Tallinn University in Sustainability Science Days

Helsinki & Espoo

10-14 June 2024

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Spillovers from school to society *- climate awareness, sustainable education and human resource management*

13 June at 13:30pm

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The university mission is to support the sustainable development of Estonia through high-quality research, studies and creative work, public discussion, entrepreneurship, co-operation with the public and third sector, and promotion of academic partnership.

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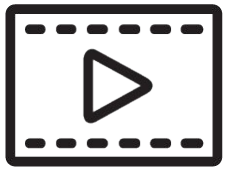
Tallinn University focus fields:

Educational innovation



Digital and media culture

Cultural competences

Healthy and sustainable lifestyle

Society and open governance

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KEKO CLUSTER

- What? Cluster on adaptation to and mitigation of environmental change
- Why?
  - Identify the causes of the gaps between science and real-world practices
  - Build a process model for the more immediate application of scientific information in decision-making processes at national, municipal, business level
- Who? Interdisciplinary teams, including environmental, social and economical, educational science, digital technology expertise

See more:
https://www.exu.tlu.ee/keko-cluster

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ROUNDTABLES

I SCHOOL AND SOCIETY (30 min)

“Climate awareness from school to society”

II UNIVERSITY AND COMMUNITY (35 min)

“Collaborative learning and skills development”

III BUSINESS AND COMMUNITY (25 min)

“Organisational development towards sustainable human resource management”

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I // *Climate awareness from school to society*

- Professor **Jaanus Terasmaa** (Tallinn University)
- **Hanna Höijer** (University of Helsinki)
- **Katrin Männik**, PhD (Tallinn University)

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Estonia is the most climate sceptic nation in the Baltic Sea region

- **58%** - I am concerned about climate change (mean of 7 countries 67%)
- **33%** - I don't think the world is facing the climate crisis (mean of 7 countries 28%)
- **28%** - I'm not ready to make more environmentally friendly choices on a daily basis (mean of 7 countries 21%)

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ORKLA, 2022

Pilot Study on Students' Environmental Awareness (2023)

- **38%** of students are concerned about their local area's condition (60% of the general population expressed high concern).
- **55%** of students expressed high levels of concern about climate change.
- **56%** of students believe climate change will significantly impact their lives in the coming years, **29%** expect little impact, and **6%** foresee no impact.
- **51%** of students believe that reducing overall consumption is the most effective action to mitigate climate change.

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Õpilaste keskkonnateadlikkuse pilootuuring 2023

Project "Climate change education to promote climate action"

01.08.2022 - 30.04.2024

- Increase the climate awareness of Estonian society through systematic climate education at all levels of education.
  - There is an overall lack of modern teaching materials.
  - Some teachers have insufficient knowledge.
  - There is also a positive side – most Estonian teachers consider climate change issues to be very important or important.

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Iceland Liechtenstein Norway grants

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Eesti Maaülikool
Estonian University of Life Sciences

The climate education programme provides support and training for teachers

- **Climate Change ABC** – online learning materials for independent study to understand the reasons, impacts, and solutions of climate change.
- **28 new teaching materials** for all school levels (from kindergarten to informal education).

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Our approach

1) **Creating learning materials aimed at students and assessing their effectiveness while considering two areas of knowledge:**
   - supporting concept development;
   - promoting students' autonomous motivation in the subject matter.
2) **Supporting and evaluating teachers in three key areas:**
   - a substantive understanding of climate change issues;
   - skills to support students' critical thinking in the context of climate change;
   - skills to promote students' autonomous motivation in learning about climate change.

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Our approach

- Integrate climate change into **various subjects** and education levels.
- Raise awareness about **indirectly related aspects** of climate change.
- Understand the i**mpact of lifestyles** on matter cycles and **ecosystems**, locally and globally.
- Understand climate change's **impact on human society's** past, present, and future development.

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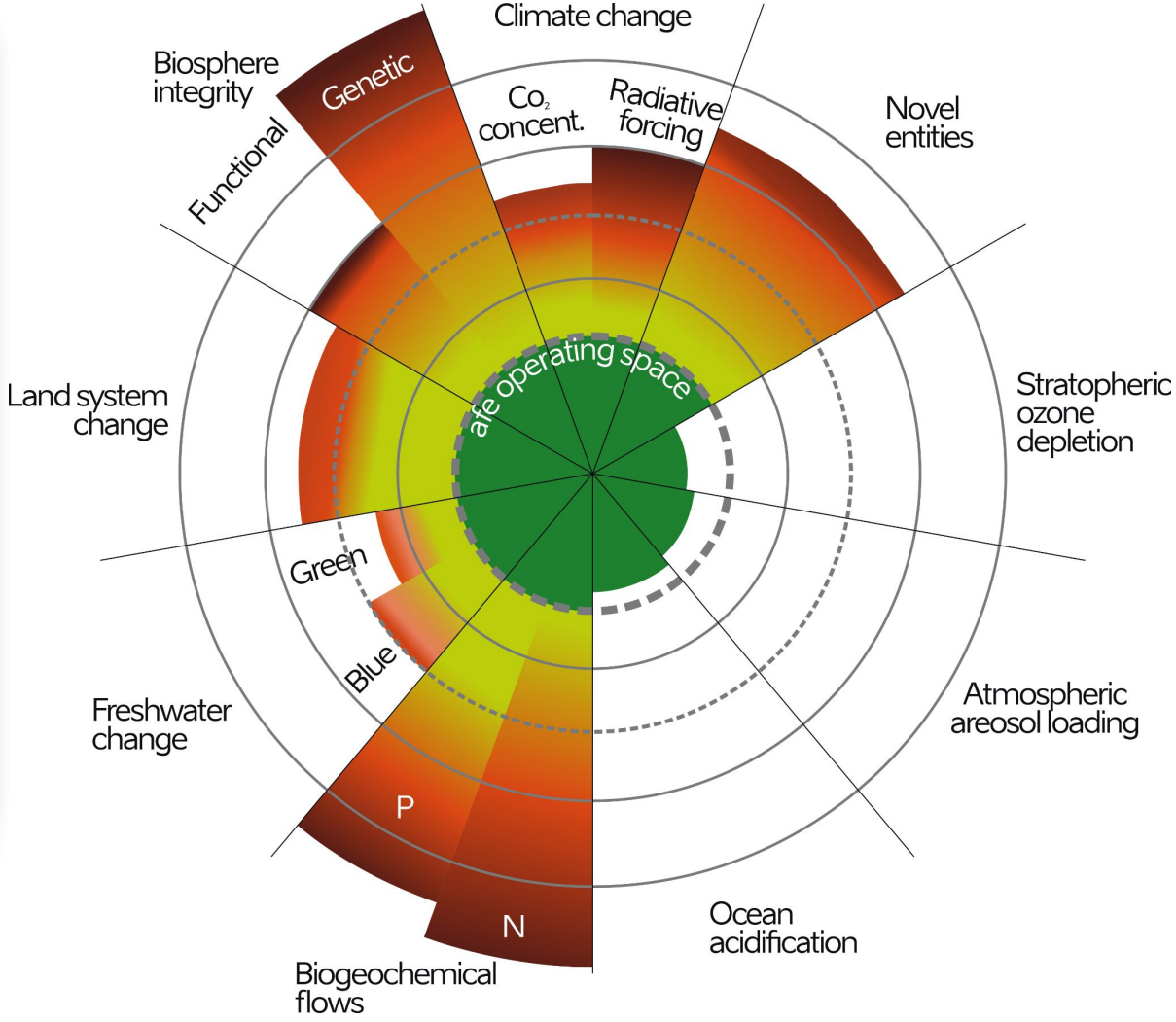
Beyond the planetary boundaries

- The Planetary Boundaries concept identifies **nine global priorities** relating to human-induced changes to the environment.
- These nine processes and systems regulate the **stability and resilience of the Earth System.**
- **Currently we are crossing 6 out of 9** as a result of human activity.



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Richardson et al. 2023 https://doi.org/10.1021/acs.est.1c04158

How well do you know how your daily activities contribute to crossing these boundaries?

0 - I don't know at all

■ ■ ■

5 - I know perfectly well

Discuss with your neighbour: what are your answers?

LED lamps, being up to 80% more efficient and lasting 2-4 times longer than regular lamps, have become the most popular light source.

Annually, about 931 million tonnes of food are wasted, with households accounting for 61%. Nearly 30% of food is wasted; a figure that's increasing.

Clothing consumption has increased 400% since 2000, with ~75% of garments ending in landfills or burners. Up to 50% of new apparel goes unworn.

How has it changed lighting usage?

Why food waste is increasing?

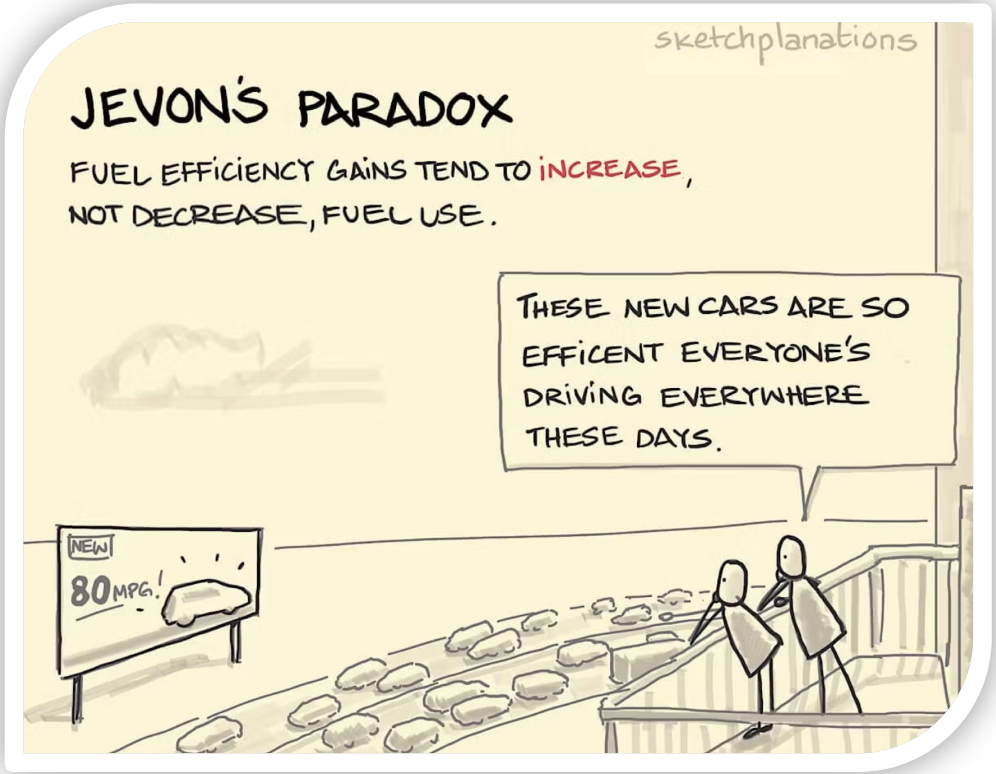
Why do we produce so many apparels?

State a principle that describes all these examples!

Slido.com: **#1523730**

Jevons Paradox (rebound effect)

Technological innovation is considered to be **main solution** to resource crises and **environmental problems**.

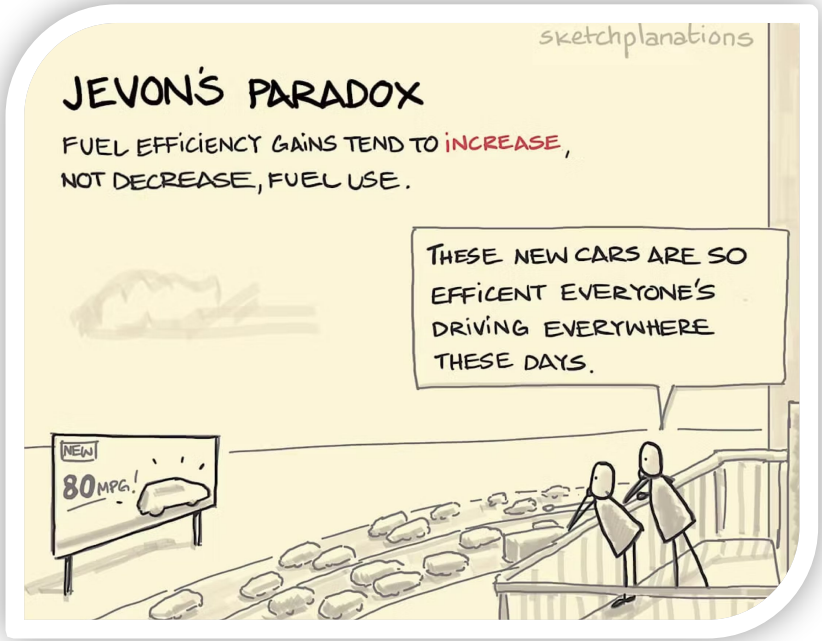


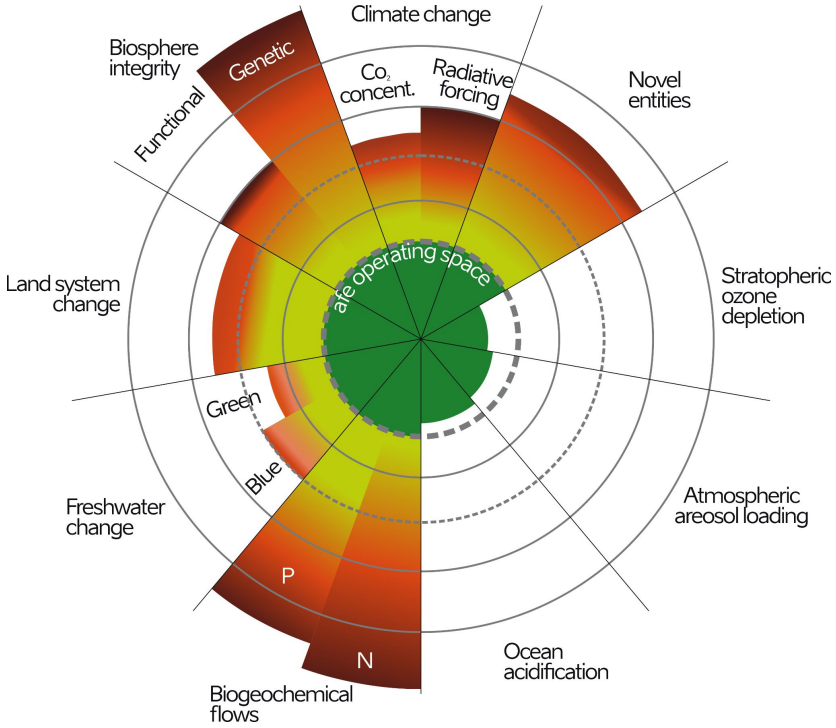
- Jevons Paradox suggests that **as technological advancements** make a resource more efficient to use, the **cost of using that resource decreases**. This reduced cost will **stimulate increased demand**, leading to **greater overall consumption** than before the efficiency gains.
- **This is counterintuitive** because one might expect that using a **resource more efficiently** would lead to **lower overall consumption** of that resource.

(Alcot, 2005)

Jevons Paradox VS Planetary Boundaries

- **Discuss with your neighbour:** What is the relationship between the Jevons' paradox and crossing the planetary boundaries?





What do you conclude from your discussion?

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Jevons Paradox

What solutions can you offer to resolve this paradox?

1) We should ban technological innovation!
2) Becoming aware of Jevons paradox will help.
3) Perhaps education helps?
4) Something else…

Jevons Paradox

Unless **technological innovation** occurs hand in hand with **social innovation** and the **rise of awareness**, the outcome is **not sustainable**.

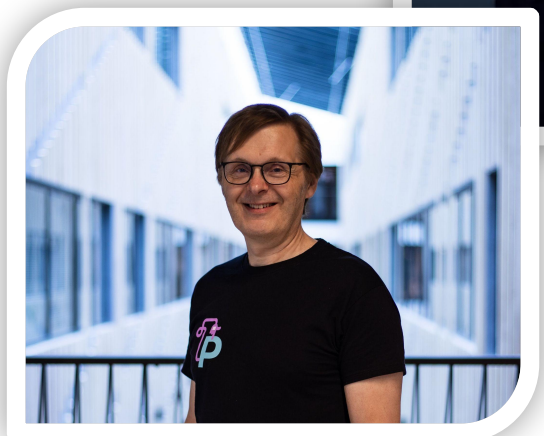
Panel discussion on climate awareness and initiatives

- What is the role of climate youth in rising climate awareness and/or decreasing climate anxiety?
- What are the best practise bottom-up initiatives among students?
- Which type of support (university, teacher, other) is the most expected by students?

II Collaborative learning and skills development

We will demonstrate the practical and easy usage of an environmental data logger through a fun experiment in which everyone can participate!

- Professor **Kai Pata** (Tallinn University)
- **Külli Kori**, PhD (Tallinn University)
- **Piret Liv Stern Dahl** (BonoLab, EIT Urban Mobility)
- **Matti Juhani Rossi**, PhD (Tallinn University)



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Tallinn University building capacities for SDG 4 & 5

Goals for Education 2030, and sustainable action along the

- SDG4 – providing lifelong learning for all, and
- SDG5 – considering gender equality in STEM education

require educational institutions to step out as actuating actors in the society. Tallinn University has developed and implemented **new learning practices for capacity building for sustainable futures -**

- **LIFE** https://www.tlu.ee/en/life and
- **Capacity building for rural communities**

LIFE CONNECTS DIFFERENT FIELDS

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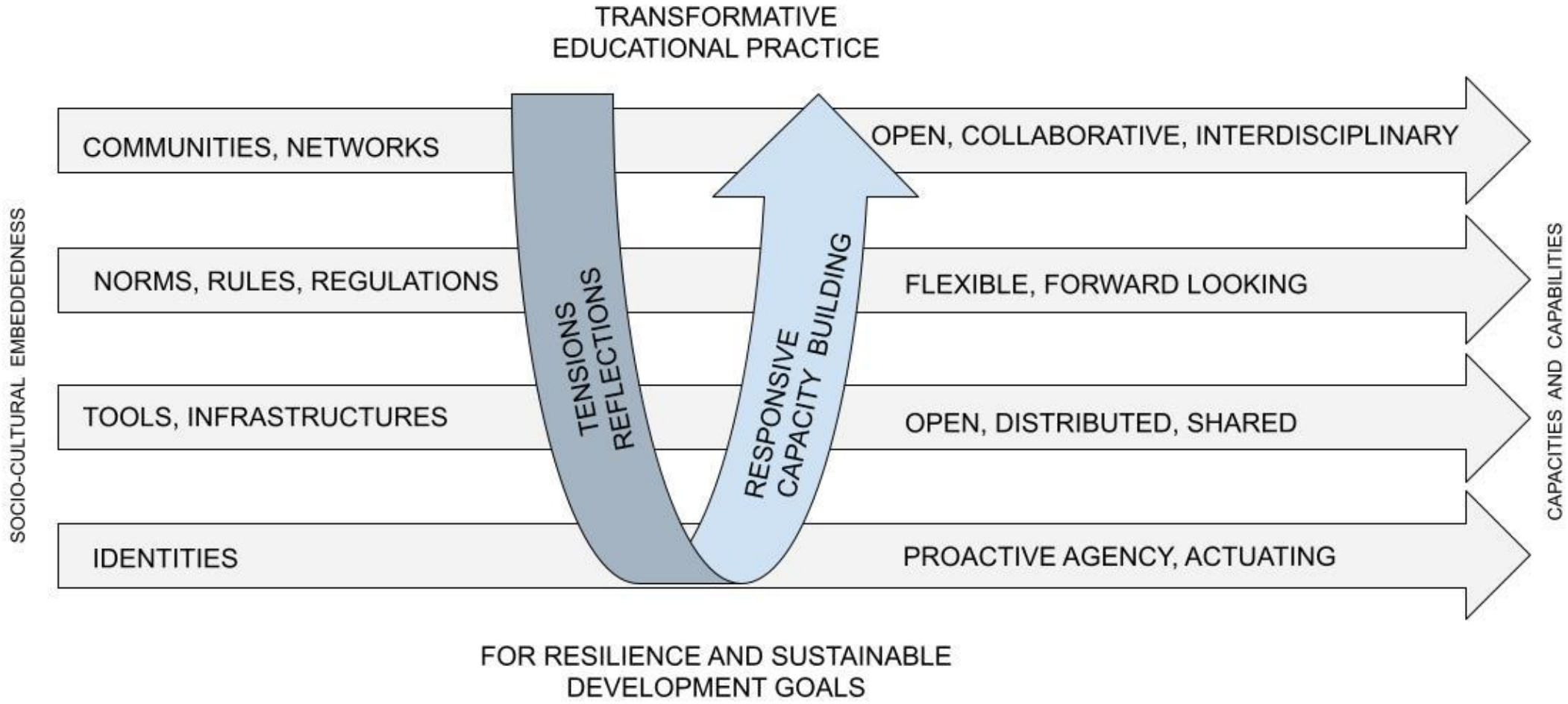
- University-wide interdisciplinary project-based course
- Compulsory for every BA and MA curriculum
- The objective is to enhance interdisciplinary competences and teamworking skills

University building capacities for SDG 4 & 5



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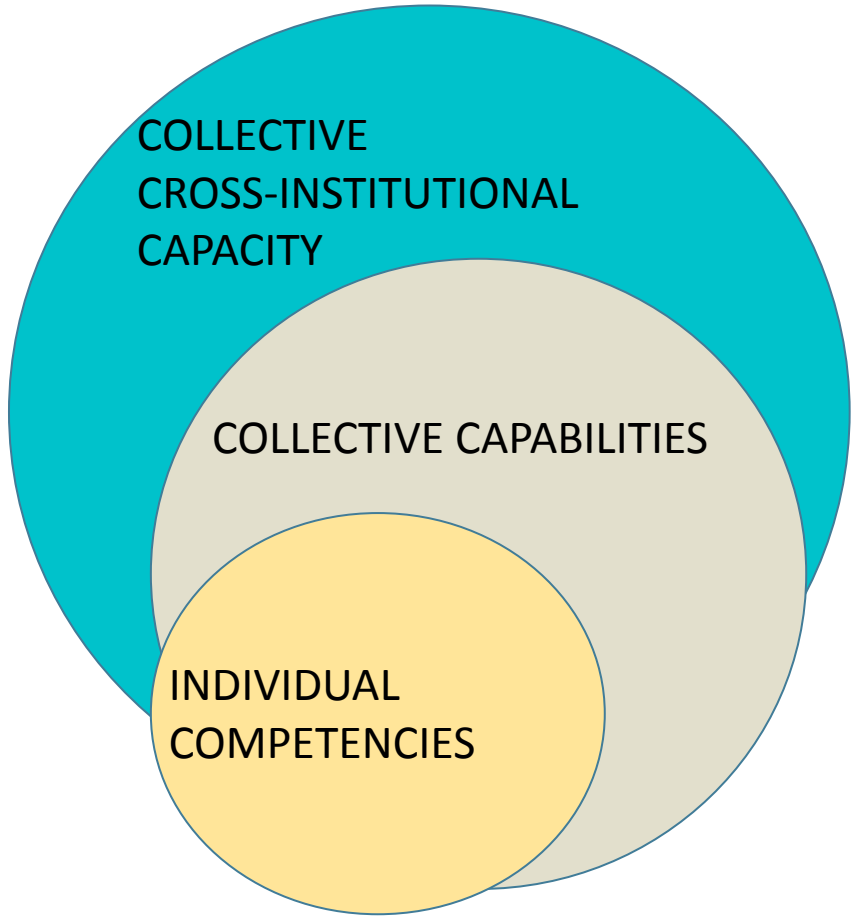
Cross academia & communities capacity building for rural communities

WINNOVATORS
Boosting entrepreneurial and STEAM capacity

Winnovators project http://Winnovators.eu

How can the universities grow the agency of higher education students t**o become change agents** for the remote communities and help the undermined rural youth (18-30) to have equal access to entrepreneurial, stem and sustainability competencies in their regions?



KA2 Erasmus+ project WINnovators (2021-2024)
Erasmus+ project funding
2021-1-EE01-KA220-HED-000032081

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TO BECOME CHANGE AGENTS IN THE COMMUNITIES

WINNOVATORS
Boosting entrepreneurial and STEAM capacity

Effective Engagement and Supportive Network Building

- **Personalized interaction**
- **Trust relationships**
- **Supportive network formation**

Interest-Driven Team Formation for Collaborative Synergy

- **Grouping students and local participants by Interest**

Customized and Progressive Learning Design

- **Structured progression at e-learning and personalised learning paths**
- **Personalized project challenges**

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TO BECOME CHANGE AGENTS IN THE COMMUNITIES

WINNOVATORS
Boosting entrepreneurial and STEAM capacity

Professional Empowerment Through Problem-Based Learning and Tangible Benefits

- **Practical problem-based learning**
- **Incentives, badges**
- **Empowering the learners in the communities**

- Adaptability, Flexibility, and Participant-Centric Approach

- **Preparedness for unexpected challenges**
- **Recognizing existing commitments**
- **Collecting feedback for continuous improvement**
- **Encouraging regular reflection**

Ongoing Support, Mentorship and Guidance

- **Cross-border mentorship and assistance of business mentors**

INOS project https://inos-project.eu/

KA2 Erasmus+ project "Integrating Open and Citizen Science into Active Learning Approaches in Higher Education (INOS)" from 2019 to 2022.

Aimed to involve a diverse range of stakeholders in open knowledge-building activities (OKAs), including academic and library staff, university students, citizens with varying levels of expertise, community members, and domain experts from different fields and sectors.

OKA design and evaluation framework: 1) co-planning, 2) co-designing, 3) co-delivery, 4) co-evaluation of impact, 5) exploitations and sustainability.

10 OKAs: 1) Noise pollution at Reidi road, 2) Service design for Elderly, 3) Dotmocracy workshop, 4) Knowledge building jam, 5) Edit-a-thon, 6) SPINE, 7) Catch up LET, 8) Life in farms, 9) Rover adventure, 10) Data workshop.

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Web2Learn Open, Social Learning

UNIVERSITY OF OULU

LIBER

université de BORDEAUX

INOS project https://inos-project.eu/

Main results:

- OKA design and evaluation framework principles were not thoroughly followed.
- Participants' active citizenship skills were developed. Growing the agency to be an active citizen in their communities is important!
- Participants' soft skills and creativity were fostered.
- Participants' technical skills and digital skills were fostered.
- Challenge: limited participation from policymakers and decision-makers.

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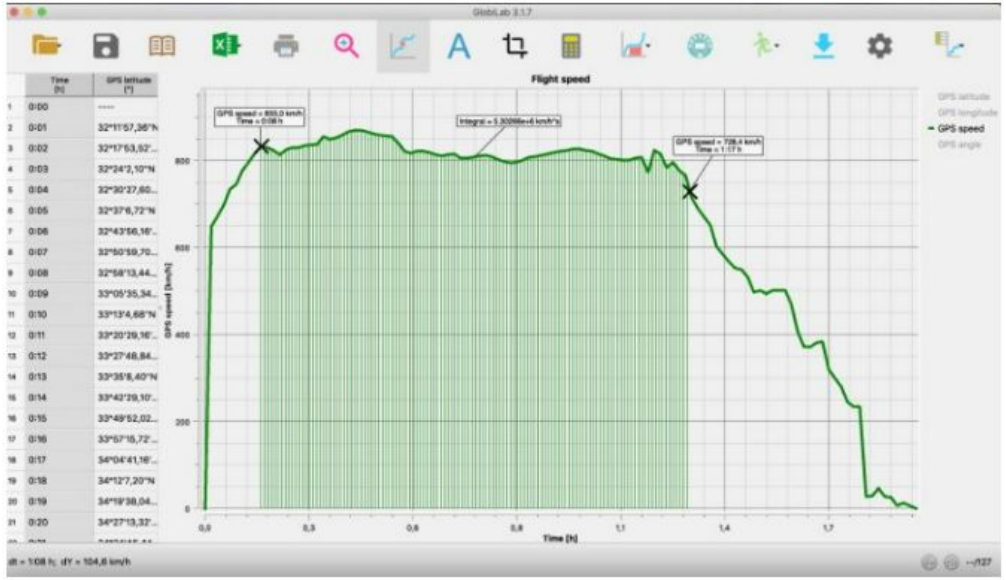
Globisens Labdisc

https://globisens.net/

Video example:

https://www.youtube.com/watch?v=sDk04G2GfhY



LABDISC ENVIRO

Take a multidisciplinary approach to engage with you environment

LEARN MORE

LABDISC GENSCI

Parallel real scientific processes and connect real world core science concepts

LEARN MORE

LABDISC BIOCHEM

Explore chemical reactions, biochemical phenomena and the intricacies of biological diversity

LEARN MORE

LABDISC PHYSIO

Discover the forces of our universe and the building blocks of matter

LEARN MORE

Kelem International School

Tackling E-Waste through Project-Based Learning

- Students designed and implemented initiatives to educate parents and the community on e-waste disposal
- Posters, digital content, and organised an event to promote e-waste recycling
- Used cross-disciplinary skills, developed new uses for waste materials, crafted new ICT or mechanical products thus promoting STEAM approaches!

SEEP programme - Circularity

- Let's Do It! World initiative (Namibia 2021-2022, Tanzania 2023-2025) SEEP toolbox

- In 2024 +50 schools in Tanzania have signed up

- Scaling through digitalisation (Swahili and other languages)

SEEP TANZANIA

https://www.seep.education/tanzania/en/

III Organisational development towards sustainable human resource management

- **Maria Kütt** (Tallinn University, Tallinn Technical University, Government Office Estonia)
- Professor **Kai Pata** (Tallinn University)
- **Katrin Männik**, PhD (Tallinn University)

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Context

Sustainable Human Resource Management (S-HRM) encompasses systems, practices and policies that ensure an adequate human capital for the organization, while considering the economic, social, and environmental impacts.

- from SHRM to S-HRM
- from 3P to 4P

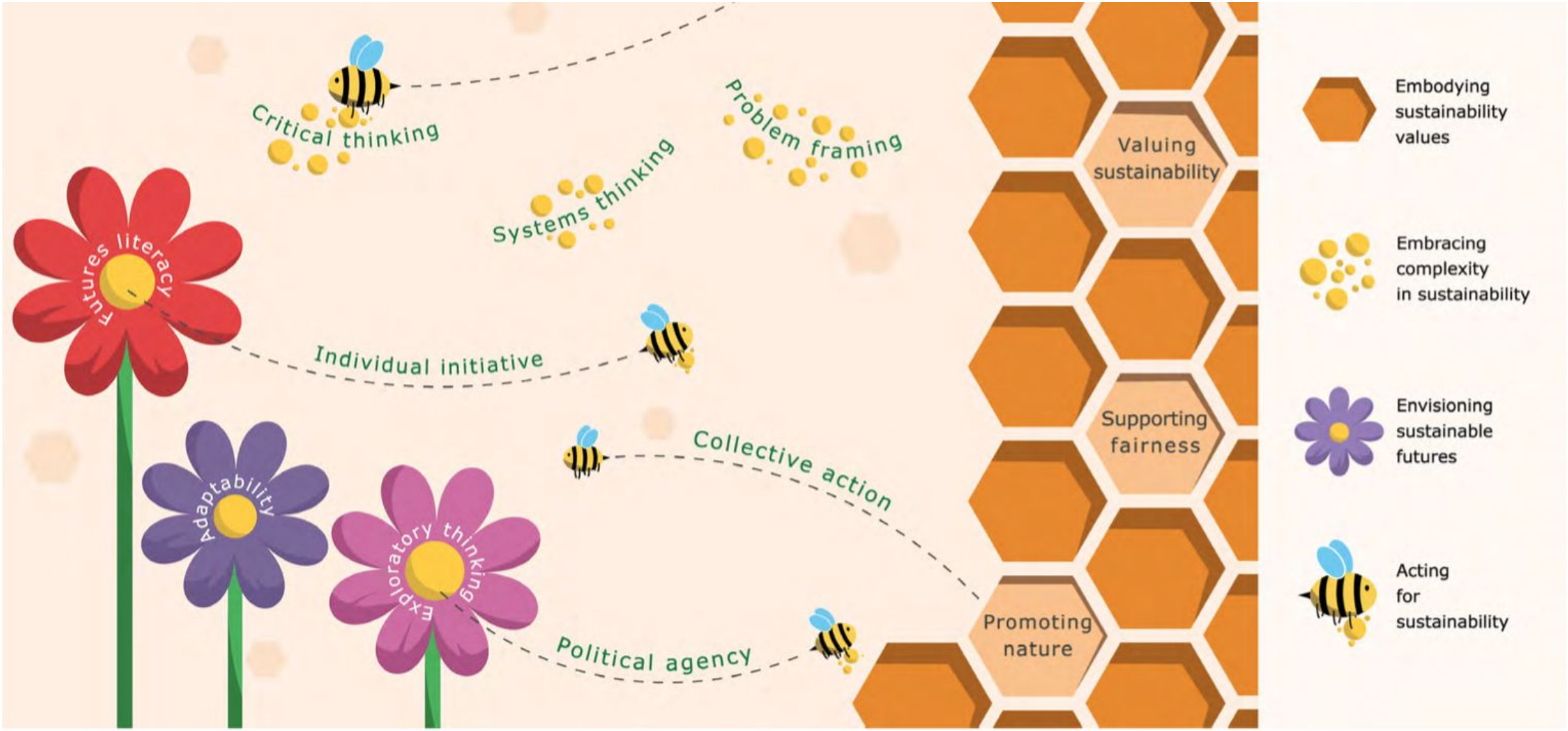
4P's and three layers from HR perspective

Sustainable Organization

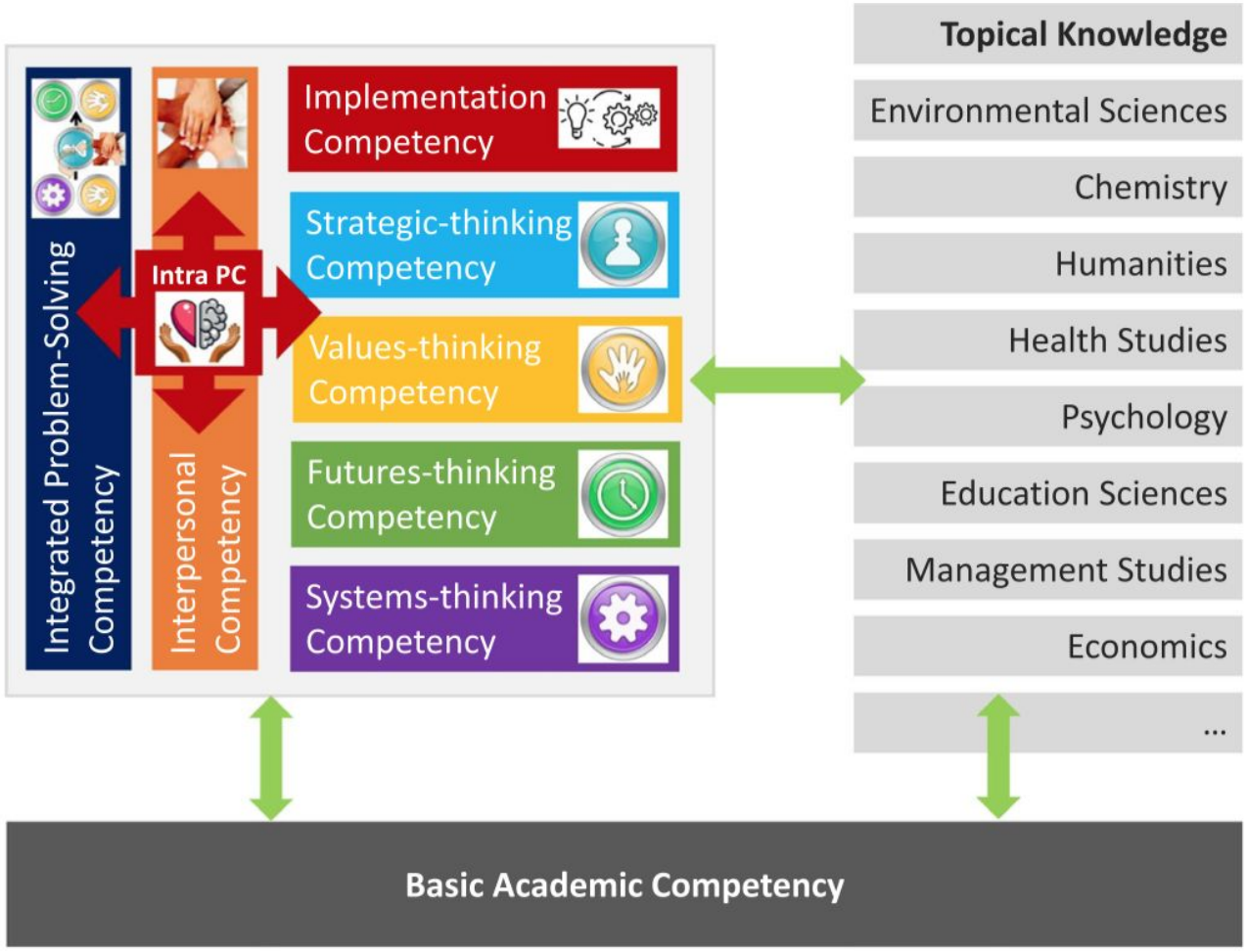
Sustainable Human Capital

Sustainable HR Practices

GreenComp - The European Sustainability Competence Framework (Bianchi et al 2022)



Three-dimensional model linking the key competencies in sustainability framework, basic academic competences and discipline-specific knowledge (Blundiers et al 2020)



Challenge for university:

how to translate it to university curricular development?

Patterns of upskilling and reskilling of university lifelong learning - ULLL

- A growing variety of flexible learning formats – micro-credential programmes, tailor-made training programmes for organisations
- A learner-centred curricula development and study approach - individual and group learning, physical and e-learning, guided and self-learning
- Stakeholders' interest on ULLL is growing, favouring longer professional study programmes à To think and take time to discuss with each other!
- Specific calls for developing green competences by governments

→ Equal treatment of learners and teachers need continuous actions
→ A heterogenous picture of educational systems in Europe
→ Bureaucratic limitations between educational systems, e.g. to develop joint cross-border micro-credential programmes

S-HRM Microdegree

Sustainable Organization

- Sustainability and environmental management - creates the framework within which the organization operates
- Environmental management and reducing environmental impact - actions that are reasonable to take at the organizational level in the interests of sustainability

Sustainable Human Capital

- Collaborative networks that create organizational change - the activities of people within the organization, HRD
- Special seminar on the role of the HR function in developing sustainable organizational culture and human capital, applying Ability-Motivation-Opportunity approach in HR Processes design

Sustainable HR Practices

- Innovation technologies and futures design - how to support the development of the organization and people through innovative solutions

Green Transition Management Microdegree (16 credits, 8 month)

- Courses (2024/2025):
  - Environment, innovation and society
  - Environmental communication
  - Environmental management system and impacts
  - Sustainable product and service development and innovation
  - Development of sustainable strategy (ESG)
  - Psychology and changes
- 26+30 adult learners (2022/2023; 2023/2024)
- Lecturers from Tallinn University, Tallinn Technical University, Estonian Academy of Arts, experts from public and private sector

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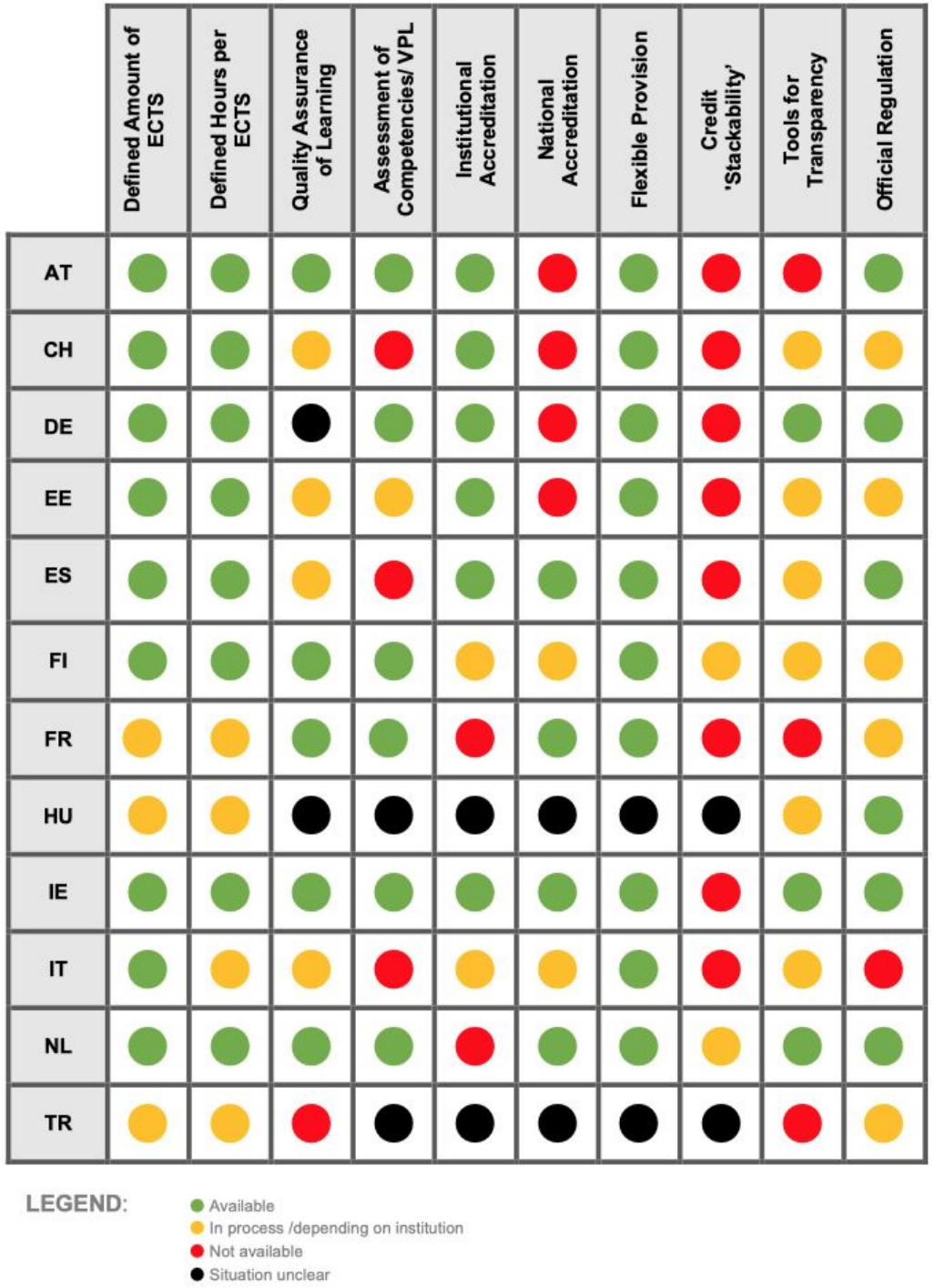
State of implementation of micro-credentials in different European countries (March 2024) Eva Cendon et al - eucen Position Paper Issue 7



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Slido

3. Discuss with your neighbour and insert here 1-2 ideas that you will take to home from this session

1. What is the biggest challenge your organization faces in incorporating sustainability into its strategies?
   - A. Lack of awareness and education
   - B. Insufficient resources and budget
   - C. Resistance to change
   - D. Lack of clear sustainability goals
2. How can lifelong learning initiatives be enhanced to better support sustainability in organizational behavior and strategy?
   - A. Incorporating more sustainability-focused courses
   - B. Providing continuous training and development opportunities
   - C. Engaging with external sustainability experts
   - D. Encouraging cross-disciplinary collaboration and innovation

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