



Food and Agriculture
Organization of the
United Nations

SUSTAINABLE BIOECONOMY AND FAO

PROJECT BRIEF



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INTRODUCTION

“The bioeconomy can be defined as the production, utilization, conservation, and regeneration of biological resources, including related knowledge, science, technology, and innovation, to provide sustainable solutions (information, products, processes and services) within and across all economic sectors and enable a transformation to a sustainable economy”

(International Advisory Council on Global Bioeconomy, 2020).

The cross-cutting nature of the bioeconomy offers a unique opportunity to comprehensively address interconnected societal challenges such as food and nutrition security, fossil resource dependence, natural resource scarcity and climate change, while achieving sustainable economic development.

The promotion of a bioeconomy is already high on the political agenda of more than fifty countries, many of which have created dedicated bioeconomy strategies and programmes. The combination of bioeconomy and digitalization is often seen as a major driver of the transformation of productive sectors.

However, the development of an economy that is based on biological resources faces several trade-offs, and not all activities are necessarily sustainable. It is therefore vital that countries promote the most appropriate bioeconomy strategies and programmes to achieve sustainability and the United Nations Sustainable Development Goals.

In particular, the development of the bioeconomy must not undermine food security, especially in areas with high levels of malnutrition.

On the contrary, the bioeconomy should be used as a vehicle to prevent malnutrition, including obesity, and other noncommunicable diseases, to find sustainable ways to manage our planet, and to preserve biodiversity both in natural systems and primary production. Traditional knowledge, research and innovation can help to develop applications in the fields of human, plant and animal health; food production, consumption and safety; and the environment. For example, the emerging field of microbiome research offers enormous potential in finding sustainable ways to produce, obtain and prepare food and other bioproducts.

FAO'S ROLE AND PROJECT INCEPTION

In January 2015, on the occasion of the Global Forum for Food and Agriculture in Berlin, 62 Ministers of Agriculture recommended that FAO coordinate international work on sustainable bioeconomy. This led to the formulation of the “Towards Sustainable Bioeconomy Guidelines” Project, whereby FAO guides countries' development of sustainable bioeconomy strategies and policies.

GOAL

The project aims to assist countries as well as producers and users of biomass and bioproducts in developing and implementing sustainable bioeconomy strategies, policies and programmes.

Timeframe: March 2017 – June 2023

KEY TARGET AUDIENCE

The primary target audience of this project is policymakers of FAO member countries who seek to develop bioeconomy sustainably. As this cannot be done in isolation, FAO's work on bioeconomy also addresses the private sector, academia, civil society and consumers.

PARTNERS

The International Sustainable Bioeconomy Working Group (ISBWG) is a multi-stakeholder expert group that serves as an informal platform for knowledge- and experience-sharing on sustainable and circular bioeconomy and acts as an advisory body to the project.

The ISBWG is composed of around 35 members with a broad range of expertise and backgrounds, from policy to research, private sector, civil society and international organizations, from all five continents.

Germany's Federal Ministry of Food and Agriculture is the primary resource partner for the project.



APPROACH

FAO's approach on sustainable and circular bioeconomy includes five operational work areas:

1. Partnerships: FAO leads international work on sustainable and circular bioeconomy through the [International Sustainable Bioeconomy Working Group \(ISBWG\)](#) and actively engages in global discussions on sustainable bioeconomy as a member of the International Advisory Council on Global Bioeconomy (IACGB), the Standing Committee on Agricultural Research (SCAR) and the EU-led International Bioeconomy Forum (IBF).

2. Normative and standard setting instruments: The ISBWG established a set of [Aspirational Principles and Criteria for Sustainable Bioeconomy \(P&C\)](#) in 2016. The P&C provide a reference list of common goals for a sustainable and circular bioeconomy and are considered a framework in monitoring systems, such as [the European Commission monitoring system](#), supporting evidence-based policy-making processes.

The 10 aspirational principles and 24 criteria were the basis of the report [Indicators to monitor and evaluate the sustainability of bioeconomy. Overview and a proposed way forward](#) (2019). The P&C were also the basis of the monitoring work developed by the Thünen Institute, as well as of a joint [Guidance note on monitoring the sustainability of the bioeconomy at a country or macro-regional level](#), which FAO developed together with the European Commission Joint Research Centre (JRC)..

3. Policy dialogue: FAO promotes policy dialogue to improve policy coherence between decision-makers from different Ministries and regions, the private sector, academia and civil society to support the development of sustainable and circular bioeconomy strategies and programmes of partner countries, in particular Namibia and Uruguay.

4. Capacity development: FAO's sustainable bioeconomy project improves capacity

through training and capacity building events, as well as a series of knowledge products on:

- ▶ Lessons learned on sustainable and circular bioeconomy worldwide and for different sectors, with a focus on food systems transformation. It includes the report [Towards Sustainable Bioeconomy. Lessons learned from case studies](#) (2019).
- ▶ Good practices and policies, through knowledge development during ISBWG seminars where members learn from each other and from external experts, as well as the report [How to mainstream Sustainability and Circularity into the Bioeconomy? A Compendium of Bioeconomy Good Practices and Policies](#) (2021), which contains 250 sources covering the entire continuum of economic sectors and activities included in the concept of the bioeconomy.
- ▶ Guidance on tools to develop and implement bioeconomy strategies, as well as on [monitoring](#).
- ▶ Special studies and foresight exercises on specific bio-innovations such as alternative proteins, alternatives to fossil-based plastic, and microbiome applications, including collaboration with FAO's interdepartmental Microbiome Food Systems working group, which led to the report [Microbiome: The missing link?](#) (2019).

5. Advocacy and communication: FAO's Sustainable and Circular Bioeconomy team uses different channels for advocacy and communication, including the ISBWG, IBF, and the IACGB. FAO also participates in and co-organizes global and regional conferences and workshops, such as at the [Global Bioeconomy Summit](#) in 2015, 2018 and 2020 and United Nations Climate Change Conference of the Parties. FAO also seeks to share bioeconomy good practices and policies with and contribute to international processes, such as Multilateral Environmental Agreements.

OVERVIEW OF THE ASPIRATIONAL PRINCIPLES AND CRITERIA FOR SUSTAINABLE BIOECONOMY

AGREED BY THE INTERNATIONAL SUSTAINABLE BIOECONOMY WORKING GROUP

PRINCIPLE 1. SUSTAINABLE BIOECONOMY DEVELOPMENT SHOULD SUPPORT FOOD SECURITY AND NUTRITION AT ALL LEVELS

- Criterion 1.1.** Food security and nutrition are supported
- Criterion 1.2.** Sustainable intensification of biomass production is promoted
- Criterion 1.3.** Adequate land rights and rights to other natural resources are guaranteed
- Criterion 1.4.** Food safety, disease prevention and human health are ensured

PRINCIPLE 2. SUSTAINABLE BIOECONOMY SHOULD ENSURE THAT NATURAL RESOURCES ARE CONSERVED, PROTECTED AND ENHANCED

- Criterion 2.1.** Biodiversity conservation is ensured
- Criterion 2.2.** Climate change mitigation and adaptation are pursued
- Criterion 2.3.** Water quality and quantity are maintained, and, as much as possible, enhanced
- Criterion 2.4.** The degradation of land, soil, forests and marine environments is prevented, stopped or reversed

PRINCIPLE 3. SUSTAINABLE BIOECONOMY SHOULD SUPPORT COMPETITIVE AND INCLUSIVE ECONOMIC GROWTH

- Criterion 3.1.** Economic development is fostered
- Criterion 3.2.** Inclusive economic growth is strengthened
- Criterion 3.3.** Resilience of the rural and urban economy is enhanced

PRINCIPLE 4. SUSTAINABLE BIOECONOMY SHOULD MAKE COMMUNITIES HEALTHIER, MORE SUSTAINABLE, AND HARNESS SOCIAL AND ECOSYSTEM RESILIENCE

- Criterion 4.1.** The sustainability of urban centres is enhanced
- Criterion 4.2.** Resilience of biomass producers, rural communities and ecosystems is developed and/or strengthened

PRINCIPLE 5. SUSTAINABLE BIOECONOMY SHOULD RELY ON IMPROVED EFFICIENCY IN THE USE OF RESOURCES AND BIOMASS

- Criterion 5.1.** Resource use efficiency, waste prevention and waste re-use along the whole bioeconomy value chain are improved
- Criterion 5.2.** Food loss and waste is minimized and, when unavoidable, its biomass is reused or recycled

PRINCIPLE 6. RESPONSIBLE AND EFFECTIVE GOVERNANCE MECHANISMS SHOULD UNDERPIN SUSTAINABLE BIOECONOMY

- Criterion 6.1.** Policies, regulations and institutional structures relevant to bioeconomy sectors are adequately harmonized
- Criterion 6.2.** Inclusive consultation processes and engagement of all relevant sectors of society are adequate and based on transparent sharing of information
- Criterion 6.3.** Appropriate risk assessment and management, monitoring and accountability systems are put in place and implemented

PRINCIPLE 7. SUSTAINABLE BIOECONOMY SHOULD MAKE GOOD USE OF EXISTING RELEVANT KNOWLEDGE AND PROVEN SOUND TECHNOLOGIES AND GOOD PRACTICES, AND, WHERE APPROPRIATE, PROMOTE RESEARCH AND INNOVATION

- Criterion 7.1.** Existing knowledge is adequately valued and proven sound technologies are fostered
- Criterion 7.2.** Knowledge generation and innovation are promoted

PRINCIPLE 8. SUSTAINABLE BIOECONOMY SHOULD USE AND PROMOTE SUSTAINABLE TRADE AND MARKET PRACTICES

- Criterion 8.1.** Local economies are not constrained but rather expanded through the trade of raw and processed biomass, and related technologies

PRINCIPLE 9. SUSTAINABLE BIOECONOMY SHOULD ADDRESS SOCIETAL NEEDS AND ENCOURAGE SUSTAINABLE CONSUMPTION

- Criterion 9.1.** Consumption patterns of bioeconomy goods match sustainable supply levels of biomass
- Criterion 9.2.** Demand-side and supply-side market mechanisms and policy coherence between supply and demand of food and non-food goods are enhanced

PRINCIPLE 10. SUSTAINABLE BIOECONOMY SHOULD PROMOTE COOPERATION, COLLABORATION AND SHARING BETWEEN INTERESTED AND CONCERNED STAKEHOLDERS IN ALL RELEVANT DOMAINS AND AT ALL RELEVANT LEVELS

- Criterion 10.1.** Cooperation, collaboration and sharing of resources, skills and technologies are enhanced when and where appropriate

With the financial support of:



MORE INFORMATION

Office of Climate Change, Biodiversity and Environment

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www.fao.org/in-action/sustainable-and-circular-bioeconomy

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