

Running the last mile

CCS and CCU as key enablers of the energy transition of EU industry

7th ACT Knowledge Sharing Workshop

5th October 2023, Paris

Zero Emissions Platform

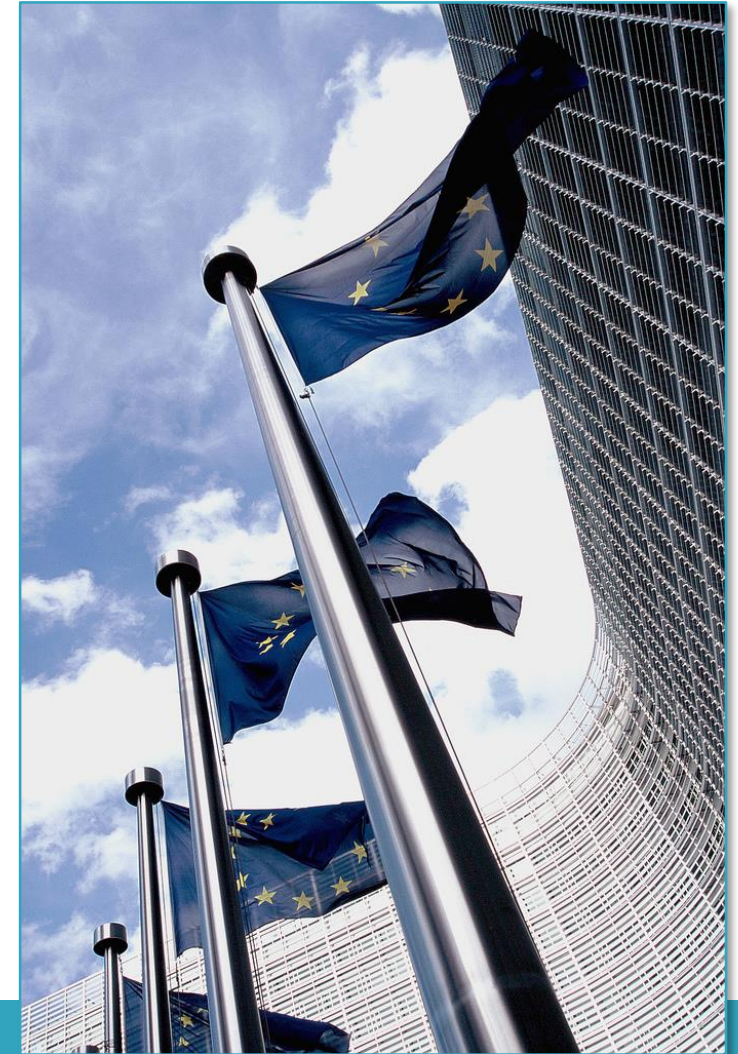


- The Zero Emissions Platform
- State of CCS and CCU in Europe
- The role of CCS and CCU in the path to net-zero
- Research and innovation challenges
- Partnerships

Zero Emissions Platform – *mission*

The **Zero Emissions Platform (ZEP)** is a European Technology and Innovation Platform (ETIP) under the **European Strategic Energy Technology Plan (SET-Plan)**

- SET-Plan is a European programme to accelerate the development of low-cost & low-carbon technologies
- SET-Plan brings relevant stakeholders together, including governments and ETIPs (such as ZEP)
- CCS and CCU are among 10 priority actions identified by the SET-Plan to accelerate the EU's energy transformation and aim to become the global leader in the green transition
- **ZEP is the official adviser to the European Union on the deployment of CCS and CCU**



EU/EEA highlights – 2023 a crucial year

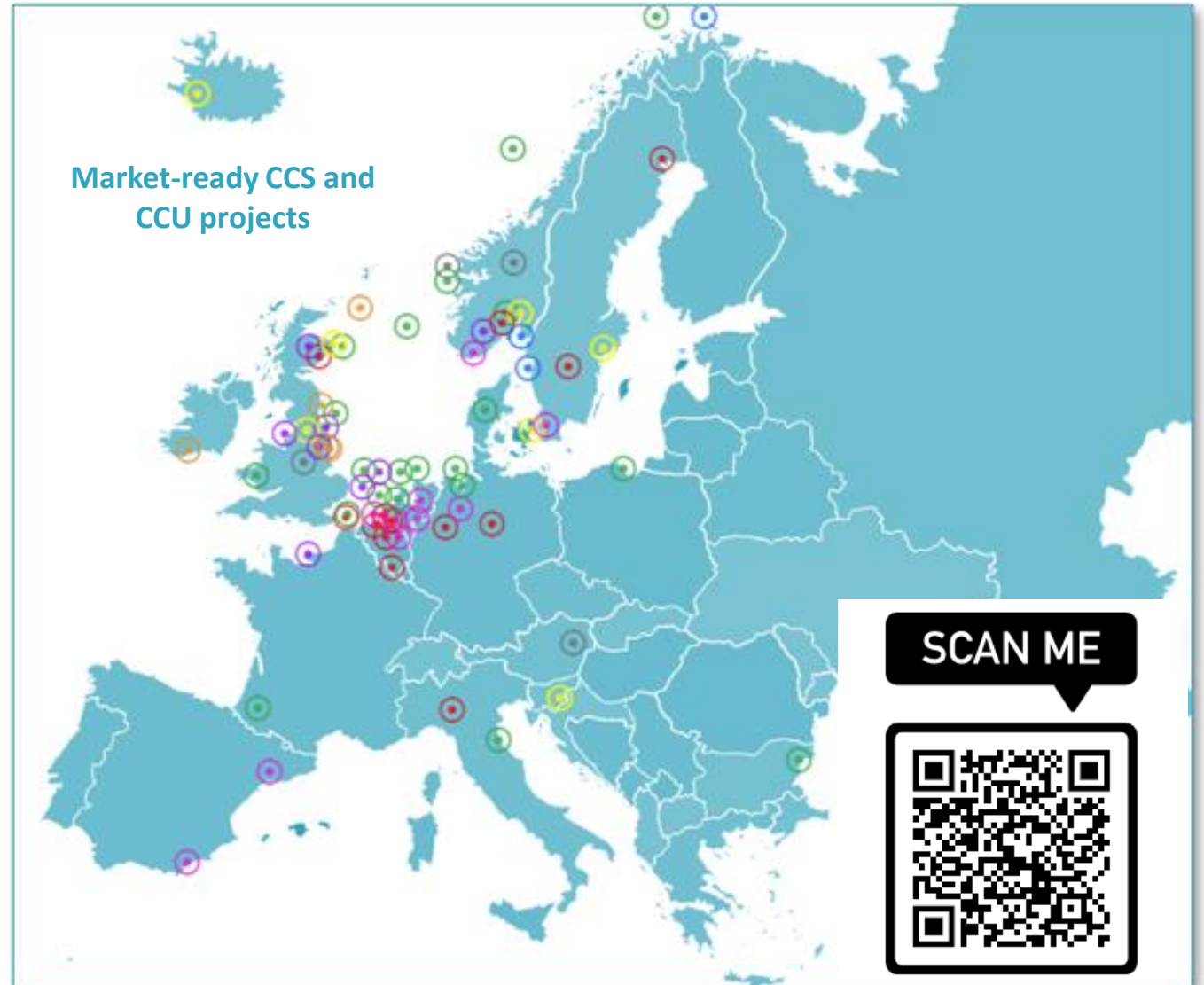
- **EU Industrial Carbon Management Strategy – Q4 2023 (?)**
 - Consultation – 31 August – CCUS Forum in Denmark 27-28 November
 - Report on CO2 T&S infrastructure + “An Interoperable CO2-Transport Network – Specifications for Transported CO2”
- **Net-Zero Industry Act (NZIA) - March 2023**
 - CCS included: focus on technologies and storage, planning
 - 50 Mtpa by 2030 CO2 storage capacity objective – Oil&Gas obligation
 - Member States to build up capacity: Reporting on storage and project progress, Supporting on access to finance, admin, Permit process maximum 18 months
- **National Energy and Climate plans end-June – France and Germany**
- **Monitoring reporting verification after reviewed ETS and CBAM**



CCS and CCU projects in Europe

- **56 CCS and CCU projects** currently under development in broader Europe (EU27+ Norway+ Iceland)¹
- **20 CCS and CCU projects** financed under the EU Innovation Fund
- **1 project reached Final Investment Decision** (Longship Project, Norway)¹
- **1 project expecting FDI in the next weeks** (Porthos, Netherlands)

1. CATF. "A Vision for Carbon Capture, Utilisation and Storage in the EU." May 2023.
2. 4 projects in the first call (2021), 7 in the second (2022), 9 in the third (2023).

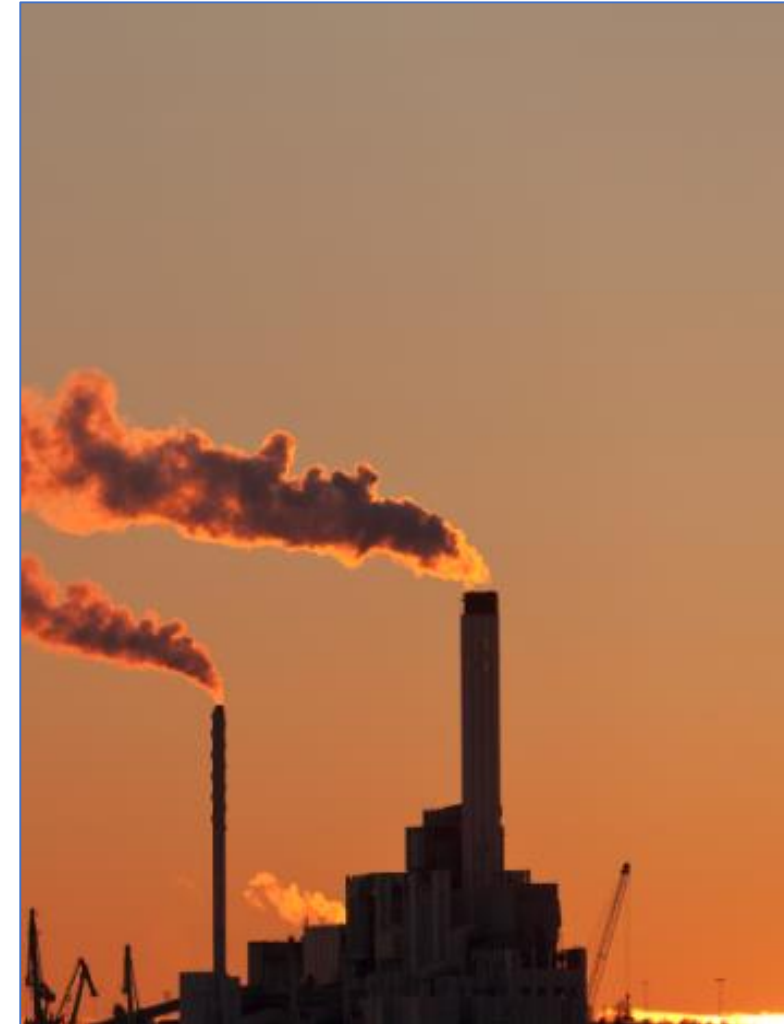


Implications of large-scale CCS and CCU

- **Theoretical CO2 storage capacity in EEA: 262-1520 GtCO2/year**
- **Current industrial emissions in EEA: 780 MtCO2/year**
- **Maximum industrial CCS in EEA: 520 MtCO2/year**
- **Additional non-industrial CCS (hydrogen, biomass...): 720 MtCO2/year³**

- **To be consistent with the 1.5° goal of the Paris Agreement, the EU needs by 2030⁴:**
 - 230-430 MtCO2/yr of CO2 removals in 2030
 - 930-1200 MtCO2/yr of CO2 removals by 2050
 - EUR 14 billion/yr in CCS and CCU investments

- **CCS and CCU are key to preserve the over 8 million jobs in hard-to-abate sectors in Europe while creating new value chains and jobs⁵**



3. CATF "Unlocking Europe's CO2 Storage Potential. Analysis of Optimal CO2 Storage in Europe." July 2023.

4. ZEP "How much CCS and CCU will be needed in 2030? – Objective: for Europe to be on track to reach climate-neutrality by 2050". July 2018.

5. Global CCS Institute. "Safeguarding Jobs and Industrial Competitiveness in Europe through CCS."

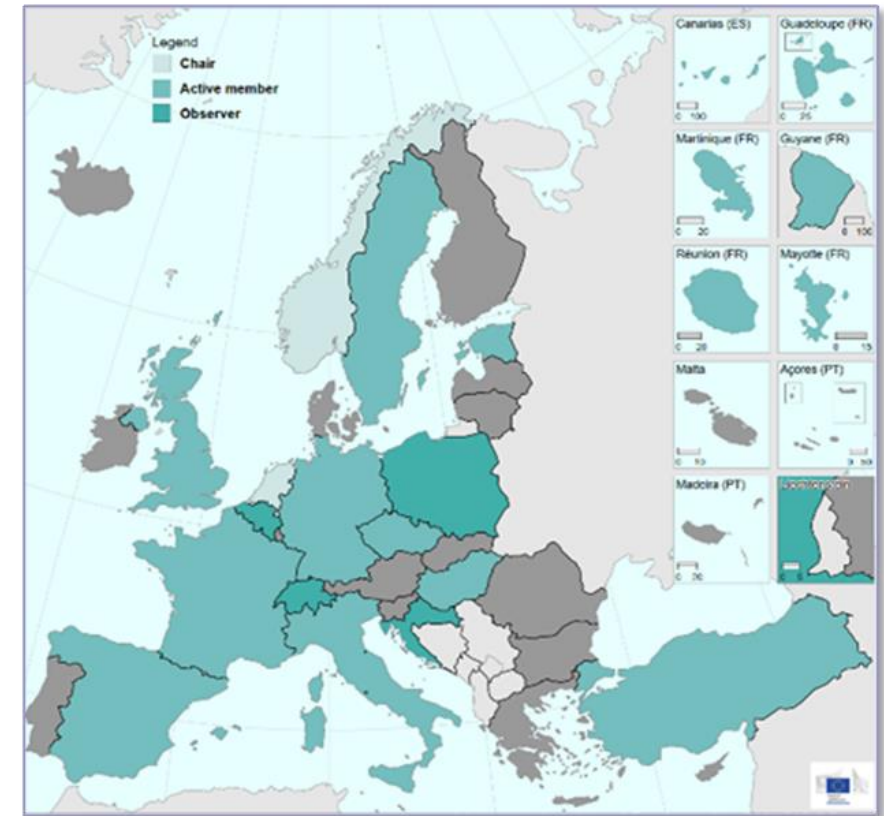


- **CCUS SET Plan:** Strategic Energy Technology Plan, a public-private venture set up in 2007 by the EU to foster the deployment of CCS and CCU.
 - **Zero Emissions Platform**
- **EERA CCS:** CCS-related joint programme (JT) of the European Energy Research Alliance, member-based organisation of research centres focused on energy.



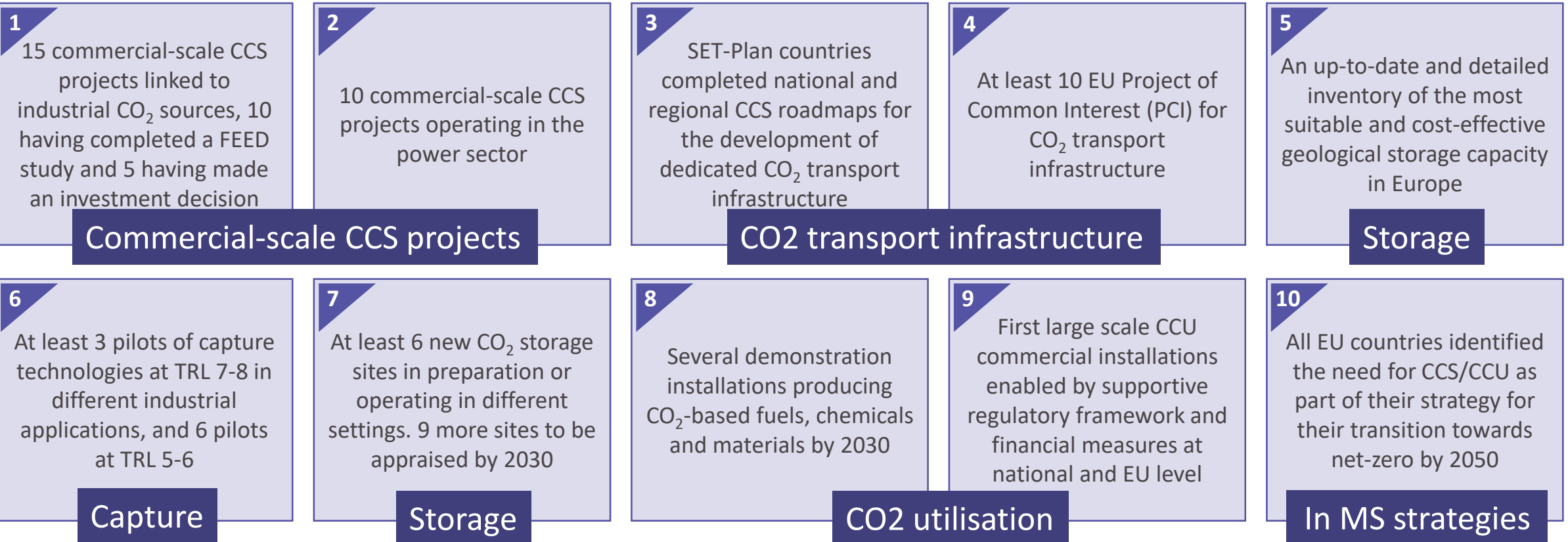
CCUS SET-PLAN – ACCELERATING THE TRANSITION

- **CCUS SET-Plan Implementation Plan (IWG9)** chaired by the Netherlands, Norway, and ZEP
- **Accelerating the transition through greater coordination** – EU, national, industrial and academic research
- **All parts of CCUS value chain**, including low-carbon hydrogen and CDR
- Updated CCUS targets: **50 MtCO₂/yr abated by CCS in 2030**



CCUS SET-PLAN 2030 TARGETS

50 Mtpa abated by CCS in 2030



Research & Innovation Challenges

- R&I priorities to bring CCS and CCU at scale⁶:
 - **CO2 capture:** flexibility, integrated systems, multi-user capabilities
 - **CO2 transport:** networks, quality standards, CO2 impurities
 - **CO2 storage:** remote emitters, monitoring, performance standards, storage capacity mapping, legacy wells;
 - **Cross-cutting:** capacity building of regulators, metering, social acceptance, life cycle assessment etc.



- ZEP and EERA identified the following **recommendations for investments in R&I**⁶:
 - Extend CCS to new industries while reducing costs
 - CCS for flexible power generation
 - CCS for hydrogen production (i.e. blue hydrogen)
 - Engineered carbon removals (BECCS, DACCS)
 - Creation of a EU-wide storage market
 - Role and scale of CCU applications
 - Public-private partnerships (ex. SET Plan)



Any questions?

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