

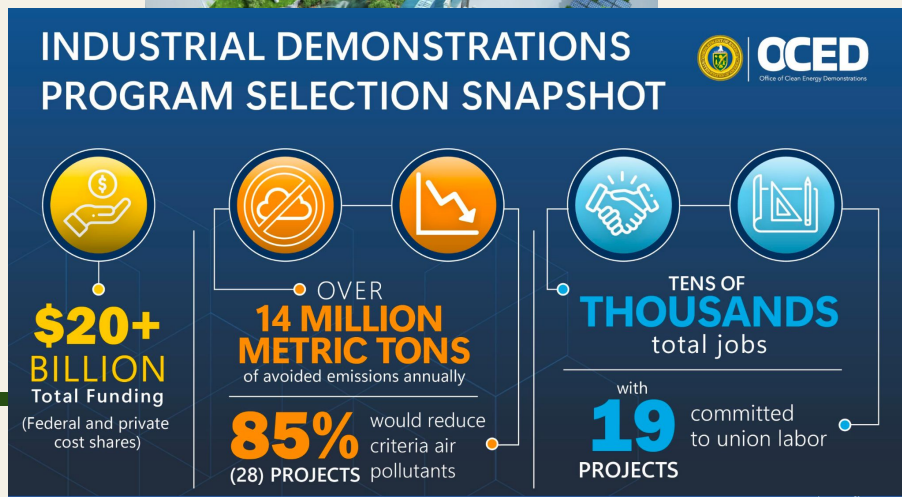
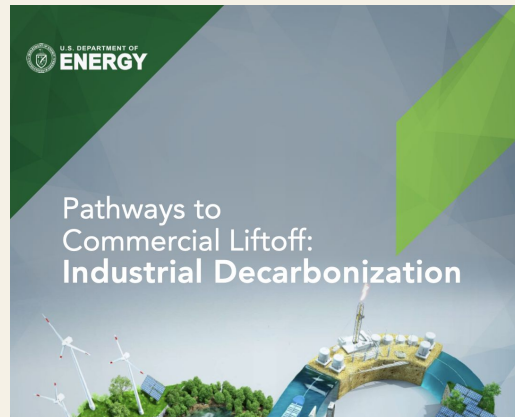
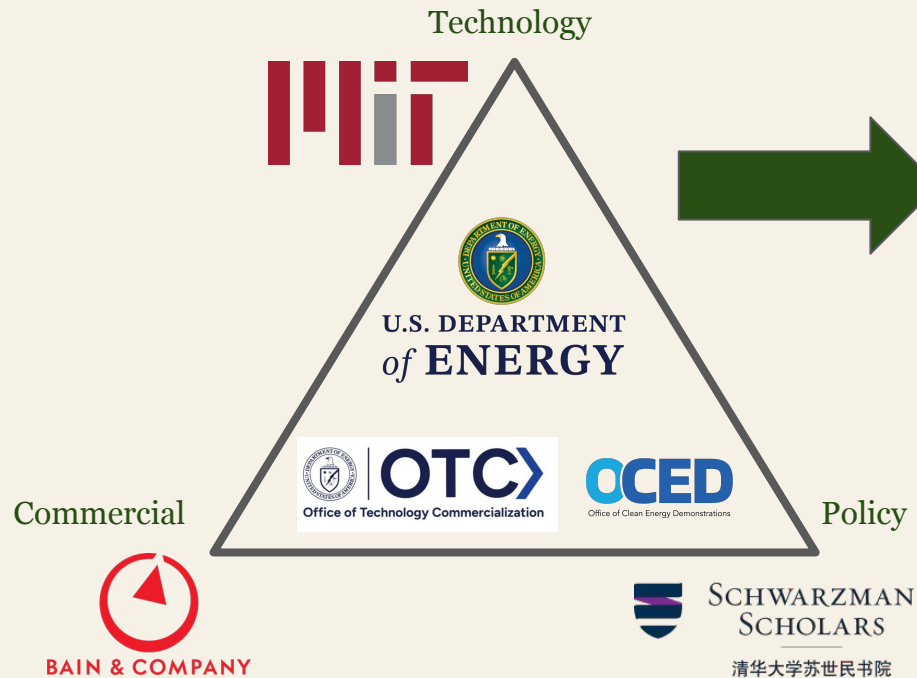
EESI: State of the Market in Industrial Emissions

Kate Scott Pavao

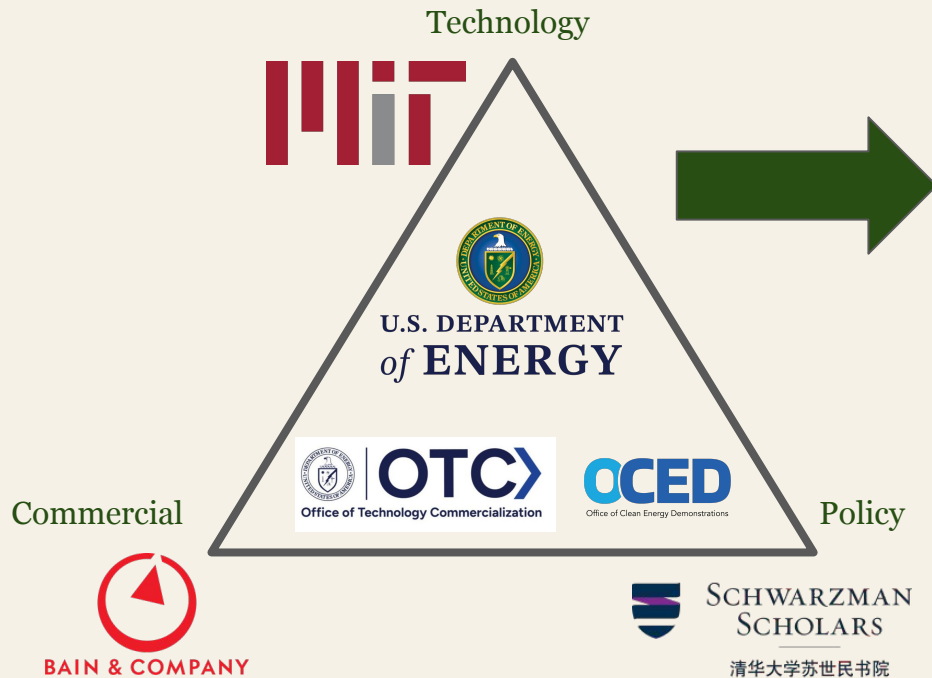
KLSP Consulting, LLC.

10/22/2025

Introduction: My passion is moving technology from lab to market



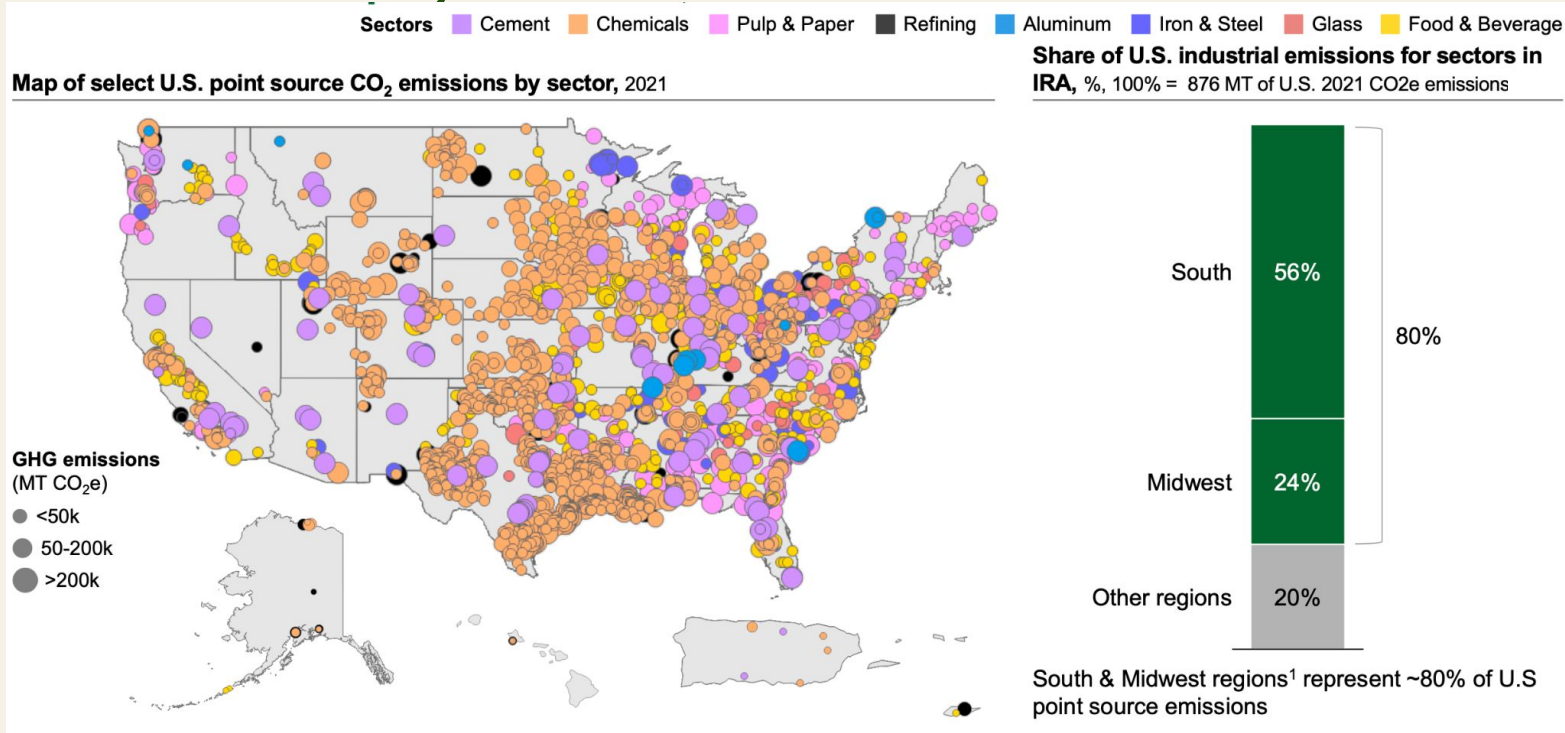
Introduction: My passion is moving technology from lab to market



Kickstarting Liftoff in Science and Policy

Working with universities, VCs, and hyperscalers across the energy ecosystem to commercialize technology

There are 2,500+ industrial facilities (and communities) across the United States



Technologies exist in every sector and technology area ready to be deployed in U.S. facilities

NOT EXHAUSTIVE ILLUSTRATIVE

Industrial Sector

Decarbonization Level

Highest stage of U.S. development*

- Deployable
- Demo
- R&D / Pilot
- Limited relevance for sector decarbonization

	Chemicals	Refining	Iron & Steel	Food & Beverage	Cement	Pulp & Paper	Aluminum	Glass
CCUS (incl. H2 production)	Various	FCC ² , process heat, SMR ³	BF-BOF ⁴ , NG-DRI/HBI ⁵		Rotary kiln	Black liquor boiler	Smelting	Melting, forming
Industrial electrification	Low-high temp heat alternatives	Low-high temp heat alternatives	EAf ⁶ transition	Low temp heat alternatives	Pre-calc, kiln	Low-mid temp heat alternatives	Low temp, high temp, process	High temp melting
Energy efficiency	Various	Various	Various	Various	Various	Various	Various	Various
Electrolytic Hydrogen	Clean ammonia production	Hydrocracking, hydrotreating ⁹	H2-HBI	Boiler	Rotary kiln	Boilers, burners	Calciner	Melting
Raw material substitutions	Recycling ¹¹	Bio-based feedstock	NG-DRI/HBI ⁵		Clinker substitution ¹⁰	Recycling	Recycling	Recycling, silica alternatives
Alt. fuel (non-H2)				Boilers, various equipment	Rotary kiln	Boilers, burners		Melting
Alt. production methods	Bio-based plastics ¹		Ironmaking processes	Various ⁸	Electrochemical ⁷		Carbochlorination, inert anode	

Adoption Readiness must improve to unlock industrial technology investment



Value Proposition: High delivered cost; High complexity to adopt



Resource Maturity: Lack of enabling infrastructure; Capital flow challenges



Market Acceptance: Emerging demand maturity



License to Operate: Community perception



Technology Readiness: Limited high-TRL technologies

Status of DOE Industrial Demonstration Projects

Sector	Project count (2024)	Project count (today)
Chemicals & Refining	7	2
Iron & Steel	6	2
Food & Beverage	3	0
Cement	6	1
Pulp & Paper	1	0
Aluminum & Metals	5	5
Glass	3	0
Heat	2	0
Total	33	10

Ongoing Project Sponsors



Cancelled Project States

TX, LA, OH, KY, MA, IL, VT,
MO, MN, IN, NY, TN, MI, NC,
CA, AZ

As government steps back, partnerships with hyperscalers, non-profits, and industry continue

09.19.25

Sustainable Concrete Buyers Alliance Launches to Accelerate Adoption of Low-Carbon Building and Infrastructure Materials

New RMI and Center for Green Market Activation initiative will enable Amazon, Prologis, Meta, and other leading organizations to participate in a first-of-its-kind joint purchase of sustainable concrete attribute certificates, driving investment into cutting-edge production facilities, low-carbon cement blends, and emerging technologies.



Microsoft Buys Over 600,000 Tons of Green Cement to Help Build Sustainable Materials Market



ESG Today Writing Staff

May 28, 2025



Microsoft

GreenieRE Coalition & Trellis Climate launch Vensurety for climate companies

⚡ 24th September 2025 - Author: [Saumya Jain](#) - Share



TRELLIS
CLIMATE



GreenieRE
COALITION

UPDATE

April 16, 2025

Apple unveils environmental progress, surpassing 60 percent reduction in global greenhouse gas emissions

Ahead of Earth Day, Apple hits new milestones in emissions reductions, clean energy, and recycled materials

Customers are invited to recycle devices in-store with a special offer through May 16



Thank you!

Find out more at klsp-consulting.com

Appendix: Status of DOE Industrial Demonstration Projects (1/2)

Sector	Project count (2024)	Project count (today)	Cancelled projects	Ongoing projects
Chemicals & Refining	7	2	Advanced recycling in TX, Flexible fuel burners in TX, e-Methanol production in TX, Innovative ethylene production in TX/LA	Dow Chemical CCUS on Gulf Coast BASF recycled syngas production in TX
Iron & Steel	6	2	Natural gas based direct iron reduction in OH, iron induction melting in AL, Hydrogen reduction in LA	Cleveland Cliffs steel induction melting in PA Vale Iron Ore Briquettes in LA
Food & Beverage	3	0	Onsite power and heat pumps in KY, OH, IL, VT, MO, MN, IN, NY, TN, MI	
Cement	6	1	Innovative cement production in MA & NC/CA, CCS in CA & IN,	Titan America calcined clay in VA

Appendix: Status of DOE Industrial Demonstration Projects (2/2)

Sector	Project count (2024)	Project count (today)	Cancelled projects	Ongoing projects
Pulp & Paper	1	0	Innovative membrane separations in LA	
Aluminum & Metals	5	5		Wieland Copper recycling Real Alloy aluminum recycling Century Aluminum Primary aluminum Constellium hydrogen melting Golden Aluminum electric melting
Glass	3	0	Flexible fuel burners in CA	
Heat	2	0	Waste heat systems in NY, Microgrid system in AZ	
Total	33	10		