Summary and key recommendations from the 2nd G20 Initiative on Bioeconomy (GIB) Meeting, held at the University of Mpumalanga, Mbombela, South Africa, 26 to 29 May 2025

Table of Contents

1. Bioeconomy as a Pillar of Global Sustainable Development

The bioeconomy is central to addressing the climate, biodiversity, food, and economic equity crises. A just, inclusive, and nature-positive transition requires moving beyond fossil-fuel dependency through a high-tech, circular and nature-based economy. The bioeconomy serves as a catalyst for climate change mitigation, biodiversity conservation, sustainable development, and inclusive economic growth. There is strong emphasis on transitioning from fossil-based to nature-based economies, with circularity and innovation at the core. Africa has abundant natural resources but captures less than 10% of biomass value, highlighting significant untapped potential.

Common Challenges

Financing and regulatory bottlenecks; Limited coordination and policy coherence; Lack of private sector engagement and investor education and inadequate data and measurement systems.

Country highlights

- An emphasis on seeing the bioeconomy more deeply integrated into national decarbonisation and innovation strategies (e.g., BioE3, Global Biofuels Alliance).
- An emphasis on seeing the bioeconomy integrated as core pillar of Nationally Determined Contributions (NDCs) and climate finance strategies, as we have seen in Brazil for example.
- An emphasis on national and regional strategies embedding the bioeconomy in rural revitalisation and agri-food system transformation.
- Concern raised that global conflict threatens multilateral progress, but support reaffirmed for coordinated global action on the bioeconomy.

Recommendations and next steps

The following recommendations were made (1) Foster public-private partnerships and regional cooperation; (2) Build investor capabilities and promote nature-positive investing; (3) Develop clear, harmonised definitions and metrics across the G20 and (4) Strengthen policy support for small and medium-sized enterprises (SMEs) and traditional knowledge holders.

2. Financing the Bioeconomy: Towards Scaled, Inclusive Investment

Common challenges

- The “Valley of Death” in scaling pilot projects was noted by the members.
- Limited investment in low- and middle-income countries due to risk and poor market incentives.
- Inadequate coordination between environment and finance ministries.
- Market failures, limited scalable investment opportunities, and inconsistent data and metrics and urgent need to harmonise bioeconomy metrics to attract and de-risk investments.

Primary Capacity Gaps Identified

- Lack of common vision and standardized classification systems for bioeconomy definition and measurement
- Immature valuation frameworks and inadequate metrics for tracking progress against high-level principles
- Limited access to dedicated financing, particularly for Micro, Small and Medium Enterprises (MSMEs) and private sector participants

- Insufficient research infrastructure and operationalisation mechanisms to translate policy principles into actionable implementation

Strategic Targets and Solutions

- Establish cross-cutting frameworks that integrate circular economy principles with bioeconomy development
- Develop targeted financial instruments linked to specific industry sectors, with emphasis on crowding-in smaller enterprises
- Prioritize knowledge sharing mechanisms and resource mapping at regional levels
- Ensure primary producers and local value chains benefit from bioeconomy development through dedicated support structures
- Strengthen international cooperation frameworks to leverage complementary strengths and promote technology transfer, particularly for biotechnology hubs and innovation ecosystems

Country highlights

- Advocated for equity-based financing and support for SMEs.
- Emphasised the role of public-private partnerships (PPPs) and shared research infrastructure (e.g., Fraunhofer Centre for Chemical-Biotechnological Processes).
- Suggested the establishment of a Business Advisory Council to align demand with investment opportunities.
- Shared multi-level financial mechanisms such as the Biotechnology Industry Research Assistance Council (BIRAC), Anusandhan National Research Foundation (ANRF), and the BioNEST network.
- Emphasized the importance of multilateral and public development banks prioritizing bioeconomy investment, policy advisory and capacity-building to help scale strategic sectors.
- Emphasized the critical role of enabling government policies and incentives including procurement, taxes, subsidies, industrial policy and research and

development support to help nascent bio-based industries compete with incumbent fossil fuel-derived products and improve their cost-curves.

Recommendations and next steps:

The creation of a Bioeconomy Finance Hub for Africa was endorsed by many countries as an inclusive and catalytic mechanism. NatureFinance, in collaboration with FSD Africa, proposed treating bioeconomy finance similarly to the renewable energy transition that includes (1) clear incentives (e.g., feed-in tariffs), (2) blended finance, (3) de-risking tools and (4) integration of bioeconomy into sovereign finance and debt strategies. Progress and key developments on implementing the African Bioeconomy Financing Hub will be presented at the September 2025 GIB Meeting, as well as further discussion to distinguish it from the proposed Bioeconomy Implementation Platform.

3. High-Level Principle 7: Policy, Trade & Inclusion

Core Themes

The finance and trade sessions sought to create **mechanisms to implement High-Level Principle 7:** Benefit from robust and coherent policy frameworks that foster trade for bioeconomy products and services, market conditions, sustainable business models, decent jobs, local value creation and private sector and civil society participation; and **High-Level Principle 9**: Be fostered by international collaboration and cooperation that addresses global challenges, leverages complementary strengths, innovation and entrepreneurship and promotes financing, capacity building and sharing of best practices. Two outcomes follow the second meeting: 1) the launch of the independent African Bioeconomy Finance Hub and 2) a clear set of trade and related policy recommendations in order to grow the bioeconomy within the G20

Trade and investment policies must support sustainable business models, local value creation, and decent jobs. There is a need for coherent national frameworks supported by international cooperation. The bioeconomy represents a $2.04 trillion trade opportunity and harmonizing sustainability standards across G20 members (and other countries) would reduce trade friction, increase market predictability, and unlock new opportunities for investment, economic growth, and job creation in the bioeconomy.

Implementation Challenges

- Current trade frameworks are constraining rather than enabling bioeconomy growth
- Bio-based products face regulatory disadvantages - bundled with fossil fuel counterparts in classifications yet excluded from industry supports and subsidies available to conventional products
- The absence of harmonized definitions, standards, and metrics across jurisdictions creates barriers to scaling legitimate bioeconomy trade
- Risk of superficial substitution threatens genuine sustainability outcomes

Strategic Opportunities

- Separate bio-based products from fossil fuel classifications in regulations
- Implement government procurement policies that prioritize bio-based alternatives
- Leverage existing trade mechanisms like continental free trade areas
- Dual approach: top-down policy frameworks and bottom-up community initiatives
- Critical inter-ministerial coordination between finance and trade departments

Country Highlights

- Advocated for inclusive models that benefit Indigenous Peoples and underrepresented communities.
- Shared innovative policy tools such as RenovaBio and Sustainable Taxonomy.
- Highlighted biotech talent retention as a policy priority.

- Stressed the importance of regional strategies and digitalisation in the agri-food sector.
- Reaffirmed commitment to rules-based trade and inclusive governance.
- Emphasised flexibility in standards to include Indigenous and sectoral actors.
- Promoted cross-border technology transfer and workforce development.
- Emphasized the need to ensure that bioeconomy trade delivers genuine environmental benefits, where trade classifications and standards prioritize bio-based products that demonstrate verifiable lifecycle benefits—such as reduced carbon emissions, biodegradability, and sustainably sourced inputs.

Recommendations and next steps

Policy harmonization must link bioeconomy advancement with circular economy principles, climate commitments, and biodiversity strategies. Investment in monitoring and verification systems, tax incentives for bioeconomy enterprises, and transitional policies can facilitate market development while ensuring environmental integrity. Regional cooperation mechanisms offer pathways for shared resources and coordinated market development, particularly important for supporting the growing population of bioentrepreneurs requiring scale-up assistance across financial, technical, and regulatory domains. Drawing from the discussions, NatureFinance will prepare a policy brief highlighting key opportunities, pain points and recommendations for the GIB to drive further discussions on leveraging sustainable trade to scale the bioeconomy across the G20.

4. Metrics and Monitoring: From Consensus to Implementation

FAO Presentation Takeaways

The Food and Agriculture Organization (FAO) shared a database of over 4,000 indicators organised across four domains (1) Territorial; (2) Value chain (3) Business/sectoral and (4) Governance. FAO recommended pilot testing and voluntary adoption, inspired by the Greenhouse Gas Protocol model.

FAO tools and initiatives include the International Sustainable Bioeconomy Working Group (ISBWG) Indicators that are aligned with the GIB High-Level Principles and the United Nations Sustainable Development Goals (SDGs); Global Bioeconomy Toolbox which is a repository of case studies, methodologies, and best practices and the Bioeconomy Dashboard which is a visual tool for progress tracking and cross-country comparisons.

Country Highlights

- Supported a simplified, flexible model.
- Prioritised cost-effective, standardised, and adaptive systems.
- Endorsed inclusive, SDG-aligned, and context-specific metrics.
- Emphasised the importance of political negotiation and data availability in indicator selection.
- Called for tools that support benchmarking across varied biomes.
- Advocated for AI-powered analytics and centralised data collection systems.

Implementation Challenges

- Cost implications and accessibility issues create significant hurdles, particularly for small-scale producers and developing economies
- Administrative burdens associated with certification processes, combined with expensive auditing requirements and limited local capacity, risk creating barriers to entry for smallholders
- The tendency to ignore hard-to-measure metrics further complicates comprehensive assessment

- Data source fragmentation increases complexity and costs

Strategic Opportunities

- Investment in robust data governance systems presents opportunities for streamlined processes and reduced transaction costs
- Development of territorial bioeconomy indicators covering input, output, growth, and export metrics can provide comprehensive progress tracking
- Natural capital accounting strategies offer frameworks for integrating environmental and economic measurement
- Green premium mechanisms demonstrate market demand for certified products
- Success requires close collaboration across stakeholders to ensure metrics systems enhance rather than hinder inclusive bioeconomy development, particularly for marginalized producers who are essential to sustainable value chain development.

Recommendations and next steps

It was recommended that members could (1) apply metrics in real-world case studies; (2) appoint national experts to co-develop standard methodologies and (3) encourage voluntary adoption, leading toward formal standardisation.

A proposal (supported by FAO) was to select 2–3 countries for pilot testing, then apply the full metrics framework and engage expert teams for analysis and refinement.

There is alignment with Global Frameworks such as the United Nations Sustainable Development Goals (SDGs), GIB High-Level Principles on Bioeconomy, Convention on Biological Diversity (CBD), Frameworks of the Organisation for Economic Co-operation and Development (OECD) and the European Union (EU).

5. The Way Forward: Institutionalisation, Implementation, Impact

Strategic Next Steps

A five-year Implementation Roadmap to operationalise the GIB High-Level Principles should be developed. Create a global Bioeconomy Monitoring Dashboard and consider establishing a Bioeconomy Observatory. Compile a Best and Emerging Practices Compendium for member countries and facilitate South-South and triangular cooperation to build capacity globally.

Country-Supported Priorities

- Called for institutionalising GIB within the G20, and linking to other relevant working groups on the Sherpa and Finance tracks (e.g. the Sustainable Finance Working Group (WG), Trade and Investment WG, Development WG, Agricultural Deputies WG, Environment, Climate and Sustainability WG, Health WG, and Energy Efficiency WG).
- Suggested linking GIB to broader geopolitical and environmental platforms/fora.
- Requested a concept paper on the Bioeconomy Implementation Platform as described in the GIB 2025 Issue Note.

6. Final Messages

The bioeconomy is not a single sector. It is a complex and cross-cutting effort that has the potential to be transformative. The G20 Initiative on Bioeconomy (GIB) must evolve from vision-setting to measurable action. Institutionalisation, inclusive governance, and evidence-based policymaking will be key. Finance, metrics, policies and investment pipeline development must advance together to unlock the full potential of a global bioeconomy. The members echoed the need co-create a future where trade thrives, communities flourish, and ecosystems regenerate.

Breaking down institutional silos emerged as a recurring theme throughout the sessions. The bioeconomy's transformative potential can only be realized when environment and finance ministries work in lockstep, when trade policies align with sustainability goals, and when the initiative connects meaningfully with other G20 working groups. This is not about adding another layer of bureaucracy, but about fundamentally reshaping how governments approach economic development.

Regional cooperation offers immediate opportunities for progress while global frameworks take shape. The proposed African Bioeconomy Finance Hub represents a concrete example of how regional initiatives can accelerate implementation while respecting local contexts and needs. Similar regional mechanisms should be encouraged and supported as building blocks for global bioeconomy development.

Finally, the bioeconomy's promise of high-tech, nature-based solutions requires massive investment in technology transfer and capacity building. This represents both an opportunity and an obligation for G20 members to share knowledge and resources equitably, particularly in supporting biotechnology hubs and innovation ecosystems in developing economies.

Side-event summary

Three presentations were made on different aspects of the bioeconomy. Firstly a presentation was made by the community and executive representatives from Mdluli Lodge, on a public-private investment into an eco-tourism game lodge on the perimeter of the Kruger National Park. The community provides land that is linked to the national park, co-owns the initiative, and provides the majority of the staffing for the lodge. The eco-lodge and associated development is an example of a successful venture into a bioeconomy service with measurable financial, social and environmental outcomes.

The second presentation was made on the Sugarcane Industry in South Africa by the Sugar Milling Research Institute, where the potential to lever the location and infrastructure associated with sugarcane industries for social, economic and environmental benefits was explored. The importance of diversification from sugar into higher value products was outlined to provide a more stable and sustainable income for the industry and to drive the establishment of a sugarcane bioeconomy, but the presenters noted the business cases could not be made for bioeconomy investments within a traditional investment paradigm, especially where these are for bio-based chemicals and materials with fossil-based equivalents, as the bio-based versions are typically more expensive to produce. Consequently, a bioeconomy premium (the difference in production cost for bio-based products compared to fossil-based alternatives) would be required, with clear routes for how such premium would be funded. In establishing such investments into sustainable bioeconomy products, there are multiple opportunities to capitalise on the sugarcane industry's reach into remote rural areas to drive sustainability outcomes and to structure the financing and certification of such investments accordingly. These outcomes could include social contributions, environmental stewardship and climate change mitigation and adaptation.

The final presentation was from Forestry South Africa, where community involvement in this plantation industry is being encouraged/developed, and where multiple bioeconomy products could expand the pipeline for demand for the industry. The speaker indicated that the potential benefits from bioeconomy investments into industries such as the sugarcane industry could also be achieved through similar strategies in other large scale agroprocessing industries, such as the forestry industry.