

A Status of the Global Bioeconomy

Partnering for the Future

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World Bioeconomy Association

Global trends

Landscape of the bioeconomy

Bioeconomy as a concept

G20 High-level principles of the Bioeconomy

Financing the bioeconomy

Competitiveness landscape

Takeaways

World BioEconomy Forum

- **Founded:** 2018
- **Mission:** A global platform to drive the circular bioeconomy, focusing on sustainable solutions for climate change and resource preservation.
- **Four-Pillar Structure:**
 - The Bioeconomy: People, Planet, Policies
 - Corporate Leaders and Financial World
 - Bioproducts Around Us
 - Looking to the Future
- **Activities:** Online roundtables, conferences, and the **Annual Declaration** to outline future directions.



The Bioeconomy: People, Planet, Policies



Corporate Leaders and the Financial World



Bioproducts around us



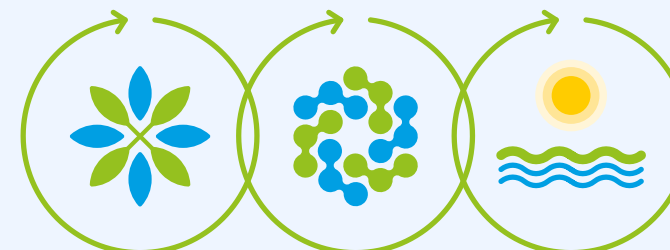
Looking to the Future



WORLD BIOECONOMY ASSOCIATION

Beyond Borders: Ignite, Innovate and Inspire with the World Bioeconomy Association!

- **Founded:** 2023
- **Mission:** A hub uniting stakeholders to grow the bioeconomy across sectors and regions.
- **Bioeconomy concept:**
 - **Bioresource Vision:** Enhancing research and technology for biomass conversion from agriculture, marine, and forestry sectors.
 - **Biotechnology Vision:** Promoting biotechnology and biomanufacturing research for diverse industrial applications.
 - **Bioecology Vision:** Optimizing ecological processes to promote biodiversity, strengthen crops, and protect soil quality.
- **Activities:** Engages in knowledge sharing, public outreach, advocacy, and collaborative research to promote responsible use of global resources

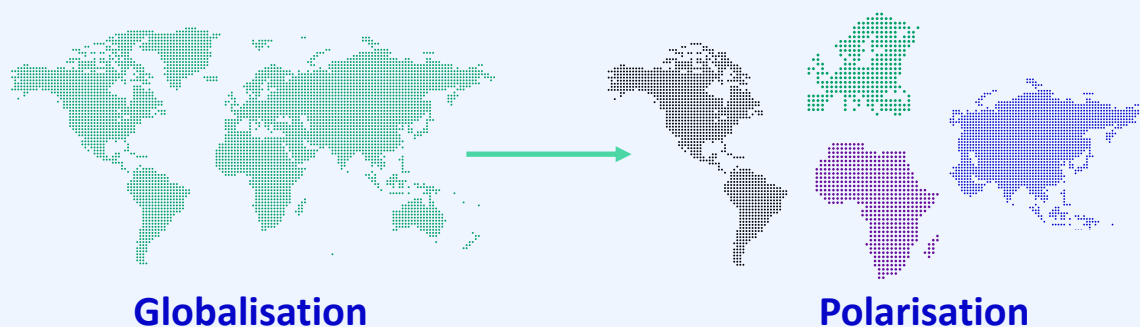


BIORESOURCE

BIOTECHNOLOGY

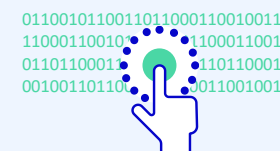
BIOECOLOGY

Global trends

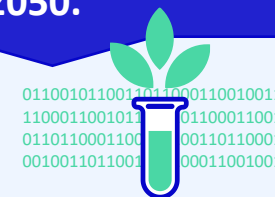


- The shift from **globalisation to polarisation** could fragment the bioeconomy, making international collaboration more difficult and leading to more regionally focused bioeconomic strategies.
- **Rising divisions** threaten international collaboration, slowing progress on global challenges like climate change and biodiversity.

Did you know? Today's global bioeconomy is estimated to be valued at US\$4 trillion, with growth potential to US\$30 trillion by 2050.



3rd Industrial Revolution
Digitalisation



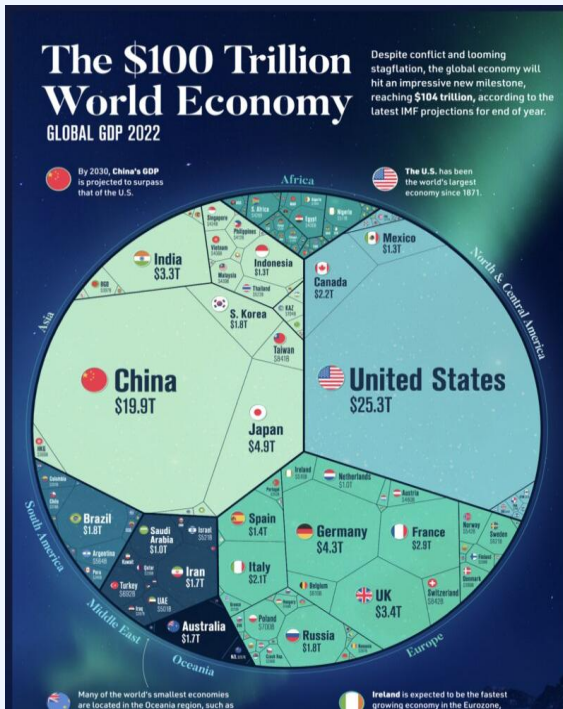
4th Industrial Revolution
Biorevolution

Opportunities in the **bio-revolution**:

- **Biotechnology advancements**, like genetic engineering and synthetic biology, are driving new markets and business models.
- **Ethical and regulatory challenges** may arise in a polarised world.

Success and growth in the bioeconomy hinges on navigating these global dynamics.

Landscape of the bioeconomy

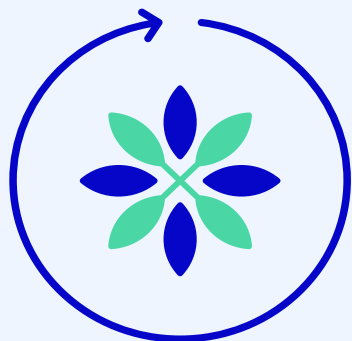


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| ARGENTINA Bioeconomía | AUSTRIA Bioeconomy Strategy for Austria | BRAZIL Institui a Estratégia Nacional de Bioeconomia | CHINA Bioeconomy Development Plan |
| COLUMBIA Colombia BIO | COSTA RICA Estrategia Nacional de Bioeconomía Costa Rica 2020-2030 | ESTONIA Circular Bioeconomy Roadmap for Estonia (2023) | FINLAND The Finnish Bioeconomy Strategy. Sustainably towards higher value added |
| FRANCE La stratégie nationale bioéconomie : remettre la photosynthèse au cœur de notre économie | GERMANY Bioeconomy – Biogenic Resources and biological knowledge for a sustainable economy | INDIA National biotechnology development strategy | IRELAND Ireland's Bioeconomy Action Plan 2023–2025 |
| ITALY Bioeconomy in Italy | JAPAN Outline of the bioeconomy strategy | LATVIA Latvian Bioeconomy Strategy 2030 | MALAYSIA National Biotechnology Policy 2.0 (DBN 2.0) |
| NAMIBIA The Namibia Sustainable Bioeconomy Strategy | NETHERLANDS The position of the bioeconomy in the Netherlands | PORTUGAL Bioeconomia | SOUTH AFRICA The Bio-Economy Strategy |
| SPAIN Bioeconomía | SWEDEN En hållbar bioekonomistrategi – för ett välmående fossilfritt samhälle | THAILAND BCG Economy Model | USA Executive Order on Advancing Biotechnology and Biomanufacturing Innovation for a Sustainable, Safe, and Secure American Bioeconomy |

- Current global economy is ≈ US\$ 100 trillion
- Bioeconomy US\$ 4 trillion to US\$ 30 trillion
- Bio Revolution looming
- BioEconomy is everywhere, but nowhere (not known by big audience)
- Bioeconomy rises on global agendas
- Financing mechanisms under review

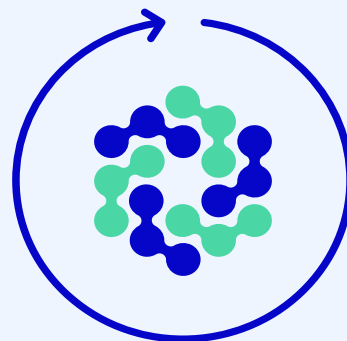
- 24 dedicated national bioeconomy strategies – some examples
 - *Japan Bioeconomy Strategy update (June 2024)*
 - *Namibia Bioeconomy Strategy (June 2024)*
 - *Ireland National Bioeconomy Action Plan 2023-2025 (October 2023)*
 - *Circular Bioeconomy Roadmap of Estonia (August 2023)*
 - *EU Bioeconomy progress report (June 2022) – 10th anniversary Bioeconomy Conference (October 2022)*
 - *The Bioeconomy Initiative from the USA (EO on National Biotechnology and Biomanufacturing September 2022)*
 - *The China Biostrategy launch (May 2022)*

The concept of the bioeconomy



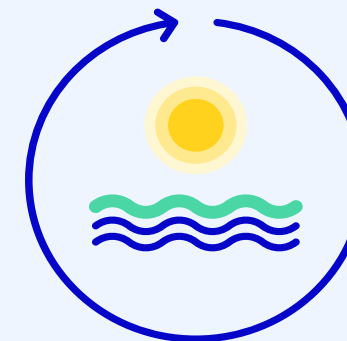
Bioresource vision

A bioresource vision, focusing on the role of research, technology development and upscaling, needed for conversion and value-chain-valorisation of biomass feed stocks, from agriculture, marine, and forestry sectors.



Biotechnology vision

A biotechnology vision, emphasising the importance of biotechnology and biomanufacturing research, for application and commercialisation in different sectors.



Bioecology vision

A bioecology vision, highlighting the importance of ecological processes that optimise the use of land, energy and nutrients, giving space for promoting biodiversity, strengthen crop plants by out-phasing pesticides and protect soil quality against degradation.

G20 High-Level Principles of the bioeconomy were launched on 11 September 2024



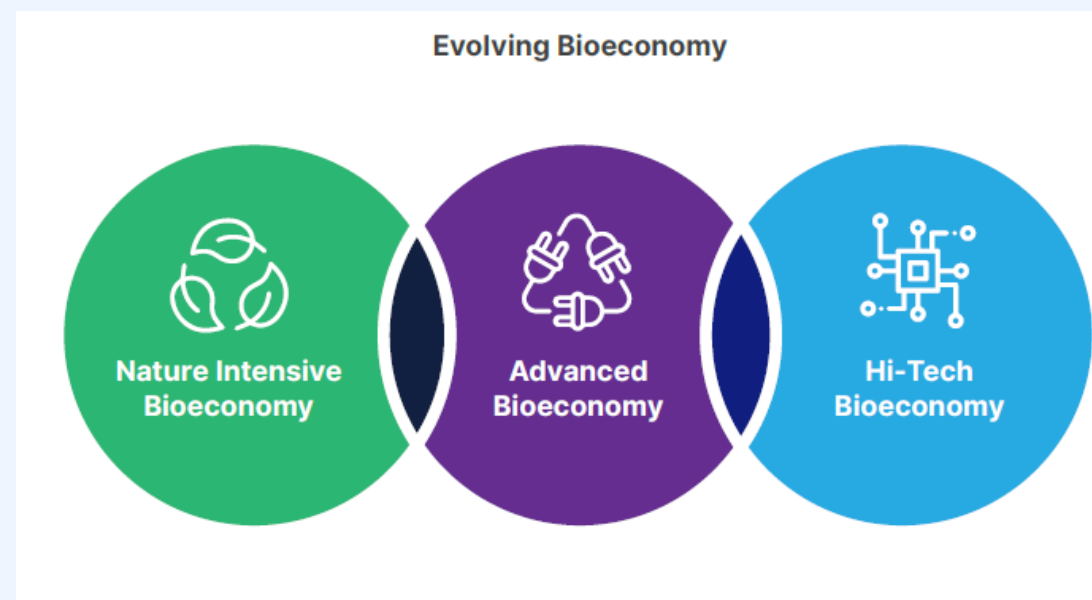
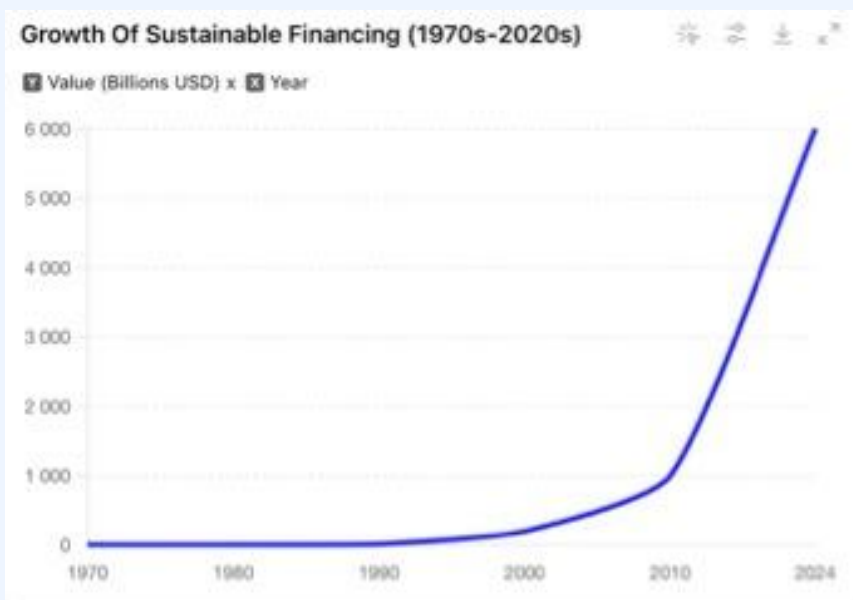
G20 High-Level Principles on Bioeconomy

Recognizing the remarkable potential of the 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 improve health and well-being, while 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 ensure 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, while 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).

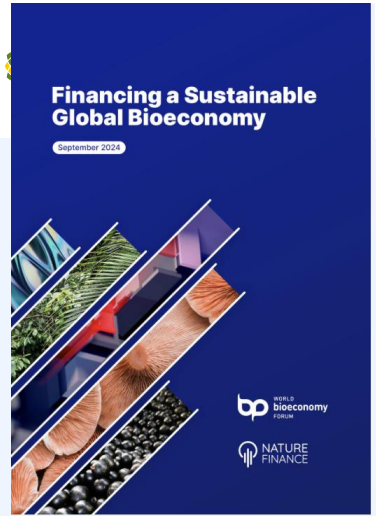
Sustainable Financing today



- Sustainable financing has developed since 1970s
- Primary focusing on Climate Change Mitigation and Biodiversity

- The Bioeconomy concept is evolving
- No concrete global understanding
 - Missing metrics and harmonised standards
 - Financing on commercial terms

Spectrum of investable bioeconomies



DESCRIPTION



Nature Intensive Bioeconomy

Utilizes biological resources, processes, and principles to produce goods and services. Encompasses agriculture, forestry, fisheries, food, and bioenergy. Aims for sustainable growth and reduced environmental impact.



Advanced Bioeconomy

Evolves traditional practices using innovative technologies and advanced biological processes. Provides sustainable alternatives to fossil-based products and enhances production efficiency and sustainability.



Hi-Tech Bioeconomy

Focuses on high-value, specialized, and technologically sophisticated bioproducts. Characterized by advanced functionalities and higher market value.

STAGE AND
LEVEL OF
INVESTMENT

Mature stage, significant investments, linked to traditional industries.

Evolving stage, continuous innovation, increasing investments from public and private sectors.

Dynamic stage, substantial R&D investments, significant funding for cutting-edge projects from both public and private sectors.

Competitiveness landscape



Bioresource vision



Biotechnology vision



Bioecology vision

| | | |
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| <p>Annual use \approx 1 billion ton</p> <p>Sentiment is to constrain use of biomass.</p> <p>Scenario on 40– 70% biomass gap by 2050.</p> | <p>Increasing sustainable use of biomass.</p> <p>Targeting 1 Billion tons of biomass annual use. (DOE 2023)</p> | <p>Biomassa capacity up 3,5 billion tons.</p> <p>China's annual biomass production will approach 3.8 billion tons by 2030 and surpass 5.3 billion tons by 2060.</p> |
| <p>A balanced approach, integrating biotechnology innovations to support sustainable bio-based industries.</p> <p>Stricter regulatory frameworks compared to the USA and China.</p> | <p>The USA primarily adopts a biotechnology vision in its bioeconomy strategy, prioritising technological innovation and industrial application in their bioeconomy strategies</p> | <p>China predominantly embraces a biotechnology vision, similar to the USA</p> |
| <p>The EU emphasizes responsible resource management, aiming to stabilise sustainable biomass use and advocate for circular economy principles.</p> | <p>Focus is minimal on ecological sustainability principles compared to the EU.</p> <p>However, efforts are underway to promote sustainable practices for resource optimisation</p> | <p>Beginning to incorporate ecological approaches, but the focus remains less pronounced compared to technological innovation and resource-intensive strategies.</p> |

Key Takeaways

- The bioeconomy is gaining momentum in global forums
- G20 High-Level Principles are aligning global understanding of the bioeconomy
- Bioeconomy financing mechanisms were introduced in Rio de Janeiro on 12 September
- The EU faces competition in the bioeconomy

Thank you!



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