

MISSION INNOVATION

Accelerating the Clean Energy Revolution

Sustainable Biofuels Innovation Challenge – Progress Summary

Issue

The use of fossil fuels in transportation and industrial production contributes up to 35% of global greenhouse gas (GHG) emissions. Increased use of biofuels in transportation and industrial applications can contribute to mitigating climate change in key areas of the global economy. With global action, the International Energy Agency (IEA) projects that biofuels could provide around 30% of all transportation fuels by 2050, thereby avoiding around 2.1 giga-tonnes of CO₂ emissions per year compared to continued use of petroleum-derived fuels. In addition to environmental benefits, biofuels can contribute to energy security by diversifying the energy mix and by providing a renewable energy resource. However, many of the most exciting biofuels remain at the pre-commercial stage of development.

Objective

The objective of the Sustainable Biofuels Innovation Challenge is to develop ways to produce, at scale, widely affordable, sustainable, advanced biofuels for transportation and industrial applications.

Organization

The Sustainable Biofuels Innovation Challenge is co-led by Brazil, Canada, China, and India.

Other participating countries include: Australia, the European Commission, Finland, France, Indonesia, Italy, Mexico, Norway, Sweden, the Netherlands, the United Kingdom, and the United States.

Approach

Mission Innovation members participating in the Sustainable Biofuels Innovation Challenge have developed a Work Programme based on three parallel work streams to allow each Challenge member to focus on areas in which they have the greatest interest and expertise:

- A. Improve the large-scale production and supply of biological feedstocks including cultivation, harvesting, collection, handling, transport and pre-treatment practices;
- B. Overcome barriers to demonstrating technologies for at-scale production of biofuels meeting end-use specifications; and
- C. Research and improve upon new technologies for the high efficiency utilization of biofuels in transport and industry, including biogas applications, high-efficiency combustion engine applications, and applications combining electric, fuel cell and biofuels (e.g. vehicle fuel cell concepts for on-board generation of power from biofuels), as well as applications for heavy duty road freights, aviation and shipping.

This Challenge aims to accelerate biofuels-related research, development, and demonstration in order to achieve performance breakthroughs and cost reductions with the potential to substantially lower GHG emissions.

It also aims to drive research and innovation not only in the refining and production stages, but also upstream and downstream at the feedstock and utilization stages including, for example, the development of high-efficiency energy crops and the leveraging of biofuels in new, more efficient vehicle engines.

Progress

The Sustainable Biofuels Innovation Challenge continues to build on the existing work of individual countries and international institutions, such as the International Energy Agency (IEA), the International Renewable Energy Agency (IRENA), and the United Nations Conference on Trade and Development (UNCTAD) to identify and prioritise innovation needs and collaboration opportunities where research and development can result in significant advances in biofuel technologies. Further, this Challenge will define joint work and collaboration to pursue with the Biofuture Platform, as it has demonstrable linkages with the goals of that initiative¹. In order to facilitate cooperation and avoid duplication of efforts, the Sustainable Biofuels Innovation Challenge has established a defined set of “areas of interest” between these organizations, initiatives and mechanisms.

Building on existing work, SBIC is preparing “maps” of the work being done in the participating countries, and developing a roadmap for future collaborative work. The mapping and roadmap exercises are crucial in identifying gaps and opportunities. In order to facilitate this mapping exercise, SBIC developed a template to be used for collecting data. In order to facilitate data collection, the development of the template was coordinated with other international initiatives. The online survey template was completed in advance of the Mission Innovation Ministerial in June 2017 and individual countries are currently populating the database survey towards production of a mapping document by late 2017.

Following the mapping exercise, the development of a roadmap including consideration of appropriate TRL levels will commence in order to identify research priorities and collaboration opportunities. This will be done through a series of meetings culminating in a workshop to formalize these arrangements, to be held in late 2017/early 2018. The lead and degree of collaboration for research areas and type of biofuel will arise out of the initial mapping exercise.

Next Steps

Subsequent workshops will provide an overview of scientific, technological and market challenges and discuss opportunities for research collaboration. Key industry players and innovators will be invited to discuss best practices, lessons learned and identify potential industry demands. This approach is intended to foster dialogue and collaboration between academia, government and the private sector in order to guide and accelerate R&D and innovation activities.

If emissions reduction targets are to be achieved, especially in the short and medium terms, biofuels have an important contribution to make. Moving forward, the Sustainable Biofuels Innovation Challenge will aim to provide opportunities to: accelerate the adoption of sustainable practices in agriculture, forestry, and land management; take advantage of synergistic mitigation and adaptation practices; and multiply opportunities for economic development by growing the market share of advanced biofuels.

¹ The Biofuture Platform is an international mechanism for policy dialogue and collaboration among countries, organizations, academia and private sector actors conscious of the need to accelerate deployment of sustainable low carbon alternatives to fossil based products in transport, chemicals, plastics and other sectors.