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Industrial Decarbonization: Opportunities and Challenges

CEC Workshop to Accelerate
Industrial Decarbonization

August 3, 2021

Key Recommendations from Industrial Decarbonization Roadmap

The industrial decarbonization roadmap addressed the need to accelerate RDD&D of emerging & transformative technologies to achieve **net-zero GHG emissions in the industrial sector by 2050**



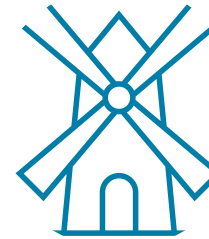
Pursue multiple decarbonization pillars in parallel, including energy efficiency, industrial electrification, low-carbon fuels and CCUS



Invest early in low-carbon process technologies to ensure future market viability.



Drive low capital investment approaches, with multiple benefits that spur early action, including energy and materials efficiency



Align with expansion of renewable energy and other low-carbon assets.

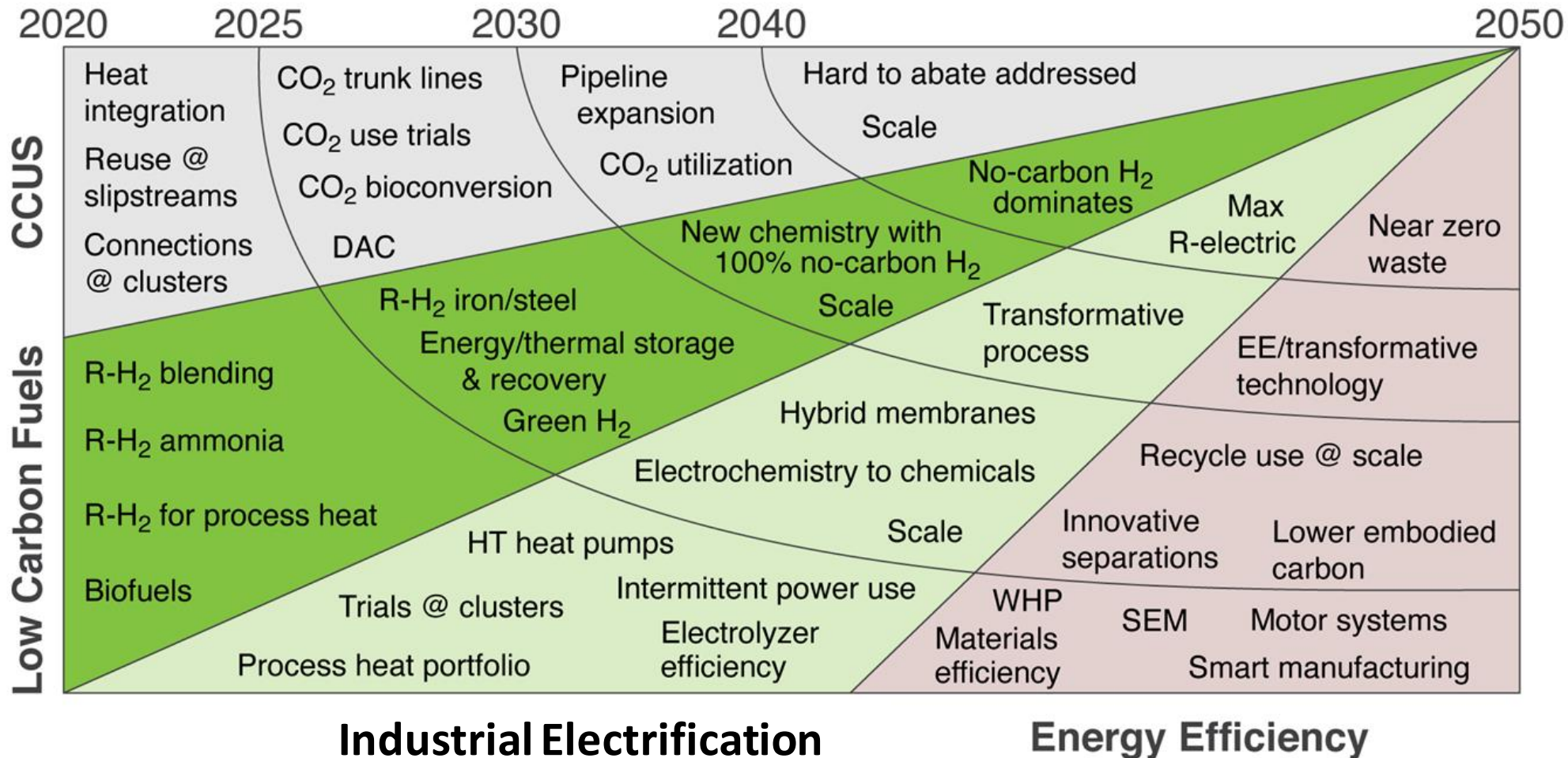


Portfolio should include new technologies, integration into process systems and supply chains.



Develop workforce across industries with a spectrum of skill sets and diversity and inclusion

Multiple Pillars of Decarbonization Must be Pursued in Parallel



Technical opportunities across a range of Technology Readiness Levels (TRLs)

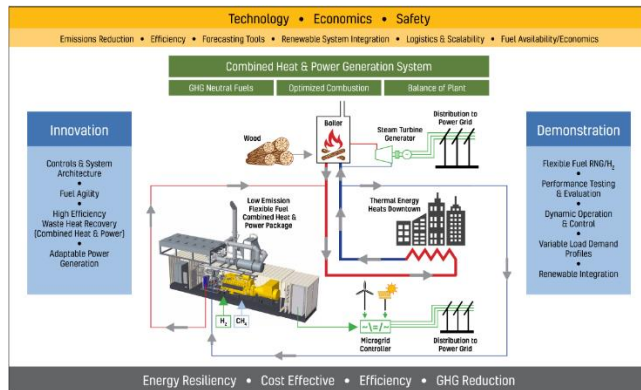
- **Higher TRLs:** Prompt investments are essential to lower adoption hurdles and rapidly scale later-stage technologies.
- **Lower TRLs:** Investments in early-stage low carbon technologies will be needed soon to ensure future market viability.

Landscape of major RD&D investment opportunities for industrial decarbonization between now and 2050.

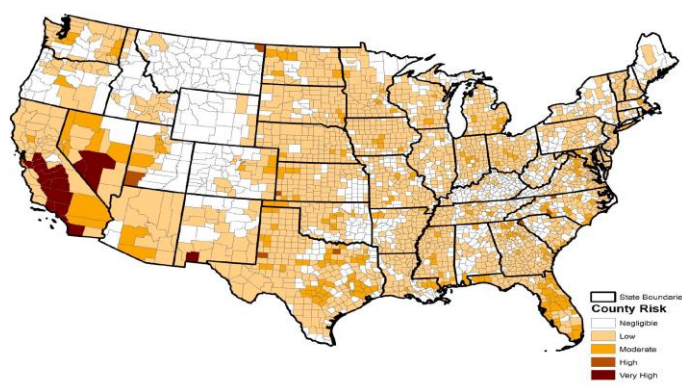
Samples of Current RDD&D Activities

Research, Development & Demonstration

- Demonstration of Combined Heat and Power in a Biomass Powered District Energy System

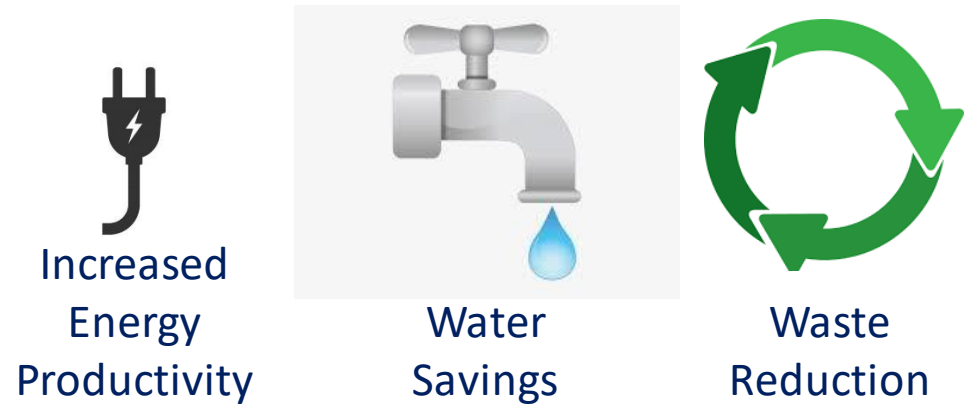


- Energy-Water Nexus – NAWI Hub

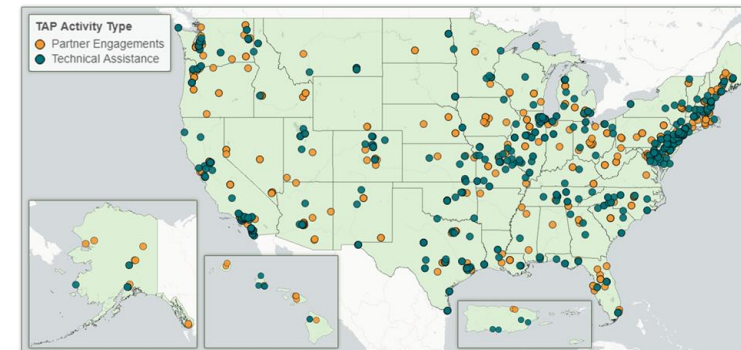


Technology Deployment

- Better Plants



- CHP Technical Assistance Partnerships (TAPs)



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<https://www.energy.gov/eere/amo/advanced-manufacturing-office>