

Mineral Carbonation International

CSLF | CDR Technology Snapshot



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Chief Operating Officer

28 June, 2022



Mineral Carbonation International

Key funders



Australian Government

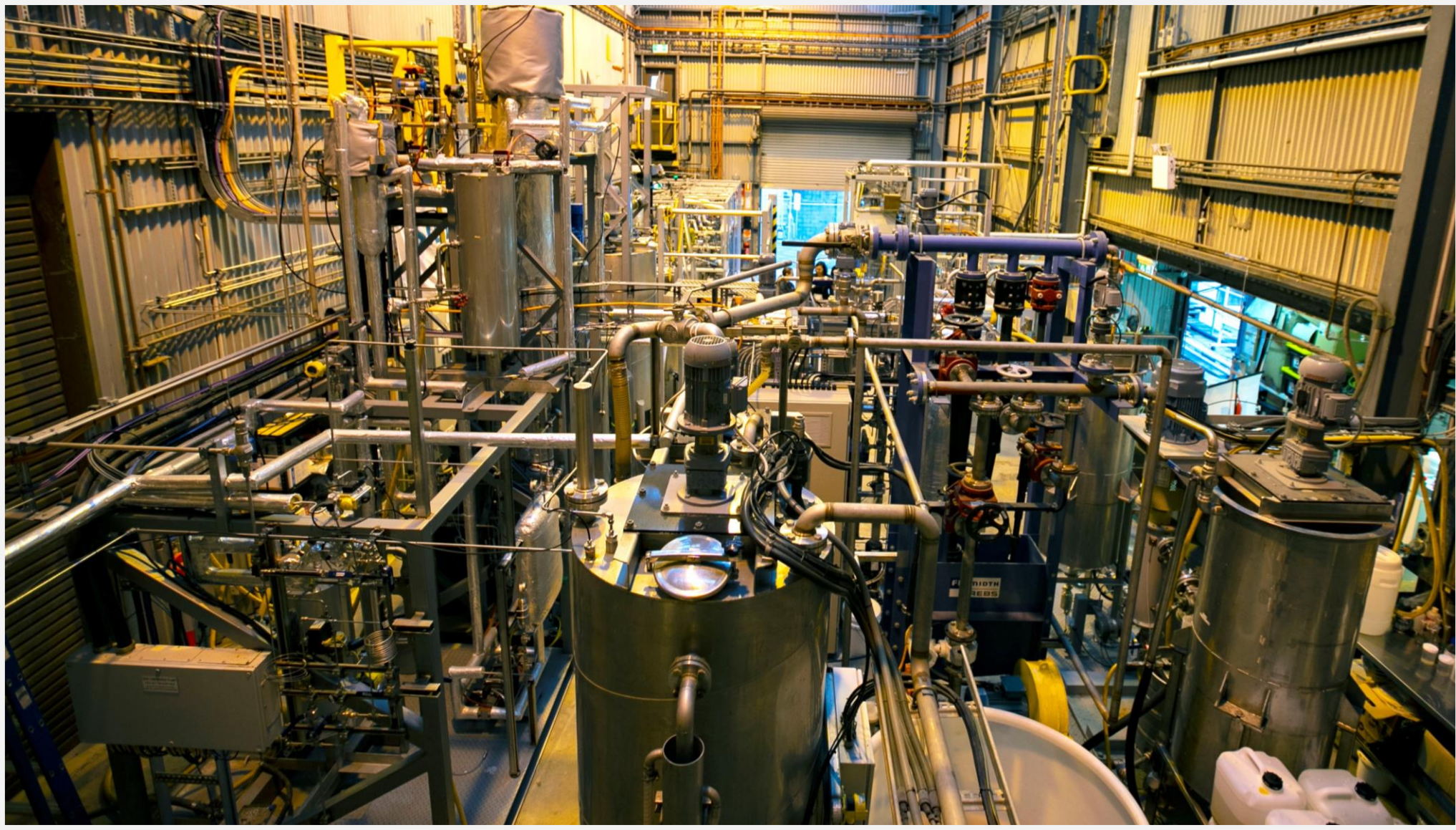


Supporters and partners



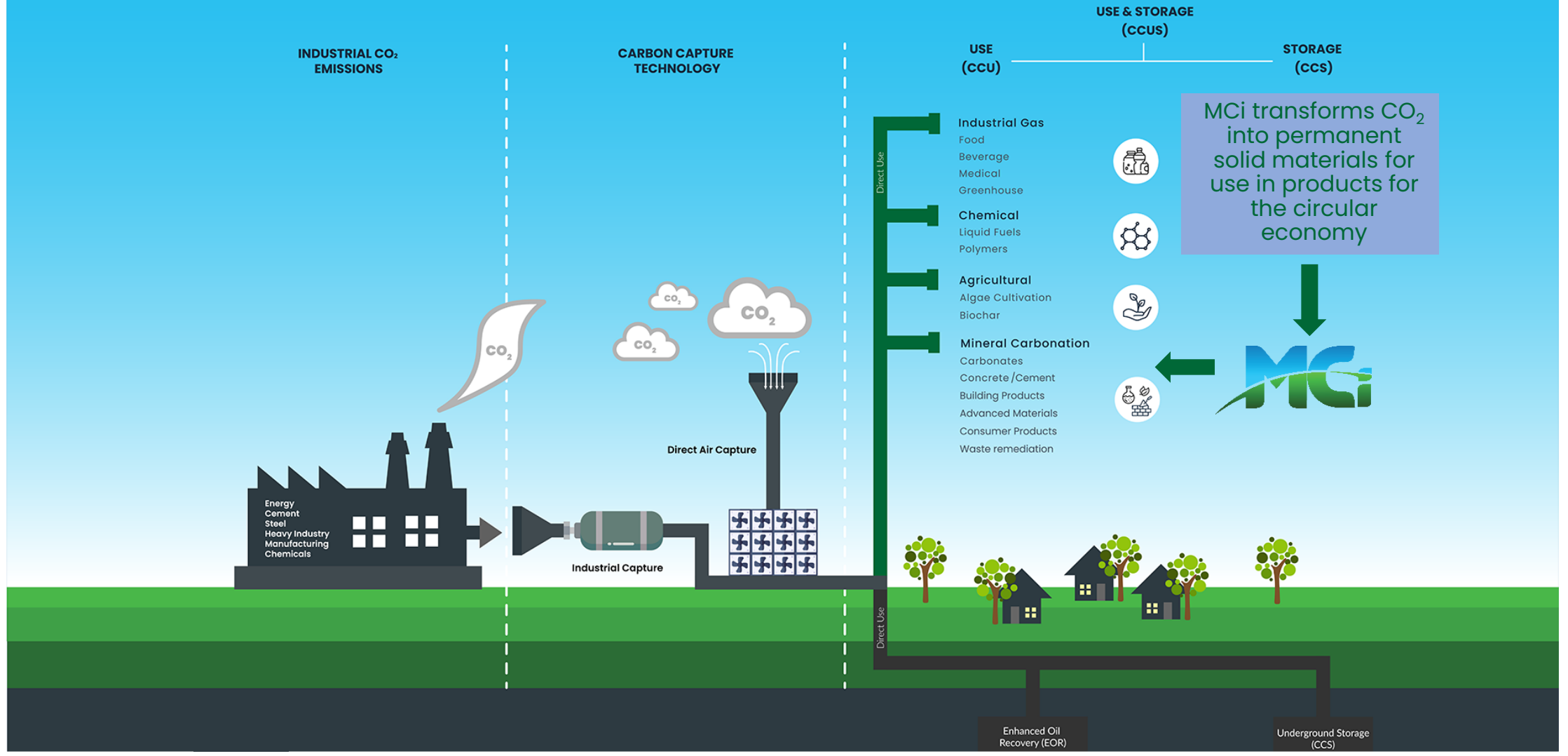
Recent media coverage



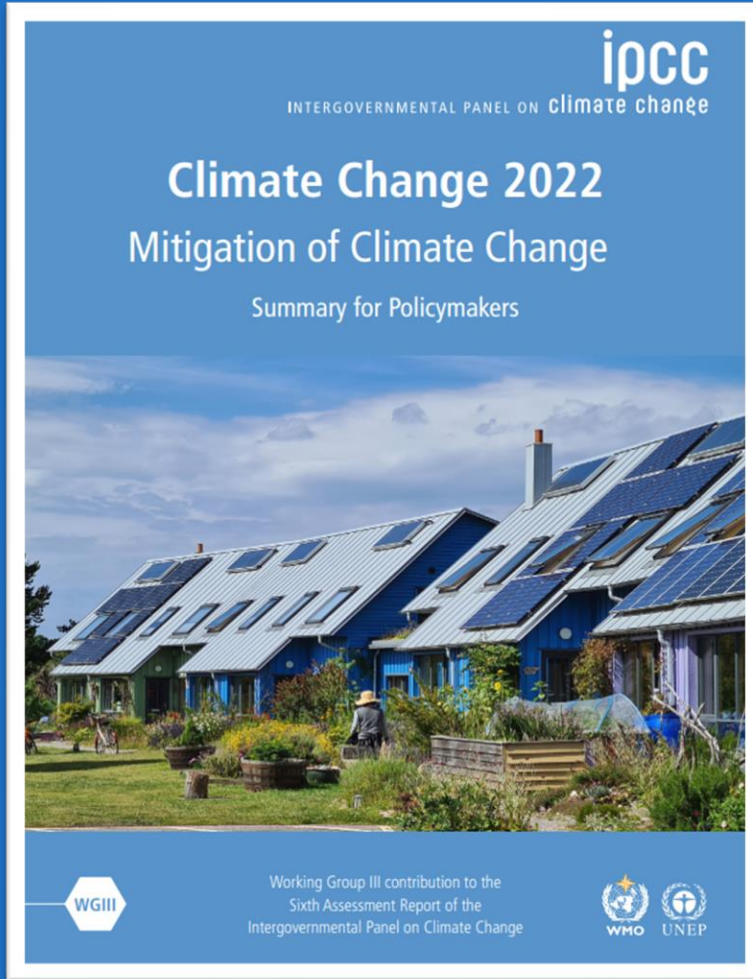




Where does MCI fit in the CCUS landscape?



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...exceeding 1.5C is **'almost inevitable'**

Reducing industry emissions will be **a collaborative effort across supply chains**, with mitigation options across production processes, energy and input efficiencies, and abatement technologies, such as **Carbon Capture and Utilisation (CCU)**

CCU has an important role in the race to net zero, whereby the hard-to-abate industries such as steel, cement, aluminum and mining can **utilise technologies as part of industry transition.**

...decarbonising industries can only be achieved through **a mentality of circularity.**

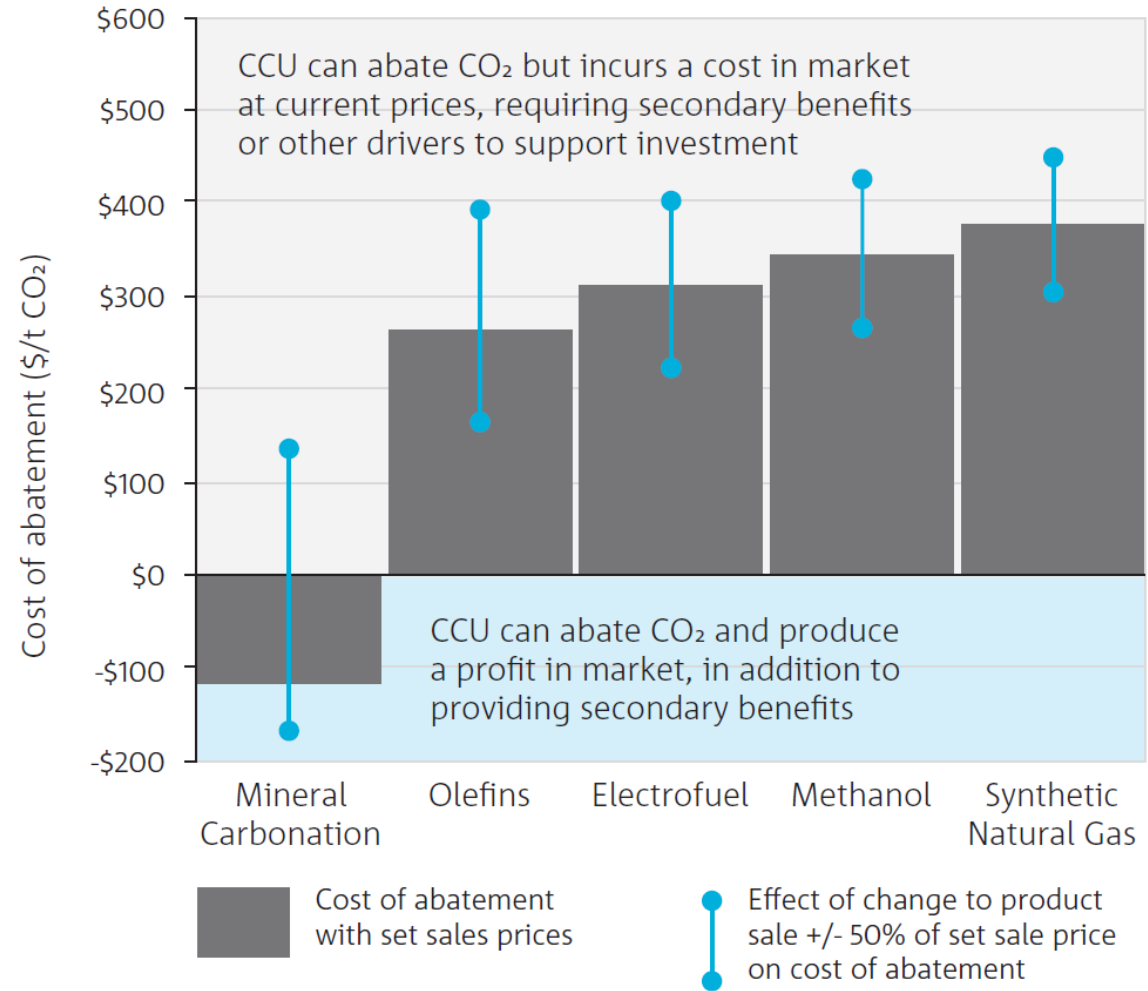


Australia's National Science Agency

CO₂ Utilisation Roadmap



Cost of abatement, including effect of product sale price on cost of abatement



Source: CO₂ Utilisation Roadmap, p13



Australia's National Science Agency

CO₂ Utilisation Roadmap

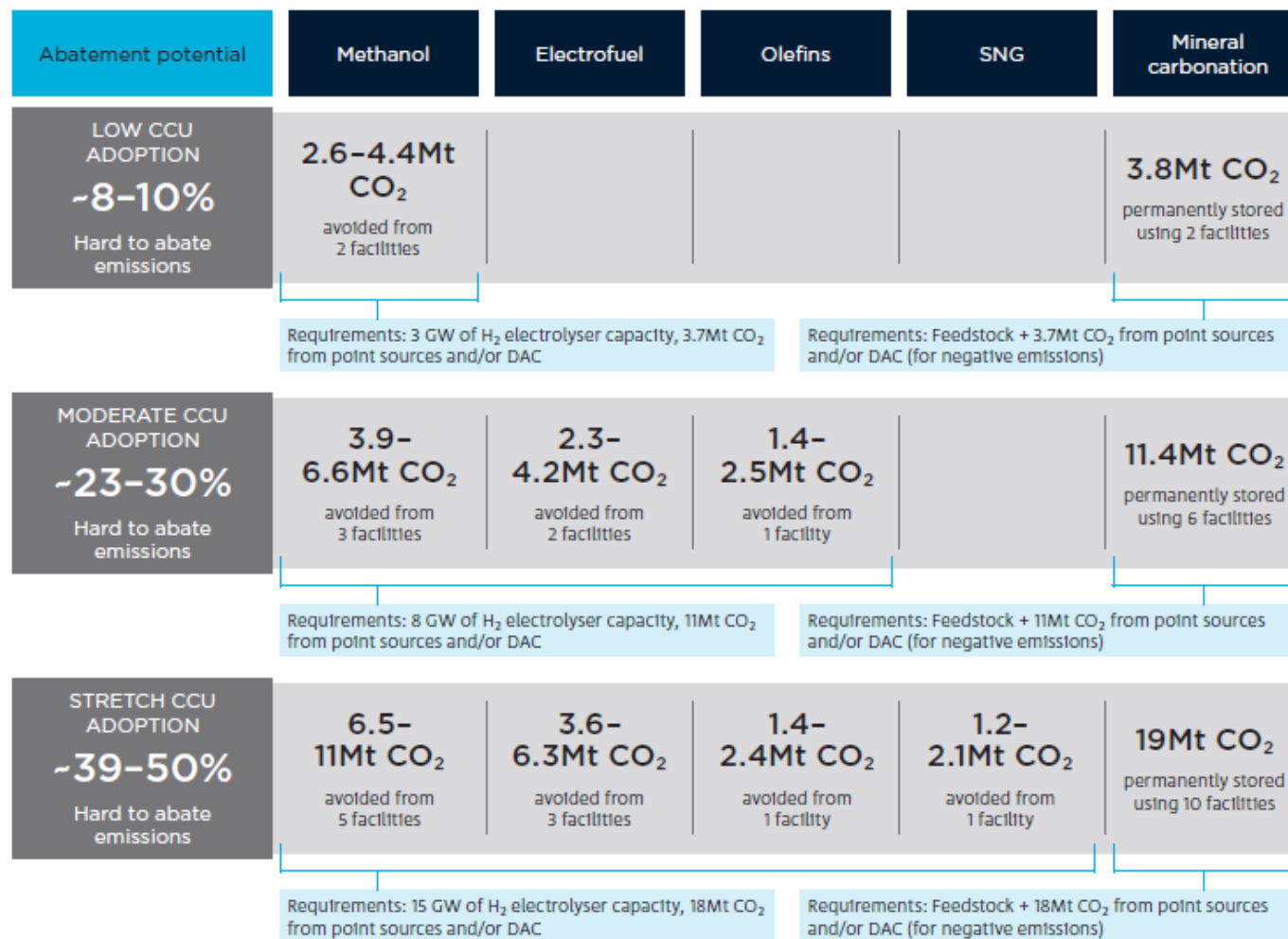


Figure 42: Scenarios to illustrate abatement potential and requirements for different levels of CCU adoption

Source: CO₂ Utilisation Roadmap, p99



UN CLIMATE
CHANGE
CONFERENCE
UK 2021

IN PARTNERSHIP WITH ITALY

Awarded #1 Cleantech



"...the winning submission was MCI's scalable carbon platform technology that converts industrial carbon dioxide (CO₂) emissions into solid bulk materials."

Announced during the Net Zero Technology Centre's (NZTC) COP26 program, *'The Road to Glasgow. Destination Net Zero'*



"Winning company MCI showed true innovation as well as grit and resilience, which will stand them in good stead as they further develop their technology and grow their business."

Martin Gilbert, Chair of the NZTC Judging Panel

TRL 6

Scale: ~100 tonnes of CO₂/yr

Details: All feedstocks, in batches or semi-continuous

Funding: Government grants/early-stage capital

Status: Operating since 2016.

Customer: Research facility in Newcastle

2016–2023

TRL 7

Scale: ~3,000 tonnes of CO₂/yr

Details: All feedstocks and continuous. Designed to be mobile.

Funding: Government grant and capital raise

Status: Detailed design, commission due: 2023

Customer: Next to Orica's ammonia plant, Kooragang Island (Newcastle, Australia)

2023–2027

TRL 8

Scale: Several sites of <100,000 tonnes of CO₂/yr

Details: TBD – all feedstocks feasible

Funding: Grants, capital raise, and customer or 3rd party capital

Status: N/A

Customer: TBD—several customer discussions progressing. Likely candidates are in AU, Japan, EU and US

2027–2030

TRL 9

Scale: Multiple sites of 100,000+ tonnes of CO₂/yr

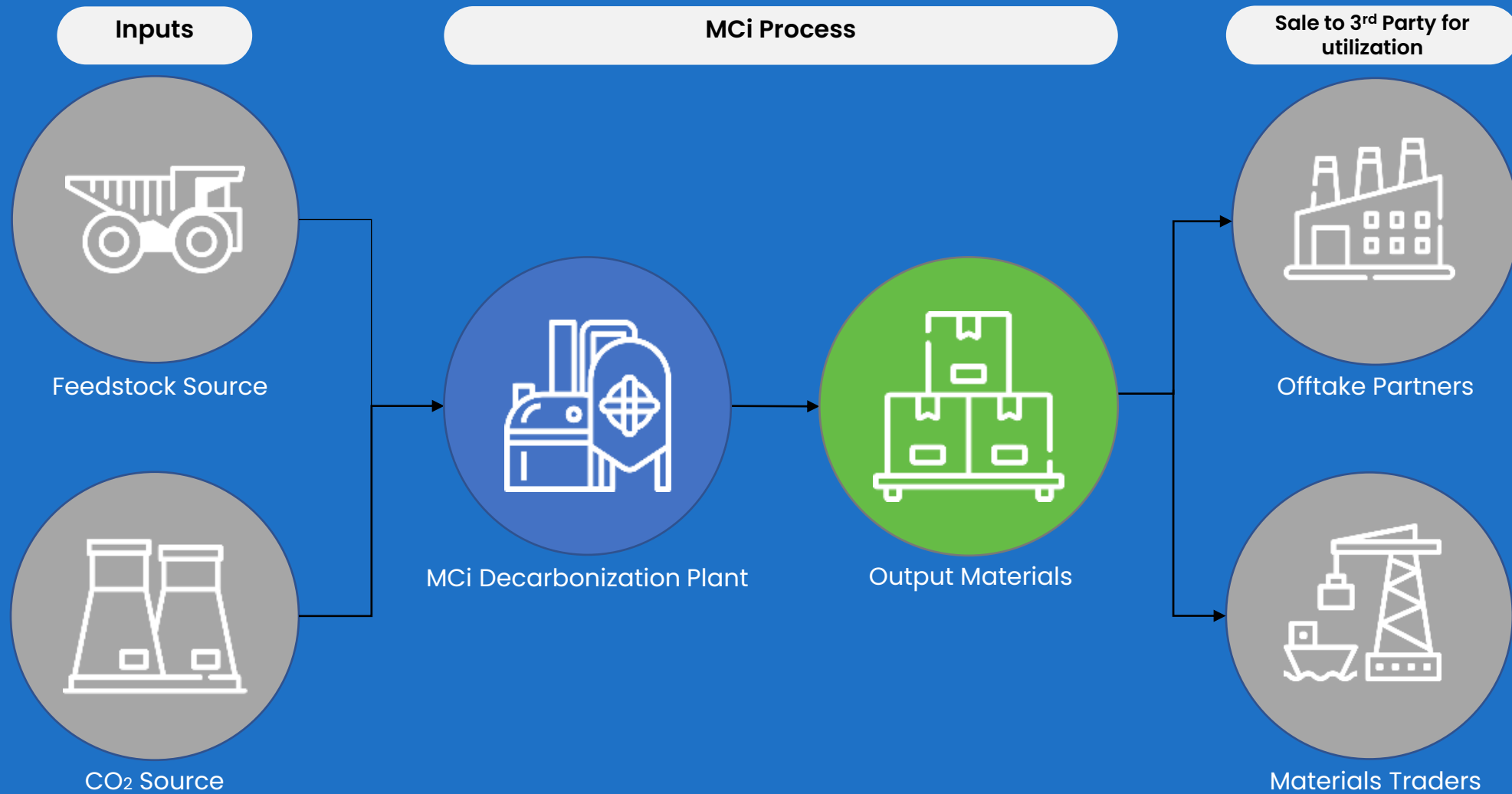
Details: TBD – all feedstocks are possible

Funding: Customer and/or 3rd party capital

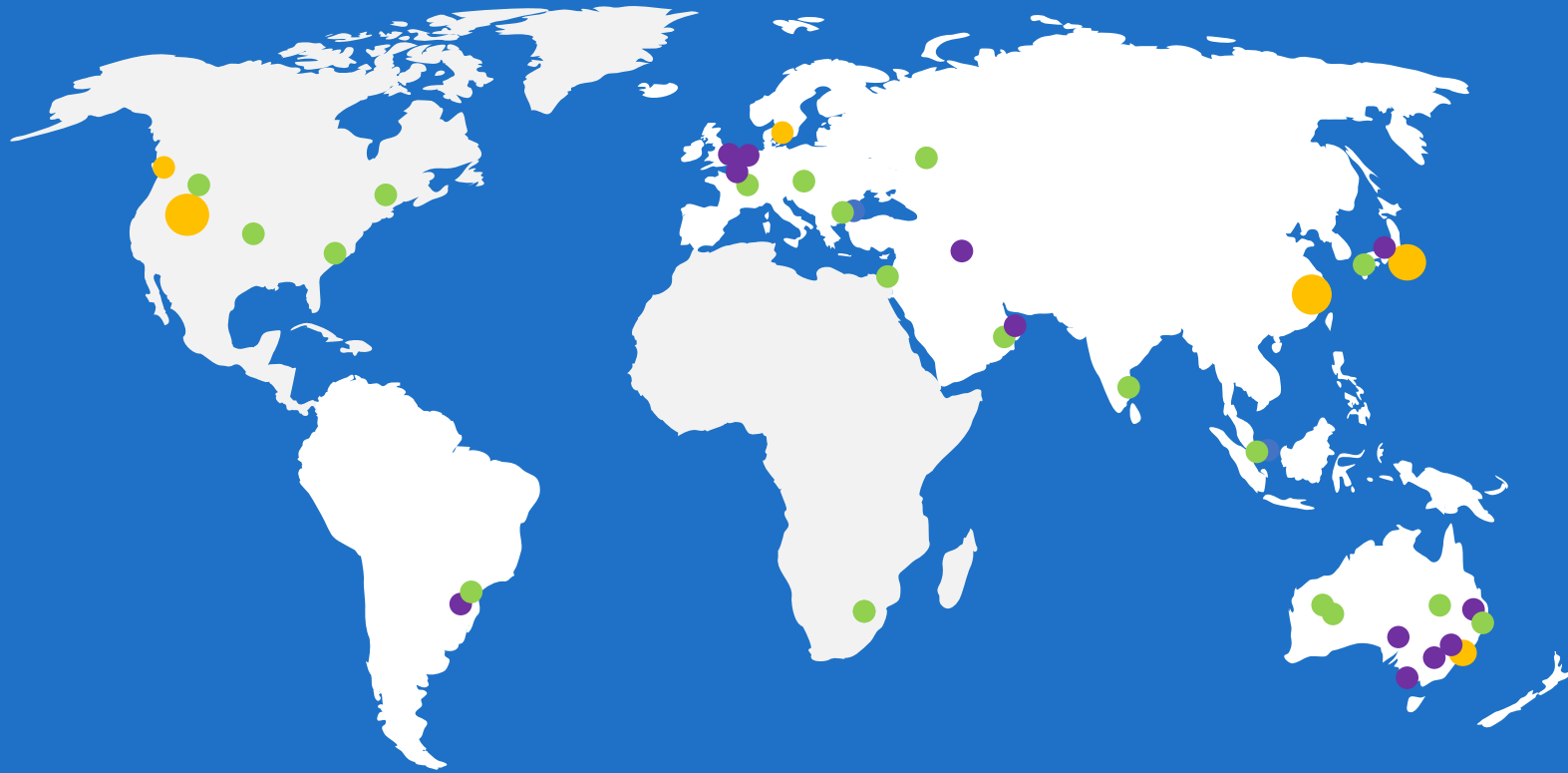
Status: N/A

Customer: Potential scale up of smaller scale plants or new sites for large-scale industrial customers

2030+



Live Activity Pipeline (active engagements):



● Abatement customers

Projects across several sectors:

- Steel
- Cement
- Mining / mineral processing
- Hydrogen / ammonia
- Waste to Energy
- Ports & energy hubs
- CCUS hubs & CO₂ capture projects

● Low-carbon embodied materials customers

Manufacturers and researchers of products including:

- Cement / concrete
- Plasterboards
- Consumer products (paint, plastics, etc.)

● Partnerships

NDA's, MoU's and collaboration agreements with groups including:

- Global commodity traders
- Carbon traders
- Standards groups
- Industry consortia/bodies
- Feedstock suppliers
- Mining partners
- Engineering partners
- Capital partners

Customer Target	Minerals Processing	Steel / Iron	Cement / Concrete	Waste-to-energy	Power	Refractories	Building Materials	Consumer Products	Ports/ CO ₂ Hubs	Glass	Agriculture	Blue Hydrogen	Oil & Gas
1. CO ₂ Supply	✓	✓	✓	✓	✓	✓	*	*	✓	✓	✓	✓	✓
2. Feedstock Supply	✓	✓		✓	✓	✓			✓				
3. Off-take Partner	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Rating	Tier 1	Tier 1	Tier 1	Tier 1	Tier 1	Tier 1	Tier 1	Tier 1	Tier 1	Tier 2	Tier 2	Tier 1*	Tier 1
MCI Discussions by Region	EMEA APAC	ASIA APAC	ASIA EMEA APAC LATAM NA	EMEA APAC	EMEA	EMEA LATAM	ASIA EMEA APAC LATAM	EMEA	EMEA APAC	EMEA	APAC		EMEA APAC NA

* Due to the ability of these markets to consume a high proportion of mineral carbonation materials, they are rated as Tier 1

Our target sectors are:

- Large-scale
- Hard-to-abate
- High emissions intensity

Customer Tiers explained:

- Tier 1 – All 3 factors present
- Tier 2 – Any two factors present
- Tier 3 – Only 1 factor present – usually CO₂

Energy & Mass Balance Summary*

Item	Quantity	Units
Mineral feedstock (various)	3 – 4	tonnes/tonne CO ₂
Thermal energy	3 – 5	GJ/tonne CO ₂
Electrical energy	0.2-0.4	MWh/tonne CO ₂
Direct flue gas CO ₂ capture concentration (option)	>15%+	Techno-economic threshold for direct capture without need for separate CO ₂ e.g. Steel, cement, chemicals, W2E
Net direct CO ₂ abatement	85-90%	Note: Includes residual emissions from energy consumption and carbon capture (full lifecycle analysis)
Net Revenue per tonne CO ₂ avoided/stored	US\$0->US\$350	Customer techno-economic studies show multiple business cases demonstrating positive net revenues
Total CO ₂ avoided	2 – 3	tonne/tonne CO ₂ (including direct emissions abatement + avoided emissions from products)

*

Performance is dependent on a number of factors including CO₂ content and mineral type
 Our technology can provide both capture and conversion – it should not be compared to capture alone
 We produce useful products which displace other energy and emissions intensive materials.



“

**We can capture carbon,
but what then?
Turning a profit will be key.**

Forbes – 27 January, 2021

Mineral Carbonation International

Thank you



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