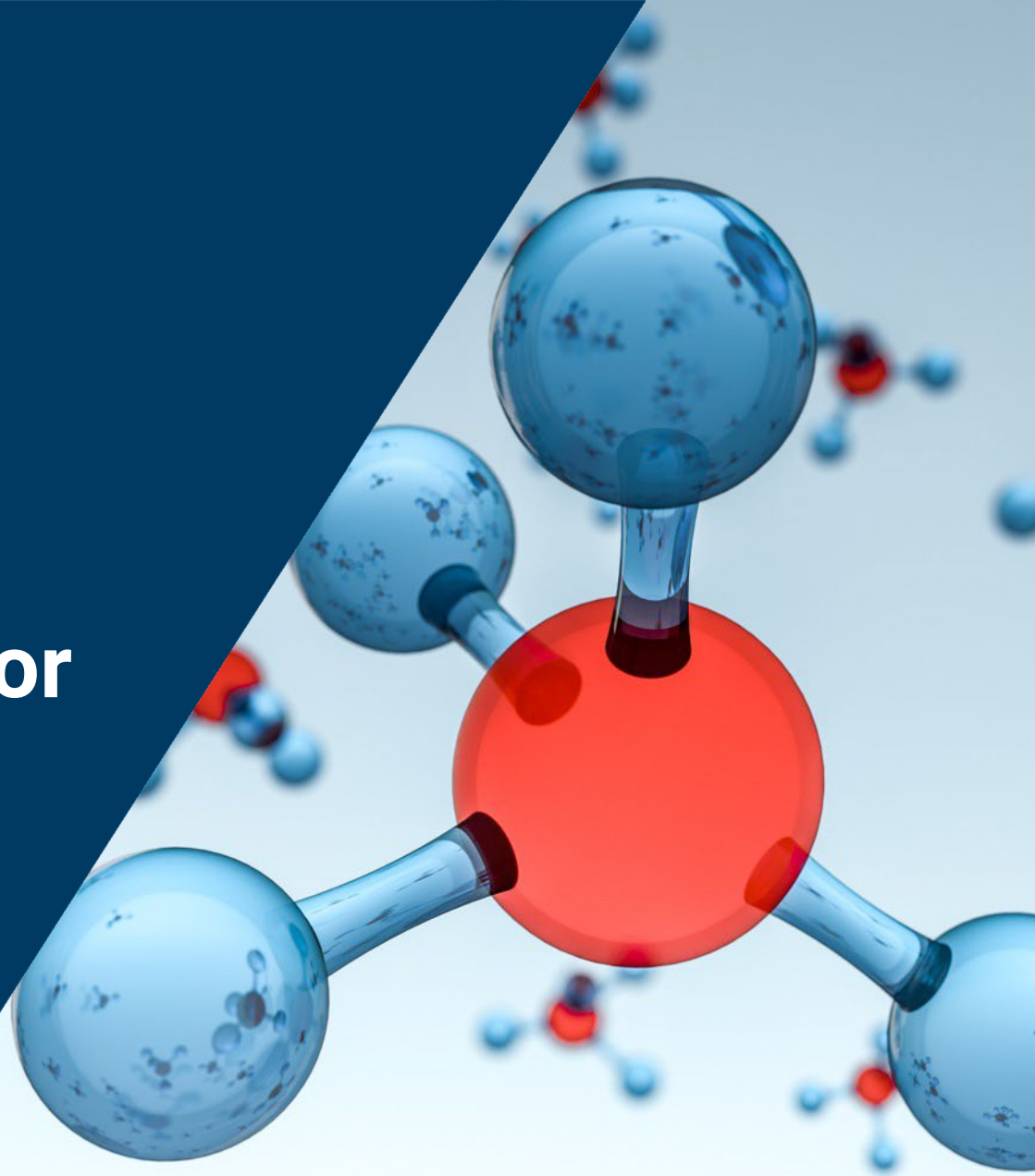
Mobilizing Market Solutions to Enhance Methane Mitigation Opportunities in the Energy Sector



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About RMI

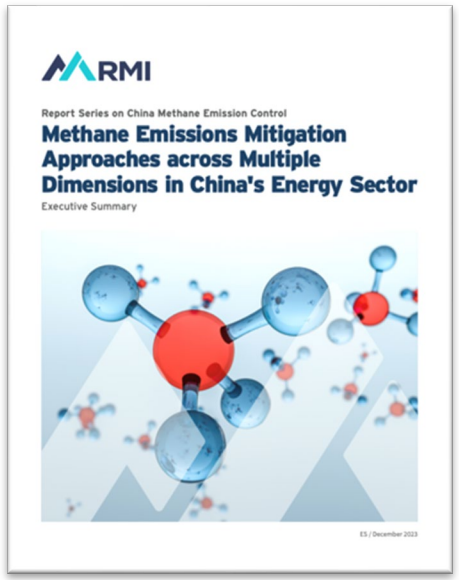
Transforming the global energy system
to secure a clean, prosperous, zero-carbon future for all.

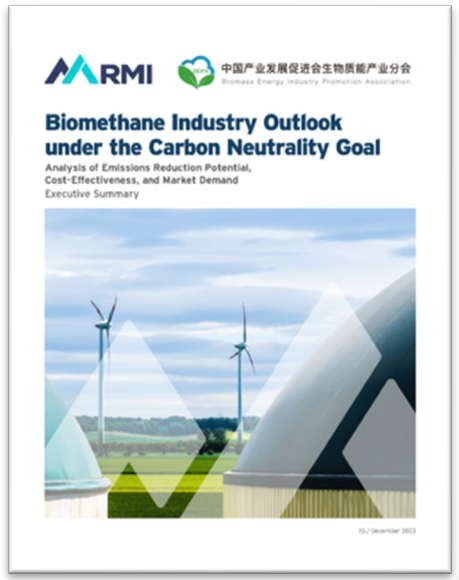
1982- 2030

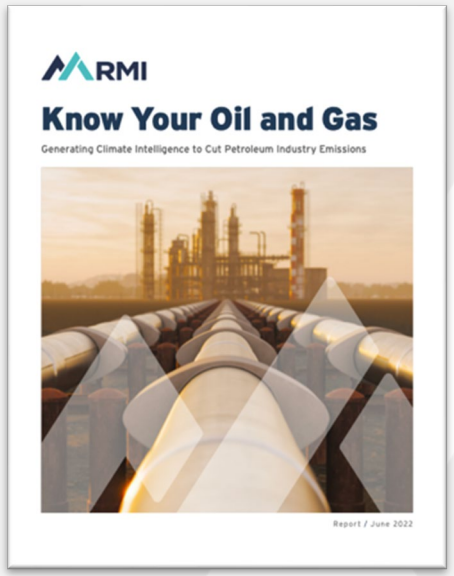
Founded in 1982 as Rocky Mountain Institute, RMI is an independent, non-partisan, nonprofit that transforms global energy systems through market-driven solutions.

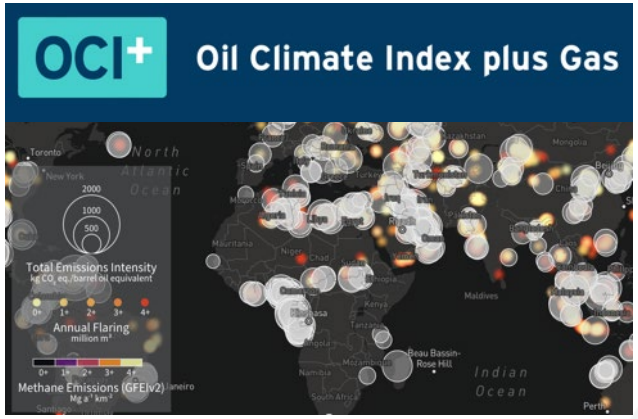
We work in the world's most critical geographies and engage businesses, policymakers, communities, and nongovernmental organizations to identify and scale energy system interventions that will cut greenhouse gas emissions at least 50 percent by 2030.

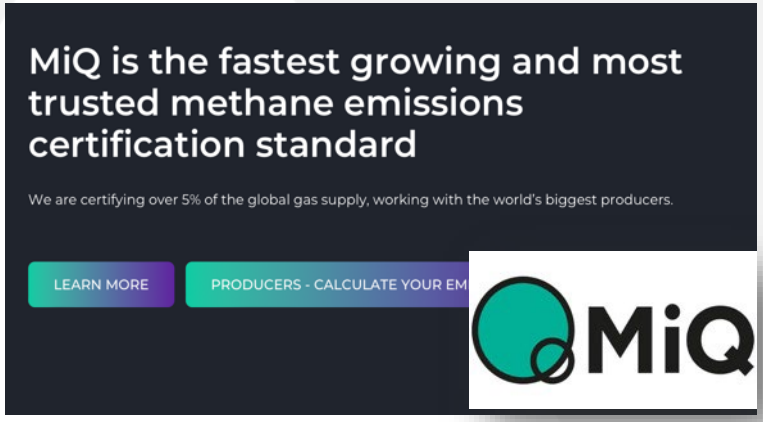
Our Research and Insights







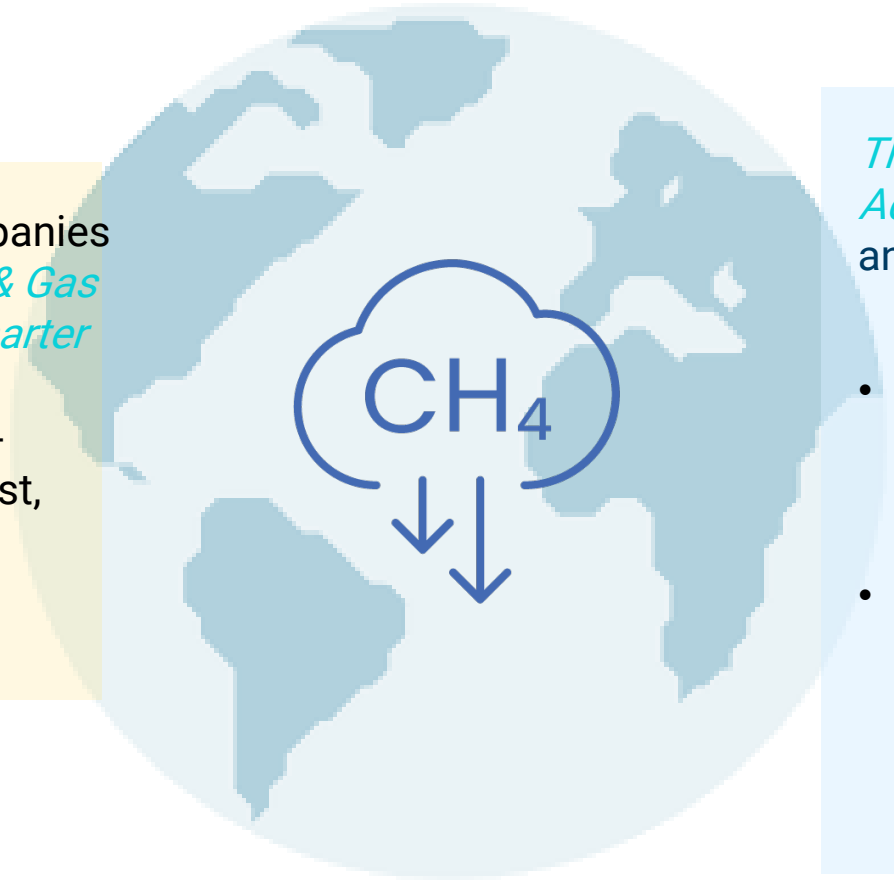




The global consensus on addressing methane emissions has resulted in collaborative efforts

50 oil and gas companies have joined *the Oil & Gas Decarbonization Charter*

Signatories have committed to net-zero operations by 2050 at the latest, and ending routine flaring by 2030, and near-zero upstream methane emissions



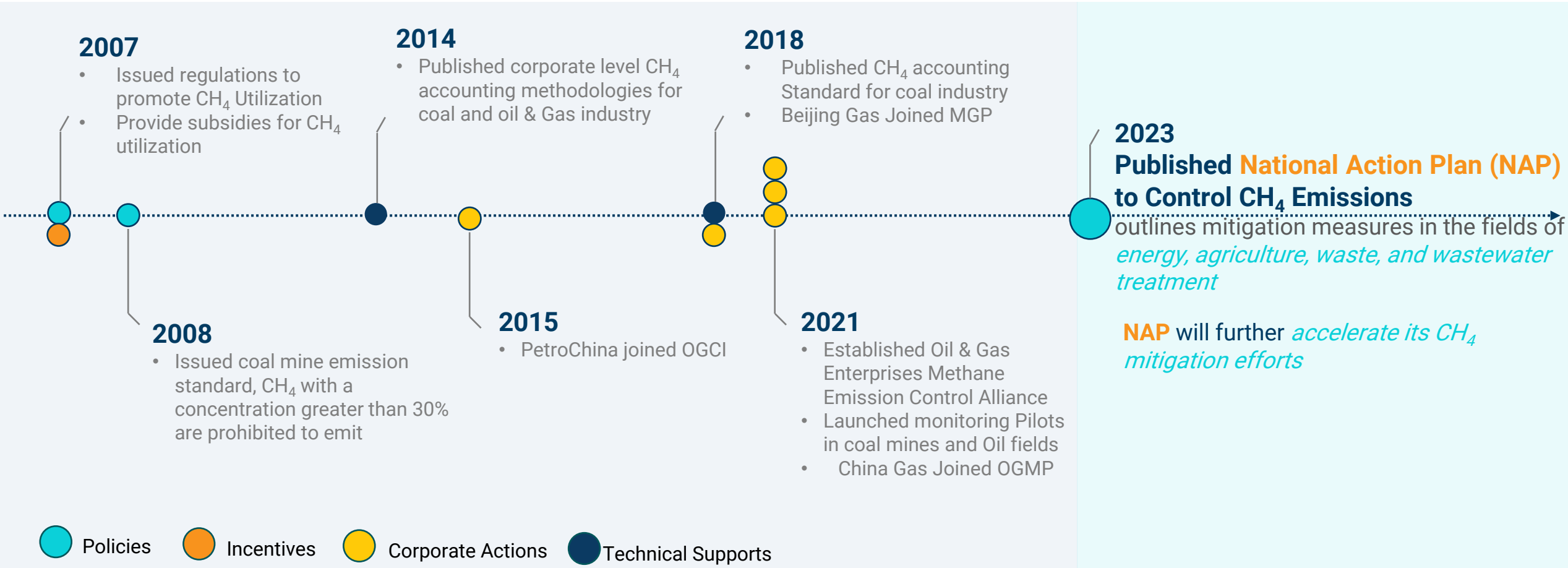
The SEnhancing Cooperation to Address the Climate Crisis by China and the U.S. *unnylands Statement on*

- implement national methane action plans and intend to elaborate further measures, as appropriate
- commit to initiate technical working group cooperation on policy dialogue, technical solutions exchanges, and capacity building

Progress of methane emissions control

China has implemented a range of policies and economic measures to curb the growth of methane emissions. In 2023, China published its first top-level design document to control methane emissions

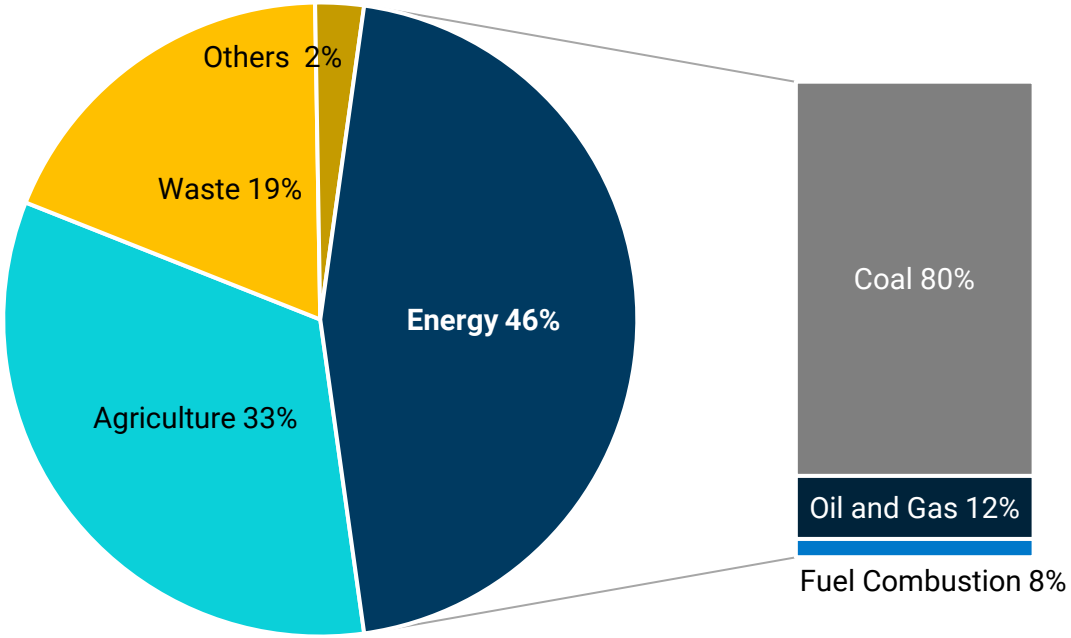
Exhibit: Primary measures China has undertaken to control methane emissions in the energy sector in past 20 years



Energy Sector: One of the key areas

The energy sector constitutes the predominant contributor to CH_4 emissions. The efforts aimed at mitigating methane emissions within the energy sector are positioned for a notable acceleration

Exhibit: The distribution of methane emissions in China categorized by Sectors



Key Tasks in the NAP to control methane in the energy sector

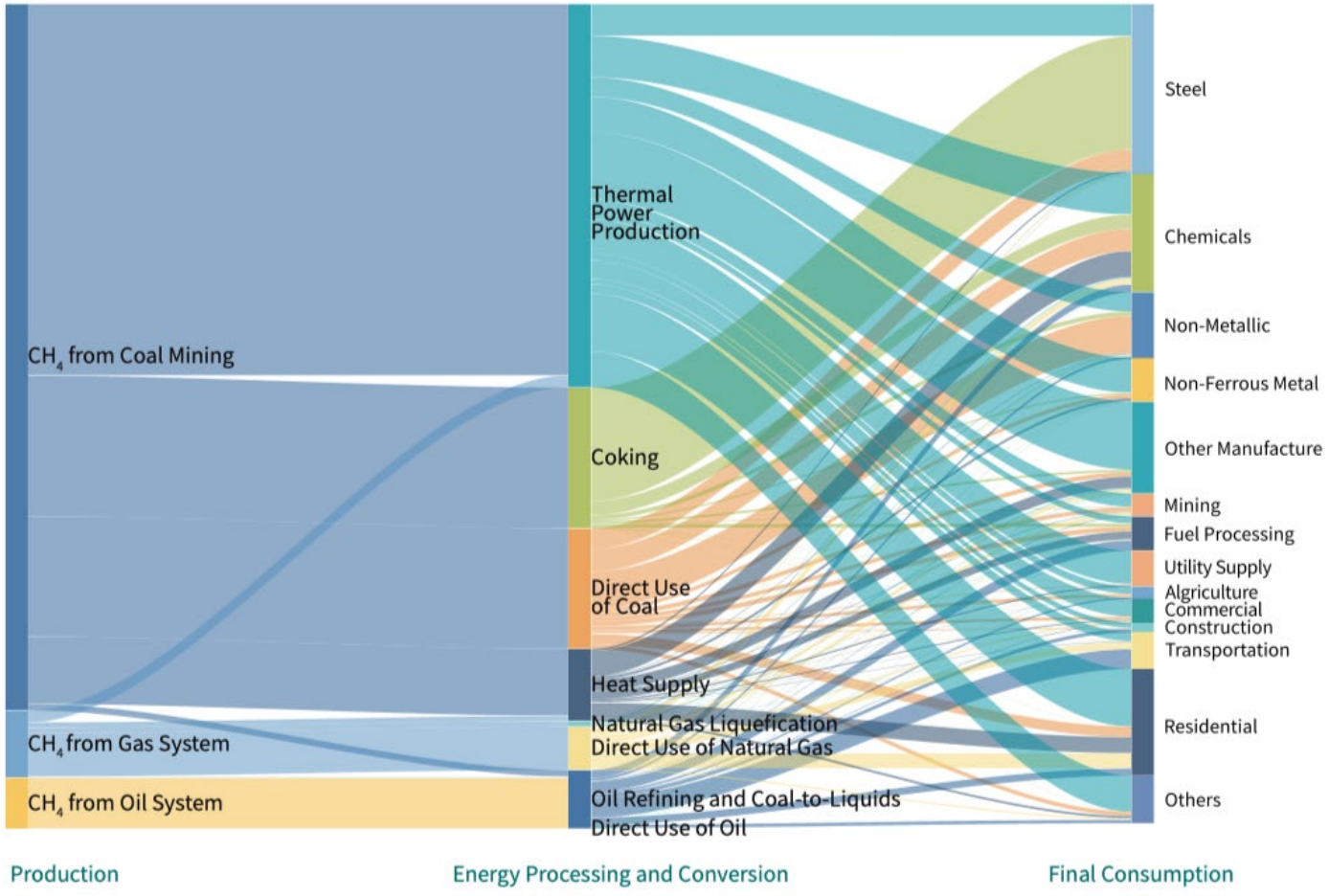
- Guide coal enterprises to increase the utilization of coal mine methane, utilize 6 bcm coal mine methane by 2025
- Enhance the recovery and utilization of CH_4 in oil and gas system
- Promote the use of LDAR and gradually reduce conventional flaring in oil and gas systems
- Promote the development of CH_4 mitigation technologies

NAP delineates a set of pivotal objectives explicitly addressing the control of CH_4 emissions within the energy sector

 RMI Graphic, Source： IEA methane tracker 2023, the ministry of Ecology and Environment, RMI analysis

Significant long-term reduction of CH_4 emissions can be expected from energy transition given the carbon neutrality goal

Exhibit: Flow Chart of Methane Emissions from Fossil Fuel Production



By focusing on transition in key industries

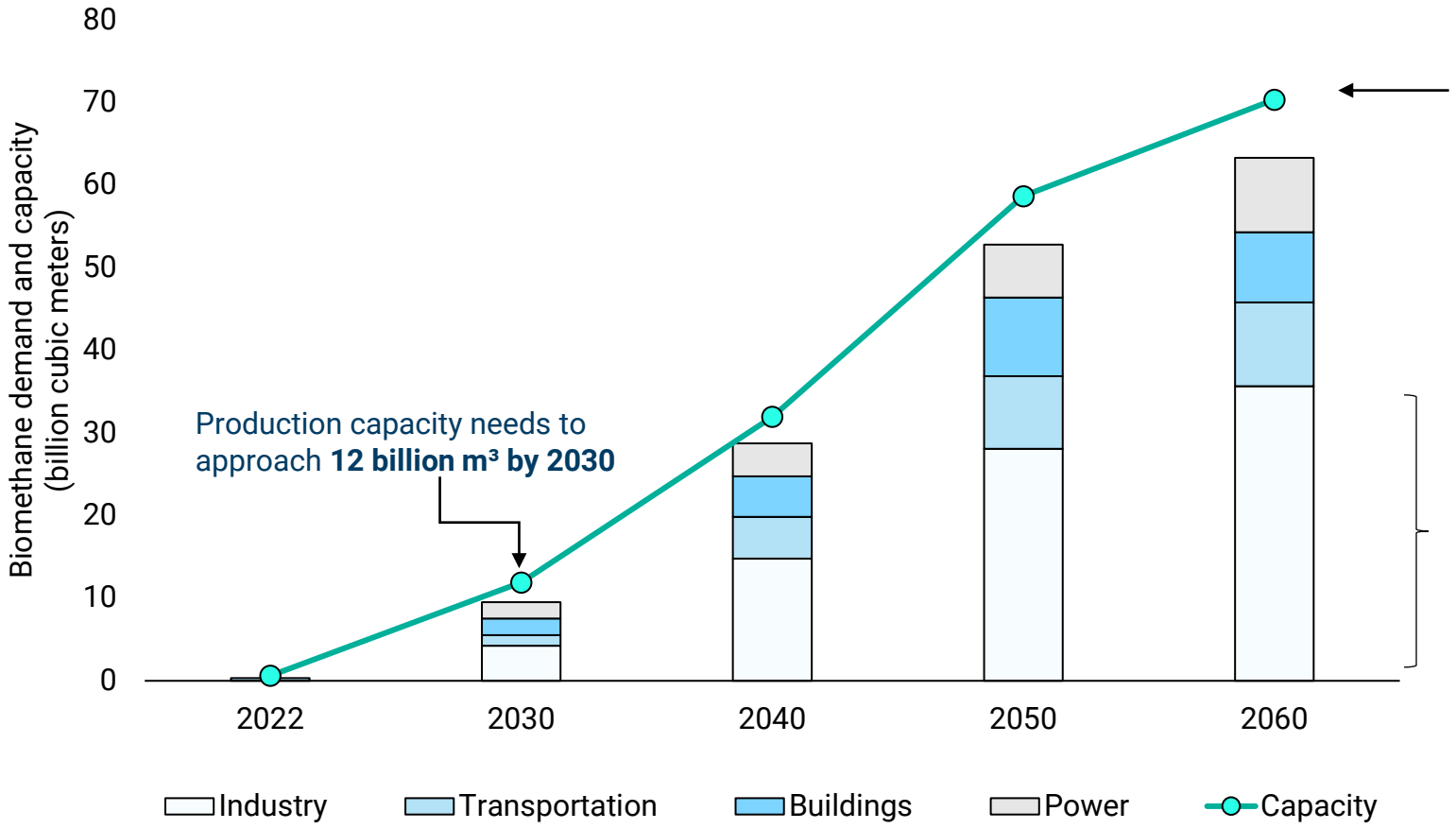
and apply key transition approaches

To mitigate CH_4 before 2030, additional efforts will still be required

RMI Graphic. Data Source: IEA, National Bureau of Statistics, RMI analysis

Biomethane: a win-win solution in mitigating methane emissions

Exhibit: Forecasts of biomethane demand and capacity



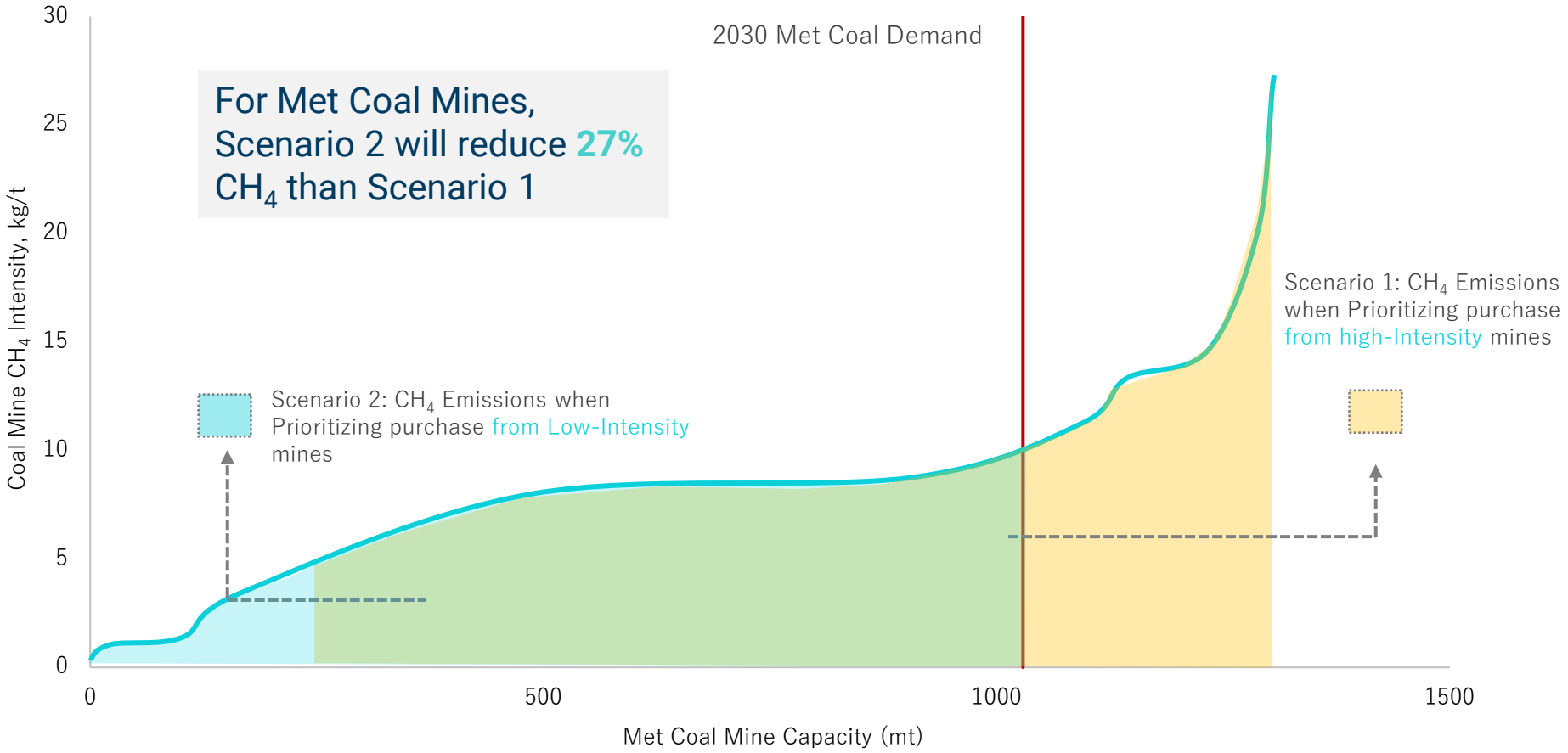
China's yearly demand for biomethane will scale up to **63 billion m³ by 2060**

The demand can be predominantly attributed to the **industry sector**'s ambition to decarbonize fuels and raw materials

Source: RMI analysis.

Coal consumption is expected to continually decrease, resulting in the potential for resource optimization

Exhibit: Methane Emissions from Coal Mines under Different Scenarios



Consumers can significantly influence methane emissions through their consumption activities, by:

- Disclosing their upstream methane emissions
- Prioritizing the purchase from regions with lower methane intensity

RMI Graphic. Source: Global Energy Monitor, Julian Gao et al., RMI analysis

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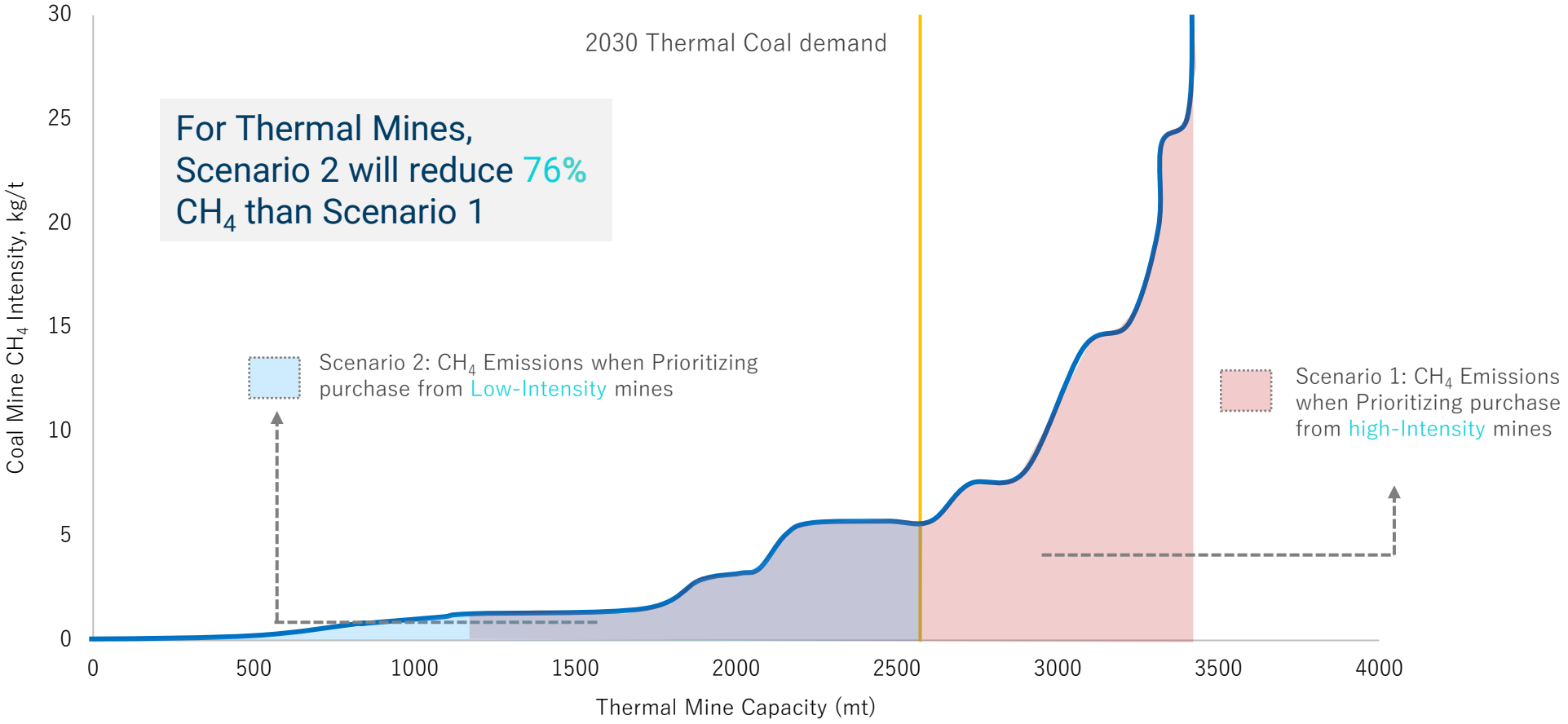

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Improved economic viability is required for key technologies

Why?

- The majority of emissions arising from coal mining consist of low-concentration coal mine methane (CMM) and ventilation air methane (VAM).
- The current economic feasibility of CMM and VAM technologies is suboptimal.

How?

- Market Mechanisms, such as the voluntary carbon market, provide project operators with the opportunity to secure verified emissions reductions, thereby yielding direct economic benefits.

Exhibit: Primary sources of methane emissions in the coal industry

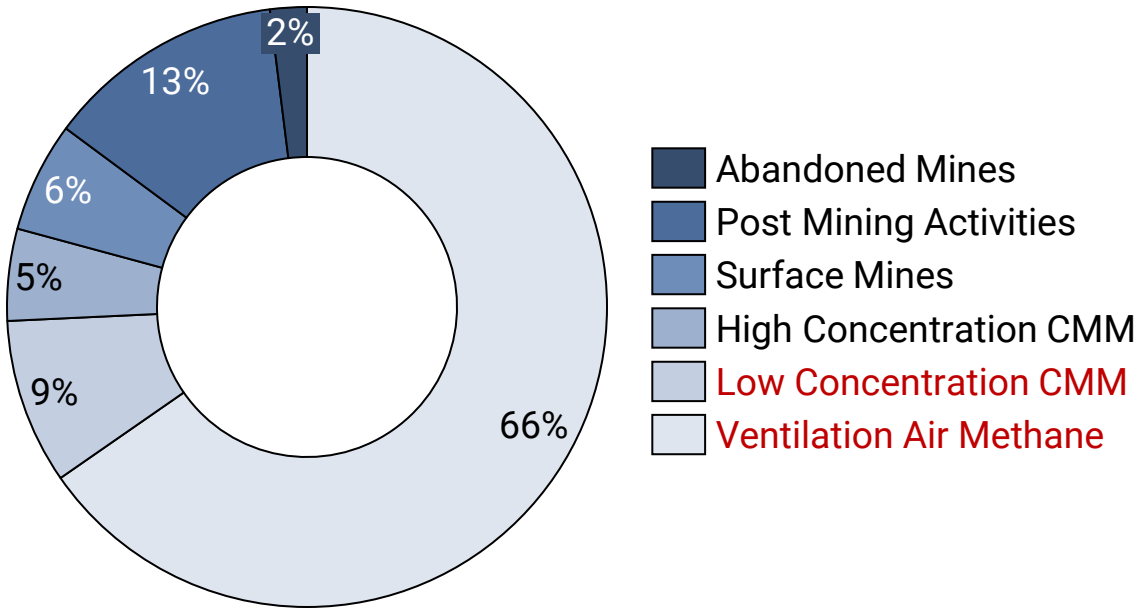
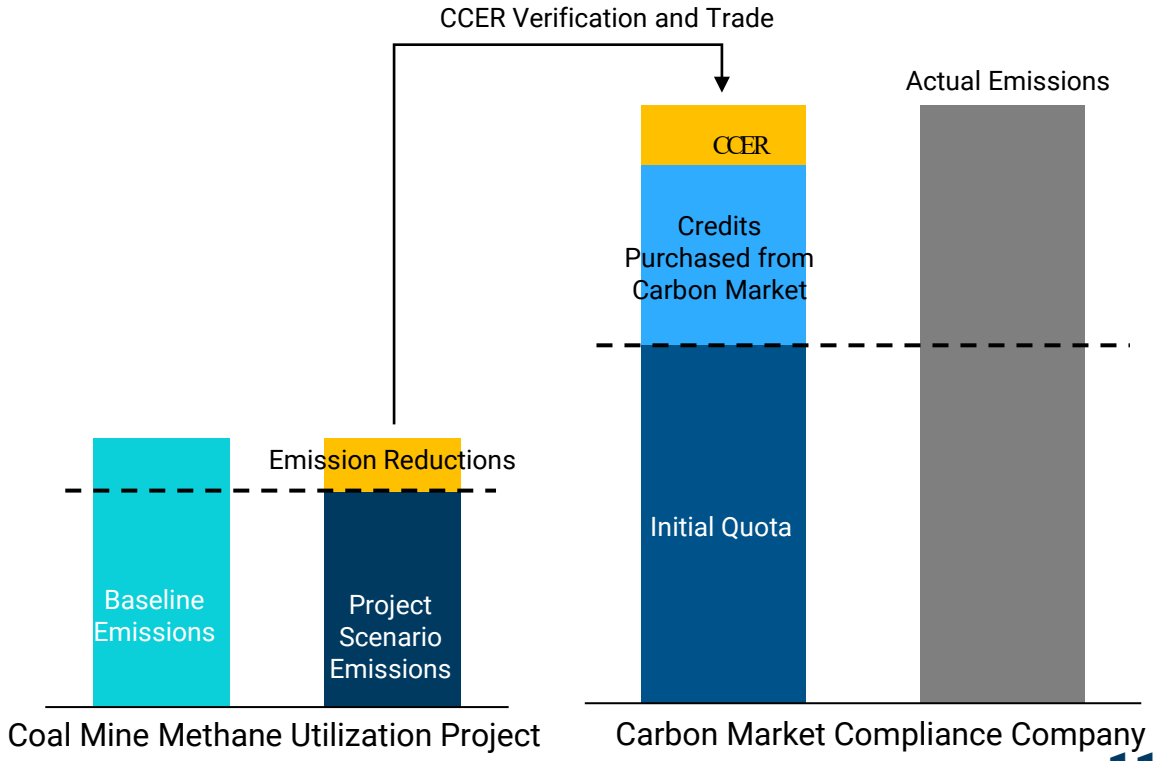


Exhibit: Application of CMM Utilization Project in the Carbon Market

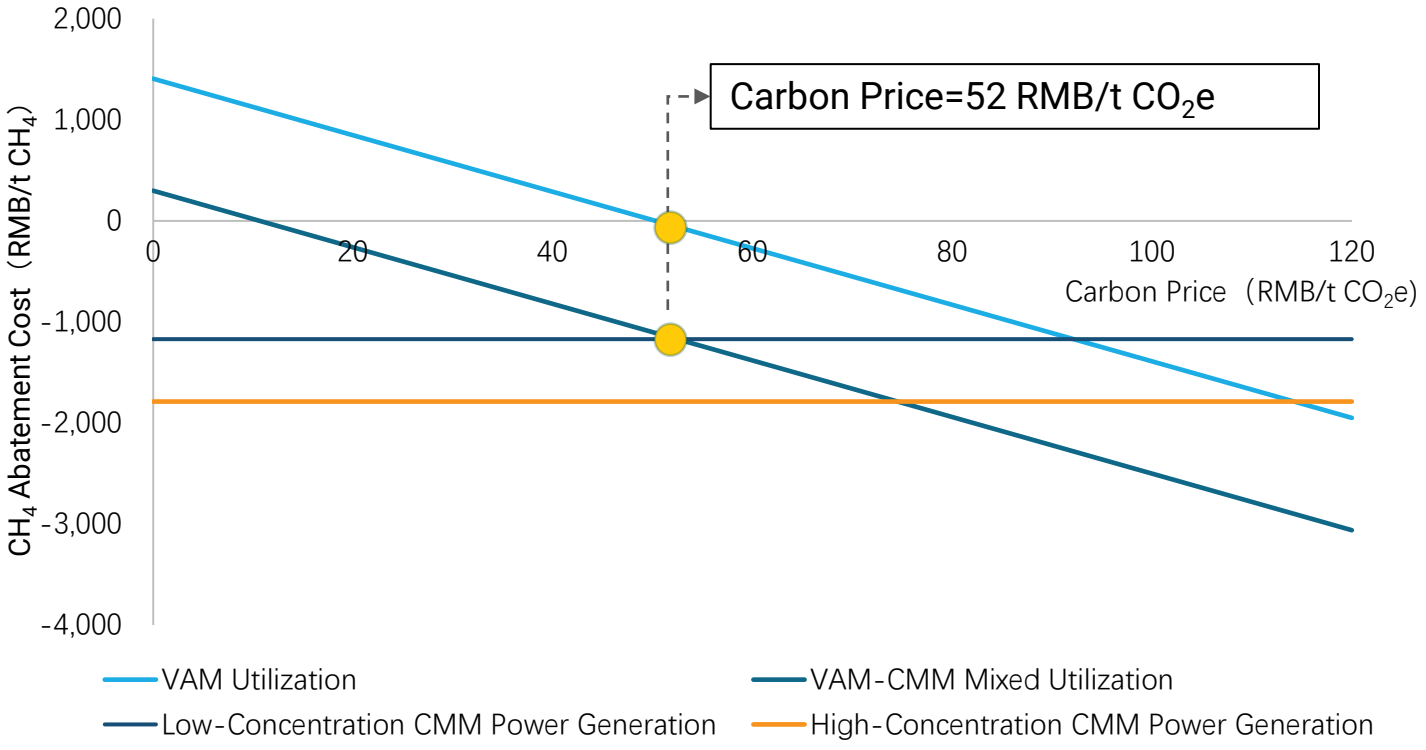


RMI Graphic. Source: Liu, et al., Zhou et al., RMI analysis

The voluntary market will unleash mitigation potential

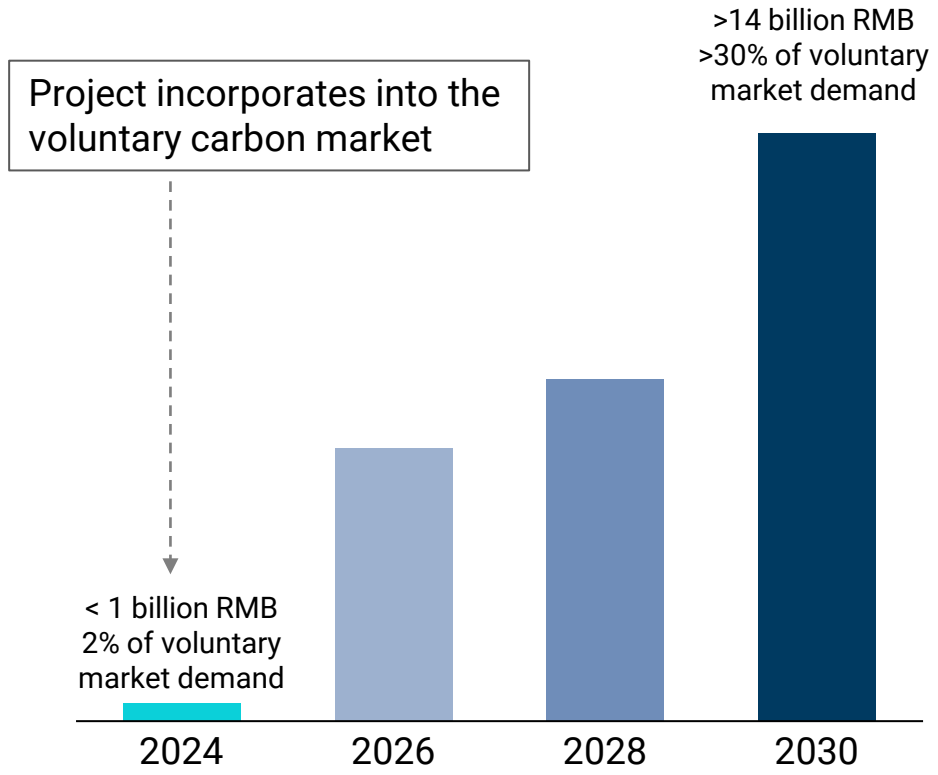
When carbon price reaches 52 RMB /t CO_2e, both VAM utilization projects and VAM-CMM mixed utilization projects can be achieved at no net cost.

Exhibit: Impact of the voluntary carbon market on the Economic Viability of Different Methane Utilization Projects



Incorporating CMM and VAM Utilization projects into the voluntary market market can result in a 21% reduction in CH_4 emissions within the coal industry by 2030.

Exhibit: Projects Scale for CMM and VAM Utilization

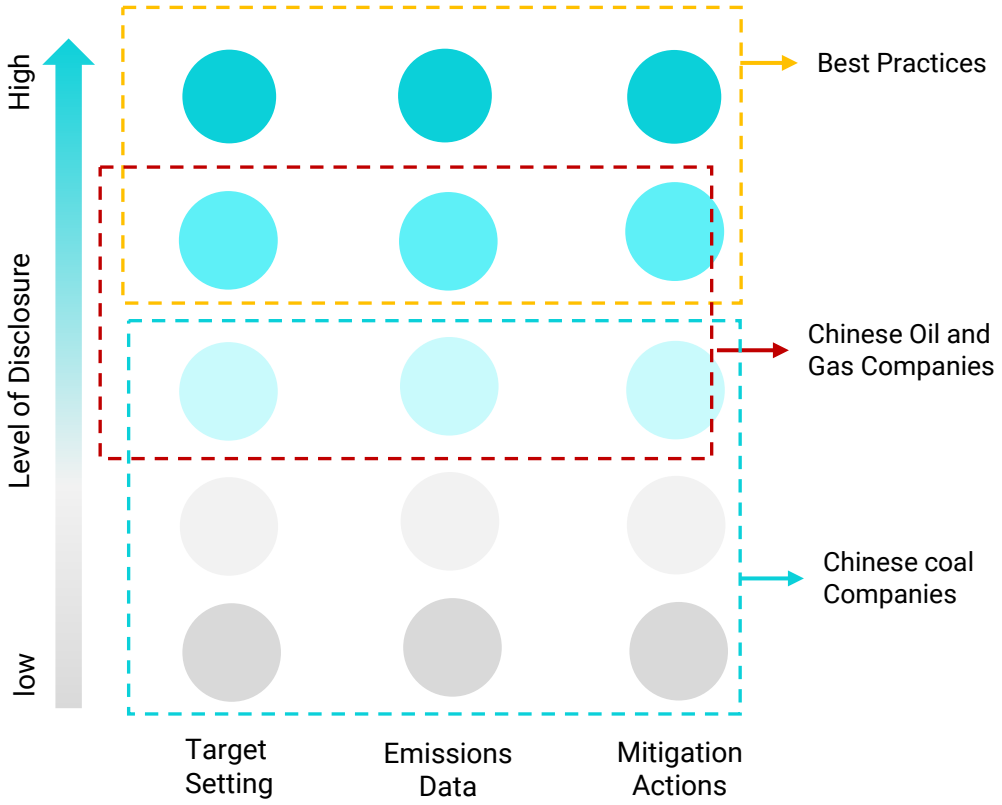


RMI Graphic. Source: RMI analysis

Emissions Disclosure and international cooperation : foundation and opportunity

A higher level of disclosure can be achieved by facilitating capacity building and sharing experiences among peers.

Exhibit: Current status of company level methane disclosure



Encouraging collaborative efforts will accelerate progress in implementing NAP and contribute to the broader global objectives of methane emissions reduction.

Exhibit: Participation of Chinese Companies in International Methane Emissions Reduction Alliances

 RMI Graphic. Source: RMI analysis

Recommendations to accelerate CH_4 emissions mitigation

Energy Transition	Comprehensive energy transitions in major fossil fuel–consuming industries
Fossil Fuel Consumption	Prioritizing the procurement of fuels with lower methane intensity
Technology Deployment	Use market mechanisms to promote the construction and operation of coal Sector methane utilization projects
Information Disclosure	Promote continuous enhancement of emissions disclosure capabilities of energy enterprises
International Cooperation	Encourage energy enterprises to actively participate in global communication and Collaboration

Thank you!

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