



The European CCUS Research Infrastructure

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# What is ECCSEL?

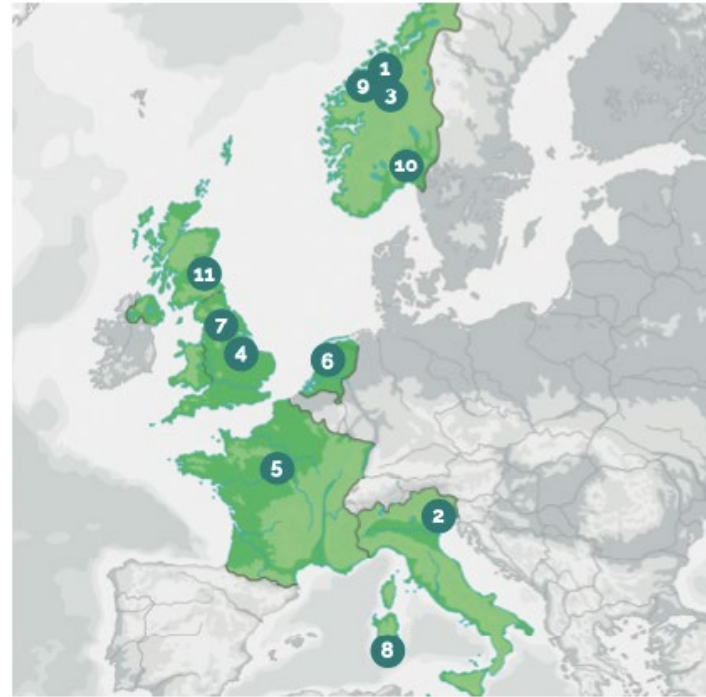
The European Research Infrastructure for CCUS

Member countries are Norway, the Netherlands, Italy, France and the UK

Provides coordinated access to 90+ CCUS research facilities

CO<sub>2</sub> capture, transport, use and storage

Coordinates development of CCUS research infrastructure and services to meet CCUS deployment needs



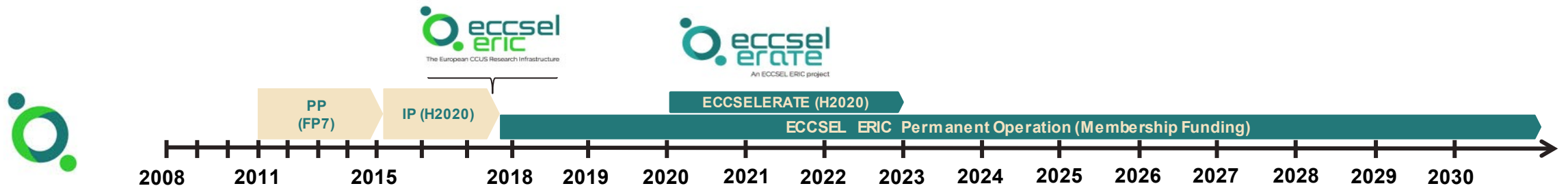
- 1 ECCSEL ERIC (Operations Centre)
- 2 OGS - Istituto Nazionale di Oceanografia e di Geofisica Sperimentale
- 3 SINTEF Energi As
- 4 BGS - British Geological Survey
- 5 BRGM - Bureau de Recherches Géologiques et Minières
- 6 TNO - Nederlandse Organisatie Voor Toegepast Natuurwetenschappelijk Onderzoek
- 7 University Of Sheffield - PACT
- 8 Sotacarbo
- 9 NTNU - Norwegian University Of Science And Technology
- 10 SINTEF As
- 11 University Of Edinburgh – SCCS



ECCSEL ERIC was founded using funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 675206



Included in the Roadmap of the European Strategy Forum on Research Infrastructures

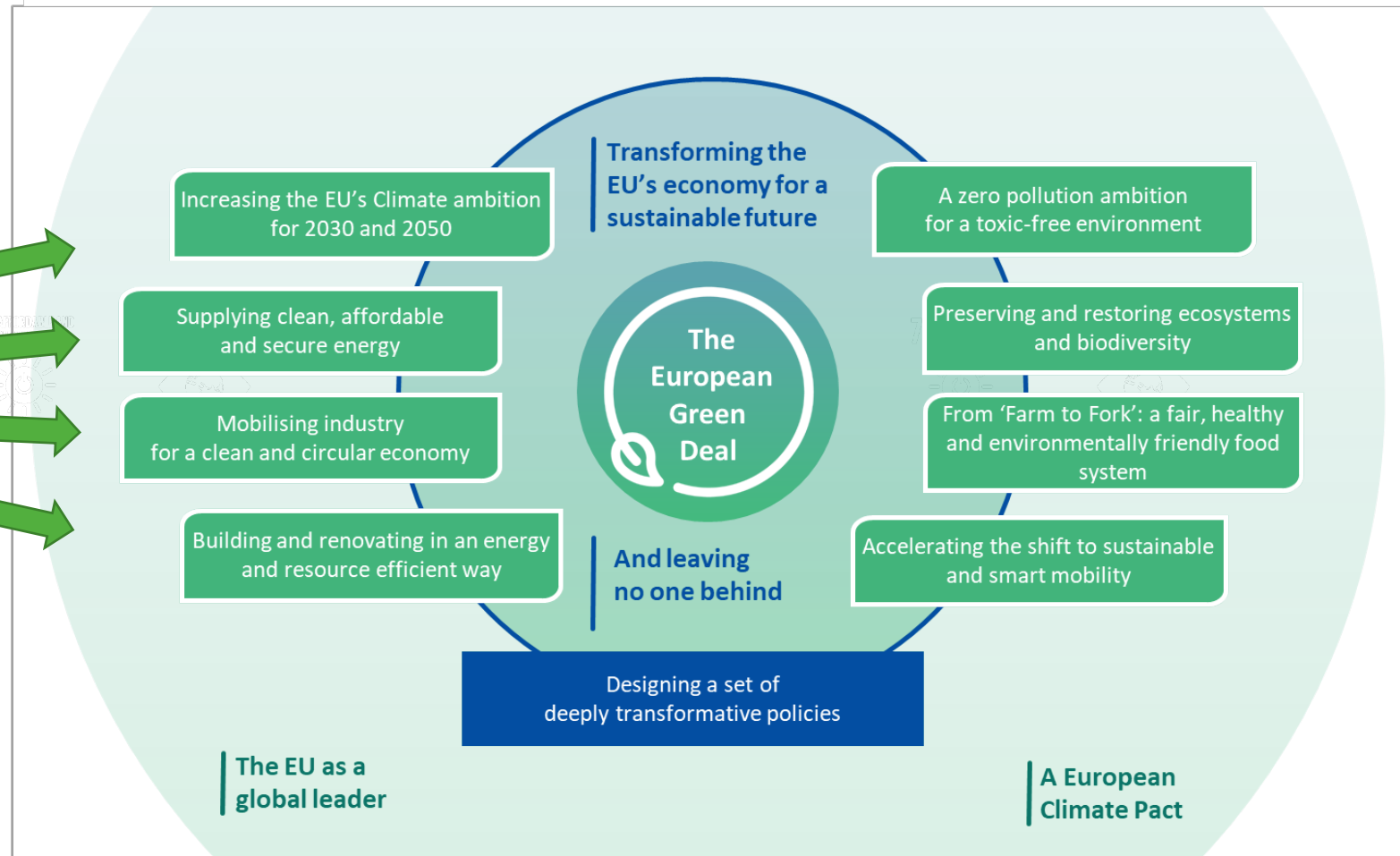
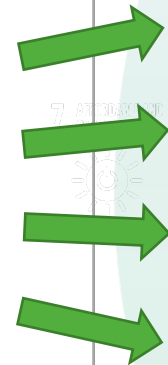


# The European Green Deal



The European CCUS Research Infrastructure

Directly involved in a number of EU projects and proposals with expected Green Deal impact/contribution



# Alignment with other international initiatives



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.

## SET-Plan

Development of CO<sub>2</sub> storage technologies to 2030 and beyond will require availability of world class R&D infrastructure. ECCSEL plays a key role in this pathway as specified in the SET-Plan IWG9 on CCS and CCU Implementation Plan: *'(ECCSEL is) a world-class research infrastructure facilitating ambitious R&D activities, European industrial initiatives, and education of specialists for the new CCUS industry'*.

## Mission Innovation

ECCSEL is aligned with the implementation of the Innovation Challenge IC3 (Carbon Capture) to enable the development and testing of new and novel technologies.





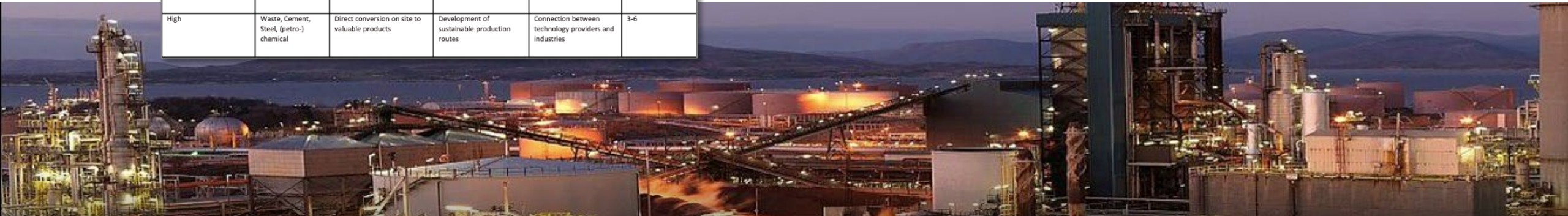
# Industry perspectives and ECCSEL research priorities

	Carbon Capture			Utilisation		
	Solid Adsorption	Liquid Absorption	Membrane / Others	Direct usage	Fuel production	Building block
Cement	Calcium looping (TRL 7)	Post-combustion capture using amine systems (TRL 7)	Oxy fuel combustion (TRL 6) Indirect heating (TRL 6) Heating with hydrogen (TRL 6)		Methane with added hydrogen (TRL 6-7)	Mineralisation to cementitious material (TRL 6)
Petrochemistry		Amine based capture of SMR outlet for blue hydrogen (TRL 7) physical absorption of ATR/POX outlet for blue hydrogen (TRL 9)	Heating with hydrogen (TRL 6)	Delivery to greenhouses (TRL 8)		
Iron & Steel	Sorbent based			Methanol with		Naphtha from CO and hydrogen (TRL 6)
	Priority level of research need	Industrial sectors	Key priority aim	Target settings	Infrastructure required?	TRL
	<b>CO<sub>2</sub> capture</b>					
Waste-to-Energy	High	Waste, Cement Steel, (petro-) chemical	Chemical post combustion capture	Improve solvent lifetime Lower energy needs	Mobile units	7
	High	Steel and (petro-) chemical	Hydrogen firing (high temperature heating)	NO <sub>x</sub> emission Operational flexibility/hybrid	Burner test facility	6
	High	Cement	Calcium looping	Sorbent durability	Demo plant	7
	Medium	Cement	Oxy fuel combustion	Upscaling	Demo plant	6
	High	Steel	Pre-combustion adsorption	Sorbent durability Sorbent lifetime Upscaling	Large scale demo plant	6
	<b>CO<sub>2</sub> utilisation</b>					
	Low	Location dependent	Delivery to greenhouses			8
	Medium	Waste, Cement, Steel, (petro-) chemical	Methanol production	Production rate Upscaling		6
	High	Waste, Cement, Steel, (petro-) chemical	Direct conversion on site to valuable products	Development of sustainable production routes	Connection between technology providers and industries	3-6

2021/22 Industry Workshop series - key industry sectors  
 Updated ECCSEL service model for industry/SME engagement  
 - knowledge sharing, capacity building, joint research

Identified research priorities for CO<sub>2</sub> capture and utilisation  
 Revising research priorities for CO<sub>2</sub> transport and storage

Design concept for new, large, multinational facility





An ECCSEL ERIC project

## First call for funded trans-national access

Open now

Closes end of June 2022

### Aim/scope

Extend ECCSEL services to industry e.g. cement, iron and steel, waste to energy, petrochemical

Collaborative research, knowledge sharing, capacity building

CO<sub>2</sub> capture, transport, use, storage



### 2021-2022 TRANSNATIONAL ACCESS CALL

#### INDUSTRY AND SMALL AND MEDIUM SIZE ENTERPRISE ACCESS TO ECCSEL ERIC FACILITIES

The first ECCSELERATE Transnational Access call offers access to ECCSEL ERIC facilities dedicated to researchers or research teams from industry and small and medium size enterprise (SME). The target of the call is to extend the ECCSEL ERIC user base to industry to meet identified needs of industry within CCUS research.

#### Conditions of the call

*Eligible applicants:* Researchers from industrial companies and SMEs covering all industrial sectors relevant for CCUS research. The Transnational Access project can be merged with other ongoing activities. Research done in collaboration between industry/SMEs and universities/research institutes will also be eligible.

*Technology Readiness Level (TRL):* All TRL levels are covered in the call.

*ECCSEL facilities accessible:* All ECCSEL ERIC research facilities is open for application.

#### *Eligible cost:*

- The running costs of the installation
- Costs for logistical, technological and scientific support to users' access, including ad-hoc training, preparatory and closing activities necessary to carry out user's work
- Travel and Subsistence funding for one researcher
  - Up to € 500 for travel
  - Up to € 100 for each day at the facility
  - Travel claim with receipts for all claimed expenses must be submitted



ECCSEL ERIC @ECCSEL\_ERIC [www.eccsel.org](http://www.eccsel.org)

## First call for funded trans-national access

What does funding cover?

Costs borne by facility to host researcher, including training and supervision

Modest travel and subsistence costs for user

For how long?

Depends on facility and nature of work

Typically days – weeks – month

Conditions

Facility and researcher cannot be based in same country

Short projects, can be combined with other research

**CATALOGUE**  
FIND THE BEST CO<sub>2</sub> STORAGE FACILITIES FOR YOUR PROJECT

Search tools 0/0/ALL

Studied STORAGE Technology 0/0/0

Research field that can be studied 0/0/0

Scale of research / facility 0/0/0


Countries 0/0/0

Access provider 0/0/0

State of Access 0/0/0

Forms of Access 0/0/0


[Search](#)



**IT5.1 CO<sub>2</sub> BOX**  
"CO<sub>2</sub> box" composed by a phase equilibrium test rig and a single-phase test rig

Other


ESF | Italy [Apply for access](#)



**IT1.8 DEEPLAB**  
DeepLab Sea Floor Landers for metoceanographic, physical and geochemical data collection

Monitoring


OSI | Italy [Apply for access](#)



**IT1.2 BIOMARINELAB**  
Ecological laboratory for microcosm / mesocosm experiments

Leakage, Leakage mitigation/remediation, Monitoring


OSI | Italy [Apply for access](#)



**IT1.3 PANAREA NATLAB**  
Panarea Natural Laboratory

Leakage, Monitoring

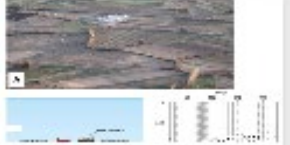
OSI | Italy [Apply for access](#)



**IT1.1 RESEARCH AIRCRAFT**  
Research AIRCRAFT equipped with high-tech remote sensing instruments

Leakage, Leakage mitigation/remediation, Monitoring


OSI | Italy [Apply for access](#)



**IT1.5 PITOP**  
PITOP Borehole Geophysical Test Site

Pressure/fracture, Migration, Caprock/well integrity, Microseismicity, Static modeling, Dynamic modeling

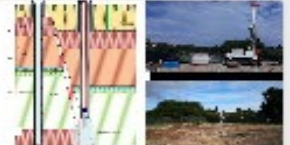
OSI | Italy [Apply for access](#)



**IT2.5 ADVANTEST ROCK**  
Advanced automatic multi-stage triaxial test system

Caprock/well integrity, Static modeling

SOTCARBO | Italy [Apply for access](#)



**IT2.4 SOTACARBO FAULT LAB**  
Sotacarbo Fault Laboratory

Migration, Leakage mitigation/remediation, Microseismicity, Leakage, Monitoring

SOTACARBO | Italy [Apply for access](#)



## Second call for funded trans-national access

### Likely scope

Addressing identified research priorities that will overcome barriers to broad CCUS roll-out in Europe

Expected August/September 2022

More information/news at website and social media channels

### Conditions

Facility and researcher cannot be based in same country

Short projects

Can be combined with other research





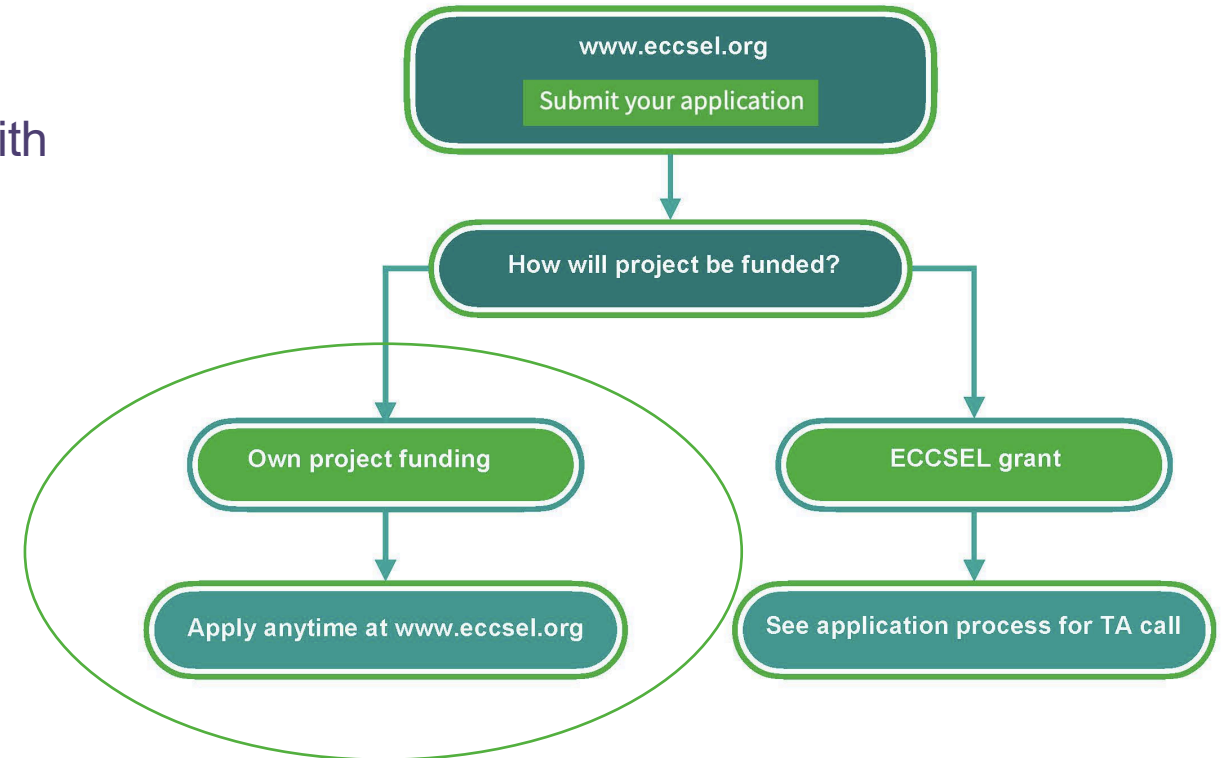
# Other ways to access facilities in the ECCSEL RI

ECCSEL facilities open to CCUS researchers with own project funds

No geographical restrictions

Streamlined application process

Apply anytime at [www.eccsel.org](http://www.eccsel.org)



# New members, observers, collaboration partners (MoUs) welcome



## Join ECCSEL (State Representative)

The information provided below is aimed towards national representatives from an EU Member State or Associated Member that could partner ECCSEL (for more information see [why ECCSEL](#) - link).  
Else, if you are a Facility Owner, go to [Join ECCSEL \(Facility owner\)](#) (link)

### Why join ECCSEL as a member?

By choosing ECCSEL, you are choosing to partner leading research institutes worldwide committed to facilitate fundamental and applied research for advancement in CCUS deployment in Europe.

### Benefits

#### Be part of a European approved RI legal entity

- International visibility and common marketing
- Increased opportunities for external cooperation
- Cost sharing and savings.
- Influence on international CCUS policies
- Partnership with other EU initiatives
- Common strategies increase cooperation and facilitate synergies

#### Access to ECCSEL ERIC resources/services

- Participate in ECCSEL ERIC events (training, conferences, etc) at preferential rates
- Use ECCSEL ERIC branding

#### Increased dedicated funding through

- EU Research and Innovation programmes, e.g., ERA ACT, Horizon Europe, etc.

- National grants and joint industry investments
- Joint / coordinated funding applications

#### Increased facility utilization

- European strategy to fill gaps of services not yet provided
- Standardized access process

- Increased turnover
- Synergised communication efforts
- **New investments, activities, and business opportunities**
- New research projects (including facilities expansions and investments)
- Capacity building, education, and training
- Innovations, spin-offs, and job opportunities

### Funding Policy

- ECCSEL solicits joint funding from the European Union, industry, and regional and national agencies.
- Members have the authority to decide how to assume their contributions to ECCSEL ERIC.
- Operational costs of facilities are recovered from facility users, subject to funding via research projects grants and industry.

### ECCSEL Members commitments

- Pay annual fee
  - Provide a minimum of one facility
  - Support/initiate integration of national facilities in own and other Member States
- Observers have the same right as Members apart from their vote right at the General Assembly.*

### How to join?

Contact [info@eccsel.org](mailto:info@eccsel.org)



### See also

- [What is CCUS?](#)
- [What is ECCSEL?](#)
- [Access ECCSEL](#)



## Join ECCSEL (Facility Owner)

The information provided below is aimed towards institutions with research facilities that could be included in ECCSEL (for more information see [why ECCSEL](#) - link).

Else, if you are representative from an EU Member State or an EU Associated Member go to [Join ECCSEL \(State Representative\)](#) (link)

### Why join ECCSEL as a Facility Owner?

By choosing ECCSEL, you are choosing to partner leading research institutes worldwide committed to facilitate fundamental and applied research for advancement in CCUS deployment in Europe.

### Benefits for facility owners

#### Be part of a European approved RI legal entity

- International visibility and common marketing
- Increased opportunities for external cooperation
- Cost sharing and savings
- Influence on international CCUS policies
- Partnership with other EU initiatives
- Common strategies increase cooperation and facilitate synergies
- Access to ECCSEL ERIC resources and services
- Participate in ECCSEL ERIC events (training, conferences, etc) at preferential rates
- Use ECCSEL ERIC branding, e.g., in marketing of own ECCSEL facilities

#### Increased dedicated funding through

- EU Research and Innovation programmes, e.g., ERA ACT, Horizon Europe, etc.
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#### Increased facility utilization

- European strategy to fill gaps of services not yet provided
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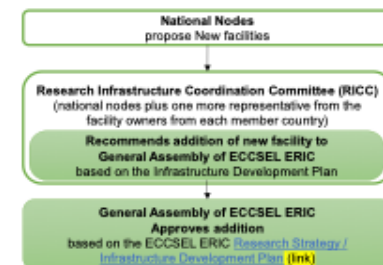
- Synergised communication efforts
- ECCSEL common data management allows shared open and fair data implementation at reduced cost (compared to individual developments)
- **New investments, activities, and applied research**
- New research projects (including facilities expansions and investments)
- Capacity building, education and training

### Facility owner commitments

- Contribute to the Member national node according to Member decision
- Provide minimum of one research facility
- Support integration of national facilities in own and other Member States

### How to add new facilities?

If the facility is within an ECCSEL member country follow the procedure below, otherwise contact [info@eccsel.org](mailto:info@eccsel.org)



The criteria for addition of new ECCSEL facilities include: relevance of provided services, user needs, uniqueness and excellence.

For more information contact [info@eccsel.org](mailto:info@eccsel.org)

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- [Access ECCSEL](#)

# Thank you for your attention

[www.eccsel.org](http://www.eccsel.org)



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