

Project Meeting #7:

Update of China's Biogas Industry and Policies

Prepared by:

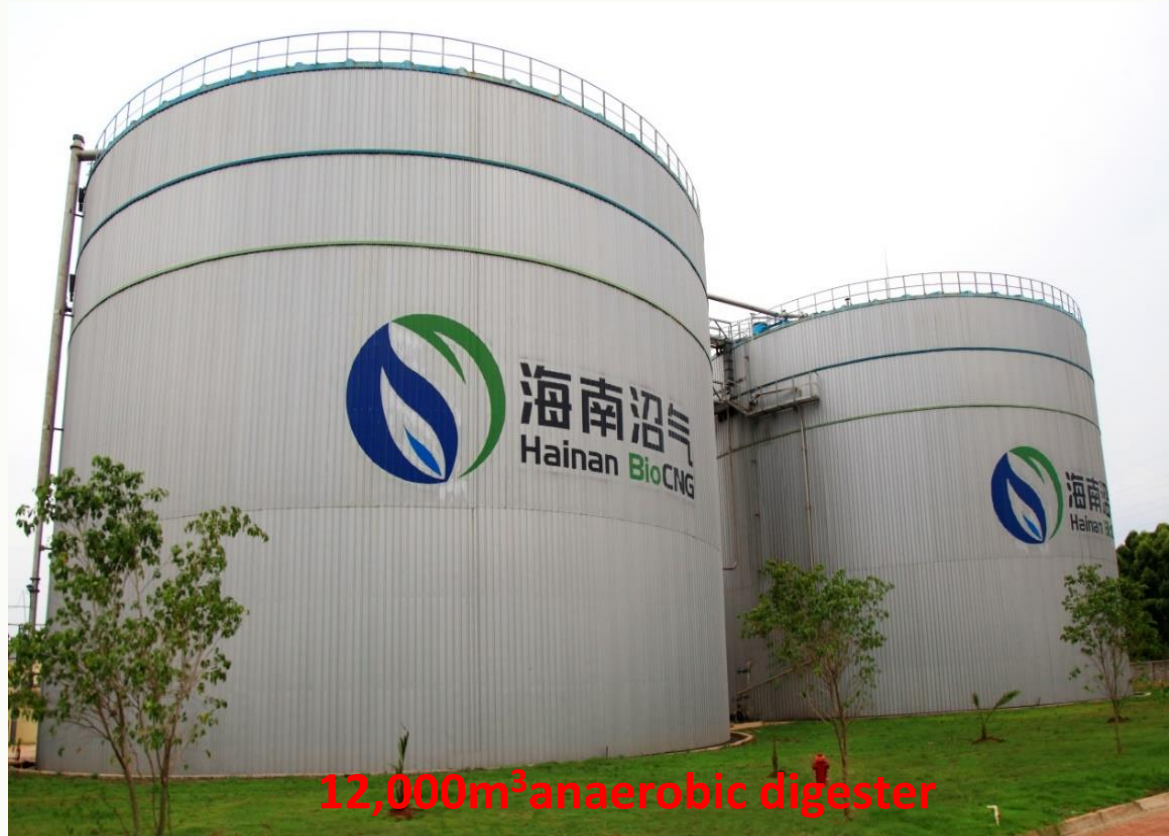
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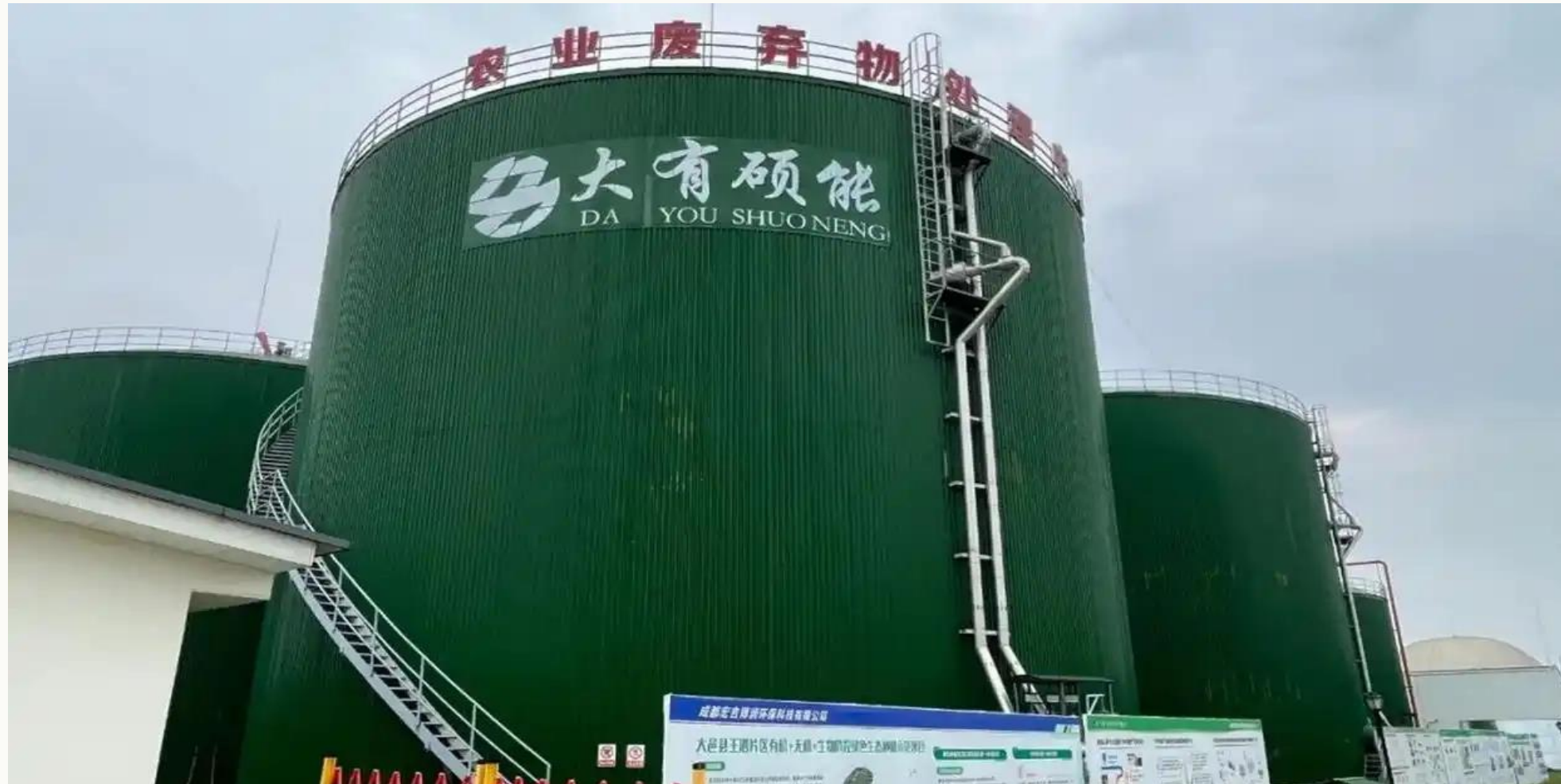


1. Current Status and Targets



- ✓ Since 2014, China's biogas industry has gradually shifted from household digesters to large-scale anaerobic digester . The potential of biomethane production in China is around 150 billion Nm³ annually.
- ✓ The biomethane industry is still in its early stage with an annual capacity of **300 million Nm³** (primarily from agricultural/animal waste).
- ✓ 2030 National Plan targets 20 billion m³ capacity, covering 5% of natural gas consumption.

The model of County-Level Circular Economy was established



66 demonstration projects (e.g., Sichuan Dayi, Anhui Bengbu) established "**waste/biomass → biogas → organic fertilizer → farmland**" cycles. Dayi's project reduces CO₂ by 110,000 tons/year and boosts wheat yield by 12% using digestate fertilizer.

State-own Enterprises Participate in the Establishment of Biogas Industry



On September 3, 2024, **PetroChina** (Southwest Oil and Gas Field Company) and Shede Wine Co., Ltd. held the signing ceremony of the biological natural gas cooperation project in Chengdu.



Sinopec launched China's first biomethane online trading platform.

Biomethane for producing methanol which used as shipping fuel



The bio-gas produced by Boneng Green Energy and the bio-methanol produced in cooperation with Daqing Oilfield Chemical Co., Ltd. have both obtained the international sustainable development and carbon certification license (ISCCEU)



On January 23, 2025, the signing ceremony of the biogas for green methanol project jointly invested and developed by Air Liquide, Guoneng Bio, Meijin Energy and Yancheng Huanghai Jinkong Group was held in Yancheng.

2. Policy Innovations in 2025

Grid Access:

- Revised *Renewable Energy Law* requires gas networks to accept biomethane (methane purity $\geq 96\%$)

.

ESG Integration:

- State-owned enterprises (SOEs) must disclose carbon reductions, promoting "gas-certificate integration" (e.g., Sinopec's bundled green certificate sales)

.

Precision Subsidies:

- Central funding shifts to straw collection systems (43% of subsidies) and county-level "gas-power-fertilizer" pilot projects

3. Biogas for Rural Revitalization and Energy Poverty Alleviation

Household Biogas Revival:

- 39 million household digesters by 2025; Yunnan and Sichuan promote "pig-biogas-orchard" models, reducing energy costs by 30%

Energy Poverty Metrics:

- Provincial energy poverty assessments include "rural biogas coverage" (8.54% weight); Tibet achieves 100% household penetration

Organic Fertilizer Substitution

- Large projects achieve >90% digestate conversion, cutting chemical fertilizer use by 20–30%, but cross-regional sales face local regulatory barriers

4. Cost Structure and Technology Standardization

Cost Structure:

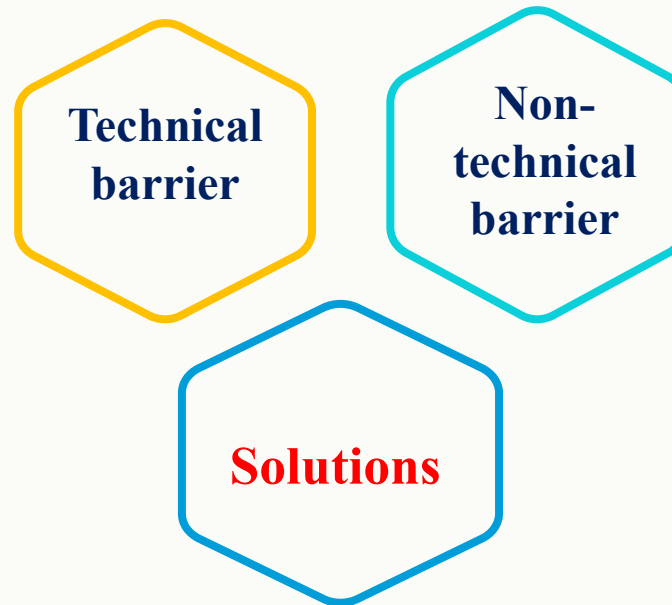
- Feedstock collection accounts for 43% of costs (doubles if transport exceeds 50 km in hilly areas); road transport adds 15% to end prices

Gas Standards:

- GB/T 41328-2022 sets stricter sulfur limits ($\leq 6\text{mg/m}^3$) than conventional gas, driving adoption of "wet desulfurization + PSA purification"

5. Barriers

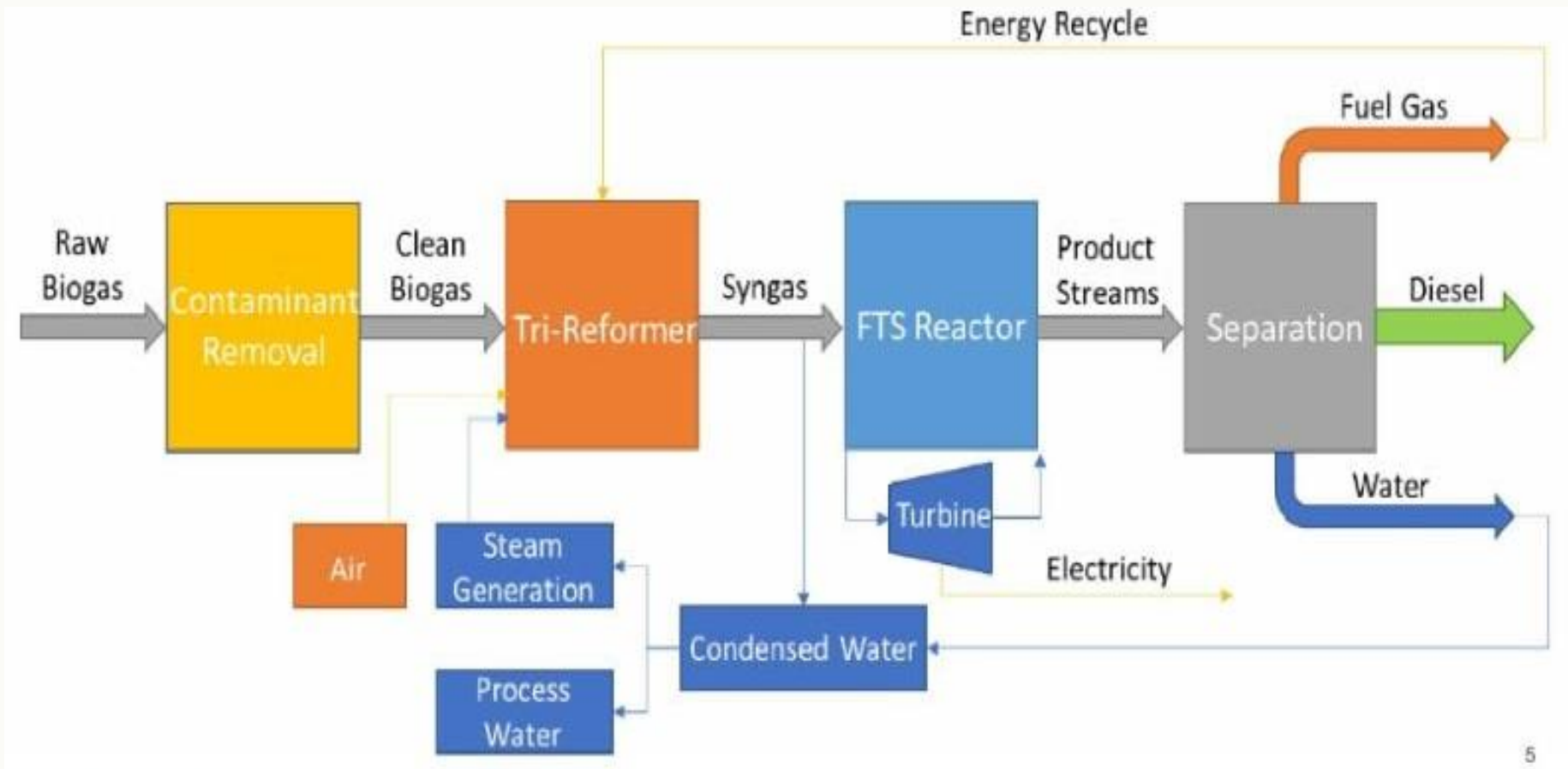
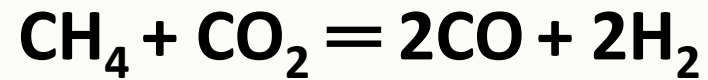
- ✓ Impact of mixed pulp of diversified biomass feedstock to the efficiency and operation of the digester.
- ✓ Issues caused by higher TS, such as floatation in the digester, when the proportion of straw increases in the material.
- ✓ The treatment of liquid anaerobic digestate.



- ✓ Poor profit of biomethane producers.
- ✓ High cost of biomass feedstock
- ✓ There is no subsidy policy for biomethane.
- ✓ Management of different biomass feedstock.

- ❑ **Legislative Mandates.** Enact Biomethane Promotion Law mandating 10% blending in gas consumption by 2030
- ❑ **Technology Breakthrough** Using solid state digester (TS > 30%) to avoid liquid digestate emission and reduce preprocessing energy.
- ❑ **Establish an independent certification system** Lead the establishment of Asian biomethane standards

6. Next steps-Biomethane for SAF production



Conclusion

Biomethane will be from energy supplement to energy pillar in China:

- ✓ **Short-term (2025–2030):** Break collection and grid-access barriers to achieve 20 billion m³ capacity.
- ✓ **Long-term (Post-2030):** Leverage 135 billion Nm³ potential and ESG carbon finance to become the world's largest biomethane producer, supporting rural revitalization and carbon neutrality



Enhancing the uptake of biomethane in Europe

Thank you!



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