

## **Knowledge exchange dialogues: The CSIR as an initial convener**

### **1. Introduction**

Currently valued at approximately US\$4 trillion, the global bioeconomy holds the potential to grow to US\$30 trillion by 2050. Beyond its economic promise, the bioeconomy offers a pathway to a more sustainable planetary ecosystem— harnessing biotechnologies to replace environmentally harmful production systems while driving innovation, creating jobs and supporting resilient livelihoods.

To realise this potential, it is in our collective interest to foster the exchange of experiences, knowledge, and technologies that can accelerate the adoption of sustainable practices. Regional and international cooperation is critical, as emphasised in G20 High-Level Principle 9 and echoed in the Bioeconomy Initiative under South Africa's G20 presidency.

### **2. The problem statement**

Despite its promise, the bioeconomy has evolved unevenly across regions. Many countries in the Global South continue to face barriers in harnessing their natural resource endowments, while bioeconomy sectors in the Global North flourish due to rapid technological advancement and significant financial investments.

This disparity risks deepening global inequalities. Addressing it requires robust knowledge exchange and cooperation—particularly in light of climate change and biodiversity loss, where technologies already deployed in the Global North could offer valuable lessons and solutions for the Global South.

### **3. The proposal**

We propose that each G20 presidency, through its Bioeconomy workstream, identify a technology application relevant to bioeconomy development and convene a scientific and technical dialogue to explore its deployment.

These convenings would bring together G20 bioeconomy counterparts to exchange knowledge, share implementation experiences and build momentum for the Global Initiative on Bioeconomy.

A suitable institution in the host country would lead the convening. For the inaugural dialogue, we propose South Africa's Council for Scientific and Industrial Research (CSIR) as the initial convener.

While this proposal focuses on innovative technologies, we recommend a complementary track (not yet developed) for non-technological bioeconomy models, such as biodiversity-based economies, ecotourism and sustainable wildlife trade.

### **4. About the CSIR**

The CSIR is a South African multidisciplinary research and technology organisation mandated with performing directed research to support scientific and industrial research and development and to, ultimately, make a positive industrial and societal impact. The organisation has been involved in bioeconomy development for more than two decades, having been a major contributor to research, development and innovation in biobased technologies and products in support of South Africa's bioeconomy strategy and earlier biotechnology focussed strategies, and now the White Paper on Science, Technology and Innovation – colloquially known as the Decadal Plan.

The CSIR undertakes its own research and development and performs work in support of evidence-based policy development. Additionally, it assists small, medium and micro enterprises (SMMEs) and industry development by providing scientific validation of product concepts, packaging and sharing proprietary technologies into market-relevant offerings.

The organisation's involvement in the bioeconomy spans various sectors, including agriculture, food, pharmaceuticals, chemicals and cosmetics. Its work primarily focuses on agroprocessing, leveraging biodiversity and Indigenous Knowledge to create products for mainstream markets, bioprocessing technologies, the biorefinery, biomaterials and green chemistry.

The CSIR's work is strengthened by strategic partnerships with various public, private and civil society entities locally, regionally and globally, making it a suitable initial convener.

## **5. Topics for discussion**

Topics for discussion at each annual meeting should be selected by the convening institution and must be relevant to the G20 partnership. Each institution should select a topic that plays to their strength, or an important contemporary issue, which is considered to have real potential for advancing the positive impacts of bioeconomies. Topics could focus on:

- Thematic technology areas that could grow the bioeconomy, e.g. agroprocessing, biomanufacturing or Indigenous Knowledge Systems (IKS) valorisation.
- Technologies that are relevant to sustainable use of biodiversity, or reducing impacts to biodiversity, for example, manufacturing bioplastics and biodegradability standards, biofuels production, biorefinery applications and the circular bioeconomy.
- Enabling and converging technologies that could prime the bioeconomy, e.g. Synthetic biology, genome editing, digital technologies/artificial intelligence and biotechnologies; biomaterials and biomanufacturing.
- Developing ecosystems that support a thriving bioeconomy, e.g. strategy development, regulatory agility, blended finance models, bio-entrepreneurship, incubation and acceleration, business plan writing, network development.

### **Proposed general agenda:**

The agenda for such a convening could include items outlined below.

1. Welcome
2. Problem statement
3. Description of technology/technologies to be discussed

4. Discussion on the technologies and their applications in the context of bioeconomy development (strengths, knowledge gaps, readiness for scaling, etc.)
5. Models for application, particularly outside the public sector
6. Challenges experienced in such deployment
7. Potential solutions to challenges
8. Conclusions and recommendations

The CSIR would like to convene a discussion on **advanced manufacturing**, including **biocatalysis** and **biomanufacturing**, including the model we have used to fund infrastructure development, the work we have done to support start-ups and SMMEs, and our efforts in workforce development, as well as what is required to support a biomanufacturing industry.

## 6. Format of the convenings

Convenings may adopt a hybrid format, allowing both in-person and virtual participation.

In-person attendees will have the opportunity to:

- Tour CSIR facilities;
- Engage directly with scientists and SMMEs; and
- Experience practical demonstrations of technologies.

The CSIR will host and provide venue, facilities and meals. Travel and accommodation costs will be borne by participants.

## 7. The expected outcomes

Convenings should aim to:

- Facilitate experience exchange and peer learning;
- Share successful models and lessons learned;
- Produce actionable outputs, including:
  - **Policy briefs** with problem framing, technology insights, application and scaling in the private sector, and recommendations;
  - **Communities of practice** for ongoing collaboration; and

- **Joint programs** to support bioeconomy growth in lagging regions.

## **8. Call to action**

We invite G20 countries to:

1. Provide feedback and endorse the principle behind the proposal
2. Nominate relevant technical bodies to refine and participate in the dialogue
3. Suggest priority topics for future convenings
4. Recommend mechanisms to include or strengthen capacity in developing countries

Subject to support, the CSIR will issue a formal call for participation by the **end of November 2025**.