

# Accelerating CCS Technologies

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## Evaluation report on Communication

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**Authors:** Anna Rosenberg (GSRI), Nicoleta Dumitrache (UEFISCDI), Aage Stangeland and Ragnhild Rønneberg (RCN)

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## 1. This is ACT

ACT was established in 2016 with 10 partners from 9 European countries as a response to the H2020 call in 2015 on low carbon technologies. This consortium joined forces with the aims to accelerate and mature CCUS technologies by making funds available for R&D and innovation projects and a solid basis for knowledge sharing in an open mind approach.

Since it was kicked off in February 2016, ACT has become a widely known programme within the transnational CCUS R&D initiatives in Europe and beyond, and has broadened the initial Consortium with funding agencies from Europe, India, Canada and the USA. A total of 16 funding agencies are involved since 2020.

The background for ACT is based on the fact that the level of carbon dioxide (CO<sub>2</sub>) released into the atmosphere has increased significantly since the industrial era, and it is well documented that burning fossil fuels emit CO<sub>2</sub> with serious and negative impacts on the climate. Carbon Capture, Utilisation and Storage (CCUS) is part of a portfolio of technologies to combat climate change. CCUS can help mitigate CO<sub>2</sub> emissions from electricity production and is a prerequisite for reducing CO<sub>2</sub> emissions from industry such as steel, cement, chemicals and petrochemical refining.

CCUS has an important role in the transition to a low-carbon economy. ACT has contributed to accelerating CCUS Technologies by making available funds for transnational research and innovation activities.

The CCUS technology involves capturing CO<sub>2</sub> from large CO<sub>2</sub> emission point sources, such as fossil fuelled power plants and large, energy intensive industrial plants, compressing it for transportation and then injecting it deep into a rock formation at a carefully selected and safe site, where it is permanently stored. In addition, CCUS projects which deal with innovative and cost reducing utilisation of CO<sub>2</sub> have also been in the scope for ACT.



Figure 1: Geological storage of CO<sub>2</sub>

The IPCC 1.5 degrees report makes it very clear that CCUS must be part of an affordable and socially acceptable energy transition. The thematic priority CCUS is essential to the climate-neutrality goal of Europe, which has been underlined in a number of policy documents issued by EC and others in the recent years.

The ACT calls have asked for RD&I projects that can lead to the deployment of CCUS. Project proposals with high industrial relevance and industrial involvement have been prioritised. Of major importance is also that the projects being funded should comply with the SET Plan Implementation Plan for CCUS (Action 9) and the Mission Innovation research priorities for CCUS.

We welcome your visit to the ACT webpage [ACT \(act-ccs.eu\)](http://act-ccs.eu) for updates on activities, events and projects results.

Even if ACT formally ended as an EC initiative on the 30 September 2021, the follow-up, monitoring and close interaction with the running projects will continue. The ACT2-projects end in autumn 2022/winter 2023 and the ACT3-projects will end autumn in 2024.

## 2. Executive summary

ACT is a fit-for-purpose, partner-driven, flexible and an easy-to-join funding scheme that serves our ambition: **to make CCUS a commercially viable climate mitigation technology.**

ACT has undertaken three successful calls (in 2016, 2018 and 2020), and has launched an Open Call, and the ACT partners have established themselves as a powerful multilateral funding scheme for research and innovation dedicated to CCUS.

The ACT partners have done a comprehensive job throughout the duration of ACT to communicate and disseminate the ACT scope, calls and results.

First of all, all ACT partners have made coordinated efforts to reach out to the CCUS research community and interested stakeholders as well as to potential applicants before all three ACT calls and to inform about the ACT Open Call. This effort includes webinars, news articles at the ACT and ACT partners web sites, related publications in various scientific and non-scientific venues and through social media. The ACT calls have also been presented at seminars, conferences and targeted meetings at regional, national and international level.

Furthermore, it has been of great importance to communicate results from funded projects throughout the ACT period. This has to a large extent been done by the projects themselves, but the ACT partners have also communicated results on webinars, seminars, conferences and thematic meetings. Results have also been communicated at the ACT web site.

An evaluation of the communication and dissemination of results to the various target groups - national wise and internationally is included in this report.

A total of 33 projects have been funded with a total amount of ~100 mill EUR. Each ACT project is however more than the sum of national efforts. The ACT projects are currently in different stage of their life: the ACT1-projects were completed in December 2020, the ACT2-projects are in their last year of operation and the ACT3-projects are kicked off in the autumn 2022 and will run for 3 years. Results of significant value, relevant to the industry and policy makers have and still are being provided by the ACT projects. ACT has

- Paved the way for large scale CCUS deployment, e.g. provided results of relevance to development of *Longship*, *Porthos*, and also the *Scottish CCUS cluster*.
- Many companies all over Europe (and also worldwide) considering moving into CCS thanks to ACT, which has provided the necessary competence and knowledge.
- Delivered results complying with the European SET Plan Implementation and Mission Innovation research targets.
- Contributed to the collaboration between partners (in Europe and across the Atlantic) who without ACT would not have found each other (not at all or not that easily).
- Presented and shared knowledge, lessons learned and ideas in the annual ACT knowledge sharing workshops since 2016.

In the following pages a more detailed report is given for each of the calls and the projects respectively.

### 3. Communication within the ACT consortium

Since 2017, the ACT consortium has carried out weekly or biweekly consortium Telcon meetings with a standing agenda, reflecting the work done in the various WPs and with a strong focus on call progress and status of the funded projects. This has ensured a close contact, excellent collaboration and coordinated follow-up amongst partners.

Also, for developing different tasks (e.g. distribution of projects to external experts, planning of knowledge sharing workshops etc.), internal small-size groups were formed and at the biweekly meetings updated the consortium about the progress, actions made and asked for inputs in order to conclude the task. In addition, a special platform and tool to share documents and work together has been created and maintained by the Call Secretariat and has been a useful and user-friendly tool for working together on common documents or having easy and instant access as a repository to all ACT documents.

The Call Secretariat has always coordinated and facilitated at all instances issues arisen, and actively contributed to maintain excellent relations between partners, projects and communicate key messages beyond the close ACT family.

### 4. Communication with the projects

There has been continuous interaction with the projects. All projects have submitted quarterly progress reports according to the procedures laid out in the ACT Monitoring Guidelines.

Representatives from the ACT consortium have also participated at project meetings at least once a year. Additional meetings between ACT partners and projects have also been organised when needed. This has mainly taken place when the projects need to discuss changes in their project plan with the funding agencies.

For the three large projects in ACT1 (ALIGN, ELEGANCY and Pre-ACT), the mid-term face-to-face meetings were organised after 18 months of implementation with the presence of participating ACT funding agencies, members of the Scientific Advisory Group and experts, which provided an excellent opportunity for close monitoring and meaningful exchange of knowledge.

All of the ACT2-projects were invited to mid-term review meetings, during which external reviewers had the opportunity to discuss and advise the project-members for their further development (and improvements of the process and work ahead).

A continuous and constructive communication between the ACT partners and the projects has been promoted and employed.

ACT representatives at national level and the ACT Secretariat have always been available for the projects on email and telephone, as well as for face-to-face meetings when necessary. This has ensured an efficient dialogue and many project leaders have stated that they appreciate the close contact with the ACT funding agencies.

## 5. Communication between the projects

ACT encouraged good communication/clustering between funded projects even from the first Call and the first Knowledge Sharing Workshop. The projects have attended the annual knowledge sharing workshops and this has resulted in fruitful collaboration between several projects. At the first event, a dedicated section was just for projects to ask questions to each other and find common research interests. Furthermore, the 2019 Knowledge Sharing Workshop, included a special session entitled “speed dating”, amongst the coordinators of the ACT1 and ACT2-projects, to foster collaboration between ACT-funded projects.

There has been very good collaboration on dissemination and one example is the seminar called "EU CCS Storage Research Projects – Science-Policy Showcase" organised in Brussels on the 10 September 2019. The seminar was planned as a joint action by ELEGACY, ALIGN, PRE-ACT, ECOBASE and several other European projects. The seminar had a very good impact on spreading results and key messages to many CCS stakeholders, policy officers and representatives of the EU.

There has also been ongoing scientific collaboration. ACT has funded several projects on CO<sub>2</sub> storage monitoring in the second call and a fruitful collaboration between these projects (DIGIMON, SENSE, ACTOM) is ongoing. One recent example of collaboration between ACT2 and ACT3 projects is the project CEMENTTEGRITY funded in the third ACT call. The project will study CO<sub>2</sub> wells, which is also addressed by the REX-CO<sub>2</sub> project funded through the second ACT call.

Finally, there are several other collaborations and synergies between ACT projects which in many occasions have joined forces.

## 6. Communication with stakeholders

After kick-off of ACT in February 2016, ACT became quite soon a well-known initiative for funding R&D and innovation projects and as a knowledge sharing platform within the CCS (later extended to CCUS) domain.

The ACT partners have presented ACT at several meetings and conferences, ranging from technical conferences to meeting for the SET-plan CCUS implementation working group. The ACT partners have also had a close dialogue with other CCS initiatives like Carbon Sequestration Leadership Forum (CSLF), the European Zero Emission Platform (ZEP), Mission Innovation, and IEA GHG. A continuously updated standard presentation have been provided by the ACT coordinator – to make sure that all who informs about ACT gives the same information (but welcome to adapt it to the national/international audience at the specific conferences/meetings).

Also, within the knowledge sharing workshops organised by ACT, depending on the country that organised it, stakeholders with activities in CCS/CCUS in the host country and beyond were invited to present latest activities and be active in the event.

It is indicative of the interest sparked by the annual Knowledge Sharing Workshop and other events where ACT has participated the intense live interaction through social media as well as the high numbers in page views and visits, during and shortly after these events.

Summary reports from the 5 knowledge sharing workshops are made publicly available [here](#).

Finally, the matchmaking page in the ACT website (<http://www.act-ccs.eu/matchmaking>) has proven to be a valuable tool for partner search and numbers almost 90 stakeholders, both active and non-active ACT partners, industry and academia from 16 countries. The ACT's matchmaking section has been especially active in periods when Calls were open, and it is constantly being updated - sign of ACT's increasing significance in the CCUS domain.

### **a) European Commission**

The ACT coordinator has had a close and valuable dialogue with the project officer at EC, Vassilios Kougionas in the years from the autumn 2015 until June 2021, and with his successors the last months of 2021. This has ensured an effective flow of information and results between ACT and EC.

The Case Officer at EC has also attended several of the ACT Knowledge Sharing Workshops with very good and informative presentations of EC perspectives on CCUS and the role of ACT as a strong and successful instrument for transnational RD&I projects addressing a number of targets set out by the SET-plan implementation plan as well as the Mission Innovation Research priorities for CCUS, respectively.

ACT was subject for an external review after 15 months and was subsequently invited to a review meeting with the EC-project officer, the EC-project financial responsible and the external reviewer in June 2018. We experienced this review process and dialogue with the EC representatives as very valuable and constructive.

### **b) ERA LEARN**

ACT has attended and contributed to several ERALEARN meeting where learnings have been shared between new ERA NETS and established once. ACT took great advantage of this type of interaction and knowledge sharing when ACT was unexperienced and later could contribute to knowledge sharing with new Cofunded initiatives. The ERALEARN Office has also been very kind in supporting and assisting when issues raised. From ERALEARN also templates for reports have been provided.

### **c) Industry**

The ACT partners have strived to keep a close dialogue with key industrial stakeholders. Conferences, seminars, and project meetings have been important venues where the ACT partners have informed industrial stakeholders on the ACT calls and the advantages of participating in ACT projects.

A number of the ACT funded projects have significant industry participation with in-kind and/or cash contribution. However, only few of the projects are led by industry - DETEC, NEXTCCUS, CoCaCO2La and CREATE are good examples of industry-led ACT-projects.

### **d) Policy makers**

In addition to the close dialogue between the ACT coordinator and the EC project officers there has also been good dialogue at national level. All ACT partners have prioritised close communication with their ministries and public bodies within the CCUS and energy sector in their own countries. This has undoubtedly increased the awareness of CCUS as an important tool for climate measures at national, regional and international levels. ACT has participated in discussions at national parliaments, has

conducted open consultations and has also participated in meetings related to combatting climate change in the European Parliament (details can be found in the ACT website).

### e) National CCUS communities

ACT partners have been liaising with CCUS communities at national level. The activities vary from country to country, but the ACT partners have kept a close contact with researcher communities to keep them informed about the ACT calls and knowledge sharing activities within ACT. Several ACT partners have also reached out to NGOs and industrial clusters.

## 7. Dissemination of results

There have been mainly two levels of dissemination; one from the ACT-funded projects (to ACT and other stakeholders) and one from the ACT consortium partners to public and private audiences. A number of presentations have been given and results discussed at meetings carried out:

- Directly from the projects (see their respective websites)
- From the ACT-consortium partners at national meetings
- From the ACT- coordinator and WP leads at international meetings (IEA-GHG, ZEP, CO2-GeoNet, CO2-Club, ECSSEL, etc)
- From the ACT-coordinator at SET Plan Implementation plan meetings (Board meetings and at the SET Plan IWG-meetings, action 9 on CCUS) and at MI-events.

Link to all projects is available at the ACT-website [here](#).

The ACT deliverable: *D4.4 Evaluation of project results* is also a relevant reference to this part of dissemination. The document can be found on our web.

## 8. CO2-DataShare-base

In addition to the reports from the projects (found on the act-ccs web here), a work by the ACT consortium partners there has recently been carried out with the intention of establishing a CO2-DataShare-base with results from (all) ACT-funded projects.

A CO2-DataShare appears to be a very good platform for the ACT projects to share their data with the public, including the wider community of CCUS researchers and stakeholders. All ACT-projects are invited, on voluntary basis, to share their data at the CO2-Data-Share platform accessible at the ACT-web page.

The CO2DataShare consortium is planning to submit an application to US-DOE and Gassnova, asking for funding for a 2-3 years trial period. There will be NO costs for the ACT consortium in this trial period. The cost model for operating CO2-DataShare after the trial period will have to be discussed later. The CO2-DataShare-base provides a great opportunity for ACT also to contribute to further digitization of our knowledge sharing.

This work has just started when ACT formally ends as an EC Cofunded initiative in November 2021, but it is planned to continue after this official ending date.