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From bioeconomy definitions to bioeconomy strategies targeted on promoting forest-based bioeconomy ?

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WHAT IS BIOECONOMY?

BIO + ECONOMY

Biology, biological
resources

+

Oïkonomia

(Oikos : house

Nomos : to manage)

The art of well
managing a house,
a territory and...

Bioresources.

- ✓ Production, transformation, use and conservation of **bioresources**
- ✓ Usually includes agriculture, fisheries, agro-food industries, **forests and wood industry**, all other processing of bio-based materials from construction to textiles, chemicals, pharmaceuticals, cosmetics, energy...
- ✓ No international definition of bioeconomy. No international convention or agreement
- ✓ No international statistics



BIOECONOMY

The bioeconomy is the production, utilization and conservation of biological resources, including related knowledge, science, technology, and innovation, to provide information, products, processes and services across all economic sectors aiming toward a sustainable economy.



Many national definitions of BIOECONOMY

Canada, “a healthy bioeconomy is the knowledge-based, competitive, and innovative production and sustainable use of biological resources, processes, and principles to provide eco-friendly goods and services.”

Finland, “bioeconomy refers to an economy that relies on renewable natural resources to produce food, energy, products and service”.

France, “bioeconomy includes all activities related to the production, utilization and transformation of bioresources. These activities are bound to meet society’s food needs and part of its material and energy needs, while providing ecosystemic services.”

Uruguay, “bioeconomy embraces primary production, the creation of new organic matter by plants and other organisms, human and animal health, bio-based product manufacturing, biofuels and biomaterials, and biochemistry”.

GREEN ECONOMY and BIOECONOMY



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An inclusive green economy is one that improves **human well-being** and builds **social equity** while **reducing environmental risks and scarcities** (UNEP)

More specialized policies on fossil GHG emission reductions: low-carbon, low-fossil-fuel or decarbonized economy strategies

Bioeconomy is focused on production, utilization and conservation of **bioresources only**.

Sustainable bioeconomy is naturally part of green economy.

Bioeconomy as a whole **is not part** of green economy, **when** it is **not managed** according to **sustainable** and inclusive practices.



From BIOECONOMY to... Forest-based bioeconomy and to wood-based bioeconomy

Forest-based bioeconomy

A bioeconomy made of all biological resources available in forests.

FAO definition of forest (FRA) :

- ▶ **Land spanning more than 0.5 hectares**
- ▶ **with trees higher than 5 meters and a canopy cover of more than 10 percent, or trees able to reach these thresholds *in situ*.**
- ▶ **It does not include land that is predominantly under agricultural or urban land use.**

Wood-based bioeconomy

A bioeconomy made of all biological resources derived from wood (including wood that doesn't come from forests and recycling of wood products).

WHY DEVELOPING A CIRCULAR SUSTAINABLE BIOECONOMY IS URGENT ?



- Population is quickly rising and available natural resources are limited.

*Extraction of raw materials **increased 10 times** during 20th century. 90 billion tons extracted in 2018 (75% of new fossil resources and 25% biomass - **Trend** : 180 billion tons in 2050 !*

- Possible to mitigate climate change through less production of non-renewable materials, less fossil energy consumption, more efficient resource use, more recycling and...

sustainable renewable BIOECONOMY



**NATURE-BASED SOLUTIONS TO CLIMATE CHANGE
AND RESOURCE SCARCITY**



Towards a circular sustainable wood-based bioeconomy

Circular economy promotes the retention of value and the reduction of environmental impacts while simultaneously reducing costs and creating economic opportunities. Policy considerations include establishing effective infrastructure for **waste management and recycling, incentivizing extended product life cycles and intelligent product design**, and ensuring that current regulations create no barriers to development or adoption of value-retention processes.

International Resource Panel, 2018: Re-defining Value

Towards a circular sustainable wood-based bioeconomy

Possible main policy directions :

- Sustainable production and efficient use of wood (for example in the construction sector)
- Inclusion of small and medium producers
- Processing and reuse of residues
- Cascading, eco-design and circularity



ENHANCING SUSTAINABLE FOREST VALUE CHAINS THROUGH BIOECONOMY POLICIES

ENVIRONMENTAL

Landscape and site productivity and environmental values are sustained

INSTITUTIONAL

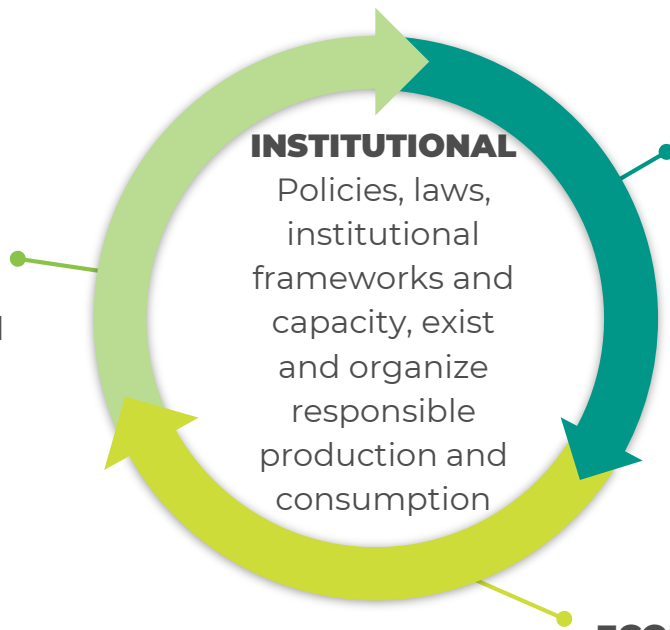
Policies, laws, institutional frameworks and capacity, exist and organize responsible production and consumption

SOCIAL

Human and labor rights are respected

ECONOMIC

Firms throughout the chain are profitable





“HOW DOES THE **FOREST SECTOR** CONTRIBUTE TO THE BIOECONOMY?”



Bioeconomy strategies in the world

According to the German bioeconomy portal (*Global bioeconomy summit*) 48 countries are developing activities related to potential bioeconomy strategies



National bioeconomy strategies with forest-based bioeconomy compounds

- 42 countries in the world approved a national bioeconomy strategy (or strategies partially covering bioeconomy) ;
- 16 countries inserted in this national strategy a forestry and wood sector development compound (Austria, Finland, France, Germany, Ireland, Lithuania, Netherlands, Norway, Russia, Sweden, Spain, Canada, Uruguay, Japan, Vietnam and Australia) ;
- Leadership comes from various ministries (agriculture, forestry, fishery, economy, trade, research)

National bioeconomy strategies with forest-based bioeconomy compounds in Europe

- Promotion of sustainable forest management ;
- To raise added-value from forest products through innovation ;
- To lower dependence on imported fossil materials and energy ;
- To focus on efficient and cascading uses of biomass + R&D for pilot plants (Netherlands) ;
- Research and innovation for cross-industrial collaboration to replace fossil resources with renewable ones + biorefineries + recycling of all industrial bio-based by-products (Sweden)
- To build knowledge-intensive highly qualified economic activities leading to biorefinery plants (Lithuania)

National bioeconomy strategies with forest-based bioeconomy compounds in Russia, Asia and Australia

Russia : better sustainability from forest to the industry (from wood harvest to chlorine-free bleaching for pulp and paper industries), recycling and valorization of waste from wood industries + intersectoral biotech platform ;

Japan : national plan for promotion of biomass utilization, including research on biotechnologies, biomass processing clusters for regional industrialization, biomass recycling programme and green public procurement policy ;

Vietnam : priority for wood industries development (in particular furniture industries) for increased value-added from forest sector ;

Australia : strengthening technology use in wood and biogenic waste processing, increasing market shares of biochemicals, bioplastics and composite biomaterials.

Two pioneer countries with national strategies specifically dedicated to forest-based bioeconomy

- in **Finland** « Wood-based bioeconomy solving global challenges »
- in **Canada** « A forest bioeconomy framework for Canada »

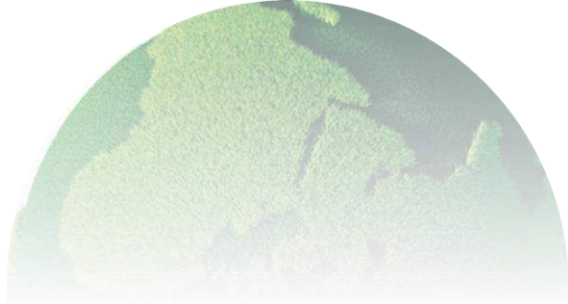
Main focuses of these strategies :

- ▶ Forest-based bioeconomy for societal and economic transformation
- ▶ Sustainable wood production
- ▶ Research programme and innovative wood-based products to meet population needs
- ▶ Economic development strategy tailored to company profiles (global, SME's and start-ups).
- ▶ Inclusion of all forest and wood stakeholders in action plan, incl. municipalities, indigeneous pepole, consumers
- ▶ Ex-post assessment



Way Forward

- ▶ Preparing **guidance** and **indicators** for sustainable wood-based bioeconomy
- ▶ Supporting inclusion of wood in **national bioeconomy strategies**; and
- ▶ Working with developing countries to **mainstream efficient use of sustainable wood products** in the national and regional economies.
- ▶ Creating a **working group** for sustainable wood in the bioeconomy



THANK YOU !

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