



G20 Initiative on Bioeconomy

Issue Note

G20 Initiative on Bioeconomy (GIB)

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Glossary

Anti-poverty	This refers to strategies, policies, or actions aimed at reducing or eliminating poverty. Anti-poverty measures typically focus on providing economic opportunities, improving access to essential services, and supporting marginalised communities to improve their living standards and well-being
Bioeconomy	Although a concept with no internationally agreed meaning, bioeconomy could be ascribed as a new productive paradigm: an economic system that focuses on sustainably using renewable biological resources, such as plants, animals, and microorganisms, to produce goods, services, information, and energy, respecting the limits of ecosystems and maintaining the provision of ecosystems services. It emphasises the sustainable and efficient utilisation of biological resources to meet the needs of societies while minimising negative environmental and climate impacts and creating new, decent jobs with sustained income.
Bioprocessing	The use of biological materials and processes to develop bio-based products, such as in agriculture, pharmaceuticals, or waste management
Biorefineries	Facilities that convert biomass into biofuels and other useful products using processes that are sustainable and environmentally friendly
Biotechnology	The use of biological processes, organisms, or systems to manufacture products or provide services, especially in

industries such as agriculture, medicine, and environmental management

Climate-Resilient	The ability of systems, communities, and economies to withstand, adapt to, and recover from climate change impacts
Equitable, Sustainable Development	Development that aims to meet the needs of all people, especially marginalised communities, in a way that is fair, just, and sustainable over time
G20 Initiative on Bioeconomy (GIB)	A global initiative led by the G20 countries to promote the development of a sustainable, equitable bioeconomy with shared global standards and policies
Global South	A term used to refer to low- and middle-income countries, primarily located in Africa, Latin America, Asia, and Oceania, often focusing on issues of development and equity
GIB High-Level Principles (also, GIB Principles)	Ten key guiding rules agreed upon by the G20 to shape bioeconomy policies, focusing on social equity, sustainability, and addressing climate and nature goals (Appendix 1)
Indigenous peoples and local communities	Refer to individuals and groups who self-identify as indigenous or as members of distinct local communities, with particular emphasis on those who “maintain an inter-generational historical connection to place and nature through livelihoods, cultural identity, languages, worldviews, institutions, and ecological knowledge”.

Nature-positive	An approach to development that ensures economic activities contribute to the restoration and conservation of biodiversity
Precision Medicine	A medical approach that tailors the treatment to individual patients based on genetic, environmental, and lifestyle factors, often using advanced diagnostic tools and data analysis to customise care
Pro-equity	Pro-equity refers to actions or policies designed to promote fairness and equality by addressing disparities between different groups. These efforts aim to ensure that resources, opportunities, and benefits are distributed in a way that rectifies existing inequalities, especially those affecting disadvantaged populations. Pro-equity measures often focus on ensuring social justice and inclusive growth in economic, health, and educational systems

General Introduction

Globally, several countries have developed national and regional bioeconomy strategies signalling these governments' commitments to harness the bioeconomy's potential¹. At its core, the bioeconomy encompasses the use of living organisms or parts thereof to make valuable products or services. The application of bio-based technologies is wide-ranging, extending across sectors such as agriculture, health, and manufacturing. Today's global bioeconomy is estimated to be valued at US\$4 trillion, with a growth potential of up to US\$30 trillion by 2050². Growth drivers include equity and poverty, climate change, environmental, and health concerns. As such, the bioeconomy offers immense economic growth potential with associated job creation and development opportunities, while embodying the cultures and norms of indigenous peoples and local communities. In the context of the global crises of climate change, biodiversity loss, and widespread unsustainable and environmentally harmful development, the global bioeconomy paradigm is a cornerstone in the transition to a more equitable, low-carbon and climate-resilient, nature-positive economy.

While many other global development options (including solar, hydrogen, nuclear and wind energy) can reduce carbon intensity, the bioeconomy option is outstanding in its breadth of possibilities and potential, and it should become a significant part of the solution to the global crises we face. An ever-increasing life sciences knowledge base and associated biotechnological tools yield increasingly diverse and impactful applications and products to underpin the bioeconomy. These are impacting societies in positive ways, including precision medicines; increased agricultural productivity and enhanced nutrition; bioremediation of wastes and oil spills; and deriving value from biomass through bioprocessing and integrated biorefineries. Furthermore, bioeconomy

¹ Delbruck, S., Griestop, L. and Hamm, U. 2018. Future Opportunities and Developments in the Bioeconomy – a Global Expert Survey. German Bioeconomy Council, Berlin.

² Nature Finance. 2024. Financing a Sustainable Global Bioeconomy. World Bioeconomy Forum.

development should not be limited to wealthy countries as it offers an opportunity for equitable and sustainable global development.

The bioeconomy comprises a spectrum of bio-based enterprises and markets, ranging from local and regional socio-bioeconomies to businesses, sectors, and economies that blend biodiversity and technologies, and this spectrum must be considered in its entirety. After all, all countries collectively share the same global bio-resources which must serve many purposes. It is therefore critical that the world collectively works towards sustainable bioeconomy approaches, particularly in the Global South, not only for the benefit of the planet but also to reduce inequality and promote sustainable development.

It is recognized, however, that the climate change crisis will impact any development trajectory with risk and uncertainty, and a bio-based economy may be particularly affected. Increasing temperatures, extreme weather events, and droughts, changing demographics of pests and diseases, amongst other impacts, will lead to reduced productivity of biomass, declining floral and faunal populations, and biodiversity loss, local and global changes in areas suitable for agriculture. It is critical that such risks – and associated socio-economic impacts - are factored into planning, global governance, and the development of mitigations measures for bioeconomy development.

These considerations are relevant for all the affiliated and non-affiliated G20 member countries; a consensus approach by G20 member countries is needed in managing the nexus between livelihood/economic priorities, and our increasingly fragile environment and associated biodiversity.

G20 Initiative on Bioeconomy (GIB) - Context

Brazil has raised the policy standard by encouraging international cooperation in advancing an equitable, sustainable bioeconomy through the G20. The 2024 G20 Initiative on Bioeconomy (GIB) recognised the need for collective action. The South African G20 Presidency in 2025 offers a valued opportunity to continue this initiative by charting a nature-positive and equitable development pathway.

Under its leadership of the G20 in 2024, Brazil prioritised the bioeconomy by developing the GIB and succeeded in establishing 10 High-Level Principles (GIB Principles, Appendix 1) on Bioeconomy, as agreed to by all members. Notably, the GIB Principles were established to inform bioeconomy-relevant policymaking and market development.

The GIB Principles focus on normative dimensions, such as social equity, livelihoods, sustainable prosperity, and the need for the bioeconomy to address nature and climate goals. They highlight the need to base the bioeconomy on accurate science, establish common definitions and metrics, and emphasise the importance of enabling trade rules, financing arrangements, and flows. These principles therefore provide a basis for how the global bioeconomy can be developed to ensure sustainability across the three dimensions of environmental, social, and economic good.

Now is the time to translate such vision, potential, and principles into action

The GIB must now stimulate the implementation of these principles through tangible bioeconomy development. South Africa has a unique opportunity to advance economic leverage and to chart a new nature-positive, equitable, and sustainable development pathway. With demonstrated leadership in developing its own Bioeconomy Strategy in

2013, South Africa, through its 2025 G20 Presidency, can provide a way to translate the GIB High-Level Principles into practice.

Moreover, South Africa's opportunity to make a difference is enhanced by the fact that Colombia has committed to prioritising the bioeconomy during its Convention on Biological Diversity COP16 Presidency; Brazil has committed to advancing the bioeconomy theme during its UN Framework Convention on Climate Change COP30 Presidency; and Malaysia indicated that it will champion the bioeconomy during its Association of Southeast Asian Nations (ASEAN) Presidency, building on the 2022 ASEAN Bangkok Accord on the bioeconomy.

Orchestrating an Equitable, Sustainable Global Bioeconomy

The South African G20 Presidency will prioritise bioeconomy policies and developments that encourage actions to address economic growth, environmental protection, and social equity. The 2025 GIB will promote anti-poverty and pro-equity goals based on national actions while focussing on regional and international cooperation. Moreover, 2025 GIB will highlight the critical importance of bioeconomy developments that address climate and nature goals, and the potential to contribute to a more equitable global economy. The G20 countries recognise the role the bioeconomy can play in mitigating climate change, as the G20 countries have agreed to “advance mitigation and adaptation efforts against global climate change, in line with applicable multilateral climate agreements”. Where relevant, regenerative and value-adding approaches should be used to ensure the sustainable use of nature-based resources in support of the [United Nations' Sustainable Development Goals](#).

Considering that some of the overarching barriers in the Global South are related to technology availability, finance and competitiveness, there is a need to implement an inclusive participation in the global bioeconomy. The expansion of the bioeconomy in the

Global South requires a review of existing regulations, development of measurement standards that will inform investment decisions, support of strategies and plans that include industrial strategies, and mitigation of the changing climate risks. To ensure that the Global South participates meaningfully and benefits from the potential development of the Global bioeconomy, support for an integrated approach from the G20 is required to consolidate efforts that address business and market developments with relevant infrastructure and technologies, equitable international financial arrangements, development of skills along the value chain, and strengthening regional and international cooperation for derisking and scaling positive impacts of the bioeconomy.

Tackling international trade barriers that restrict the Global South from fuller participation should facilitate economic, environmental, and social sustainability. These objectives can be achieved through advocating for the G20 member countries to develop strategies that include objectives incorporating the 10 agreed High-Level Principles, and through the design and development of various levels of bioeconomy interventions that can be relatively easily implemented, particularly in countries of the Global South, and in Africa.

As in most G20 workstreams, objectives will be achieved by drawing lessons from G20 members, through the development of tools and methods, and by encouraging G20 member countries to identify and advance their own biomass valorization potential, as well as advancing possible, and at times essential, areas for international cooperation.

Priorities

Towards establishing global bioeconomy standards and metrics

The lack of common standards and metrics makes it difficult to measure and have a shared understanding of the bioeconomy. Agreeing on and adopting a common set of metrics and standards and related data for planning, aligning, guiding, and evaluating bioeconomy interventions at national, regional, and international levels, will allow consistent and accurate assessment and global alignment as captured in GIB High-Level Principle 8:

“Utilizing transparent, comparable, measurable, inclusive, science-based and context-specific criteria and methodologies to assess their sustainability throughout the value chains”.

This will help ensure sustainable, inclusive, and responsible bioeconomy development. Such a framework can potentially consider aspects like sustainable development integration, inclusivity and equity, climate change risks, preferential trade, environmental impact, and resource efficiency. In addition, it could offer clear implementation guidelines and an international collaboration framework.

Objectives

- Identify and collate current nature-related standards which are available to be applied to financial flows and economic activities, linked to business risk, trade policies, economic and industrial subsidies, and financial policies, regulations and standards. Identify and address gaps and needs. Ensure the approach is appropriate for inclusive participation.
- Identify mechanisms for advancing the development of a comprehensive set of standards and metrics for planning, aligning, guiding, and evaluating bioeconomy interventions at national, regional, and international levels.

Deliverable

Recommendation for the development of a framework based on the GIB principles providing a structured approach to measuring, evaluating, and aligning bioeconomy developments as detailed above.

Examining the common needs, opportunities and challenges in bioeconomy development support in an African context

To create appropriate mechanisms and instruments that can provide and stimulate bioeconomy development leading to sustainable companies, the common challenges to successful entrepreneurialism in Africa needs to be identified and addressed. As such, this would be a response to the socio-economic issues and policy developments aligned to GIB High-Level Principles 1 and 7:

“Integrating and promoting **sustainable development** across its economic, social and environmental dimensions, contribute to **eradicating hunger and poverty** and improving health and well-being, whilst ensuring global **food security and nutrition**” and

“Benefitting 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”.

Issues such as financial resource availability; ease of accessing resources, science/innovation infrastructure (laboratories; pilot scale bioprocessing and fermentation infrastructure); incubation facilities; technical training (including equipment, product standards, entrepreneurial and various business skills); regulatory hurdles, incentives, mentorship, and partnerships.

Objective

To introduce case studies and expert opinion on the fundamental requirements in supporting bio-entrepreneurialism in Africa.

Deliverable

Report on key considerations in supporting bio-innovations and bioeconomy developments in an African context.

Financing bioeconomies

Central to entrepreneurship is fostering international collaboration and cooperation. The availability and access to suitable financial resources are an underlying challenge for entrepreneurial support in Africa, and elsewhere in the Global South. This priority will examine the range of interventions both sovereign and from across the globe, that could be deployed to increase resources supporting bioeconomy Small, Micro and Medium Enterprises (SMMEs) and companies. This priority is in line with GIB High-Level Principle 9:

“Foster international collaboration and cooperation that addresses global challenges, leverages complementary strengths, innovation and entrepreneurship and promotes financing, capacity building and sharing of best practices”.

Related to this, seed funding (for science-based research, workshops, with resulting publications and policy briefs) is required to galvanize science-based thematic recommendations or knowledge products that can guide countries or investors for specific bioeconomy development opportunities as espoused by GIB High-Level Principle 6:

“Be developed through safe, secure and responsible use of science, technology, innovation and traditional knowledge, with potential benefits, risks and impacts assessed scientifically”.

Objective

To examine the means for countries, regions and the globe to increase the availability of risk finance for entrepreneurs in Africa and the Global South, through financial

instruments and incentives, and through seeding the development of science-based recommendations for development.

Deliverables

- a. Collation of key financial instruments and incentives that are available to countries and the globe to increase support of risk capital for bio-entrepreneurs, SMMEs and companies in the Africa/Global South.
- b. Identification of means for seeding support for science-based bioeconomy recommendations.

Framing a platform for delivering on bioeconomy developments in Africa

A long-term support platform is required to give effect to bioeconomy aspirations in Africa. Such a platform would assist Africa and the Global South to attain the ambitious goals set in Principle 1:

“Integrating and promoting **sustainable development** across its economic, social and environmental dimensions, contribute to **eradicating hunger and poverty** and improving health and well-being, whilst ensuring global **food security and nutrition**”.

The structure would need to consider:

- a. Coordination of stakeholders;
- b. Serving as a repository of information related to bioeconomy case studies; country context assessments; existing investments, etc;
- c. Design and deployment of catalytic bioeconomy projects;
- d. Development of global financial, trade, and investment incentives;
- e. Climate change impacts and risks to bioeconomies; and
- f. Thought leadership for global bioeconomy development.

Objective

Provide governance, strategic and operational recommendations, in the design of a framework for the terms of reference for a Bioeconomy Implementation Platform.

Deliverable

A set of recommendations on the terms of reference for a Bioeconomy Implementation Platform.

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Dates of Meetings

23 - 25 FEBRUARY 2025; UNIVERSITY OF THE FREE STATE; BLOEMFONTEIN.

25 – 27 MAY 2025; UNIVERSITY OF MPUMALANGA; MBOMBELA.

SEPTEMBER 2025 (date and venue will be advised)

Appendix 1: G20 High-Level Principles on Bioeconomy

Recognizing the remarkable potential of bioeconomy to contribute to building a sustainable future and fostering economic growth for all, the G20 Initiative on Bioeconomy (GIB) has initiated the international debate on this innovative, complementary productive paradigm. Its members have decided on ten voluntary, non-binding High-Level Principles on Bioeconomy, according to which bioeconomy activities are expected to:

1. Integrate and promote **sustainable development** across its economic, social and environmental dimensions, contribute to eradicating **hunger and poverty** and improving health and well-being, whilst ensuring global **food security and nutrition**.
2. Be **inclusive and equitable**, uphold the rights of all persons, including Indigenous Peoples and members of local communities, promote gender equality and the participation of all stakeholders.
3. Advance **mitigation and adaptation efforts against global climate change**, in line with applicable multilateral climate agreements.
4. Contribute to the conservation of **biodiversity**, the sustainable use of its components and the fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, subject to national laws and in line with applicable international agreements and instruments.
5. Advance **sustainable consumption and production** patterns and the efficient and circular use of biological resources, whilst promoting the **restoration and regeneration of degraded areas and ecosystems**.
6. Be developed through safe, secure and responsible use of **science, technology, innovation and traditional knowledge**, with potential benefits, risks and impacts assessed scientifically.

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.
8. Utilize transparent, comparable, measurable, inclusive, science-based and context-specific **criteria and methodologies** to assess their sustainability throughout the value chains.
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.
10. Be based on **country-specific** approaches and implemented in line with national priorities and regional and local circumstances.

* The applicable multilateral climate agreements referred to in Principle 3 include, but are not limited to, the Paris Agreement. The applicable international agreements and instruments referred to in Principle 4 include, but are not limited to, the Kunming-Montreal Global Biodiversity Framework (KMGBF).