**Carbon Sequestration leadership Forum** 

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Prepared by CSLF Secretariat

# Summary of the Carbon Sequestration Leadership Forum (CSLF) Technical Group Mid-Year Meeting

Hosted by Delegation of Poland

13 June 2023

**1. Meeting protocols/safety briefing:** Ms. Åse Slagtern, Chair of the Technical Group, opened the meeting and described protocols on how the meeting would be conducted. The Chair welcomed delegates and attendees assembled at the meeting in Warsaw and those joining virtually. She noted that this was the third CSLF meeting hosted in Poland. Delegates around the table were then asked to introduce themselves, followed by meeting observers.

2. Adoption of agenda: The draft agenda was adopted by delegates without changes.

**3. Approval of minutes:** Minutes from the June 2022 Mid-Year Meeting were approved by the delegates without changes.

**4. CSLF Secretariat Report:** The CSLF Secretariat, represented by Ms. Stephanie Hutson, provided a short overview of recent activities, including those from the previous year's meetings. Notable activities included the planning for the 2023 Mid-Year Meeting and the associated workshop on CCUS in Central and Eastern Europe.

**5. Meeting host welcome/overview: CCUS Activities in Poland:** Piotr Dziadzio, Undersecretary of State, Ministry of Climate and Environment (Poland) welcomed all attendees and guests to the meeting and workshop. He noted that Poland most recently hosted the 2014 meeting of the CSLF Policy and Technical Groups. Undersecretary Dziadzio noted the changed environment for CCUS development and deployment, including an increase in numerous initiatives and organizations. In Poland, the ministry has been working on CCUS planning for several years and is continuing to address challenges. A brief status of CCUS technology in Poland was presented, including potential significant onshore and offshore CO<sub>2</sub> storage. Currently, there are proposed changes in the legal framework for geologic storage of CO<sub>2</sub>; these are proposed as part of Draft Amendment to the Geological and Mining Law.

In August 2021, Ministry of Climate and Environment established an advisory body to facilitate and coordinate development of CCUS technologies (CCUS Working Group). This group serves as the platform for information exchange and coordinating activities around opportunities and barriers to CCUS development in Poland. The working group manages several workstreams, focused on: analyzing potential for CCUS in various sectors; creating a feasibility study for CCS facilities in energy sector and a CCUS strategy for cement sector; and discussions on needs and challenges of several sectors, including

energy and industrial sectors. This Ministry of Climate and Environment has supported and issued recommendation letters for several CCUS projects and initiatives: Poland-EU CCS Interconnector; Go4ECOPlanet—Lafarge Cement; ECO2CEE; and CO2 Routes Across Europe. Undersecretary Dziadzio closed his presentation by noting that Poland is ready, and has experience in oil and gas exploration, which provides a knowledge base for CCUS activities.

### 6. CSLF Projects Interaction and Review Team (PIRT)

Dr. Sallie Greenberg, PIRT lead, opened the PIRT session and welcomed the two PIRT nominated projects from Brazil (Petrobras' Santos Basin Pre-Salt Oil Field CCUS Project) and China (Sinopec Qilu-Shengli Oil Field Project). The project representatives provided overviews of each project, including ongoing activities, challenges, and opportunities. Once the presentations were completed, including Q&A from delegates, PIRT delegates then discussed the projects, and following a short discussion, the group agreed to approve them. The Chair proceeded with formally recognizing both projects as CSLF-Recognized Projects and congratulated the project representatives.

## 7. Building industrial clusters and CO<sub>2</sub> infrastructure

This panel opened with an overview of IEAGHG activities from Tim Dixon. He noted the ongoing relationship with the Technical Group and provided a short overview of the IEAGHG's primary activities, including GHGT-16 (held in Lyon, France in October 2022) and GHGT-17 (to be held in Calgary, Canada in October 2024). The call for abstracts for GHG-17 opens in September 2023. IEAGHG has published several reports since the last CSLF Technical Group meeting, ranging from blue hydrogen to standards. He highlighted the report from the 5<sup>th</sup> International Workshop on Offshore Geologic CO<sub>2</sub> Storage, which stemmed from a CSLF TG meeting recommendation. IEAGHG has hosted several events this year, including those of its expert networks. Mr. Dixon also noted several UNFCCC developments, and highlighted IEAGHG's ongoing role in providing technical expertise and input.

The panel focused on the perspectives from both governments and industry on clusters and infrastructure, including government policy and approach to clusters, and an overview of notable operational projects and those under development. The session started with introductory talks by the Invited panelists, who were drawn from the United Kingdom Department for Energy Security and Net-Zero (Chris Wiseall), the U.S. Department of Energy (Mark Ackiewicz), INEOS—Project Greensand (Søren Reinhold Poulsen), Battelle (Neeraj Gupta), and ExxonMobil Low Carbon Solutions (Amir Bahrami).

Panelists noted recent developments in clusters and other infrastructure, highlighting the policies and enabling environments around infrastructure, as well as the challenges faced by industry and other stakeholders. Several challenged mentioned included the requirements for CO<sub>2</sub> purity and the transboundary transport of CO<sub>2</sub>. The latter is important and especially relevant between states in the United States and between European countries without proper legislation. Through discussion, panelists spoke about the importance of partnerships and buy-in from industry, government, and communities in the development of clusters. Partnerships and engagement did not only include those at the national level, but also those at regional, state, and local community levels. Other decarbonization activities, such as renewable energy projects, can be supportive of the development of clusters, especially when part of an integrated value chain. Clusters may be appealing to project developers due to greater integration of activities and the potential for shared risks and costs. Working in clusters may also result in easier access to support from governments, who may find it easier to work with groups rather than multiple individual companies. In addition to the benefits and advantages of clusters and other infrastructure, panelists also discussed the challenges around managing numerous participants and viewpoints, and the need for effective communication not only between project stakeholders but with also with impacted communities.

# 8. Operative and in-construction pilot and demonstration storage projects – using lessons learned on permitting, data sharing and research to accelerate large-scale CCS

The panel opened with a short presentation from Ceri Vincent, CO2GeoNet, who provided an overview of the group's activities. CO2GeoNet held its first in-person forum since the COVID-19 pandemic in September 2022 in Venice, Italy. Several key messages were delivered at this event—CO<sub>2</sub> storage needs to accelerate quickly to avoid bottlenecks, and sharing lessons learned on storage remains a key accelerator. It was also noted that utilization with durable storage could help accelerate CCS roll-out. CO2GeoNet will host its next Open Forum in October 2-5, 2023, in Venice on the theme of large-scale deployment. There will also be workshops on building onshore storage in the U.S. and Europe, and learning from existing projects/piloting new areas. Another Open Forum will follow in May 2024 (May 21-24). CO2GeoNet is offering a master's level course in CO<sub>2</sub> storage jointly offered by Sapienza University (Rome) and the University of Zagreb. CO2GeoNet will have a presence at COP28 and is also planning ahead for GHGT-17 in 2024.

The session began with presentations from three invited projects: Illinois Decatur Project (Sallie Greenberg), CO2CRC Otway Project (Max Watson) and Project Greensand (Søren Reinhold Poulsen). Panelists provided overviews of their projects, noting key developments with significant impacts and outcomes, with a focus on key lessons that could be learned and applied to later stages of the project or other, later projects. Through their presentations, panelists also noted the features of their project within the context of CCS development in their respective countries. While each panelist cited lessons that were more specific to their project or sector, many lessons were broadly applicable, ranging from the need for regulatory frameworks to the importance of collaboration and communication. Panelists also agreed that it takes time to get storage sites operational, both with respect to creating teams and the actual characterization of the physical site. Thus, early projects are important, as is building on available information and experiences. Early involvement of governments may ease the permitting process.

These speakers were followed by short presentations on the Tomakomai Project (Takashi Kawabata, Japan CCS) and the Northern Lights Project (Imran Abdul-Majid, Northern Lights). As both projects provided in-depth presentations at the June 2022 Mid-Year Meeting, speakers opted to share "refresher" updates for the audience. These speakers touched on similar lessons learned to the earlier panelists, including unique aspects of the project as well as common experiences, such as the importance of community engagement.

Following the project presentations, speakers participated in a short, moderated discussion, focusing on project start-up, building on previous projects, results, and learnings, and maintaining momentum once projects are completed.

#### 9. Update from the Global CCS Institute (GCCSI)

Ms. Jessica Oglebsy, GCCSI, provided an overview of the Institute and its main advocacy objectives. She provided an update on Global Status Report, their annual flagship product, which will be released in November 2023. Other key GCCSI publications, ranging from factsheets, thought leadership pieces, and policy reports, were noted. GCCSI held several advocacy events in Europe, including an event co-hosted with GE on the London Protocol; an event on commercial and regulatory frameworks in Norway; the EU Green Week Partner event; its Europe Members Meeting; and the 2023 Europe Forum on CCS (the two latter events held on June 14<sup>th</sup> and 15<sup>th</sup>, respectively). The Institute is tracking several developments in Europe, including a four-fold increase in CCS activity in EU since 2019. Ms. Oglesby noted that CCS networks are fundamental to EU climate ambitions; on this, Norway and Netherlands are leading with Longship and Porthos respectively. The EU Innovation Fund is also key—one notable development is a recent funding call for large-scale innovation projects. The Institute is also tracking upcoming items, including EU CCUS Strategy, Regulatory Framework for CO<sub>2</sub> Infrastructure, Review of CCS Directive Guidance Documents, Carbon Removal Framework, closer cooperation and CO<sub>2</sub> transport between North Sea countries, and evolution of the EU ETS.

#### 10. Update on Mission Innovation CDR Mission

Mr. Mark Ackiewicz, U.S. DOE, provided an overview of the MI CDR mission. The mission is starting to now move to an implementation stage after its first full year. Its recent highlights include: collaboration and information sharing; strategic direction setting; and the launch of its first sprint (CDR Launchpad). Technical tracks are DAC; LCA and TEA; Enhanced Mineralization; and BiCRS. These are presently engaged in Facilities and Resource Mapping.

The CDR Launchpad has launched data sharing platform and taxonomy for information sharing and is working on scoping for its MRV Working Group; a session is proposed for July in India at the CEM/MI Ministerial Meetings. Iceland has recently joined the Launchpad, and the effort is open to prospective members. At the Global Clean Energy Action Forum (GCEAF) in September 2022, the CDR Mission participated in a roundtable discussion on carbon management, where it focused on policy levers to move CDR forward. Priorities for the remaining months of 2023 include: making progress on existing sprints and initiatives; measuring impact; maximizing opportunities for strategic engagements, working with private sector; and expanding on momentum. The mission participated in CEM/MI Annual Gathering in Brazil in March 2023 and will have a presence at CEM14/MI8 in July 2023, and COP28 in December 2023.

#### 11. Update from the Clean Energy Ministerial (CEM) CCUS Initiative

Mr. Juho Lipponen, CEM CCUS Initiative, provided an overview of the key CEM CCUS Initiative activities and efforts. As general background, he provided an overview of the CEM as a whole, including its cycle of activities and workstreams. For upcoming CEM14 meeting in Goa, schedules are still in development; he encouraged those planning to attend to maximize their time there. The CEM CCUS Initiative will hold 3 side events as part of the official program—Decarbonising Cement with CCUS; Financing CCUS; and Carbon Management Challenge. These side events build off existing work the Initiative has in place with organizations such as the Global Cement and Concrete Association, as well as with the Initiative's Finance Sector Lead Group. The Initiative continues its engagement and outreach strategy, and welcomes new members and those interested in learning more about its activities.

#### 12. Technical Group—the way forward

Led by Ms. Åse Slagtern, Chair, and the Secretariat, the meeting shifted to a focus on the future of the CSLF. Ms. Stephanie Hutson, CSLF Secretariat, shared a proposal regarding the future of the CSLF Technical Group, noting that the CSLF has done a great deal of work to increase awareness of CCS globally. Other organizations have emerged since the CSLF was created in 2003, as interest and activity has grown globally. U.S. DOE has held the Secretariat role since 2003, and Norway has served as Chair of the Technical Group since 2006. (Norway has decided to give up its chair role in 2024 when the current cycle ends, and the U.S. has decided not to continue as Secretariat). The CSLF Secretariat and Chair proposed to put meetings on hold and assess important activities to ensure they continue elsewhere, such as project recognition.

Following this overview, the Chair opened the floor for comments from delegates and allied organizations. Attendees spoke on the value of CSLF meetings to decision makers and other stakeholders and expressed their support for continuing key activities in some form.

The meeting shared support for the proposal on the future of the CSLF. Following the discussion, the CSLF Secretariat and Chair invited delegates to share comments on the proposal and future of the CSLF. Together, the Secretariat and Chair will work on next steps over the following six months.

#### 13. Report from the Secretariat (Summary)

The CSLF Secretariat, represented by Stephanie Hutson, provided a short summary report from the meeting. One key outcome of the meeting included the formal recognition of the two PIRT projects. As an action for the group, the Secretariat noted that delegates can share their input and comments on the proposed way forward for the CSLF Technical Group following the shared proposal and open discussion from agenda item #12.

Åse Slagtern, Chair, closed the meeting, thanking meeting hosts, delegates, moderators, and other meeting attendees.