

## **Impact of Research Infrastructures**

Impact of ECCSEL in several dimensions

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# CC(U)S proven technology (North Sea, North America), but too expensive and energy intensive for widespread deployment

Need for European regulation(s) and more joint infrastructure projects for CO<sub>2</sub> transport and storage The major knowledge gaps that remain within  $CO_2$  transport are in flow phenomena in pipelines, wells, and bulk transport vessels

CO2 transport



The potential of CCU options to mitigate  $CO_2$  emissions is generally low, relative to the scale of global emissions, but CCU can play a role for hard-toabate sectors like aviation and steel production.

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CO2 USE

Carbon capture technologies are still expensive and energy intensive. Focus more on energy intensive industries like cement and steel

The main research needs in CO<sub>2</sub> storage are improving efficiency of storage, through advancing dynamic reservoir capacity estimates or improved use of pore space, and demonstrating safe and permanent containment







#### **Enabling low to zero CO<sub>2</sub> emissions from industry and power generation**

The European CCUS Research Infrastructure

**Consortium:** 

Norway (Operations Centre), France, Italy, United Kingdom and Netherlands

23 research facility owners providing open access to 88 world class research facilities

(Continuously expanding with new members/partners and facilities)



Close CCUS knowledge gapsnaging the Risks of Extreme Events and Disasters to France Climation hand topt

Contribute to reduction of CO<sub>2</sub> emissions in accordance with the Paris agreement 1,5 – 2 degree target



Upgrades and new builds in the range of 200 Million Euro from 2015 until 2030

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#### The European Green Deal





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ECCSEL responds to the UN sustainable development goals (SDGs) by contributing to solutions that substantially reduce CO<sub>2</sub> emissions from industry and power generation.

With the focus of strengthening the services in the field of energy ECCSEL research projects, ECCSEL contributes to the overall vision of enabling low to zero CO<sub>2</sub> emissions from industry and power generation to combat climate change – two concrete examples:

7 AFFORDABLE AND CLEAN ENERGY 13 ACTION	7 AFFORDABLE AND CLEANENERGY 13 ACTION
Substantially reducing $\rm CO_2$ emissions in the cement sector is an important climate action measure.	Waste-to-energy plants constitute a large emission source of $CO_2$ today. More research is needed before emissions can be reduced at cost efficient rates worldwide.
ECCSEL's users at LEAP in Italy is about to demonstrate vital parts of the Calcium Looping concept, one of the most promising technologies for ${\rm CO_2}$ capture in cement plants	At various plants in the Netherlands, ECCSEL aerosol characterisation equipment contributes to the early adoption of $CO_2$ emission reduction at substantial rates, at waste-to-energy plants

# Supporting high priority indicators – first 5 years in operation

Торіс	Description	KPI	Target value	Priorit y	Source of info	Owner	Current status	Steps needed / performed
Creation of new concepts	Needs for research infrastructure: existing RI upgrades & new facilities	KP1 - Number of reports on agreed upgrade and new facilities	Short term (5 years) minimum 10	5	General Assembly meeting	OC-ECCSEL	List of planned upgrades complied; Some new builds / upgrades have started and/or are operational. New proposals have been submitted (f. ex. in IT and NO)	Start / complete construction
	Inputs from industry	KP2 – Number of workshops with industrial parties	1 annually	5	Operations Centre	Community Manager	IAG meetings and other meetings with Industry in 2019; one workshop held in FR and one in NO in June 2019	Analyse 2019 events. Identify target group and event, plan, invite and carry out event in 2020
	Technology scientific excellence documentation from the ECCSEL Operations Centre	KP3 - Technology scientific excellence documentation/ report on gaps	1 annually	5	Operations Centre	OC-ECCSEL	Ongoing: Work on revising the gap analysis has started, major revision will be completed as part of the ECCSELERATE project	Finish report

# Supporting high priority indicators – first 5 years in operation

Торіс	Description	KPI	Target value	Priority	Source of info	Owner	Current status	Steps needed / performed
Managing knowledge resources and research infrastructure	Performance and benefit analyses of ECCSEL RI	KP4 - Satisfied customers	At least 50 % satisfied - 5/5, no lower scores than 3/5	5	Operations Centre	OC- ECCSEL	Satisfaction survey was created. 2019: Start surveying more widely. Delayed due to slow process of signing SLA.	Collect satisfaction ratings from users during 2019. Report every 12 months to GA.
	Use of facilities and resources	KP5 - Number of ECCSEL research facilities used	40 times per year (transnational)	5	Operations Centre	OC- ECCSEL	Facilities used more than 150 times, but less than 40 transnational	All use needs to be reported to the OC every 6 months. ECCSELERATE project will increase the number of transnational accesses
	Membership development/exp ansion	KP6 - Number of partner countries	Minimum 1 member per year. Target is 13 members after 5 years	5	Operations Centre	OC- ECCSEL	No new members yet. Switzerland probably joining from 2020. Hopefully Poland as well.	Ministry level ECCSEL GA members need to push their counterparts in targeted countries while ECCSEL Management and Scientific members must push their scientific counterparts in targeted

# **Revision of high priority indicators – next 5-10 years**



## **Other Economic, Societal and Technical Impacts**

Transnational access deployment:

- Facility Owners/Operators:
  - Improve sharing and profitability of their facilities (better recognition and visibility)
  - Professionalizing accesses and services provision
  - Collective strategy and synergies
  - Transversal capacity building
- Industry, Projects/Users:
  - More visible and accessible R&D services (factsheet portfolio)
  - Effective and known criteria of quality and contractualisation (Shared policies and standards)
  - Support from the Operations Centre to select the more appropriate facilities and services

Help to strengthen the facilities use and the connection between external users and the facility Owners.
Those benefits open new opportunities contributing to a virtuous circle...





Increased funding

industry grants

applications

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Horizon 2020 / Europe,

#### **ECCSEL ERIC Facility Provider Benefits**

#### Part of a European Research Infrastructure

- International visibility and joint marketing
- Cost sharing, saving and prioritisation
- Partnership with other EU initiatives



#### New investments, activities and business

- More research facility investments
- New research projects
- Capacity building and jobs
- Spin-off businesses and products

#### Increased facility utilisation

- Attract new users/projects
- Standardised and • supervised access
- More operational activity
- Increased turnover
- High quality facilities, operation and services



#### **Other Economic, Societal and Cultural Impacts**

Data management and Policy:

→ECCSEL, as a RI, is leading the Data Management of the CCUS community:

- Improve quality of the produced Data (FAIR Principles)
- Promote Open Science and Open Data practices

→ As CCUS is highly involved in industrial activity and technology development, the accessibility and interoperability of ECCSEL data may strongly simulate the emergence of new services and data valorisation modes





# Thank you for listening

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