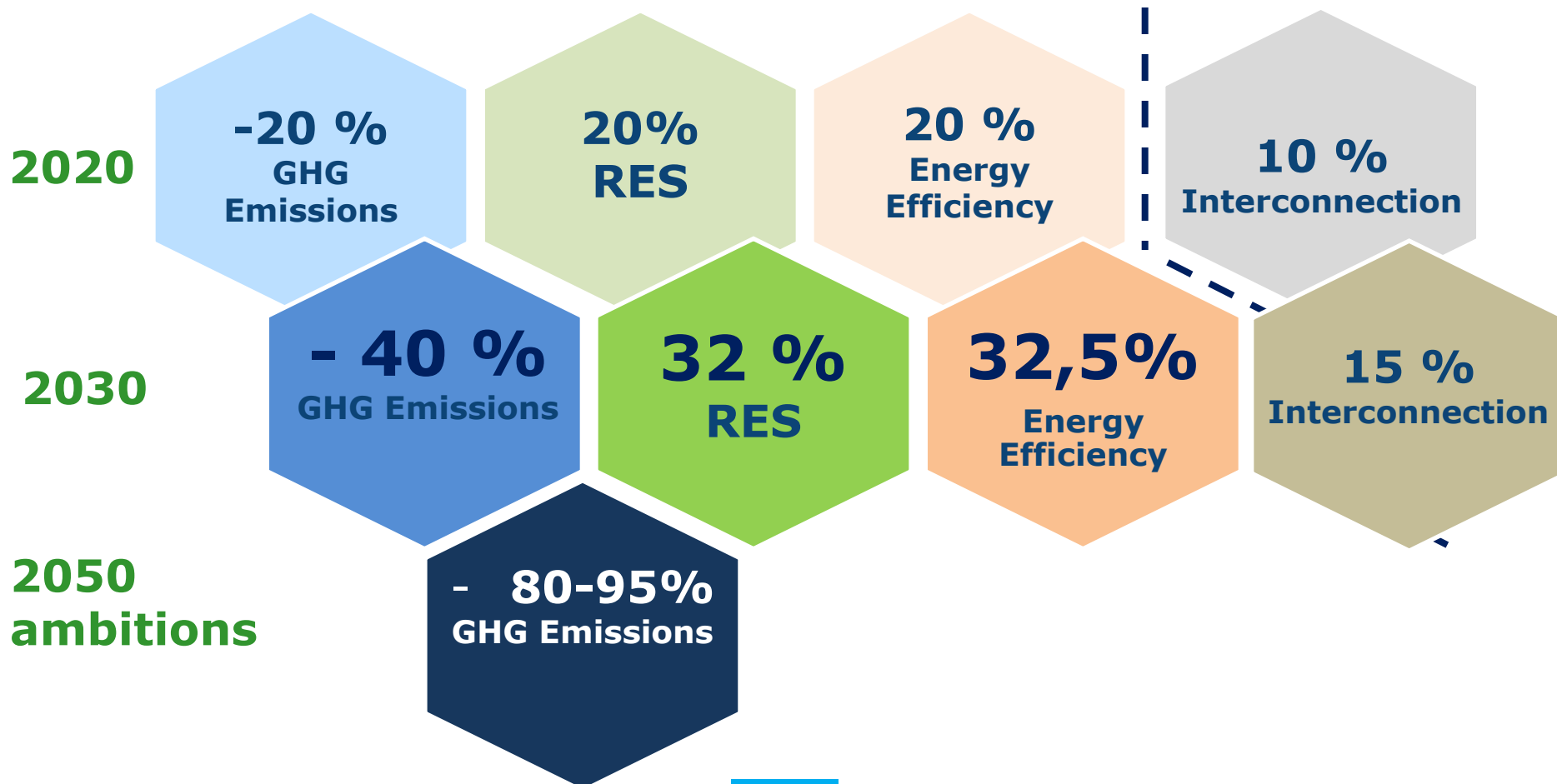


# Clean Energy Transition and CCUS - EU perspective



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# European Climate & Energy Targets



PRESIDENT

An Economy that Works for People



Frans Timmermans  
European Green Deal

Europe fit for the Digital Age

Trade

Innovation and Youth

Budget and Administration

Jobs

Economy

Agriculture

Cohesion and Reforms

Neighbourhood and Enlargement

Health

Justice

Transport

Equality

Internal Market

Home Affairs

Crisis Management

Energy

International Partnerships

Environment and Oceans

Interinstitutional Relations and Foresight

Values and Transparency

Democracy and Demography



European Commission

# European Green Deal

## PEOPLE

- **Just Transition**
- European Climate Pact

## CLIMATE

- Climate Law
- Raising global ambition (2030)
- **Clean energy and transport**
- Taxation

## ENVIRONMENT

- Zero Pollution
- Biodiversity
- Farm to Fork

## ECONOMY

- European Semester / SDG
- **Industrial Strategy**
- Circular Economy
- Sustainable investment

**Sustainable Europe**

# A European Green Deal



- **Becoming the world's first climate-neutral continent**
- **First European Climate Law to enshrine the 2050 climate-neutrality target**
- **More ambitious than GHG emission 40% target for, 2030 → 50 – 55%**
- **Extend the ETS to cover the maritime sector, traffic and construction and reduce the free allowances allocated to airlines**
- **Introduce a Carbon Border Tax to avoid carbon leakage**
- **To become world leader in circular economy and clean technologies**
- **Decarbonise energy-intensive industries (e.g. steel, cement)**
- **Invest record amounts in cutting-edge research and innovation**
- **The EU will lead international negotiations to increase the level of ambition of other major emitters by 2021.**



# The EU energy system in transition

- In line with the EU's goal is net-zero GHG emissions by 2050 to stay within 1,5°C to achieve climate neutrality
- In order to reach these ambitious goals CCUS will be needed
- **This means 'renewables first', with remaining fossil fuel and energy-intensive industries fully decarbonised through CCUS and clean hydrogen**
- Remaining fossil fuel power plants must be highly flexible to back-up and balance these fluctuating renewables
- **Deep electrification of transport and industry requires sector coupling**

# **A Clean Planet for all**

**A European strategic long term vision for a prosperous, modern, competitive and climate neutral economy**



# Our Vision for a Clean Planet by 2050

- **The Paris Agreement objective is to keep temperature increase to well below 2°C and to pursue efforts to limit it to 1.5°C**
- **The IPCC report confirms that limiting climate change to 1.5°C has to be pursued to avoid worst impacts**
- **For the EU to lead the world in climate action, it means achieving net-zero greenhouse gas emissions by 2050**
- **The EU with this vision can inform others how we can deliver collectively a clean planet.**
- **The Long Term Strategy shows transforming our economy is possible and beneficial.**



## **7 Building Blocks**

- 1. Energy Efficiency**
- 2. Deployments of Renewables**
- 3. Clean, safe & connected Mobility**
- 4. Competitive industry and circular economy**
- 5. Infrastructure and inter-connections**
- 6. Bio-economy and natural carbon sinks**
- 7. Tackle remaining emissions with carbon capture and storage**

## 7<sup>th</sup> Building Block: CCUS

- ✓ **Rapid deployment of renewable energy and new options to decarbonize industry have reduced the need for CCUS**
- ✓ **Still, CCUS has a crucial role to close the circle for a net-zero economy:**
  - ✓ **Energy intensive industries will require it where other alternatives do not exist**
  - ✓ **If combined with sustainable biomass it could create negative emissions**
- ✓ **CCUS is facing barriers: lack of demonstration plant and proof of economic viability, regulatory barriers in some Member States, public opposition**
- ✓ **An enabling framework is needed to spur large-scale demonstration, scale up private investments, provide the right signals to the markets and reassure public opinion**

# Innovation Fund

First tool to  
implement  
Long-Term  
Strategy

Driving low-  
carbon  
technologies  
to the  
market

Regulatory  
Framework  
adopted on  
26 February  
2019

Renewable  
energy

CCUS

**Driving low-carbon  
technologies to the  
market**

Energy-intensive  
industries

Energy storage

# Key features of the Innovation Fund

Volume of at least  
EUR 10 billion at  
current carbon  
prices

Support of up to  
60% of additional  
costs related to  
innovative  
technology

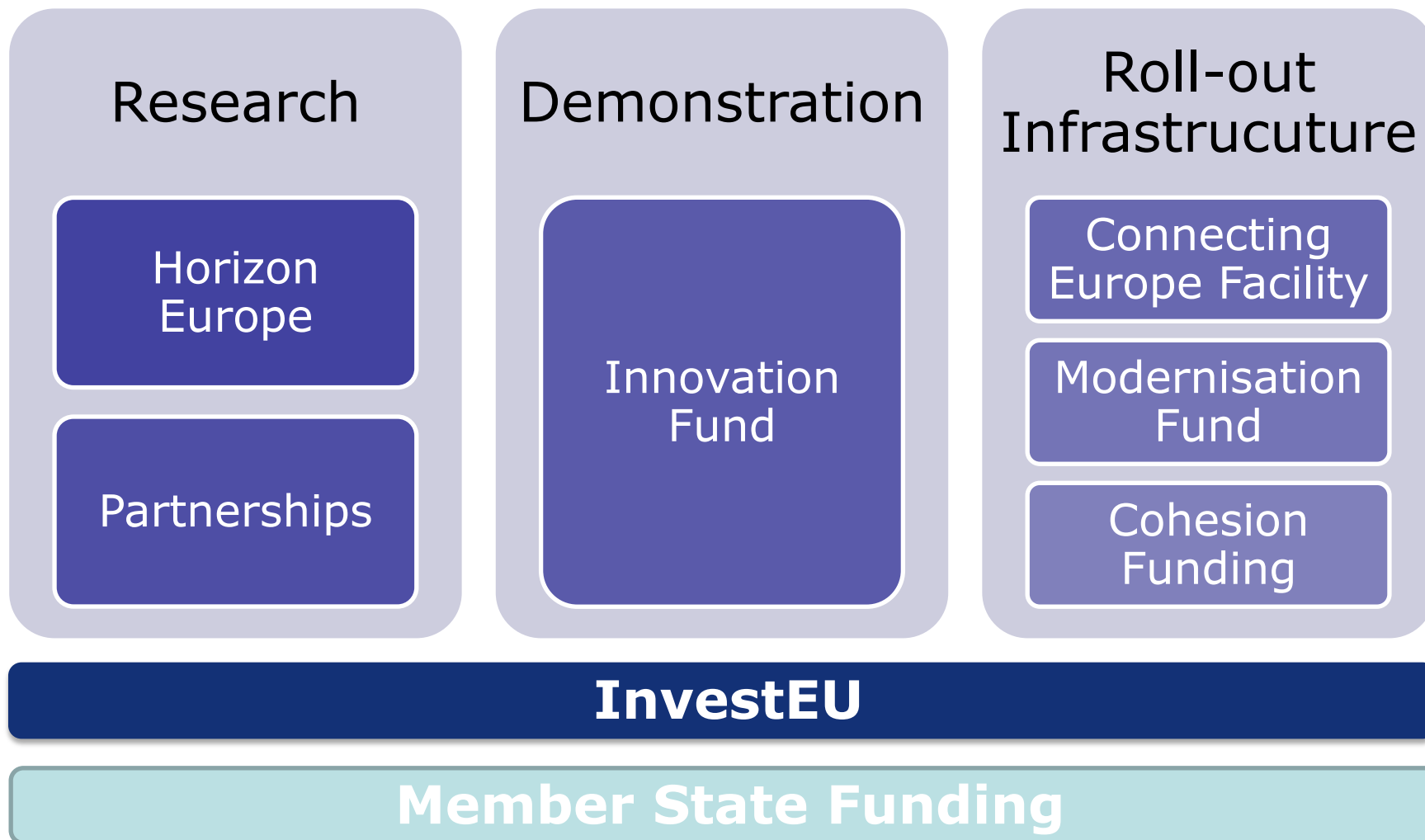
First call expected  
for 2020 and  
regular calls up to  
2030

Financed from the  
revenues of the EU  
Emissions Trading  
System

Support of  
additional capital  
and operating  
costs (up to 10  
years)

Comprehensive  
selection criteria  
and project  
development  
assistance

# Synergies – Innovation Fund



# SET Plan Action 9



## Implementation WG CCUS

Co-chairs: ZEP ETIP, NL and NO

11

COUNTRIES

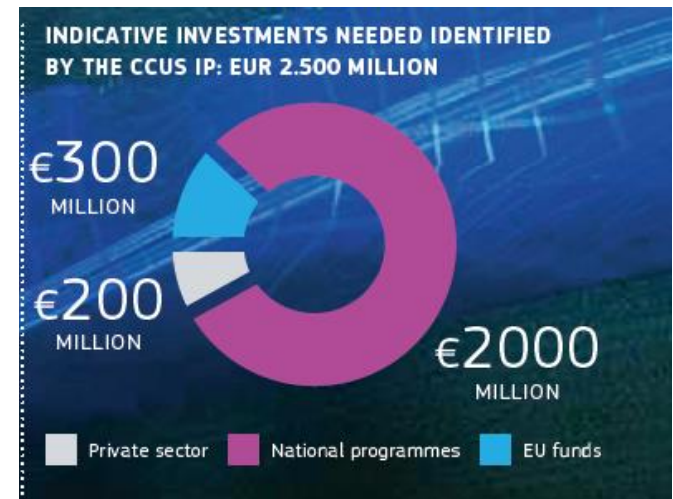
CO-CHAIRS

**STAKEHOLDERS**

The European Technology Platform for Zero Emission Fossil Fuel Power Plants (Co-Chair), Actys BEE, ArcelorMittal, Bellona, the British Geological Survey, BP, EERA, the European Chemical Industry Council (CEFIC), the European Steel Technology Platform, the European Turbine Network, the European Steel Association (Eurofer), Gassnova, the Global CCS Institute, General Electric, the German Aerospace Center, Greenwin, Heidelberg Cement, the International Energy Agency, IFP Energies Nouvelles, the International Association of Oil and Gas Producers, Mitsubishi Hitachi Power Systems, Port of Rotterdam Authority, the Research Council of Norway, ScinnoV, Shell, Sirtef, Sotocarbo SpA, TAQA Global and the Netherlands Organisation for Applied Scientific Research (TNO).

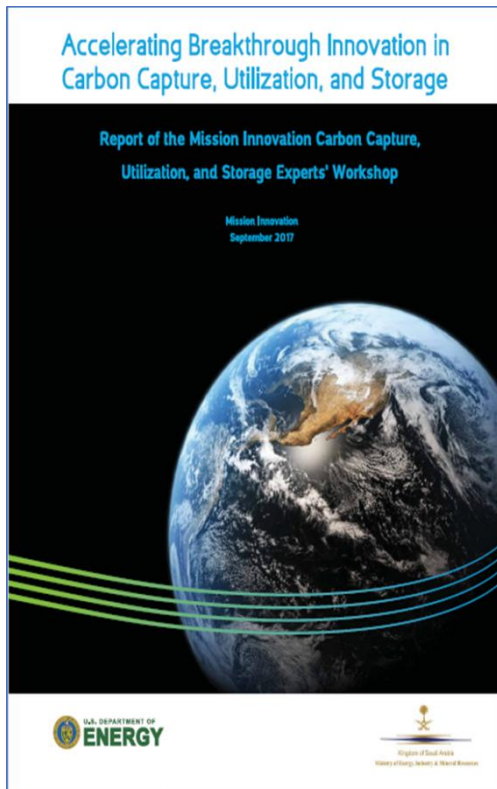
Type organisation	IMPACTS9
Gov/Funding	-
Gov/research	-
Research	UKRI British geological survey (UK), SINTEF (NO)
Industry	CCS Association (UK), CO2 Value Europe (BE)
Other	-

Collaboration with the ACT ERANET, the EERA, the CCUS Project Network



# Mission Innovation Challenge # 3: CCUS

- 20 active countries
- Co-leads: **UK, Mexico, Saudi-Arabia**



		Australia	Brazil	Canada	Chile	China	Denmark	EC	Finland	France	Germany	India	Indonesia	Italy	Japan	Mexico	Norway	Republic of Korea	Saudi Arabia	Sweden	The Netherlands	UAE	UK	USA
1	Smart Grids Innovation Challenge	○	○	○		●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
2	Off Grid Access to Electricity Innovation Challenge	○	○	○		○		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
3	Carbon Capture Innovation Challenge	○		○		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
4	Sustainable Biofuels Innovation Challenge	○	●	●		○		○	○		○	○	○	○	○	○			○	○		○	○	○
5	Converting Sunlight Innovation Challenge	○	○	○	○	○	○	○	○	○	○		○	○	○	○			○	○	○	○	○	○
6	Clean Energy Materials Innovation Challenge	○		○			○	○	○	○	○		○		○	○	○	○	○	○	○	○	○	○
7	Affordable Heating and Cooling of Buildings Innovation Challenge	○	○	○		○	○	○	○	○	○		○		○	○			○	○	○	○	○	○

- **2nd Workshop in Trondheim Norway 19-20 June 2019**
- **ACT ERA-NET as a vehicle for cooperation with MI countries**



# Horizon 2020 Energy –WP 2018-2020

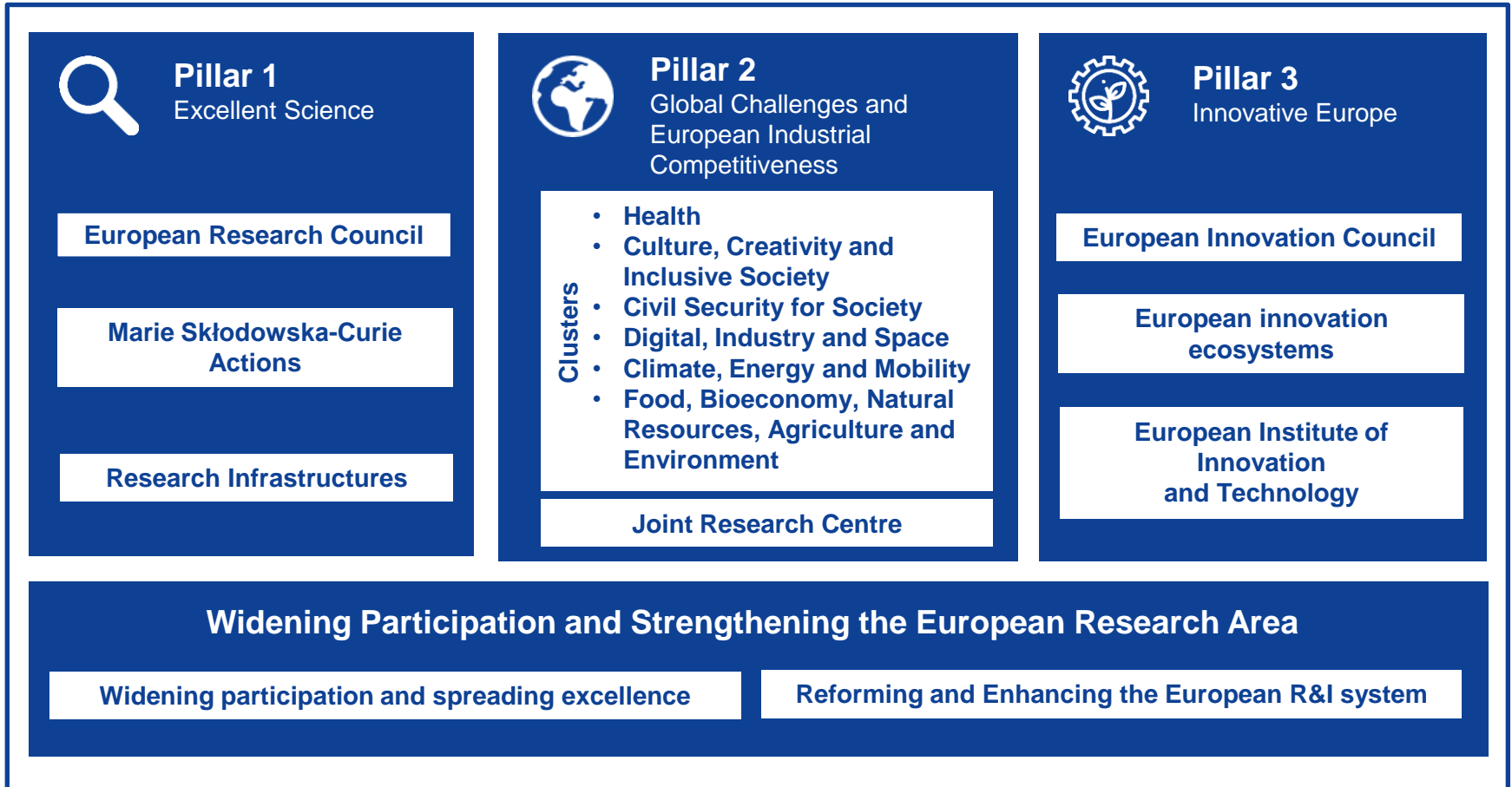
## Topics on CCUS



- ***NZE-1: Pilots for advanced capture technologies (2018)***
- ***NZE-2: Pilots on CO2 conversion to fuels (2018)\****
- ***NZE-3: Strategic planning for CCUS deployment (2018)***
- ***NZE-4: Integrated solutions for flexible power plants using power-to-X and energy storage (2019)***
- ***NZE-5: CCS in industry (2019, 2020)\****
- ***NZE-6: Geological storage pilots (2020)***

\* topics in which R&I cooperation with **Mission Innovation countries** is encouraged

# Horizon Europe: Preliminary structure



# Cluster 'Climate, Energy and Mobility'





# Clean Energy Transition and CCUS R&I

- **Draft Strategic R&I plan for Horizon Europe produced by the European Commission**
- **CCUS and CCU are addressed in Cluster 5 -Climate, Energy and Mobility and Cluster 4 -Digital, Industry and Space**
- **Preparation of the WP 2021/2022 (early 2020), by co-creation**
- **Coordinating priority setting and use of resources across different R&I frameworks: SET-Plan, Work Programmes, Partnerships**
- **Match funding needs –via joint EU-MS-stakeholders funding, like Partnerships**
- **International collaboration through Mission Innovation**



# Thank you!

#HorizonEU

<http://ec.europa.eu/horizon-europe>