

Collection Poster Pitch Slides

European Bioeconomy Scientific Forum 2025

**Boosting regional and international bioeconomy
collaboration and skills**

 **11 - 13 June 2025**

 **Joensuu, Finland**



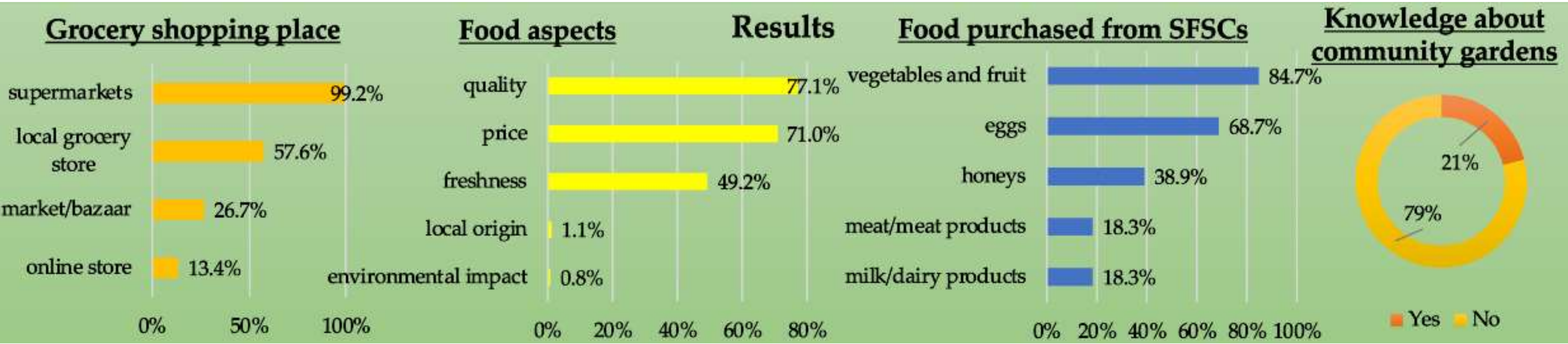
Short food supply chain in urban areas: evidence from Polish Generation Z

Monika Roman, Luiza Ochnio, Joanna Domagała
Department of Logistics, Institute of Economics and Finance, WULS



Introduction

- Globalization and crises have exposed vulnerabilities in long food supply chains.
- Urban areas are particularly sensitive to food supply disruptions.
- Short food supply chains (SFSCs) offer promising solutions.
- Generation Z is just entering the market and is characterized by specific behaviors that are important to understand in order to meet their needs and expectations, including with regard to adapting food systems.



What are the benefits of SFSCs?

- Geographical and social proximity.
- Greater transparency for consumers.
- Better prices and continuity of supply.
- Higher producer revenues and support for local food traditions.
- Development of local economy, jobs, regional identity.

Research Objectives

- Identify and analyze SFSC models in Polish cities.
- Understand Gen Z's perception of SFSCs.

Methods

- Diagnostic survey via questionnaire (May 2025).
- K-means cluster analysis.

Characteristic	"Confident" (35%)	"Conscious" (48%)	"Skeptics" (17%)
Consumer Profile	Household 2+2 or more people/living with family More often men	Household 1+1 and 2+1 More often women	Predominance of single-person households
Knowledge about SFSCs	Highest knowledge	Good knowledge	Low knowledge
Interest in purchasing products from SFSCs	Very frequent purchases Average level of spending Highest willingness to pay more for purchases with SFSCs	Very frequent purchases Average level of spending High willingness to pay more for purchases with SFSCs	Rare frequent purchases Low level of spending Average willingness to pay more for purchases with SFSCs
Main factors that encourage people to buy from SFSCs	Quality Certificate - small Better Promotion - small Traceability - small Close Purchase Location - medium	Quality Certificate - significant Better Promotion - significant Traceability - significant Close Purchase Location - very significant	Quality Certificate - medium Better Promotion - medium Traceability - medium Close Purchase Location - significant

Conclusions

- SFSCs are a viable alternative to global chains.
- Multiple active initiatives exist in Poland, but lack systemic support.
- Building trust and data transparency is essential for resilient food systems.

- Educational and promotional activities needed for SFSCs initiatives, development of digital platforms.
- City logistics - activities supporting producers and facilitating deliveries
- Building trust and data transparency is essential for resilient food systems

European Bioeconomy Scientific Forum 2025

Valorising Agro-industrial Residues to Produce Isoamyl Acetate through Extractive Fermentation

Burgess, L¹; Maikah, B.E¹; Martínez, P¹; Rzeszutek, O¹; Medina, G. ¹; Morle, T ¹; Sánchez-Castañeda, A.K²; Saulou-Berion, C²; Moussa, M²;Anthony, E²

¹ AgroParisTech, Paris-Saclay University, France

² SayFood - Paris-Saclay Food and Bioproduct Engineering, France

Contact: Lucy Burgess, lucy.burgess@agroparistech.fr

INTRODUCTION

Aim: to valorise endive root juice into a volatile aroma compound in an extractive fermentation process using yeast

Agro-Industrial Waste



- 1.05 billion tons of agro waste generated in 2022 globally^{1,2}
- 367 million tons/year generated in the EU, 39% during manufacturing²

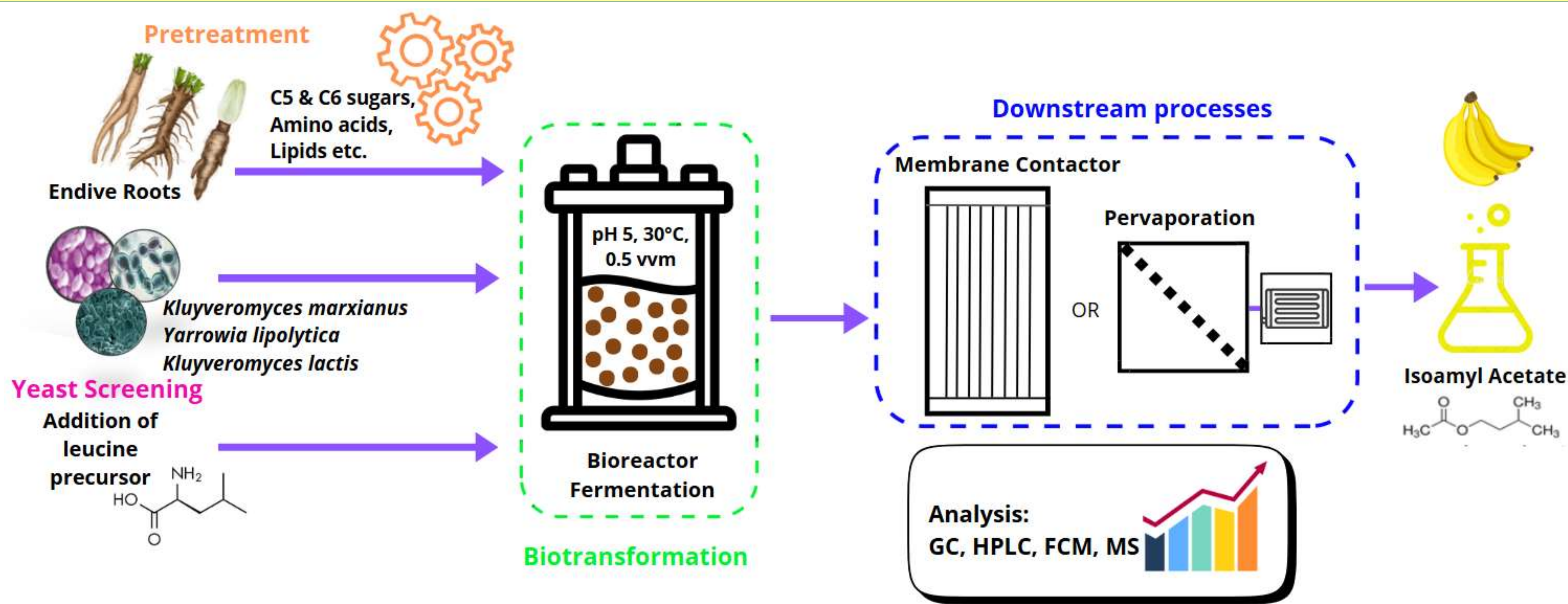
Bioconversion sustainable processing of biomass

Sustainable alternative to chemical synthesis

Marketable Products: Aroma compounds

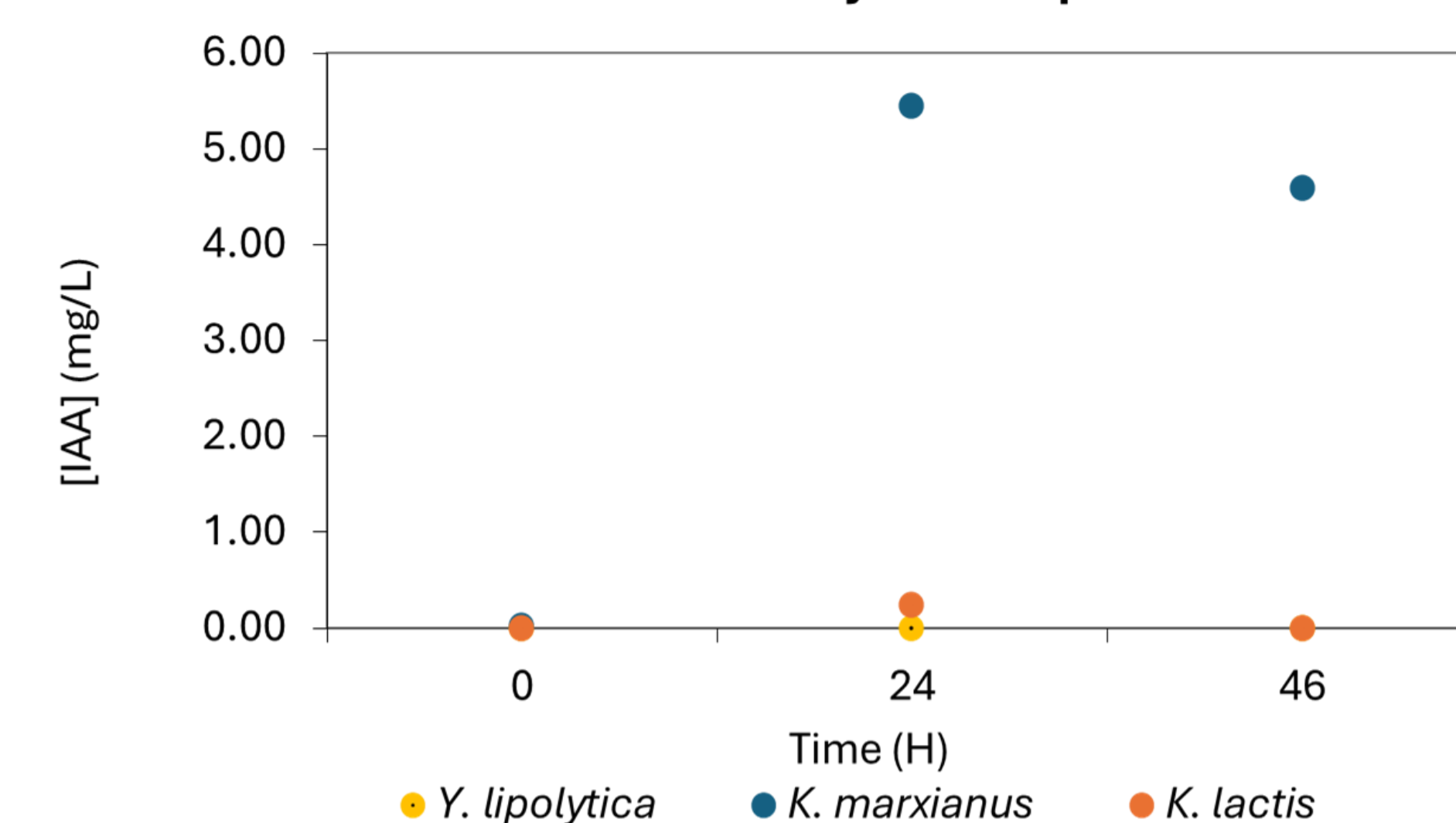
- The aroma market is estimated at 19.72 billion USD in 2026

METHODOLOGY

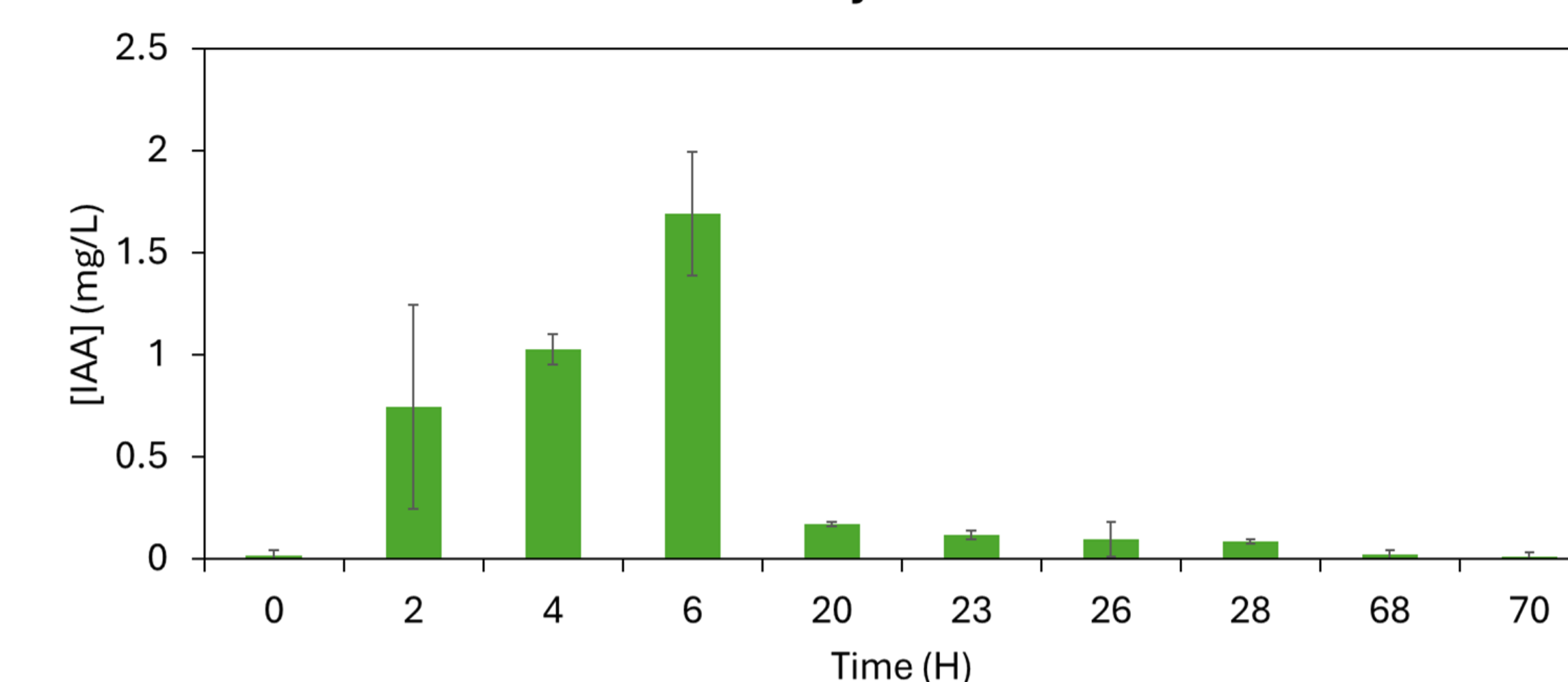


RESULTS AND DISCUSSION

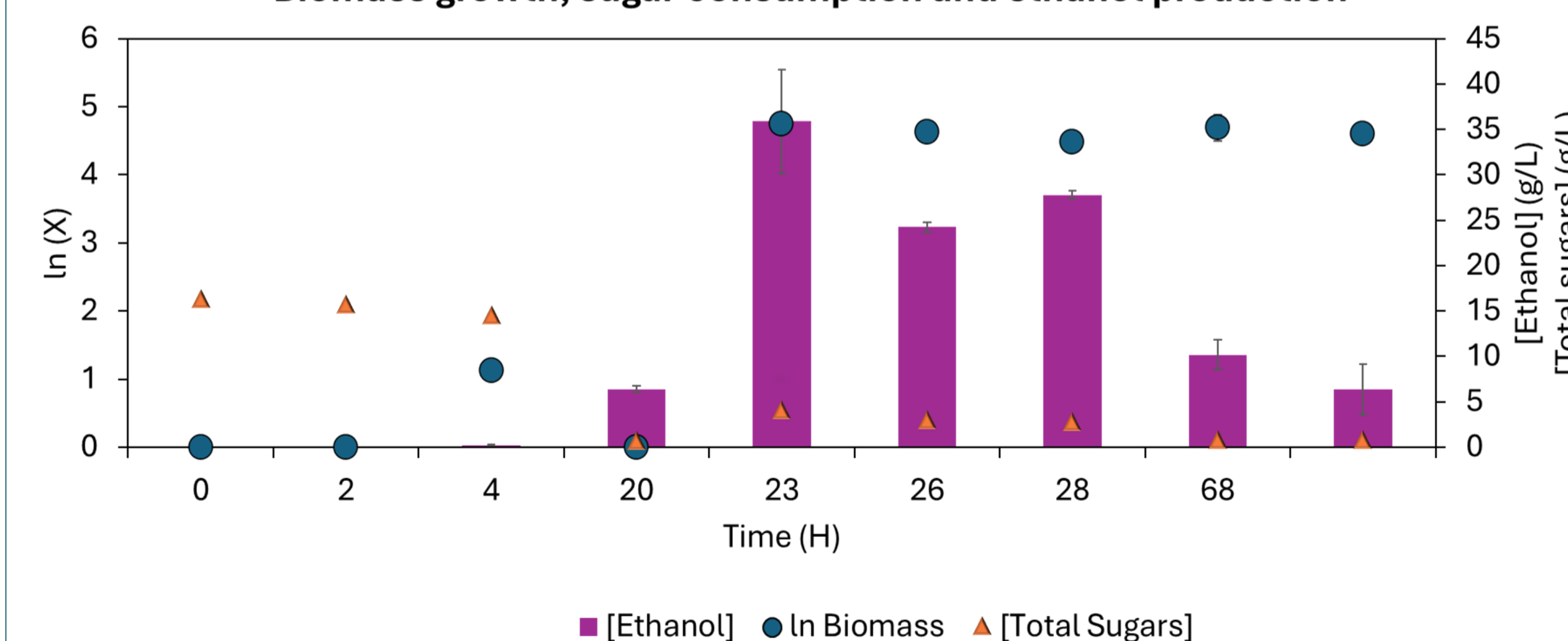
IAA Production by Yeast Species



IAA Production by *K. marxianus*



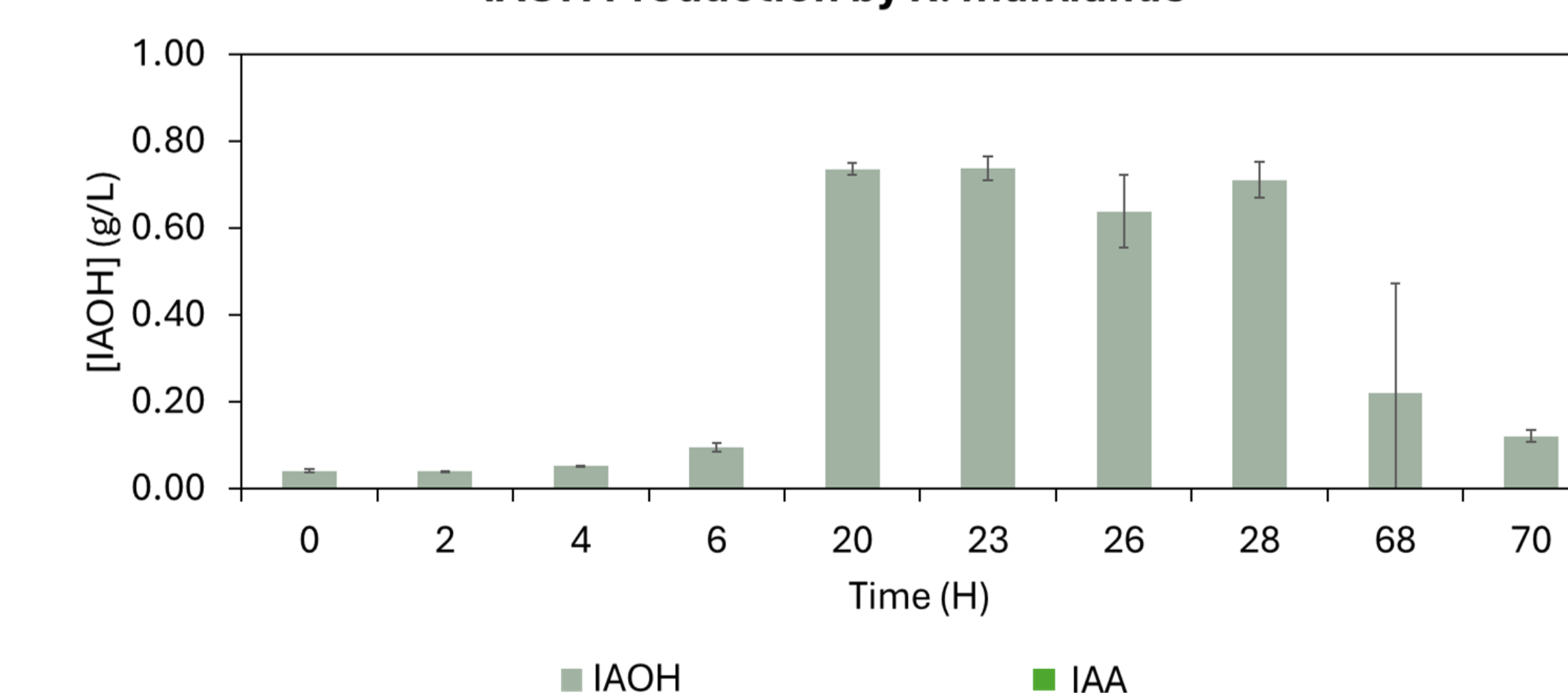
Biomass growth, sugar consumption and ethanol production



Conversion Yield

IAA = $0.11 \text{ mg} \cdot \text{g}^{-1}$
IAOH = $296.0 \text{ mg} \cdot \text{g}^{-1}$

IAOH Production by *K. marxianus*



Productivity

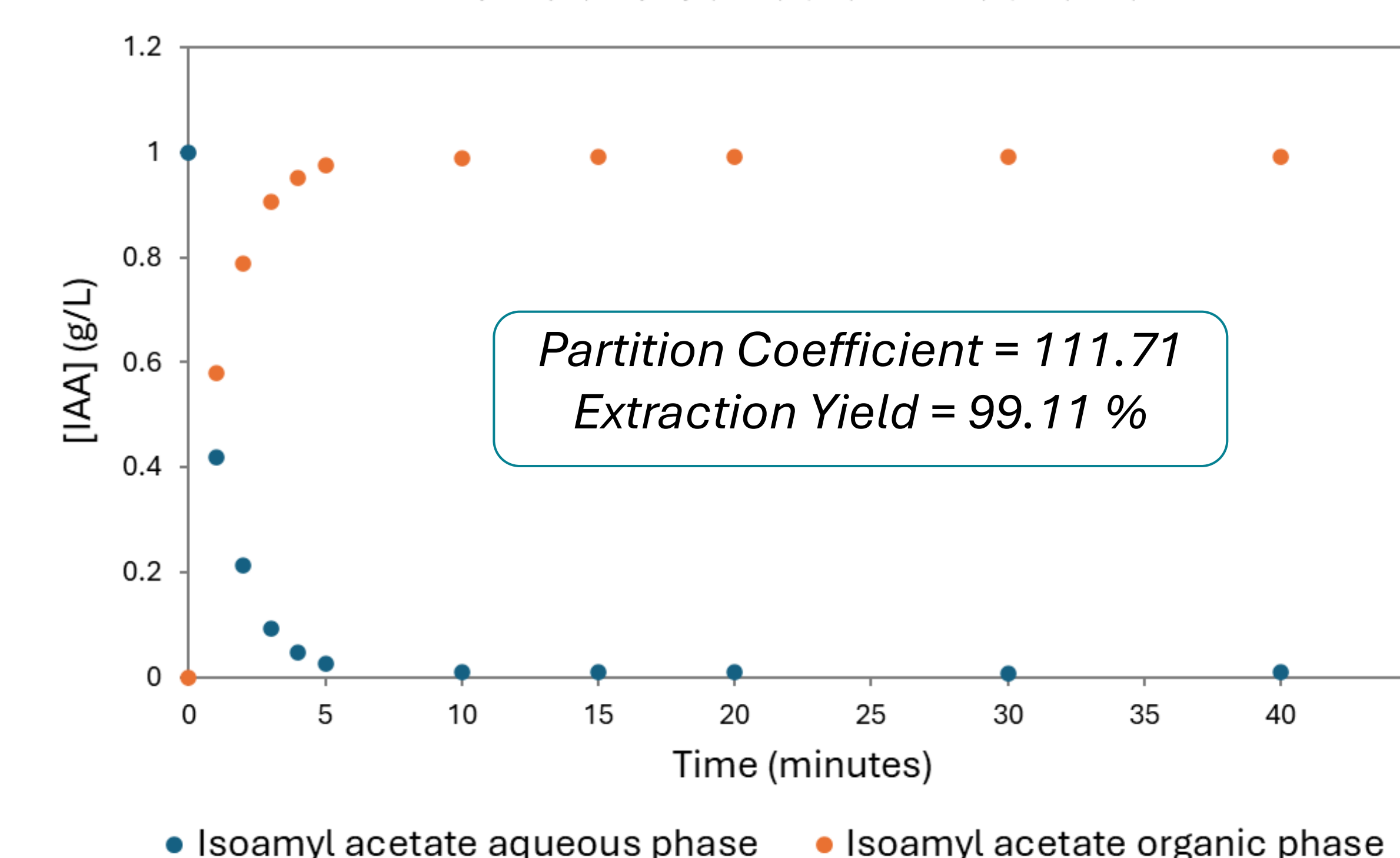
IAA = $0.00242 \text{ mg} \cdot \text{L}^{-1} \cdot \text{h}^{-1}$
IAOH = $103.0 \text{ mg} \cdot \text{L}^{-1} \cdot \text{h}^{-1}$

Preliminary Downstream Processes:

Pervaporation: main influencing parameter was temperature

Parameter	Value	Condition
Max Total Flux	1120 g/m ² ·h	60 °C
Max IAA Partial Flux	28.02 g/m ² ·h	60 °C
Max Enrichment Factor (β)	57.78	60 °C
Max Permeate Concentration	32.01 g/L	Feed ≈ 1 g/L

L-L Membrane Contactor Extraction of IAA



CONCLUSION

- Novel application for FER juice in which *K. marxianus* had highest production of IAA
- Efficient liquid-liquid extraction
- Challenges of product volatility

FUTURE WORK

- Optimisation of fermentation conditions
- In-situ recovery techniques
- Comparative LCA & Techno-economic assessment

Scan for details



WHY THIS MATTERS



There is a need to reduce viral transmission

+

Bark and berry pomace are natural sources of **antiviral compounds**

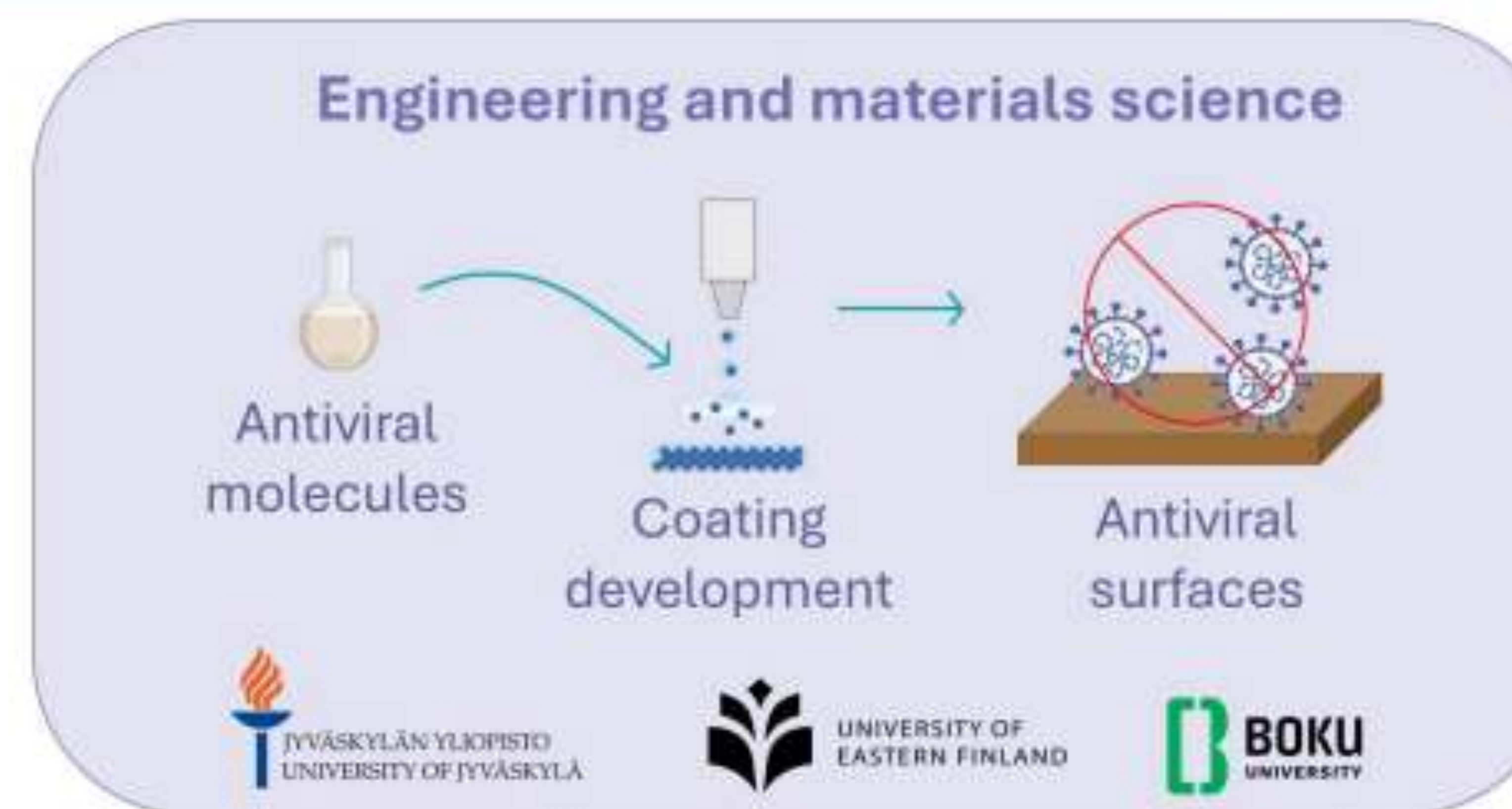
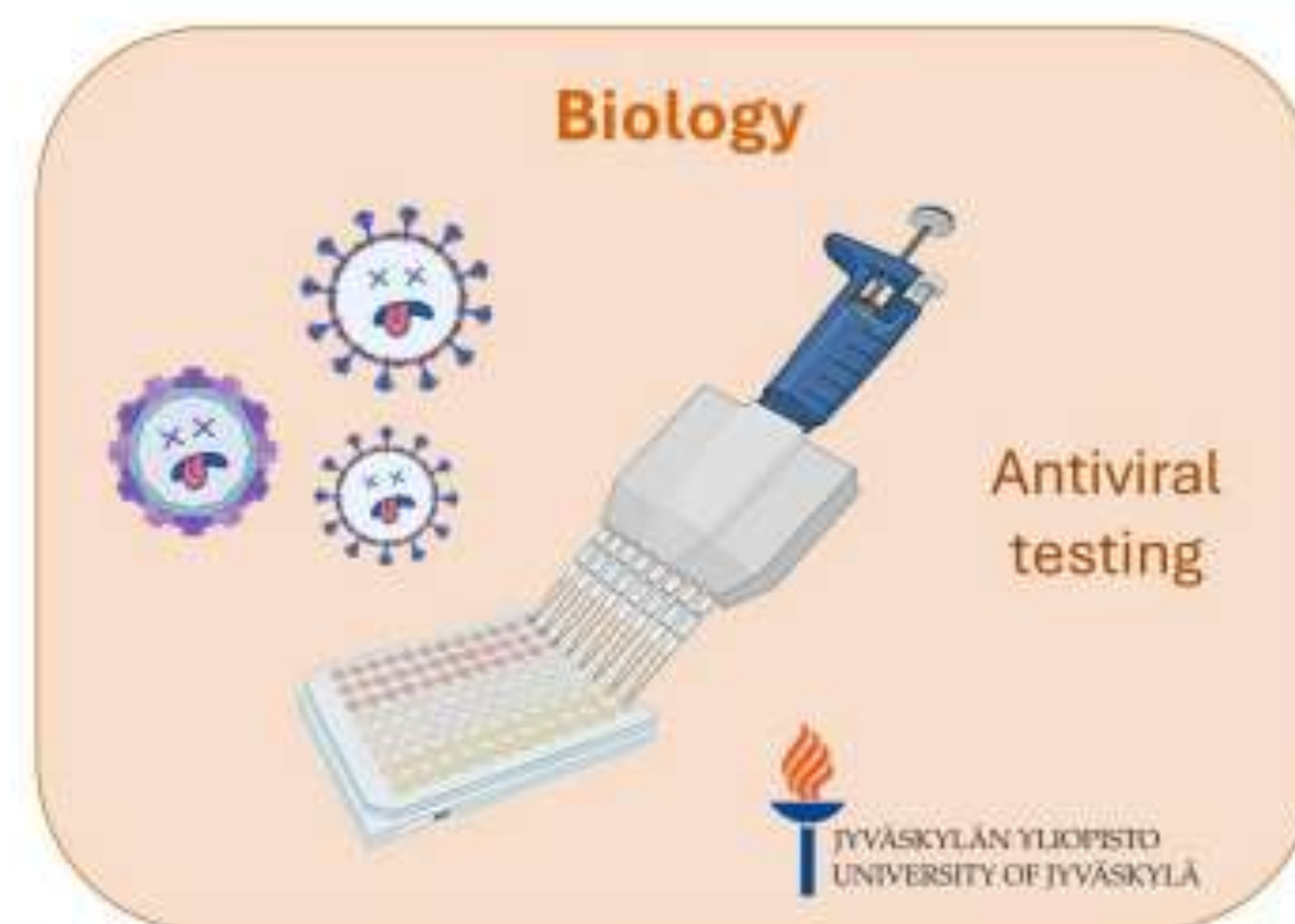
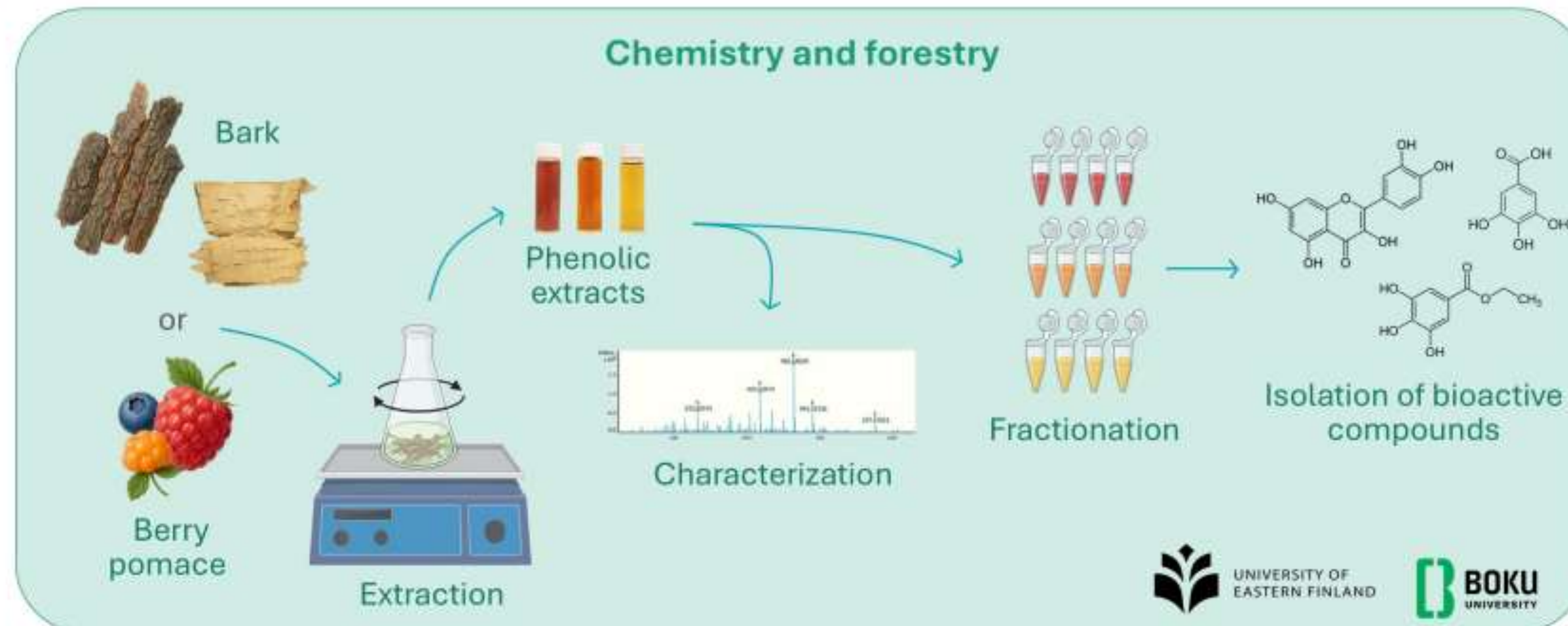


Side-streams

High-value chemicals



OUR MULTIDISCIPLINARY APPROACH



REAL-WORLD USE

Contaminated surfaces are a significant route of viral transmission



Surfaces with antiviral properties are of critical importance

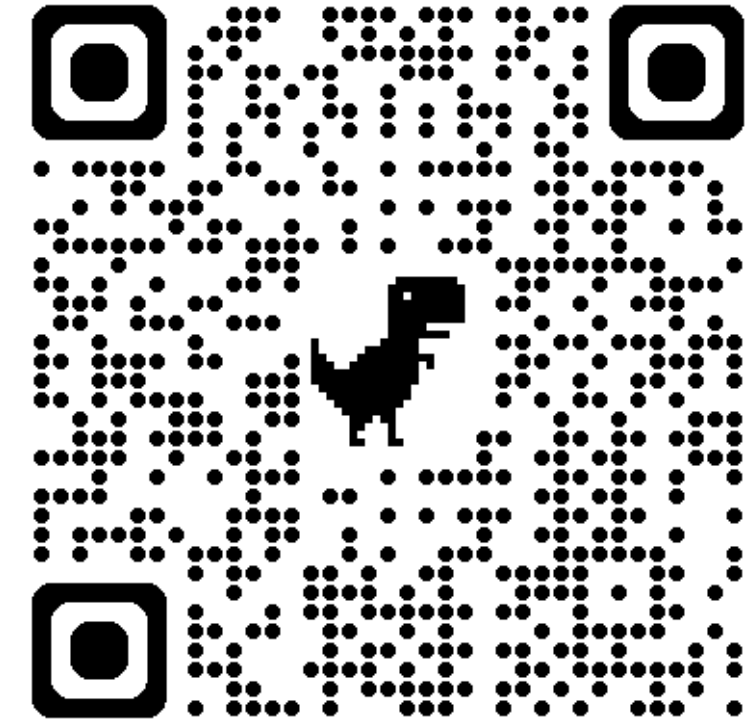


FINAL GOAL

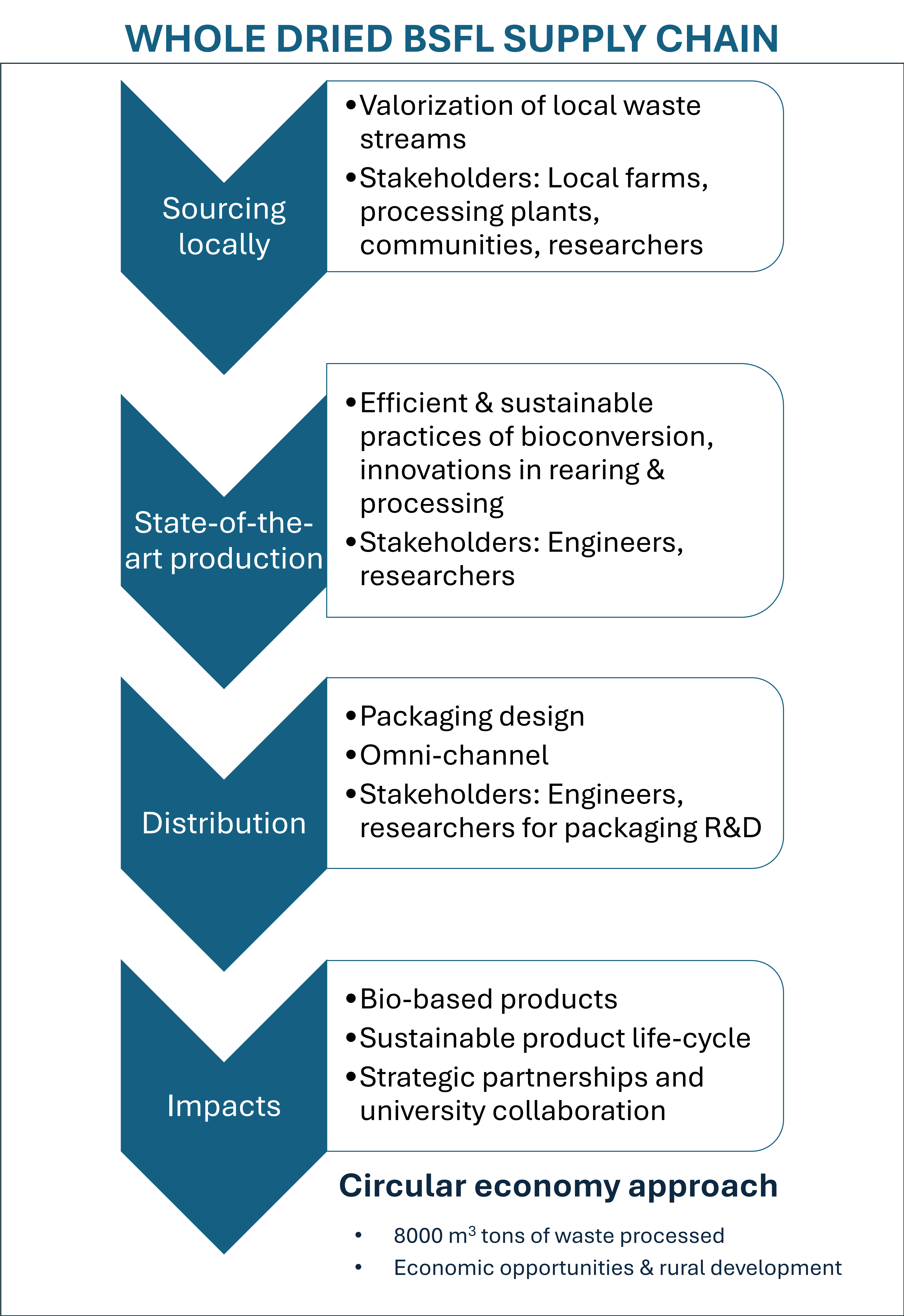
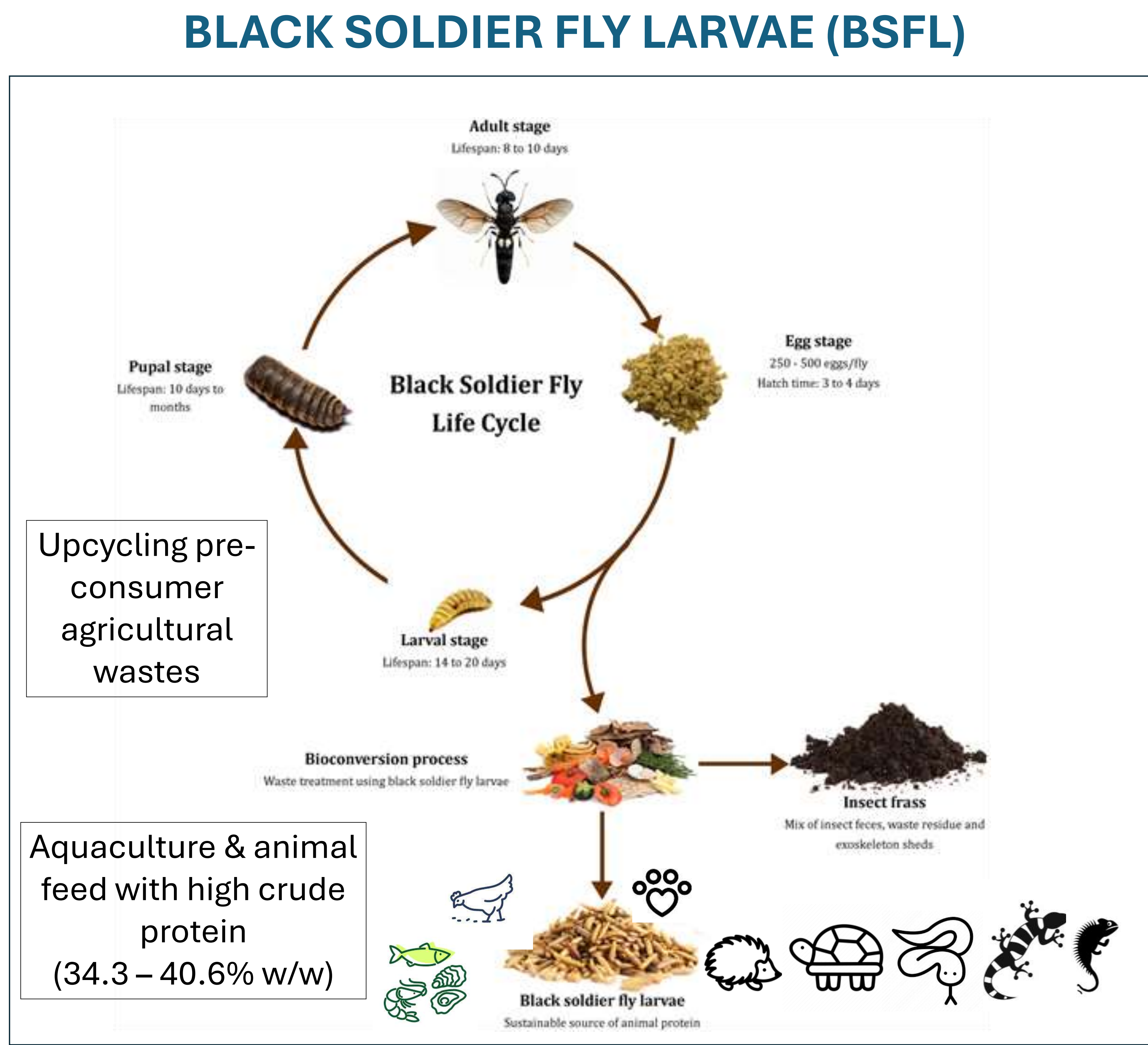
- Obtaining **natural antiviral compounds**
- Design of novel bioinspired **antiviral coatings**
- Contribute to **sustainable materials and the bioeconomy**



From waste to wellness: Scaling Black Soldier Fly Larvae for sustainable pet nutrition through diverse multi-stakeholder collaborations – A Southeast Asian case



- INTRODUCTION & BACKGROUND
- SEA’s agriculture market: Gross production value US\$153.21 billion (2025) → immense waste generation
 - BSF use resources efficiently, require less footprint → waste management and sustainable agriculture
 - Pioneering BSFL protein industrial production in SEA
 - Feed is among the biggest environmental hotspots in raising animals → Potentials of BSFL in pet food



- KEY FINDINGS
- BSF meal has limited inclusion levels for acceptability
 - Limited pet food technology
 - Exotic pets have different nutritional requirements
 - Adapting BSFL size for pet treats and product portfolio was suggested
 - Packaging development & labelling
 - Market feedback

- CONCLUSIONS
- BSFL is sustainable for pet nutrition
 - Whole dried BSFL can be an alternative to animal feed
 - BSFL can reduce reliance on conventional pelleted pet foods

- KEY LEARNINGS
- Application & market acceptance can be barriers.
 - Engage with local communities to scale impacts.
 - Emphasize collaboration and partnerships, knowledge-sharing.

Synergizing sustainability assessments

Background



The bioeconomy increases demand for **sustainable biomass**

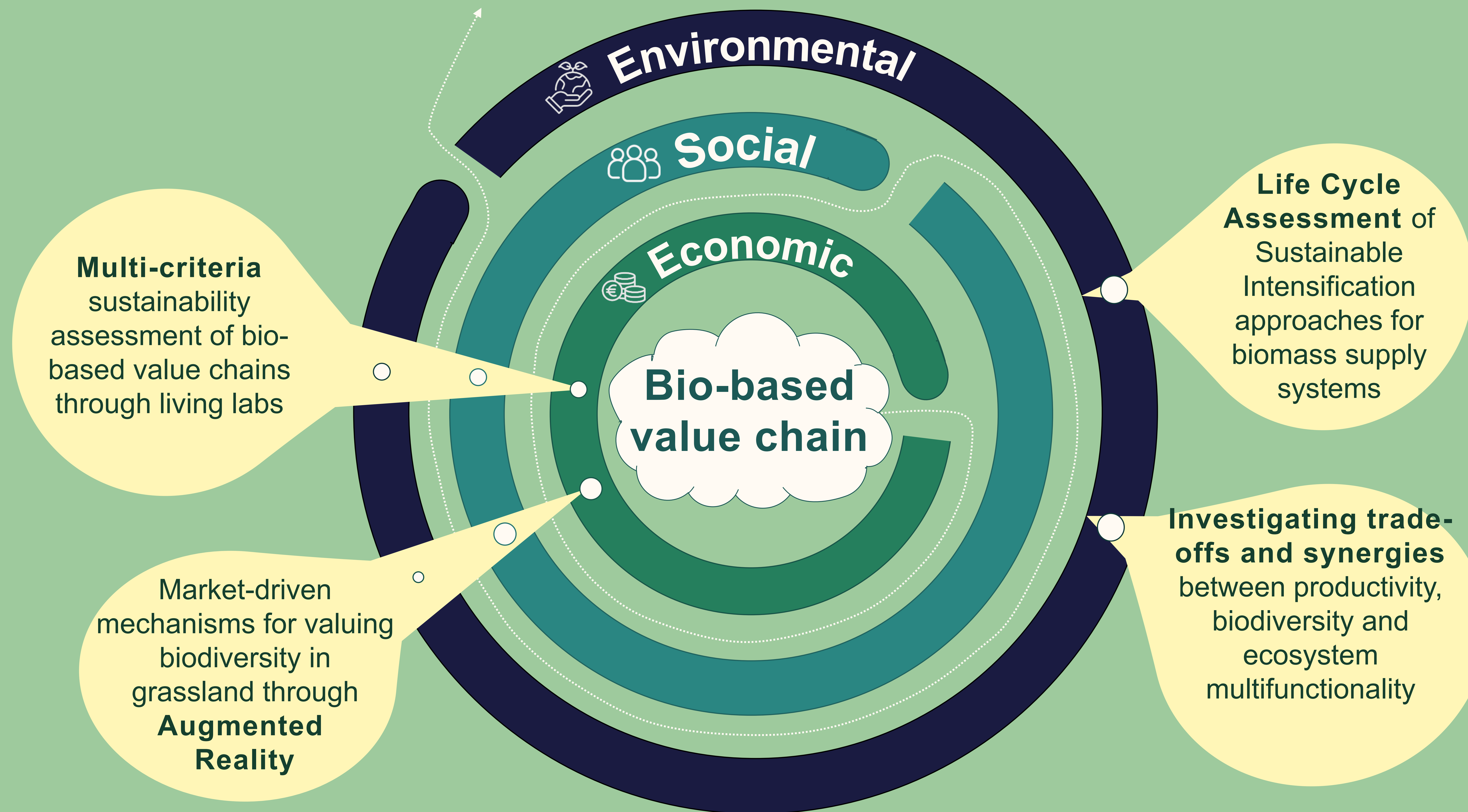


Biomass sustainability faces **trade-offs**



DESTINY assesses sustainability from **multiple perspectives**

Sustainable bioeconomy



Key messages



Bio-based value chains encounter various **bottlenecks**



Holistic assessments are crucial



Current assessments **do not cover** all relevant aspects



Funded by
the European Union

Ana Cavallo, Marisa Groenestege, Mohammed Jardini, Bent Rech
University of Hohenheim, BOKU University



Background

- Agricultural runoff (high levels of N and P) leads to **eutrophication**
- Coastal eutrophication + rising global temperature = *Ulva spp.* algae blooms
- The accumulation of algae on the shore can produce **hydrogen sulfide**
- More than **€ 600,000 annually** in remission of algae blooms

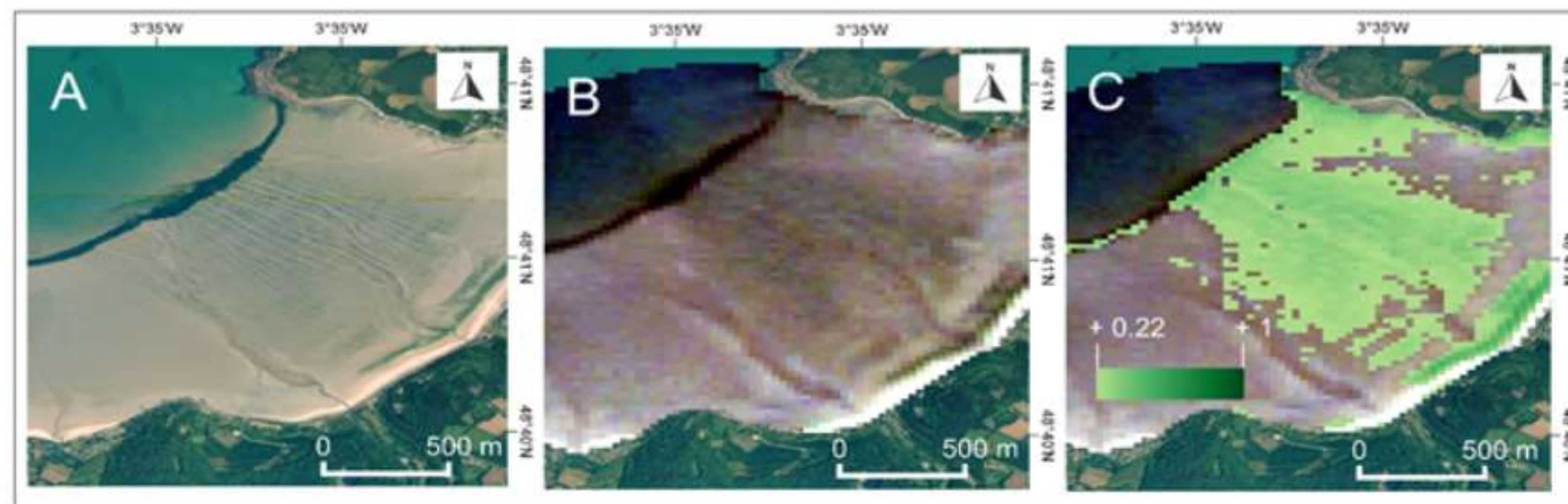
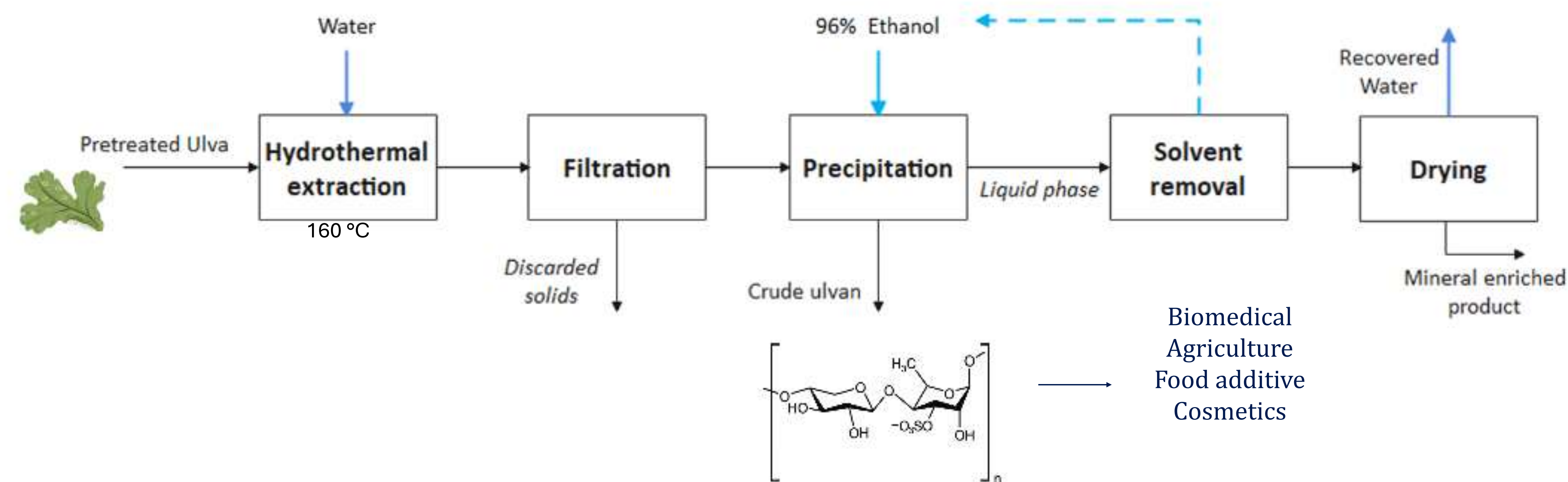


Figure 1. Algae bloom accumulation in Saint-Michel-en-Grève (Bretagne region) using NDVI technology. Extracted from [1].

Ulvan extraction



References
[1] Schreyers, L., van Emmerik, T., Biermann, L., & Le Lay, Y. F. (2021). Spotting green tides over Brittany from space: three decades of monitoring with Landsat imagery. Remote Sensing, 13(8), 1408. DOI:10.3390/rs13081408



Contact

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Results

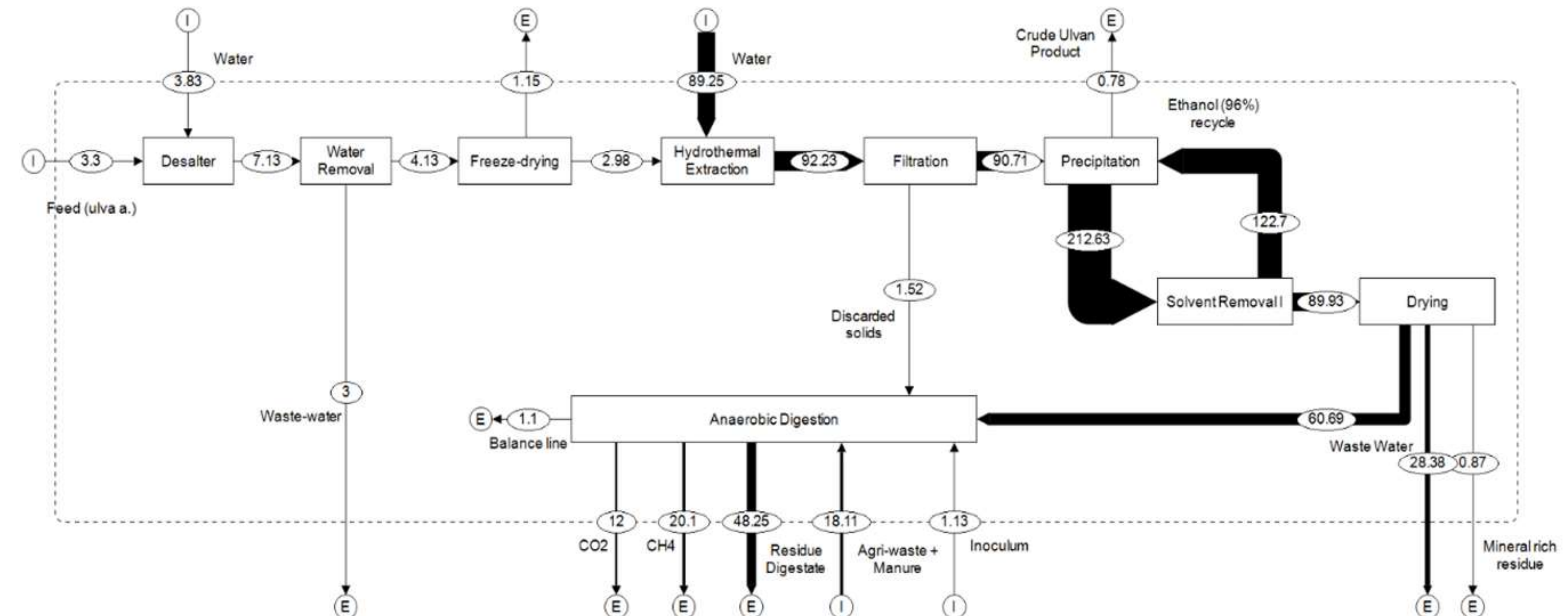


Figure 2. Material Flow Analysis (MFA) of the proposed biorefinery.

Sustainable development

Environment

- Circular design approach and return of nutrients to the soil
- Total reduction of **100 tons/year** of non-renewable CO_2

Social

- Promote the socioeconomic development of the region and the improvement of coastal landscapes
- Engage with the local community

Economic

- Self-energy production and minimization of resources consumed, and waste generated

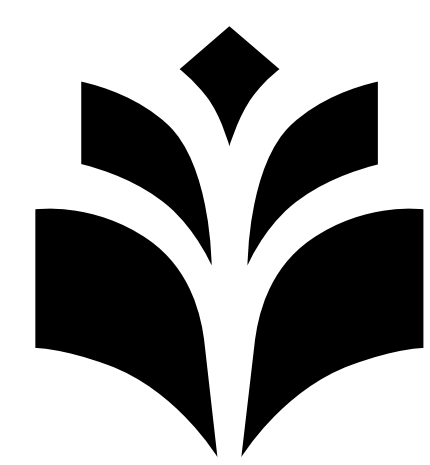
Conclusion

A technically feasible marine biorefinery that promotes Bretagne's bioeconomy transition

Further steps

- Conduct a Life Cycle Assessment (LCA)
- Evaluate economic feasibility
- Continue researching applications for ulvan

Grateful acknowledgment is due to Ph.D. Pauline Marty for supervising this project.



UNIVERSITY OF
EASTERN FINLAND

Sustainable Barrier Coatings Based on Nanocellulose and Natural Waxes

Wen Jiang^{1*} // Agne Swerin² // Laura Tomppo¹ // Tomas Björkqvist³ // Aleksii Hämäläinen³ // Reijo Lappalainen¹

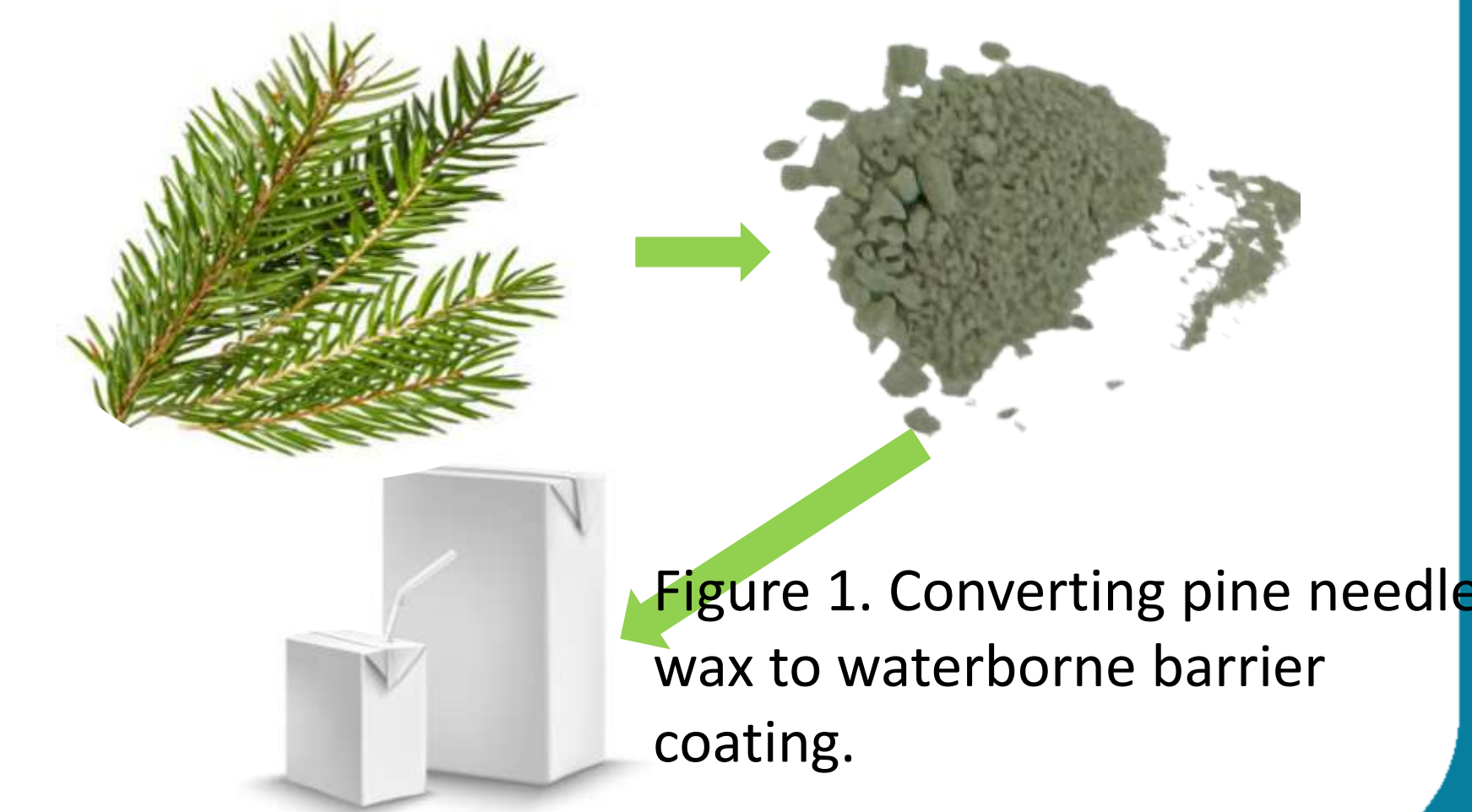
¹Department of Technical Physics, University of Eastern Finland, Finland // ²Department of Engineering and Chemical Sciences and Pro2BE research environment on Processes and Products for a circular Biobased Economy, Karlstad University, Sweden // ³Faculty of Engineering and Natural Sciences, Tampere University, Finland



European Bioeconomy
Scientific Forum 2025
11-13 June 2025, Joensuu

Introduction

Eco-friendly materials derived from natural sources are gaining increasing attention as sustainable alternatives to synthetic polymers in various applications, including films, adhesives, and coatings. Extensive research on bio-based barrier coatings has highlighted the importance of developing innovative coating systems and technologies for the paper industry. These coatings offer advantages of sustainability, a green chemistry perspective, cost competitiveness, abundant natural feedstocks, and strong performance properties. However, achieving effective and scalable solutions remains a challenge for both academia and industry. This study focuses on developing renewable and green waterborne barrier coatings based on nanocelluloses and natural waxes.



Materials

Pine needle wax is extracted from the surface of Scots pine (*Pinus Sylvestris*) needles by Soxhlet extraction. Another two commercial waxes used in this study are carnauba wax and beeswax. Two nanocellulose are used including commercial CelluForce CNC and MFC (Microfibrillated Cellulose) produced from birch kraft pulp.



Figure 2. Pictures of beeswax, carnauba wax, pine needle wax, MFC, CNC.

Methods

Formulation of coating dispersions

The coating dispersions are prepared by mixing hot-melted wax, solvent, ionic surfactant, CNC, MFC, and water with an Ultra Turrax. All dispersions have a final solid content of 6% by containing a ratio of MFC, CNC, and wax at 1.1:4.4:0.5, 1.1:3.9:1, and 1.1:3.4:1.5.

Applying coatings on the paperboards

Dispersions with solid content of 6% of MFC, CNC, and wax are applied on the paperboards as one-layer coating with a rod coater. Two-layer coating is made by applying one layer of MFC and CNC dispersions (4.5% solid content) and another layer of soluble wax in solvent (solid content of 1.5%).

Characterization of barrier properties

The coated paperboards are tested for coat weight, coat thickness, air permeability, surface roughness, water vapor transmission (WVTR), oxygen transmission rate (OTR), mechanical properties, and water contact angle.



Figure 3. RK K control coater.

Results

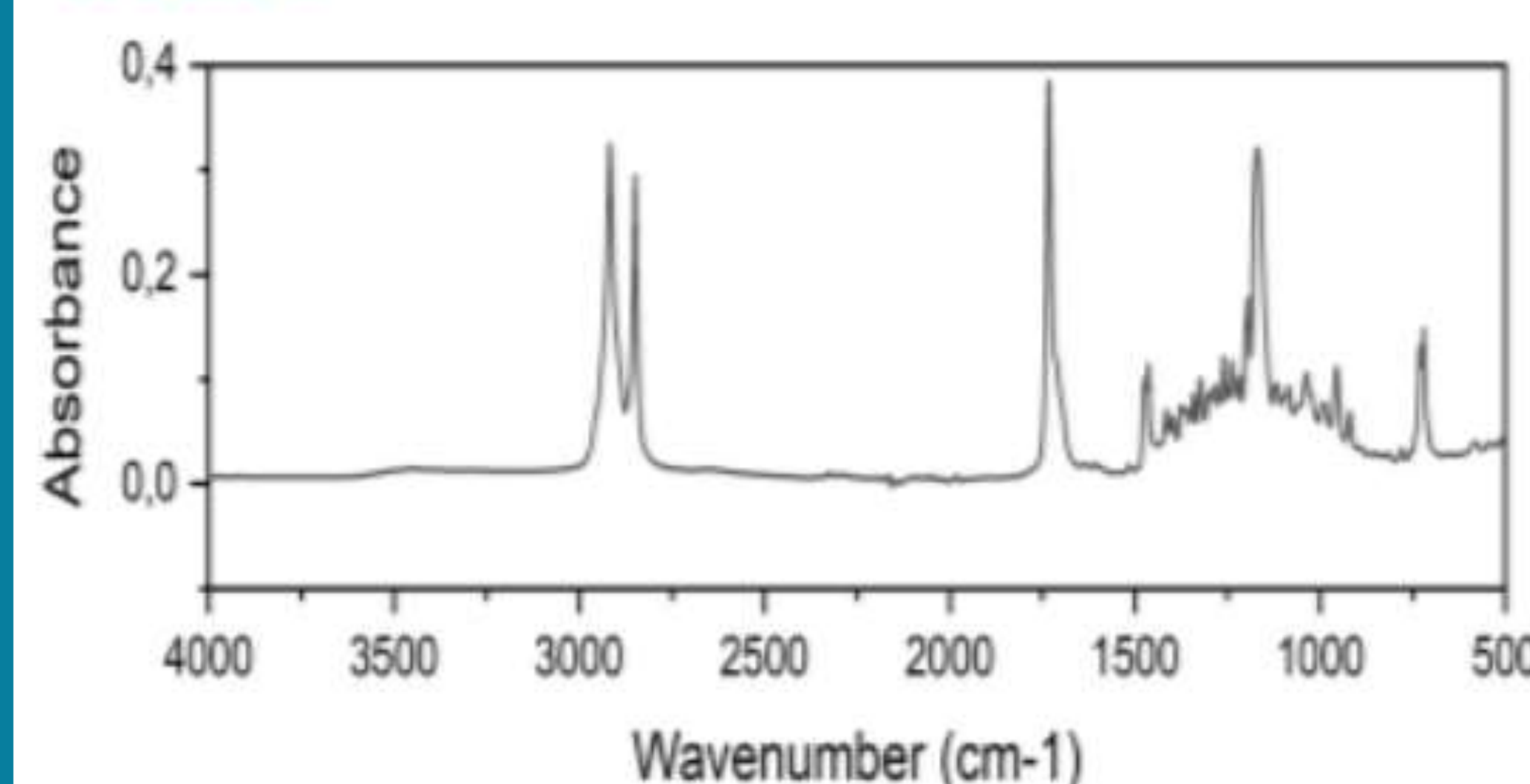


Figure 4. FTIR of pine needle wax.

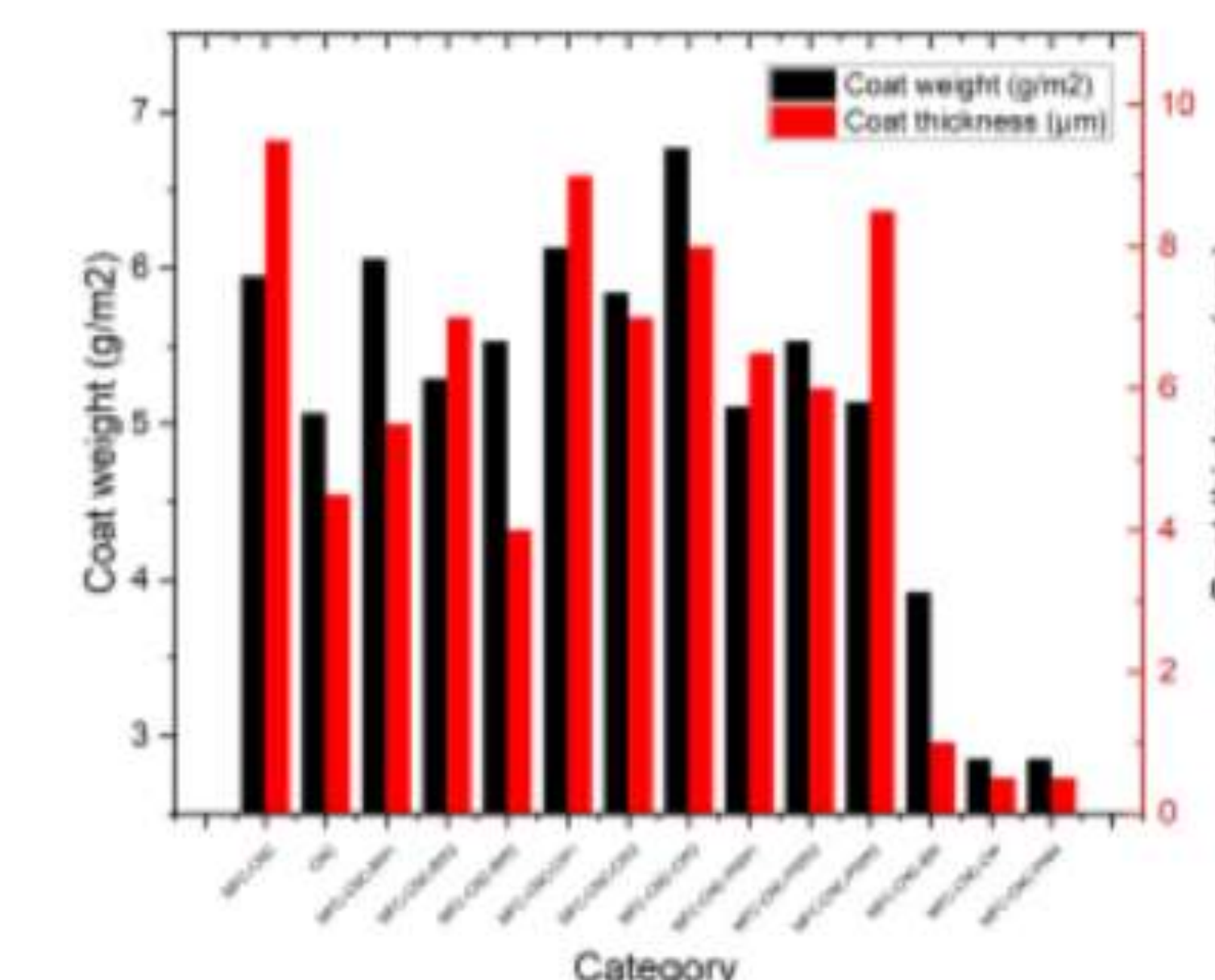


Figure 5. Coat weight and coat thickness of each paperboards.

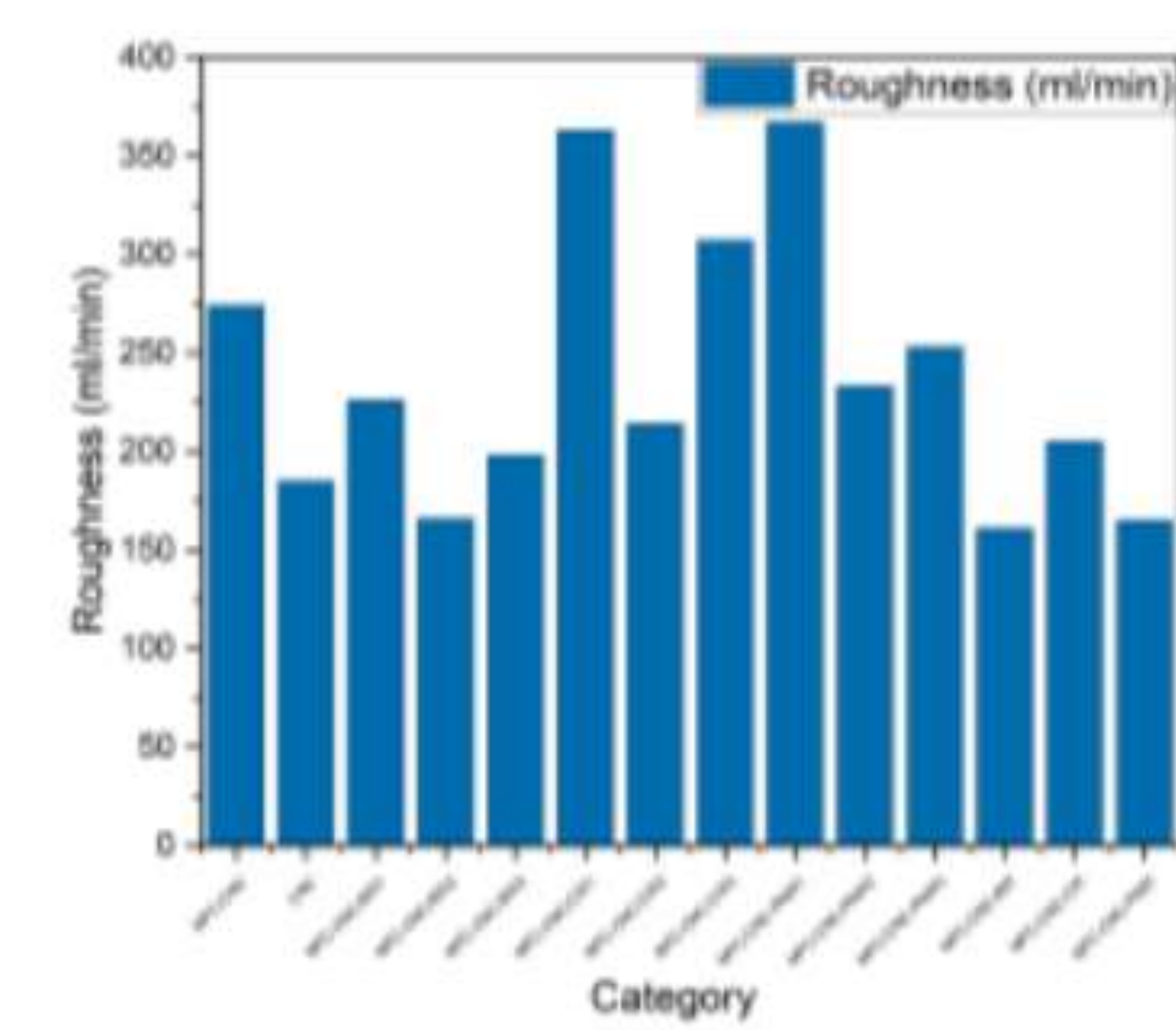


Table. Glass transition temperatures (T_g) of each wax.

	T_g (°C)
Bees wax	61
Carnauba wax	83
Pine needle wax	77

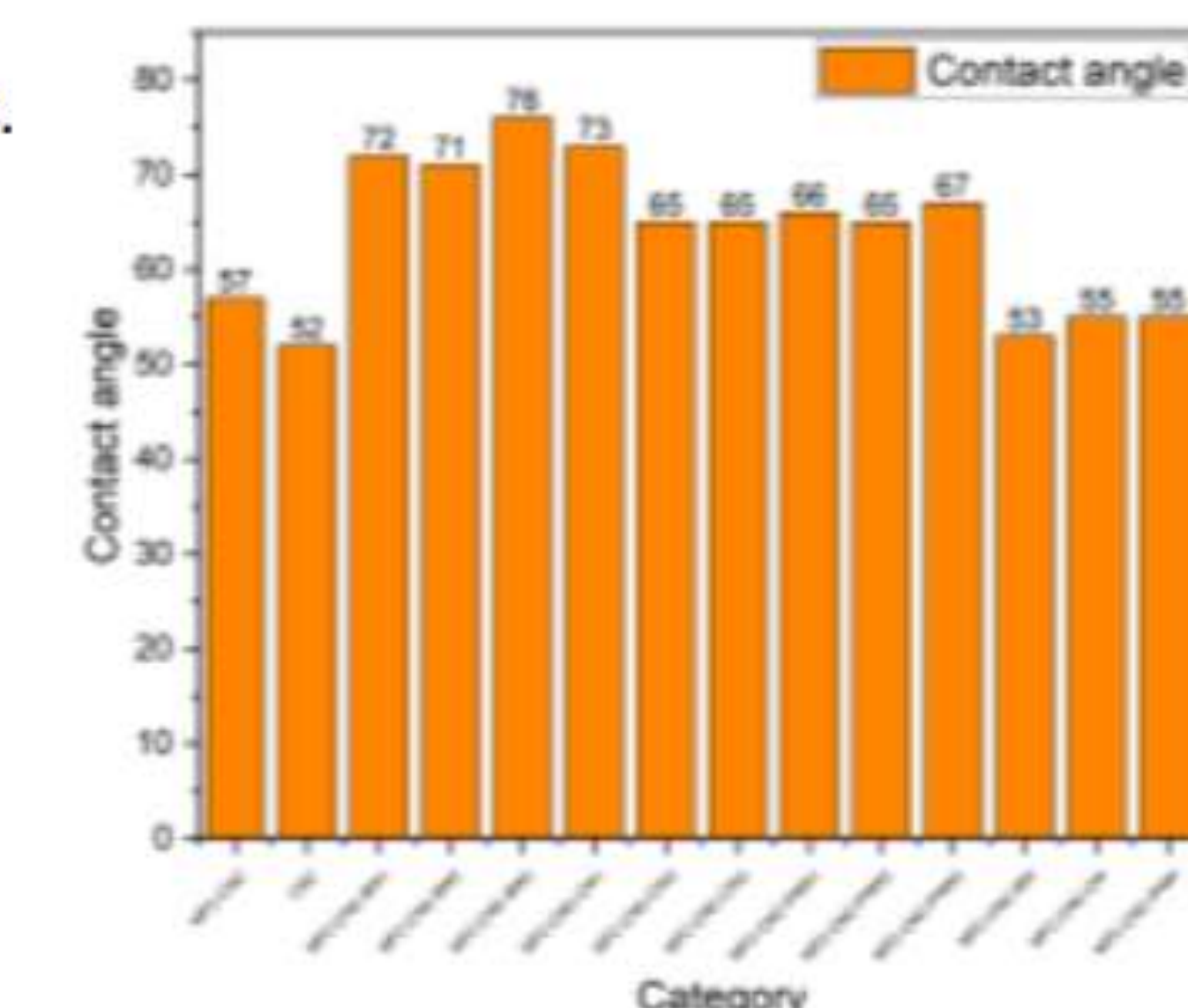


Figure 7. Contact angle of coated paperboards.

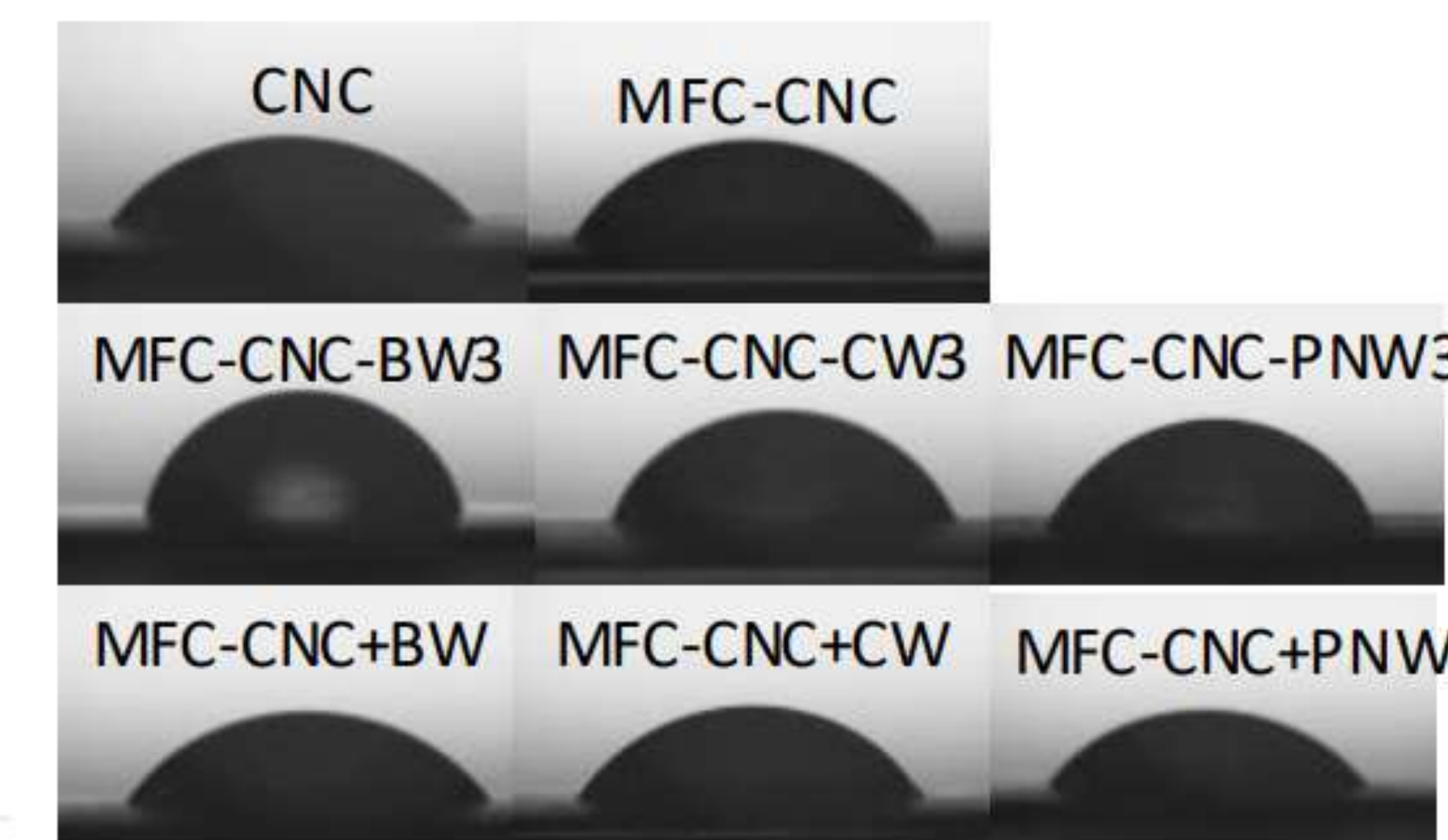


Figure 8. Image of contact angle tests.

Conclusions

- MFC and CNC are hydrophilic. Adding waxes can improve water resistant property. Beeswax works better than carnauba wax and pine needle wax.
- The current wax concentration is 0.5-1.5% (Wax-to-nanocellulose of 11:1-3:1). Increasing the wax concentration should be considered.
- Applying a single layer of sole wax as coating provides a shining surface to the paper. However, it didn't form an effective coating to the paper.

This work is part of COCOBIN project funded by Business Finland and PolyTree funded by Research Council of Finland.



Collaboration with
 TAMPERE UNIVERSITY
 KARLSTADS UNIVERSITET
 Tampereen yliopisto
Tampere University

Human skin cell model elucidates the safety aspects of hemp- and wood-based distillates

Viivi Berg¹, Riina Tiainen², Mo Yang², Henri Hakkarainen², Reijo Lappalainen¹, Marjut Roponen²

¹ Dept. of Technical Physics (UEF), Kuopio, Finland

² Dept. of Environmental and Biological Sciences (UEF), Kuopio, Finland

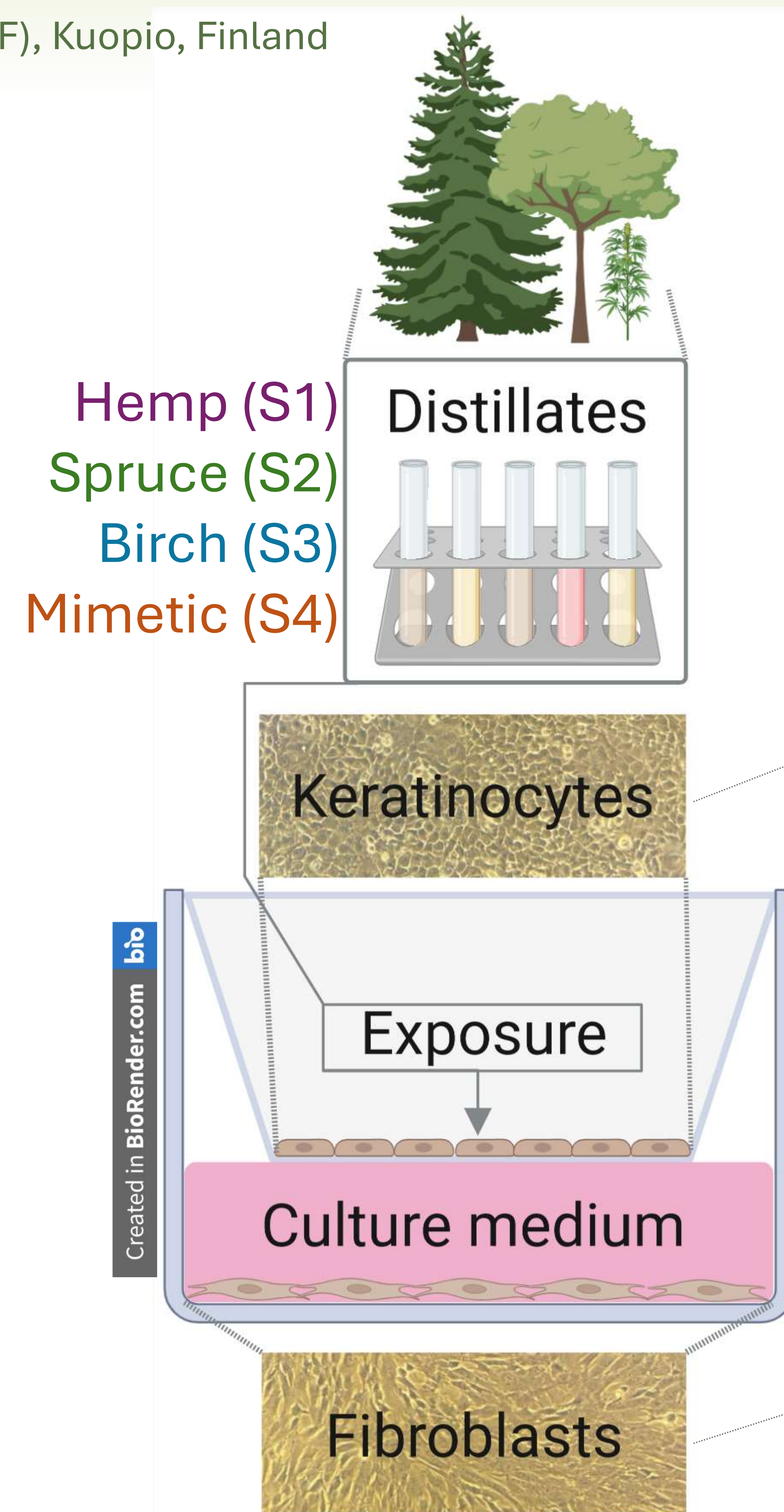
Why?

- Safety assessment
- Pre-screening
- Product development
- Skin contact

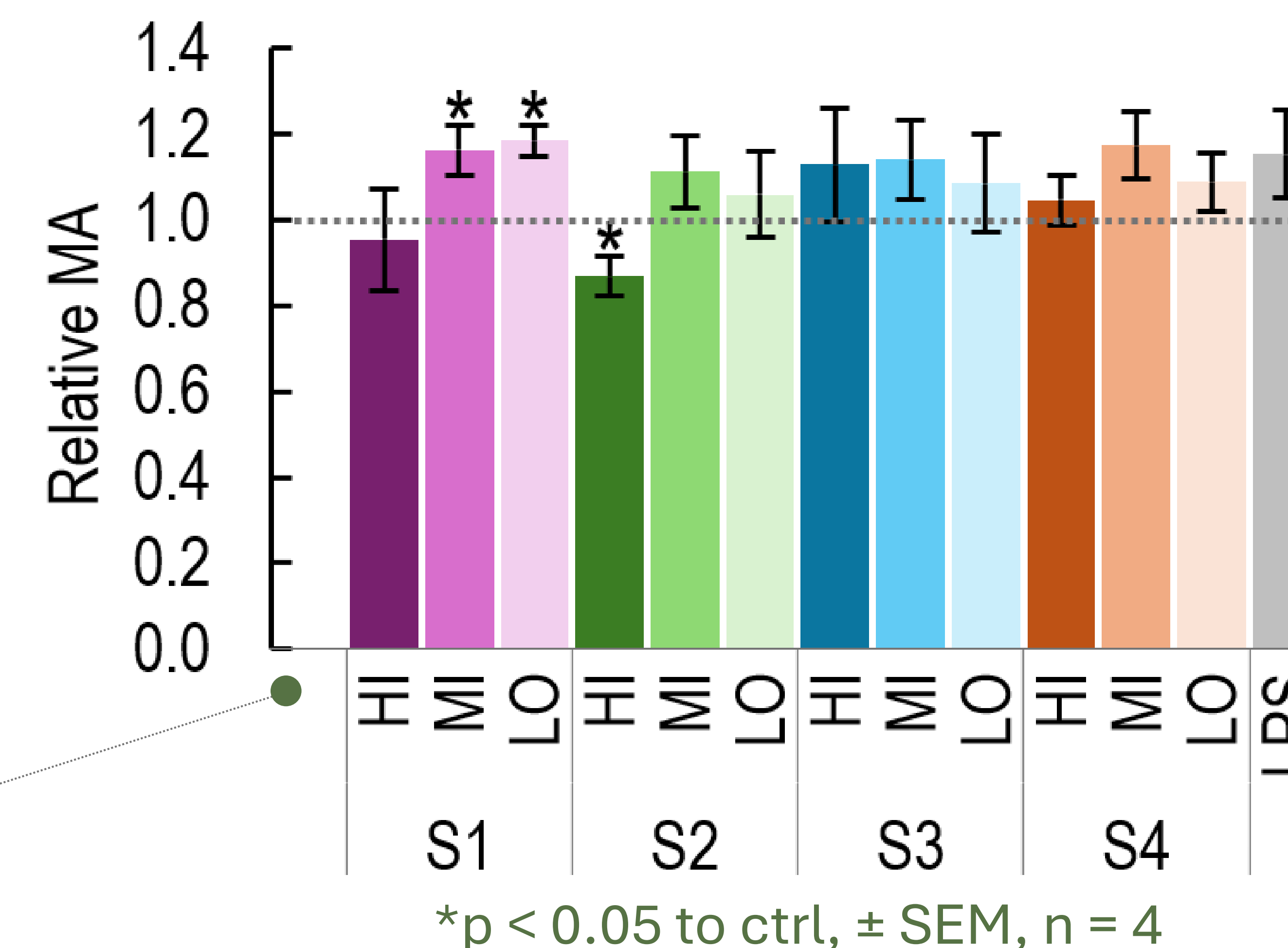
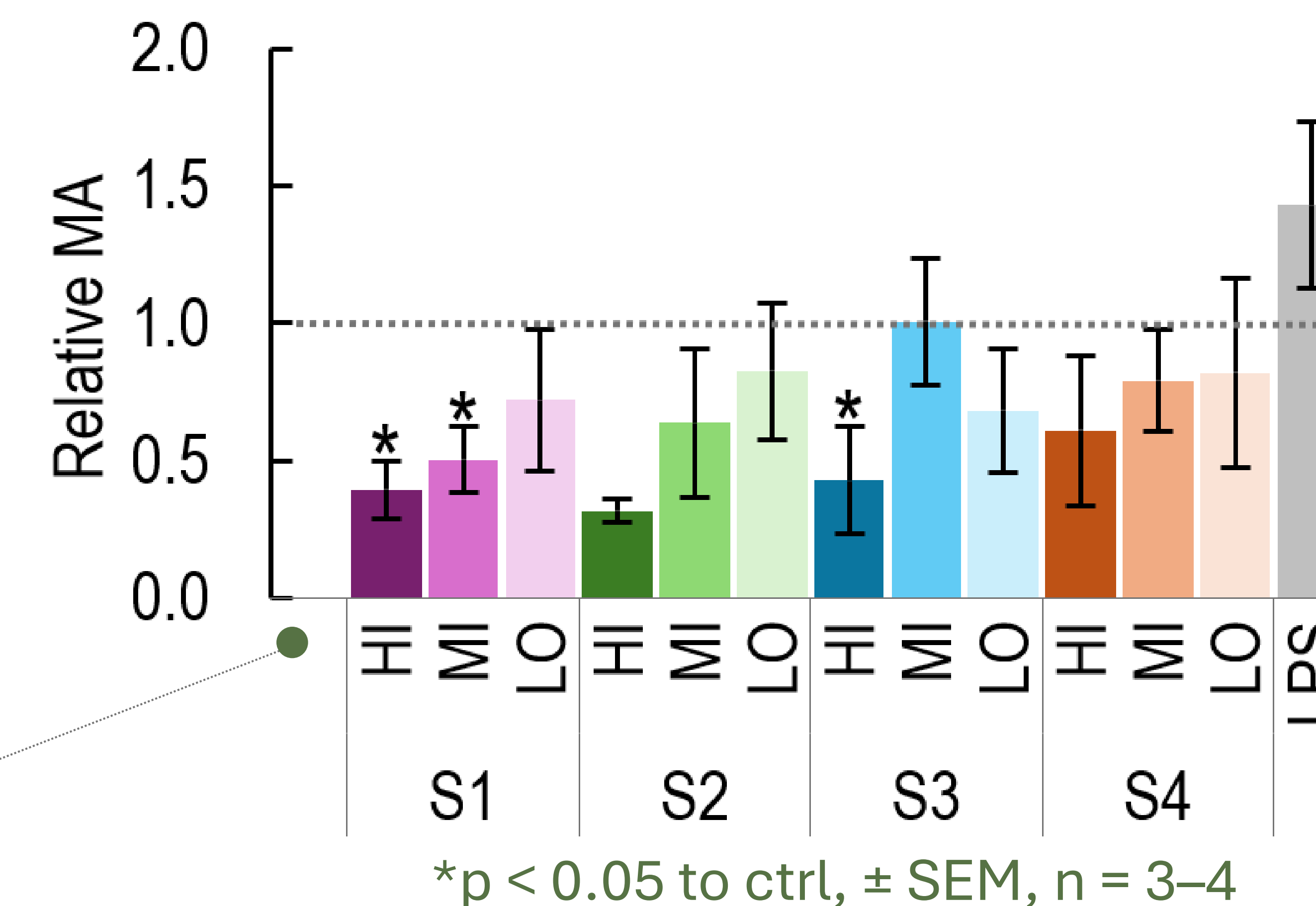
How?

- Viability
- Metabolic activity (MA)
- Oxidative stress
- Inflammatory response
- Cell cycle profile
- Migration

viivi.berg@uef.fi



Metabolic activity:



Outcomes?

- Feasibility
- Repeatability
- Simplicity
- Physiology

What's next?

- Airway model
- Optimization
- Biochar & extractives
- Composites, coatings & components



Circular tomato greenhouses

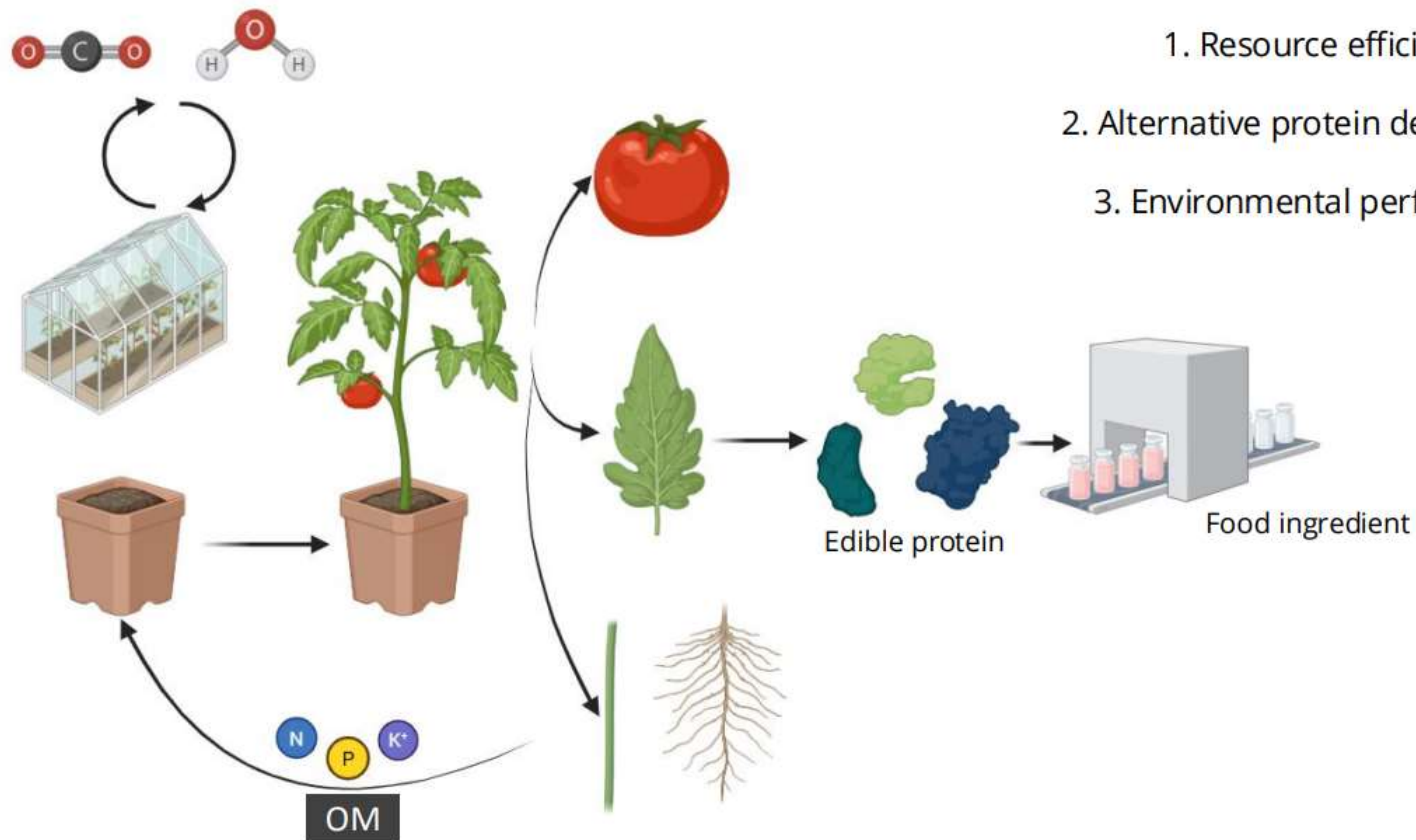
Keywords: biowaste valorization, circular supply chains, plant breeding, life cycle assessment (LCA)

ONLY

51% of input nutrients,
8% of input water, and
5% of input CO₂,
stay in the fruit

OUR PROPOSAL

1. Design a circular supply chain
2. Use breeding techniques to increase protein content
3. Assess the supply chain with life-cycle assessments



OUTCOMES:

1. Resource efficiency
2. Alternative protein development
3. Environmental performance

Extraction of phenolic compounds from hemp and wood bark: methods, sustainability assessment and business model

Dimastyaji Yusron Nurseta, Aitana Zoco, Aleezay Anjum Ahmed, Yuanyuan Cheng, Ellen Slegers, Renzo Akkerman, Reijo Lappalainen, Laura Tomppo, Irina Mihailova, Antti Haapala

1. Objective

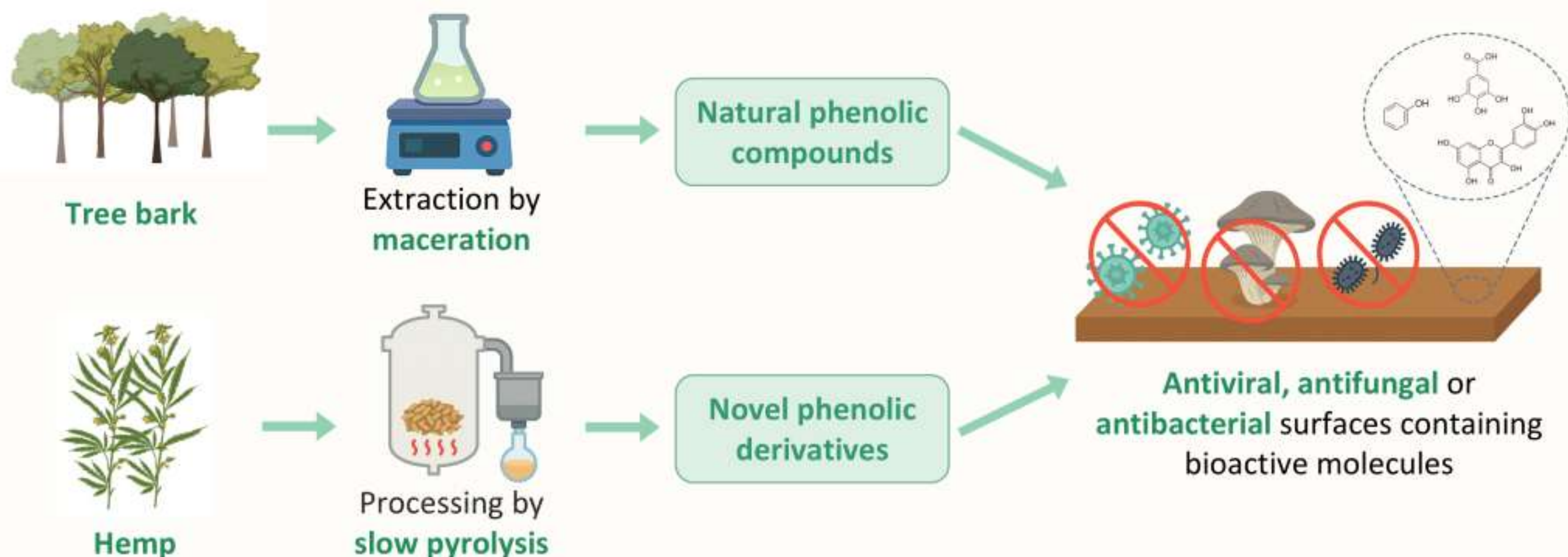
Advance towards a sustainable bioeconomy by valorizing hemp hurd and tree bark residues and evaluating the economic and environmental feasibility of scaling these processes, supported by a triple-layered business model.

3. Environmental Performance

Prospective LCA



2. Development of Functional Coatings



4. Triple-Layered Business Model



The Added-Value of Citizen Science to Increase Awareness and to Make Better Decisions for Preserving Soils Health

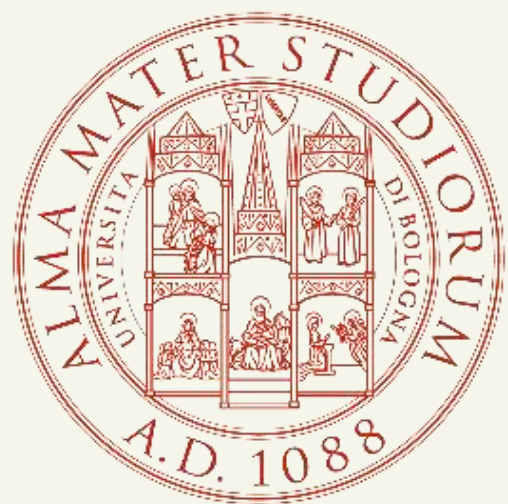
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European Bioeconomy Scientific Forum 2025

11-13 June 2025, Joensuu



ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA



ENGAGING CITIZENS IN SOIL SCIENCE:
THE ROAD TO HEALTHIER SOILS



Co-funded by
the European Union



UK Research
and Innovation

The Power of Play: Digital Technologies Transforming Forest Planning

Philip Chambers¹, Teppo Hujala¹, Mari Selkimäki¹, Isabella Hallberg-Sramek², Karin Öhman² | ¹University of Eastern Finland,
²Swedish University of Agricultural Sciences | European Bioeconomy Scientific Forum 2025



The Challenge & Vision

🌲 Forest Bioeconomy +
📱 Digitalisation
+ 👥 Communities

🌍 **The Challenge:** Sustainable bioeconomy requires social inclusivity & transparency

🎮 **Innovation:** Playful digital technologies transforming stakeholder engagement

👉 **Vision:** Democratic forest planning supporting bioeconomy transition

Exploring how playful technologies can democratise bioeconomy decision-making



Network Research Focus

📊 Interdisciplinary
Research Network

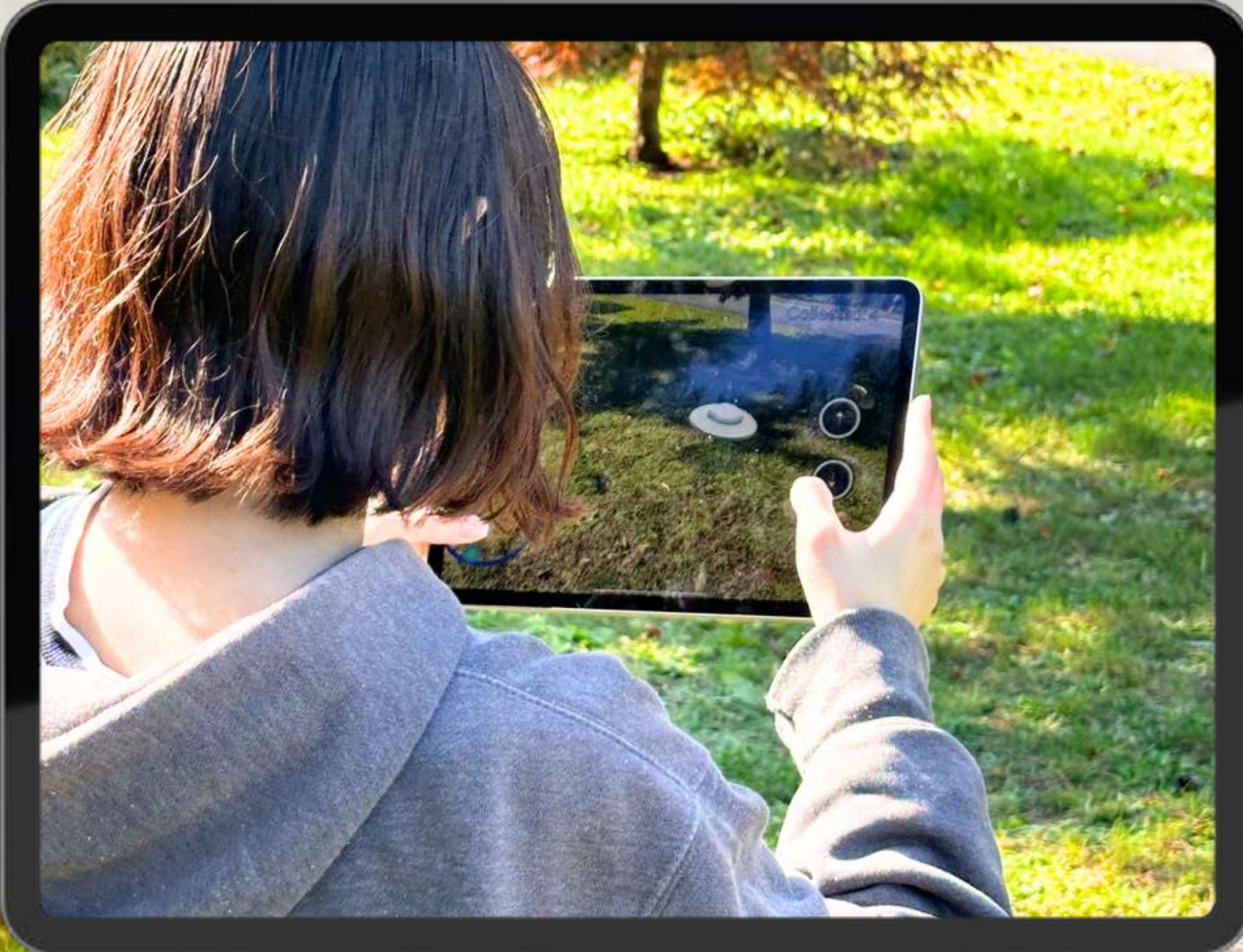
PPGIS
Public
Participation GIS

VGI
Volunteered
Geographic Info

LBGs
Location-Based
Games

Gamification
Digital
Engagement

Assessing current trends & developing
methods for inclusive forest planning



Addressing Critical Research Gaps

📊 Forest Bioeconomy
Research Landscape

Social Inclusion: Limited knowledge of public perceptions in forest bioeconomy

Stakeholder Engagement: Need for participatory approaches in forest planning

Democratic Governance: Gaps in inclusive decision-making processes

Regional Variations: Understanding cross-cultural forest management differences

Our network tackles identified gaps in forest
bioeconomy social dimensions



Join Our Network!

2025 Activities: Online meetings • Stakeholder workshops • Knowledge exchange
Participate: Share expertise, test methods, collaborate on research
Outcomes: Publications, policy brief, research agenda for post-2025



Scan me! 😊

9

European
countries

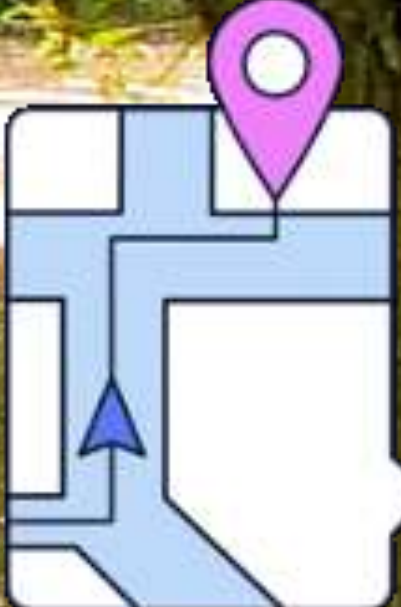
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In-person
meetings

6

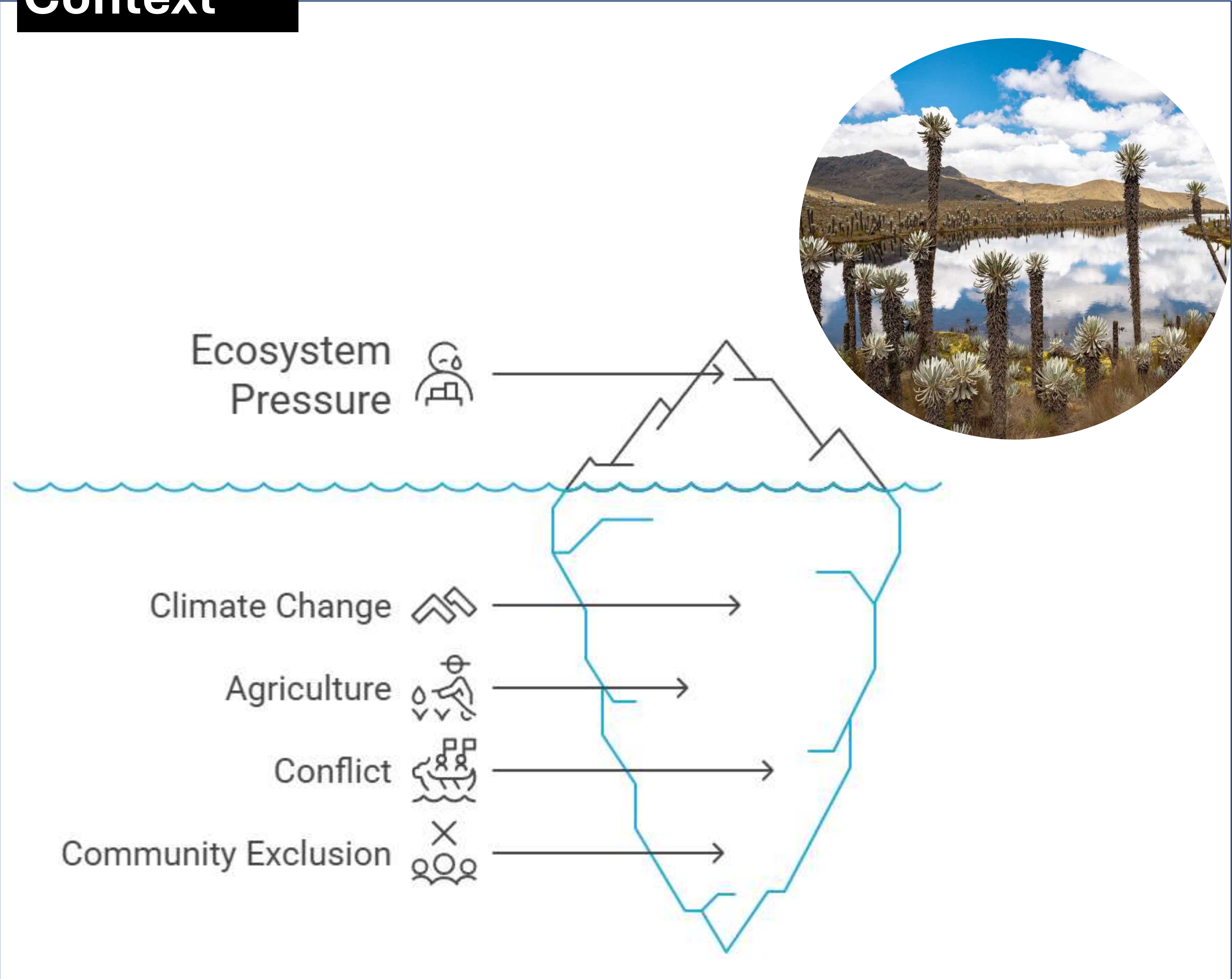
Webinars

Contact: Philip Chambers
University of Eastern Finland
sites.uef.fi/playfairforest/



Enhancing the Sustainable Utilization of High-Mountain Byproducts in Colombia

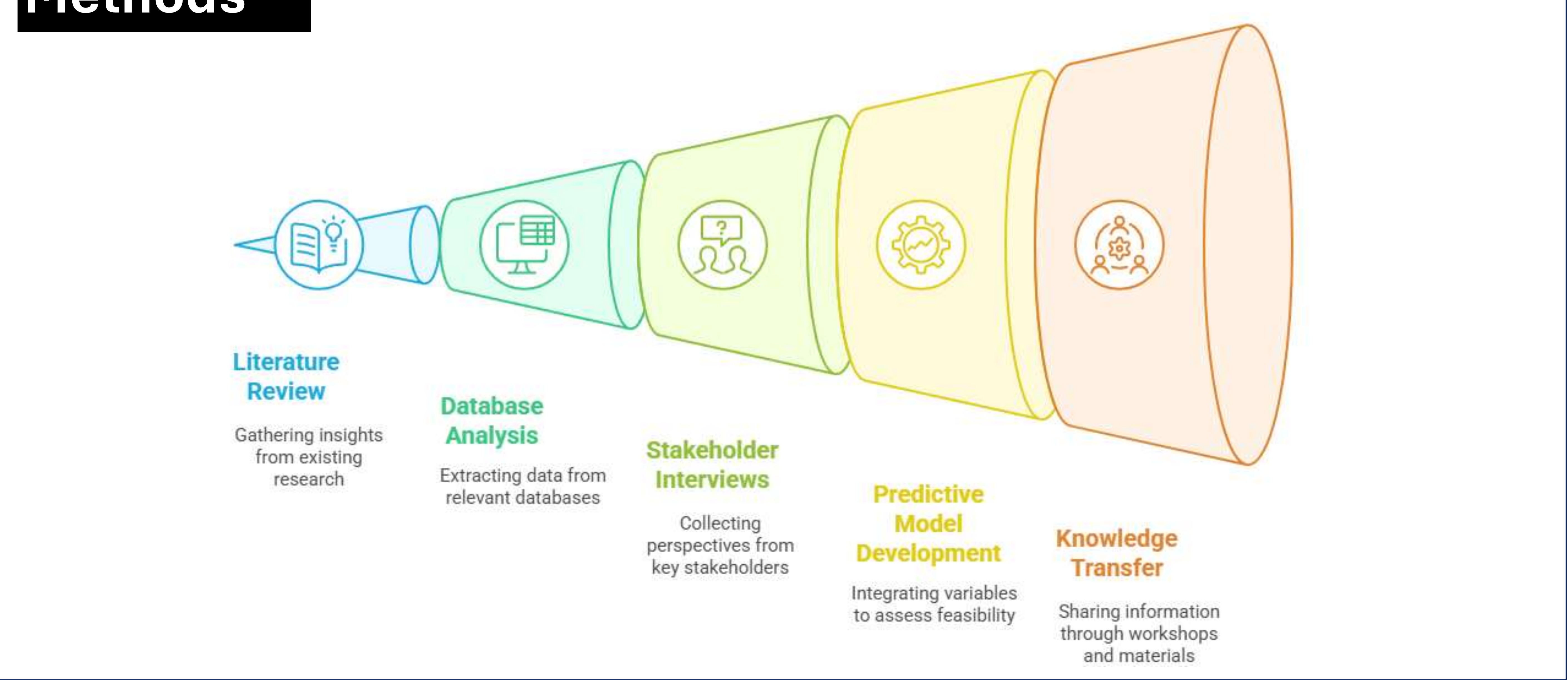
Context



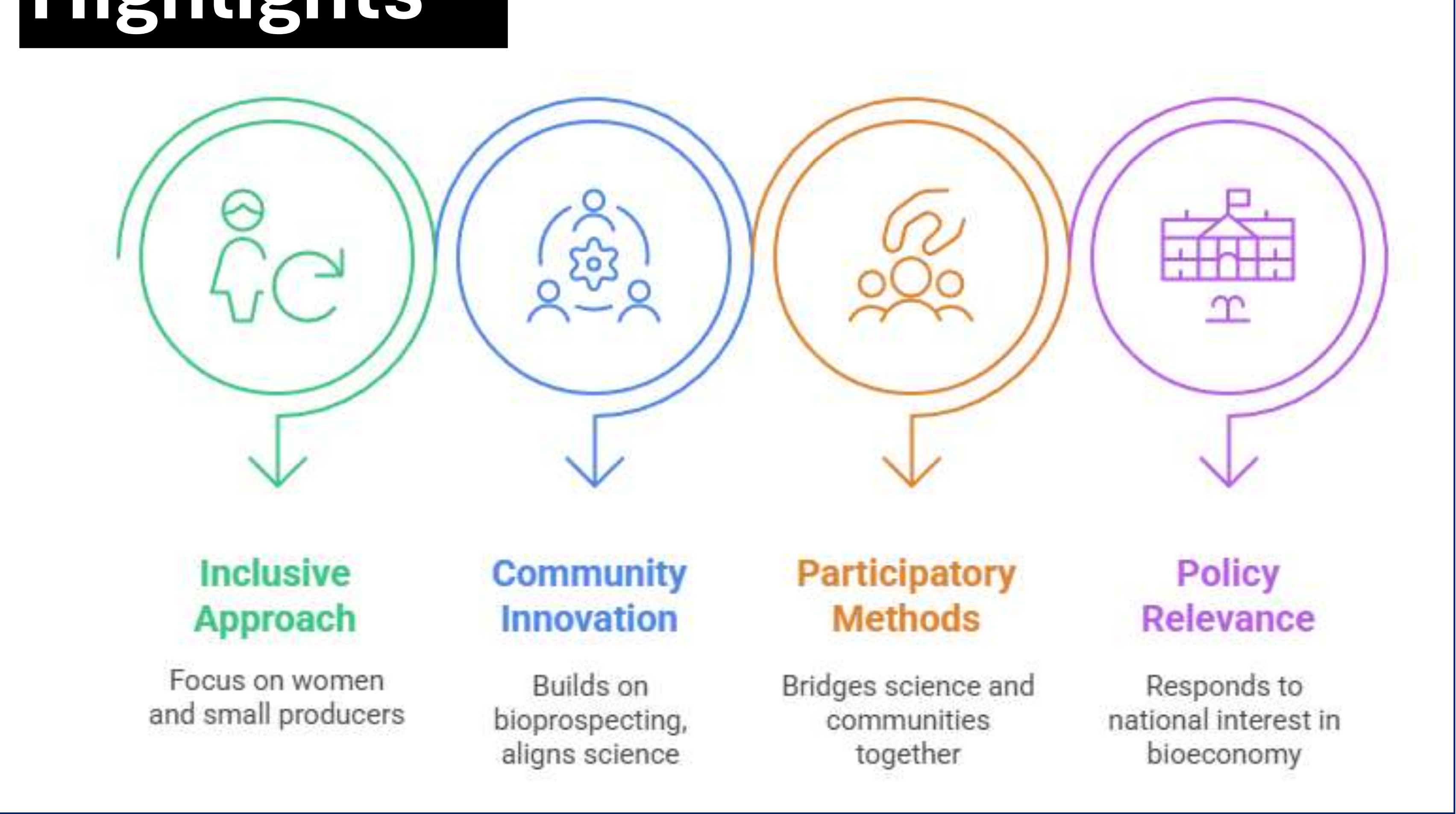
Aim

This research aims to develop a predictive model to **assess the socioeconomic and environmental viability** of high-mountain vegetation byproducts.

Methods



Highlights



Explore My Research



Faculty of Forestry and Wood Sciences

Steering bioeconomy through peatland conservation: A policy review from Ramsar to the Nature Restoration Law.

Chaitanya Suárez-Rojas¹ & Camilla Widmark²

¹Postdoctoral researcher, ²Associate professor - Department of Forest Economics, Swedish University of Agricultural Sciences, Umeå, Sweden



Are policies from different governance levels working in the same direction to prevent peatland degradation and provide consistent restoration measures?

- Europe and Sweden broadly respond to international concerns regarding the need to protect, restore and sustainably use peatlands.
- However, there is incoherent information about peatland ecosystem services, the pressures that deteriorate them, and the specific solutions for their restoration.
- ➔ More coordination and research-based knowledge are needed...





Towards strong sustainability forest services – Decision support for a more sustainable forest use

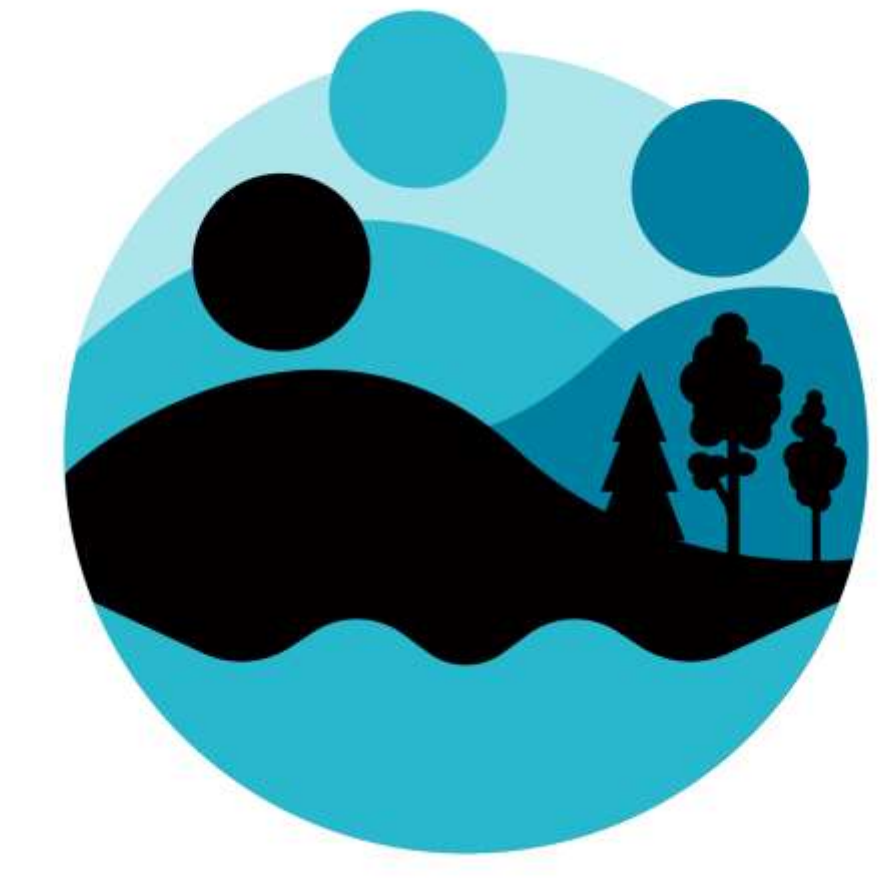
Anu Laakkonen (anu.laakkonen@uef.fi) University of Eastern Finland, School of Forest Sciences
European Bioeconomy Scientific Forum 2025. Poster session 2. Bioresource management and governance

Strong sustainability paradigm:
well-being of nature and people
beyond mere economic gains

**Development of decision support
services and forestry education:**
seeing forest planning and operations
through ecological and
forestry lenses



Environmental Collaboration and Conflict Resolution (ECCR)



Objective of ECCR network and course series

The ECCR aims to promote partnerships that co-create knowledge and build skills for environmental collaboration and conflict resolution through teaching and research across continents.

Our partners

The ECCR fosters strong partnerships among researchers, universities, research institutions, NGOs and local governments.



ECCR course series



Our practice-oriented courses use real-world case studies and offer a comprehensive framework for understanding conflict and collaboration. We explore key topics such as consensus building, facilitation and mediation. A strong emphasis is placed on group discussions and encouraging participants to actively engage and reflect.



Key learning outcomes

Participants will learn to apply the principles of collaborative approaches to natural resource governance and conflict resolution. Combining theoretical foundations with real-world case studies, they will explore concepts and tools that support collaboration, analyze environmental conflicts, and critically reflect on how collaboration works in different social, cultural, and ecological contexts. Participants will also engage with a global network of researchers and practitioners working on environmental collaboration and conflicts.

ECCR2024 Report available (QR code),

Next ECCR activities

1. The ECCR course series continues: 2025 in Yogyakarta, Indonesia. 2026: Joensuu, Finland. 2027: Southern Africa.
2. ECCR-ON: Online course offered in 2026.

Open Planning for a Circular Bioeconomy at Local and Regional Levels

Takanori NAGANO*, Kenji TANAKA**, Katsuhiko, TAKATA***

*Kobe University, **Kyoto University, ***Akita Prefectural University, Japan



How can stakeholders design diverse circular-bioeconomy addressing locality?

How can we empower bioresource governance across different sectors at regional scale?

Visualization of ecosystem services and industrial value chain is the key.

Stakeholders should be able to refer to global database for inspiration and design.

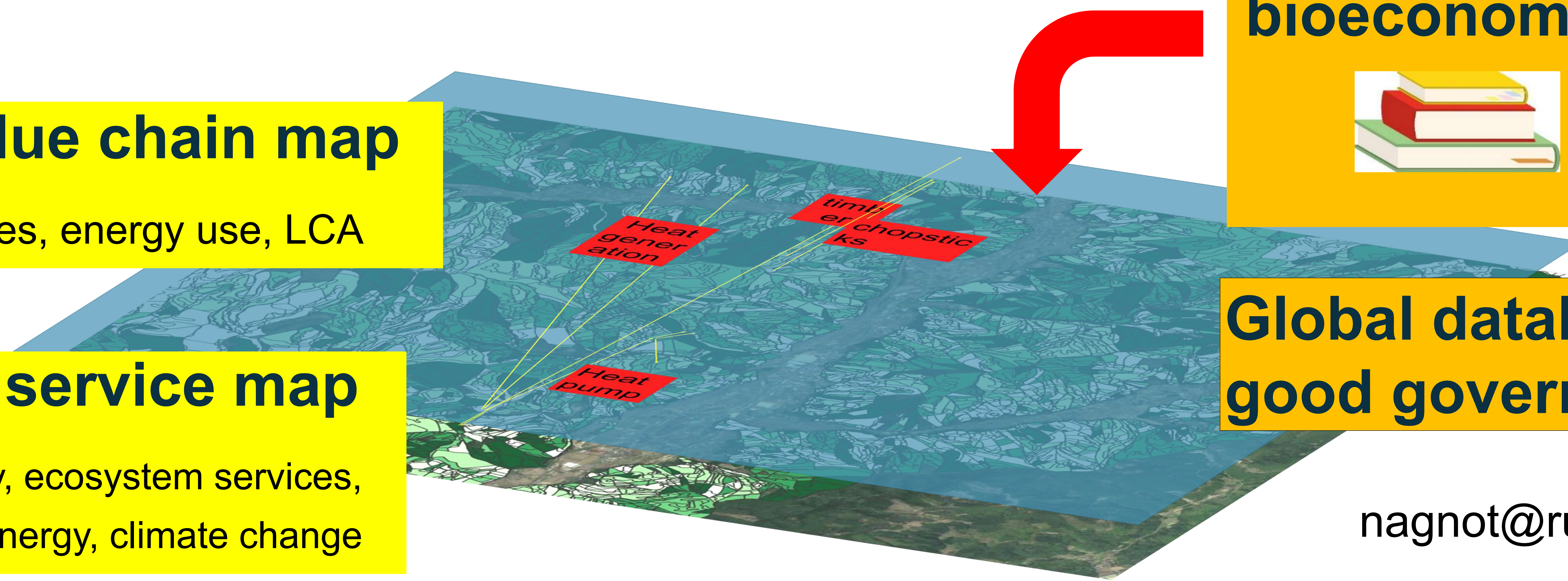
We are designing tool kits and looking for collaborators

Industrial value chain map

Biomass flow, facilities, energy use, LCA

Ecosystem service map

Biomass productivity, ecosystem services, zoning, renewable energy, climate change



Global database of new bioeconomy technologies



Global database of good governance



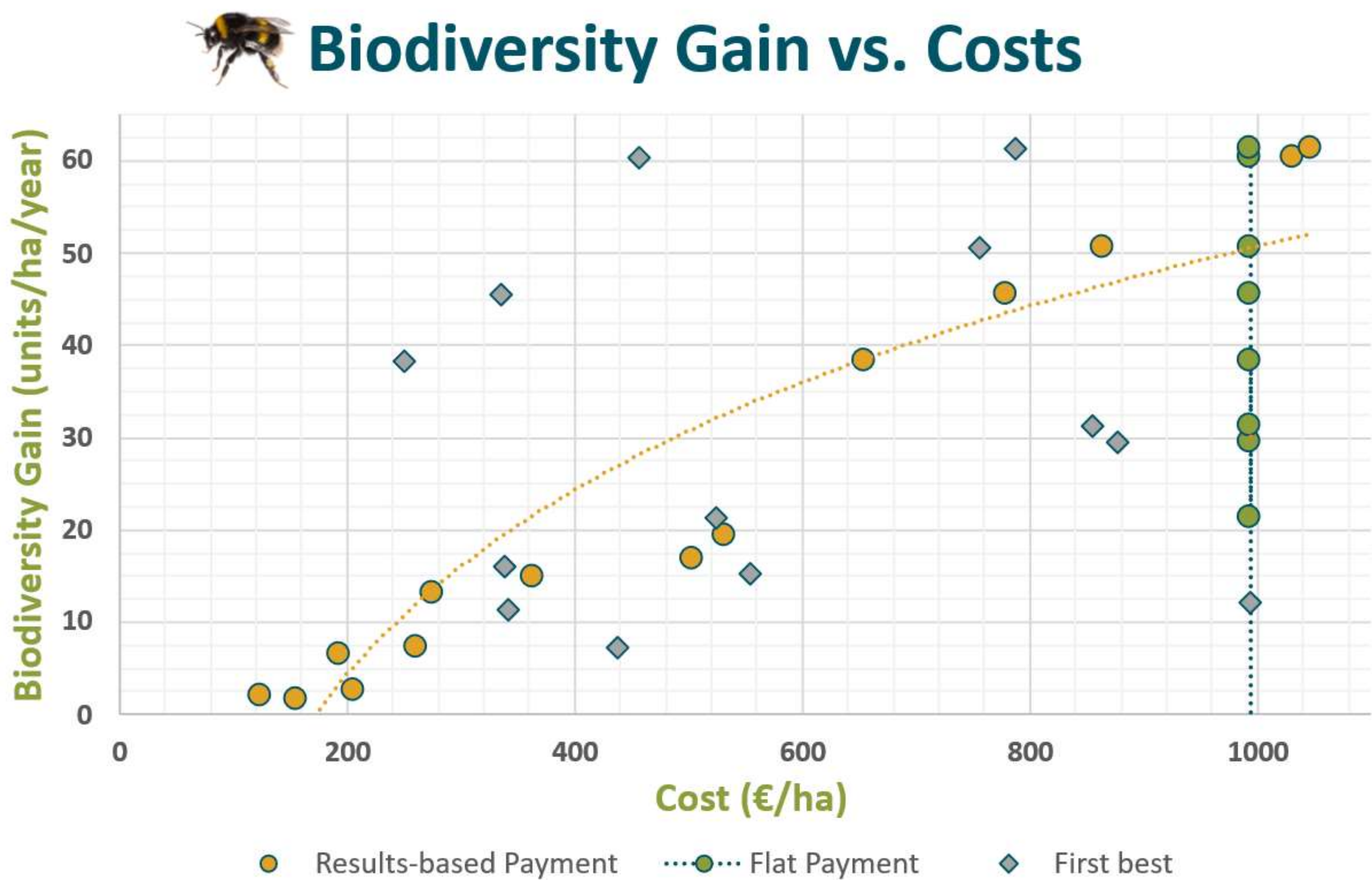
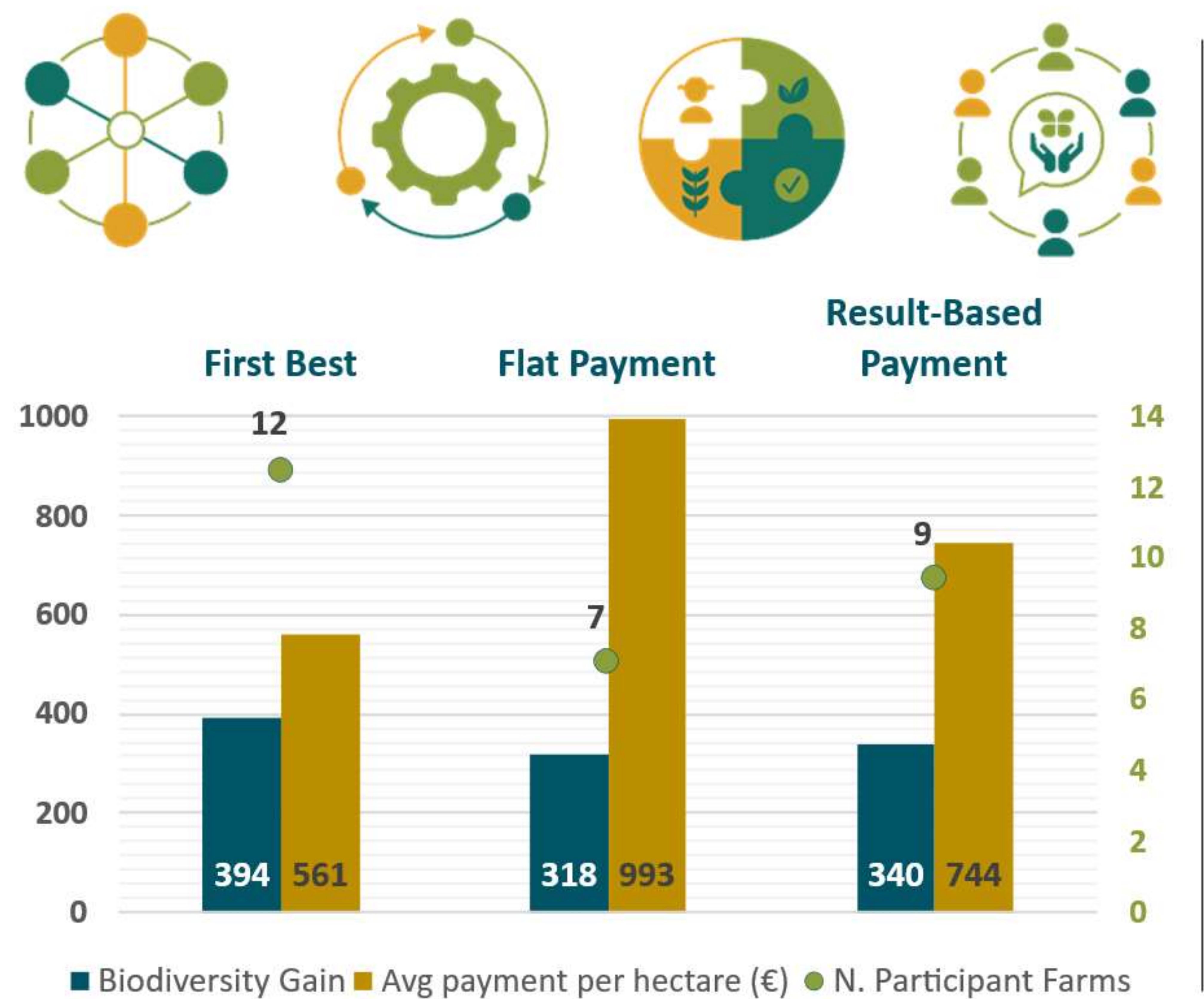
nagnot@ruby.kobe-u.ac.jp

Modelling the Interconnection between Instrument Design, Acceptance, and Effectiveness/Efficiency of Incentives

Monserath X. Lascano G., Fabrizio Ungaro, Riccardo Borgia, Stefano Targetti, Matteo Zavalloni, Meri Raggi, Davide Viaggi



Alma Mater Studiorum Università di Bologna - Department of Agricultural and Food Sciences



KEYWORDS

Farmland biodiversity
Bioeconomy
Agri-environmental subsidies
Policy instruments
Result-based payments
Cost-effectiveness
Monitoring technologies
Sustainable agriculture
Contract design
Ecosystem services

- Different policy instruments fundamentally change both the cost and the effectiveness of biodiversity interventions.
- These results assume zero monitoring costs; thus, reducing monitoring costs through new technologies is a key enabler for implementation.

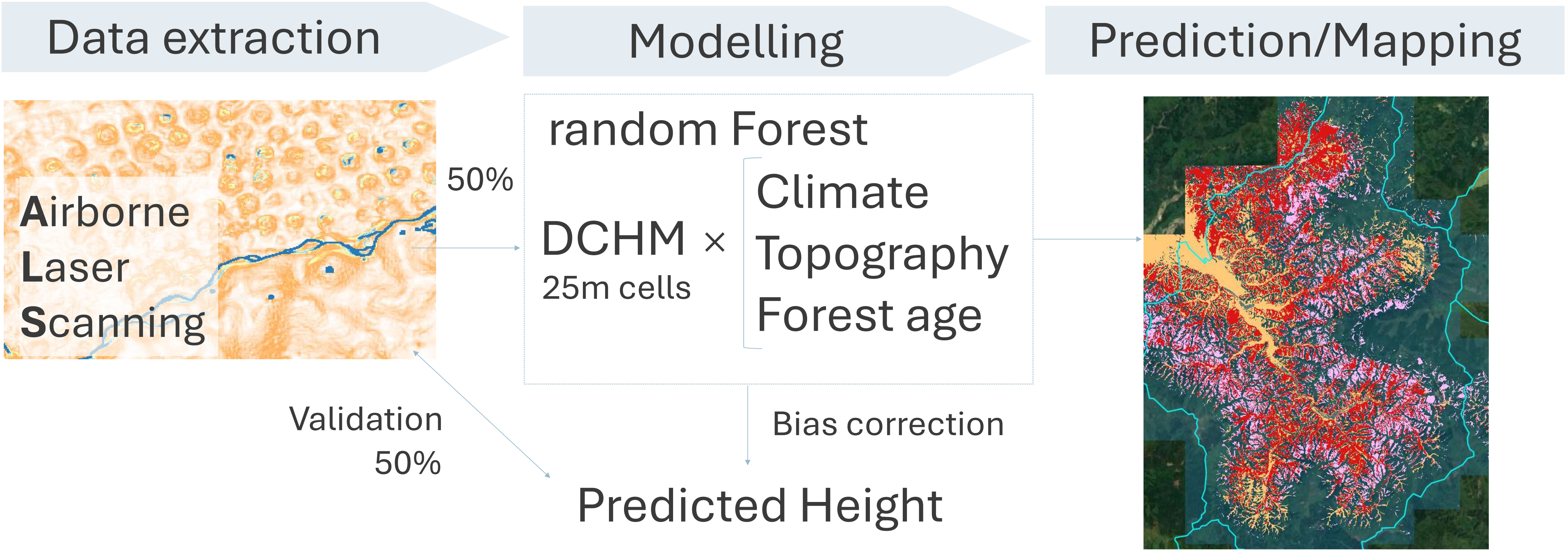
Building the foundation for a regional bioeconomy: integrating forest big data and machine learning to predict cedar forest height and growth

Katsuhiro Nakao

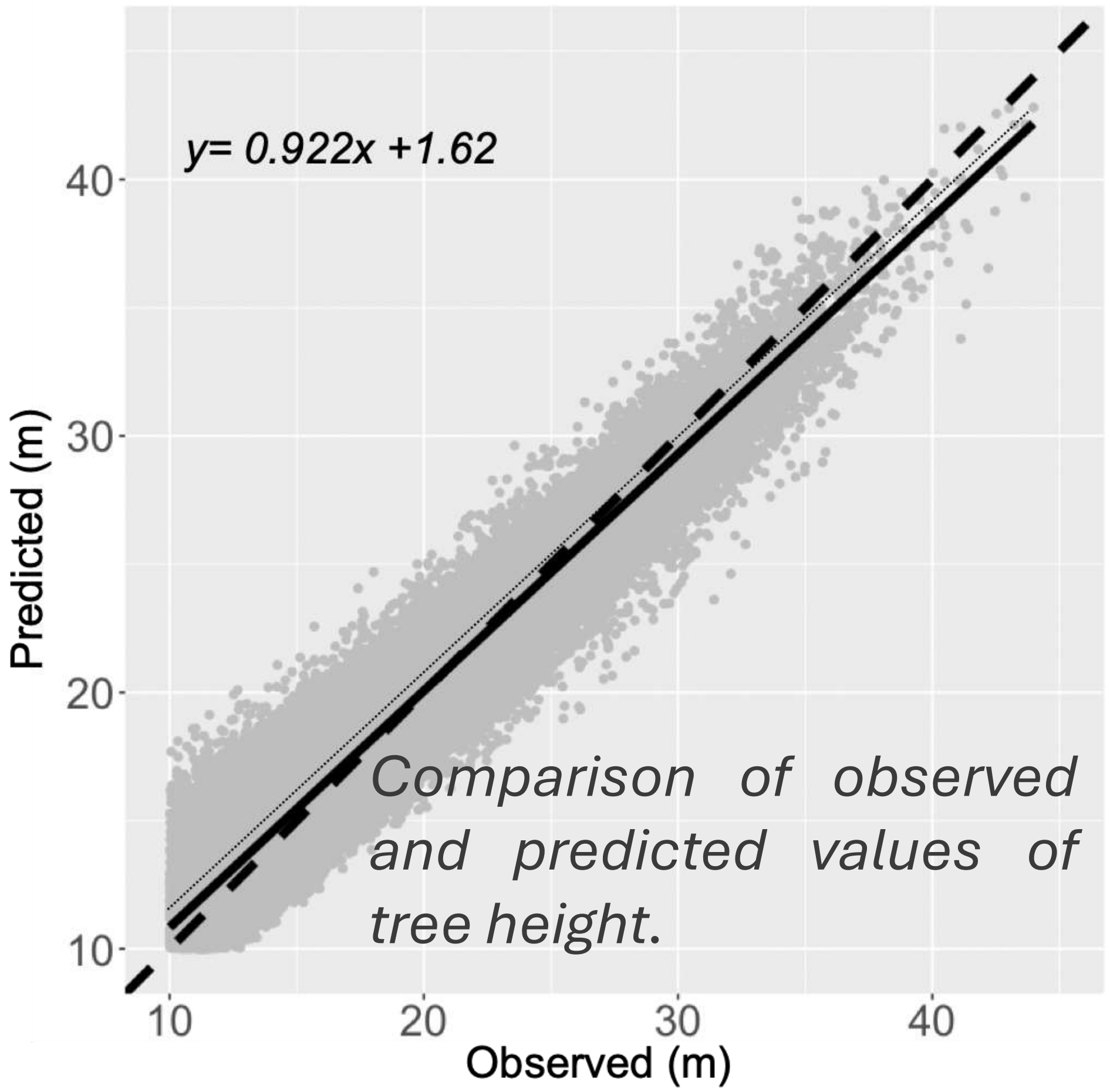
Forestry and Forest Products Research Institute, Japan



1. Analytical framework



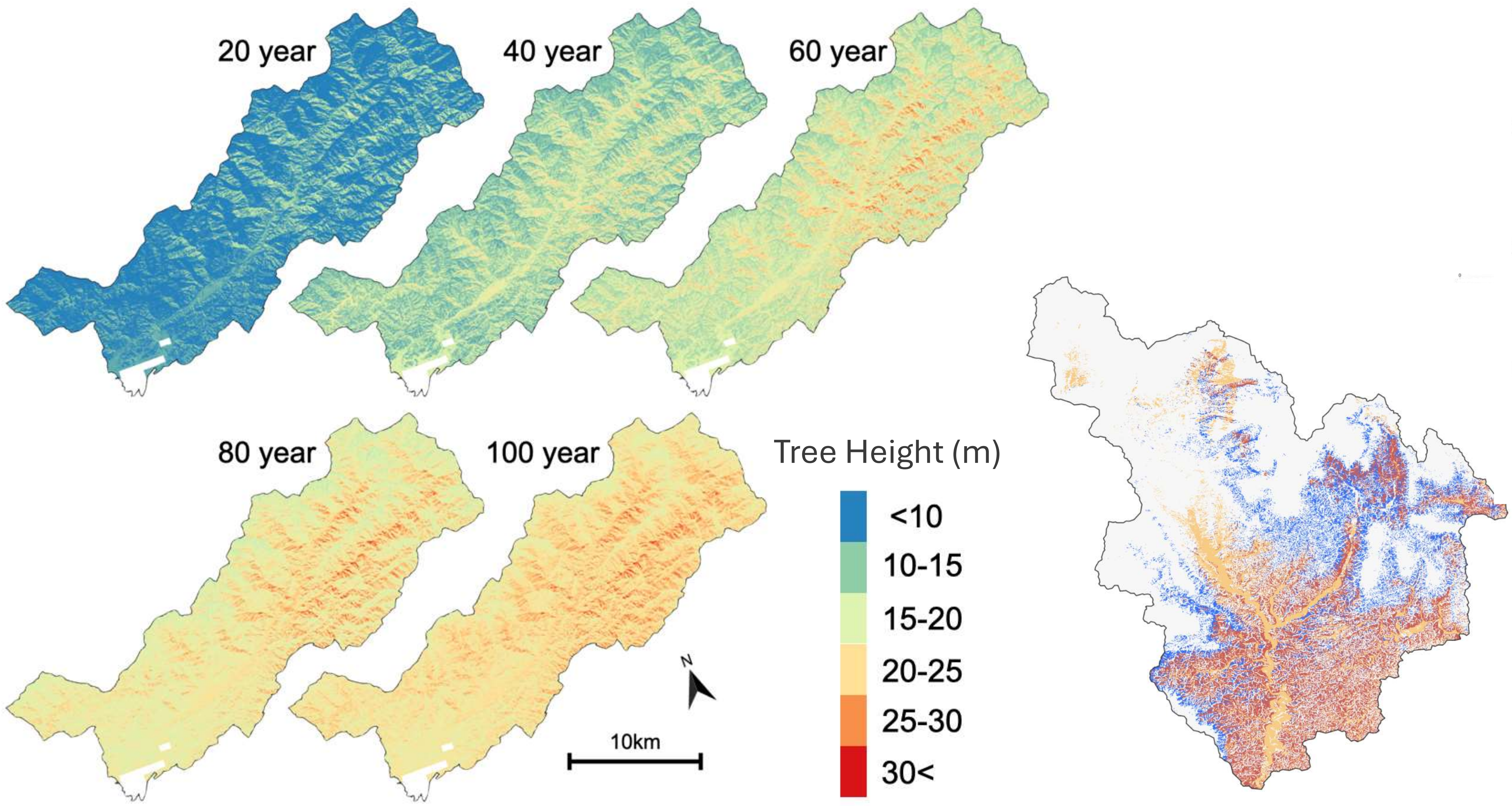
2. Validation



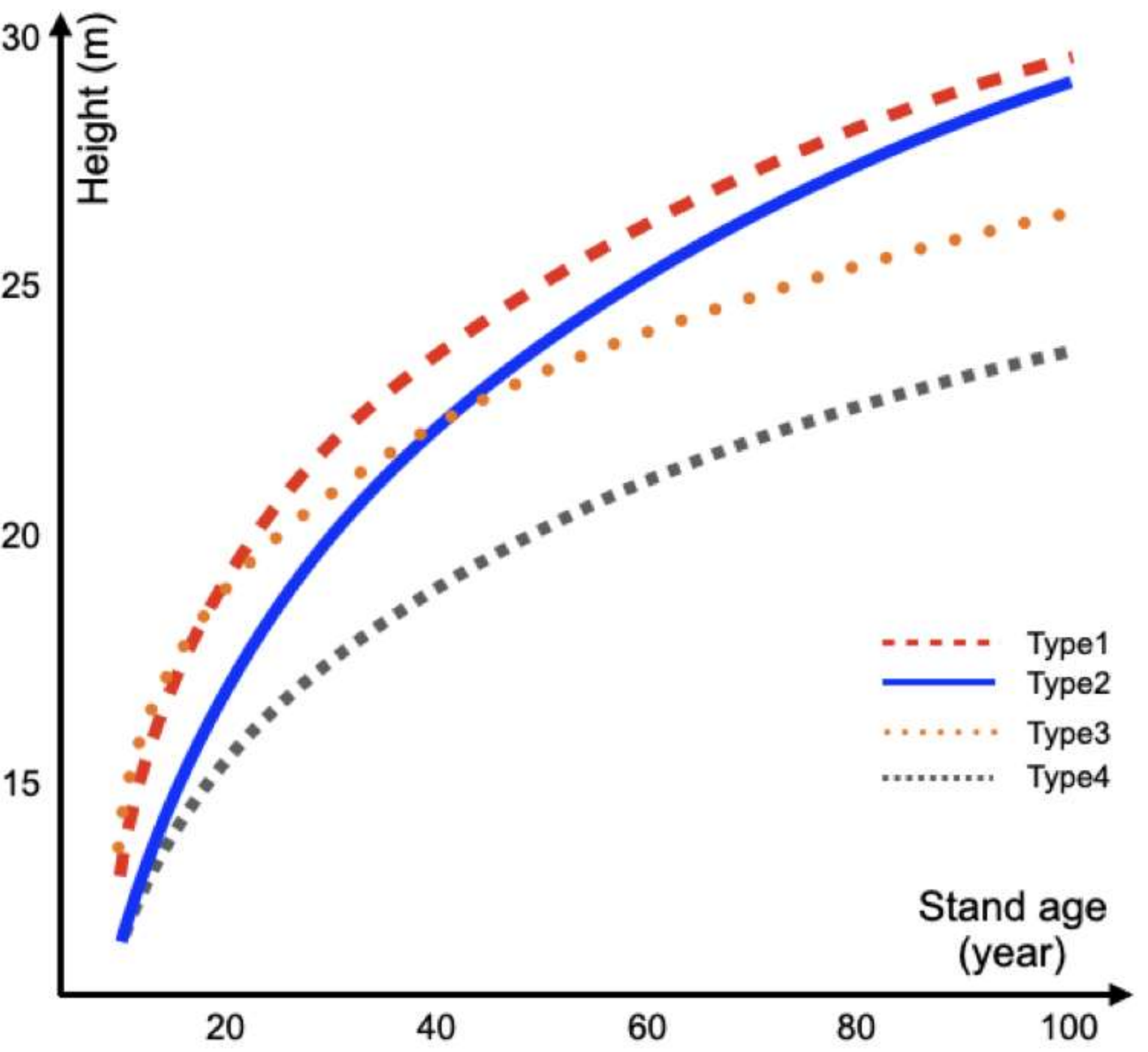
Highlights

- Developed method for quantitative analysis of tree height growth at regional scale.
- Predicted Japanese cedar tree height growth with high accuracy/high resolution.
- Growth patterns according to forest age were visualised in the model area.
- Implementation in local forest management is being considered via QGIS.

3. Predicting height growth

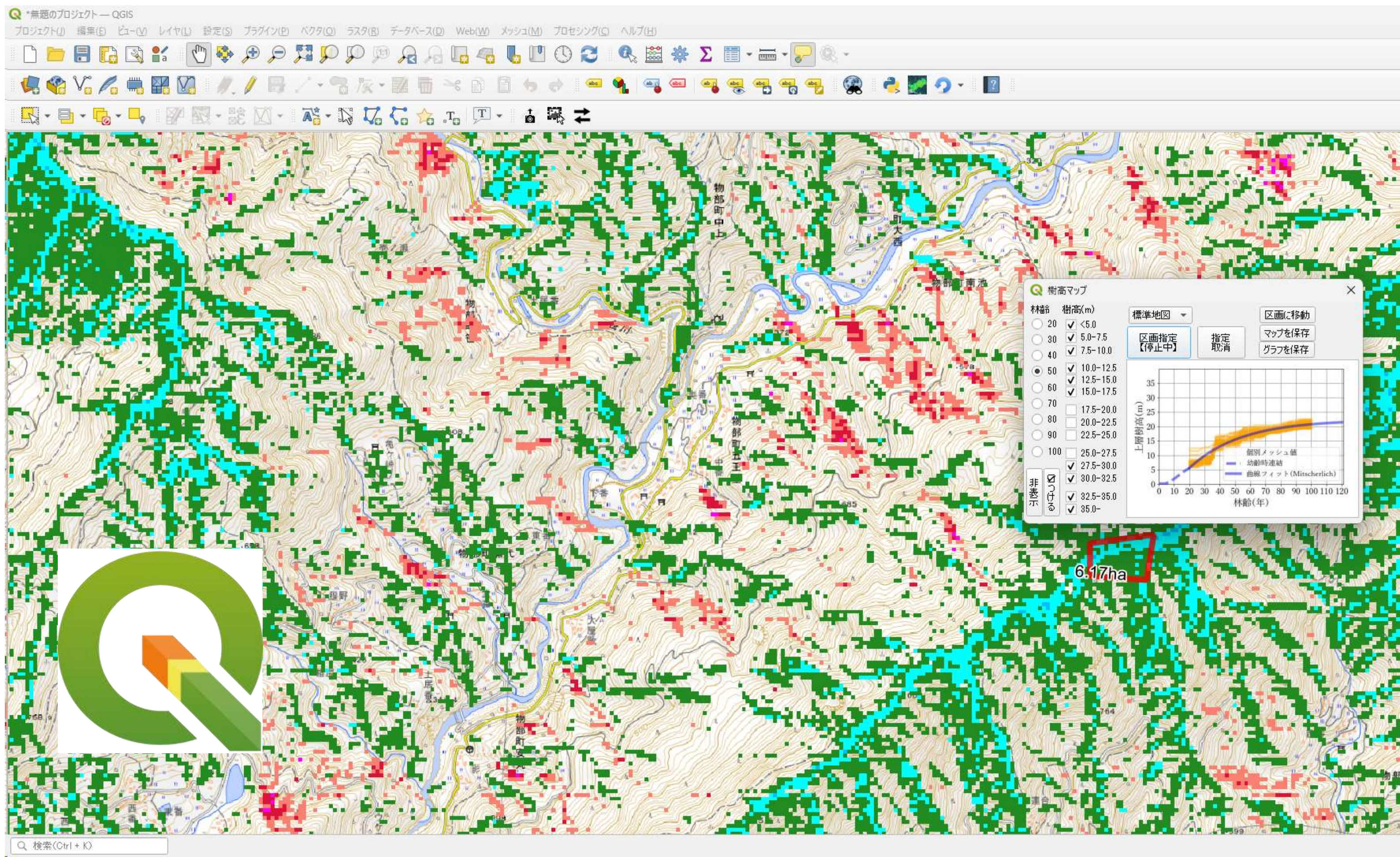


4. Potential height growth types



- Type1:** High-growth
- Type2:** Late-maturing
- Type3:** Precocious
- Type4:** Low-growth

5. QGIS plug-in



Please check our paper for more details.

knakao1001@gmail.com



Bioeconomy in Countries of the Mekong Region

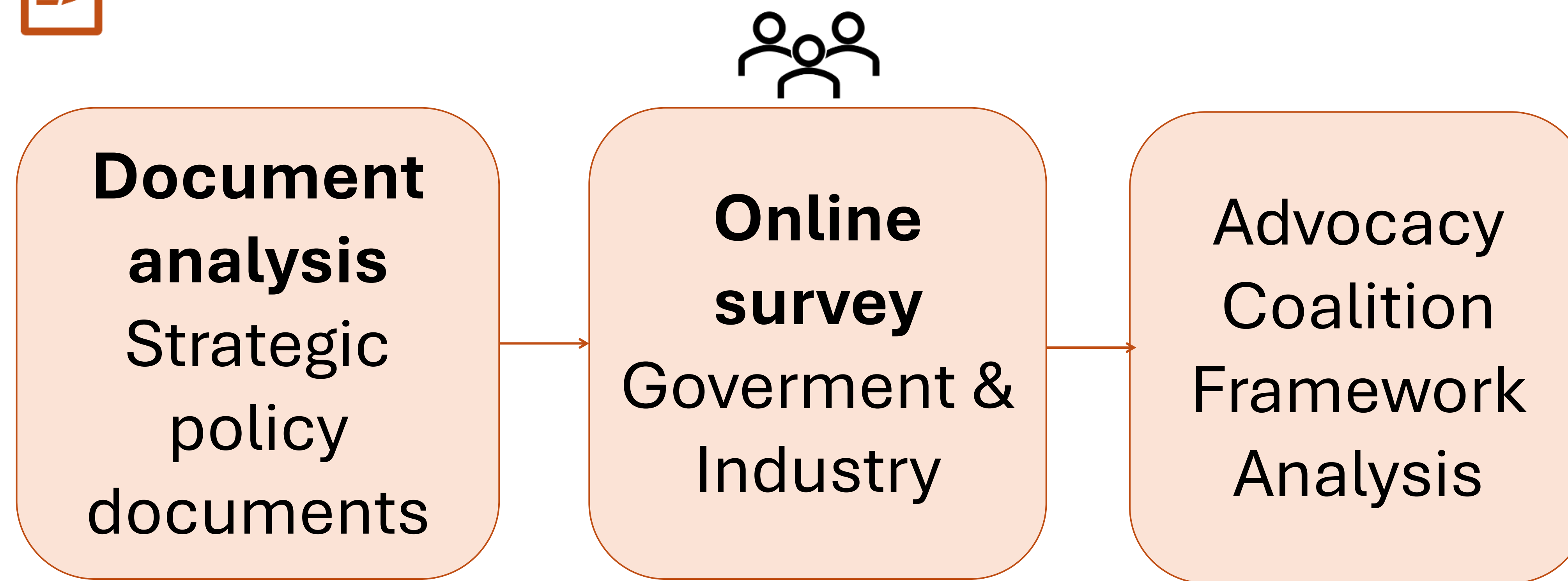
Stakeholders Understanding and Perceptions in Thailand, Vietnam, and Laos.

Rinn, Radek, Martin Jankovský, Petra Palátová, Sandra Paola García-Jácome, Alice Sharp, Prasit Wangpakapattanawong, Nataša Lovrić, Manh Vu Van, Minh Doan Thi Nhat, Bounheuang Ninchaleune, Inta Chanthavong, Kongchan Doungmala

WHY IT MATTERS

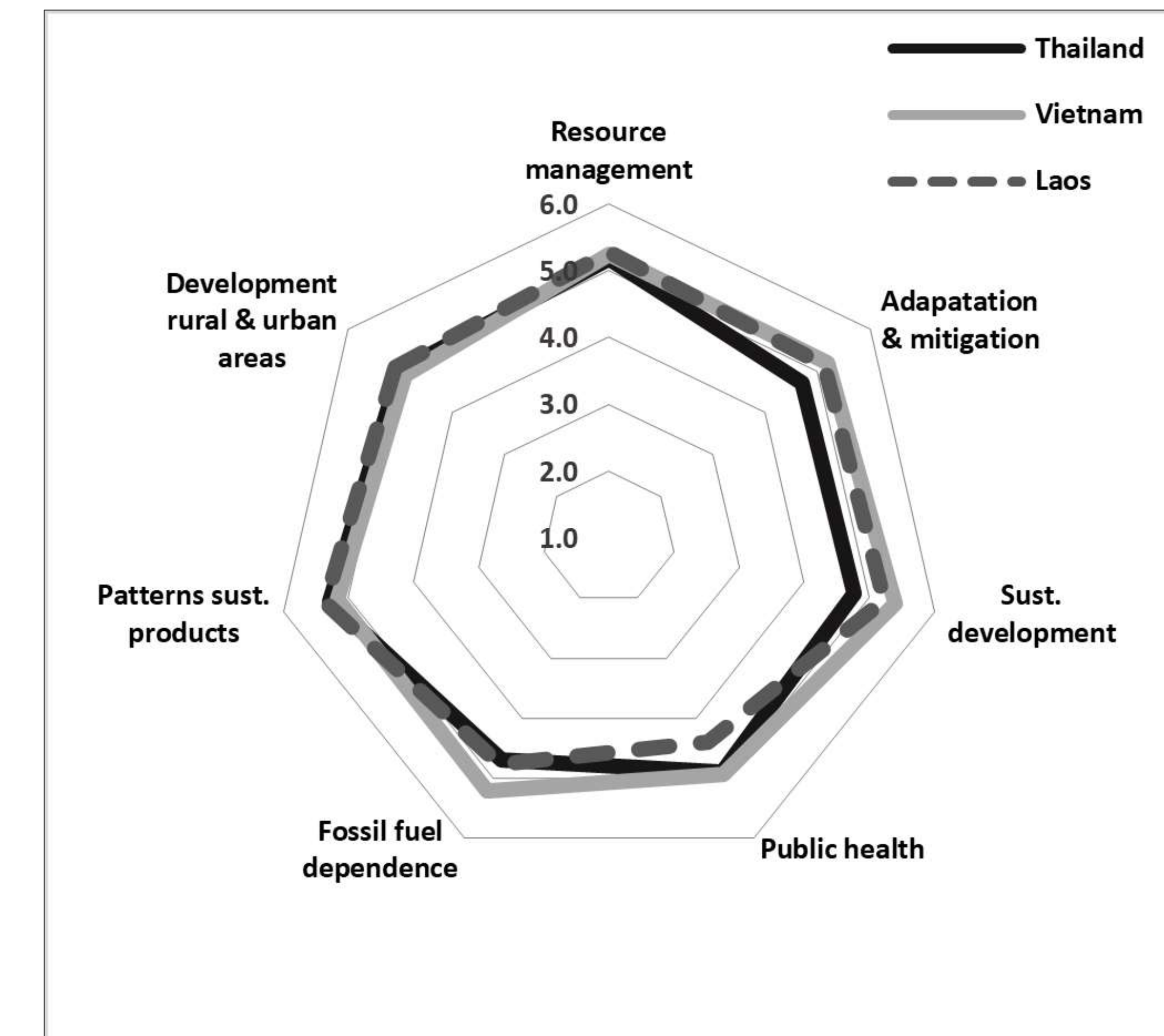
- Goal: Understand how stakeholders in Thailand, Vietnam, and Laos perceived BE.
- Why is it important? BE can drive sustainable development, but stakeholders face barriers.

WHAT WE DID



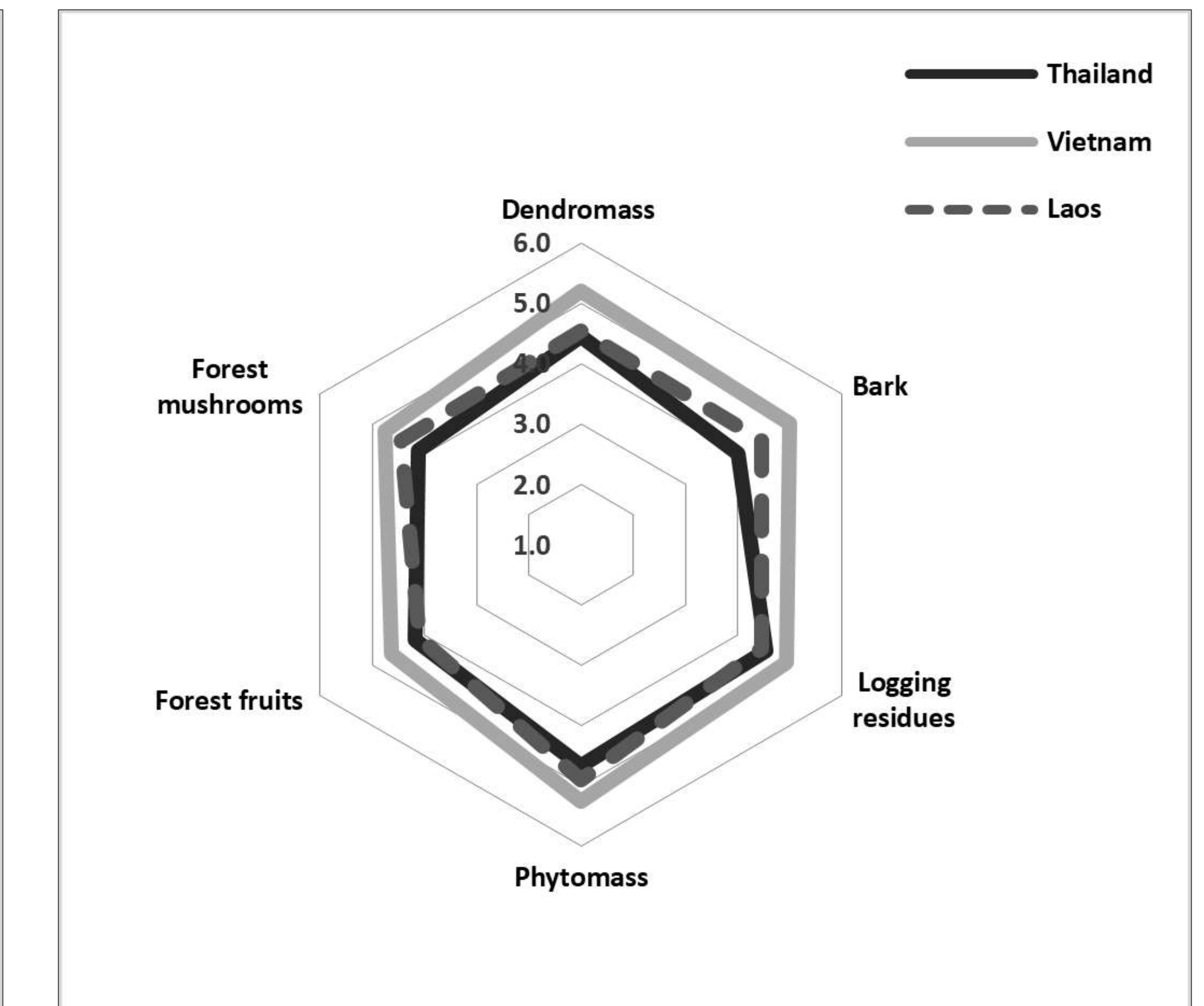
WHAT WE FOUND

Perceived BE goals.



Key insight: Aligned vision on BE goals despite lack of formal strategies.

Perceived forest-based renewable resources.



Key insight: Forest-based sector showed a clear connection with BE in all the countries.

BARRIERS

- Limited expert knowledge in BE.
- Insufficient state-level support.
- Low technological development.

RECOMMENDATIONS

- Greater policymaker involvement.
- Dedicated BE strategies with country-specific approaches.

FUTURE RESEARCH

- Economic valuation of BE potential.
- Technology transfer mechanisms.
- Comparison with EU countries.



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e-mail: garcia_jacome@fld.czu.cz



Faculty of Forestry
and Wood Sciences

WWF, 2015. <https://www.worldwildlife.org/magazine/issues/spring-2015/articles/the-mekong>

EVA4.0 (Advanced research supporting the forestry and wood processing sectors' adaptation to global change and the 4th industrial revolution, CZ.02.1.01/0.0/0.0/16_019/0000803) granted by the Ministry of Education, Youth and Sport of the Czech Republic, by FRAME (Forests, climate change mitigation and adaptation: Higher Education Cooperation in Mekong region) granted by Erasmus+ Key Action 2: Capacity Building in the field of Higher Education and by the project BETTER Life (Bringing Excellence to Transformative Socially Engaged Research in Life Sciences through Integrated Digital Centers), granted by Horizon Europe. The authors also wish to thank all the participants of the questionnaire survey.

Transatlantic Innovation Networks in Forest-Based Bioeconomy: Navigating Polycrisis with the Quintuple Helix Model

Satu Helenius

European Bioeconomy Scientific Forum



Core Problem & Approach

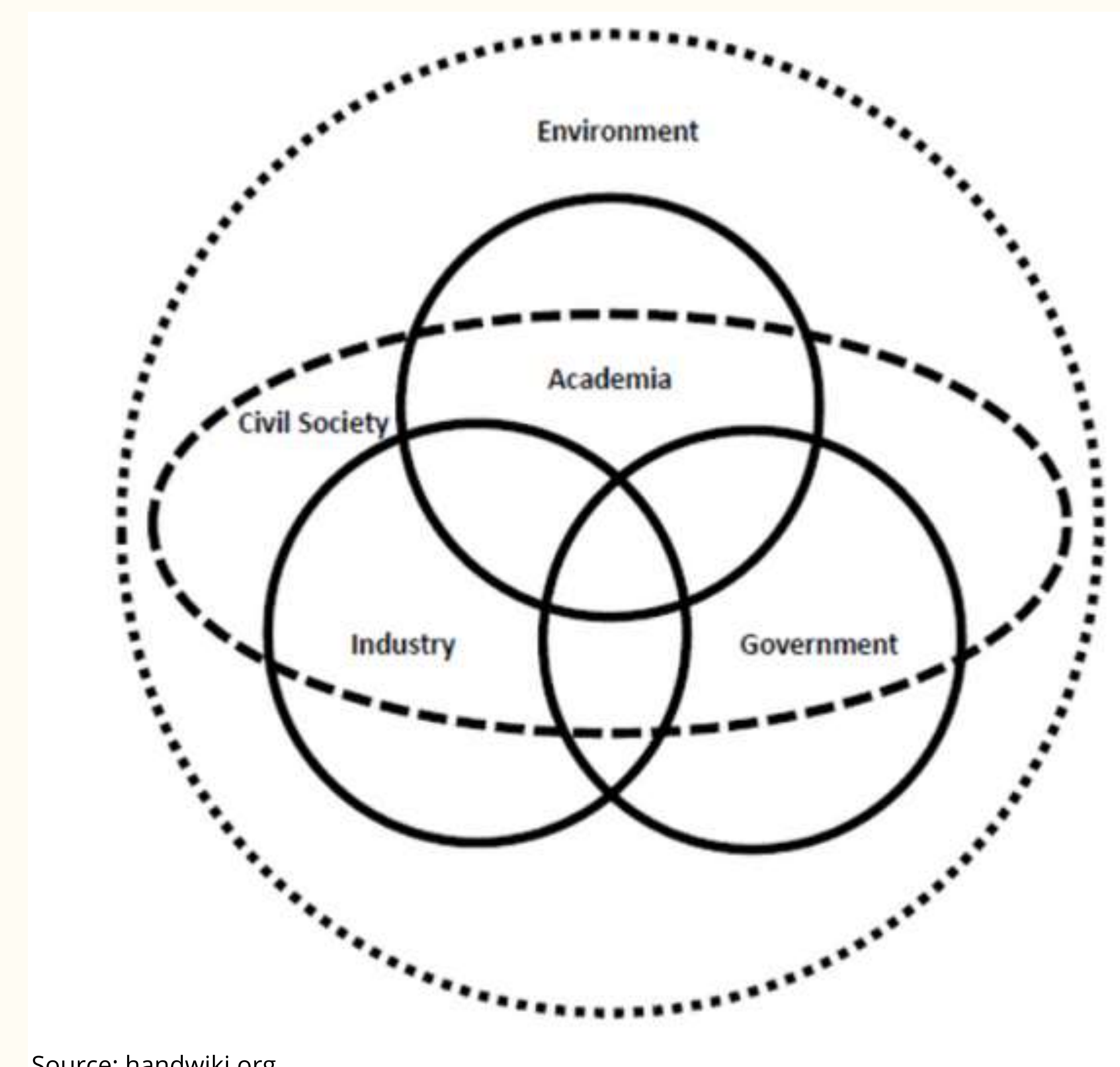


Source: ISRM Students

How can multi-sector innovation networks drive sustainable transitions in the forest bioeconomy amid interconnected crises?



Theoretical Framework



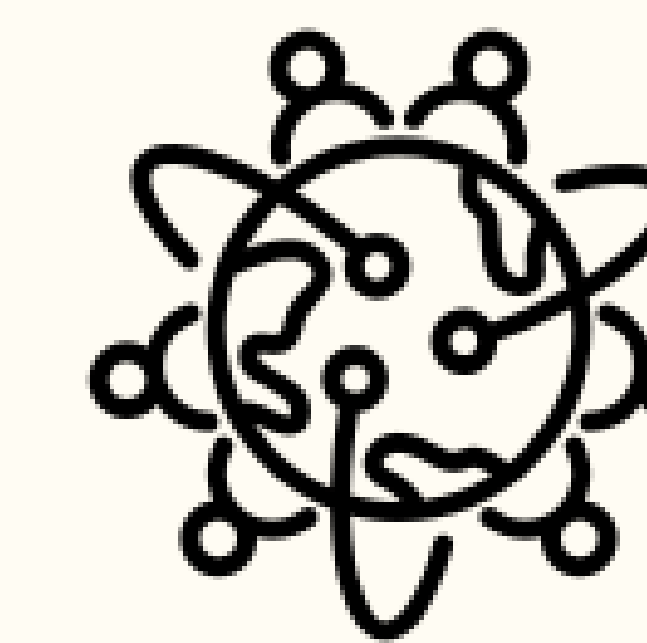
Source: handwiki.org

QUINTUPLE HELIX



Methodology

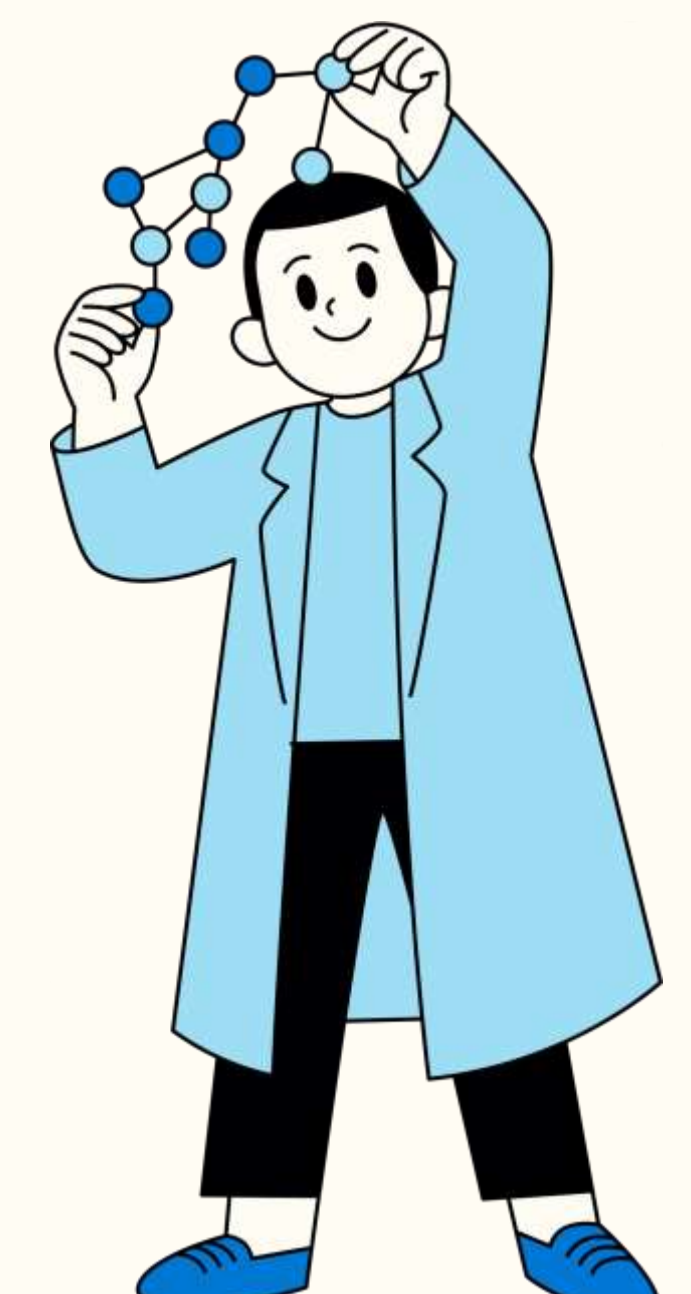
Social network analysis +
Participatory foresight



-  Map network structures
-  Co-create future strategies
-  Assess long-term implications

Expected Impact

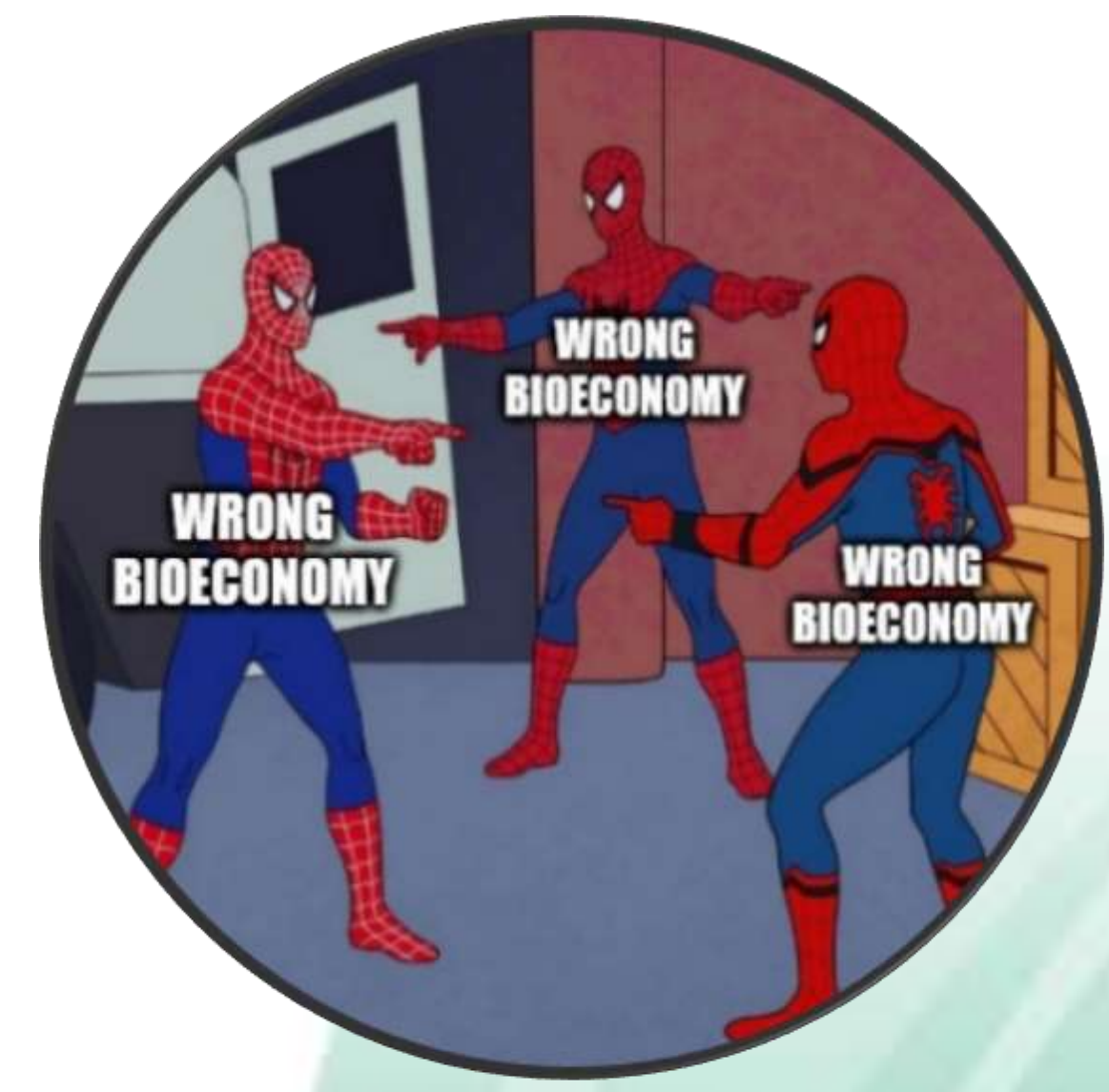
Enabling resilient, inclusive bioeconomy transitions through transatlantic knowledge exchange.





“The Bioeconomy: More Than a Technological Fix?”

Exploring the Social Side of Transformation



The need for a holistic perspective:

- The transformation towards a bioeconomy is often perceived as a primarily **technological** problem, which
- neglects the social, institutional, and behavioral dimensions essential for sustainable change

Our study aims to:

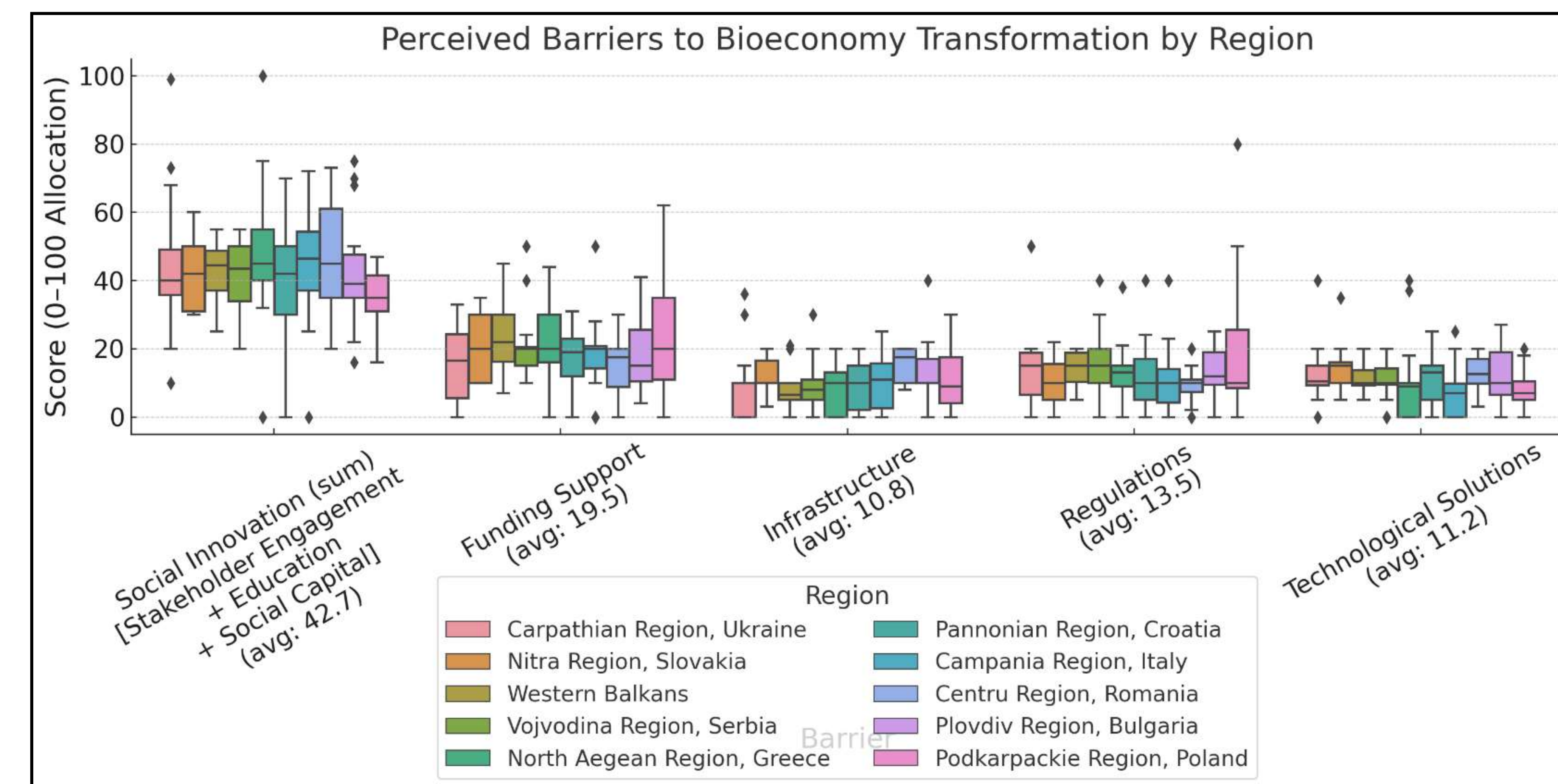
- Explore how different stakeholders understand the bioeconomy
- Investigate how these understandings and actor backgrounds influence their prioritization of key barriers to transformation

Study design:

- Mixed-method survey with 155 participants from 10 European Regions representing diverse actor groups in the bioeconomy
- Collected data on understandings of the bioeconomy, regional and professional backgrounds and perceived barriers to its transformation etc.

Findings:

- Stakeholder Eng.: Low priority among stakeh. focused on economic goals*
- Funding: Rated high by policy stakeholder*
- Regulations: More important to those emphasizing social sustainability goals*
- Education: Deprioritized by policy stakeh.* and those defining bioeconomy as biotechn. driven***
- Social Capital / Collaboration: NA
- Infrastructure: Varies across regions** and linked to a biotechn.-based view of the bioeconomy*
- Technological Solutions: Weakly associated with prioritization of economic sustainability

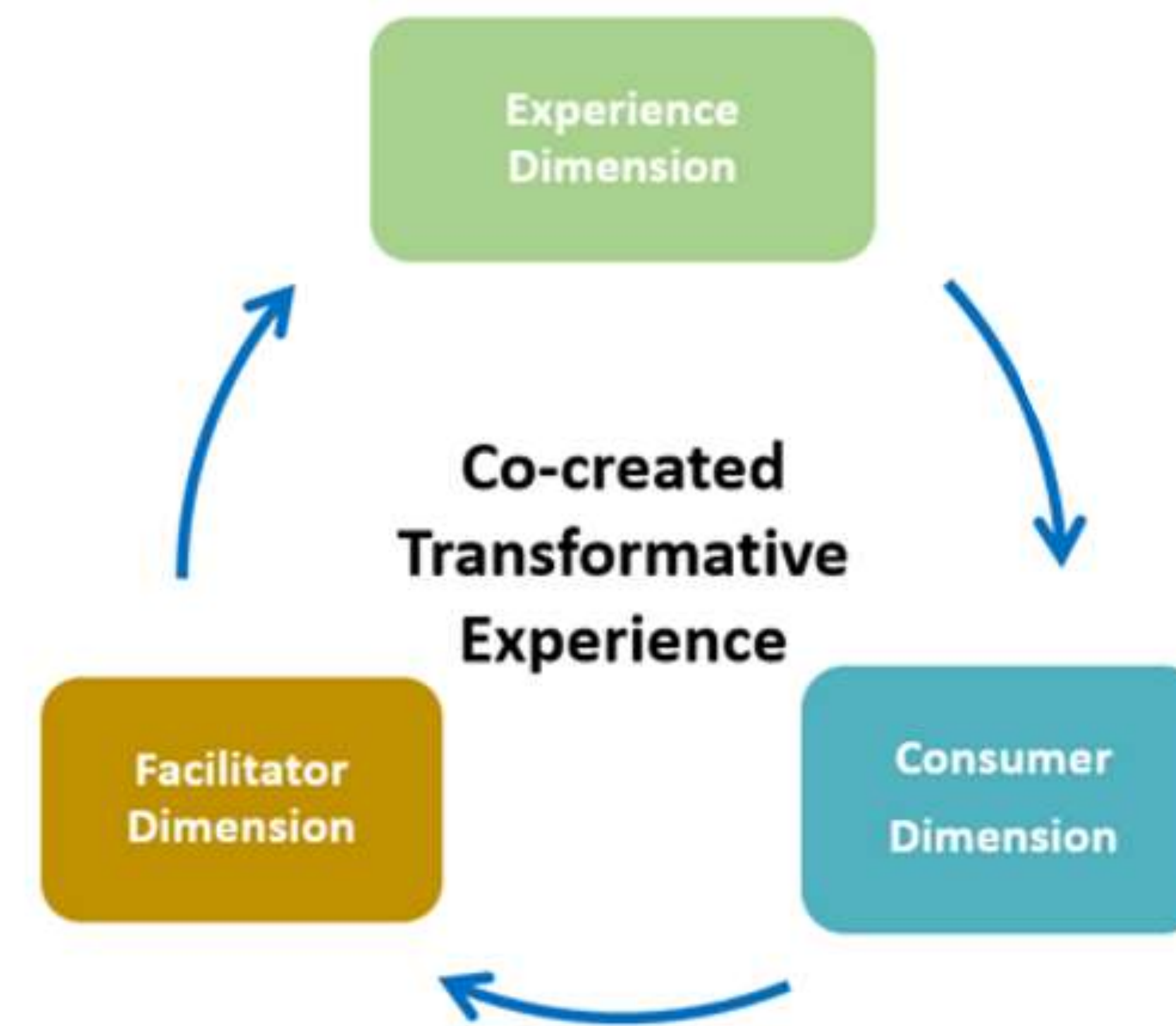


Transformative Experiences for Enhanced Communities and Planet

Tourism Benefits

Muhammad (Mo) Khogali 11.06.2025

Objective: Explore how tourism experiences (designed based on consumer motivations) can yield profound outcomes.

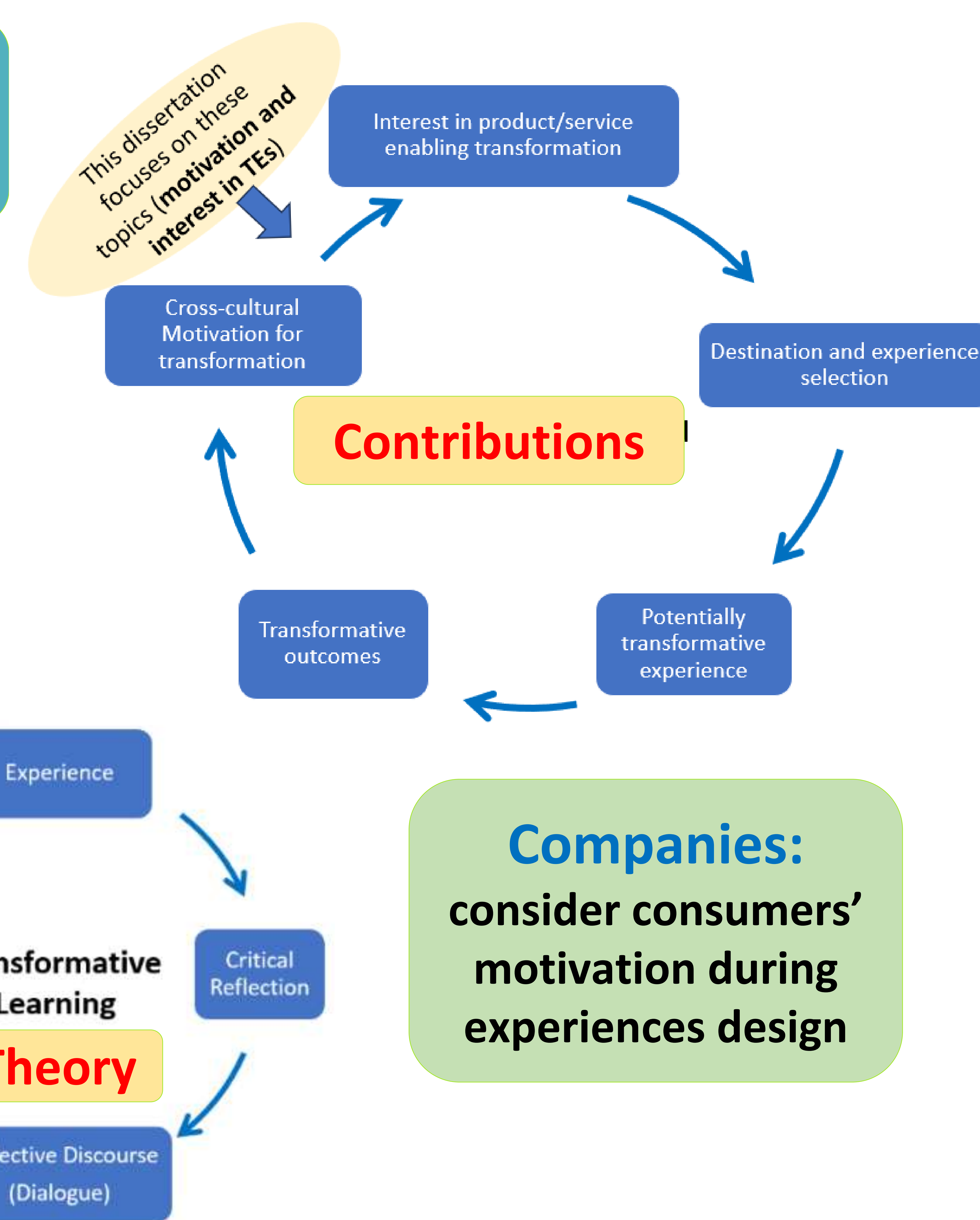


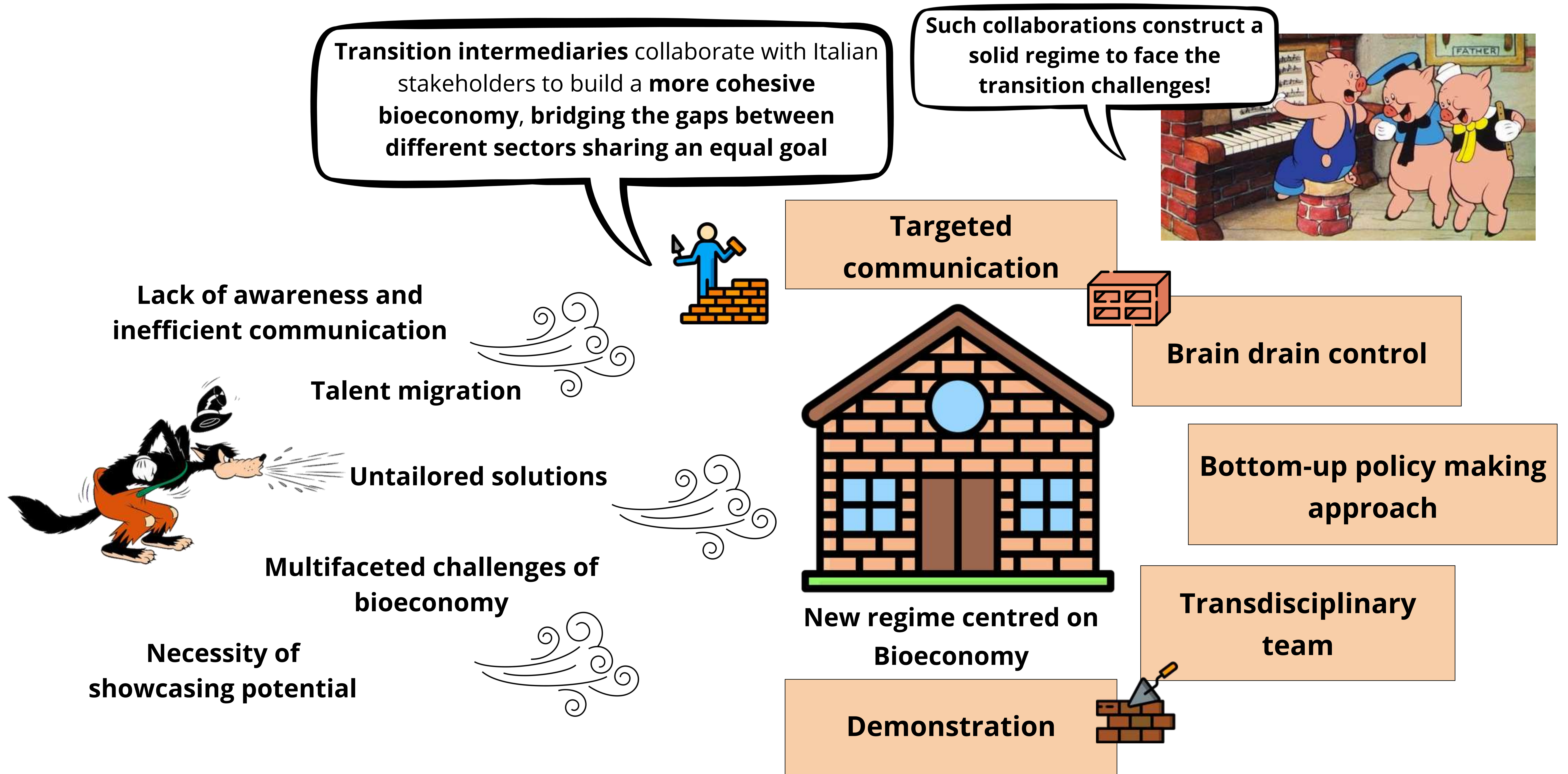
Method:

- **Online survey:** Finnish (N=538) & German (N=502)
- **Motivations:** assess 44 claims about what is important during a trip.
- **Interest:** rate 30 tourism products that enable transformative outcomes.

Results:

- **Finnish and German consumers** show interest in different experiences to meet their personal motivations.
- **Self-enrichment:** Finnish consumers interested in **retreat experiences** Vs. German consumers attracted by **forest experiences**.
- **Both are interested in** local and cuisine experiences to explore local lifestyle.
- **Both show less interest** in technology-aided experiences.





What is SOBIO?

Social Scientific Biosociety Research Network (SOBIO) is a multidisciplinary research network, which brings together scholars studying social aspects of bioeconomy. The network includes scientific expertise reaching from environmental policy, business studies, law, human geography, forestry, to sociology.

Focus and aims

SOBIO focuses on social scientific research of bioeconomy with a cross-disciplinary approach. SOBIO emphasises support to early career researchers.

Examples of research

Johansen, K. & Konu, H. (2025). Designing Transformative Nature-Based Wellbeing Tourism Experiences: A Case Study from the Finnish Lakeland Region.

Erkkilä, A., Herdieckerhoff, I., Mustalahti, I., Tumaini U. J., Maro A. H. (2024). Ambiguity and forest-based bioeconomy: The case of forest fires in the Southern Highlands of Tanzania.

Activities

- SOBIO Days (annual)
 - *Next SOBIO days on 7.10.2025!*
- Networking events & excursions
- Policy Briefs

Structure

SOBIO functions on rotating coordination structure including departments at both the Faculty of Social Sciences and Business Studies and the Faculty of Science, Forestry and Technology.

Collaborators

12 collaborating institutes from 8 countries

Contact

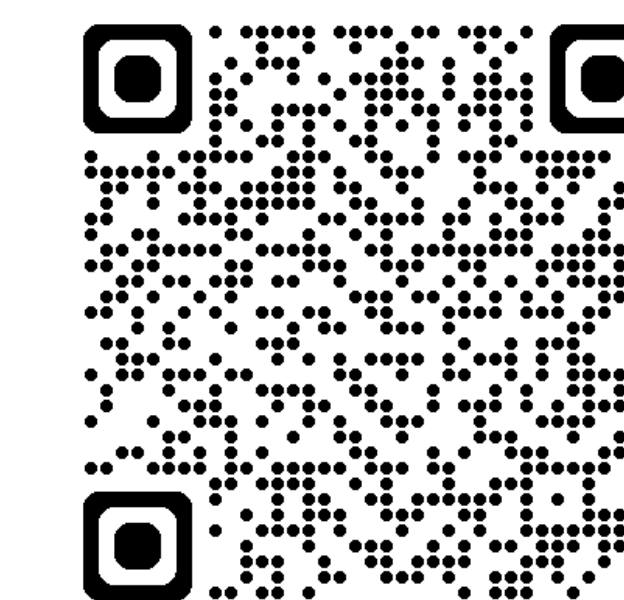
Coordinators:

Elli Arvola, elli.arvola@uef.fi

Olga Sydd, olga.sydd@uef.fi

Website <https://sites.uef.fi/sobio/>

See also 



Photos: Moritz Albrecht, Timo Haapasalo

Bridging Regional Bioeconomy Gaps

Multi-Actor Approach and Cross-European Collaboration in Circular Bio-Economy Strategies and Actions

Disparities persist in terms of access to finance, socio-economic and environmental data, knowledge, and expertise.



Empowering EU rural regions to adopt and scale up small-scale bio-based solutions

Marche (IT) Focus on *Canvas*, *novel forestry (bio-based building efficiency)*, and *bioactive compounds*.
→ Mobilized stakeholders from Operational Groups (EIP-AGRI) to co-create a regional action plan.



Puglia (IT) Promotion of *biofertilizers, agrovoltaics, and bioenergy*.
→ Cultural and social barriers addressed through an *itinerant regional mission*.
→ Regional technical panel set up to co-design training and new business models.



15 REGIONS 10 COUNTRIES



BIOMODEL
4REGIONS

Developing innovative governance models at regional and local levels

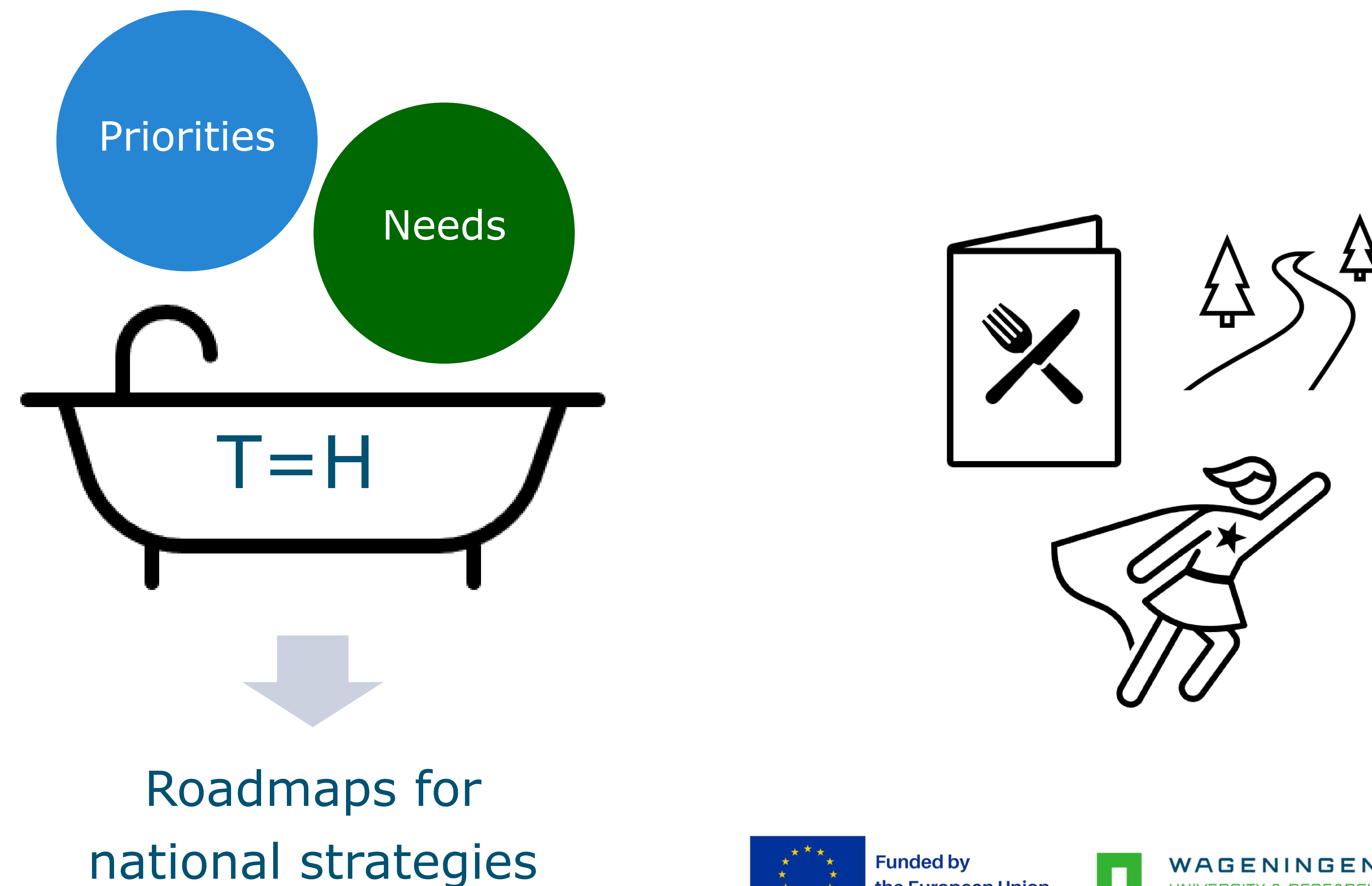
Tuscany (IT) developed its bioeconomy strategy through *transnational peer exchange*.
→ Collaborated with other EU clusters (e.g. Slovakia) to benchmark governance approaches in the agri-food sector and identify shared opportunities.
→ Promoted cluster-to-cluster collaboration to align local strategies with European bioeconomy goals.



Final insights

- 1 A place-based approach anchored in **organized communities** for building and maintaining multilevel governance and stakeholder networks.
- 2 Collaboration needs time, trust, and consistent engagement.
- 3 Supralocal and European connections can support knowledge sharing, peer learning, and visibility beyond the local.

Enhancing knowledge transfer and skills development for circular bioeconomy growth in Central and Eastern Europe



Key priority areas

Access to funding (all)

Cross-sector and multi-actor collaborations



Policy prioritization and public awareness



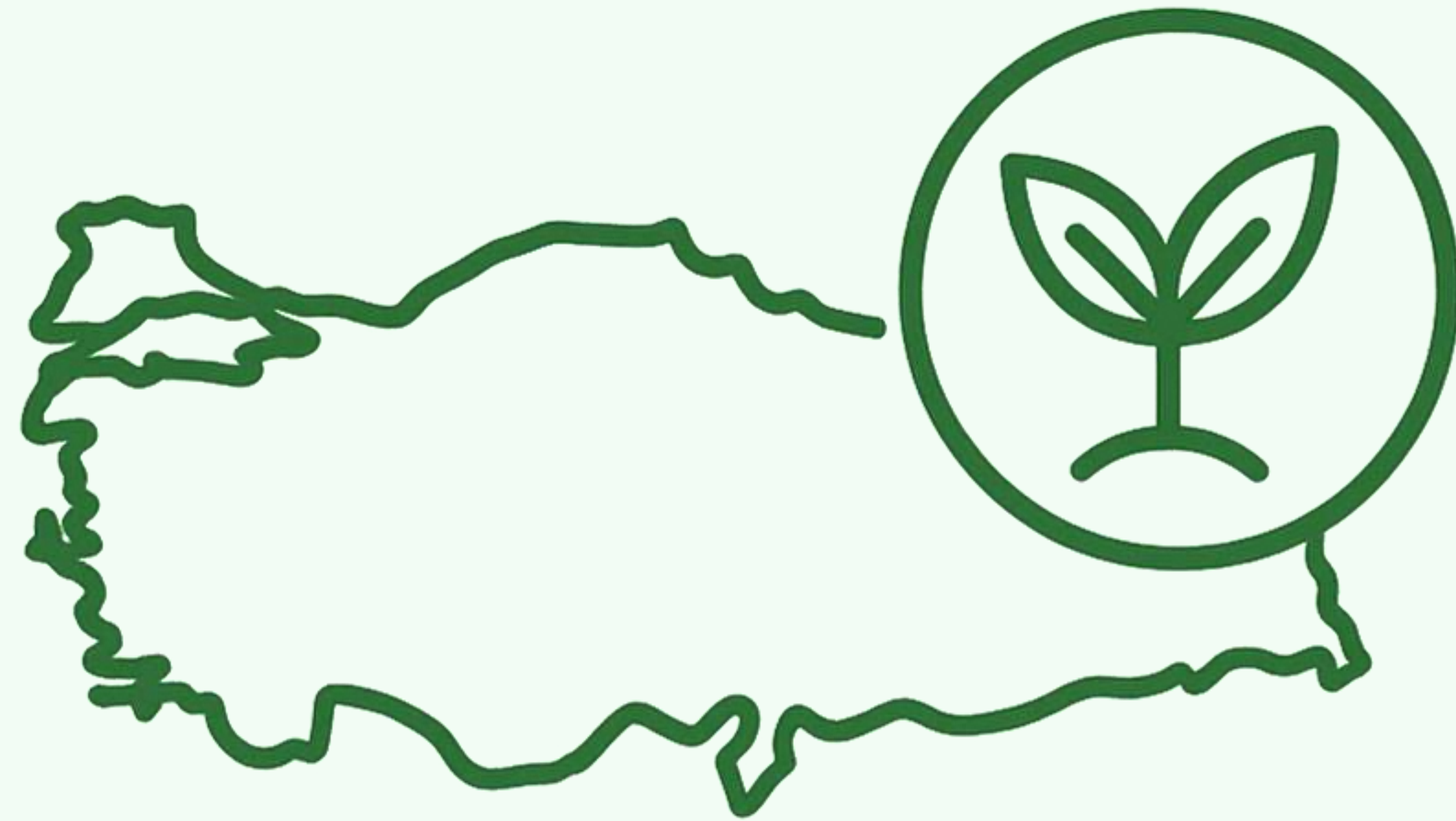
Innovation, research and development



Opportunity awareness
Streamlining governance Human capital

Unlocking Bioeconomy Potential: Collaborative Opportunities for Türkiye and the EU

Elif Nuroğlu¹, Andreas Pyka², Ayten Nahide Korkmaz¹, Stephanie Lang^{2*}



Türkiye's bioeconomy
potential?

Collaborative
opportunities for Türkiye
and the EU?



Descriptive mixed-
method approach



Strategic geographic
location

Strong agriculture and
growing biotechnology

Missing national
bioeconomy strategy



Joint research initiatives

Cross-border bio-based
value chains

Knowledge exchange
and sharing

Presentation for "Poster session 3: Bioeconomy policies and stakeholders" at the European Bioeconomy Scientific Forum 2025.

¹ Turkish-German University ² University of Hohenheim * Presenting author

BISC-E Austria:



Empowering Students in the Bio-based Economy

What is BISC-E?

Europe-wide student competition organized by the Bio-based Industries Consortium (BIC)

Interdisciplinary teams of 3-6 Bachelor or Master students

Design bio-based products or processes

Promotes innovation, entrepreneurship & awareness for the bioeconomy

Austria joined in 2025



Coordination:
Sabine Schweitzer
Martin Greimel
Martin Weigl



What Makes Austria's Edition Unique?



Pre-registration team matchmaking



1:1 meetings with the national coordinator

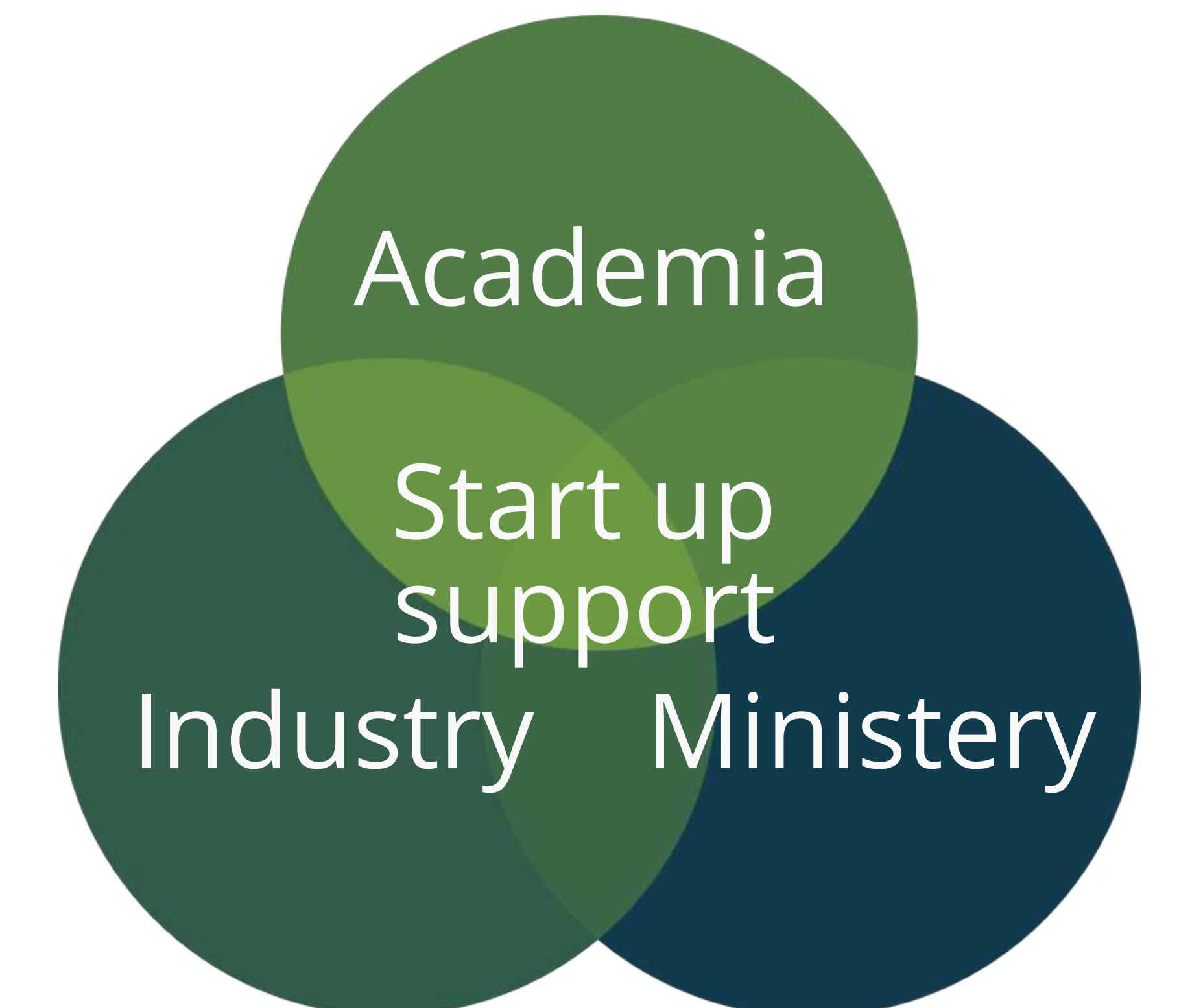


Workshops on pitching, bioeconomy & bioentrepreneurship



Final event fosters cross-sector networking and ecosystem-building

Jury Composition



Winners 2025:



mycelium-based soil system from waste to regenerate urban soils



Strengthening Agricultural Innovation in the Bioeconomy: Insights from Operational Groups (OGs) in Italy and France.

Intro

Given the critical role of **agricultural innovation** in driving the **European bioeconomy**, it is essential to understand how effectively **technology adoption** can be measured and how the impact of **CAP** interventions can be assessed across diverse regional contexts.

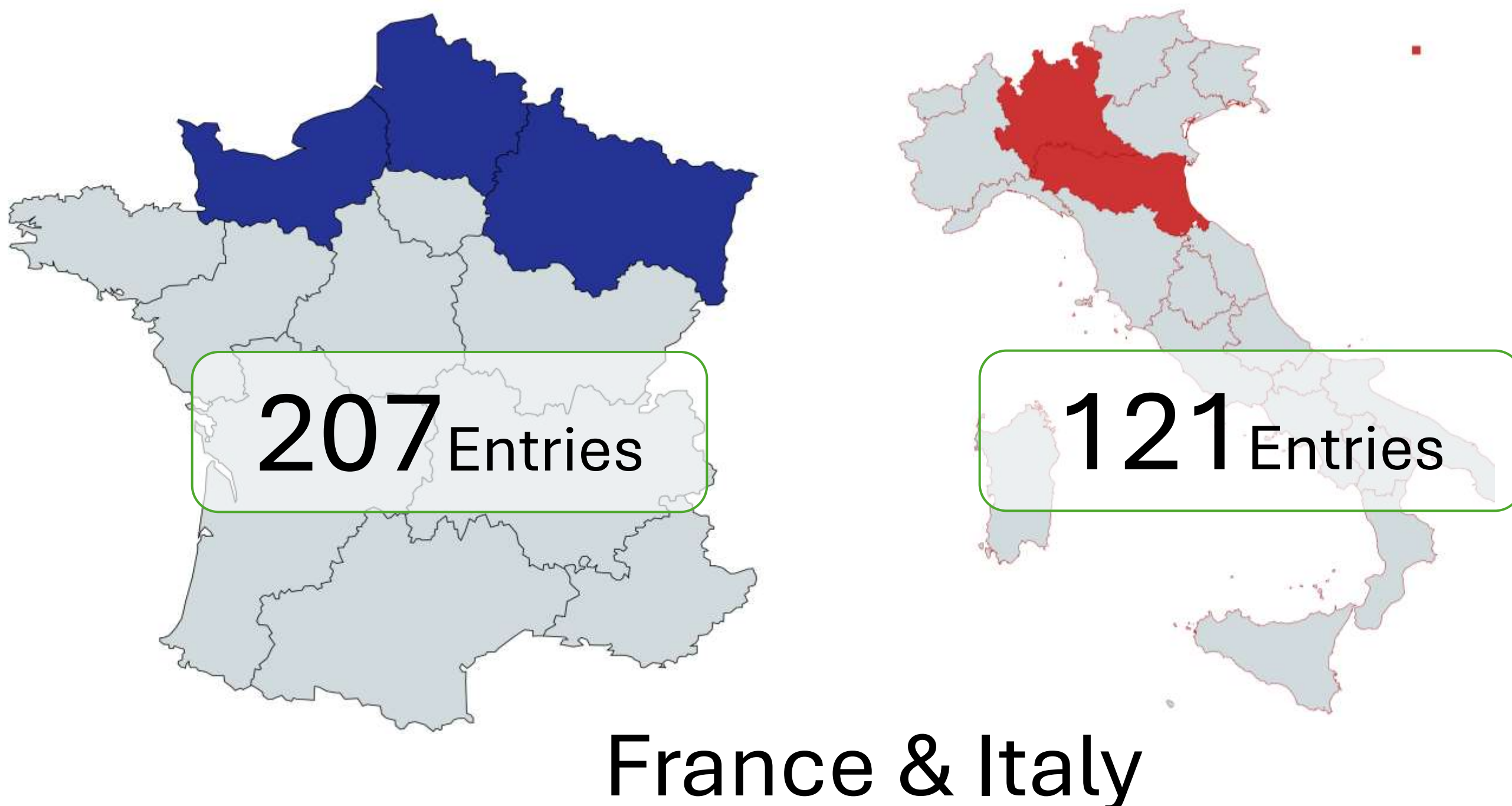
How regional CAP policies shape technology adoption?

Methods

Data Collection



Regions Studied



Themes Investigated

- CAP effectiveness
- Farmers feedback
- Innovation dynamics in OGs

Findings



Key Enablers

- CAP incentives
- Technical assistance



Critical Barriers

- Bureaucracy
- Perceived risks
- Farmers' age



Regional Differences

- Adoption heavily influenced by local agricultural contexts



Simplify administrative procedures



Strengthen regional adaptation of CAP measures



Promote farmer-centric policy design



How to: Inspire Youth Participation in the Bioeconomy



bb. Bio Boosters

OPEN INNOVATION THAT IS
IMPACTFUL,
INTERNATIONAL
AND DRIVEN BY INDUSTRY NEEDS.

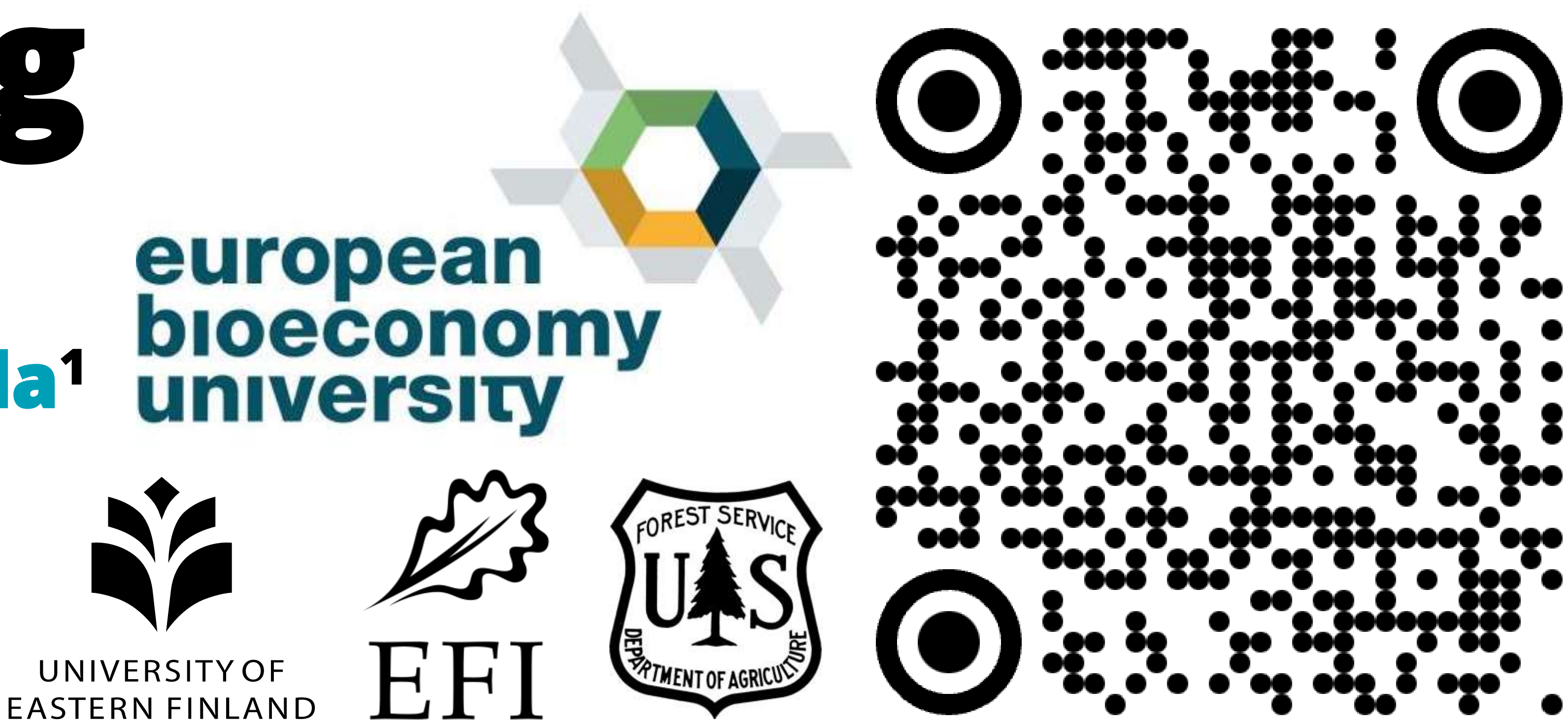
THE PROVE IS IN THE NUMBERS :
9 BIOREGIONS,
18 CHALLENGES,
246 SOLUTION IDEAS FROM 20
COUNTRIES,
121 MENTORED TEAMS,
23 INNOVATION PARTNERSHIPS



Piloting an Interactive Horizon Scanning of the Forest Bioeconomy in Finland

Tuomas Mauno*¹ // Päivi Pelli² // David N. Bengston³ // Jouni Pykäläinen¹ // Teppo Hujala¹

1) University of Eastern Finland, School of Forest Sciences, Joensuu, Finland
2) European Forest Institute, Joensuu, Finland
3) USDA Forest Service, Northern Research Station, St. Paul, MN, United States
*Corresponding author (tuomas.mauno@uef.fi)



WHAT IS HORIZON SCANNING? OUR HORIZON SCAN: A THREE-STEP PROJECT

Horizon scanning is a combination of foresight methods to systemically detect, collect, and analyze futures information such as weak signals of change to help organizations and policymakers anticipate future developments.

1. How...

...to identify and interpret weak signals of change affecting the forest bioeconomy.

- An international panel of experts provided their views through a Real-Time Delphi method.

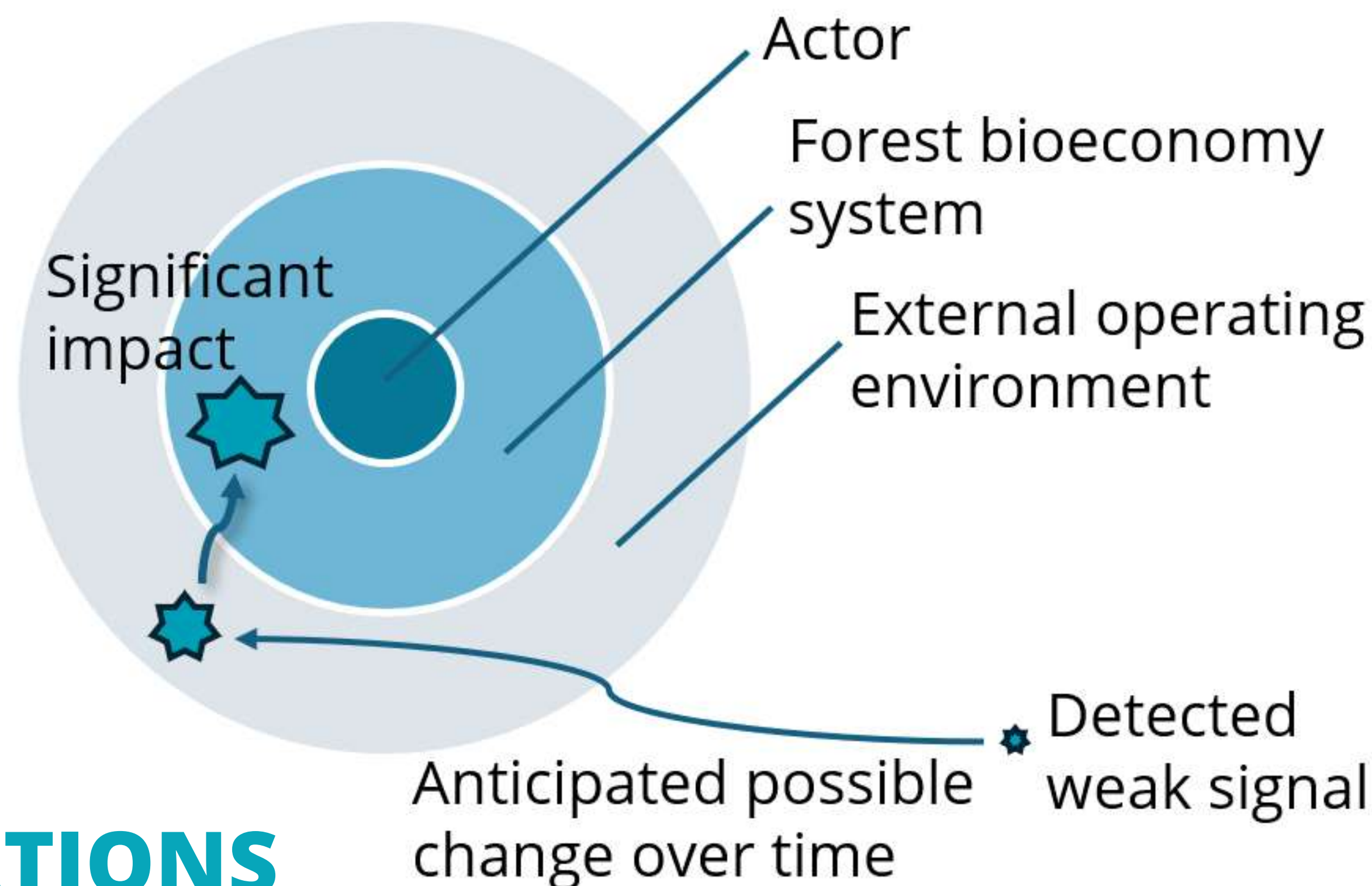
2. What if...

...the event x happens; how could it affect the forest bioeconomy?

- An exploratory, one-time, horizon scan campaign online to collect signals of change.

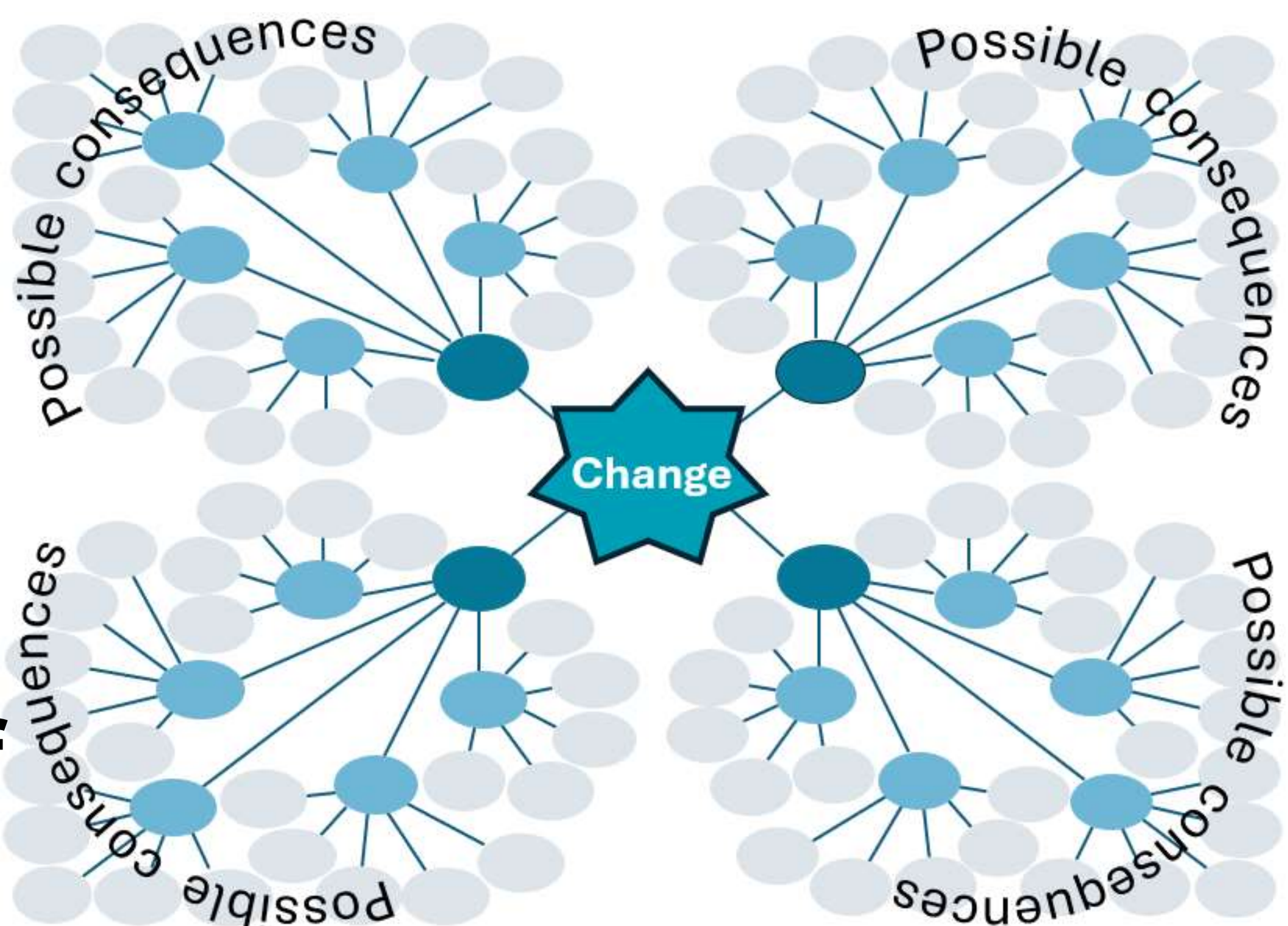
3. Then what?

The collected signal data must be further processed to serve strategy and action. In this step, Joel Barker's Implications Wheel® method was used to find possible consequences for a collected signal (What if the Gulf stream stops?...).



A regional scanning team (Finnish forest bioeconomy stakeholders).

Onsite signal interpretation workshops.



FINDINGS AND IMPLICATIONS

The project has shown that there is interest in interactive and open horizon scanning in the Finnish forest bioeconomy. However, the pilot shows that the futures capacity of forest bioeconomy stakeholders is not yet at a sufficient level (e.g., forest bioeconomy experts have difficulty detecting the weakest signals of change), which can, however, be developed by conducting horizon scanning within organizations.

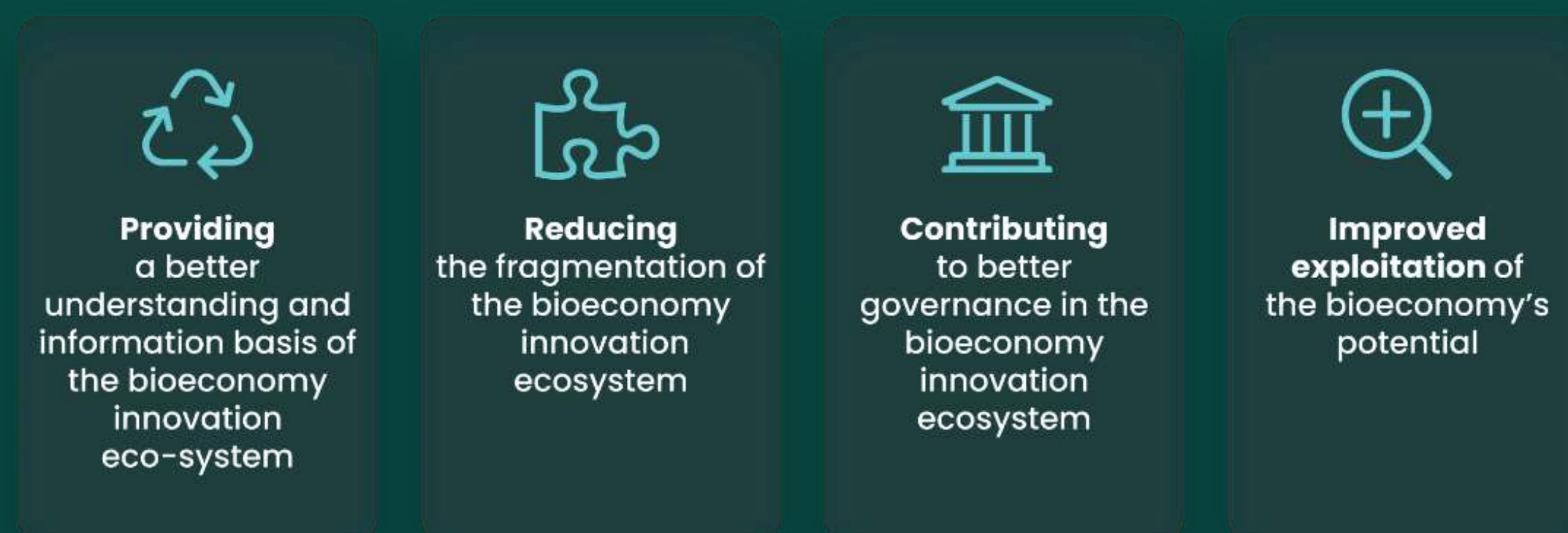


ShapingBio : engaging stakeholders towards a sustainable bioeconomy

The bioeconomy of the future

ShapingBio is a 3-years EU funded project that aims to promote innovation in the European bioeconomy across sectoral, governmental and geographical levels by providing evidence-based information and recommendations for better policy alignment as well as supporting and integrating stakeholders in the bio-based sectors.

Main objectives:



Main pillars: policy and governance, applied research and technology transfer, collaboration, and financing

Main stakeholders' groups: academia, industry, public sector, civil society

Reports, stakeholders' engagement strategy, policy instruments and recommendations, Country fiches, press releases, podcast, and more.

Scan the project's **outputs!**



Funded by the European Union



ShapingBio approach

ShapingBio prioritizes **co-creation processes** to foster **meaningful** and **inclusive** stakeholder engagement in the bioeconomy sector, ensuring that underrepresented stakeholders are included in policy discussions through cross-sectoral collaborations, and public and private partnerships.

To achieve this goal, ShapingBio actively involves stakeholders in **testing and validation processes**, leading to **high-quality recommendations** for the European Commission, by implementing:

- Validation workshops (in person & online)
- Thematic workshops (in person & online)
- Interviews (phone & online)
- Surveys (online)
- Desk research



Based on action research approach, ShapingBio Partners engaged a wide group of Stakeholders to co-create a list of recommendations to ensure **underrepresented voices** are heard:

- Early stage and regular engagement,
- Trust-building and direct outreach,
- Tailored activities and concrete takeaways,
- Support and enlargement of networks,
- Support the recognition of marginalized stakeholder groups as key knowledge holders and brokers in specific field.



Your Engagement, Your Way.

Share your feedback, comments and suggestions on how to better engage stakeholders in bioeconomy by scanning the QR code!

www.shapingbio.eu

Regional bioeconomy - opportunities for a successful transformation

🎯 Goal: Transforming the greenhouse gas intensive Rhenish area into a bioeconomy model region

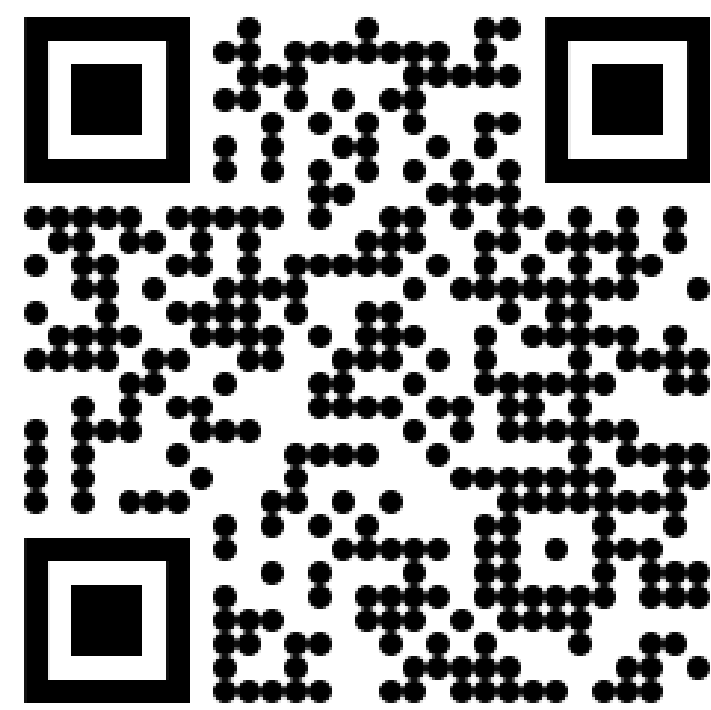
? How can we achieve that?



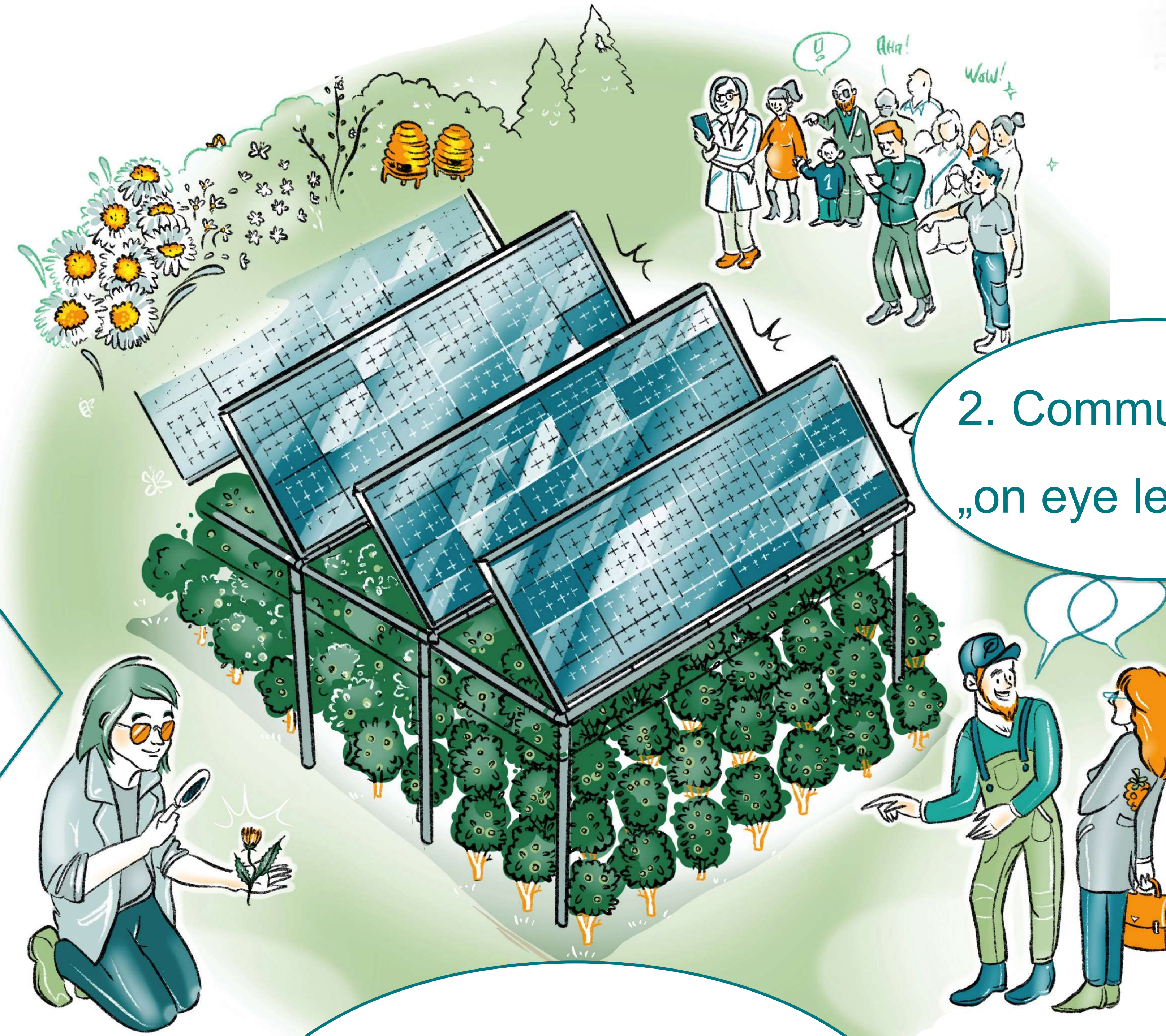
Rhenish area (Germany):

- Largest coal mining region in Europe
- energy-intensive industry, agriculture, strong academia

Details:



Systemic transformation into bioeconomy model region by:



1. Places of encounter and experiencing science (demonstration sites)

2. Communication „on eye level“

3. Strategy tailored to regional characteristics

