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Chile (GMT-4)

Webinar internacional

Bioeconomía:
productividad para
una sociedad más
sustentable



Organiza
Fraunhofer
CHILE

Estrategia de Bioeconomía Sostenible. La experiencia de Uruguay

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DE ECONOMÍA



UNIVERSIDAD
DE LA REPÚBLICA
URUGUAY

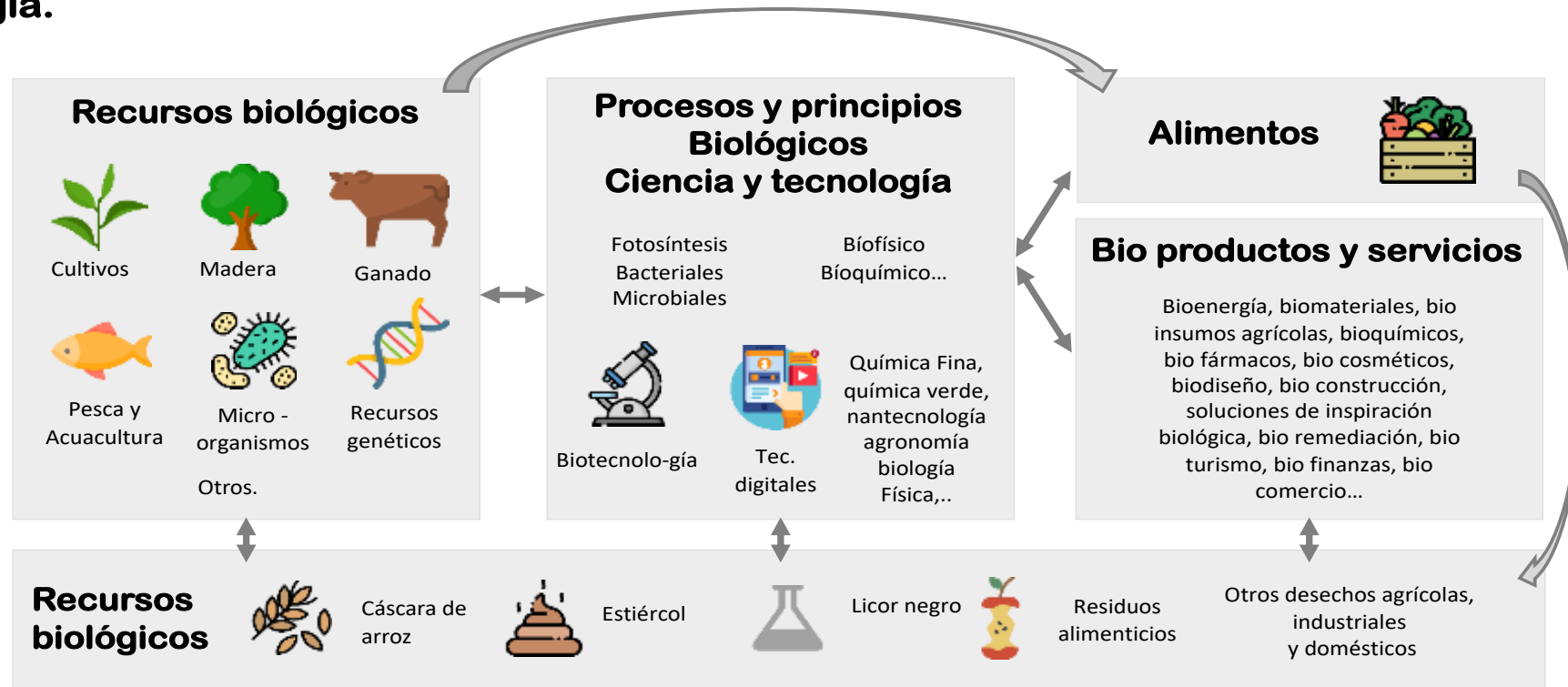
Índice de la presentación

1. Estrategia borrador de bioeconomía en Uruguay
2. Diversificación de la estructura

2. ESTRATEGIA (BORRADOR) DE BIOECONOMÍA EN URUGUAY

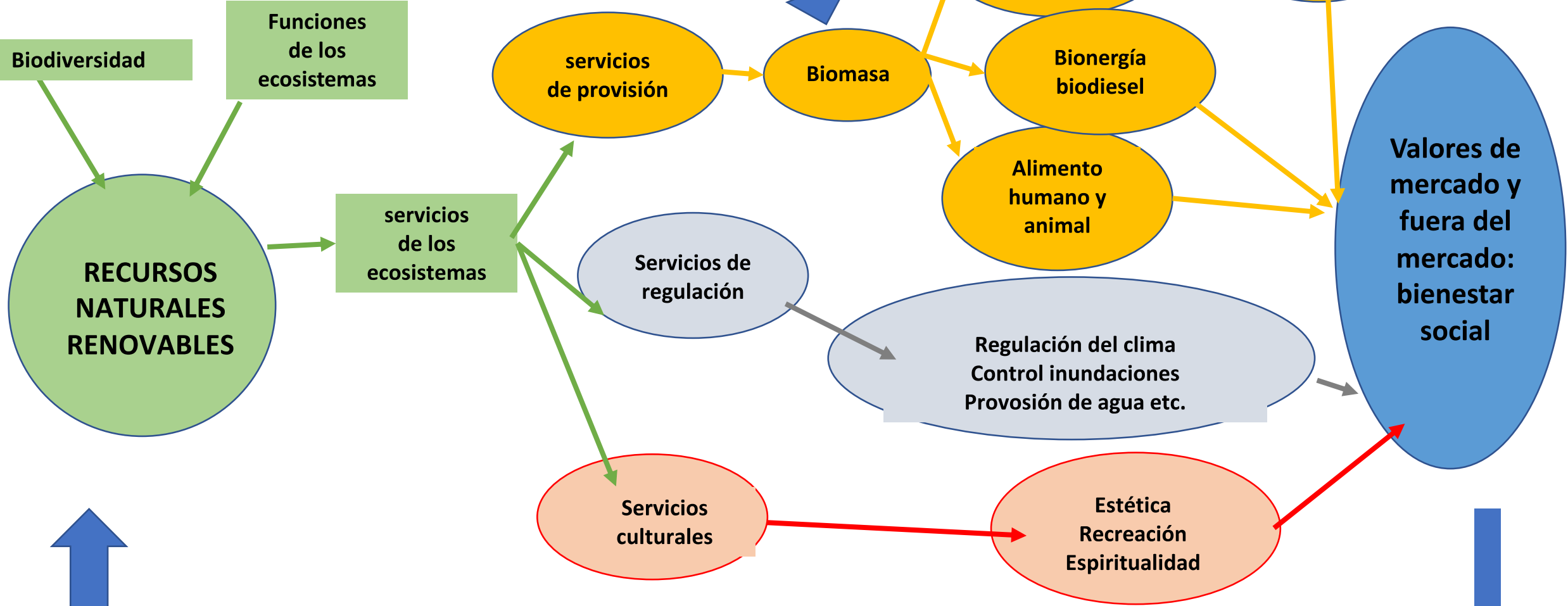
BIOECONOMÍA SOSTENIBLE

Economía basada en la producción de bienes y servicios a partir del uso directo o la transformación sostenible de los recursos biológicos, aprovechando los principios y procesos biológicos, la ciencia y la tecnología.



Fuente: Ministerio de Ganadería, Agricultura y Pesca en base a CEPAL y Consejo Alemán

bioeconomía circular



Fuente: Hetemäki (2017)

GESTIÓN SUSTENTABLE DE LOS SERVICIOS ECOSISTÉMICOS

OBJETIVOS
DE DESARROLLO
SOSTENIBLE



INFORME NACIONAL VOLUNTARIO - URUGUAY 2017

SUSTAINABLE
DEVELOPMENT
GOALS

SUMMARY

VOLUNTARY NATIONAL REVIEW - URUGUAY 2018



SUSTAINABLE
DEVELOPMENT
GOALS



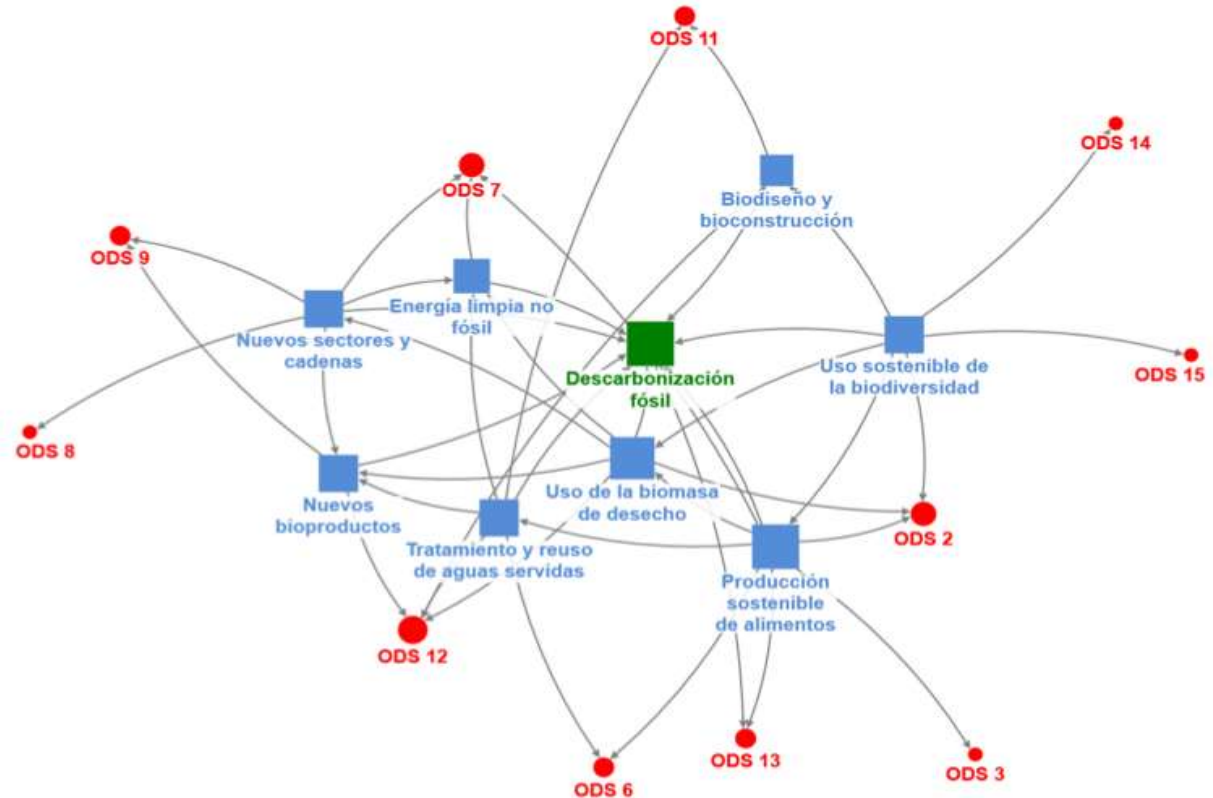
SUMMARY

VOLUNTARY NATIONAL REVIEW - URUGUAY 2019

BIOECONOMÍA y ODS CEPAL, 2017

Bioeconomía y la Agenda de Desarrollo 2030

Relación entre ámbitos de la bioeconomía y los Objetivos de Desarrollo Sostenible



La Estrategia de Bioeconomía Sostenible de Uruguay (borrador técnico elaborado)

1

Desarrollo territorial inclusivo

Fomentar el desarrollo local de los territorios en función de los efectos de localización de la biomasa y su lógica económica, social e institucional

Líneas de acción:

1. Promover el empleo verde
2. Desarrollar capacidades empresariales para la producción, innovación y gestión
3. Fomentar conglomerados territoriales como bioclústers

2

Sostenibilidad del consumo y la producción

Fomentar un consumo y una producción sostenibles.

Líneas de acción:

1. Promover el desarrollo de una agricultura, ganadería, silvicultura, pesca y acuicultura sostenibles
2. Promover la resiliencia y regeneración de los ecosistemas para la mejora de los servicios ecosistémicos de provisión, regulación y culturales
3. Informar, sensibilizar, regular e incentivar el consumo responsable.
4. Influir en las elecciones de los consumidores al destacar la sostenibilidad de los productos de la bioeconomía a través de la comunicación activa y la regulación
5. Promover la producción de alimentos, bebidas e ingredientes sostenibles y reducir las pérdidas y desperdicios de alimentos.
6. Promover una industrialización de la biomasa no comestibles (biofarma, bioquímica, bioinsumos agrícolas etc.).
7. Fomentar la circularidad en todo el ciclo de vida del producto.
8. Promover la digitalización de la bioeconomía

3

Inserción internacional sostenible

Buscar nichos de mercado para colocar productos con 'valor agregado ambiental', anticipándose a regulaciones futuras internacionales sobre sostenibilidad

Líneas de acción:

1. Generar estudios sobre el concepto de "valor agregado ambiental" y su impacto sobre la inserción internacional de Uruguay
2. Fortalecer la participación en ámbitos internacionales
3. Abordar las cadenas de valor regionales y globales en conjunto
4. Crear, actualizar y revisar la normativa local que promueva y facilite la producción de bioproductos y se adapte al ámbito internacional

4

Ciencia, tecnología e innovación orientada a la bioeconomía

Desarrollar, promover e implementar ciencia, tecnología e innovación enfocada en la bioeconomía

Líneas de acción:

1. Apoyo a la generación de una masa crítica de Ciencia, Tecnología e Innovación en bioeconomía
2. Articular y fortalecer alianzas
3. Desarrollar las biorefinerías
4. Derechos de propiedad Intelectual y protección del acceso a los recursos genéticos para investigación
5. Implementar compras públicas bioeconómicas

EJES ESTRATÉGICOS

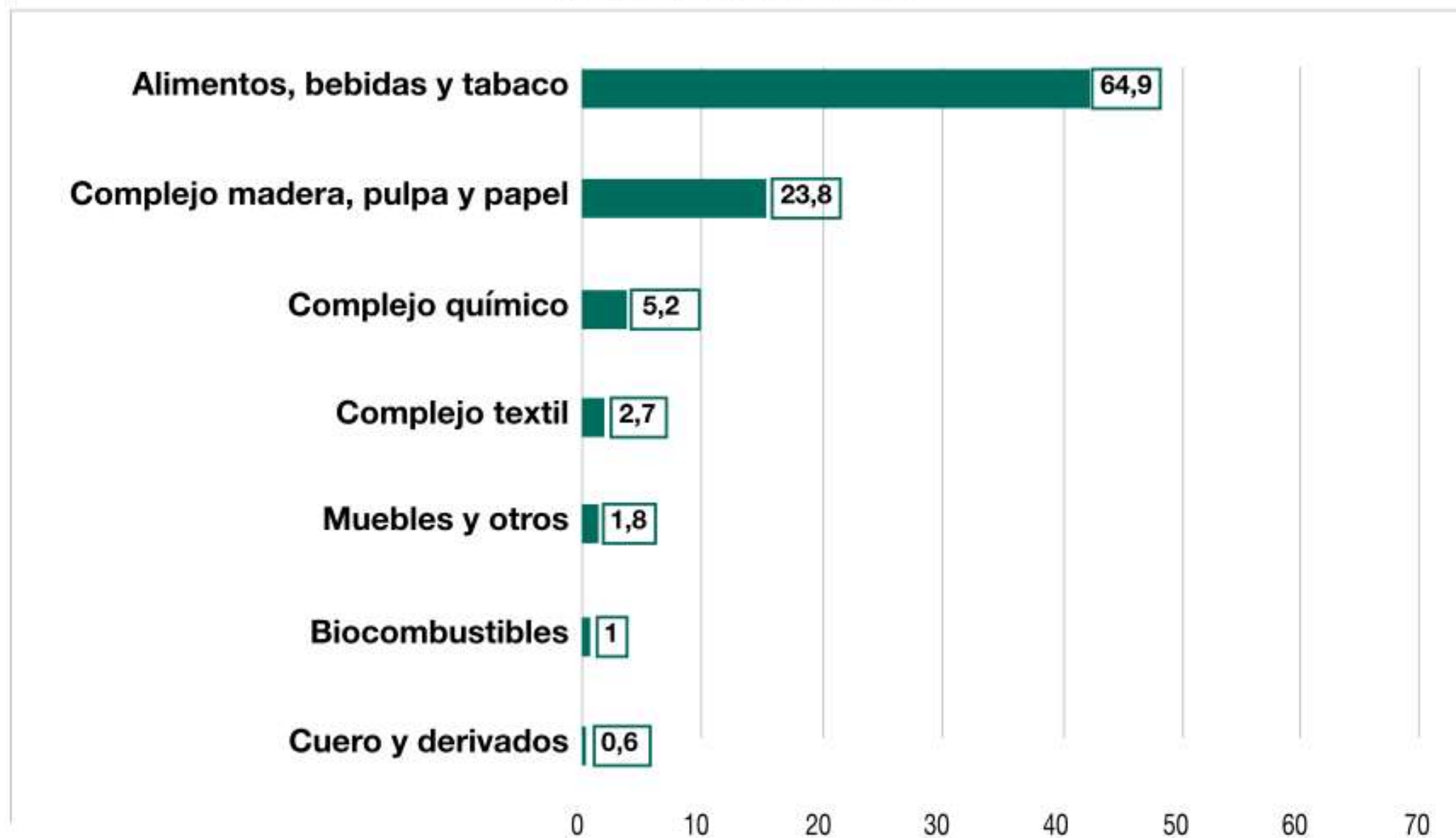
Cuenta Satélite Bioeconomía-2018



Fuente: IICA (2021)

Gráfico 2. Valor agregado industrial de base biológica por rama en Uruguay.

(Año 2018- % del total de bio)



Fuente: Elaborado con base en a CNUy-BCU (2016) (2020)

2. DIVERSIFICACIÓN SOSTENIBLE DE LA ESTRUCTURA PRODUCTIVA

**Sector forestal es un candidato
ideal para la bioeconomía**



The Future of Forest-based Bioeconomy Areas

Strategic openings in Uruguay and the World by 2050

Rafael Popper | Nina Rilla | Klaus Niemelä |
Juha Oksanen | Matthias Deschryvere |
Matti Virkkunen | Torsti Loikkanen

Foresight Study:

Step 1

Kick-off conference, mobilisation and scoping workshop

- Inception meeting and multi-actor mobilisation event
- Coordination protocols
- Co-creation of key FBA foci

Step 2

Mapping key FBA and critical issues in the world

- FBA assessment
- Mapping and assessing critical issues by FBA
- Analysis of global business news and data from Factiva

Step 3

Mapping GVN and assessing FBA needs and gaps in Uruguay

- Mapping the key FBA context and targets in Uruguay
- Global value network analysis
- Assessment of needs, gaps and aspirations

Step 4

Aligning aspirations with shared FBA visions for Uruguay

- Identifying multi-stakeholder aspirations
- Mapping common targets by FBA
- Promoting shared FBA visions by 2050

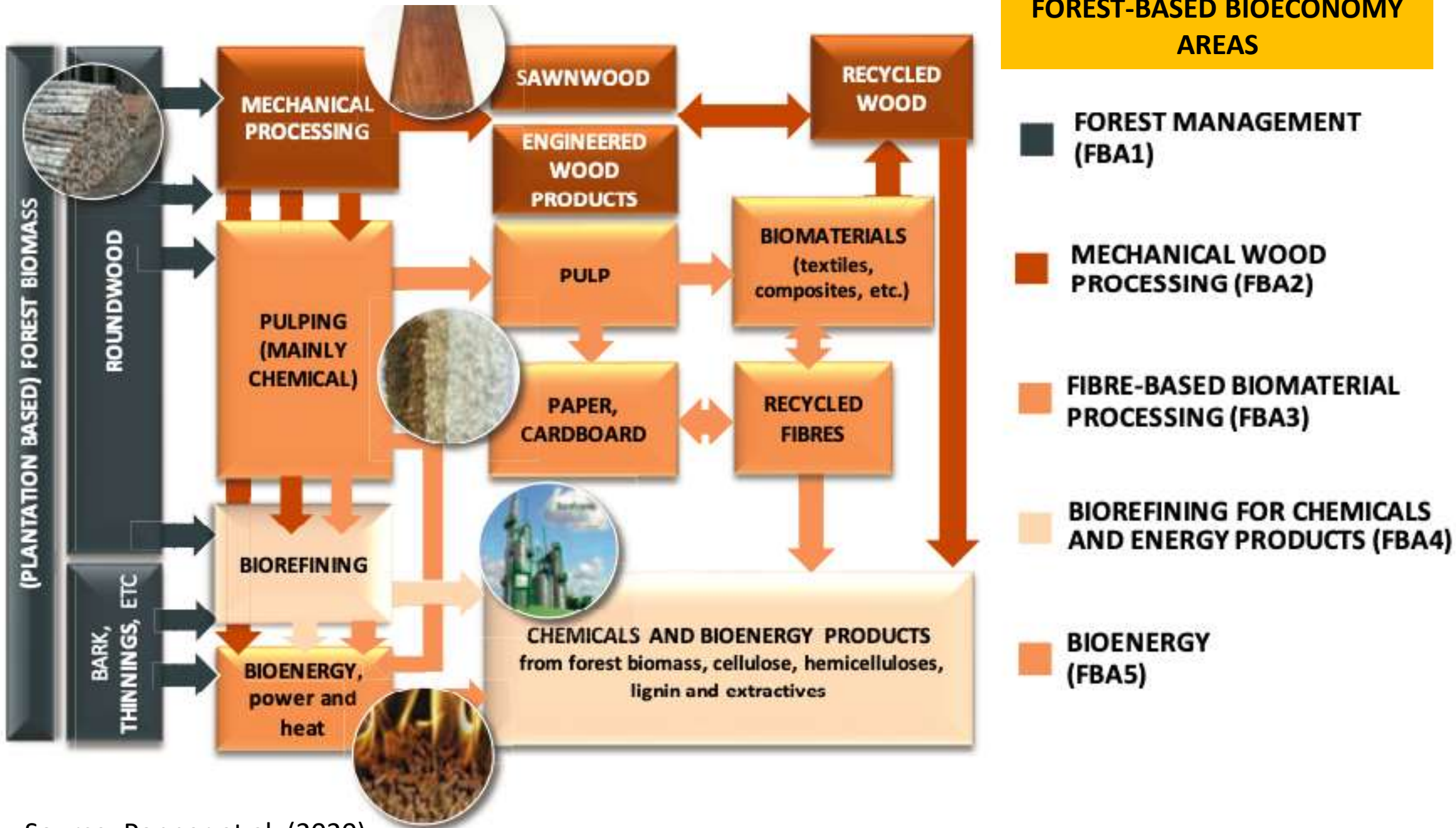
Step 5

Creating strategic action roadmaps for key FBA in Uruguay

- FBA opportunity pathways analysis
- Co-creation of 15 action roadmaps
- Action roadmaps consolidation by FBA

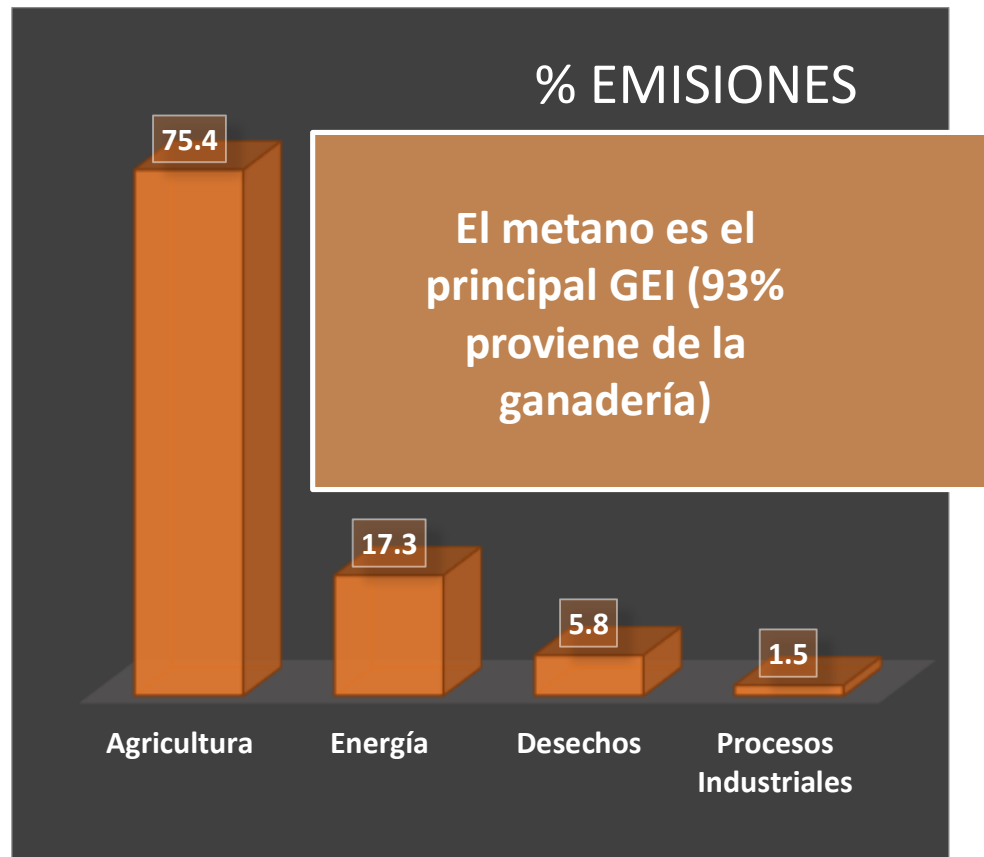
<https://cris.vtt.fi/en/publications/the-future-of-forest-based-bioeconomy-areas-strategic-openings-in>

FOREST-BASED BIOECONOMY AREAS



Source: Popper et al. (2020)

Emisiones de Gases de efecto invernadero (GEI) Fuerte predominio del sector agropecuario



100% del secuestro está en el sector agropecuario:

- Fotosíntesis.
- Bosque nativo y plantaciones forestales
- Suelos



**Bosque nativo protegido
por Ley: no hay
deforestación neta en
Uruguay**



**Sistemas
silvopastoriles:
incipientes**

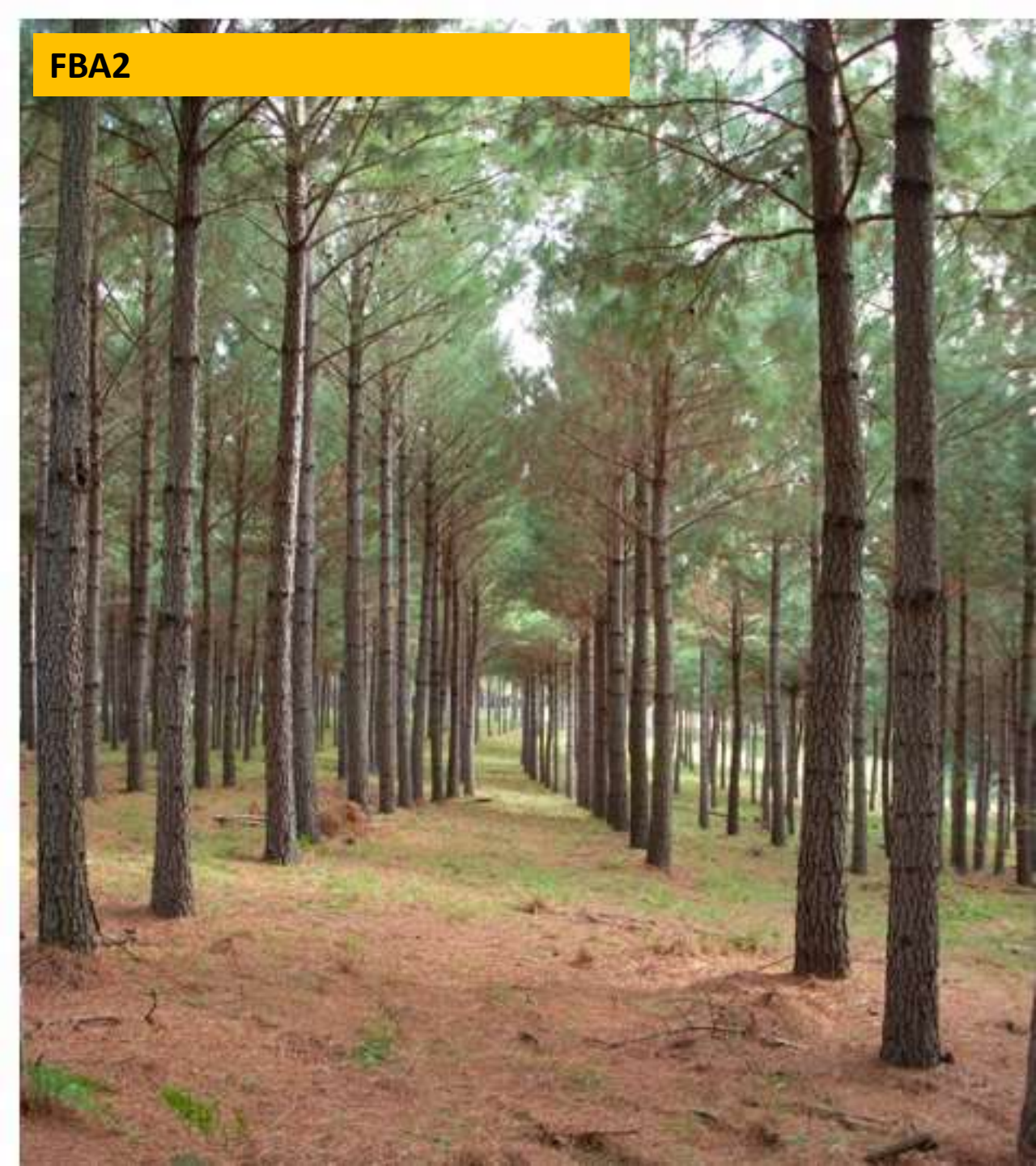
Incluidas en la Contribución Determinada a nivel Nacional (NDC) UNFCCC

- **Aumento del bosque nativo**
- The total coverage of native forests has, actually, increased in the past 30 years, and it is now 752000 hectares. Carbon stocks in these forests have increased due to the expansion of the area and due to secondary growth, in about one third of the surface. This responds to legal regulations that ban native forest logging and to tax exemption incentives provided to registered areas with native forests, which amounts to approximately USD 5 million a year. By 2030 annual CO₂ removals from native forests by means of domestic resources are expected to be around 1300 Gg and up to 2500 Gg with additional means of implementation
- **Área de plantaciones forestales con destino abrigo y sombra incambiadas**
- Given the importance of livestock production in Uruguay, the area of shelter and shade forest plantations that support this production and provide well-being to the animals are essential in the country. This is why Uruguay's unconditional objective is to keep 100% of the current area of shelter and shade forest plantations for 2025, thus preserving the carbon stock in these areas. In addition, subject to additional means of implementation, the country aims to increase by almost 10,000 hectares the area of shelter and shade forest plantations for livestock and in almost 10,000 hectares the area of silvopastoral systems, which will represent an additional sequestration of 393 Gg of CO₂ per year.

FBA 2: Procesamiento madera mecánica

- **FBA2 Vision for Mechanical wood processing** The industry of mechanical transformation of wood makes an efficient, innovative and integral usage of the wood resource, boosted by construction demand and embedded in global value chains.
- **Recommendation:** To adapt competitive sawn wood and plywood products (including standards) to international and domestic building with wood markets and distribution channels (for both pine and eucalyptus)

FBA2

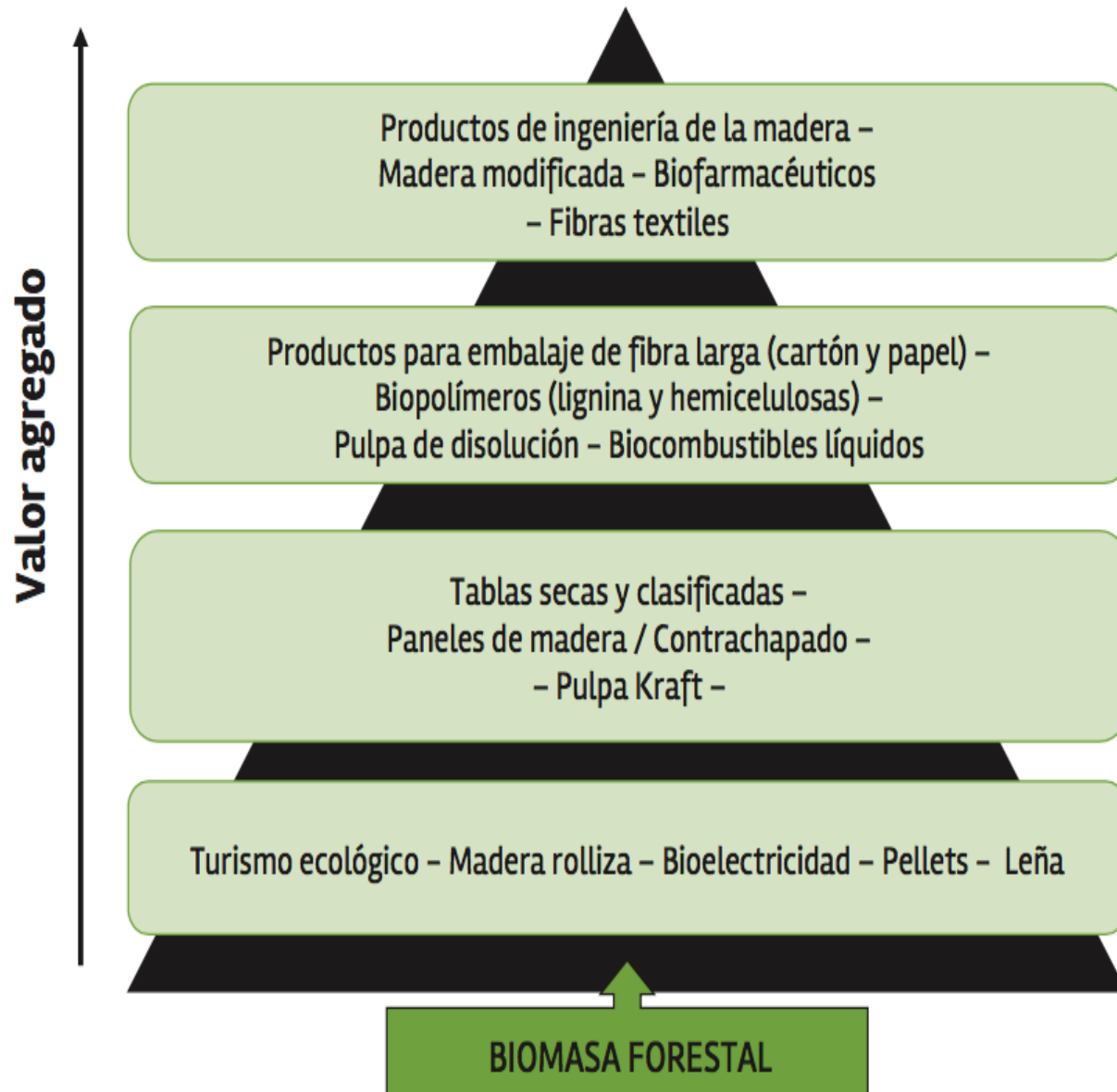




Uruguay



TRANSFORMACIÓN DE LA BIOMASA FORESTAL



PRODUCTOS DE INGENIERÍA DE LA MADERA

POSADA JOSÉ IGNACIO



- First construction in CLT (VIK hotel, José Ignacio)
- Anastasio Hotel
- Casino Hotel Argentino
- Atchugarry Foundation
- Montoya Reserve
- Ciudad Vieja Building - National Interest
- Tacuarembó educational-technological pole

MUSEUM OF LATIN AMERICAN ART - Atchugarry Foundation



ARTICLE 270

The promotion of the use of wood for housing, carpentry and furniture construction purposes is hereby declared to be of general interest.

Fibre-based biomaterials processing (FBA3)

Traditionally the focus in this forest-based bioeconomy area has been in pulp, paper and fibre-based packaging production. There are novel types of biomaterials include **foams, new kinds of textile fibres and yarns and (bio)composites.**

Increasing the number of pulp types or grades produced addresses, at least partly, **the strong need to diversify forest sector activities in order not to become too dependent on only one tree species or only pulp as end product in Uruguay.** Producing different grades of pulp from eucalyptus but also from pine would lessen vulnerability for global demand fluctuations in specific types of pulp for the country as a whole. At the same time, it would allow product diversification offering path to new markets and market segments,

Recommendation: Encourage large companies to consider investments also in other type of pulp mills, such as pine kraft pulp, eucalyptus dissolving pulp and eucalyptus NSSC pulp mills.

UPM planta. Fray Bentos



**Montes del Plata (Stora Enso-Arauco) planta.
Colonia**



Construcción 2d plant UPM (abre 2022)

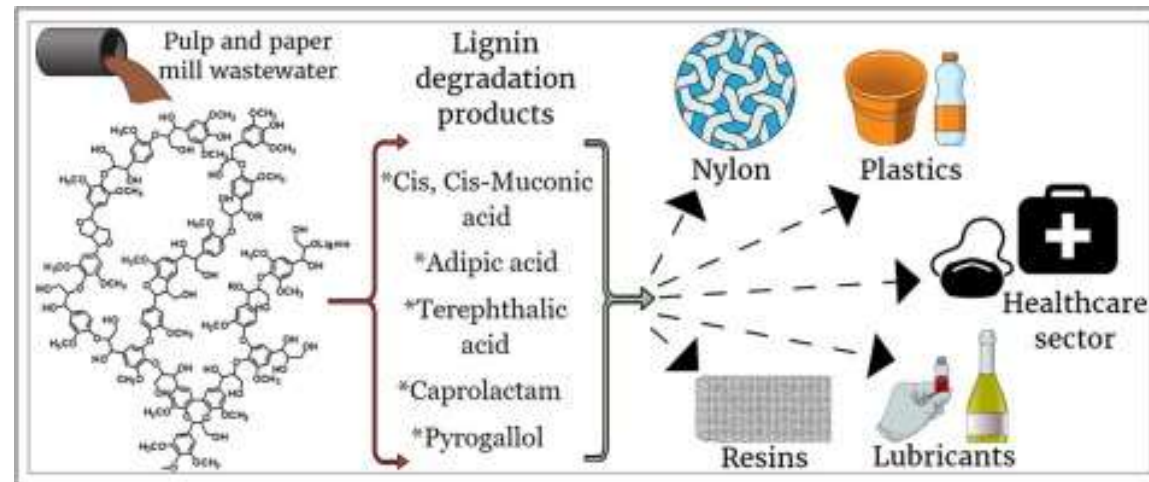


Biorefining (FBA4)

Whereas FBA 3 concentrates on fibre-based bio- materials, the focus in biorefining is in manufacturing value added biochemical and bioenergy products from forest biomass. **Circular bioeconomy approach emphasizes** the role of industrial symbioses and utilization of industrial by-products and side-streams in biorefineries.

Recommendation:

Encourage the creation of networks to joint utilisation of different residues and wastes from forest industry and other sectors, to produce different biochemicals, materials and biofuels.



Wood-based bioenergy can be produced by using residues from harvesting and mechanical wood processing. It also plays an important part of integrated pulp mills and biorefineries

In pulp and paper industry, the use of the power produced by the combustion of the side-product black liquor has become a mainstream solution throughout the world. Excess capacity of generated electricity in kraft pulp mills are often fed into external grid. The high demand of pulp-based packaging in the world markets are currently driving up the excess bioelectricity available from the pulp mills.

Recommendation:

Seizing opportunities for small-to-medium scale Combined Heat and Power (CHP) plants at new and existing mechanical wood processing sites and biorefineries.

Source: Popper et al. (2020)

