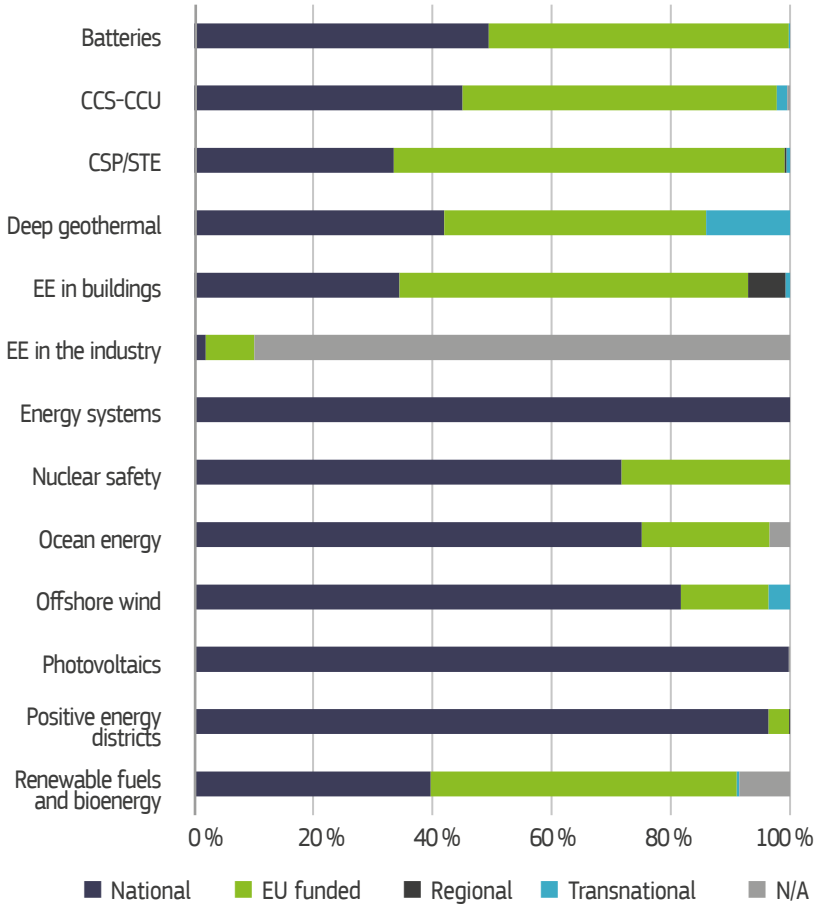
Disclaimer: The analysis is based on the information reported by the IWGs and is considered not exhaustive. It provides an indication of the ongoing effort in supporting the goals of the SET Plan.



Funding source of the reported projects

70 % of the funds come from national projects.

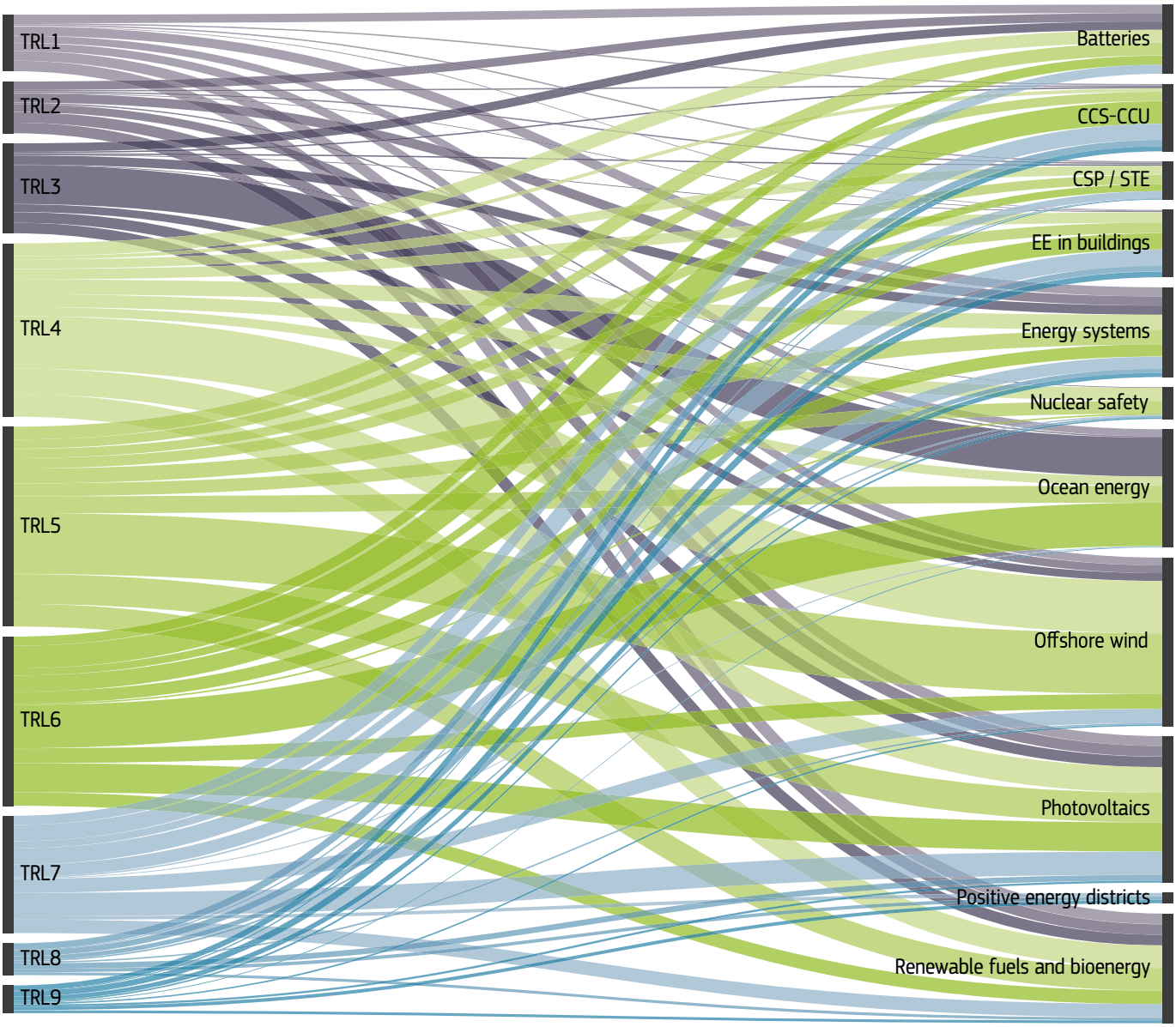
Regional and transnational projects account for 2 % of the total budget, however they play key role in the Deep geothermal, EE in buildings, Offshore wind and Photovoltaics IWGs.



*Estimated budget for Nuclear safety is provided on yearly basis, with project duration of 10-20 years

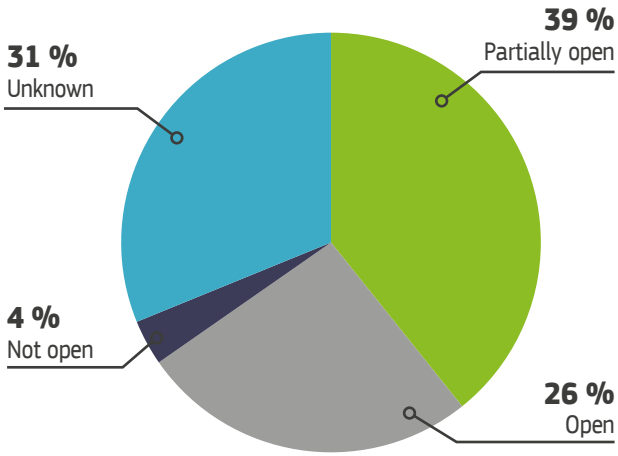
Technology readiness level (TRL) focus

- Most IWGs reported the TRL of the projects funded.
- 60 % of the projects address technologies at TRL 4 to 6.
- 20 % of the projects aim at TRL 7 or higher.
- CCS-CCU, CSP/STE, EE in buildings, Energy systems, Offshore wind, Photovoltaics and Renewable fuels and bioenergy have projects across the whole development path.

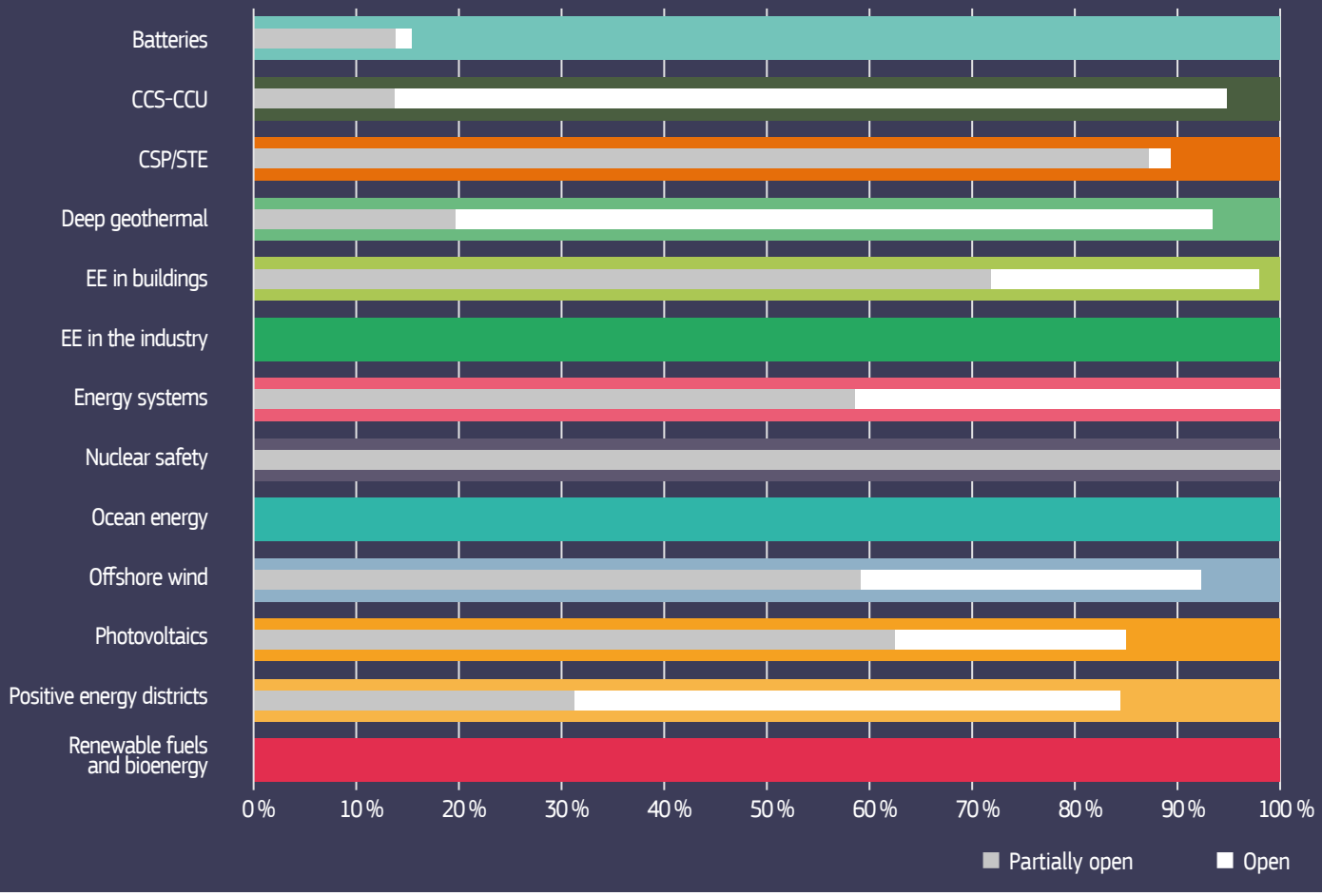


Openness of the results

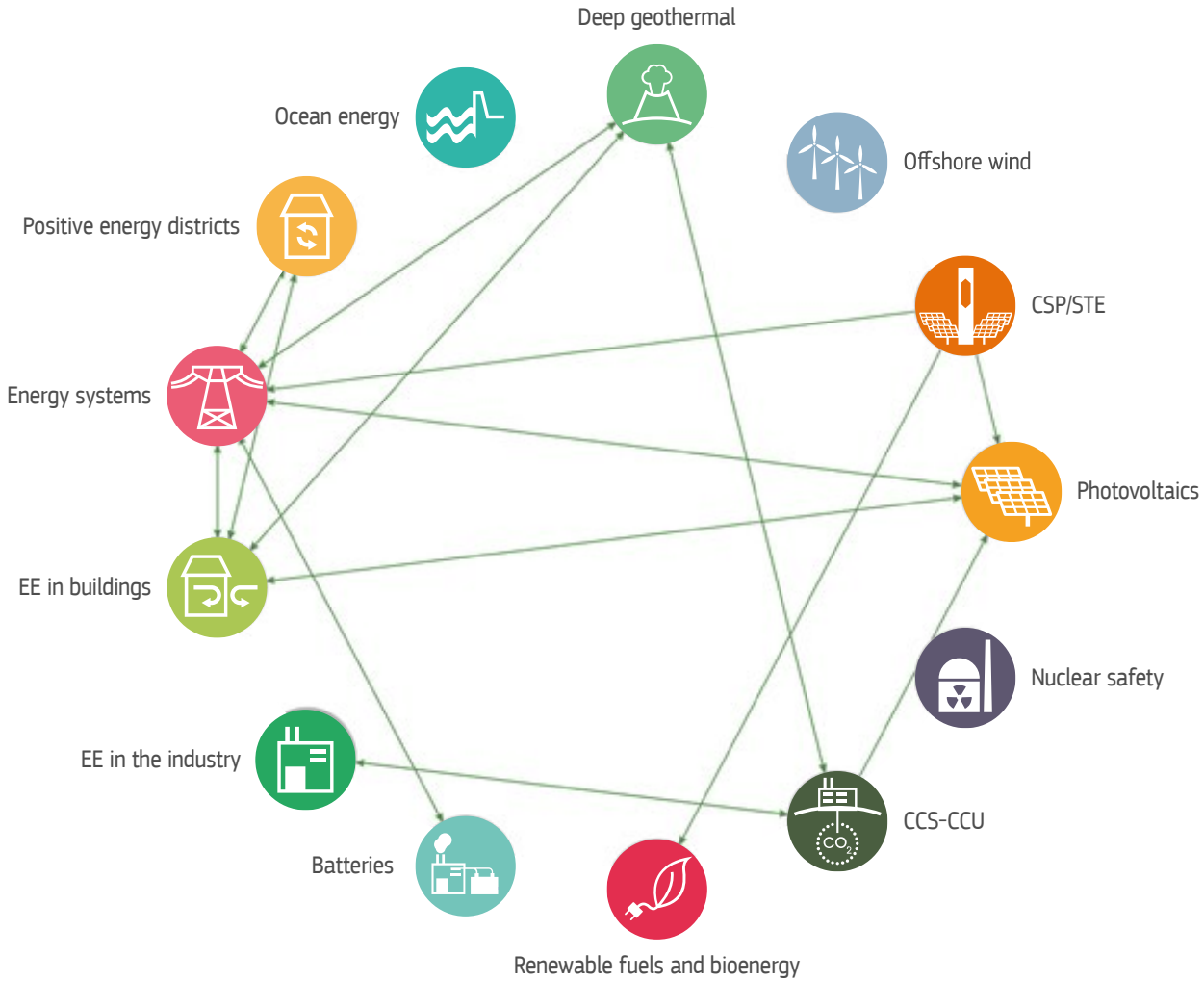
- Of 1203 projects identified by the IWGs, 39 % have results that are partially open to the SET Plan: some deliverables and a final project reports are available to the SET Plan community.
- 26 % of the projects are open: access to scientific information and deliverables is granted to any user.
- For 31 % of the projects no information is provided.



- The share of openness varies across IWGs.
- Most IWGs have identified projects that are either fully or partially open to the SET Plan community.
- For EE in industry, Ocean energy, Renewable fuels and bioenergy, no information on the openness of projects is available.

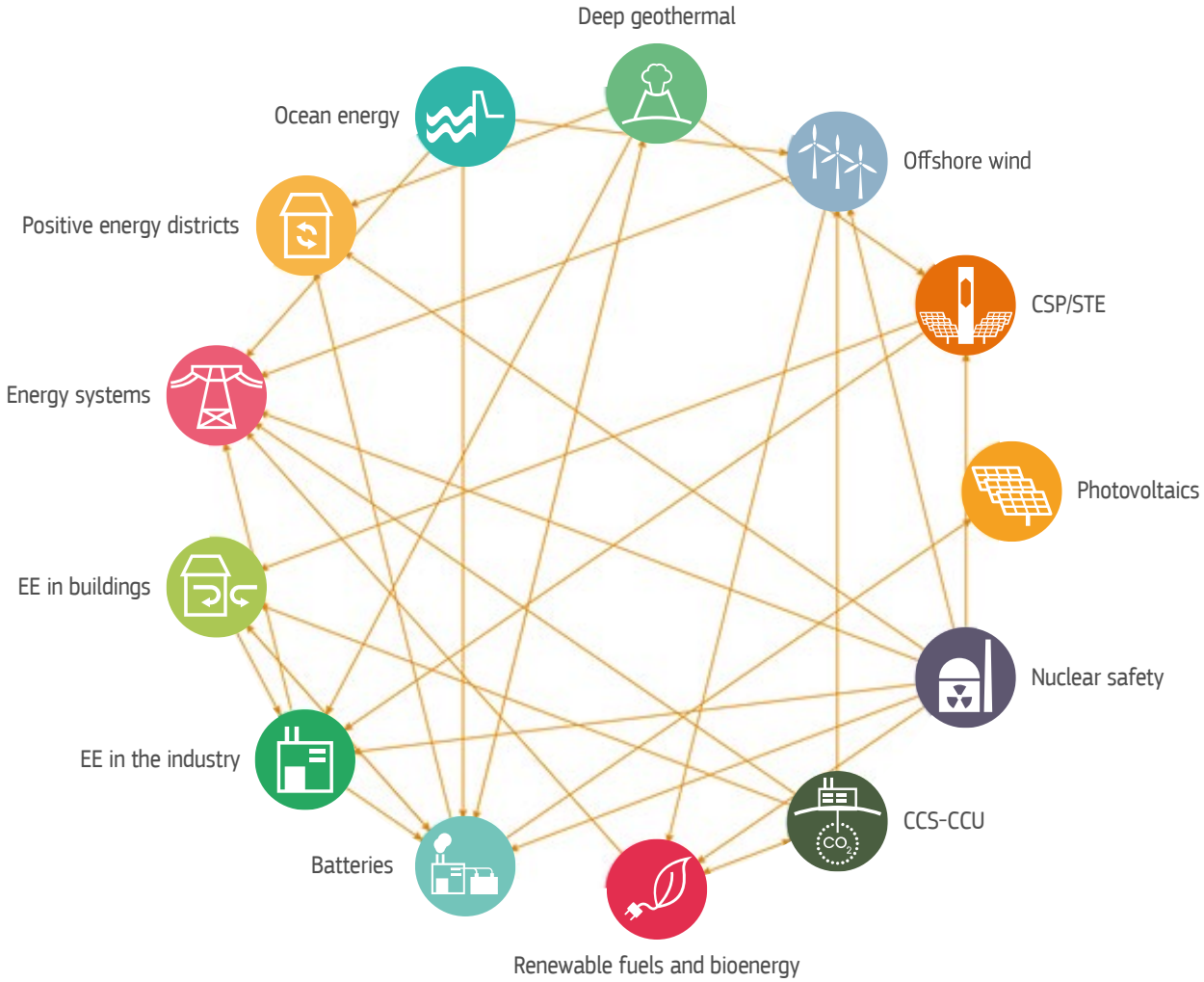


SYNERGIES BETWEEN IMPLEMENTATION PLANS AND LINKS BEYOND THE SET PLAN



Collaboration between IWGs

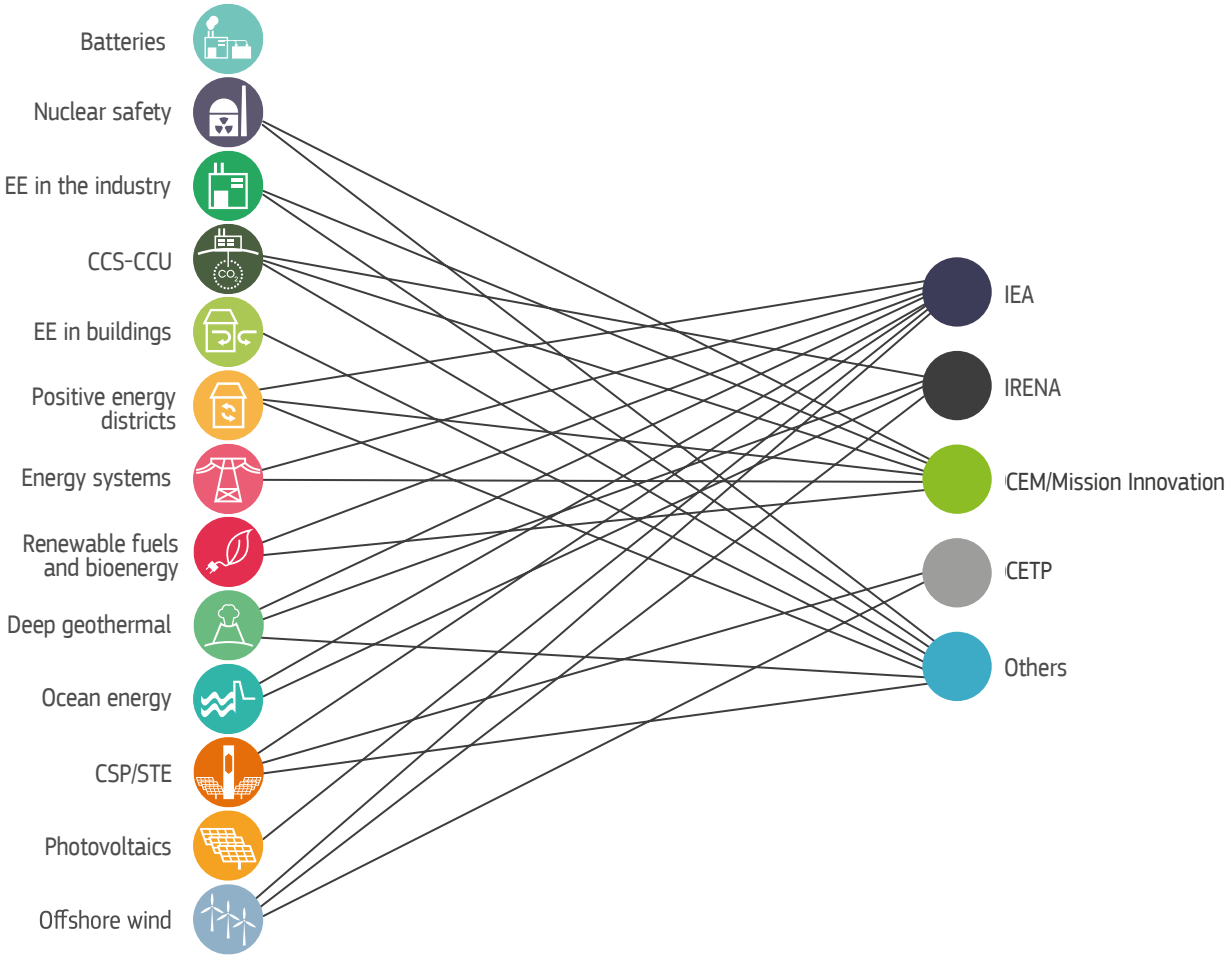
- There are already 14 established cooperation activities among 10 different IWGs.
- A number of cooperations address key policy areas such as the Renovation wave and Energy system integration.



- There is growing awareness that collaboration among IWGs is fundamental to achieve success.
- All IWGs indicate that they would like to collaborate with IWG4 – Energy systems.
- Batteries, EE in buildings, EE in industry, Positive energy districts and Photovoltaics have activities that are deemed beneficial to the success of five or more other IWGs.

Ongoing collaborations beyond the SET Plan

- Most IWGs report ongoing collaboration activities beyond the SET Plan.
- International initiatives and platforms offer the opportunity to further the scope of the work of the IWGs.
- Initiatives supported by International Energy Agency (IEA), IRENA, Clean Energy Ministerial (CEM) and Mission Innovation; and the Clean Energy Transition Partnership (CETP) are closely linked to the SET Plan work.
- At the same time the targets set by the SET Plan implementation plan are becoming benchmarks globally.



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KEY MESSAGES

All IWGs are advancing with their implementation plans.

IWGs are adapting to the changing policy priorities and are aligning their work to deliver on the challenges for the green and digital transitions.

There is strong contribution from national projects towards the targets of the SET Plan, showing increased alignment between the R&I priorities of the implementation plans and national programmes. The alignment reinforces the role of the SET Plan in defining the Energy R&I agenda, as also indicated in the NECPs.

Collaboration between IWGs is increasing to meet the SET Plan targets. Through enhanced cooperation the SET Plan will deliver more effectively on EU initiatives such as the Renovation wave and Energy system integration strategy.

SETIS will continue working with the SET Plan community to further improve the reporting, especially on aspects such as R&I investments.

Abbreviations

CCS – CCU – Carbon Capture and Storage - Carbon Capture and Utilisation

CEM - Clean Energy Ministerial

CETP - Clean Energy Transition Partnership

CSP/STE – Concentrated Solar Power – Solar Thermal Electricity

EE - Energy efficiency

EGD – European Green Deal

ETIP - European Technology and Innovation Platform

EU - European Union

IEA – International Energy Agency

IRENA - International Renewable Energy Agency

IWG – Implementation Working Group

MS - Member States

NECP - National Energy Climate Plan

R&I - Research & Innovation

SET Plan – Strategic Energy Technology Plan

SETIS - Strategic Energy Technology Information System

TRL - Technology Readiness Level

Units:

- b EUR - billion Euro
- m EUR - million Euro

This report was made possible thanks to the active collaboration and contributions of the IWGs.

This report was made by SETIS, the SET Plan information system, coordinated and managed by the JRC.

SETIS wishes to thank the following members of the IWGs:

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