



Food and Agriculture
Organization of the
United Nations



Bioeconomy and Mainstreaming Biodiversity for Food and Agriculture

**LLDCs (Landlocked Developing Countries) Consultation
Meeting**

on the Pre-Zero Draft of New Declaration on 3R and Circular
Economy - *Sustainable 3R and Circular Economy Goals for Achieving
Resource Efficient, Clean, Resilient, Sound Material Cycle and Low-
Carbon Society in Asia and the Pacific (2024-2034)*

**7 August 2024, United Nations Lao PDR, Vientiane, Lao
PDR**

FAO Lao Country Office



Food and Agriculture
Organization of the
United Nations



1. Bioeconomy to halt biodiversity loss
2. Bioeconomy initiatives in Lao PDR
3. FAO's role in supporting bioeconomy



Food and Agriculture
Organization of the
United Nations



1. Bioeconomy to halt biodiversity loss



Bioeconomy to halt biodiversity loss

- Biodiversity and Agriculture are closely interlinked
- Agrifood systems – crop and livestock production, fisheries, aquaculture and forestry – manage significant parts of the biomass:
 - 44 % of the world's habitable land is agricultural land (48 million km²)*
 - 31% of the world's land area is forests – in half of it there is human activity
 - Oceans under fishing activities? 2%-55%



Source: <https://ourworldindata.org/land-use>

We should think of making our actions more responsible and sustainable !

Biodiversity is being lost at an unprecedented rate and progress in reverting this trend has so far been modest (SDGs Report, 2023).



Bioeconomy to halt biodiversity loss

- The bioeconomy is based on the **sustainable and circular use of biological resources and processes** to produce food, feed, bio-based products and services – has major potential to address several interlinked global challenges, including:
 - hunger and poverty
 - **biodiversity loss**
 - climate change
- Circular Economy strategies also seek to keep materials in the eco-sphere and the techno-sphere for as long as possible, rather than “discarding” them. This should help reduce resource use and energy demand, within a product’s life cycle (Ritz’en and Sandstrom, 2017).

The bioeconomy tackles the **five key direct drivers of biodiversity loss identified by IPBES***:

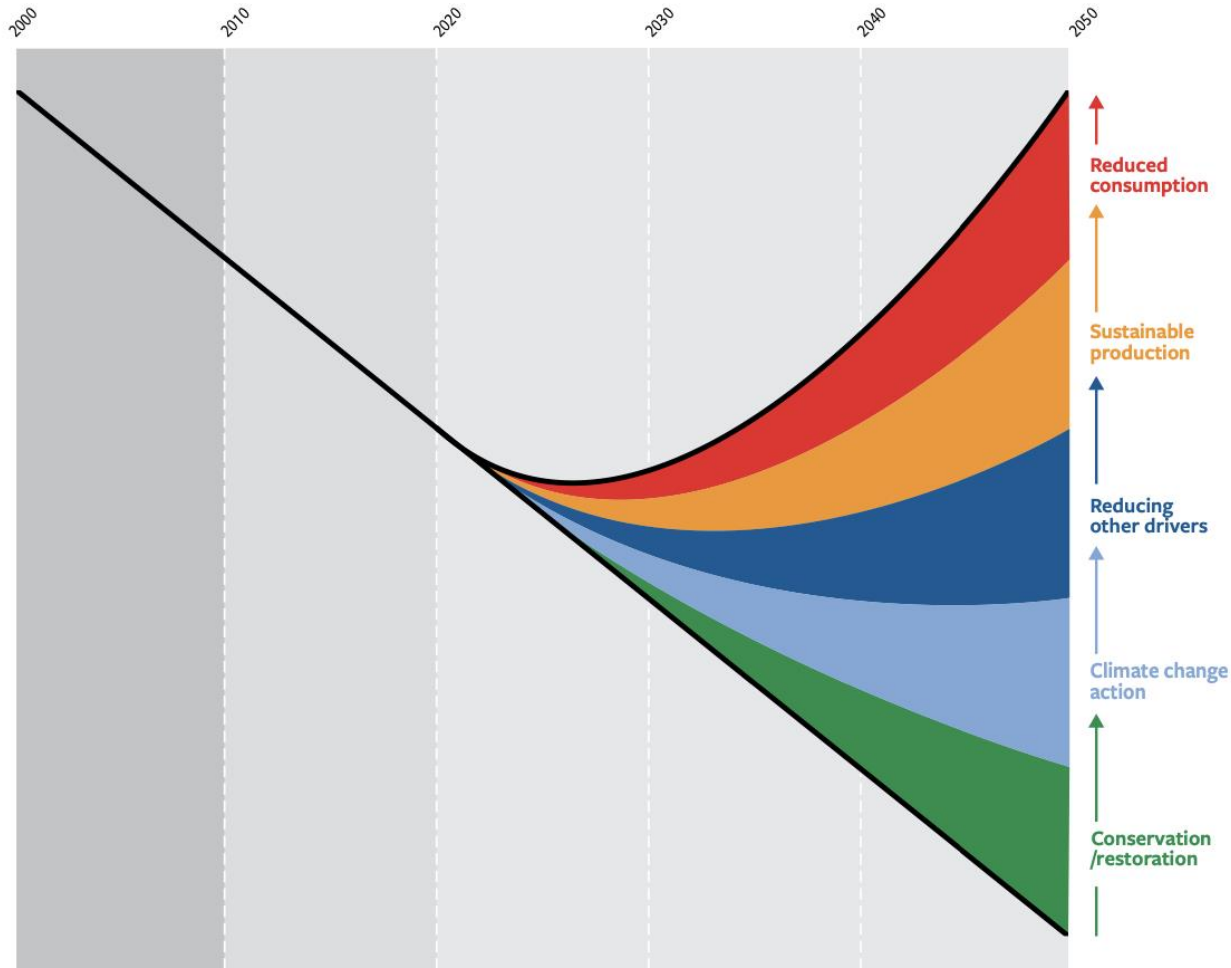
- **Land use changes:** It reduces the amount of land needed to provide resources to the economy
- **Exploitation of biodiversity:** It manages renewable resources such as fish stocks, soil biodiversity for the long term
- **Climate change:** It reduces greenhouse gas emissions across the economy
- **Pollution:** It reduces the use of synthetic chemicals
- **Invasive alien species** It designs out the waste on which invasive alien species can be transported to new ecosystems

*2019, IPBES. *The Global Assessment Report on Biodiversity and Ecosystem Services*. https://files.ipbes.net/ipbes-web-prod-public-files/inline/files/ipbes_global_assessment_report_summary_for_policymakers.pdf Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services(IPBES)



Bioeconomy to halt biodiversity loss

A portfolio of actions to reduce loss and restore biodiversity



Agrifood systems account for the largest share of the global bioeconomy and thus have enormous potential to bring about transformative solutions to reverse the biodiversity loss trend



Opportunities for Circular Bioeconomy to halt biodiversity loss (1)

1. Food Waste – an opportunity

931 million tonnes of food waste generated in 2019

- 17 % of total global food production wasted
- 11% in households, 5% in food service
- 2% in retail

Food waste can be converted to compost or used to produce biogas, thereby avoiding harmful methane emissions



2. Biofertilizers and Biopesticides

Organic wastes (crop residues, food waste, seaweeds and animal waste) can be converted into biofertilizer products rich in nitrogen, phosphorous, potassium and other nutrients and into biopesticides.

3. Bioenergy

- Bioenergy production as a tool for waste management (agricultural and forestry wastes and by-products) but also manure or microbial biomass, seaweeds.
- Sustainable modern bioenergy systems are closely linked with food security and energy security.



Opportunities for Circular Bioeconomy to halt biodiversity loss (2)



4. Recycling of nutrients

Soil organisms act as the primary driving agents of nutrient cycling, regulating the dynamics of soil organic matter, soil carbon sequestration and greenhouse gas emission, modifying soil physical structure and water regimes, enhancing the amount and efficiency of nutrient acquisition by the vegetation and enhancing plant health.

5. Reuse of water

- Urban and agricultural water can be treated and re-used as a resource.
- Need an integrated water management approach considering the system's and surrounding's perspectives and procedures for agri-food transformation.

6. Agroforestry Systems





Food and Agriculture
Organization of the
United Nations



2. Bioeconomy initiatives in Lao PDR

Regulatory framework (1)

Laos National Biodiversity Strategy and Action Plan (NBSAP) 2016-2025



Lao People's Democratic Republic

Peace Independence Democracy Unity Prosperity

National Biodiversity Strategy and Action Plan 2016 - 2025

Prepared by

The Ministry of Natural Resources and the Environment

*Endorsed by MONRE, Laos
National Biodiversity Strategy and
Action Plan (NBSAP) on Jan 2016*

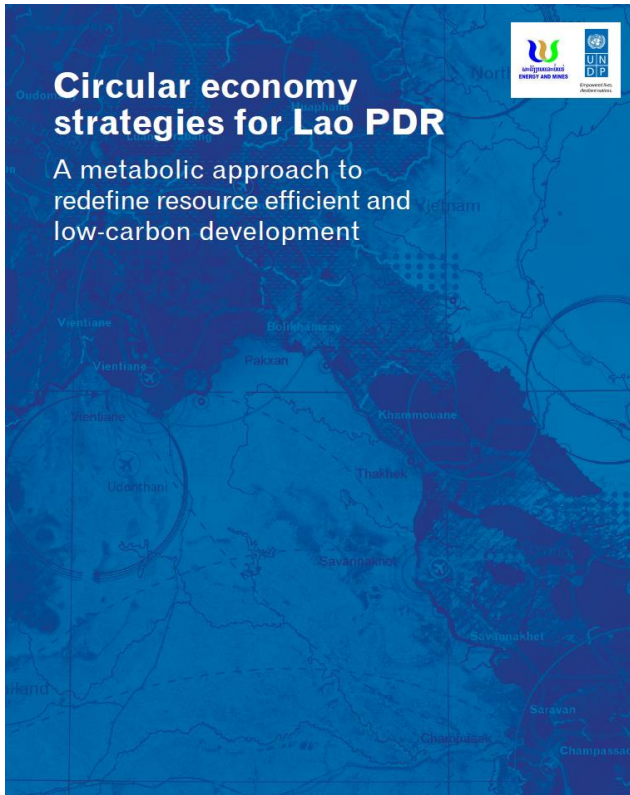
Focusing on 5 key strategic areas:

- **Strategy 1: Protect Ecosystems, Species, and Genetic Diversity**
- **Strategy 2: Integrate Biodiversity Value into Socio-Economic Decisions**
- Strategy 3: Strengthen Knowledge Base for Decision Making
- Strategy 4: Inspire and Enable Actions through Communication and Education
- Strategy 5: Enable Effective Preparation and Implementation of Plans



Regulatory Framework (2)

Circular Economy Strategies for Lao PDR 2017



Circular Manufacturing and Textiles:

- Recycling and Remanufacturing: Utilizing biological materials like natural fibers (e.g., hemp) in the textiles industry and remanufacturing components such as motorcycle parts.
- Bioleaching: Using bacteria to extract metals from electronic waste, reducing reliance on hazardous chemicals.

Circular Construction Materials:

- Cross Laminated Timber and Bamboo: Substituting carbon-intensive materials like concrete and steel with sustainable, bio-based materials for construction.
- Eco-Tourism: Promoting the use of local, bio-based construction materials in tourism infrastructure to enhance sustainability.

Agriculture and Hydropower:

- Algae Farming: Utilizing hydropower reservoirs for algae cultivation, which can produce bio-based materials such as bio-fertilizers, proteins, and potentially biofuels.
- Bio-Based Economy: Leveraging agricultural residues and organic waste to produce biodegradable plastics and other bio-based products.



The key initiatives at project level



Food and Agriculture
Organization of the
United Nations



Protected
Area System

The Agro-
Biodiversity
Initiative
(TABI)

Community-
Based
Conservation

Wildlife
Conservation

The Carbon
and
Biodiversity
Phase 2
Project
(CarBi 2)

Mainstreamin
g Biodiversity
in Agriculture

WWF-Laos
Conservation
Programme

Other small
projects on
biomass/
biogas





Food and Agriculture
Organization of the
United Nations



3. FAO's role in supporting bioeconomy

FAO's role in supporting bioeconomy (1)



Food and Agriculture
Organization of the
United Nations



FAO leads the International Sustainable Bioeconomy Working Group (ISBWG).

The Global Forum for Food and Agriculture in 2015 recommended that FAO should take the lead on global policy discussions on sustainable and circular bioeconomy in food and agriculture.



Multi-stakeholder expert group: private sector, civil society and international organizations.



Expertise and background from policy to research from all five continents.



Support to increase national capacities to develop strategies and policies for sustainability and circularity in the bioeconomy.



Facilitates international dialogue and serves as a platform for sharing knowledge and experiences on circular bioeconomy innovations, technologies, practices and policies.



Advisory body to FAO

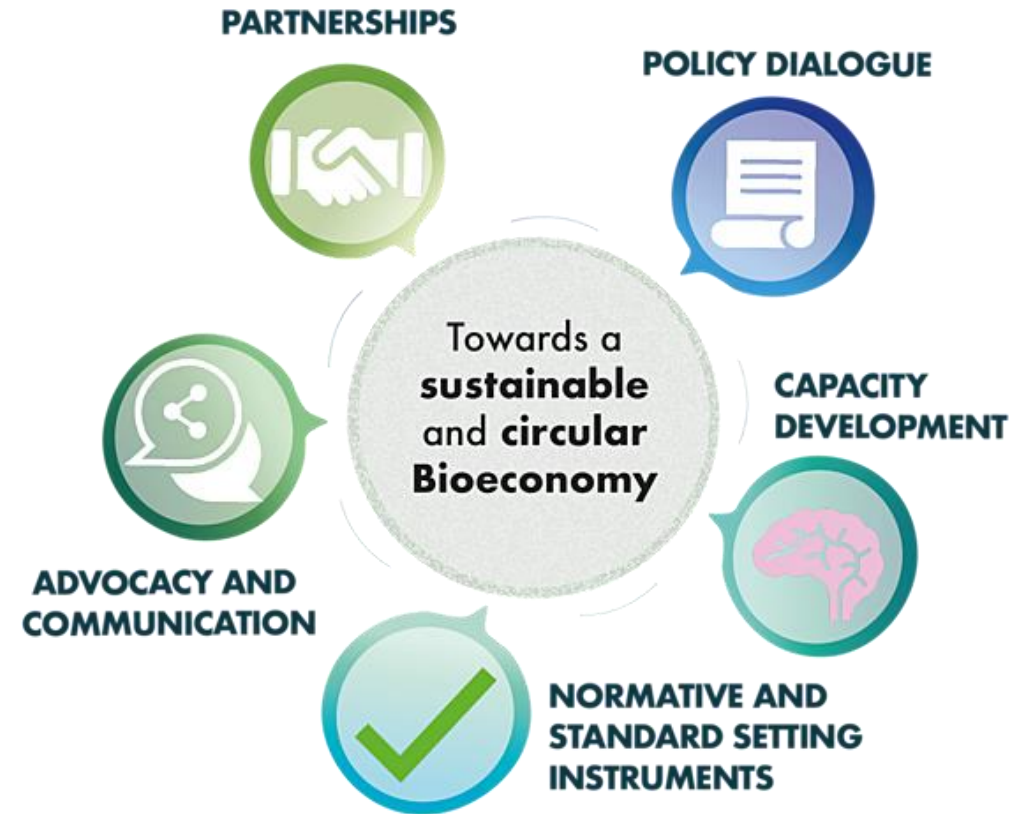


FAO's role in supporting bioeconomy (2)

Bioeconomy for Sustainable Food and Agriculture Programme

Moving towards a more strategic approach to bioeconomy:

- Improve the sustainability of agrifood systems with bioeconomy solutions at three levels: technological, organizational and social
- Policy support to improve policy coherence to achieve national sustainability objectives;
- Pilot countries to support the identification of sustainable and circular opportunities





Food and Agriculture
Organization of the
United Nations



Kob Chai Lai Lai/Thank you



FAO Sub-regional Office for the Pacific Islands