

# Sustainable Biomethane Initiative

The European biomethane value chain welcomes the REPowerEU plan and the Commission's recognition of the important role biomethane can play. The introduction of a biomethane target of 35 bcm will effectively substitute 20% of imported Russian gas by 2030. This memo presents input to the detailed REPowerEU plan expected in May.

**To achieve 35 bcm of EU biomethane production by 2030 and rapid additional growth already this year REPowerEU should propose to:**

1. **Anchor the 35bcm target in the Renewable Energy Directive (RED) III**
2. **Establish a public-private cooperation to enable the right policies and accelerated investments across the EU**
3. **Speed up permitting for new biomethane installations and grid-connection**
4. **Require Member States to develop national biomethane strategies**

## Success depends on making the 35 bcm target binding...

REPowerEU proposes an unprecedented biomethane scale-up. Fit for 55 already aims for a strong increase to 150 TWh biomethane. This effort will now more than double, adding another 190 TWh to reach a total of 370 TWh. Biomethane will increase twelvefold compared to today's production, a much greater effort compared to wind and solar-PV.<sup>1</sup>

Biomethane growth is also more ambitious than targeted growth in EU green hydrogen

production, see graph above. REPowerEU proposes an additional 15 mln tonnes of green hydrogen, of which 10 mln tonnes of imports and 5 mln (165 TWh) tonnes EU production on top of the Fit for 55 ambition of 5.6 mln tonnes (190 TWh) of EU-produced green hydrogen.

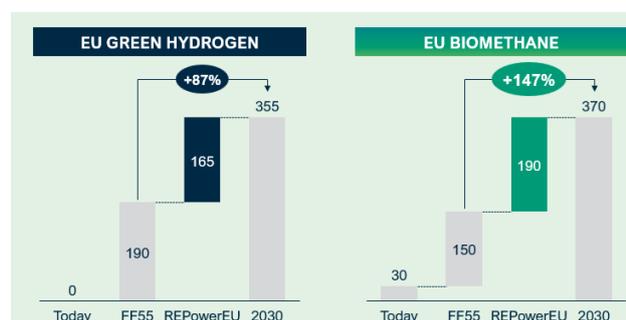


Figure 1 - EU scale up of green H<sub>2</sub> vs biomethane

Biomethane developments so far have been mainly confined to a small number of Member States. Scaling up from 3 bcm to 35 bcm in nine years' time requires biomethane investments in all Member States. Prioritising permitting and investments, enabled by national policies consistently across all Member States will only happen under EU guidance. Therefore the 35 bcm target should be included

<sup>1</sup> The biomethane target is much more ambitious than the REPowerEU target for additional wind and solar-PV capacity. REPowerEU proposes a combined capacity increase of 80 GW or about 160 TWh on top of the 900 GW foreseen already as part of Fit for 55. REPowerEU thus increases the wind and solar-PV ambitions by 9% compared to Fit for 55, compared to 147% for biomethane.

in the Renewable Energy Directive. Other legislative measures are needed too. It is important to assess implications of REPowerEU to policy files currently under discussion, before closing them.

### ...and on providing proactive EU support

**Biomethane is a decentral form of energy supply. The ambitions resulting from FF55 and REPowerEU require a coordinated approach.** Such approach is two-fold: structuring already ongoing developments (e.g. planning new industrial-sized biomethane plants close to gas grids) plus initiating new ones (e.g. biogas to biomethane upgrading). Structuring and coordination is needed because biomethane is produced decentral at a relatively small scale.

Thus far, the EC has, for good reasons, actively promoted green hydrogen, wind energy and solar-PV, with strategies, funding and public-private cooperation. There's a EU hydrogen strategy, an EU strategy on offshore renewable energy (mainly wind) and a new EU strategy on solar PV is under development. Hydrogen has an alliance, a Joint Undertaking and funding from the Innovation Fund (see below). It's now urgent for the EU to provide similar proactive support also to biomethane.

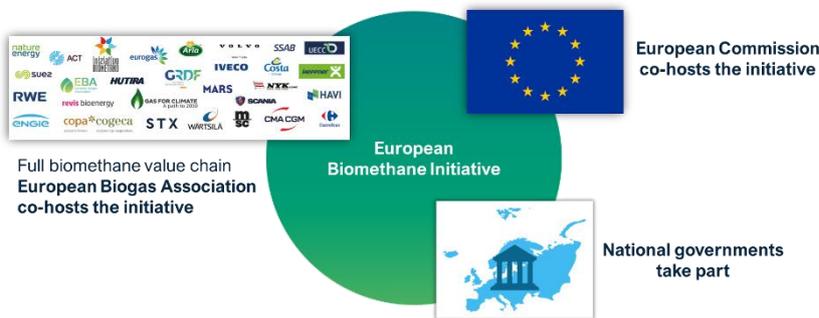
Table 1 - EU support measures for hydrogen

Name	Description	EU support
<b>Fuel cells and hydrogen joint undertaking</b>	Public-private partnership supporting research, development and demonstration activities	€940 million under EU FP7, followed by €1330 million under Horizon Europe
<b>Clean Hydrogen JU</b>	Successor of FCH-JU from Nov 2021	€1 billion EU funding for period 2021-2027
<b>European Clean Hydrogen Alliance</b>	Formal Alliance launched by the Commission and the value chain	European Commission provides staff to run the ECHA secretariat
<b>Innovation Fund</b>	Three out of seven projects awarded subsidies in 2021 focus on hydrogen	Total awarded subsidies €1.1 billion
<b>Hydrogen Strategy</b>	European Commission Communication	EU target for 40 GW electrolyser capacity and up to 10 Mtonne of green H <sub>2</sub> by 2030

### New public-private cooperation to achieve the biomethane target

The biomethane value chain is ready to engage in a public-private cooperation to be launched and hosted jointly by the European Commission and European Biogas Association and the full biomethane value chain, and with active participation of EU Member States too. A successful cooperation would work to achieve the new EU biomethane target. From this central effort, various tangible plans emerge, overseen by the public-private initiative.

The Commission (e.g. GROW D2) and EBA would provide staff. EBA's contribution to staff the secretariat and involve advisors if needed would be funded by a Steering Committee of ~12 companies. The secretariat would run daily activities, while DG ENER and DG AGRI would be involved without having to commit dedicated staff. All companies active in the biomethane value chain and all Member States could join the initiative free of charge.



A public kick-off would take place ideally in early July. Beforehand, we would agree on the structure, governance and timelines of the initiative and establish a secretariat. Plus create an agenda which could be called 'Biomethane scale up strategy', including:

1. Breaking down the 35 bcm target over Member States, as input for updated National Energy and Climate Plans (NECPs) and for national biomethane strategies (*see Annex below*)
2. Outlining ways to speed up permitting
3. Identification of actions to enable cross-border trade biomethane, allowing counting of GHG savings in import countries. This is an urgent issue.
4. Exchanging best practices on effective policies to ensure a positive business case
5. Setting up an EU investment support mechanism for biomethane
6. Analysing production technology configurations to achieve the 35 bcm target, their respective costs (LCOE) and timelines to develop and connect to grids new small and large AD-based biomethane units; methanation units to upgrade existing biogas plants, and gasification units.

The biomethane scale-up strategy should be published by the Commission and presented during a kick-off with EVP Timmermans, Member State senior representatives and company CEOs.

The figure below shows suggested activities of the new public-private cooperation in parallel to policy making.

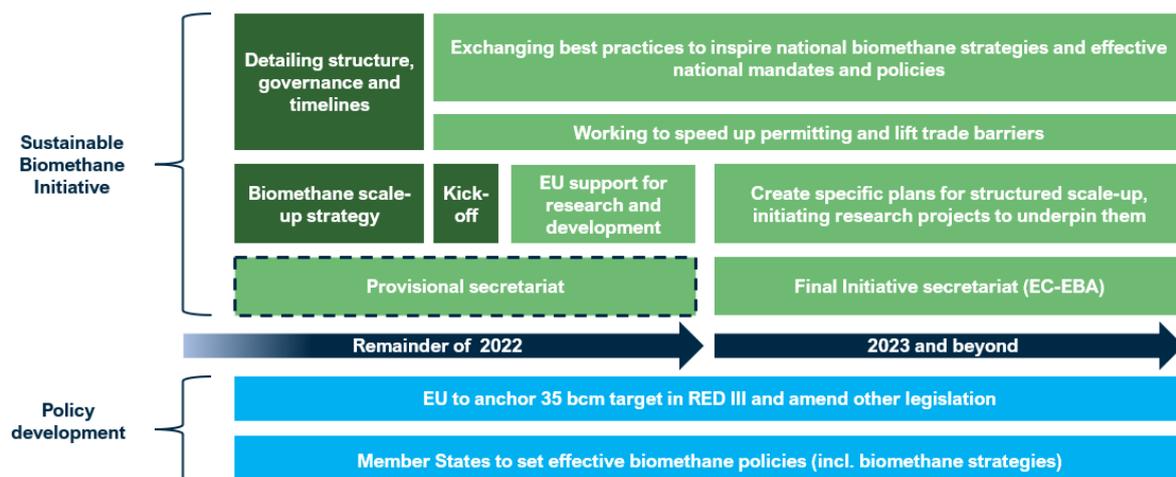


Figure 2 - Proposed activities for the initiative. Activities highlighted in dark green to be performed by summer 2022

## Work on accelerating investments should start immediately

Based on current investments, EBA expects a capacity expansion for biomethane production of 0.8 bcm during 2022. Three additional parallel options exist for rapid growth this year. EBA expects that increasing plant output (point 1 below) to maximum capacity<sup>2</sup> could result in an additional 0.8 bcm, while points 2 and 3 could jointly achieve an additional 0.6 bcm of biomethane production already in 2022.

### 1. Increasing the output of existing biomethane plants

Average plants currently operate on 71% of their capacity, that could be increased to 91% or 8000hrs/yr.

### 2. Planned biomethane projects for 2023 to become operational in 2022

Construction of new biomethane production plants takes between 1 to 1.5 years. On top of that comes 1 to 2 years for permitting. Speeding up permitting processes can do a lot to accelerate projects in years to come. For this year, engineering firms should see whether it's possible to speed up construction of already permitted new projects. Also, gas grid operators should see how to faster connect new installations to existing gas grids.

### 3. Enable new upgrading units added to existing biogas plants

Europe produces 15 bcm<sup>3</sup> of biogas which is presently not upgraded to biomethane. Adding methanation units to existing biogas plants can rapid scale up biomethane production. Adding methanation units to existing biogas plants takes approximately six months. Permitting and scarcity of necessary materials (e.g. membranes) are bottlenecks.

To quickly accelerate production, and to allow for more than 3.5 annual growth during coming years, REPowerEU should be the start of a process that sets a binding EU target, effective national policies, much faster permitting and with public-private cooperation to get there.

These are the companies that currently form the Steering Committee, representing the full group of involved companies and organisations.



<sup>2</sup> 91% is the maximum capacity of the biogas plant and methanation unit due to required maintenance operations.

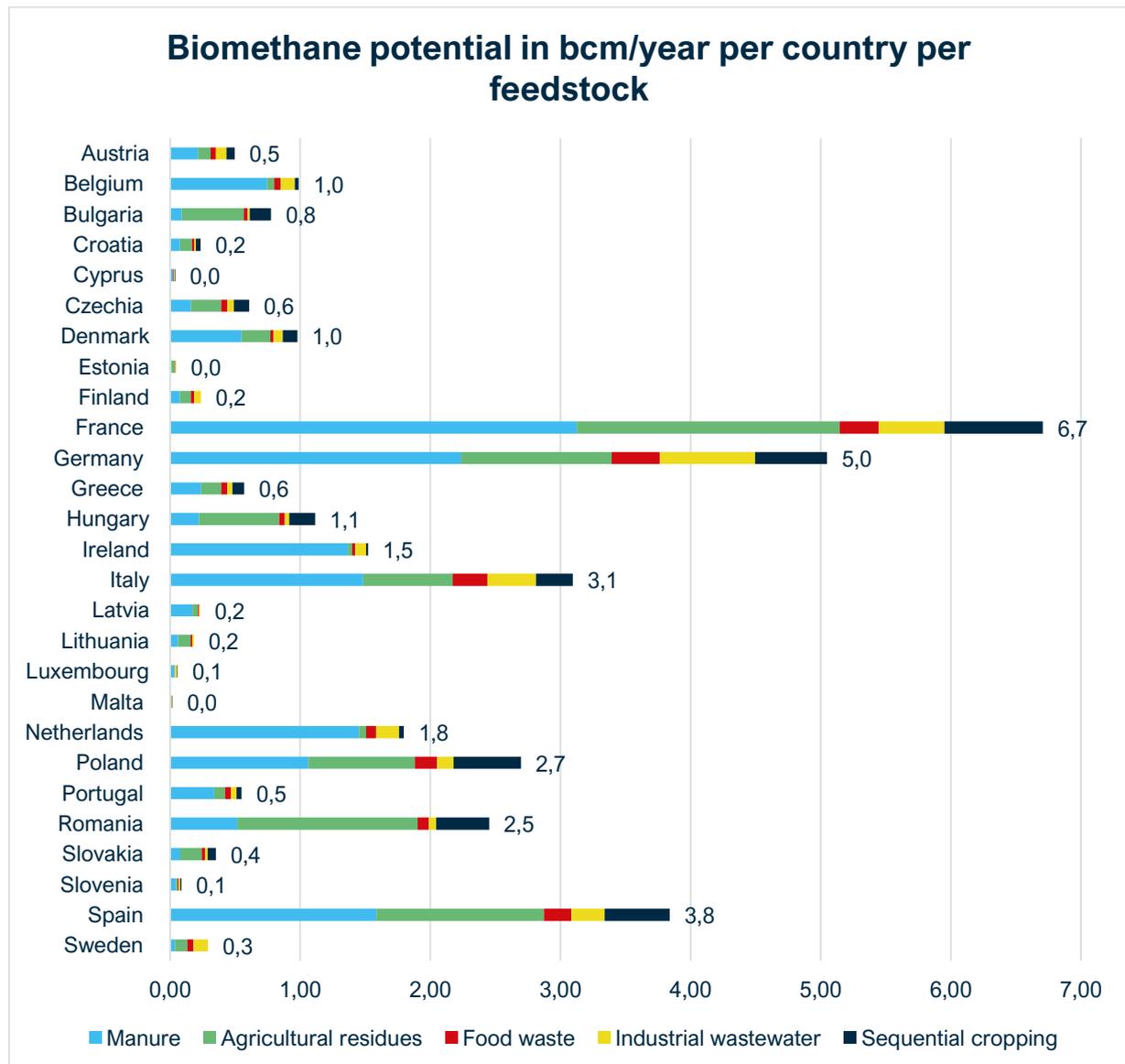
<sup>3</sup> In our earlier communication we mentioned a number of 17 bcm which turns out was too high.

## Breakdown of 35 bcm mainly based on biomass waste and residue feedstock

The table below shows how the EU can produce 35 bcm of biomethane from sustainable biomass sourced from within the EU. This feedstock mix is largely based on previous work by Gas for Climate and a wide range of data and studies, including recent data from EBA. The assumptions used are conservative. An additional potential from sewage sludge is available, further increasing the share of wastes and residues to produce 35 bcm. EBA is currently collecting data and insights on the biomethane potential from sewage sludge by 2030.

Feedstock	Biomethane	Assumptions	Source
<b>Manure</b>	16 bcm	Solid manure: 50% of all the solid manure potential at farms with more than 100 Lifestock Units (LU). Liquid manure: 100% of all the liquid manure at farms with more than 100 LU. Only manure that is collected from stables	Gas for Climate, based on Elbersen et al., 2016: "Outlook of spatial biomass value chains in EU-28. <a href="#">See here.</a>
<b>Agricultural residues</b>	10 bcm	Largest share of straw is left on agricultural soils. From sustainably collectable straw, 50% of cereal straw is considered to be used for biomethane. Remainder mostly for animal bedding.	Gas for Climate (Iqbal et al. 2016): "Maximising the yield of biomass from residues of agricultural crops and biomass from forestry (Spottle et al. 2013). "Low ILUC potential of wastes and residues for biofuels: Straw, forestry residues, UCO, corn cobs" (Elbersen et al., 2016): "Outlook of spatial biomass value chains in EU-28"
<b>Food waste</b>	2 bcm	7% of food waste in the EU today	Gas for Climate Eurostat (CE, Delft, 2017): "Optimal use of biogas from waste streams" (Elbersen et al., 2016): "Outlook of spatial biomass value chains in EU-28"
<b>Industrial wastewater</b>	3 bcm	Total potential for 2050 of 14 bcm. Assumed that by 2030 20% of that potential could be achieved.	EBA (2021), The role of biogas production from industrial wastewaters in reaching climate neutrality by 2050. <a href="#">See here</a>
<b>Silage produced as sequential/ double crops</b>	4 bcm	Implemented today in Italy, tested in France. EU potential of 41 bcm (Gas for Climate) or 45.9 bcm (Uni Ghent and EBA, lower scenario). Assumed that by 2030 ~10% of this potential can be achieved.	
<b>TOTAL</b>	<b>35 bcm</b>		

Member State specific breakdown of feedstock mix as presented above



The bar chart above and table on the next page shows the breakdown over EU Member States of the feedstock mix to produce 35 bcm biomethane largely based on waste and residues, performed by EBA. For manure and agricultural residues the breakdown is based on the national availabilities of these feedstocks. The total EU potential of post-consumer food waste is split over Member States based on their relative shares of EU population. The split of industrial wastewater is based on national shares of total EU GDP. The national shares of sequential cropping are based on the methodology used in a joint study by the University of Ghent and EBA.<sup>4</sup>

<sup>4</sup> Magnolo, F.; Dekker, H.; Decorte, M.; Bezzi, G.; Rossi, L.; Meers, E.; Speelman, S. The Role of Sequential Cropping and Biogasdoneright™ in Enhancing the Sustainability of Agricultural Systems in Europe. *Agronomy* 2021, 11, 2102. <https://doi.org/10.3390/agronomy11112102>

Country	Manure	Agricultural residues	Food waste	Industrial wastewater	Sequential cropping	Total
Austria	0,21	0,10	0,04	0,08	0,06	<b>0,50</b>
Belgium	0,75	0,05	0,05	0,11	0,03	<b>0,99</b>
Bulgaria	0,09	0,48	0,03	0,02	0,16	<b>0,78</b>
Croatia	0,08	0,09	0,02	0,01	0,04	<b>0,23</b>
Cyprus	0,02	0,00	0,01	0,00	0,00	<b>0,04</b>
Czechia	0,16	0,23	0,05	0,05	0,12	<b>0,61</b>
Denmark	0,55	0,22	0,03	0,07	0,11	<b>0,98</b>
Estonia	0,01	0,02	0,01	0,01	0,00	<b>0,05</b>
Finland	0,07	0,09	0,02	0,05	0,00	<b>0,24</b>
France	3,13	2,02	0,30	0,51	0,75	<b>6,71</b>
Germany	2,23	1,16	0,37	0,73	0,55	<b>5,05</b>
Greece	0,24	0,16	0,05	0,04	0,09	<b>0,57</b>
Hungary	0,22	0,61	0,04	0,03	0,20	<b>1,11</b>
Ireland	1,36	0,04	0,02	0,08	0,02	<b>1,52</b>
Italy	1,48	0,69	0,27	0,37	0,28	<b>3,10</b>
Latvia	0,17	0,04	0,01	0,01	0,00	<b>0,23</b>
Lithuania	0,06	0,10	0,01	0,01	0,00	<b>0,18</b>
Luxembourg	0,03	0,00	0,00	0,02	0,00	<b>0,06</b>
Malta	0,01	0,00	0,00	0,00	0,00	<b>0,02</b>
Netherlands	1,45	0,05	0,08	0,18	0,04	<b>1,80</b>
Poland	1,06	0,82	0,17	0,13	0,52	<b>2,70</b>
Portugal	0,34	0,08	0,05	0,04	0,04	<b>0,55</b>
Romania	0,52	1,38	0,09	0,06	0,41	<b>2,45</b>
Slovakia	0,08	0,17	0,02	0,02	0,06	<b>0,35</b>
Slovenia	0,05	0,01	0,01	0,01	0,01	<b>0,09</b>
Spain	1,59	1,29	0,21	0,25	0,50	<b>3,84</b>
Sweden	0,04	0,09	0,05	0,11	0,00	<b>0,29</b>
<b>Total</b>	<b>16,0</b>	<b>10,0</b>	<b>2,0</b>	<b>3,0</b>	<b>4,0</b>	<b>35,0</b>