

# Accelerating CCS Technologies

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## Overview of the ACT Initiative November 5, 2019

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Co-funded by the  
European  
Commission within  
the Horizon 2020



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# Why ACT?

- Carbon Capture, Utilization and Storage (CCUS) is an essential part of the toolbox for reducing CO<sub>2</sub> emissions.
- International cooperation and knowledge-sharing are crucial factors for widespread deployment.
- Leverage skills, capabilities, etc.

# ACT – How it works

- ACT is a fit-for-purpose, partner-driven, *flexible* and an easy-to-join multi-national mechanism that is focused on accelerating CCUS technology.
- Research Council of Norway (RCN) is overall coordinator for the effort
- National funding stays within country to fund researchers (e.g., U.S. funds U.S. researchers, etc.)
- Follows national procedures for funding
- Can tailor to your countries interests (e.g., capture, or even more specific technologies)
- Does require coordination amongst members for overall call for proposals and evaluations; and agreements between project partners.
- Selected projects monitored for progress
- Third call under consideration: *New partners are welcome!*

# CSLF Members Participating in ACT1 and ACT2

	Australia	Brazil	Canada	China	Czechia	European Commission	France	Germany	Greece	India	Italy	Japan	Korea	Mexico	Netherlands	New Zealand	Norway	Poland	Romania	Russia	Saudi Arabia	Serbia	South Africa	United Arab Emirates	United Kingdom	United States	
ACT						X	X	X	X						X		X			X						X	X

- Non-CSLF Members participating in ACT: Spain, Switzerland, Turkey; Nordic Energy Research
- Momentum and interest is growing



# Status for the two ACT calls

## 1<sup>st</sup> Call for proposals, June 2016

- 10 partners from 9 countries cooperate
- 8 new projects decided for funding in 2017
- Project period 3 years
- 36 M€ from ACT
  - of which ~11,9 M€ from the EC

## 2<sup>nd</sup> Call for proposals, June 2018

- 13 partners from 11 countries cooperate
- 12 new projects decided for funding in June 2019
- Project period up to 3 years
- 31 M€ from ACT
  - No EC money
  - Kick off in Sept/Oct. 2019

# 1<sup>st</sup> call. Projects funded, 2017-2020

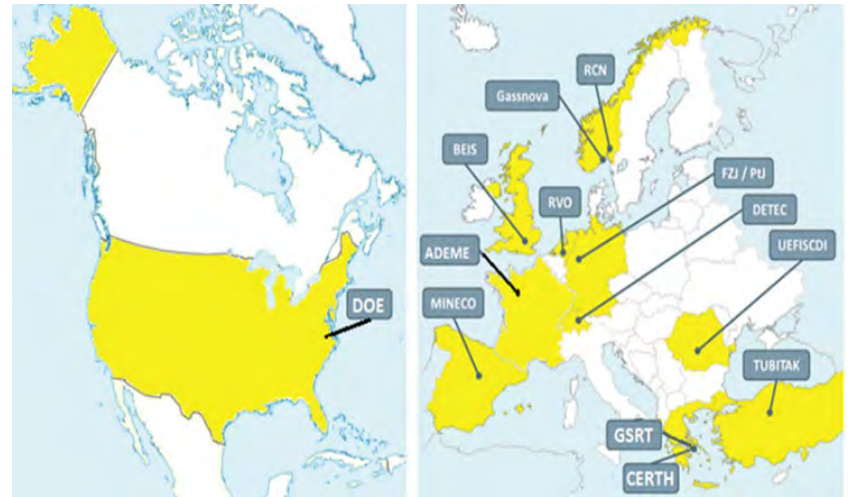
Project	Activities	ACT, M €	Norway	Netherlands	UK	Germany	Romania	Switzerland	Spain	Turkey
ALIGN	Chain integration, clusters	14,5	x	<b>X</b>	x	X	X			
ELEGANCY	Chain integration, hydrogen	8,9	<b>X</b>	x	x	X		x		
PRE-ACT	CO2 storage, pressure handling	4,5	<b>X</b>	x	x	X				
ACORN	Full chain CCS / infrastructure	2,0	x	x	<b>X</b>					
DETECT	CO2 storage, risk assessment	2,0		<b>X</b>	X	X				
ECOBASE	CO2-EOR SouthEast Europe	1,2	<b>X</b>	x			x			x
GASTECH	Gas switching technology	1,7	<b>X</b>	x			x	x	x	x
3D-CAPS	3D printed sorbents	1,5	X	<b>X</b>			x			

- Total budget for 8 projects: € 50 M
- ACT supporting: € 36 M

**bold X** = lead country  
 more info at [www.act-ccs.eu](http://www.act-ccs.eu)

# ACT call 2 in 2018, partners

- **France**, Germany, **Greece**, The Netherlands, Norway, Romania, Switzerland, Spain, Turkey, UK and **USA**  
(green = new in ACT2)



- Total budget: up to 30 M€ (varies from 0,4 - 6M€)
- Projects encouraged to target issues defined by:
  - SET-Plan CCS and CCU Implementation Plan
  - Mission Innovation Research Priorities
  - ...and make use of world class infrastructure, e.g ECCSEL



# 2<sup>nd</sup> call. Projects funded, 2019-2022

Project	Activities	ACT, M €	France	Germany	Greece	Netherlands	Norway	Romania	Spain	Switzerland	Turkey	UK	USA
DigiMon	Digital Monitoring of storage sites	5		X	X	X	<b>X</b>	X				X	X
LAUNCH	Predict and control degradation	5.1		X		<b>X</b>	X					X	X
AC2OCEM	Oxyfuel technology for cement industry	3	X	<b>X</b>	X		X			X			
ACTOM	Monitoring of offshore storage	1.5				X	<b>X</b>					X	X
ANICA	Carbonate looping process	2.4		X	X							<b>X</b>	
FUNMIN	Mineral carbonization	0.7	X			X			X			<b>X</b>	
MemCCSea	Compact membrane offshore	1.7		X	<b>X</b>		X						X
NEWEST-CCS	Technology for CCS in WtE plants	2.2		X		X	X					<b>X</b>	
PrISMa	Sorbent materials for capture	2.1					X			X		<b>X</b>	X
REX-CO2	Reuse of existing wells for storage	2.5	X			<b>X</b>	X	X				X	X
SENSE	Integrity through ground surface monitoring	2.7	X	X			<b>X</b>		X			X	X
SUCCEED	CO2 storage and geothermal	2.5				X					X	<b>X</b>	

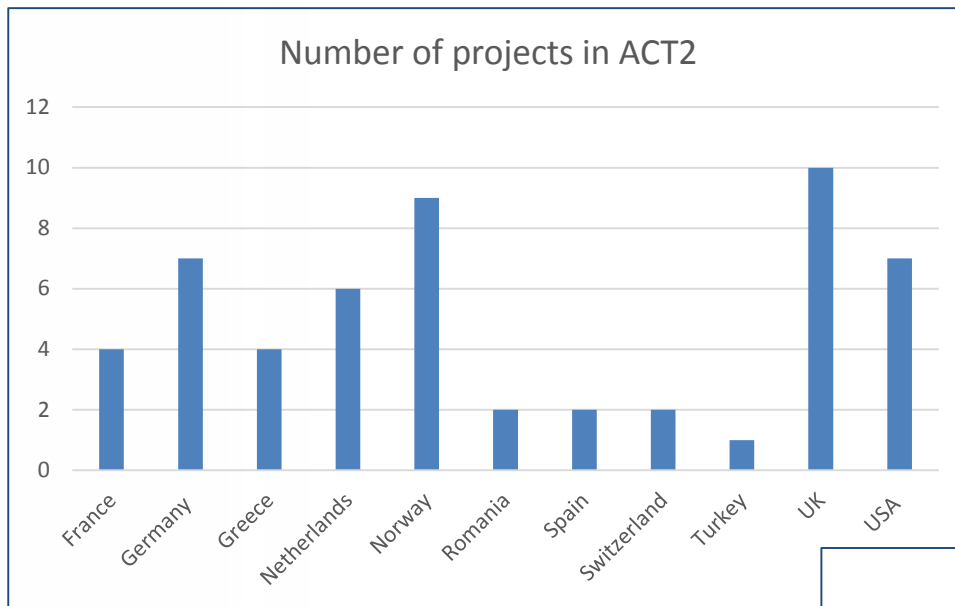
- Total budget for 12 projects: € 43,5 M
- ACT supporting: € 31 M

**bold X** = lead country

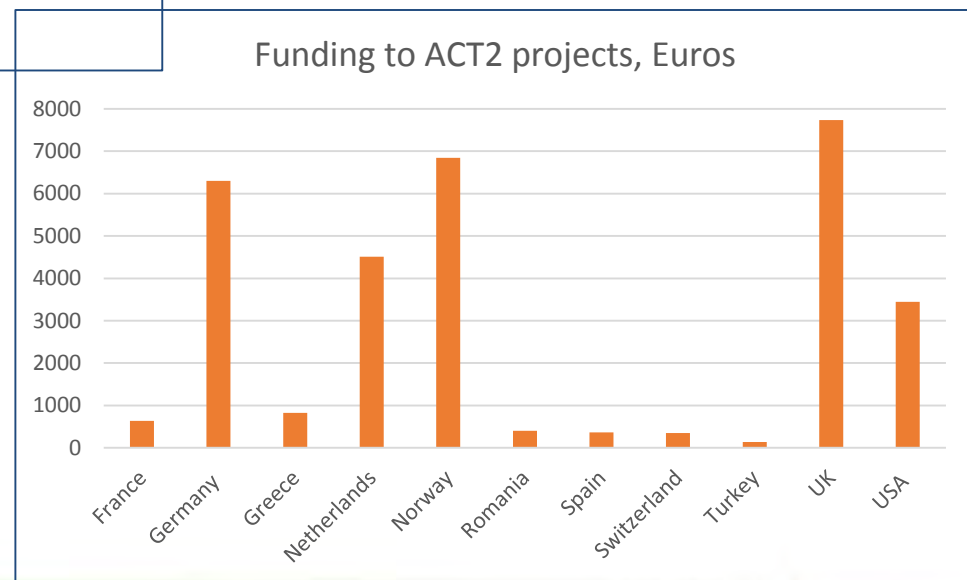
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# Distribution of ACT2-projects



- Projects have included communication, knowledge sharing and social aspects
- Germany, The Netherlands, Norway, UK and USA participate in 7-10 of the projects
- France, Greece, Spain, Switzerland and Turkey participate in 1-4 projects
- Participants from 3-7 countries in each project



# Additional activities and Knowledge Sharing

- ACT is more than just the single projects
- The projects can learn from each other
- Knowledge Sharing Workshop in Romania 24 October 2017 for funded projects
- Knowledge Sharing Workshop at RWE, Germany, 13 November 2018
- ...in Greece in 6-7 November 2019
- The projects should together with the ACT consortium and other initiatives lead to accelerated CCUS deployment globally



# Summary

- **Lessons Learnt**

- Cooperation within the ACT consortium is very good
- NO, UK and NL very much in line with same goals for a full chain CCS implementation, industry interest and relevant
- Smaller CCS countries benefit much from the cooperation
- Hard to attract industry in some countries
- Extended consortium (included US and France) in 2018 and NER in ACT3

- **Added value and Impact**

- Cooperation between the funded project (from ACT1) is very good
- Learnings across borders and across projects, very beneficial to all partners
- The majority of projects (from ACT1 and ACT2) are at TRL 2-5, higher TRL projects are more challenging...

