

Bioeconomy and Sustainability: An Integrative Framework for the Transformation of Production and Education – Lessons from Chile and Finland

Outline

- **Promising Bioeconomy Initiatives in Chile**
- **Bioeconomy Applications in *Agricultural & Forest Biosystems***
- **Challenges in Human Capital Development**
- **Outcomes of the Ongoing Engagement with Finland**



The triple crisis: climate change, biodiversity loss and pollution



Decision to embrace Bioeconomy

to ensure sustainable
environmental sustainability



CHILE: National Land Area by Type of Land Use

Uso del Suelo		Superficie (ha)	%
1	🏢 Áreas Urbanas e Industriales	796.720	1,1
2	👤 Terrenos Agrícolas	3.230.542	4,3
3	🌾 Praderas y Matorrales	30.240.377	39,9
4	🌲 Bosques	18.030.735	23,8
4.1	🌲 Plantaciones Forestales	3.114.125	4,1
4.2	🌲 Bosque Nativo	14.737.485	19,5
4.3	🌲 Bosque Mixto	179.125	0,2
5	🌿 Humedales	854.896	1,1
6	🏔️ Áreas Desprovistas de Vegetación	17.347.106	22,9
7	❄️ Nieves Eternas y Glaciares	3.466.361	4,6
8	💧 Cuerpos de Agua	1.431.227	1,9
9	⚠️ Áreas no Reconocidas	331.199	0,4
Total		75.729.163	100



Promising Bioeconomy Initiatives in Chile



Circular territory: Program driven by CORFO and the Ministry of the Environment, and implemented by SOFOFA Hub.



Bioeconomy Agreement: “Fostering Green Transition: Bioeconomy in Chile and Finland”



Bioeconomy Consortium – CTCI Node, Central-Southern Macrozone of Chile

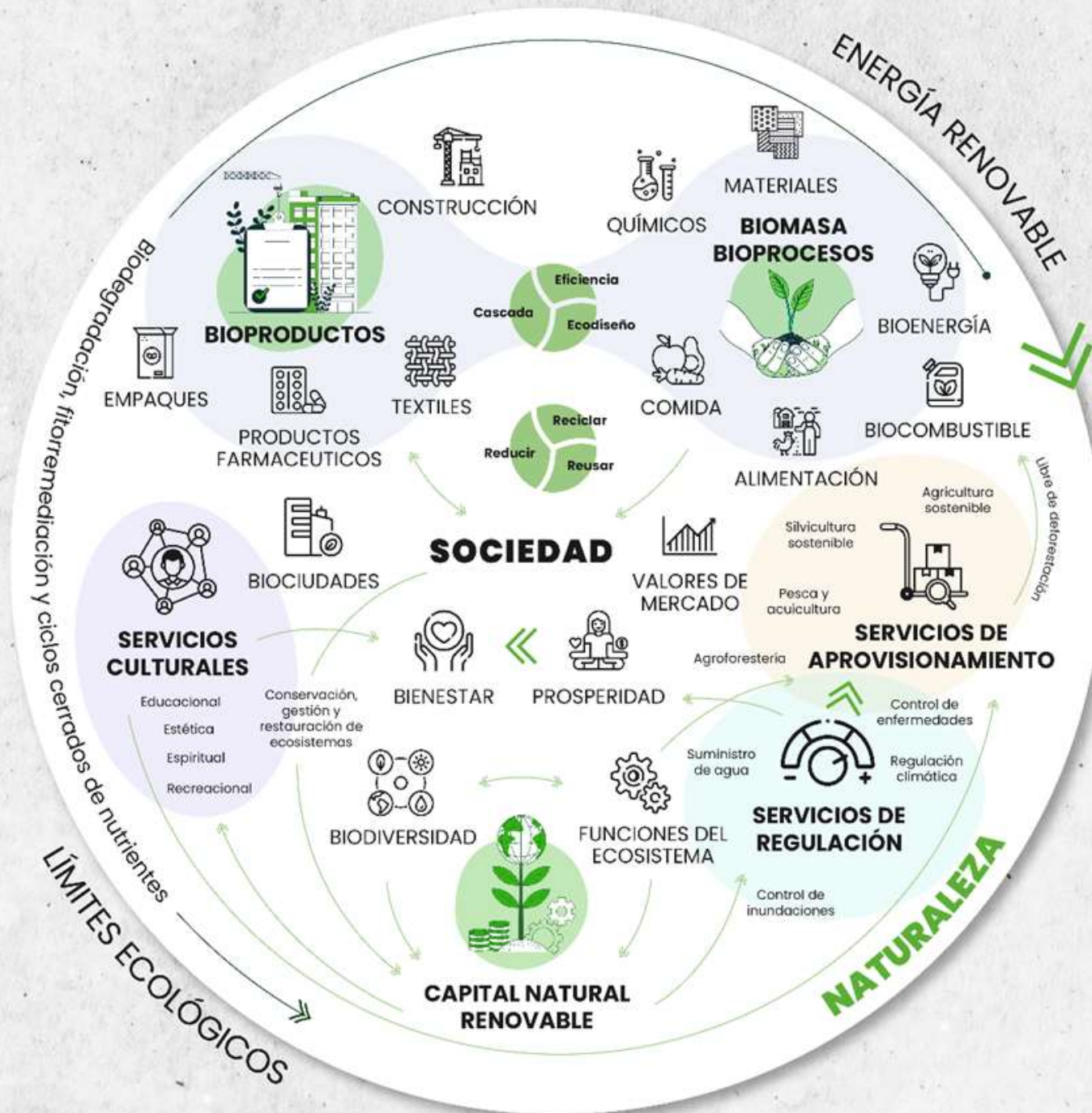
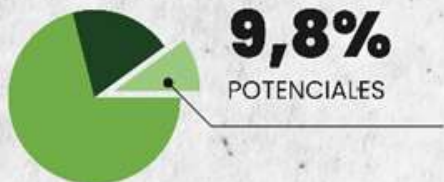


National Center of Excellence for the Wood Industry

BIOECONOMÍA CIRCULAR REGENERATIVA



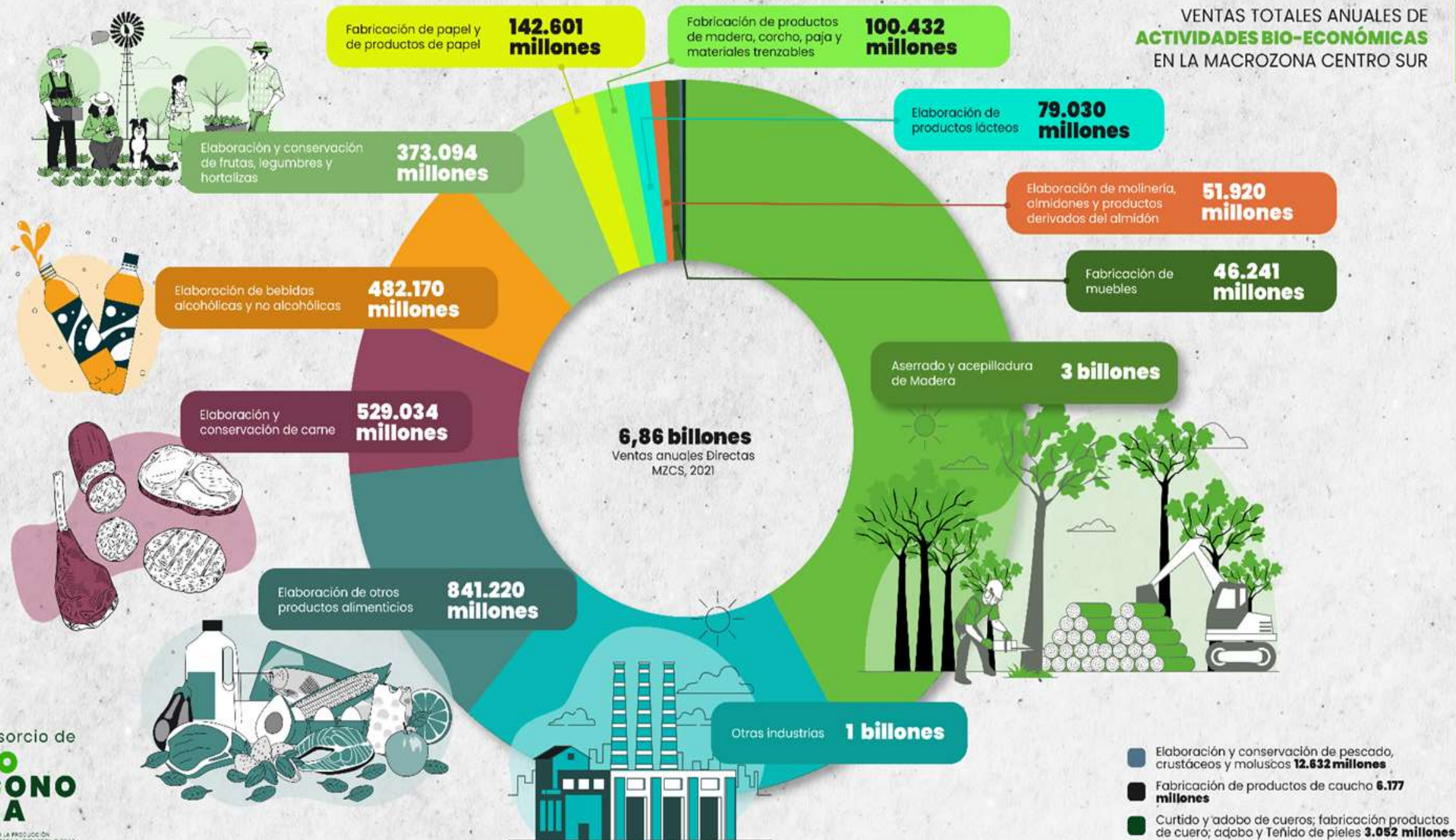
CHILE TOTAL VENTAS ANUALES CL 2021



Adaptado de
European
Forest Institute.



VENTAS TOTALES ANUALES DE
ACTIVIDADES BIO-ECONÓMICAS
EN LA MACROZONA CENTRO SUR



Associated institutions

Consortio de **BIOECONOMIA**
ACELERANDO LA PRODUCCIÓN SOSTENIBLE PARA EL DESARROLLO DE LA MACROZONA CENTRO SUR DE CHILE

INSTITUCIONES ASOCIADAS

6 AGUA POTABLE Y SANEAMIENTO 11 INDUSTRIA Y ENERGÍA 12 RESPONSABILIDAD DE CONSUMO RESPONSABLE 13 ACCIÓN POR EL CLIMA 15 VIDA DE ECOSISTEMAS TERRESTRES 17 ALIANZAS PARA LOS OCEANOS Y LAS ZONAS COSTERAS

TALCA UNIVERSIDAD **UNACH**

UNIVERSIDAD SAN SEBASTIAN **UCSC** **Universidad de Concepción**

SINIA Instituto de Investigaciones Agropecuarias **UA** UNIVERSIDAD AUTÓNOMA DE CHILE **Red ACV Chile** **CIPA** Centro de Investigación de Polímeros Avanzados

FedeFruta FEDERACIÓN DE PRODUCTORES DE FRUTAS DE CHILE **ceap** CENTRO DE ESTUDIOS EN AGRICULTURA PRECISA **udt** Ciencia, Tecnología e Innovación en Bioeconomía **ECOINNOVA** Zero emission industrial design

UOH Universidad de O'Higgins **inkglobal** **ucm** UNIVERSIDAD CATECUSA DEL MAULE **CCAF** CENTRO DE ESTUDIOS AVANZADOS EN PROTECCIÓN

corma **Tierra Verde** FERTILIZANDO EL MUNDO **FUNDACIÓN** **fruselva** IGETHER

RR **opus** INGENIEROS ASOCIADOS **KIMUN BIOTEC** **MAC BIO**

48 representatives
25 institutions

representantes
25 instituciones

CTOI Nodo CTCL Centro Sur

O'Higgins
Maule
Ñuble
Biobío



Promising Bioeconomy Initiatives in Chile

Regional universities are actively engaged in the 'Fostering Green Transition: Bioeconomy in Chile and Finland' TFK Program, which seeks to drive the transformation of production and consumption systems toward sustainable models rooted in renewable natural resources.




Correo: Rosa María Alzamora Ma x intranet.udec.cl x (7) WhatsApp x educación en bioeconomía - Goc x


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Circular Bioeconomía circular Forestal Udec Economía circular Finlandia Biotecnología Biomasa Maestría Posgrado Agricultura


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Universidades chilenas y finlandesas ...


 Universidad Católica del Maule
Chile y Finlandia cooperan para la ...


 Bio-emprender - IICA
Empleo Futuro ...


 CRIEDU UAB
Educación en Bioeconomía en Europa - C...


 AIJU
Espacio de reflexión ...


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Qué es la Bioeconomía - CTA


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 Fundación Finanzas Éticas
empleo futuro ...


 GenB project
Bioeconomy Educational Cards (Spanish ...


 Revista PQ
La bioeconomía, apuesta clave ...


 BioEconomía.info
FAO anuncia dos nuevas iniciativas d...


 Bioeconomía
Economía Circular
Bioeconomía Circular
Economía base biológica

 Maestría en Bioeconomía

 IMPLEMENTING BIOECONOMY

 IMPLEMENTING BIOECONOMY

 IMPLEMENTING BIOECONOMY

 IMPLEMENTING BIOECONOMY

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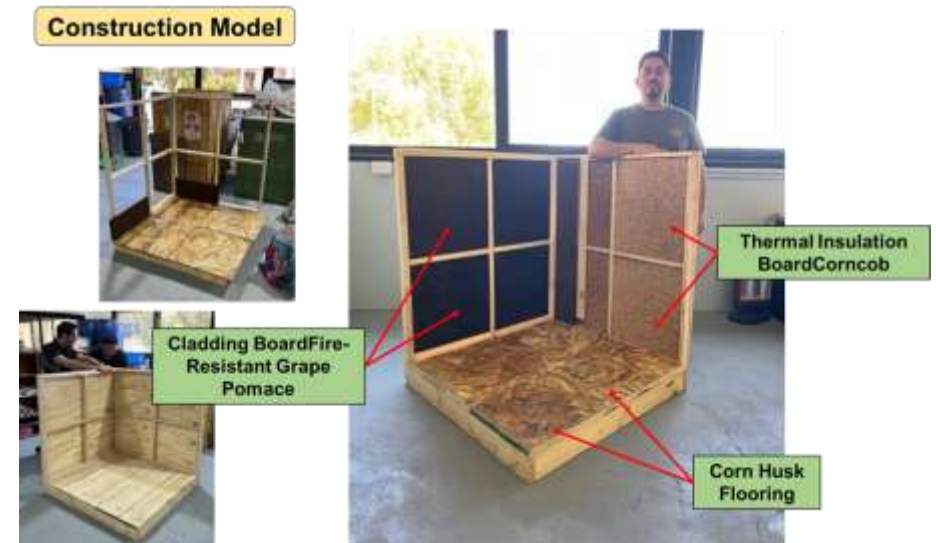
Bioeconomy Applications in *Agricultural and Forest Biosystems*



Development of paper and cardboard using an integrated processing of residual wine industry biomass



Valorization of agroforestry waste for the development of non-structural eco-boards for sustainable housing



Prototyping of tooth brushes with wood from invasive woody species (*Ulex europaeus*)



Currently, it is known that *P. radiata* plantations are far from being biological deserts, as they harbor native flora and wildlife.

Exotic plantations and natural forests coexisting in ecosystemic harmony



Integrative Agriculture + Bioeconomy: Area research



Environmental
friendly
production



Medicinal plant: native
and foreign
(conservation-
propagation-
commercial production



Modelling:
Allocation,
efficiency, Input-
output, Functional
elements, etc.

Challenges in Human Capital Development

- Identify current skill gaps and anticipate future workforce needs
- Modernize education through the development of minors, diplomas, and micro-credentials
- Design targeted training programs for professionals in forest and agricultural biosystems
- Implement dual-model training programs combining academic and hands-on experience
- Integrate bioeconomy-related skills directly into field-based practices
- Development of participatory decision-making methodologies
- Policy accelerator in Bioeconomy

Outcomes of the Ongoing Engagement with Finland

Project Applications

- PTEC Environmental Liabilities
- Natural Capital
- Technological Center for Innovation in Regenerative Circular Bioeconomy

Projects in Development:

- Waste Revaluation through PTEC

Completed Project:

- "Separating Solid Household Waste for Territorial Transformation"*

Outreach and Events:

- 4 Webinars 2 Summer Courses International Congress on Bioeconomy (October 28–30)

Initiatives Under Review:

- Erasmus+ EduBioCir Project
- Agreement with companies to develop protocols for cultivating conservation-listed species in commercial plantations



KIITOS PALJON !!



ucm
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