
Recommendations for overcoming barriers in Norway

- Restrict the usage of fossil gas in green house industries and for heating buildings. This can increase the demand for biogas and stimulate to more investments in production facilities by inducing stable demand for biogas. Since 2022, there has been a ban on the use of mineral oil in temporary heating of buildings, but the use of fossil gas is still permitted. Restricting the use of fossil gas can reduce the cost-disadvantage of biogas, but other substitute of heating, e.g., electricity and district heating can mitigate the effect on the demand for biogas.
- The lack of a steady and predictable supply of substrate increases risk for new investments in production facilities. There are already support schemes in place for farmers to deliver manure for biogas production. This policy can be further strengthened by providing a guarantee for continued support for a longer time-period. This can reduce the risk of investing in production facilities by increasing the probability that supply of substrate remain stable. Delivering manure for biogas production can also reduce the release of methane by reducing the storage time of the manure.
- Fish sludge and fish silage can be good substrate sources, in particular when it is combined with livestock manure. Land based fish-farming facilities collect fish sludge, but offshore fish-farming facilities are not required to do this. The fish-farming industry in Norway is mainly offshore-based. The fish sludge might have negative environmental impacts on the nearby waters. A regulatory demand to collect some of the fish sludge from offshore fish farms can stimulate to increased substrate supply for biogas. Studies indicate that by mixing livestock manure with fish sludge or fish silage, biogas production can be increased by 2-3 times when compared to production using only livestock manure.¹ However, there is also a risk of a higher content of environmental toxins in the biomass-leftovers which can influence its suitability as biofertilizer.
- Stimulating the use biproducts from biogas. The production of biogas produces left-over biomass and, in particular when upgrading biogas to biomethane, produces CO₂.
- To stimulate the demand for biogas, support schemes for biogas vehicles can be considered. Either by making fossil-based alternatives more expensive, e.g. introducing a value-added tax on fossil-fuel based transportation trucks, or by subsidizing the purchase of biogas trucks. Increasing the costs of fossil fuels will also reduce the cost-difference for biogas vehicles.
- Some support schemes for investments in production facilities exists, but often conditional on using innovative technologies. Support schemes for investments in facilities using “old” technologies

¹ Norsus (2023). *Mulighetsrommet for produksjon av biogass i Norge*. Norsk institutt for bærekraftsforskning (NORSUS), OR-06.23

should be considered. This can stimulate to increasing supply of biogas and thus mitigate coordination issues between supply and demand. The demand for biogas depends on the belief that supply will be adequate, and the supply of biogas depends on adequate demand.

- Support schemes for distribution and filling stations should remain and could be increased. The lack of charging stations is still a barrier for increased volume of vehicles running on biogas.
- Local governments can regulate areas for filling stations for biogas to speed up the rollout of new stations. They can also choose biogas technologies for their vehicles fleet, e.g. buses and public transport, waste collection etc. This can incentives biogas production by providing a stable source of demand.

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