

The Future of Green and Low-Carbon Cement

Market and policy drivers, technology landscape, costs and economics, and promising start-ups in low carbon cement

Multi-Client Study Prospectus



440 COBIA DR • STE 1704
HOUSTON • TEXAS 77494
+1 (281) 506-8234
INFO@ADI-ANALYTICS.COM
WWW.ADI-ANALYTICS.COM

Outline

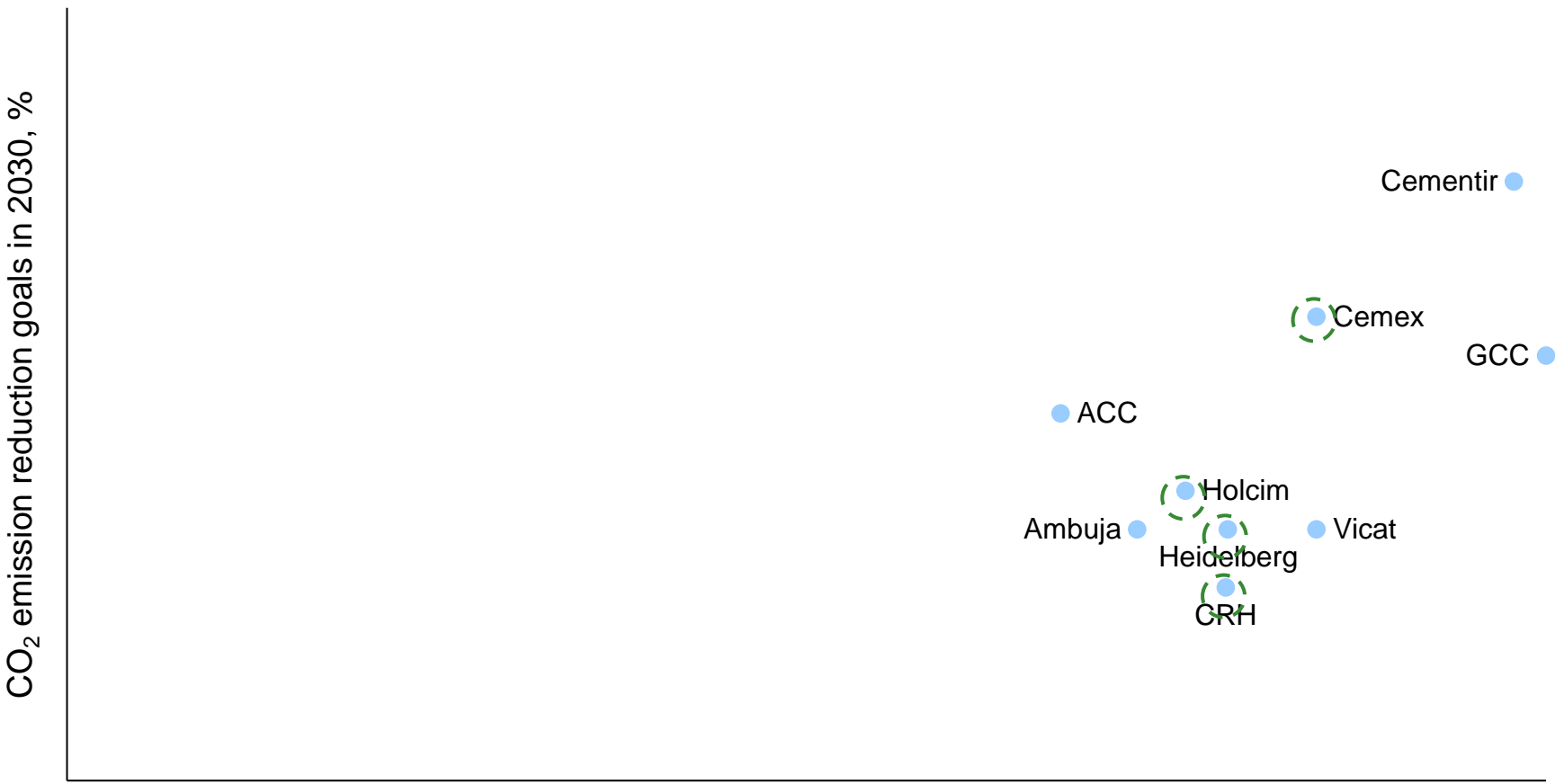
- ▶ **Study Prospectus**

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Several large major cement producers have set CO₂ reduction targets by 2030 as well as net-zero commitments by 2050

Cement producers' decarbonization commitments

(Current emissions in kg of CO₂ per ton of cement vs CO₂ emission reduction goals in 2030)



Current emissions, kg of CO₂ per ton of cement

Several countries in Europe along with the U.S. are driving decarbonization of the cement industry

Countries promoting decarbonization of cement industry


- **Greening Government Strategy**, government has committed to disclose embodied carbon in structural materials in major projects starting 2022 and 30% reduction in embodied carbon starting 2025
- **Strategic Innovation Fund with \$8 billion** to expedite decarbonization projects with larger emitters

- **UK Climate Act** targets to reduce GHG emissions by at least 100% of 1990 levels by 2050, which includes high emission industries like cement industry
- **CIF fund with \$1.3 billion** to support CCUS efforts in emission intensive industries
- **EPSRC to provide \$260 million** to support development and use of low-carbon cement and concrete

- **Construction Production Regulation**, encourage use of low environmental impact construction products
- **Emission Trading System**, sets cap on total GHG emissions from high emission industries, including cement industry making amendments to **FIT For 55 policy** for emissions to be reduced by 61% relative to 2005 levels by 2030

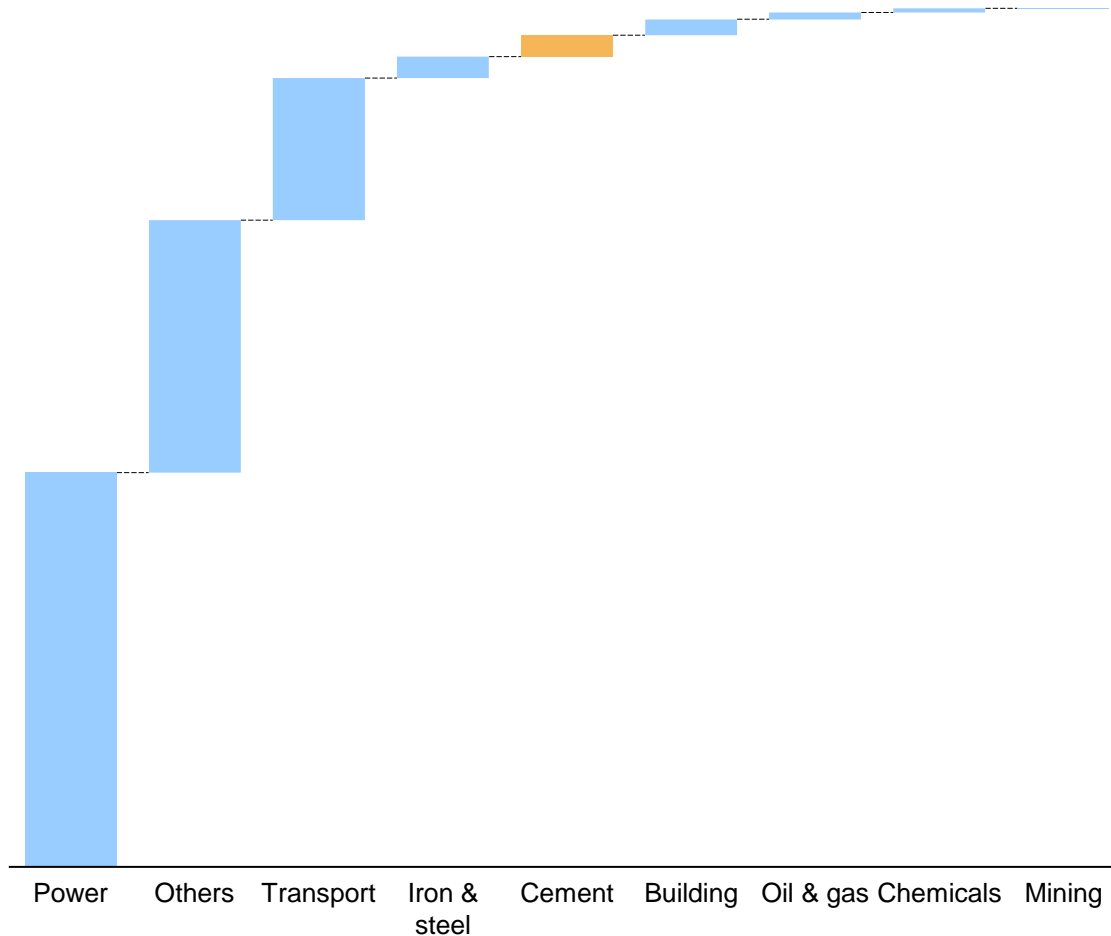
- **Inflation Reduction Act Section 45Q**, provides tax credit up to \$85 per ton of CO2 permanently stored and \$60 per ton of CO2 used for EOR or other industrial use with even higher credits for DAC
- **Buy Clean Initiative**, provides U.S. GSA \$3.38 billion to invest in federal building and \$2.15 billion to procure low-carbon materials for construction and renovation of federal building, achieving net zero emission federal building portfolio by 2045
- **Carbon Intensity of Construction and Building Materials Act** introduced in California in 2022 aims to achieve 20% net reduction in GHG emission of building materials by 2030 and 40% net reduction by 2035

- The Ministry of Industry and Information Technology along with the Ministry of Ecology and Environment issued the **Notice on Further Improving the Normalization of Cement Peak-Shifting Production** in late 2020 which requires that all the cement clinker production lines transition to peak-shifting production, thus minimizing operation time, reducing excess capacity, and lower carbon emissions

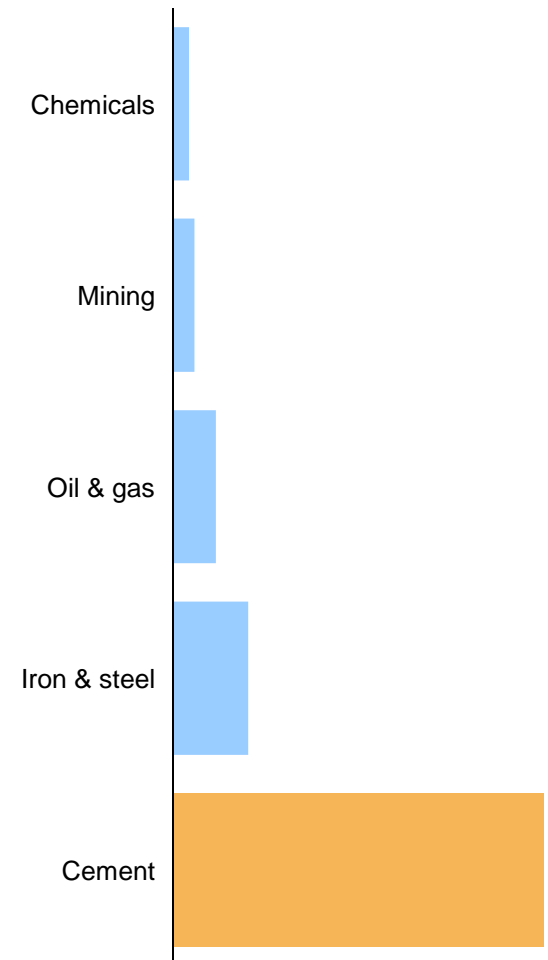
 Clear mandates adopted  Clear mandates expected by 2030  No clear guidelines yet

Cement production is a major source of global CO₂ emissions and also generates the most emissions per revenue dollar

Share of global CO₂ emissions
(Percentage, 2017)

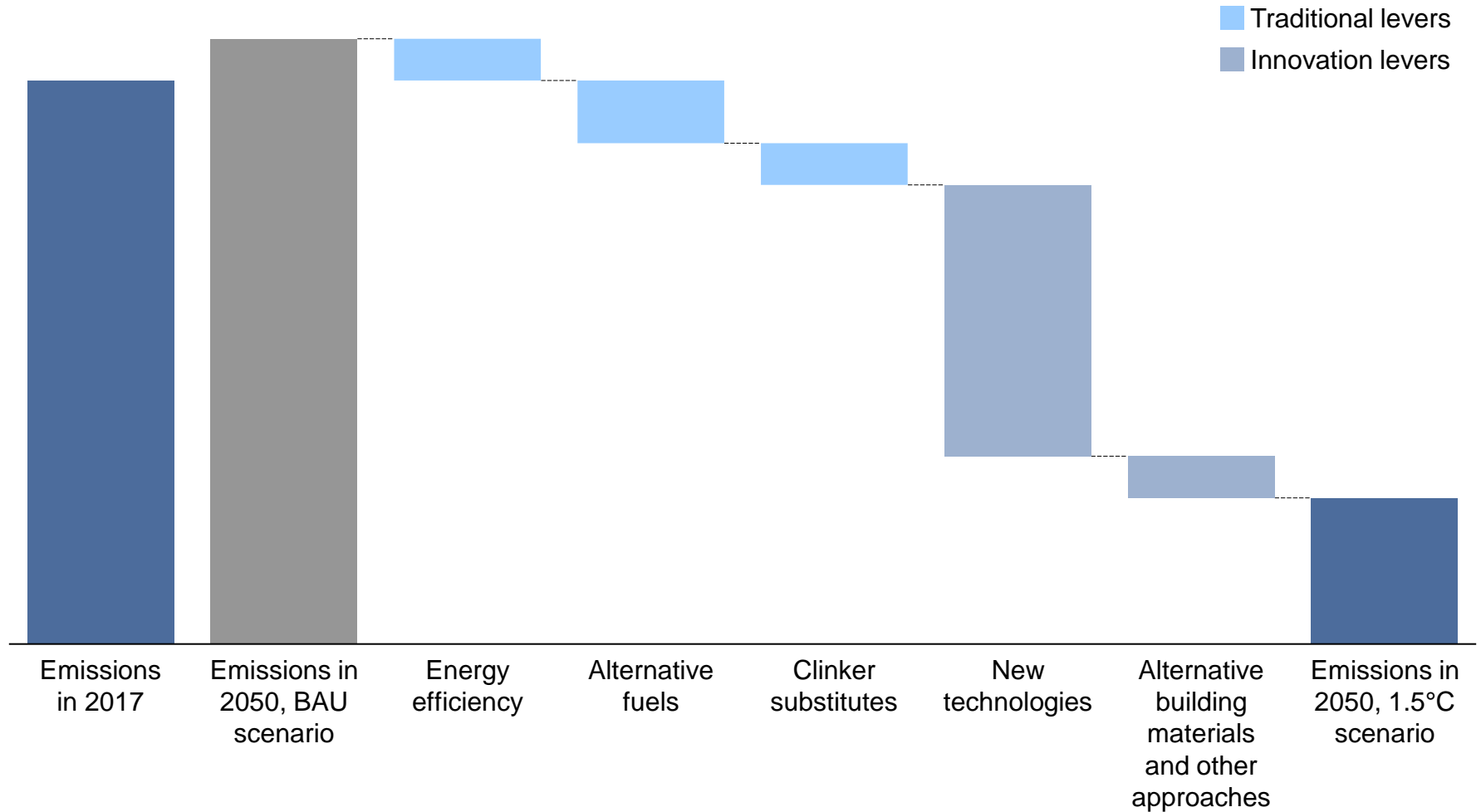


CO₂ emissions per revenue
(kg of CO₂ per USD)



For a business-as-usual scenario, new technologies in cement production will reduce 45% of CO₂ emissions in 2050

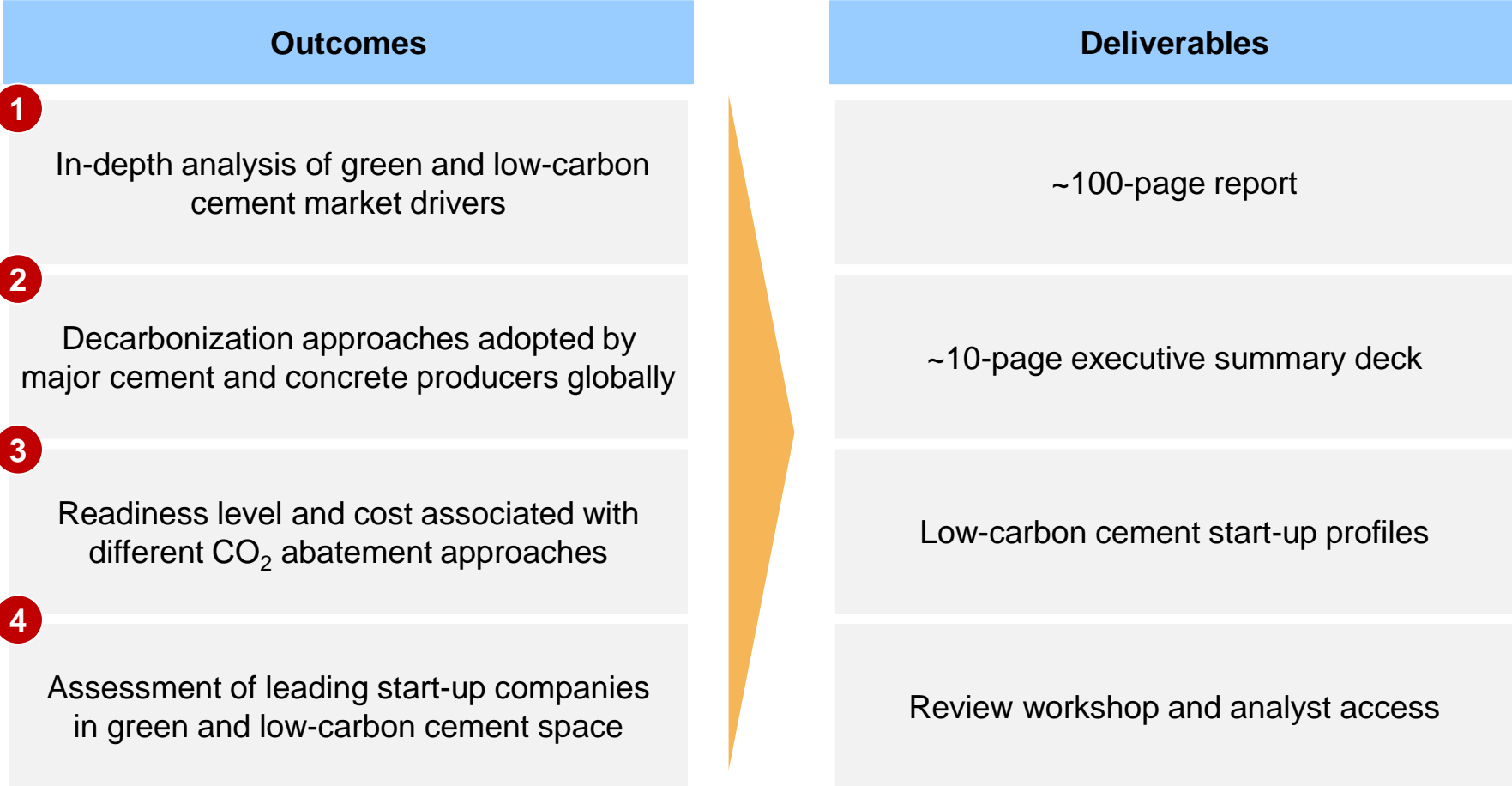
Potential CO₂ emissions and reductions
(Giga tons of CO₂ per year)



ADI's multi-client study will address a number of key questions as reflected by its comprehensive table of contents

1	Executive summary <i>Key conclusions, findings, and strategic implications</i>	5	Decarbonization pathways for cement industry <i>Segment decarbonization approaches based on emission sources and their abatement potential and adoption readiness level</i>
2	Green and low-carbon cement market drivers <i>Regulations, corporate commitments, technology development, and consumer awareness</i>	6	Cost and economic analysis <i>Cost and economics of various cement decarbonization pathways</i>
3	Global cement production outlook to 2035 <i>Global cement demand drivers and production outlook by region</i>	7	Competitive landscape of low-carbon cement start-ups <i>Comparison across multiple metrics such as regulatory compliance, current and future production rate, and offtake agreements</i>
4	Decarbonization challenges in the cement industry <i>Cement industry value chain and decarbonization challenges</i>	8	Conclusions and recommendations <i>Key findings and conclusions, strategic implications, and insights</i>

ADI's "Future of green and low-carbon cement" study is available immediately with several key deliverables



Contact Uday Turaga, +1.281.506.8234 or info@adi-analytics.com to purchase this study.

Outline

▶ Study Prospectus

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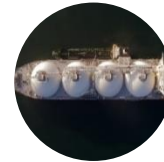
Global CapEx / OpEx outlook



Energy transition advisory



Alternative marine fuels market study



Global / NA small-scale LNG



U.S. gasoline and octane outlook



Refueling North America with LNG



Latin America refined product exports



Assessing opportunities in bio-based chemicals



Benchmarking shale gas monetization options

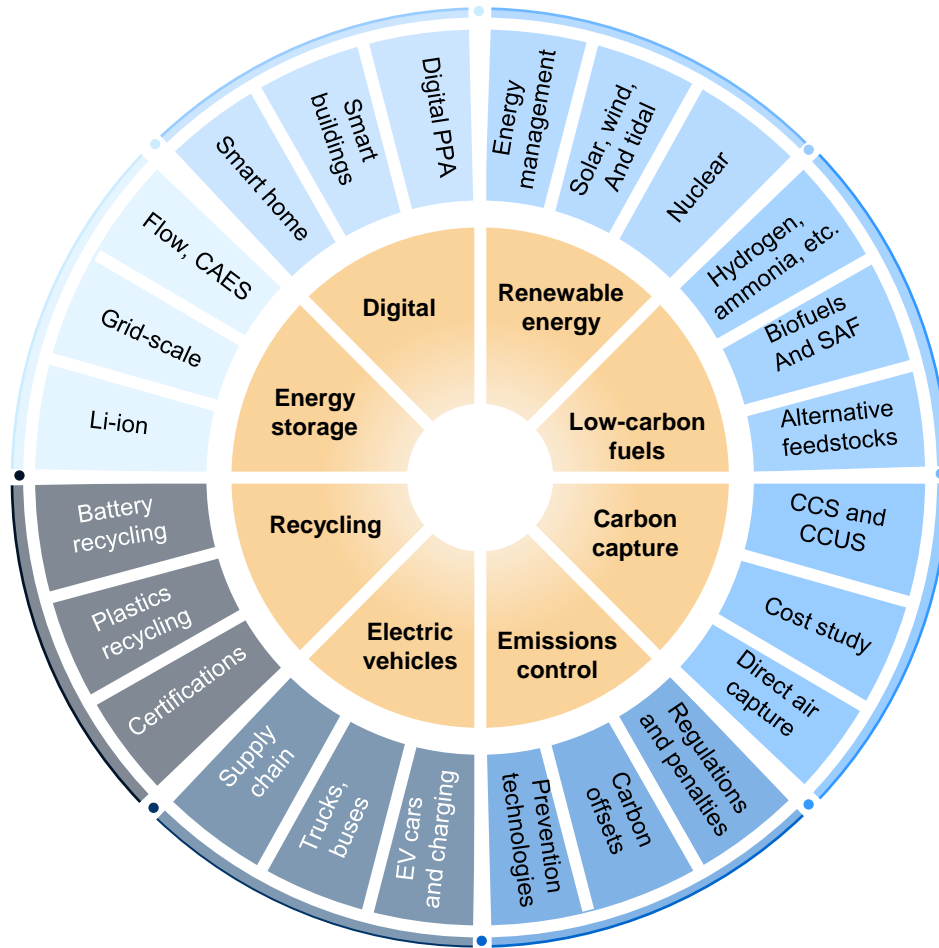


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440 COBIA DR • STE 1704 • HOUSTON • TEXAS 77494

+1 (281) 506-8234 • INFO@ADI-ANALYTICS.COM

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