



**Statement from the Hannover Symposium organized by
Volkswagen Foundation
and the International Advisory Council for Global Bioeconomy (IACGB)**

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One Planet - Bioeconomy Solutions for Global Challenges

Summary

To deal successfully with the global crisis affecting the planet the current economic models based on the fossil economy need to be substantially transformed as soon as possible. We are on the brink of a new era that offers related solutions for society and economy, recognizing the planet as home for all human beings alongside animals, plants and microorganisms, respecting and preserving (or re-establishing) their habitats.

Bioeconomy, is a key solution enabling a transformed fossil-free, sustainable, regenerative and circular global economy. Technologies and social innovations are significant drivers of the bioeconomy which relies on bioresources and science, while building on the responsible use of nature's tools and services. Local and global adoption of the bioeconomy is necessary to enable achievement of the United Nations Sustainable Development Goals.

This statement developed by the IACGB, results from an international workshop supported by the Volkswagen Foundation held in Hannover, Germany, June 26-27, 2023, and builds upon previous Communiqués of the Global Bioeconomy Summits (GBS) in 2020, 2018 and 2015 (<https://www.iacgb.net/>).

I. Bioeconomy is now part of the policy agenda

Over the past 20 years, the value of the sustainable and circular bioeconomy in transforming the economy across all sectors has become more recognized globally. The IACGB defines the bioeconomy as “a *knowledge-based production and utilization of biological resources, biological processes and principles to sustainably provide goods and services across all economic sectors*”. It arises from different types of biological innovations and protects and regenerates renewable natural resources, providing local, regional, social and economic development opportunities. It provides essential building blocks for strategies to address climate change mitigation and adaptation and nature loss, more broadly. This promotes job creation, safeguards livelihoods and secures future health and food supply. It is cross-sectoral, systemic and emergent in nature, and thus has a multi-faceted impact benefiting the economy, society and environment. **The bioeconomy is increasingly recognized as a key concept in making the transition to a sustainable and inclusive future.**

Further momentum has been gained at the international level since the 3rd Global Bioeconomy Summit held in November 2020. For example, China, the USA, ASEAN and East Africa and some LATAM countries have adopted new innovative and bold bioeconomy strategies. The 27 Member States of the European Union have recently adopted Council Conclusions on the bioeconomy. The FAO has included a bioeconomy pillar in its Strategic Framework 2022-31. The relevance of the bioeconomy in climate change is increasingly acknowledged in global fora, including the recent COP15 global agreement on biodiversity and ecosystems services. IACGB acknowledges and encourages global discussions on the critical factors that support a successful journey to a sustainable transformation of the economy.



Bioeconomy strategies developed in recent years are shaping the direction of economies and sustainability policy developments internationally. However, the opportunities as well as the limitations of individual national/regional bioeconomy strategies and their implementation needs to be explored and discussed. It is critically important to translate bioeconomy strategies and policies into actions to

- meet global food security,
- scale bio-based products for construction, manufacturing, transportation,
- promote urban and rural economic development to address global challenges related to climate change, while reversing nature-loss and maintaining functioning ecosystems at scale.

Sustainable sourcing and production across supply chains as well as ensuring circularity and eliminating waste are key aspects in bioeconomic solutions.

The bioeconomy is increasingly proving to be a catalyst for defining future developments and influencing research, financing, market access and consumer behavior. These developments need to be assessed and measured consistently; and hypotheses, barriers and drivers for the future developments need to be elaborated in a joint effort between governments, academia, the public and the private sector, both globally, regionally and locally.

This statement “One Planet – Bioeconomy Solutions for Global Challenges” developed by the IACGB builds upon and updates previous Communiqués issued in 2020, 2018 and 2015 (<https://www.iacgb.net/>).

The validity of key elements of the 2020 Communiqué has increased, and remains topical and valid. This includes the three overarching contributions of the bioeconomy to people and planet:

- **Bioeconomy for health and wellbeing** as a key element in building back better during and after COVID-19,
- **Science and technology breakthroughs** are occurring, and remain essential for advancing the sustainable and circular bioeconomy, and
- **Climate action, ecosystems and biodiversity** protection can be achieved with and for a sustainable bioeconomy.

The 2020 Communiqué furthermore urged the strengthening of actions for creating global bioeconomy policies. These included:

- capitalizing on the power of science and technology.
- creating bioeconomy jobs through partnerships and innovation.
- mobilizing finance for bioeconomy development.
- increasing involvement of industry and business.
- promoting resilient value chains.
- strengthening demand side policy approaches.
- promoting partnership, shared responsibilities and a global platform.

The Communiqué from GBS 2015 outlined cornerstones of a global agenda, together with policy measures, leading to a sustainable bioeconomy. The Communiqué in 2018 stressed the importance of the social impact of a bioeconomy and the Communiqué issued from GBS2020 specifically emphasized the bioeconomy's role in the transformation of industry. The IACGB recognizes that the role of the bioeconomy in 2023 is advancing in providing sustainable solutions for global challenges. Building on the priorities and recommendations of the 2020 Communiqué, the IACGB acknowledges the achievements since 2020 and revisits the milestones and goals.

In particular, we highlight the following points that are of particular importance in 2023 and beyond:



- We observe a significant increase in the number and diversity of priorities in new and updated **bioeconomy strategies** – both policy and research strategies – with high level political impact.
- We acknowledge the recognition of bioeconomy principles in **global alliances**; such as in the IPCC reports, the recent G20 reports, the FAO Strategic Framework 2022-2031, and the UNIDO identification of new products.

The IACGB sees the need for urgent and immediate action:

- We urge for a rapid development of national and international **bioeconomy roadmaps or strategies** to fully harness the transformative power and disruptive nature of bioeconomy solutions. These should address hunger and poverty and biodiversity loss, job creation, economic growth and territorial development, reduce dependence on fossil resources, engage with youth and local communities, and boost resilience towards climate change and health challenges.
- We strongly advocate for the formation of a global bioeconomy platform and **consolidation of global alliances and partnerships** to assist in sharing information and lessons learned by different countries/regions; coordinating, revising, reshaping and emphasizing targets over time. Such a global enabling platform would preferably be with the support of international organizations, governments and intergovernmental structures.

II. Bioeconomy – the way forward

The IACGB urges for “**plans of action**” at national regional and global level, recognizing the status of the global bioeconomy in 2023 and to target goals for 2030 covering the following aspects:

1. Recognize new and updated bioeconomy **strategies**. Increasingly synergistic strategies are operating at different scales based on diverse needs and roadmaps locally. We welcome a global mapping of the updated bioeconomy strategies around the globe.
2. Recognize the need to better understand and include the **ecological boundaries** of the bioeconomy and the finite biological resources of our planet to feed people and animals, provide clean water, affordable and clean energy, and long-lasting carbon storage products.
3. Enhance the **knowledge base** on the status of biodiversity, ecosystems, degraded land and hydrosphere.
4. Encourage actions to manage and regenerate **natural resources** sustainably and contribute to the Biodiversity landmark agreement (<https://www.cbd.int/article/cop15-cbd-press-release-final-19dec2022>) to guide global action on nature through to 2030.
5. Facilitate global sharing of experiences and learning across bioeconomy strategies and implementation plans and incorporate bioeconomy **principles** into global alliances/partnerships.

New and emerging opportunities are particularly present in:

- a. materials including for construction, packaging, transportation (aviation and shipping industry)
- b. processes including synthetic biology-based production of chemical building blocks and using CO₂ as a carbon source



- c. manufacturing including mobile or modular biorefineries and precision fermentation for protein production
- d. agriculture and food systems including regenerative forestry and land/ocean farming producing multiple materials for health and food security as well as bioproducts
- e. architecture and urban design including green cities and urban farming
- f. agriculture technologies as means to better make use of and better manage natural resources, inputs and productions

6. Establish shared **global standards** to measure goals and achievements on the way to reach the SDGs.

Sustainability metrics can be a measurable tool to monitor how the bioeconomy sectors and businesses across the supply chain contribute to reducing carbon emissions, ensure water security (supply and quality), ensure soil security (reducing soil degradation) and regeneration, and to overall maintain healthy terrestrial and marine ecosystems and biodiversity at scale while boosting the bioeconomy.

7. Develop bioeconomy **solutions** to address hunger, to become resilient towards climate change (including biomanufacturing, urban redesign and reduction in fossil resource usage) and health challenges leading to sustainable and resilient livelihoods.

Bioeconomy solutions will impact all sectors of society and industry. In particular:

a. societal

- foster bioeconomy opportunities and impacts on local and indigenous communities
- support initiatives to enhance consumer and youth generation awareness and promote sustainable consumption patterns and social innovation

b. industry and financing

- promote more sustainable and regenerative agriculture, aquaculture and fishery businesses and marine, water and bioresources
- promote a more efficient and circular food industry
- establish biorefineries that sustainably use bioresources for processing and manufacturing, and implement Biofoundaries for biotechnology developments and industrial growth
- set up standards for biomanufacturing
- introduce modern breeding techniques to the market to improve crop and animal genetic diversity for climate resilience, nutrient enhancement and pest resistance
- develop safe and environmentally sound alternatives to fossil based non-biodegradable plastics
- recognize bioeconomy drivers (or solutions) in urban design (or urban solutions) including the construction, waste management, the textile and materials sectors
- promote new technologies and investments for a sustainable bioeconomy
- set up and use synthetic biology and gene platform technologies include biomedical applications
- promote a Global Bioeconomy Investment Fund and prioritize international organizations financing of bioeconomy investments

c. political

- promote regionalisation in the bioeconomy
- secure biodiversity regions and sectors (e.g., amazon, great barrier reef, forestry, marine, etc.)
- monitor the impact of AI, robotics, and precision technologies on bioeconomy development
- establish biodiversity targets and their utilization in agriculture, food, aquaculture, forests, and biomaterials
- support development and use of substitutes or alternatives for agricultural inputs such as synthetic fertilizers and chemical pesticides
- set standards and market access for bioeconomy products and materials, such as bioplastics or novel foods, including alternative proteins and cell-based meat



- introduce indicators and standards for measuring and monitoring the bioeconomy, such as global standards of biomass production, globally consistent measures of carbon emissions across the full value chain, including consumers.
- acknowledge the barriers of current regulation systems and remove incentives for traditional industries
- address challenges of limited biological resources
- establish carbon markets and opportunities for bioeconomy financing
- set up inter-ministerial and nationally recognized governances and measurement of the global and regional long term change processes
- provide institutional arrangements to guide and promote bioeconomy awareness and acceptance in society

8. Establish **global alliances/partnerships** to reach identified bioeconomy goals and to form a collaborative global forum

Bioeconomy initiatives need a strong voice and forum. A global partnership is envisioned that would enable various bioeconomy initiatives to collaborate under one recognized open global forum.

III. Bioeconomy – on the verge of participation in the global agenda

The IACGB sees technological and social innovations as the key drivers of the bioeconomy.

A bioeconomy has become a reality for companies in recent years and a crucial pillar for regional, national and global economies. Governments are leveraging this as they set their directions for a sustainable and carbon neutral future, striving to fulfil the obligations of the Paris agreement. SDGs and carbon neutrality cannot be achieved without including bioeconomy principles. Examples include circularity of biomass carbon and other natural resources (nitrogen, phosphorus), production of fossil free materials and building blocks, and resource-efficient food and feed production.

Training, education and communication are key requirements for an inclusive bioeconomy. Societal needs include job creation and education, food security and health services, climate mitigation and nature preservation. Using technology transfer, life-long training (including increased technical training for the biotechnology industry) and empowering people by participation in grass root activities allows for inclusive communication and integrative participation. Thus, adoption of bioeconomy solutions in everyday life helps the urgent transformation of the economy and society.

Initiatives like the IACGB that strive for global attention and collaboration can catalyze the transition process. Specific initiatives include establishing and promoting regional hubs and networks, promoting circularity, supporting monitoring, and championing future-oriented projects, such as mobile biorefineries. Societal changes are necessary and should be promoted (such as uptake of more sustainable lifestyles, inclusion of diverse societal groups and youth perspectives, and changed consumer behavior in mobility and consumption patterns).

The IACGB sees a need for urgent action in order to bring the bioeconomy to the attention of society, younger generations, policymakers, private sector, financing sectors and people striving to find solutions for the transformation of society and the economy. The IACGB think-tank addresses organizations such as the World Bank, OECD, FAO and UNEP to help bring bioeconomy integration into global thinking. Among topics for urgent discussion are regulatory issues and standards, including new accounting and control systems for evaluation and measurement of the stocks, as well as allocation and use of natural and social resources that are currently excluded from economic accountability.



IV. Goals and recommendations

The following goals and recommendations for political leaders and the bioeconomy community are considered particularly important:

1. Make bioeconomy an **integral part of and framework for sustainable development and for resilience-building economic strategies**.

This especially applies to the climate change, biodiversity and food systems agendas mapped out by the related strategies of UN Summits. It includes cooperation among various Conventions and Initiatives such as those on Biodiversity (CBD), Desertification (UNCCD), the Earth Microbiome (EMP), the International Nitrogen Initiative (INI), or UNESCO Ocean Science for Sustainable Development (UNDOSSD); and promotion of cooperation between major bioeconomy and economy fora (eg. Conference of the Parties (COP), World Business Council for Sustainable Development (WBCSD), Food and Agriculture Organization of the United Nations (FAO), Organisation for Economic Co-operation and Development (OECD), International Bioeconomy Forum (IBF), World BioEconomy Forum (WCBEF)).

2. Monitor and advise on **how the energy, and construction sectors, agricultural and trade policies of the major players can be transformed** by bioeconomy in different regions.

This includes, for example, impacts of the Green Deal in Europe and initiatives in other regions, enabling market access for bioeconomy products and processes by introducing standards and by allowing fair competition with “old” fossil-based products and processes through level playing field conditions.

3. **Mobilize citizens and the younger generations to participate** in and embrace bioeconomy actions in their respective communities, and encourage youth participation in shaping the national, regional and global bioeconomy agendas.

About IACGB:

The International Advisory Council on Global Bioeconomy (IACGB) is an independent think tank composed about forty high-level bioeconomy leaders and experts from all hemispheres, representing different backgrounds and expertise. While the members of the IACGB serve in their personal capacity, many of them also advise the bioeconomy landscapes and governments of the countries or regions to which they relate.

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