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50 shades of GREEN INFRA

RESEARCH INSIGHTS

THE POTENTIAL OF RENEWABLE NATURAL GAS

Renewable Natural Gas (RNG) will be the third fastest growing renewable energy source on the pathway to Net-Zero

International Energy Agency

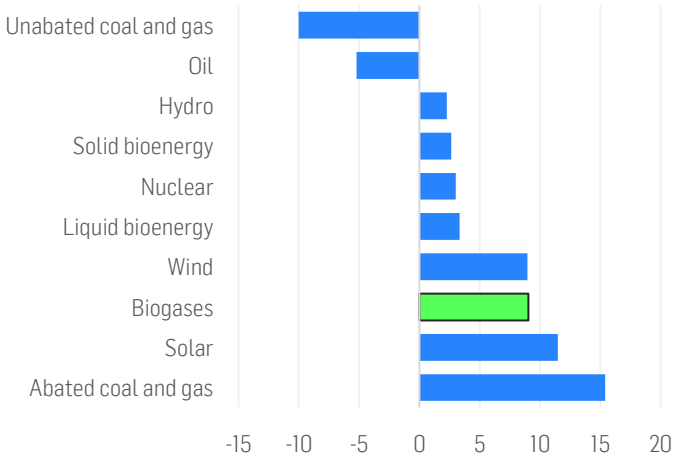
Biogases' Shining Star

Biogases, notably methane, currently constitute a marginal fraction of the overall global energy mix. The International Energy Agency (IEA) reports that in 2022, bioenergy accounted for 6.43% of the global energy supply, with gaseous sources of bioenergy contributing just 0.21% of it.[1]

Despite this, RNG stands out in the race toward Net-Zero. According to the IEA's Net Zero Emissions modelling, **gaseous bioenergy is set to be among the fastest-growing energy sources**, just behind solar energy and abated coal and gas. This forecast anticipates a **compounded annual growth rate of 22%** for Renewable Natural Gas (RNG) between 2022 and 2030. Looking further into the future, biogas energy production is projected to grow at a rate of 9% between 2022 and 2050 if we are to achieve Net-Zero, underlining RNG's pivotal role in shaping the future energy landscape – which has also been reflected through a notable surge in biogas demand in the recent past.[1]

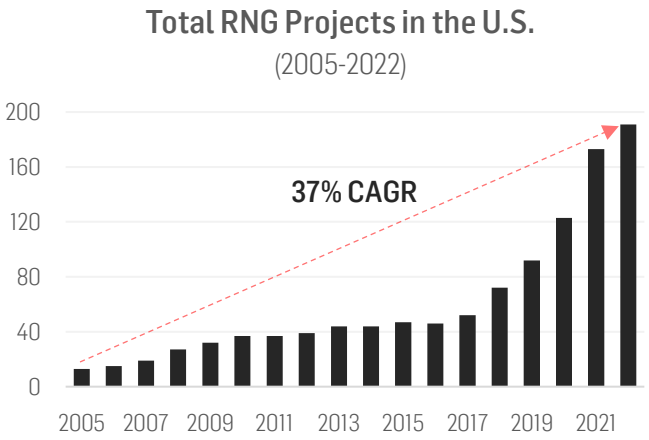
CAGR of Different Energy Sources to 2050

vs. 2022 (assuming achievement of Net-Zero)



The RNG market, in particular, experienced a robust 20% growth in 2022, with 60 million cubic feet in daily production capacity added over the year. Additionally, **the number of RNG projects doubled over the past five years**, reaching 66 announced projects in 2022.[2, 3]

This heightened interest can be attributed to the emission reduction potential of biogases. RNG sourced from diverted landfill food and green waste can serve as a potent instrument for greenhouse gas reduction at scale. A UC Davis study underscores this, estimating that over 20% of California's current residential natural gas consumption could be met solely by RNG derived from its existing organic waste.[4]



RNG Policy Propulsion

On top of its decarbonization potential, investing in RNG production may emerge as a dual-impact strategy, fostering job creation across diverse regions while concurrently addressing waste management for enhanced air quality – making it an attractive focus point for policymakers. Notably, this in reflected in government initiatives such as the Biden administration's Inflation Reduction Act, which is steering the sector towards cost-competitiveness with traditional sources of natural gas.

The act introduces carbon capture credits, offering **USD 60 per metric ton of greenhouse gases captured for commercial use** – thus amplifying the commercial viability of RNG, particularly for electricity generation facilities built after 2022.Further regulatory tailwinds may propel the sector forward.[5]

One such case is the United States Environmental Protection Agency's proposal to make RNG production eligible for Renewable Fuel Standard compliance credits. These credits, anticipated to evolve into a potential **USD 17 billion market by 2030**, would be aimed at rewarding electric vehicle Original Equipment Manufacturers when biogas generates electricity for charging light-duty electric vehicles. Simultaneously, the Clean Air Act would mandate municipal solid waste landfills of a certain size to implement landfill gas collection systems, potentially steering more landfills into the RNG business.[6, 7]

From Gas to Net-Zero

RNG's key benefits, extend beyond regulatory incentives. In contrast to the intermittent nature of solar and wind, RNG relies on abundant, reliable and growing sources of energy. Its ease of storage and transport, given its compatibility with existing natural gas infrastructure, also presents a significant advantage for it.

Moreover, RNG's localized production capability enhances societal resilience against external supply shocks. A key opportunity lies in replacing a substantial portion of fossil-derived natural gas with pure methane biogas derived from waste. Projections indicate the potential of **this energy source to power three million U.S. homes** with 654 billion cubic feet of biogas annually.[8]

References

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[2] North American renewable natural gas market could expand tenfold by 2050 to reach 4 bcfd (woodmac.com)

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[4] The Feasibility of Renewable Natural Gas as a Large-Scale, Low Carbon Substitute (arb.ca.gov)

[5] Inflation Reduction Act provides major tax incentives for public power (nortonrosefulbright.com)

[6] It's time for utilities to accelerate investment in renewable natural gas (middle-east.kearney.com)

[7] Frequent Questions about Landfill Gas (epa.gov)

[8] Could Renewable Natural Gas Be the Next Big Thing in Green Energy? (e360.yale.edu)

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