Evaluation of barriers to biomethane sourcing from new production countries

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Why biomethane is an attractive option for heavy industries

Biomethane production and consumption is scaling rapidly in the EU, with around 20% annual growth in production capacity. It is a mature technology that can be scaled rapidly and production costs are significantly lower than the cost of renewable hydrogen.[1] Up to recently, most large industries were focusing on hydrogen in their strategies to reach net zero emissions. Because hydrogen has turned out to be initially more expensive and its scale up has been delayed[2], it makes sense that industries turn to biomethane, in addition to a still foreseen future scale-up of hydrogen. Biomethane and hydrogen have a high degree of substitutability and can both be used for applications that require high temperature heat. Biomethane has the additional benefit that it can be used in processes that require carbon as an input, including steel-making. It is feasible to produce at least 100 bcm of sustainable biomethane in the EU.[3] Tata Steel Nederland (TSN) views biomethane as a suitable renewable gas to be used in its future production process and aims to source 0.5 bcm (5 TWh) of biomethane from 2032 onwards, and already sourcing increasing volumes in the years before that. This memo outlines the current market barriers for a continued scale up of biomethane production and how these barriers can be overcome to enable sourcing by TSN.

Evaluation of possible barriers to availability of grid-injected biomethane for TSN

Focus on new countries as imports from mature markets may be inaccesible or expensive.

Given the relatively limited production potential for biomethane in the Netherlands, TSN aims to source a significant share of its demand through imports from other EU members and Ukraine. Looking at current production, by far most biomethane in the EU is produced under national subsidy schemes in only 5 Member States: Germany, France, Italy, Denmark and the Netherlands. Subsidy schemes ensure guaranteed subsidised supply to consumers in end use sectors domestically, typically no export of subsidised biomethane is possible. This means that TSN cannot access this biomethane, with the possible exception of Denmark.[4] In the future, these mature markets are likely to introduce demand-side incentives such as blending obligations with high penalty prices, likely leading to higher market prices than TSN can offer. TSN could therefore best focus on sourcing biomethane from new large production installations in countries with large quantities of available sustainable

[1] Biomethane can be produced at a cost of €70 to €150 per MWh in mature markets, depending on the size of the production installation. Renewable hydrogen is estimated to cost €6 to €8 per kg or €200-€265 per MWh; meaning that biomethane has up to 3,5 times lower costs. Production in new markets in e.g. Eastern Europe could be significantly more cost-effective than €70/MWh. A cost of biomethane delivered of €60/MWh requires an EU ETS price of €150 on top of a natural gas price of €30/MWh as delivered, or a significantly lower ETS price if biomethane replaces coal in steel-making.

[2] The European Court of Auditors pointed to the high cost of renewable hydrogen and concluded that the EU targets for the scale up of renewable hydrogen were overly ambitious. Special report 11/2024: The EU's industrial policy on renewable hydrogen | European Court of Auditors.

[3] A recent study by Guidehouse for EBA (Biogases towards 2040 and beyond | European Biogas Association) conclude that a total production potential of around 160 bcm exists in the EU. This includes a large contribution from sequential cropping which still needs to be demonstrated at scale outside Italy, plus a large contribution from gasification, a not yet mature technology. A sustainable potential of at least 100 bcm of sustainable biomethane in the EU would be a relatively conservative estimate. The TYNDP 2024 by the ENTSOs assume 70 bcm of biomethane, not based on own bottom-up analysis.

[4] Denmark allows the export of subsidised GOs for compliance markets, however it remains to be seen whether this is still the case by 2032.

biomass, little biomethane production today and relatively low production costs. These include Poland, Romania, Spain, and Ukraine.[5] The rest of this document will focus on the situation in these countries.

Remaining market barriers in new countries that need to be solved.

While the countries mentioned above all have a high production potential and should be able to deliver cost-efficient biomethane, a number of barriers exist that need to be solved. Four barriers are discussed below and for each it is evaluated to what extent it can be solved during the coming years to enable TSN to successfully source biomethane.

1. **Biomethane costs more to produce than fossil fuels, meaning incentives are needed**. Even though biomethane production in new production countries will have a lower cost compared to mature markets, government incentives will still be needed. The price of EU ETS allowances today is insufficient to be able to source biomethane at the moment.

   Evaluation: The four assessed countries have no or limited support mechanisms to support domestic biomethane production, although Poland has introduced a subsidy for (very) small plants. However, under the EU ETS, TSN is allowed to import biomethane from across the EU. TSN looks at sourcing for the period 2032-2040, during which period the EU ETS allowances price is expected to be sufficiently high. TSN could already start to secure future volumes of biomethane during the coming years, to help create new production capacity for its offtake.

2. **Access to gas grids** to connect supply with demand
   In many new biomethane production countries regulation is in place to accommodate the injection of biomethane to gas distribution and transmission grids. The EU gas package requires Member States to grant biomethane access to gas grids and also Ukraine has created the regulatory conditions for biomethane injection to gas grids.[6] In Poland and Romania, no biomethane is actually connected to gas grids today, meaning that network operators have yet to gain experience in it. However, the Polish market starts to develop, and around 100 applications for plants are under development to be connected to gas grids and have been filed with the network operator.[7] In Spain, grid operators have successfully connected biomethane plants[8] although the application process can be lengthy, and the first biomethane plant in Ukraine was connected to the gas grid in 2024 and has started to export biomethane to Germany in early 2025.[9] The costs of grid connection can vary significantly between countries, making it useful to exchange best practices.[10]

   Evaluation: all new markets either have already created or will soon create the necessary regulation to facilitate biomethane injection in gas grids. Network operators in Spain and Ukraine have experience in connecting biomethane to gas grids, Poland expects to connect new plants to gas grids shortly, and Romania seems to be the least advanced in this area. It should be able to have well functioning processes in place in all new markets well before 2030, CEER[11] is creating a process to share best practices on gas grid connections with

[5] Ukraine has a significant production potential and all actors in the Ukrainian biomethane value chain as well as the government are committed to develop the sector. Investments are still to be developed. In Poland, €3.4 billion in investments are being planned to build 0.7 bcm of production capacity and in Spain, some €1.5 billion in investments are being developed to create 0.5 bcm of production capacity. No information is available about possible planned investments in Romania.

[6] Currently only biomethane injected in the EU interconnected gas infrastructure can be used for EU ETS compliance. This forms a barrier to using imports from Ukraine under the EU ETS, this barrier should be lifted during the coming years.

[7] Interview with TGE, Polish commodity exchange.

[8] Biomethane - Enagás renovable

[9] The first Ukrainian biomethane has been exported to the EU/Germany.

[10] Insights based on upcoming Common Futures study for European Biogas Association.

[11] Council of European Energy Regulators

national regulators and EBA will shortly publish a study that describes how the costs to connect biomethane to gas grids are paid for across Member States. Still, due to the lack of experience, grid connection requests of initial investments may take relatively long.

3. Difficulty to obtain **permits** and lengthy permitting times
   In many Member States, obtaining the necessary environmental and planning permits can take several years, as was identified in a recent inventory by the Biomethane Industrial Partnership.[12] While for Romania no information is available (no biomethane plant has been permitted although the first one is being planned), the permitting process for the first plants in Poland took around 3 years and in Spain, permitting is reported to take 2 to 2.5 years. The duration of permitting in Ukraine is unclear.

   Evaluation: the duration of permitting processes in Poland and Spain are similar to those in established biomethane markets, while the situation in Romania and Ukraine is unclear. Permitting for initial investments in the latter two countries may take relatively long and may pave the way for later investments. It should be feasible to have well-functioning permitting processes in new production countries well before 2030.

4. Lack of functioning **national registries for GOs** in novel biomethane countries and no access to Union Data Base
   The Union Data Base (UDB) is not yet accessible to biomethane, to facilitate the transfer of Proof of Sustainability (PoS) between producers and consumers across the EU. Also, not all Member States have national registries for GOs. In Poland for example, no biomethane GOs exist and neither does a national registry for biomethane GO exist.[7]

   Evaluation: within the next year, it can be expected that UDB is expected to be fully operational for biomethane PoS, it may take a bit longer to also connected to national GO registries (and for all EU MS to introduce these), to avoid double counting of internationally traded biomethane, yet this should be feasible well before 2030. This should not hamper the sourcing of biomethane by TSN.

In addition to the points discussed above**, access to financing** may be an issue for biomethane investments in new production countries. TSN can choose to co-develop and co-finance new production installations in partnerships with experienced biomethane project developers, which reduces project risk. Also, working with EIB and EBRD can help, especially in Romania (EIB) and Ukraine (EBRD).

To conclude, biomethane production in the EU to date has been confined to a few Member States only mainly due to the lack of incentive schemes in many Member States. An increase in demand-side incentives, the emergence of a cross-border market and the expected increasing price of EU ETS allowances are likely to accelerate investments in Member States with (almost) no production today, plus a significant opportunity exists in Ukraine. Some challenges exist in new biomethane production countries, however as described in this memo, most can be expected to be solved during the coming years, enabling TSN to source biomethane from new production countries. This will probably require a pro-active sourcing strategy with strategic partnerships with experienced project developers (plus possibly EIB and EBRD) to jointly develop and finance new production capacity, and to provide long-term offtake security.

[12] BIP_Task-Force-2_Accelerating-biomethane-permitting_Oct2023.pdf. This brief report provides guidance on best practices in designing a well-functioning and fast permitting process.