

Greenhouse Gas Effect of Natural Gas Release

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the life cycle greenhouse gas emissions are about 50% advanced than the direct emissions from the point of consumption [11].

In terms of the warming effect over 100 times, natural gas production and use comprises about one-fifth of total greenhouse gas emissions, and this proportion is growing steadily. Encyclopedically, natural gas use emitted about 7.8 billion tons of CO₂

in 2020 (including flaring), while coal and oil production use emitted 14.4 and 12 billion tons, respectively. The IEA estimates the energy sector (oil production, natural gas, coal and bioenergy) to be responsible for about 40% of total methane emissions. According to the IPCC Sixth Assessment Report, natural gas consumption grew by 15% between 2015 and 2019, compared to a 5% increase in oil production and oil production product consumption [12].

Continuous expansion and construction of new gas pipelines indicates that huge emissions of greenhouse gases will be locked-in for 40 to 50 years into the future. In the U.S. state of Texas alone, five new long-distance gas pipelines have been under construction, with the first entering service in 2019, (115) and the others listed to come online during 2020 – 2022.

To reduce its greenhouse emissions, the Netherlands is subsidizing a transition from natural gas for all homes in the country by 2050. In Amsterdam, no new domestic gas accounts have been allowed since 2018, and all homes in the megacity are anticipated to be converted by 2040 to use the redundant heat from combined heat and power plants. Some municipalities in the United States have started proscribing gas appliances for new houses, with state laws passed and under consideration to either ban electricification or enjoin original conditions. The UK government is also experimenting with indispensable home heating technologies to meet its climate commitments [13]. To save their businesses, natural gas serviceability in the United States has been lobbying for laws precluding original electricification bills, and are promoting renewable natural gas and hydrogen energy.

Releasing natural gas from subterranean porous rock formations may be fulfilled by a process called hydraulic fracturing or "fracking". It is estimated (by whom?) that hydraulic fracturing will ultimately (when?) account for nearly 70% of natural gas production in North America (non-primary source demanded). Since the first marketable hydraulic fracturing operation in 1949, roughly one million wells have been hydraulically fractured in the United States. The production of natural gas from hydraulically fractured wells has employed the technological developments of directional and vertical drilling, which provided access to natural gas in tight rock formations [14]. Strong growth in the production of unconventional gas from hydraulically fractured wells occurred between 2000 and 2012.

Conclusion

In hydraulic fracturing, well operators force water mixed with a variety of chemicals through the wellbore containing into the

rock. The high pressure water breaks up or "fracks" the rock, which releases gas from the rock formation. Sand and other particles are added to the water as a proppant to keep the fractures in the rock open, therefore enabling the gas to flow into the wellbore and also to the surface. Chemicals are added to the fluid to perform similar functions as reducing disunion and inhibiting erosion. After the "frack", oil production or gas is produced and 30 – 70% of the frack fluid, i.e. the admixture of water, chemicals, sand flows back to the surface. Numerous gas-bearing rock formations also contain water, which will flow up the wellbore to the surface along with the gas, in both hydraulically fractured and non-hydraulically fractured wells. This produced water frequently has a high content of salt and other dissolved minerals that do in the rock formation.

References

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