

## JOINT MISSION STATEMENT

### The Integrated Biorefineries Mission

#### The Mission

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<b>The Challenge:</b>	<i>Greenhouse gas emissions from the transport and chemicals sectors already account for nearly one-third of global emissions with transport responsible for already one-fourth of them, and are projected to increase by 2050, in particular from transport. Therefore, there is a need for low-carbon and renewable alternatives to fossil-based fuels, chemicals, and materials, particularly in hard-to-abate sectors such as, long-haul transportation, and industry.</i>
<b>The Goal:</b>	<i>Develop and demonstrate innovative solutions to accelerate the commercialization of integrated biorefineries, with a target of replacing 10% of fossil-based fuels, chemicals and materials with bio-based alternatives by 2030.</i>
<b>The Mission:</b>	<i>The Mission will advance sustainable biorefining pathways and technologies to support the development and commercialization of bio-based fuels, chemicals and materials, by also considering process energy demands. This will support de-risking new and emerging technology, while improving the cost-competitiveness of bio-based alternatives, notably biofuels. Members will (a) promote research, development, and innovation across the biorefining supply and value chain, (b) advance pilot-scale demonstration projects for sustainable biorefining technologies, and (c) collaborate with industry and standards-setting organizations to support regulatory development for these new products.</i>

#### Summary

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*Access to low carbon and sustainably sourced Fuels, Chemicals, and Materials (FCM) will be essential to reduce greenhouse gas emissions from both energy and non-energy products to support the world's transition to a climate neutral economy. Sustainable bio-based FCM can help to diversify our energy sources while supporting this decarbonization, however require support to de-risk new and emerging technologies and improve their cost-competitiveness.*

*Therefore, this Mission aims to support the development and commercialization of biorefineries, to de-risk new and emerging biorefining technologies and improve the cost competitiveness of sustainably sourced bio-based FCM, through international collaboration on research, development and demonstration (RD&D). This will consist of leveraging world-class expertise in biomass characterization, conditioning, conversion, and technological developments, as well as new and emerging conceptual designs of integrated biorefineries, with a goal of replacing 10% of fossil-based fuels with sustainable bio-based alternatives by 2030.*

*Participating members will advance this work through three pillars:*

- 1) **Research, development and demonstration** that focuses on technologies and processes that reduce the costs of sustainable bio-based FCM and improves the efficiency for their production across value chains, also considering the energy demand for these processes.*

- 2) **Pilot scale demonstrations** on new technologies or facilities to support cost-competitiveness of sustainable bio-based FCM.
- 3) **Coordination and collaboration with government, academia, industry and other stakeholders** to identify challenges in biorefining and develop supportive **policy** and **regulatory** environments for sustainable bio-based FCM.

## Activities

Participating member activities and projects may include:

- The Mission's first task will be to conduct an exhaustive analysis and prioritization of innovations the Mission must address. This will raise awareness of the issues and will serve as a springboard for collaborative research, development and innovation activities.
- Developing a joint action plan that identifies domestic and international efforts needed to make cost-competitive biofuels, chemicals, and materials by improving overall process sustainability and reducing end-user costs and stimulating more action individually and collaboratively.
- Pilot scale and demonstration projects to accelerate commercial scale deployment of clean energy solutions via Zero-waste biorefinery approach.
- Share technological breakthroughs, demonstrations and innovative solutions including key challenges (pre-commercial) by connecting researchers, innovators, other relevant platforms and initiatives; develop a knowledge platform to enable rapid learning

*This Mission will also synergise with other Missions and work with the MI Collaborate Platform initiative, "Innovations for Sustainable Aviation fuels (ISAF)."*

This mission will advance this work by adhering to the following principles:

- **Cooperation:** Proactively engage and work with member countries and, where possible, the private sector and other national and international initiatives, including existing multilateral platforms and ISAF.
- **Transparency:** Clear and open communication of technological breakthroughs;
- **Participation:** Actively engage in mission activities;
- **Accelerate action:** Identify challenges, opportunities and solutions to support technological innovation and commercialization of biorefining technologies, processes and biorefineries.
- **Review, reflect, improve:** Analyze and assess progress, activities and targets to ensure the Mission's objectives are met.

## Commitments

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The Mission will bring together a public-private coalition of MI countries, the private sector and international platforms to accelerate the innovation needed to enable Sustainable and Renewable carbon Fuels, Chemicals and Materials production.

### Membership Requirements:

#### Core Members:

- 1) A national investment between **\$ 2–5 million/year** in one or more sustainable bio-based FCM approaches OR demonstrated prior commitments in sustainable bio-based FCM-Integrated Biorefineries facilities/companies that can be committed and leveraged as part of the mission;
- 2) Leading or co-leading at least one function/activity specified within the mission;

- 3) Increase engagement with the private sector as appropriate to link up low-carbon approaches / efforts across the value chain and promote/facilitate public-private partnerships; Motivating at least two Industry partners to join this Biorefinery Mission;
- 4) Investing in, or, supporting (2-3) pilot-scale and demonstration projects with the potential of leading to deployment;
- 5) Develop and implement a strategy to enhance ambition and conduct pioneering research, development and demonstration in technologies across the value chain in either renewable fuels, or chemicals and materials;
- 6) Increase international exchanges and sharing of best practices, including sharing domestic efforts on innovation for renewable fuels chemicals and materials (e.g. policies, programmes, or public-private partnerships); and
- 7) Monitor and provide summaries of their respective renewable fuels, chemicals and material's research, development and demonstration efforts.

### **Mission Support Group**

-) same as above, but without requirement 2 and 3.

The Ministers of the Core Group plan to meet annually at the Ministerial to review progress and agree upon actions. The Mission will report bi-annually to the whole MI community on progress of the mission.

### **Knowledge Partners:**

- a. Contributing time and/or resources to the development of reports and workshops and participate in projects;
- b. Facilitating connections between researchers, innovators and end-users
- c. Bringing stakeholders to the table (for workshops, working groups, and collaborative RD&D projects).

The Mission Statement builds on the Mission Innovation 2.0 Launch Statement and does not constitute a legally binding commitment. This Mission Pact will commence 4 April 2022 and will continue in effect for 5 years. After this period, the Pact may be extended for a further five years to support delivery of the mission goal by 2030, subject to review of mission delivery and achievements.

### **Members**

The Biorefineries Mission brings together a dynamic and delivery-focused high ambition alliance between countries, the private sector, research institutes and civil society to accelerate innovation in renewable fuels, chemicals, and materials for a sustainable low-carbon economy.

The following governments and organisations are committed to advancing the Mission's goal of **accelerating the commercialisation of biorefineries to replace fossil carbon with sustainable bio-carbon.**

- ❖ **The Co -Leads:** India  the Netherlands 
  - **India\*** (Department of Biotechnology, Ministry of Science and Technology, Govt of India)
  - **Netherlands:** Ministry of Economic Affairs and Climate Policy

- ❖ **Core members:**

1. Brazil
2. Canada

#### **Mission Support Group**

3. European Commission
4. United Kingdom

- ❖ **The Knowledge Partners:** IEA, IEA Bioenergy (Task42), HLCAC, Nova Institute (Germany), CEM Biofuture Initiative.