



BIP Work Programme

October 2022



Imprint

This document has been written in a collaborative effort by the European Commission, DG Energy C2 and the biomethane value chain, coordinated by European Biogas Association and supported by Common Futures. The Governing Board has adopted this document and is responsible for its content.

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1.

Introduction

This document is the Work Programme of the Biomethane Industrial Partnership (BIP). The creation of the BIP was discussed by the biomethane value chain and the European Commission resulting in its announcement by the European Commission in the REPowerEU plan published on 18 May 2022. The goal of the BIP, based on the Commission's Biomethane Action Plan is to: "support the achievement of the EU target on biomethane production for 2030 and to create the preconditions for a further ramp up of its potential towards 2050 through closer involvement of stakeholders. The partnership would create a platform for strategic discussion among key stakeholders along the whole value chain on how to best support the production and use of biogas and biomethane."¹

The BIP has been launched at the EU Sustainable Energy Week on 28 September 2022.

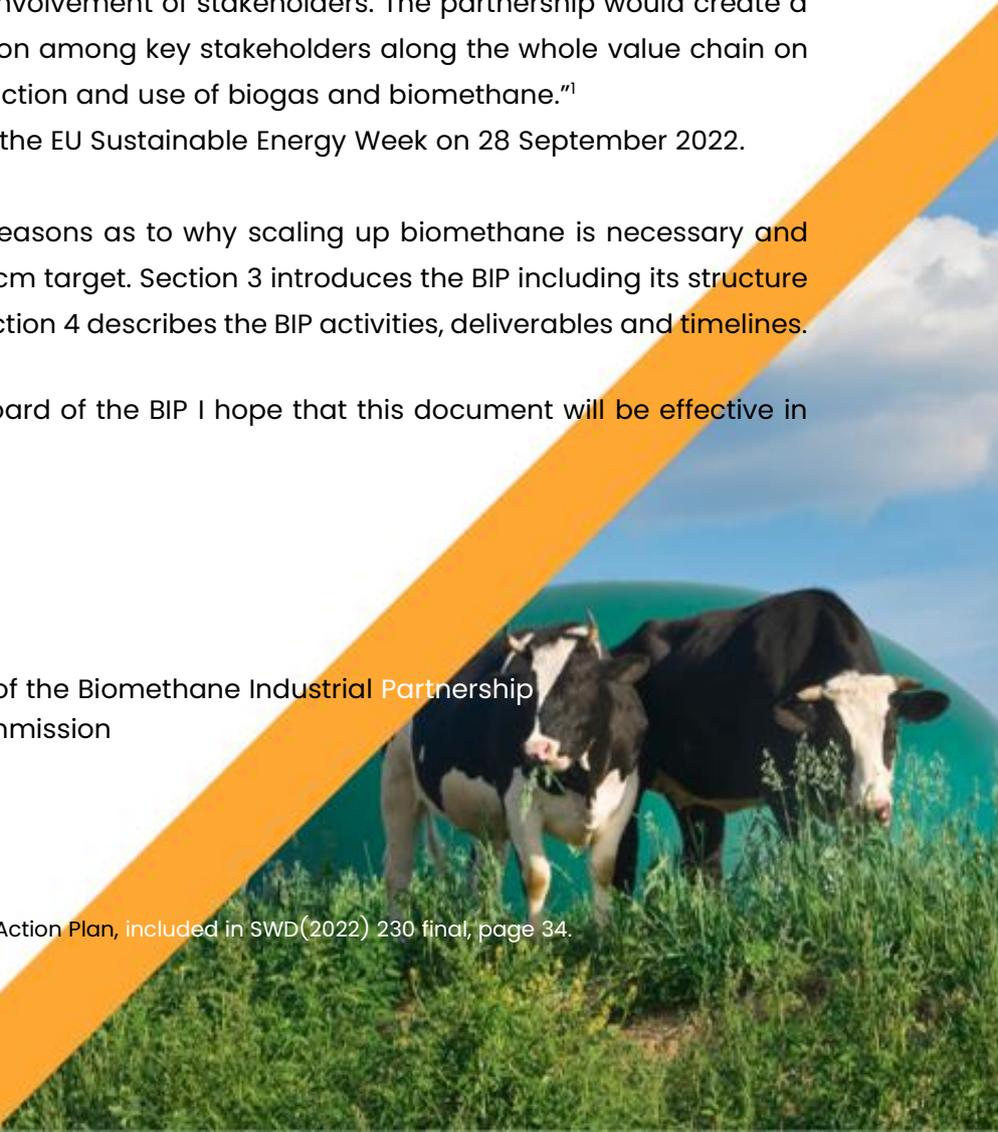
Section 2 below outlines the reasons as to why scaling up biomethane is necessary and what it takes to meet the 35 bcm target. Section 3 introduces the BIP including its structure and way of working. Finally, section 4 describes the BIP activities, deliverables and timelines.

On behalf of the Governing Board of the BIP I hope that this document will be effective in guiding our work.

Catharina Sikow-Magny
Chair of the Governing Board of the Biomethane Industrial Partnership
Director ENER.C, European Commission


Catharina SIKOW-MAGNY

¹ European Commission, Biomethane Action Plan, included in SWD(2022) 230 final, page 34.



2.

A biomethane agenda for
Europe



2.1 Why we need biomethane

The need to scale up sustainable biomethane in Europe is more urgent than ever, following the need to reduce dependency on natural gas imports from Russia and address high energy prices while simultaneously addressing the climate crisis. Biomethane is the **cheapest and most rapidly scalable** renewable gas available today. Rapidly scaling up biomethane production and use requires coordination and structuring of projects as well as alignment on effective policies. Therefore, the European Commission has announced in its recent REPowerEU plan a target to increase annual EU sustainable biomethane production and use to 35 bcm by 2030 and the creation of a Biomethane Industrial Partnership, a public-private initiative that will work towards achieving the target.

The European Commission highlights three reasons to ramp up sustainable biomethane in Europe. Firstly, the ability of biomethane to increase Europe's **security of energy supply** and reduce the EU's dependency on imported natural gas from Russia, secondly, the **cost competitiveness** of biomethane and thirdly the notion that biomethane can be a **sustainable** renewable energy carrier. The Commission states that: "Boosting sustainable biomethane production to 35 bcm by 2030 is a cost-efficient path to achieve our ambition to reduce imports of natural gas from Russia [...] The partnership would create a platform for strategic discussion among key stakeholders along the whole value chain on how to best support the production and use of biogas and biomethane."²

The new biomethane target will replace 20% of EU import of natural gas from Russia (at 2021 levels), it will reduce the EU's exposure to gas price volatility by providing stable domestic gas supply while being competitive compared to natural gas.³ And sustainably produced biomethane, meaning produced in full compliance with the EU Renewable Energy Directive, will **reduce the EU's greenhouse gas emissions**. As a sustainable renewable gas produced from biomass feedstock with a short carbon cycle⁴, biomethane typically achieves high greenhouse gas emission savings compared to natural gas especially when sustainably produced from organic waste, residues and innovative biomass sources.

In order to maximise the climate benefits from biomethane when replacing fossil energy sources, four factors are important: (1) using CO₂ captured when upgrading biogas to biomethane to create additional renewable energy, displace CO₂ of fossil origin or to

² European Commission, REPowerEU plan, COM(2022)230 final, published 18 May 2022, page 8.

³ Natural gas prices in the first nine months of 2022 varied between €60 to €350/MWh still excluding CO₂ price, biomethane is cost competitive. Large-scale biomethane can be produced for around €55/MWh plus grid injection costs while small biomethane plants produce at around €90/MWh

⁴ Biomass feedstock has been created by photosynthesis, taking CO₂ out of the atmosphere.

sequester it; the latter leading to negative emissions⁵, (2) mitigating greenhouse gas emissions in the biomethane production process by using renewable energy as process fuel, (3) avoiding methane leakage during production and transport by ensuring closed, airtight processes⁶, and (4) avoiding negative direct and indirect land use change impacts in biomass feedstock production. Additional climate benefits can be achieved through reduced methane emissions from organic methane landfilling, through separate collection and subsequent anaerobic digestion.

All of the reasons mentioned above for scaling up sustainable biomethane underline its societal benefits. Two additional reasons for an increased role for biomethane are its ability to contribute to a more **sustainable, circular agricultural sector** and its **high energy system value** to achieve a climate neutral energy system at the lowest cost to society.

Biomethane can contribute to sustainable agriculture

If produced sustainably, biogas and biomethane has important agricultural benefits. No biomass nutrients are lost in the anaerobic digestion process, they are all captured in its co-product digestate. Digestate from the digestion of agricultural waste and residues, agro-industry and food waste and manure contains nitrogen, phosphate and potassium and has excellent properties as a biogenic fertiliser. Digestate has high nitrogen absorbing properties, thereby reducing nitrogen emissions, compared to using untreated manure as fertiliser. Increasing the supply of biogenic fertiliser helps to ensure Europe's food security.

Biomethane digestate has excellent properties as a biogenic fertiliser

Biomethane can reduce the societal cost to create a climate neutral energy system

Sustainable biomethane has a role in the future climate neutral energy mix, replacing the use of natural gas and in a smart combination with renewable electricity, green hydrogen and other renewable energy sources.

The figure below summarises the need to quickly increase deployment of biomethane in Europe and the ability to do so. Although the new biomethane target is ambitious, biomethane production can be scaled up rapidly because mature, proven technology is

⁵ An additional way to generate negative emissions is through soil carbon sequestration, storing biogenic carbon below agricultural soils.

⁶ Biomethane can help drastically reduce greenhouse gas emissions. To ensure its positive role in climate change mitigation (even on short term, as methane has an extremely high short term GWP), it is vital to keep methane emissions to the lowest possible level. The Partnership can compile information on best practices and best available technologies.

applied and biomethane can easily be transported, stored and distributed to end consumers through existing gas infrastructure.

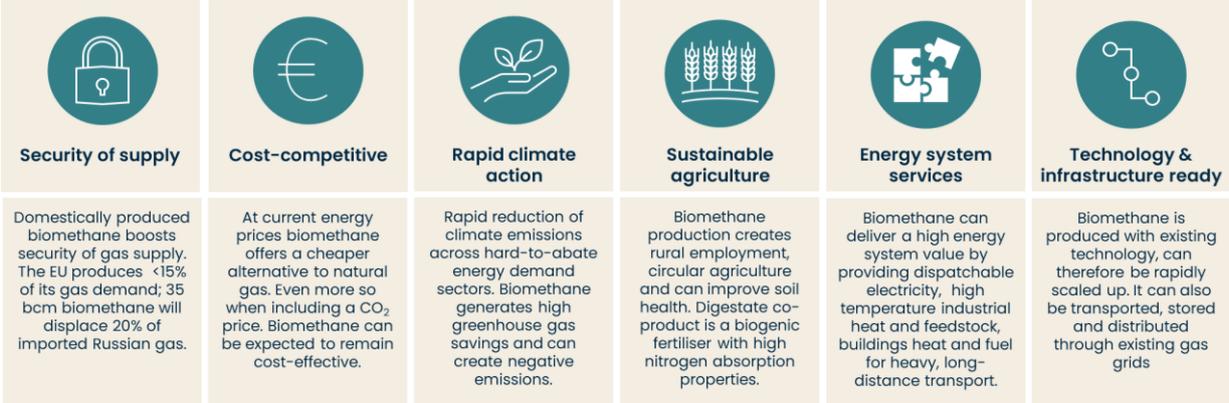


Figure 1 Reasons to scale up biomethane

2.2 Sustainable biomethane to achieve the 35 bcm target

The new target of 35 bcm or about 370 TWh of biomethane is ambitious but achievable. *Ambitious* because the EU produced just 3 bcm (32 TWh) of biomethane in 2020 and by the end of 2022 a total EU production of 4-4.5 bcm is expected. Scaling up to 35 bcm requires investments in up to 5,000 new biomethane production units and collecting up to 200 million tonnes of available sustainable biomass. It will be crucial to ensure that sustainable biomass is used with a low risk to cause negative indirect land use change impacts, avoiding competition with existing food and feed production.

At the same time, the new target is *achievable* because enough sustainable feedstock is available, the key barriers hampering a rapid increase in biomethane production have been identified⁷ and the biomethane value chain is ready to invest.

It is crucial that sustainable feedstocks are used with low indirect land use risks. These are sufficiently available

Ramping up EU sustainable biomethane production is likely to require a mix of large-scale and smaller production units. Large-scale anaerobic digestion based biomethane plants can produce 16 to 20 million cubic metres of biomethane per year. This is considerably more than the average biomethane plant in Europe today that produces about 4 million m³/year. A mix of about 4,000 smaller and 1,000 larger anaerobic digestion based

⁷ The European Commission has listed in the Biomethane Action Plan the main barriers hampering accelerated investments that need to be tackled together with EU Member States, the biomethane value chain and other relevant stakeholders. SWD(2022)230. Commission staff working document implementing the REpowerEU action plan: investment needs, hydrogen accelerator and achieving the bio-methane targets, p.34-46.

biomethane plants could be required to meet the target. In addition to anaerobic digestion it could be feasible that biomass-to-biomethane gasification will be deployed at commercial scale before 2030. Gasification units could be deployed at 100–200 MW scale, producing 80–160 mln m³/year. Besides large-scale construction of new biomethane production capacity, there are additional ways to increase production:

- (1) add methanation units to existing biogas plants. Europe produces 15 bcm of biogas which is presently not upgraded to biomethane. Adding methanation units to existing biogas plants can rapidly scale up biomethane production.
- (2) increase the output of existing biomethane plants. Average plants currently operate on 71% of their capacity, that could be increased to 91% or 8000 hrs/yr.

The required new biomethane plants will require permits and large numbers of additional technical experts to build and operate them. Lengthy permit processes and increasing staff shortages are two pressing barriers that need to be overcome. Additional barriers are scarcity of necessary materials (e.g. chips, membranes), lengthy grid injection process in some regions and lack of a functioning EU-wide biomethane market to facilitate longer-term offtake certainty for investors. The REPowerEU plan should be the start of addressing these barriers. National biomethane strategies need to focus on much faster permitting, plus create the conditions for a functioning cross-border market as well as efficient grid injection procedures and incentives for end-users to switch from using fossil energy carriers to biomethane. Biomethane consumers can provide long-term offtake certainty that provides confidence to investors. Biomethane producers need to invest in hiring and training the necessary workforce, together with vocational training institutions, and need to reduce biomethane production costs and foster innovation.

Waste, residues and innovative biomass sources to produce 35 bcm biomethane

A large quantity of sustainable biomass feedstock will be needed. Depending on the feedstock mix, a total of 150 to 200 million tonnes of feedstock is needed to produce 35 bcm. All of these feedstocks are available within the EU and can be sourced sustainably in full compliance with the Renewable Energy Directive's sustainability criteria and with low associated land-use change or carbon debt risks. Growth in EU biomethane production will be not be based on maize produced as main crop but rather based on waste and residue feedstocks (food waste, sewage sludge, forestry residues, agricultural residues) and **innovative biomass sources**. Innovative biomass sources are possible biomethane feedstocks which could be used to produce biomethane yet today are not widely used, These include algae, grass, roadside verge grass, silage crops cultivated in a sequential

cropping system⁸ or on contaminated land. Also, in particular in the eastern part of the EU, there may be a potential for sustainably cultivated silage crops on marginal lands. Innovative biomass sources may also include waste and residues which today are not widely used for biomethane.

Biomethane from organic waste

EU waste legislation requires that organic waste must be collected separately by January 2023.⁹ Since currently only a minor share of biowaste and food waste are collected and separated, large amounts of additional organic waste will become available as feedstock to produce biomethane and digestate with strong environmental and climate benefits.

Breakdown of the 35 bcm target over feedstocks and Member States

In a recent report¹⁰, the Gas for Climate consortium concludes that sufficient quantities of sustainable biomass are available within the EU to produce 41 bcm of biomethane by 2030, of which 3 bcm based on gasification of woody biomass residues. Figure 2 below provides a breakdown of 38 bcm of biomethane production based on anaerobic digestion.

⁸ Sequential cropping is the cultivation of an additional second crop before or after a main crop on a plot of agricultural land, thereby reducing the period during which this land is fallow. The second crop can be used for sustainable biomethane production a low risk on indirect land use change. It is important that nutrients captured in digestate are brought back to the land as biogenic fertiliser to ensure soil health.

⁹ Revised EU waste rules as adopted by Council on 22 May 2018: [Circular Economy: New rules will make EU the global front-runner in waste management and recycling \(europa.eu\)](https://ec.europa.eu/euro-press/press-room/2018/05/22-18-0001)

¹⁰ Guidehouse for the Gas for Climate consortium, *Biomethane production potentials in the EU. Feasibility of REPowerEU 2030 targets, production potentials in the Member States and outlook to 2050* (July 2022).

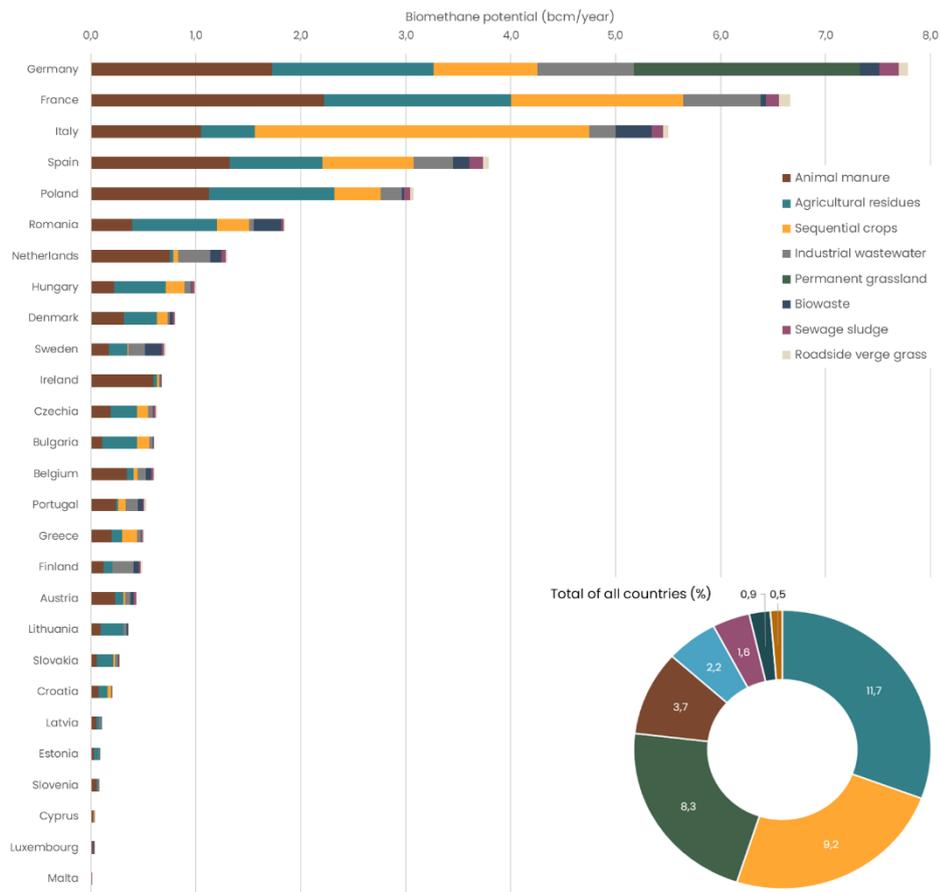


Figure 2 Breakdown of biomethane potentials based on available sustainable biomass feedstock for anaerobic digestion based production installations. Source: Gas for Climate 2022

3.

A biomethane industrial partnership



Biomethane developments in Europe to date have been mainly confined to a limited number of Member States. Scaling up from 3 bcm to 35 bcm in under nine years' time requires biomethane investments in *all* Member States. Prioritising awareness-raising, permitting and investments, enabled by national policies consistently across all Member States will only happen under EU guidance and requires collaboration between Member States and the value chain. Exactly this is what the Biomethane Industrial Partnership (BIP) aims to do. The reasons to create the BIP are outlined in the Biomethane Action Plan, which details many proposed actions on which the BIP could play a meaningful role.

Topics to be covered by the Partnership mostly link to proposed actions included in the Biomethane Action Plan. The BIP is needed because:

1. Large differences exist across the EU on whether and how biomethane production and consumption is facilitated through **policy**. Production and consumption needs to increase across the EU. This requires awareness-raising and **lifting barriers, including speeding up permitting**, in full respect to relevant legislation. The Biomethane Industrial Partnership can help to share best practices in technological and business solutions, in policy design, sourcing of sustainable feedstocks, can facilitate the creation of national biomethane targets and strategies as well as foster collaboration between Member States in policy making.
2. Biomethane is produced in installations that are dispersed across EU rural areas. To **rapidly scale up production**, developments need to be coordinated and structured. The Biomethane Industrial Partnership can enable effective collaboration between companies, governments and other stakeholders, including civil society, to speed up investments, and to promote cross-border integrated projects based on local projects.
3. The Biomethane Action Plan highlights the need to evaluate preconditions to promote **sustainable and innovative biomass sources**. The BIP can help to identify potentials for innovative (additional) biomass sources that help to achieve the 2030 target and enable further growth thereafter, including the identification of preconditions under which these feedstocks could be promoted.
4. Biomethane helps to achieve a cost-effective energy transition due to its large energy system value as a storable, high energy dense, easily transportable energy source. **Cost-efficient production** remains a crucial driver of increased deployment of biomethane. Various actors can work together in the Biomethane Industrial Partnership to identify and work on actions to reduce costs.
5. Biomethane can be scaled up based on existing, mature technology. **Research, development and innovation** helps to commercialise better, cost-effective technologies that help biomethane to grow more quickly. The Biomethane Industrial Partnership can help to identify R,D & I gaps.

3.1.1 Structure of the Partnership

The organisational structure of the Biomethane Industrial Partnership should enable an **effective and goal-oriented** Partnership that is free and **open** for membership for all

relevant parties. The governing structure as presented in this Section should enable **the BIP to have impact** and should invite all involved stakeholders take ownership in accomplishing its goals. The BIP can only be successful if representatives from the European Commission, EU member states, companies active in the biomethane value chain and other relevant stakeholders get engaged to actively team up to achieve the objectives of the Partnership.

The BIP consists of a Governing Board, multiple Task Forces and a secretariat. The responsibilities, tasks and composition of each of these bodies is described below.

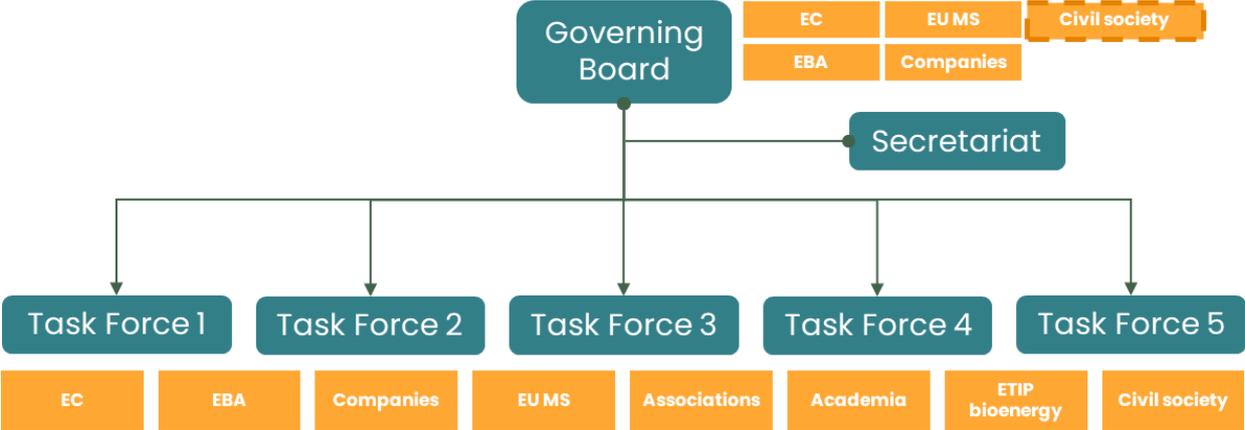


Figure 3 Structure of the Biomethane Industrial Partnership

3.2 Governing Board

The Governing Board is the highest body steering the Biomethane Industrial Partnership, consisting of representatives of the European Commission, Member States and the biomethane value and supply chain. The Governing Board actively works to achieve the goal of the Biomethane Industrial Partnership to – support the achievement of the EU target of 35 bcm biomethane production and use by 2030 and to create the preconditions for a further ramp up of its potential towards 2050.

3.2.1 Governing Board responsibilities

The Governing Board takes all strategic decisions related to the functioning of the BIP, including the creation of Task Forces and their deliverables and timelines. In particular, responsibilities of the Governing Board are to:

1. Govern this Work Programme, and modify it if and when necessary;
2. Appoint chairs and members for all Task Forces;
3. Monitor the progress made in all Task Forces, ensuring that Task Forces stick to their mandate and work to finalise their deliverables within the agreed timelines;
4. Decide when Task Force deliverables are final and when Task Forces cease to exist. In doing so the Governing Board validates the process leading to final deliverables, without validating the content of the deliverables. The Governing Board thus does not formally adopt or approve deliverables;
5. Have the possibility to decide on any new needs to be covered by new deliverables of existing Task Forces and/or on the creation of new Task Forces.

3.2.2 Membership

The Governing Board consists of up to eight members, including:

- Director of DG ENER, European Commission
- Director of DG AGRI, European Commission
- Director of relevant national ministry, preferably of the Member State holding the current Council presidency
- Director of relevant national ministry, preferably of the Member State that will hold the upcoming Council presidency
- CEO of European Biogas Association
- Company board member (biomethane value chain)
- Company board member (biomethane value chain)
- Board member of civil society organisation

The Governing Board chooses its own chairperson from among their members.

Member State representatives are foreseen to be board member for a one-year term, during the six-month period ahead of their presidency plus during their six-month presidency.

Governing Board members who represent a company are appointed by the value chain Support Group on a rotating basis, with each serving a one-year term. See Section 3.5 [Value chain Support Group](#) below for more information

3.2.3 Way of Working

The Governing Board meets once every four months, with the aim to have one in-person meeting per year. All meetings are planned and supported by the BIP secretariat. At least one co-chair of each Task Force is present during a part of each Board meeting to provide updates on the status of activities in their Task Force. Governing Board members are expected to dedicate sufficient time to prepare each Board meeting, plus to take part in occasional presentations at events or conferences.

3.3 Task Forces

Task Forces are working groups in which BIP members collaborate at expert level on specific activities on the basis of the BIP Work Programme. At the start of the BIP, the Governing Board will have created a total of five initial Task Forces.

Each Task Force actively works to achieve the Biomethane Industrial Partnership goal. The activities and deliverables of each Task Force reflect this.

Task Forces are time-bound, and work on specific pre-defined actions mandated by the Governing Board. For each Task Force, its purpose, scope-of-work and suggested deliverables are laid out in Section 4 below. These deliverables and their timelines will have to be agreed upon by the Governing Board, based on a detailed proposal by Task Force co-chairs. The work load for Task Force members will be considerable.

Deliverables of Task Forces will be presented to the Governing Board before being published but their content will not be validated by the Governing Board.

3.3.1 Task Force governance and membership

Task Forces each consist of two to three co-chairs plus 10 to 25 members, with the exception of TFI which can have up to 35 members plus co-chairs. Co-chairs are selected by the Governing Board, with the aim to ensure that each Task Force has one policy maker (European Commission official or Member State representative) as co-chair as well as one representative from the biomethane value chain Support Group plus possibly one co-chair from civil society or academia.

Membership of Task Forces is limited to a two-year term, with the exception for European Commission, Member State and EBA representatives. All interested parties have the possibility to apply for Task Force membership at any time during the lifetime of the task

force of their interest. . An application form has been published on 28 September 2022 on the EC and BIP websites. The Governing Board decides on Task Force membership using the following criteria:

- a. Each applicant must subscribe to the goal of the BIP;
- b. Each applicant must commit to dedicate in-kind resources to actively join the work on TF activities and commits to pay for own expenses related to their participation in TF meetings;
- c. Overall TF membership is diverse, taking into account as guidelines:
 - i. All EU Member States will be invited to join Task Force 1.
 - ii. Task Forces 2-5 could consist of around 40-50% value and supply chain membership (including primary producers), 40-50% public sector membership and up to 20% membership from academia and civil society;
 - iii. Geographical diversity of membership needs to be ensured;
 - iv. Diversity among corporate members to ensure that various parts of the biomethane value chain are represented;
 - v. Gender balance of member representatives should be ensured.

In case many more companies, NGOs or academic institutions apply for Task Force membership than there are places available, each party will only be able to become member of one Task Force and the Governing Board can decide to limit Task Force membership to two years, to enable admission of new members. Co-chairs are responsible for a fair and efficient rotation process.

As an alternative to full Task Force membership, interested parties can also apply for a status of 'associate membership'. Associate members are not actively involved in Task Force activities and meetings but upon the expressed interest in their application, they can be consulted on specific topics, invited to participate in specific events including workshops, organised by the Task Forces. No selection criteria apply for parties that apply for associate membership. This enables a larger group of stakeholders to provide input during workshops and consultations and join public events.

3.3.2 Creation and modus operandi of Task Forces

Five Task Forces have been created by the Governing Board, each of which will start after the technical kick-off of the BIP. All Member States have been invited by the European Commission to join Task Force 1, focusing on national biomethane policies and strategies. Member States can also apply to join another Task Force in addition, subject to selection by Governing Board.

The BIP secretariat provides practical support to all Task Forces. It is recommended that Task Forces organise themselves in subgroups, each working on a specific deliverable. Co-chairs are responsible for creating subgroups and appointing one chair per subgroup. Co-chairs should be looking for the largest possible majority in decision making.

Task Force meeting frequency is decided by the co-chairs. At least:

- a. One yearly physical meeting, including a physical kick-off;
- b. Subgroups working should meet every two weeks;
- c. Co-chairs of each Task Force should meet every month;
- d. Co-chairs of all Task Forces should meet collectively three times each year ahead of each Governing Board meeting to ensure an effective exchange of information.

3.4 Secretariat

The secretariat is responsible for day-to-day operations of the BIP. The secretariat will be created and funded by the value chain Support Group via the European Biogas Association (EBA).

3.4.1 Secretariat activities

The secretariat will organise and host all meetings of the Governing Board and Task Forces and will also support the organisation of physical meetings and events. In addition, the secretariat will provide support to Task Forces in organising workshops and events. In its work, the secretariat will liaise with the Governing Board and Task Force chairs.

A cloud-based document sharing facilitation has been created by the secretariat. The secretariat will support Task Forces in guiding the process, helping co-chairs in guarding agreed timelines and deadlines, and graphically designing deliverables based on the BIP visual identity. Finally, the secretariat will facilitate external communication by maintaining the BIP website, drafting press releases and other content.

3.5 Value chain Support

The value chain Support Group, mentioned above under '[Governing Board Membership](#)', will represent the biomethane value chain¹¹ in the BIP and financially supports the Secretariat.

The Support Group (SG) consists of up to twenty individual companies and the European Biogas Association to allow for effectiveness. The Support group has three main tasks:

¹¹ Biomethane value chain is defined as all companies active in biomethane, including biomass producers, biogas and biomethane producers, gas infrastructure companies, technology providers, project developers and investors, and companies active in biomethane consumption.

- (1) Supply two SG-members that will be member of the Governing Board for a one-year period to represent the full biomethane value chain;
- (2) Propose to the Governing Board SG-members as candidates to become Task Force co-chair, and;
- (3) Supporting company representatives in the Governing Board

SG mandates last two years. Selection of SG members takes place through voting by all company members of the BIP Task Forces. All companies active in the biomethane value chain can apply for SG membership. SG membership candidates cannot vote for themselves. Selection criteria and voting process for SG membership are published on the BIP website.

SG members can nominate themselves for Governing Board membership. Selection of company Governing Board members takes place through voting by all members of the SG. Selection criteria and voting process for company representatives in the Governing Board are published on the BIP website.

4.

Goals, deliverables
and timelines of Task
Forces



The Biomethane Industrial Partnership will start in 2022 with the following five Task Forces:

- Task Force 1: National biomethane targets, strategies and policies
- Task Force 2: Accelerated biomethane project development
- Task Force 3: Sustainable potentials for innovative biomass sources
- Task Force 4: Cost efficient production and grid connection
- Task Force 5: Research, Development and Innovation needs

This Section describes the activities, deliverables and timelines of each of the Task Forces. The topics covered by the Task Forces address the most urgent topics that enable biomethane to rapidly scale up.

Task Force 1 focuses on the creation of national biomethane targets, strategies and policies. The Task Force will provide input to Member States and will also initiate a framework for bilateral collaboration between Member States to facilitate capacity building. The deliverables of this Task Force will need to be developed within a short time-frame in order to be relevant. The European Commission proposes in its Biomethane Action Plan that national biomethane strategies should be incorporated into the draft updated National Energy and Climate Plans (NECPs), scheduled June 30th 2023. This means that most of the currently defined deliverables of this Task Force will need to be finalised by mid 2023. It would be desirable if many EU Member States would join this Task Force. Also after completion of national biomethane strategies, this Task Force can continue to work on facilitating and sharing best practices on biomethane policy making.

Task Force 2 will focus on the need to rapidly increase sustainable biomethane production capacity by **developing solutions to identified barriers to scale-up investments mapping planned new investments in biomethane production and use and assessing supply chain capacity and security, as well as the links with other connected industrial sectors.** This will likely result in suggestions for policy makers as well as for the biomethane value chain and investors. As part of its work, the Task Force will provide an overview of available public funding and how various funding sources can be combined. Biomethane companies and private and public investors can be expected to join this Task Force.

Task Force 3 will identify the potentials across the EU for innovative biomass sources and the conditions under which these potentials could be unlocked. A significant effort is required to collect sustainable biomass feedstock to feed additional biomethane production installations. This biomass is available in sufficient quantities, yet innovative novel biomass sources could be unlocked, including those based on new agroecological practices to intensify photosynthesis on already cultivated land, e.g. sequential cropping. This TF will assess the results of completed studies and projects. The TF could also explore how using innovative biomass sources for biomethane production in combination with

utilisation of digestate as a biogenic fertiliser can lead to a more circular agriculture, reduce emissions and environmental impacts.

Task Force 4 will identify and facilitate ways to decrease the cost of production and grid connection. Biomethane can contribute to a cost-effective energy transition and efforts to further drive down production costs and facilitate investments to scale up biomethane.

Task Force 5 will identify the current status of R, D&I in biomethane production, grid connection and end-use applications and will recommend future R, D&I needs. Continuous research, development and innovation (R, D&I) are important for future growth and to increase Europe's strategic autonomy in green technology.

The suggested deliverables of Task Forces are presented in subsections below. Co-chairs of each Task Force are responsible for detailing the timelines for deliverables. In certain cases, deliverables between deliverables of different Task Forces are interlinked, requiring frequent interaction between co-chairs of various Task Forces.

Task Force 1

National biomethane targets, strategies and policies

The goal of Task Force 1 is to provide EU Member States with useful insights and guidelines to develop national biomethane targets, strategies and policies. Suggested initial Task Force 1 deliverables focus on providing the necessary insights and guidelines for Member States to create national biomethane strategies.

4.1.1 Deliverables and scope

Task Force 1 has the following four suggested deliverables:

1. Report with starting points for setting **national biomethane targets** and creating national **strategies**, including:
 - a. Target setting for national biomethane production, based on:
 - i. Current national biomethane production and historical growth
 - ii. National biomethane potentials for 2030, both the total sustainable potential as well as the share of the total that could be directly injected into gas grids or otherwise utilised in end-use applications. This activity will largely be based on existing studies. The work under TFI should also consider the needs at national level on the optimisation of feedstock collection.¹² Additional biomethane potential from innovative sources of biomass will be analysed in Task Force 3, with initial input from that Task Force by March 2023. Additional renewable gas from e-methane production using biogenic CO₂ will be analysed in Task Force 4 and will provide input to this Task Force 1 deliverable.
 - iii. Top-down split of the 35 bcm target proportionally over EU Member States based on national biomethane potentials.
2. Paper with **suggestions for national biomethane strategies** to meet national targets, including possible incentives to stimulate uptake in end-use applications. Suggestions would build on the guidance document to be published by the European Commission and be linked to the 'general framework for integrated national energy and climate plans'.¹³
3. Report outlining **existing national biomethane policies** and lessons learned:
 - a. Existing national support mechanisms for biomethane production, including an overview of existing subsidies (EU, national and regional) for rapid biomethane

¹² Especially on food waste management, including ensuring compostable plastics are properly treated and composted and not separated at plants.

¹³ REGULATION (EU) 2018/1999, Annex I, [available here](#).

project development, also exploring how various financial incentives could be stacked. This activity should take into account a recent study¹⁴ for the European Commission on the topic;

- b. Existing support mechanisms for biomethane demand in various end-use sectors, including mandates, tax schemes, procurement rules and subsidies;
- c. Mechanisms to facilitate, fund and speed up biomethane grid injection (including reverse flow technology);
- d. Permitting:
 - i. which permits are required to develop biomethane production and its grid-injection in various Member States and what are typical timelines
 - i. best practices to reduce permitting times and capacity building in efficient permitting processes

All Member States, including those that are not member of Task Force 1, will be invited to share details on their national biomethane policies. A number of workshops can be foreseen to which all EU Member States are invited. A first workshop could focus on a display of best practices in biomethane target setting, strategy building and policy making. A second workshop could discuss guidelines for biomethane target setting and strategy building and could discuss an overview of national biomethane policies, concerning both production and end-use, possibly followed by a workshop on the status of developing national biomethane strategies.

4. **Facilitate bilateral teaming** between Member States, in which one Member State with well-established biomethane policies assists another Member State that has the aspirations to initiate national biomethane policies. The Task Force facilitates matchmaking between Member States. The Task Force will draft a paper to evaluate the twinning activity with possible recommendations for future improvement. In addition to bilateral teaming as a capacity building mechanism, the CEO of European Biogas Association is available as **informal 'liaison officer'** between the value chain and Member States, to frequently interact with Member State representatives and provide further insights.

4.1.2 Timeline

Although it is up to Task Force chairs to define the detailed timeline and milestones for each of the deliverables, it is important that Task Force 1 deliverables should feed into the process of preparing and submitting updated National Energy and Climate Plans:

- 15 March 2023: Member States report to the Commission on the status of implementation of their NECP (Progress Report), including progress on reaching the targets, updates on policies and measures, and projections;
- 30 June 2023: Member States submit a draft update of the NECP to the Commission or justify that the current plan remains valid;

¹⁴ Trinomics for European Commission, Energy subsidies. Energy costs, taxes and the impact of government intervention on investments (2020), [available here](#).

- 30 June 2024: Member States notify to the Commission a (final) update of the NECPs unless they have justified that the current plan remains valid.

Task Force 2

Accelerated biomethane project development



The goal of Task Force 2 is to identify and scale up best practices, initiate creative solutions and overcome barriers to speed up investments in new biomethane projects across the value chain. Task Force 2 focuses both on what is necessary in policy and its implementation, and on how the value chain can contribute to speed up developments.

4.2.1 Deliverables and scope

Task Force 2 has the following suggested deliverable:

1. A series of seven papers, each of which analyses and proposes solutions for a specific barrier or opportunity to speed up investments:
 - a. **Business case innovation:** how an ‘orchestrator’ can bring together investors in previously separate projects, to create clustered GW-scale projects:
 - i. GW-scale projects can apply for EUPCI and IPCEI status under applicable conditions
 - ii. GW-scale projects can more easily attract EIB project support and Innovation Fund financing.
 - b. Facilitating a transition to **biomethane use in various sectors:** This paper will examine existing hurdles and incentives that enable end-users to switch to using biomethane, and seek to identify pathways towards enabling this transition e.g. through certifications, fiscal incentives, or other measures. Issues of production and standardization will be covered as well.
 - c. Creating a **cross-border EU market for biomethane.** The paper will identify technical and non-technical barriers to cross-border trade, providing clear and specific examples for each barrier. Amongst other topics the paper will analyse how an EU-wide certification system and the Union Database can facilitate cross-border trade in biomethane. The paper will analyse how the EU can facilitate the creation of a liquid EU biomethane market and how grid injection can be increased.¹⁵

¹⁵ What lessons can be drawn from e.g. the French zoning approach to give project developers the right of injection in areas located close to gas grids and to provide a financial framework to cover the costs and cost sharing? Identification of good practices may result in mapping of “go to areas” where potential for biomethane have been identified and easy connectivity to the grid for project developers exist.

- d. **Shortening permitting times.** What legislative frameworks are needed to keep permitting times to a minimum, and what are the challenges and solutions in enforcing existing legislations.
- e. Identification of **critical materials** (including chips and membranes) and barriers in their supply and suggestions on how these could be overcome, with a particular focus on the circular economy. The authors of a recent study¹⁶ by the European Commission and Joint Research Centre could be involved.
- f. Assessing the positive impacts on **related industrial sectors**, such as fertilizers and soil amendments, bioplastics, food industry and waste water treatment.
- g. **Biomethane production in areas without nearby gas grids.** How to ensure cost-efficient injection to the nearest injection point (virtual pipelines using trucks).

The papers are created by TF members, possibly also based on expert interviews and workshops.

¹⁶ European Commission and Joint Research Centre, *Critical raw materials for strategic technologies and sectors in the EU. A foresight study (2020)*, [available here](#).

Task Force 3

Sustainable potentials for innovative biomass sources



The goals of Task Force 3 are to:

1. Assess potentials of innovative sources of sustainable biomass for biomethane production across the EU;
2. Analyse how primary producers can scale up production of innovative sustainable biomass sources, and share the necessary knowledge, preconditions and incentives to do so.

4.3.1 Deliverables and scope

Suggested deliverables of Task Force 3 to produce an overview of existing studies and projects, plus organising a series of expert hearings with resulting papers and several workshops. The Task Force will draw up and analyse an overview of available (scientific) literature plus organise a series of expert hearings or workshops on:

1. EU-wide potential assessment for sustainable rotational/sequential cropping to produce biomethane feedstock. The study scope includes establishing verifiable definitions of these cultivation practices and including assessing how these cultivation practices, in combination with biomethane production and digestate utilisation, contribute to a more circular agriculture, assessing also the potential impact of these practices on food/feed security as well as on the environment and the resilience of ecosystems to climate change;
2. EU-wide potential assessment for feedstock production on marginal and contaminated land;
3. Carbon budget and soil nutrient implications of rotational/sequential cropping and the need to further study this;
4. Identification of additional innovative sustainable biomethane feedstocks. See section 2.2 above for a description of what these could be.

As a possible additional deliverable, a database could be established to account potentials from all resources, e.g. manure, industrial waters, municipal wastes and sludge, agricultural waste and residues, agro-industry and food waste, and for existing and innovative technologies. The accounting of the potential from all types and sub-categories of resources will be done according to the IPCC 2006 Guidelines, and related 2019 Refinements. This activity would require strong involvement of the JRC.

Task Force

4

Cost efficiency of biomethane production and grid connection



Task Force 4 aims to provide insights into best practices for efficient and low-cost biomethane production and grid injection, that can be directly applied by the value chain.

4.4.1 Deliverables and scope:

Task Force 4 has seven suggested deliverables:

1. Paper on **business case optimisation** for biomethane production, **by valorising biogenic CO₂ and digestate as co-products**. When analysing the valorisation of digestate, the extent to which its nitrogen can be taken up by plants will be taken into account.
2. Report on how biomethane production technology and operation **costs can be reduced**. This analysis includes:
 - a. Best available technologies of biogas production and upgrading to biomethane
 - b. Reduce the costs of biomass to biomethane gasification
 - c. Plant design, including size and pooling of smaller biogas units towards large centralised biomethane units
 - d. Plant operation and maintenance
 - e. Reduce the cost of biomass feedstock amongst others by applying sequential cropping

A potential barrier to meeting the 35 bcm target in time will be **labour and skill scarcity**. Therefore, in each of the abovementioned elements (a-c) increased labour efficiency through standardisation and automatisisation will be taken into account.

As part of the analysis, TF4 members could identify best practices and perform simulations and experiments to optimise plant operation. External experts can be invited to contribute to the work, including in public workshops.

3. Paper on **business case analysis of e-methane production using biogenic CO₂** and on-site renewable electricity and electrolysis to boost total biomethane production at plant level.
4. **Interactive consumer guide** for investors in biomethane capacity, allowing them to identify the available products that fit their needs.
This guidance is based on the results of deliverable 2 above.

5. Report on how **costs of biomethane grid injection and necessary grid reinforcement** (reverse flow technology, grid extensions) **can be reduced**, including pooling of smaller biogas units towards large centralised biomethane units, and including standardisation of national requirements to equipment (e.g. injection equipment in Germany is three times as expensive than in the Netherlands due to regulatory requirements). Results from EU projects will be utilized to this end.
This analysis will not be a tendered study, but will be performed by gas TSOs, DSOs and equipment suppliers that are members of TF4.
6. Paper on the advantages and barriers of **creating standardised product offerings** for biomethane production. The paper will outline how companies can create, and how Member States can facilitate, more standardised product offerings. In this, a differentiation between 'greenfield' and 'brownfield' developments can be made. The paper will also present barriers and enablers in trading biomethane in the EU.
7. Finally, the Task Force will be organising **tours** in several Member States **to showcase best practices** in biomethane production and grid-connection. All Task Force member and other interested stakeholders would be invited for these tours.

In its work, the Task Force could explore the possibilities of the Innovation Fund, as well as to the EIB INVESTEU, and the NEXTGENEU to co-finance the last stages before and towards commercialisation of the innovative technologies.

It should be noted deliverables 1 and 2 can provide a relevant contribution to the creation of national biomethane strategies and should feed into Task Force 1 work.

Task Force 5

Research, Development and Innovation needs



Task Force 5 identifies ongoing innovation efforts in biomethane production technology, feedstock collection, grid connection and end-use, and what is needed for innovation to be commercialised. Its goals are:

- Identification of innovative technologies and operations for:
 - the production of sustainable biogas and biomethane
 - for the upgrade of sustainable biogas to biomethane
 - integration of sustainable biomethane to the gas grid or other use cases
 - substituting biomethane for fossil energy carriers in end-use applications
- Identification of barriers for the commercialisation of abovementioned innovative technologies and operations, and formulation of necessary studies, experiments, pilots and demonstration projects to tackle these barriers.

4.5.1 Deliverables and scope

The suggested deliverable of Task Force 5 is a report outlining the **current status of research and remaining R&D questions** concerning innovative technologies and operations and barriers for their commercialisation. Topics to be covered are:

- a. Assessment of innovative thermochemical, biochemical and biological technologies for biomethane production including their commercialisation;
- b. Improving anaerobic digestion technologies and operations. This includes novel technologies, like Artificial Intelligence, robotics, internet of things in biomethane production to reduce costs and maximise climate change mitigation;
- c. Improving methanation technology to enable the valorisation of biogenic CO₂, allowing for CO₂ re-use and carbon sequestration;
- d. Improving labour efficiency in biomethane production;
- e. Improving grid related technologies including reverse flow and compression;
- f. Current status regarding methane leakage in anaerobic digestion and biogas/biomethane transport and distribution, and how to further reduce this;
- g. Sustainable sourcing of residues and wastes and novel feedstocks such as algae;
- h. Improving and enabling enhanced extraction of minerals from digestate;
- i. Technologies to enable integrated production of hydrogen and biomethane.



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