

Heavy-duty transport transport in Germany: Environmental advantage through biomethane

February 2021

Today, heavy-duty road transport in Germany is responsible for just under a quarter of transport-related CO₂ emissions. The defossilization of transport in general and heavy-duty transport in particular is an important approach to achieving the German government's climate target – i.e., reducing German greenhouse gas emissions by 55 percent by 2030 compared with 1990. Biomethane, as an already available climate-friendly fuel alternative, could become one of the key technologies in this context.

In order to achieve the German government's climate goals, many adjusting screws need to be turned, for example in the energy, transport or private sectors. One important focus of this position paper will be on heavy goods traffic,

- which accounts for a share of total German emissions of five percent or around 38 million metric tons of CO₂ equivalents per year¹,
- whose absolute carbon dioxide emissions increased between 1995 and 2018 from 39.2 to 47.9 million metric tons, i.e. by 22%, despite improved vehicle efficiency due to the ever-growing volume of traffic², and
- whose requirements, such as range, level of purchase costs, or refueling infrastructure, cannot be met today by any alternative propulsion system other than biomethane.

Biomethane – proven technology, locally available

Biogas can be easily upgraded to biomethane and used in liquid (BioLNG) or compressed (BioCNG) form as a climate-friendly fuel. Compared to other alternative drives for climate-neutral mobility, biomethane is successfully in use today, is immediately available, and is already contributing to the defossilization of heavy-duty traffic.

1. https://www.biogaspartner.de/fileadmin/Biogaspartner/Vortraege/bgp_2020/3.Zukuenftige_Entwicklungen_und_Herausforderungen_im_Schwerlastverkehr_Andres.pdf

2. <https://www.umweltbundesamt.de/daten/verkehr/emissionen-des-verkehrs#strassenguterverkehr>

The environmental benefits of biomethane as a climate-friendly fuel are obvious: vehicles powered by BioLNG/BioCNG

- **emit up to 80 percent less CO₂** than conventional diesel engines,
- release around **99 percent less fine dust particles**
- **reduce nitrogen oxide emissions** by around 90 percent,
- emit around **50 percent less noise** than a comparable diesel engine³.

For logistics companies, the environmental benefits of BioLNG/BioCNG also open up new economic perspectives. Their vehicle fleets can travel in urban areas regardless of applicable vehicle bans. The significant reduction in the noise level emitted also makes it possible to carry out night-time transports.

With CO₂ pricing in effect since the beginning of 2021, diesel and gasoline prices will increase by seven cents in the first year to 15 cents per liter in 2025. For LNG and CNG propulsion, the CO₂ price is moderate and will gradually reach one cent per kWh in 2025. **No CO₂ price will be charged for a BioLNG or BioCNG tank filling.**

In addition, the following applies to LNG/BioLNG or CNG/BioCNG powered trucks:

- Toll exemption until 2023
- Support through energy tax reduction
- Continuous expansion of refueling infrastructure
- 15% lower fuel consumption than conventional diesel⁴
- Comparable range (LNG/BioLNG ~ 1600 km, CNG/BioCNG ~ 600 km)

Biomethane – catalyst for more climate-friendly heavy-duty traffic
Climate protection in transport is only feasible if all greenhouse gas reduction potentials are exploited and thus an openness to all available technologies is given. Biomethane-based fuels are already making their contribution to this. **There must be a serious and**

3. Zukunft Erdgas e.V.

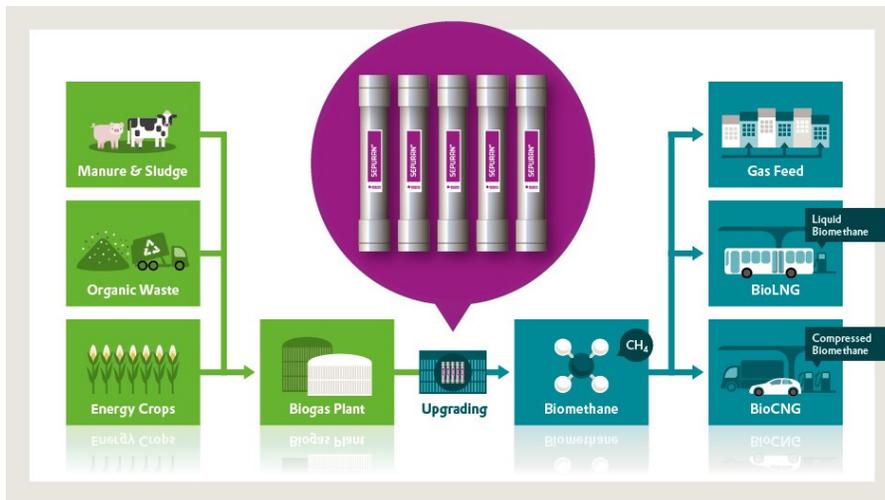
4. <https://zukunft.erdgas.info/gas-im-markt/gas-im-verkehrssektor/lng-verfluechtigtes-erdgas/lng-im-strassengueterverkehr>

reliable long-term perspective for sustainably produced biofuels in Germany.

LNG and CNG already represent mature, competitive and immediately available fuel alternatives in heavy-duty transport. A move away from fossil LNG or CNG and thus the use of green BioLNG or BioCNG is indispensable. Technology openness and thus the demand-oriented use of the various alternative fuels are the key to achieving the climate targets set by the German government.

Simple and efficient purification of biogas to biomethane with Evonik's membrane

Biogas is produced by fermenting biomass—an organic substance, for example, from organic waste such as liquid manure and sewage sludge or from renewable raw materials. The particularly selective SEPURAN® Green hollow-fiber membrane from Evonik easily and efficiently upgrades raw biogas, which consists of the energy carrier biomethane plus carbon dioxide, into high-purity biomethane that can be used to generate electricity and heat or as a fuel.



Since their market launch in 2011, SEPURAN® Green membranes have been successfully installed in more than 500 biogas upgrading plants worldwide. Evonik produces them at its site in Schörfling (Austria). The based material – the high-performance plastic – is manufactured in neighboring Lenzing.

Evonik sets itself ambitious sustainability targets

The specialty chemicals company itself has set ambitious sustainability goals. For example, Evonik aims to reduce its absolute Scope 1 and Scope 2 greenhouse gas emissions by 50 percent by 2025 compared with 2008. The plan is based on climate-friendly further development of the company's own production processes and an expansion of the range of products with particular sustainability benefits.

The membrane production site in Schörfling, for example, relies on an energy mix consisting of 25 percent locally produced biomethane. The share of renewable energies will be further expanded in the future. In addition, Evonik's logistics purchasing department relies on cooperation with selected logistics providers who transport Evonik's raw materials and end products using CNG- and LNG-powered trucks.

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Further information under

<https://www.membrane-separation.com/en/upgrading-of-biogas-to-biomethane-with-sepuran-green/defossilization-goods-transportation>