

**Contents**

- Section 1 – Key Contacts ..... 2
- Section 2 – Mission Goal and Desired Outcomes ..... 2
  - 2030 Goal ..... 2
  - Global Metrics ..... 2
- Section 3 – 2024 Deliverables ..... 3
  - Summary ..... 3
  - Priority Deliverables – Detailed Workplan ..... 4
  - Additional Activities (Subject to Resources) – Detailed Workplan ..... 9
- Section 4 – Mission Inputs (KPIs) ..... 11
  - Human Resources ..... 11
  - Funding / Financial Resources ..... 13
- Section 5 – Mission Outputs (KPIs) ..... 15
  - Collaborative and Coordinated Funding Calls ..... 15
  - Research Collaborations and Knowledge Sharing Communities ..... 15
  - Events ..... 16
  - Publications (including workplans, case studies, best practices, mapping datasets, analysis)..... 16
  - Stakeholder Engagement ..... 17
- Section 6 – Demonstrations Projects ..... 20

## Section 1 – Key Contacts

- **Mission Director:** Mark de Figueiredo, [mark.defigueiredo@hq.doe.gov](mailto:mark.defigueiredo@hq.doe.gov)
- **MI Secretariat Liaison:** K Powe, [kay.powe@nrcan-rncan.gc.ca](mailto:kay.powe@nrcan-rncan.gc.ca)
- **LinkedIn:** <https://www.linkedin.com/company/mission-innovation-cdr-mission/>

## Section 2 – Mission Goal and Desired Outcomes

2030 Goal	
<p>“Enable CDR technologies to achieve a net reduction of 100 million metric tons of CO<sub>2</sub> per year globally by 2030.”</p>	<p><b>2024 progress update:</b></p> <ul style="list-style-type: none"> <li>• Estimated volume of CO<sub>2</sub> removed globally by “novel” CDR methods currently sits at 2.3 MtCO<sub>2</sub>/year.<sup>1</sup></li> <li>• Per our <a href="#">Action Plan</a>, the Mission has three desired outcomes:               <ol style="list-style-type: none"> <li>1) Enhanced understanding of local and global CDR potential</li> <li>2) Advancement of R&amp;D for CDR technologies</li> <li>3) Global demonstrations and pilot-scale tests</li> </ol> </li> <li>• The Mission has activities to support outcomes #1 and #3. The Mission acknowledges that there is currently a gap around outcome #2 (CDR R&amp;D). For 2024, the Mission will look at options to fill this gap.</li> </ul>

Global Metrics				
Indicator	Target	Milestones	Current Status	Data Source
Global CO <sub>2</sub> removal <sup>2</sup>	100 Mt CO <sub>2</sub> /year (by 2030)	XX Mt CO <sub>2</sub> /year by 2025 XX Mt CO <sub>2</sub> /year by 2028	2.3 MtCO <sub>2</sub> /year	<a href="#">State of CDR Report (Jan 2023)</a>
Cost ranges	Biochar		\$10-345/tCO <sub>2</sub>	
	BECCS		\$15-400/tCO <sub>2</sub>	
	DACCS		\$100-300/tCO <sub>2</sub>	
	EM		\$50-200/tCO <sub>2</sub> (Defined as enhanced weathering in State of CDR report; does not cover all aspects of EM)	
Global public investment in CDR R&D			\$4.1B between 2010-2022	
Siting decisions supported by local engagement	100% of new demonstration projects	n/a	[TBD based on CDR Launchpad analysis]	CDR Launchpad reporting
Number of standardized definitions for LCAs or Number of LCA / TEA data gaps addressed				

<sup>1</sup> “Novel CDR methods,” as defined by the State of CDR Report, includes: BECCS, biochar, DACCS, enhanced weathering, and coastal wetland management. The latter is not within scope of the Mission; volumetric data does not align perfectly with Mission goal.

<sup>2</sup> See Chapter 6 of State of CDR Report for qualifications around deployment data.

Section 3 – 2024 Deliverables

Summary

Priority Deliverables for 2024	Resource Gaps	Additional Activities (subject to capacity)	Resource Gaps
1. CDR Launchpad	<ul style="list-style-type: none"> <li>- Dedicated coordinator to drive MRV WG and knowledge sharing activities</li> </ul>	A. Networking Platform	<ul style="list-style-type: none"> <li>- No lead identified yet</li> <li>- HR needs: collaborate with external partner?</li> <li>- Financial needs: costs to set up?</li> </ul>
2. CDR Mapping Initiative	<ul style="list-style-type: none"> <li>- Funding for more sophisticated mapping software + GIS expert to develop future maps <i>and/or</i></li> <li>- Partner(s) to develop future maps</li> </ul>	B. Stakeholder Engagement (including a SE Cohort)	<ul style="list-style-type: none"> <li>- Dedicated resources to lead and support</li> </ul>
3. LCA Case Studies	<ul style="list-style-type: none"> <li>- Mechanism to disseminate findings for wider application (outside of Mission)</li> </ul>	C. Global South Engagement	<ul style="list-style-type: none"> <li>- Member commitments/resources</li> <li>- Exploring embedding into existing projects and building on member-led engagement, rather than developing stand-alone project</li> </ul>
4. SMART-CDR Competition	<ul style="list-style-type: none"> <li>- Currently exploring options for:                             <ul style="list-style-type: none"> <li>o Judges/evaluators of proposals</li> <li>o Mentors for students</li> <li>o Sponsorship secured for travel stipends and cash prize but will continue to pursue options for third-party support.</li> </ul> </li> </ul>	D. Events and Communications	<ul style="list-style-type: none"> <li>- Lead for presence at COP29 (TBC)</li> </ul>
5. Joint R&D Call	<ul style="list-style-type: none"> <li>- Funding commitments from members.</li> <li>- Administrator for a joint call (e.g. CETP, RMI, other)</li> </ul>		
6. Measuring Progress	<ul style="list-style-type: none"> <li>- Opportunities to streamline IEA data categories so that we can capitalize on their datasets?</li> </ul>		
7. Ongoing activities in the Technical Tracks 7.1. BiCRS 7.2. DAC 7.3. EM 7.4. LCA/TEA	<ul style="list-style-type: none"> <li>- Dedicated resources to coordinate newly launched DAC workstream (e.g. FTE, R&amp;D capacity).</li> </ul>		

Priority Deliverables – Detailed Workplan

Deliverable	Task	Lead(s)	Target Date	Status	Notes / Results
1. CDR Launchpad	2024 Progress Update	US	Nov 2024 (at COP29)	Not started	Building on 2023 update available on website (and projects profiled on LinkedIn).
	Launch MRV working group	US	TBC	In progress	Scope cooperative studies / workshops / webinars supportive of harmonizing MRV protocols internationally and/or identifying key MRV research needs
	Circulate analysis around MRV methodologies to inform further discussion.	UK	Q1 2024	Complete	UK report: Review of engineered greenhouse gas removal (GGR) standards and methodologies. Published December 2023. <a href="#">Source</a> .  (Also Greenhouse Gas Removal methods and potential UK Deployment, TEA. Published in 2021. <a href="#">Source</a> )
	Identify knowledge sharing platform for demo projects	US	TBC	In progress	Establish information sharing site on EDX platform via US National Energy Technology Laboratory
2. Mapping Initiative	Maintain CDR demos and deployments map	Canada	Ongoing	Ongoing	Updated on a quarterly basis. To do: cross reference with data from 2023 CDR Launchpad Progress Update. The U.S has asked RMI to validate D&D map data. Awaiting the results before updating the map.
	Streamline the demos and deployments map	Canada		Not started	To do: consider ways to improve functionality for users (e.g. streamline data categories; continue to use PowerBI or different tool?).
	BiCRS: collect preliminary data for resource mapping (technically available biomass)	Norway	March-May 2024	In progress	Carried over from 2023. Template for member input circulated Dec 27, 2023; deadline for input: May 31 2024. See "7a BiCRS" below.
	BiCRS: publish bioresources mapping	Norway, Canada	Q2 2024	Not started	
	EM: publish preliminary data for resource mapping based on inputs received from the survey	Australia, KSA	April 2024	In progress	Carried over from 2023. In Q3 2023, EM technical track leads surveyed members on available datasets related to EM resource mapping. See "7b EM" below.
	EM: publish EM resource mapping	Australia, KSA, Canada	Oct 2024 (at MI-9)	Not started	See "7EM" below.

## CDR Mission – 2024 Workplan

Deliverable	Task	Lead(s)	Target Date	Status	Notes / Results
	Develop options paper for the future of the mapping initiative	Canada	Q2 2024	Not started	To do: chart out vision for mapping initiative beyond this beta phase, including exploring partnership opportunities and technical needs for future maps/datasets.
3. LCA Case Studies	DAC: case study	Canada, Japan, US	TBC	In progress	Carried over from 2023. Examining DAC in different geographic areas and climate conditions. Collected 10 locations for DAC case studies. See "7d LCA/TEA" below.
	BiCRS: waste-to-energy case study	Norway	2024	In progress	Carried over from 2024. Aiming to publish findings in 2024. See "7a BiCRS" and "7d LCA/TEA" below.
	BiCRS: conversion of forestry residues to hydrogen via gasification with CCS case study	Canada	2024	In progress	Carried over from 2024. Aiming to publish findings in 2024. See "7a BiCRS" and "7d LCA/TEA" below.
	EM: case study TBC	Australia and KSA	TBC	In progress	Scoping currently under discussion. See "7b EM" and "7d LCA/TEA" below.
4. SMART-CDR Competition	Project Announcement	Canada, US	Feb 13-14, 2024	Complete	Preliminary announcement delivered at the IEA Ministerial.
	Secure and coordinate administrator	US	Feb 2024	Completed	Signed a contract with US National Renewable Energy Laboratory.
	Official project launch	UK, US, Canada	June 19, 2024	In progress	Launch and announcement planned for Negative Emissions Technology Conference in Oxford, UK June 19, 2024. After the launch, applications will go live.
	Stakeholder engagement	KSA, Canada	Q4 2024	In progress	So far, secured sponsorship from four external partners. Will continue recruitment, including targeting philanthropies over the summer.
	Evaluation Panel	US (NREL)	Q2 2024	In progress	NREL to lead recruiting and managing a global evaluation panel of up to 10 volunteers representing all member countries.
	Ministerial progress update	USA, Canada	Oct 2024 (at MI-9)		Share progress on project in Ministerial remarks during MI-9. (At this point, the first round of successful projects will be selected).
	TBC Develop a technical report or deliver a virtual workshop (either as part of prize competition, or to support the CDR Launchpad MRV working group).	Japan (TBC)	Dec 2024/ Jan 2025		A virtual workshop for finalist students in December/January to enhance their understanding of global MRV trends and latest innovations. Or, developing a report on global trends for MRV or other

## CDR Mission – 2024 Workplan

Deliverable	Task	Lead(s)	Target Date	Status	Notes / Results
					topics of importance to advance either as part of the prize competition, or as part of the CDR Launchpad MRV Working Group.
	Final pitch event & award ceremony	Canada, Norway	Feb 25-27, 2025	In progress	Norway to host final pitch and award event at the CLIMIT Summit, Bergen, Norway. Canada will be the lead and will coordinate and deliver the side event. Up to 5 finalist student teams receive travel stipends to participate in the event.
	Winning 3 teams awarded	US, KSA, Canada	March 2025		Award up to 3 winning teams with: cash prize; mentorship; social media/online profile.
5. Joint RD&D Call	Solicit preliminary interest from members	U.S.	Q1 2024	Completed	Members have expressed early interest in exploring opportunities for Joint R&D Call.
	Identify third-party to administer a joint call (e.g. CETP, RMI, other)	U.S.	TBC	In progress	Gathering information from CETP regarding use of mechanism for collaborative R&D projects
	Define scope and timelines for a joint call	U.S.	TBC		
6. Measuring Progress	Develop response to 2023 TAG recommendations	Canada, KSA, US	May 2024	Completed	
	Report on mid-year progress	Canada, KSA, US	May or June 2024	In progress	MISC expecting progress update. Review workplan, assess progress, take action to address risks.
	Collect data related to Mission inputs and outputs	Canada, KSA, US	Q4 2024	Not started	Based on KPIs identified in 2024 workplan. Mission to collect data where possible for the end of 2024.
	Work with TAG to assess Mission progress	Canada, KSA, US	Q4 2024	Not started	
7. Ongoing Technical Track Activities <i>[cross-reference with deliverables above, as noted in the table]</i>					
7.1 BiCRS	BiCRS Demo Projects Webinar - Publish Report	Japan, Norway	Jan 2024	In progress	A summary report to be published on MI website in January 2024.
	Work Package #1: Mapping and characterizing biomass feedstock, transport, and storage of CO <sub>2</sub> , and user	Norway, Canada	Q4 2024	In progress	See p. 13-16 of BiCRS Scope of Work. Mapping biomass, reviewing literature on sustainability definitions, and engaging industry. (Also see “2. Mapping Initiative” above).
	Work Package #2: Harmonize LCA/TEA methodology for BiCRS	Norway, Canada	Summer 2024 (TBC)	In progress	See p. 16-17 of BiCRS Scope of Work. (Also see “3. LCA case studies” above).
	Work Package #3: Topics specific to CO <sub>2</sub> utilization technologies (TBC)	TBC	TBC	Not started	Part of Phase 2 of BiCRS Scope of Work. Details to be decided / depends on resource availability.

## CDR Mission – 2024 Workplan

Deliverable	Task	Lead(s)	Target Date	Status	Notes / Results
					BiCRS webinar (tbc)
	Work Package #4: Pilots and demonstration facilities	TBC	TBC	Not started	Part of Phase 2 of BiCRS Scope of Work. Details to be decided / depends on resource availability.
	Work Package #5: Collaborative activities with other Missions / initiatives	Japan, Norway	Ongoing	In progress	<p>Carried over from 2024. Part of Phase 2 of BiCRS Scope of Work.</p> <ul style="list-style-type: none"> <li>Participated in a meeting convened by the Integrated Biorefineries Mission at the Annual Gathering in Rio (March 21, 2023). The meeting brought together MI Missions and CEM initiatives with activities related to biomass. Lars presented on BiCRS technical track activities.</li> <li>CDR Mission Director met with Mission Director for the Urban Transitions Mission at MI-8 in Goa (July 2023). Discussed waste-to-energy BiCRS projects in Northern European cities as a potential avenue for Mission-to-Mission collaboration. BiCRS TT in contact with UTM to plan common activities for 2024.</li> <li>BiCRS technical track leads meeting with leads of the Integrated Biorefineries Mission in September 2023 to inform about workplans from both sides and to identify possible areas of collaboration. Areas of collaboration have been identified and will be discussed further in 2024.</li> <li>Reached out to Sweden and Brazil for participation in BiCRS webinar and further collaboration. BiCRS webinar (tbc)</li> </ul>
7.2 DAC	Launch DAC technical track	Canada, US	January 2024	Completed	Launch meeting on January 30.
	Initial DAC webinar	Canada, US	April 3	Completed	
	Publish action plan for technical track	Canada, US	TBC	Not started	
7.3 EM	Activity 1.1: EM Resource Mapping	Australia, KSA	September 2024	In progress	Part of Phase 1 (June 2023-September 2024). See p. 7 of EM Workplan. (Also see “2. Mapping Initiative” above).

## CDR Mission – 2024 Workplan

Deliverable	Task	Lead(s)	Target Date	Status	Notes / Results
	Activity 1.2: Publish EM Resource Maps	Australia, KSA	Sept 2024 (at MI-9)	Not started	Part of Phase 1 (June 2023-September 2024). See p. 8 of EM Workplan for outcomes. (Also see “2. Mapping Initiative” above).
	Activity 2.1: Identify and Support National CDR Enablers	Australia, KSA	December 2025	Not started	E.g. RD&D project/case study database to identify overlaps and opportunities to collaborate. E.g. Platform to facilitate networking and knowledge sharing among stakeholders.  Part of Phase 2 (January 2024-December 2025). See p. 9 of EM Workplan for outcomes.
	Activity 2.2: Collaborative RD&D projects and case studies	Australia, KSA	December 2025	Not started	Part of Phase 2 (January 2024-December 2025). See p. 9-10 of EM Workplan for outcomes.
7.4 LCA/TEA	Literature review of LCA methodologies	Japan	Q1 2024	In progress	Carried over from 2023. Reviewing 30-40 papers/reports. Circulated to members for input on December 26, 2023.
	Activity 1.1: LCA/TEA Case Studies	(Various)	(Various)	In progress	See "3. LCA case studies" above. Separate leads for DAC, BiCRS, and EM case studies. See p. 6-7 of LCA/TEA TT Action Plan.
	Activity 1.2: Develop best practices and assessment guidelines for LCA/TEA	Canada, Japan	2024 (TBC)	TBC	To guide the application of ISO standards 14040/14044, 14064, and 14067 when conducting LCAs and TEAs. Potential project for 2024. See p. 7-8 of LCA/TEA TT Action Plan.
	Activity 2.1: Assess Data Gaps	Canada, Japan	Ongoing	Ongoing	See p. 9 of LCA/TEA TT Action Plan
	Activity 2.2: Address Data Gaps	Canada, Japan	Ongoing	Ongoing	See p. 9-10 of LCA/TEA TT Action Plan.
	Activity 3.2: Launch data hub	Canada	Mid-2024	In progress	Carried over from 2023. Discussions are ongoing around guidance for LCA data use, sharing, and storage. See p. 10-11 of LCA/TEA TT Action Plan.
	Activity 4.1: Assess CDR scale-up	Canada	2023-2028	2023-2028	Carried over from 2023. Advanced methods to examine (environmental and economic) impact of CDR deployment at scale and assess future scenarios. Led by Canadian academic experts in collaboration with LCA technical track members. Work undertaken domestically to be shared through knowledge-sharing



## CDR Mission – 2024 Workplan

Deliverable	Task	Lead(s)	Target Date	Status	Notes / Results
					events and fora. See p. 11-12 of LCA/TEA TT Action Plan.

### Additional Activities (Subject to Resources) – Detailed Workplan

Deliverable	Task	Lead(s)	Target Date	Status	Notes / Results
A. Networking Platform	Set up conversation with IEAGHG to explore interest / capacity to lead.	TBC	TBC		
	Consult stakeholders on their needs / priorities for such a platform	TBC	TBC		Also for potential discussion with a stakeholder cohort.
B. Stakeholder Engagement	Identify priority partners to pursue partnership at the project, workstream, or Mission level	TBC	Q4 2024	In progress	Carried over from 2023. Identifying stakeholder engagement opportunities.
	Establish CDR 'Stakeholder Cohort' [ <i>Name subject to change</i> ]	TBC	Q4 2024	In progress	Establish a community composed of varying stakeholder types to advise, contribute to specific projects, and/or design new projects. If not for 2024, consider developing proposal for a cohort, to be established in 2025. MI Secretariat to develop a proposal in spring 2024.
	Maintain list of stakeholders engaged	Canada	Ongoing		Tracking commenced in January 2024 (including the Mission's past engagements). Maintain list of stakeholders who have spoken at events, workshops, participated in projects or workstreams, or met with Mission or technical track leads.
C. Global South Engagement	Establish collaboration with Global South countries on CDR RD&D, CDR market development and/or resource assessments	US	Q2 2024	In Progress	Exploring collaborative projects/studies with Kenya on accelerating development of their CDR industry, focusing on geothermal-DAC, basalt storage, and potentially surficial mineralization and marine CDR. Could expand collaboration to other Global South countries in the future.
D. Events and Communications	Establish CDR Mission LinkedIn page	Juho	Q1 2024	Complete	
	Deliver community engagement workshop	Canada, US, MI Think Tank	TBC	In progress	Partner with MI Think Tank to deliver a workshop that looks at best practices for community engagement in CDR and other clean tech sectors.

## CDR Mission – 2024 Workplan

Deliverable	Task	Lead(s)	Target Date	Status	Notes / Results
	Deliver a side event at CEM15/MI-9 (TBC)	Juho (with BiCRS TT?)	Oct 1-3	Not started	Potentially deliver in partnership with CEM CCUS Initiative. Potential focus: BiCRS/BECCS, given links to host priorities.
	Deliver in-person workshop at GHGT-17 (TBC)	Canada	Oct	Not started	Tentative workshop(s) for technical experts on the margins of the conference.
	Showcase Mission progress at COP29	TBC	Nov 11-24	Not started	Mission may have limited capacity to deliver events at CEM15/MI-8, GHGT-17, and COP29 (all within 1.5 months of each other). Potentially collaborate with a stakeholder organizing their own event.

Section 4 – Mission Inputs (KPIs)

Human Resources <sup>3</sup>						
Country / Partner	Gov't Officials		Contracted Experts		Roles and Responsibilities	Key contacts
	Planned	Actual	Planned	Actual		
Australia					Core member <ul style="list-style-type: none"> <li>• <b>CDR Mapping:</b> Contribute data to mapping projects.</li> <li>• <b>EM Technical Track:</b> co-lead technical track with KSA; organize workshops; develop projects as appropriate.</li> </ul>	Andrew Lenton Renee Birchall Warren Flentje
Canada	1.5-2.0 FTE		0 FTE		Co-lead <ul style="list-style-type: none"> <li>• <b>Mission ‘Secretariat’:</b> Advance Mission workplanning, track Mission progress</li> <li>• <b>CDR Launchpad:</b> Report on Canadian demo projects; participate in MRV working group.</li> <li>• <b>CDR Mapping:</b> Provide overarching coordination for mapping initiatives; develop options paper for the future of the mapping initiative; contribute data to mapping projects.</li> <li>• <b>SMART-CDR Competition:</b> project management and coordination on planning committee, communications liaison, stakeholder recruitment support, lead the coordination and delivery of the final pitch event. Support from Canada includes 0.15 FTE and travel (for the one Canadian representative) to deliver in-person side event at CLIMIT Summit.</li> <li>• <b>Stakeholder Engagement:</b> advance SE strategy.</li> <li>• <b>LCA/TEA Technical Track:</b> co-lead with Japan; lead a BiCRS LCA case study; coordinate and host data hub (in-kind contribution).</li> <li>• <b>DAC Technical Track:</b> co-lead with US.</li> </ul>	Steph Klak K Powe Evelyne Baker Saviz Mortazavi Benjamin Eisner
European Commission					Support member <ul style="list-style-type: none"> <li>• <b>CDR Launchpad:</b> Report on EC demo projects, including Horizon Europe calls for CDR projects; participate in MRV working group</li> <li>• <b>CDR Mapping:</b> Contribute data to mapping projects.</li> </ul>	Eirik Lonning
Japan	1.0-1.2 FTE (4 People)			0.27	Core member <ul style="list-style-type: none"> <li>• <b>CDR Launchpad:</b> Report on Japan demo projects; participate in MRV working group.</li> <li>• <b>CDR Mapping:</b> Contribute data to mapping projects.</li> <li>• <b>SMART-CDR Competition:</b> sit on planning committee; host a webinar or developing a technical report in Dec 2024/ January 2025 (TBC)</li> </ul>	Yuko Kono Shin Morimoto Atul Sharma

<sup>3</sup> This input considers how many people are helping to advance the work of the Mission. For units, we recommend you use Full Time Employee (FTE). You may also wish to note the roles and responsibilities that various members take on.

Human Resources <sup>3</sup>						
Country / Partner	Gov't Officials		Contracted Experts		Roles and Responsibilities	Key contacts
	Planned	Actual	Planned	Actual		
					<ul style="list-style-type: none"> <li>• <b>LCA/TEA Technical Track:</b> co-lead with Canada; lead DAC case study; coordinate knowledge exchange; develop literature review of LCA methodologies.</li> <li>• <b>BiCRS Technical Track:</b> Co-lead with Norway; organize workshops; co-lead development of guidance on key research areas in accordance with BiCRS scope of work document.</li> </ul>	
IEAGHG			(See US below)		<ul style="list-style-type: none"> <li>• <b>Mission 'Secretariat':</b> Mission coordination, member engagement, communications, knowledge sharing, and links to CEM CCUS Initiative.</li> </ul>	Juho Lipponen
India					Support member <ul style="list-style-type: none"> <li>• (Mission co-leads to reach out in 2024 to explore interests/contributiFons)</li> </ul>	
Norway	0.7-1.5 FTE (divided on three persons)		0.2-0.4 FTE		Core member <ul style="list-style-type: none"> <li>• <b>CDR Launchpad:</b> Report on Norway demo projects; participate in MRV working group</li> <li>• <b>CDR Mapping:</b> Lead BiCRS resource mapping project; contribute data to other mapping projects.</li> <li>• <b>BiCRS Technical Track:</b> Co-lead with Japan; organize workshops; co-lead development of guidance on key research areas in accordance with BiCRS scope of work document.</li> <li>• <b>LCA/TEA Technical Track:</b> lead a BiCRS LCA case study; participate in knowledge exchange.</li> <li>• <b>SMART-CDR Competition:</b> Host final pitch event at CLIMIT Summit in February 2025.</li> </ul>	Jørild Svalestuen Lars Ingolf Eide Erik Gjernes Svein Ingar Semb
Saudi Arabia	1.0-1.2		0		Co-lead <ul style="list-style-type: none"> <li>• <b>Mission 'Secretariat':</b> Advance Mission workplanning, track Mission progress</li> <li>• <b>CDR Mapping:</b> Contribute data to mapping projects</li> <li>• <b>SMART-CDR Competition:</b> Sit on planning committee. Advancing engagement with external partners to support the competition.</li> <li>• <b>EM Technical Track:</b> Co-lead with Australia</li> <li>• <b>LCA/TEA Technical Track:</b> participate in knowledge exchange.</li> </ul>	Faisal Qurooni Khalid Harthi Naif Qahtani
United Kingdom	~0.5FTE (4 people)		~0.1FTE (2 people)		Support member <ul style="list-style-type: none"> <li>• <b>BiCRS Technical Track:</b> Have participated in two webinars, interested in progressing biochar</li> <li>• <b>CDR Launchpad:</b> Report on UK demo projects; participate in MRV working group</li> </ul>	Charlotte Powell  Isabela Butnar, Birgitta Beuthe: LCA/TEA

Human Resources <sup>3</sup>						
Country / Partner	Gov't Officials		Contracted Experts		Roles and Responsibilities	Key contacts
	Planned	Actual	Planned	Actual		
					<ul style="list-style-type: none"> <li>• <b>CDR Mapping:</b> Contribute data to mapping projects.</li> <li>• <b>LCA/TEA Technical Track:</b> participate in knowledge exchange through the various working groups.</li> <li>• <b>SMART-CDR Competition:</b> Will be a strategic partner through provision of participants mentors. Host competition launch at Conference on Negative CO2 Emissions.</li> <li>• <b>DAC Technical Track:</b> contribute to knowledge exchange and webinars, road map pending.</li> </ul>	Theresa Redding: Biochar  Steve Smith
United States	~0.5 FTE		0.2 FTE		Co-lead <ul style="list-style-type: none"> <li>• <b>Mission 'Secretariat':</b> Provide the Mission Director/strategic oversight of Mission activities; host file sharing platform; fund Juho Lipponen contract to serve as part-time coordinator for CDR Mission (see IEAGHG)</li> <li>• <b>CDR Launchpad:</b> lead the initiative (including recruitment, tracking progress, coordinating knowledge sharing); report on US demo projects; set up and participate in MRV working group</li> <li>• <b>CDR Mapping:</b> Contribute data to mapping projects</li> <li>• <b>SMART-CDR Competition:</b> Sit on planning committee; contract NREL to administer the competition. Strategic lead for project. Participate in launch event in the UK.</li> <li>• <b>DAC Technical Track:</b> co-lead with Canada</li> <li>• <b>LCA/TEA Technical Track:</b> participate in knowledge exchange</li> </ul>	Mark de Figueiredo Matt Antes Andrew Jones (DAC Track co-lead)  Juho Lipponen (via IEAGHG)
(Total)						
HR Gaps / Needs: <a href="#">[See summary box in Section 3]</a>						

Funding / Financial Resources <sup>4</sup>				
Country / Partner	Planned	Actual	Type of funding (i.e. public or private)	Description
Australia				

<sup>4</sup> This input considers financial contributions that advance the work of the Mission – e.g. for asset creation (e.g. a website or other interactive portal), hosting events or meetings, or communications products. Whether you use US dollars, Euros, or another currency, please use consistent units throughout. Note: this considers direct funding for the Mission. Funding calls supported by mission activity are considered under Outputs. Contracts for FTE support to the mission should be considered as Human Resources.

Funding / Financial Resources <sup>4</sup>				
Country / Partner	Planned	Actual	Type of funding (i.e. public or private)	Description
Canada				<ul style="list-style-type: none"> <li>- Financial contribution (amount TBC) to an LCA/TEA data hub hosted by the National Research Council of Canada.</li> <li>- Funding to University of Calgary and University of Alberta will contribute to data gaps and generating insights for the LCA/TEA workstream. (Exact funding amount allocated to Mission activities TBC).</li> </ul>
European Commission				
Japan	\$20,470			Funding for BiCRS and LCA/TEA Technical Track Online Workshops (Contract).
IEAGHG				
India				
Norway				
Saudi Arabia	\$0			
United Kingdom				
United States	\$100K USD	\$100k USD		America Made (NREL) contract for administering the SMART-CDR Competition.
(Total)				
<b>Financing Gaps / Needs:</b> [See summary box in Section 3]				

Section 5 – Mission Outputs (KPIs)

Collaborative and Coordinated Funding Calls <sup>5</sup>						
Funding Call	Public Funding		Private Funding		Description and Link to Mission Goals	Result of the funding call (when known)
	Expected	Actual	Expected	Actual		
TBC	TBC				<ul style="list-style-type: none"> <li>Link to Mission’s desired outcome #2: “Advancement of R&amp;D for CDR Technologies.”</li> <li>Potentially explore joint R&amp;D call via CETP or another mechanism in 2024.</li> </ul>	<i>E.g., Number of projects funded, technologies advanced</i>
(Total)						

Research Collaborations and Knowledge Sharing Communities <sup>6</sup>			
Participating countries / orgs	Area of Focus	Benefit to Mission	Status
TBC MRV Working Group (countries TBC)	Measurement, reporting, and verification (MRV)	Knowledge exchange addresses need for transparent, robust and credible MRV to facilitate scaling and development of CDR technologies and markets.	US convened members in July 2023 (at MI-8) for initial workshop on MRV challenges and potential priorities for international collaboration. Next steps for MRV working group to be determined.
TBC Stakeholder Cohort (orgs TBC)	CDR stakeholder engagement	Advise, contribute to specific projects, and/or design new projects with Mission members.	Potential deliverable for 2024. Seeking to establish a community of various stakeholder types.
LCA Data Hub (countries TBC)	Life Cycle Analysis	Streamline data collection and validation for the purposes of LCAs in a publicly available, collaborative platform.	To be launched in 2024.
AIST (Japan), University of Calgary (Canada), University of Alberta (Canada)	Life Cycle Analysis	Research collaboration to advance methodologies for CDR life cycle analysis – which in turn helps to build confidence in CDR technologies.	Collaboration established. 1 academic paper published

<sup>5</sup> The following relates to specific project funding that the mission has facilitated and/or plays a significant role in delivering or supporting its creation. If applicable, the Mission should also identify any private funding it will leverage. Any currency can be used but please be consistent with all sections that are requested financial detail. In the description column, please highlight your Mission’s involvement within the fund and elaborate on how this fund is expected to support the Mission’s goals.

<sup>6</sup> The following section relates to “non-funded” knowledge sharing and research collaborations that are facilitated by the mission to support mission goals. This could be leveraging existing funding programmes across multiple partners or facilitating workshops and knowledge sharing between member countries and organisations. If not directly led by Mission members, the Mission should be able to demonstrate that they have contributed to establishing the collaboration, or contributed to the knowledge sharing activities in some way.

Events				
Event Title	Description	Date	Reach	Results
3rd International Conference on Negative CO2 Emissions	Host SMART-CDR Competition launch on June 19 <sup>th</sup> at the Negative CO2 Emissions Conference in Oxford.	June 19 2024	Global	
CLIMIT Summit 2025	Host CDR Mission side events, including SMART-CDR Competition final pitch event and awards during Summit in Bergen, Norway. TBC other CDR Mission side events may occur.	February 25-27 2025	Global	
DAC: Technical Track Kickoff Workshop	Workshop to strategize and identify RD&D priorities.	April 3	Closed, members only.	
TBC Community Engagement Workshop	Workshop that looks at best practices for community engagement related to CDR projects. Potentially to be delivered in partnership with the MI Think Tank.	TBC		
TBC CEM15/MI-9 Side Event		September 25 (TBC)		
TBC GHGT-17	Potential in-person workshop(s) and knowledge sharing for technical experts	October 20-24		
TBC COP29				
LCA/TEA: Technical Track Workshop	Workshop introduces the LCA/TEA 2023 progress and 2024 action plan - Technology and Business Perspectives.	March 11, 2024	Public	Exchange information on current CDA/TEA activities with seeking common understanding on the evaluation framework.

Publications (including workplans, case studies, best practices, mapping datasets, analysis)				
Title	Description	Date	Reach	Results
CDR Launchpad: 2024 Progress Update	An update on identified CDR pilot-scale and demo projects to inform knowledge sharing activities.	Targeting COP29		
CDR Mapping: Demos and Deployments Dataset	Dataset with CDR demos and deployments worldwide. Updated quarterly.	Ongoing		



Publications (including workplans, case studies, best practices, mapping datasets, analysis)				
Title	Description	Date	Reach	Results
CDR Mapping: Bioresources Dataset	Dataset with technically available biomass availability	TBC		
CDR Mapping: EM Resources Dataset	Dataset with mafic and ultramafic rock availability	Targeting MI-9 (Sept 2024)		
LCA Case Studies: DAC				
LCA Case Studies: BiCRS	a) Waste-to-energy case study b) Conversion of forestry residues to hydrogen via gasification with CCS case study			
LCA Technical Track: Literature Review of LCA Methodologies	LCA Literature Review on DAC (DACs) and EM to understand the status and gaps toward the common LCA/TEA frameworks.	Ongoing	CDR Members first, and public	Ongoing
DAC Technical Track: Action Plan	Sets out priorities for the technical track.	TBC		
BiCRS Technical Track: Summary Report from BiCRS Demo Projects Webinar	Summarizes learnings from BiCRS demonstration projects from various countries.	January 2024		

Stakeholder Engagement <sup>7</sup>		
Engagement Method	Objectives and Intended Impact	Results
SMART-CDR Competition	Objectives: <ul style="list-style-type: none"> <li>- Secure investor in prize pot.</li> <li>- Contract NREL lab to administer prize.</li> <li>- MRV and other, relevant companies participate in project (e.g. providing mentors and evaluators, participating in event, hosting student presentations, lab tours).</li> <li>- Academic institutions help to promote the project, contribute to evaluation and mentorship.</li> </ul>	(To be updated after project is completed in early 2025).

<sup>7</sup> Missions may want to consider who their target audience is in a given year and how they intend to engage them. This could include senior representatives, ministers, industry, NGOs, other international organizations, or the public. Missions may want to consider the objectives of and results from these engagements (e.g. signing of a statement of intent, funding committed by the stakeholder, knowledge exchange, amplifying messaging).

Stakeholder Engagement <sup>7</sup>		
Engagement Method	Objectives and Intended Impact	Results
	<ul style="list-style-type: none"> <li>- Relevant NGOs contribute to the project (e.g. Student Energy, Carbon 180) through promotion, financial contribution, providing advice, contributing to evaluation/mentorship, or other methods as appropriate.</li> <li>- Secure an event partner for the final pitch event.</li> </ul> <p>Impact:</p> <ul style="list-style-type: none"> <li>- Stakeholders strengthen project delivery.</li> <li>- Stakeholders access future talent, new ideas.</li> </ul>	
New Projects (TBD)	<ul style="list-style-type: none"> <li>- Partner on joint RD&amp;D call (E.g. RMI, CETP)</li> <li>- Partner to develop and launch knowledge platform (e.g. IEA GHG)</li> </ul>	(To be updated at the end of 2024).
Events	<p>Objectives:</p> <ul style="list-style-type: none"> <li>- Priority speakers from external partners are identified and contribute to knowledge exchange at MI events.</li> <li>- Event partners shape event programs (e.g. MI Think Tank event on community engagement, GHGT-17).</li> </ul> <p>Impact:</p> <ul style="list-style-type: none"> <li>- Increase awareness of MI and opportunities for collaboration.</li> <li>- Knowledge exchange between stakeholders.</li> <li>- Strengthen MI events, ensuring relevance for stakeholders/audience.</li> </ul>	<p>(To be updated at the end of 2024, based on ongoing tracking throughout the year).</p> <p>Past engagement:</p> <ul style="list-style-type: none"> <li>- Joint CEM CCUS Initiative event at COP28 (2023).</li> <li>- Tracker includes stakeholder participation in past events: MI-7 RT; COP26 side event, CDR Launchpad event at COP27; BiCRS webinar.</li> </ul>
Stakeholder Engagement Cohort	<p>Objectives:</p> <ul style="list-style-type: none"> <li>- Building on past engagements with stakeholders, develop a proposal to establish a formal group of stakeholders including a range of private actors with distinct operations throughout the CDR value chain, with consideration given to whether a broad range of stakeholders should be included, such as corporate off-takers. The cohort would provide input and feedback on Mission projects and priorities, exchange knowledge, identify and advance joint projects, among others. Exact structure and goals TBD.</li> </ul> <p>Impact:</p> <ul style="list-style-type: none"> <li>- Establishing community for stakeholders to exchange with one another.</li> <li>- Increase CDR Mission access to stakeholder input, latest priorities and information.</li> <li>- Facilitate new collaborations, strengthen existing projects, increase knowledge of global stakeholder activities.</li> </ul>	<p>(To be updated at the end of 2024)</p> <p>Past engagement:</p> <ul style="list-style-type: none"> <li>- Stakeholder input to Action Plan summer 2022 via workshop.</li> <li>- Input to Innovation Roadmap, summer 2022.</li> </ul>

Stakeholder Engagement <sup>7</sup>		
Engagement Method	Objectives and Intended Impact	Results
CDR Launchpad	<p>Objectives:</p> <ul style="list-style-type: none"> <li>- Include external partners as active participants in MRV working group.</li> <li>- Profile Launchpad projects on social media, at events.</li> <li>- Invite Launchpad projects to participate in knowledge exchange.</li> </ul> <p>Impact:</p> <ul style="list-style-type: none"> <li>- Increase awareness about projects.</li> <li>- Exchange learnings from demos, enabling “learning by doing.”</li> <li>- Government to business information exchange to advance the state of MRV.</li> </ul>	(See list of Launchpad projects <a href="#">here</a> . Update at the end of 2024 with how projects were engaged).
Mapping Initiative	<p>Objectives:</p> <ul style="list-style-type: none"> <li>- Data exchange with other mapping projects.</li> <li>- Partnership to deliver new maps (e.g. contract to host map).</li> </ul> <p>Impact:</p> <ul style="list-style-type: none"> <li>- Strengthen delivery of MI CDR map, and other global maps.</li> <li>- Eliminate duplication.</li> <li>- Leverage external partner expertise to deliver projects.</li> </ul>	(Update at the end of 2024).  Engagements so far include exchanges with DAC Coalition.
Workstream participation	<p>Objectives:</p> <ul style="list-style-type: none"> <li>- Workstreams identify meaningful opportunities for innovators, academics, other international initiatives to contribute to workstream initiatives, for example as a member.</li> <li>- Build on prioritization to identify which stakeholder types should be engaged in workstreams.</li> </ul> <p>Impact:</p> <ul style="list-style-type: none"> <li>- Access to expertise to strengthen projects.</li> <li>- Coordinate global efforts, streamline work.</li> </ul>	(Update at the end of 2024) Existing engagements: <ul style="list-style-type: none"> <li>- Canadian and UK academics contributing to LCA/TEA workstream in 2023, attending meetings and advancing case study and literature review work.</li> <li>- Preliminary meetings between BiCRS workstream and Integrated Biorefineries.</li> </ul>
Case studies	<p>Objectives:</p> <ul style="list-style-type: none"> <li>- Workstreams work with project proponents to develop and publish case studies (e.g. LCA/TEA).</li> <li>- Identify end-users of case studies.</li> </ul> <p>Impact:</p> <ul style="list-style-type: none"> <li>- Publicly available knowledge, sharing results from projects for “learning by doing”</li> </ul>	(Update at the end of 2024/when case studies are published).  Case studies underway: <ul style="list-style-type: none"> <li>- BiCRS: waste-to-energy LCA/TEA case study (Norway)</li> <li>- BiCRS: conversion of forestry residues to hydrogen via gasification with CCS case study LCA/TEA (Canada)</li> </ul>

## Section 6 – Demonstrations Projects

Section 6 – Demonstrations Projects See list of pilot-scale and demo projects identified for the CDR Launchpad here: <https://mission-innovation.net/wp-content/uploads/2024/01/CDR-Launchpad-Projects-Jan-2024-update.pdf>