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COMPETENCES FOR THE DIGITAL AND SUSTAINABLE TRANSITION OF WOOD AND FURNITURE SECTOR

Luka Goropečnik, Katarina Remic, Matej Jošt, Leon Oblak, Jože Kropivšek

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Univerza v Ljubljani
Biotehniška fakulteta

REPUBLIKA SLOVENIJA
MINISTRSTVO ZA GOSPODARSKI RAZVOJ IN TEHNOLOGIJO

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SLOVENIAN RESEARCH AGENCY

AGENDA OF PRESENTATION

- INTRODUCTION
- METHODOLOGY
- RESULTS
- CONCLUSIONS

INTRODUCTION


1 NO POVERTY
2 ZERO HUNGER
3 GOOD HEALTH AND WELL-BEING
4 QUALITY EDUCATION
5 GENDER EQUALITY
6 CLEAN WATER AND SANITATION
7 AFFORDABLE AND CLEAN ENERGY
8 DECENT WORK AND ECONOMIC GROWTH
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
10 REDUCED INEQUALITIES
11 SUSTAINABLE CITIES AND COMMUNITIES
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
13 CLIMATE ACTION
14 LIFE BELOW WATER
15 LIFE ON LAND
16 PEACE, JUSTICE AND STRONG INSTITUTIONS
17 PARTNERSHIPS FOR THE GOALS
SUSTAINABLE DEVELOPMENT GOALS

CLIMATE AND ENVIRONMENTAL CHALLENGES

Deforestation

Depletion of natural resources

Air pollution

Water pollution

Waste

...

In the last five decades, our world population has doubled.
World Bank, 2023. World: Total population from 2011 to 2021 (in billion inhabitants) [Graph]. In Statista.

From 1970 to 2017, the annual global volume of raw material use tripled and is still growing. UN environment programme. Global Resources Outlook. 2019: Natural Resources for the Future We Want.

About half of all greenhouse gas emissions and more than 90% of biodiversity loss and pressure on water resources come from the extraction of natural resources and the processing of materials, fuel and food. UN environment programme. Global Resources Outlook. 2019: Natural Resources for the Future We Want.

EU industry has started the transition but still generates 20% of EU greenhouse gas emissions. It remains too "linear" and dependent on the flow of newly acquired raw materials. Eurostat, 2022. Air emission intensity from industry

Achieving a climate-neutral and circular economy requires comprehensive mobilization of industry.

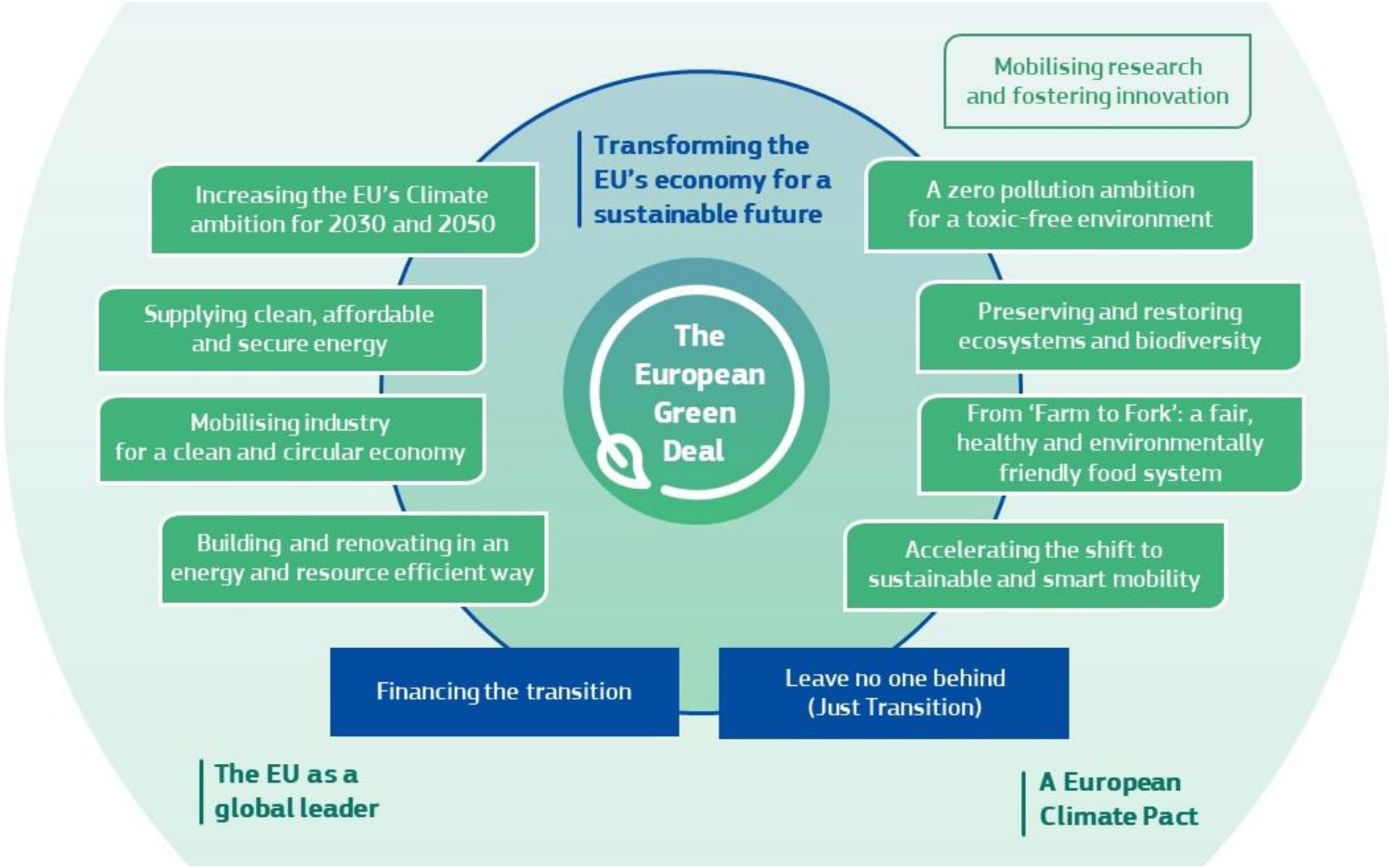
CLIMATE AND ENVIRONMENTAL CHALLENGES

"Tackling climate and environmental challenges is the most important task of this generation. The atmosphere is getting warmer, and the climate is changing from year to year.„ (UN, 2015)

At least 55 % less net emissions by 2030

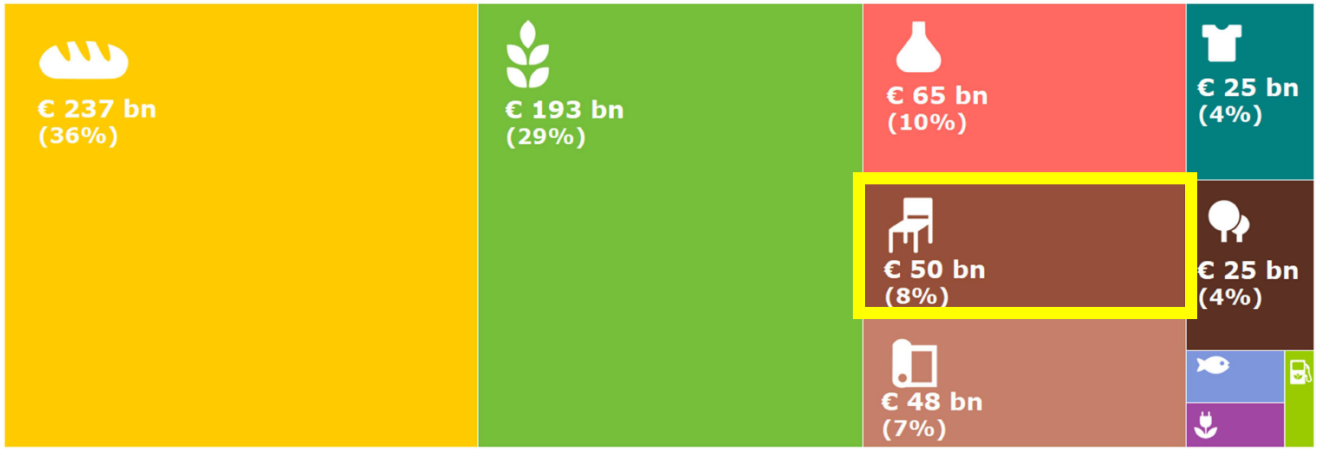
The leading initiatives of the European Green Deal include:

- European industrial strategy
- Circular Economy Action Plan
- Strategy for sustainable bioeconomy
- …

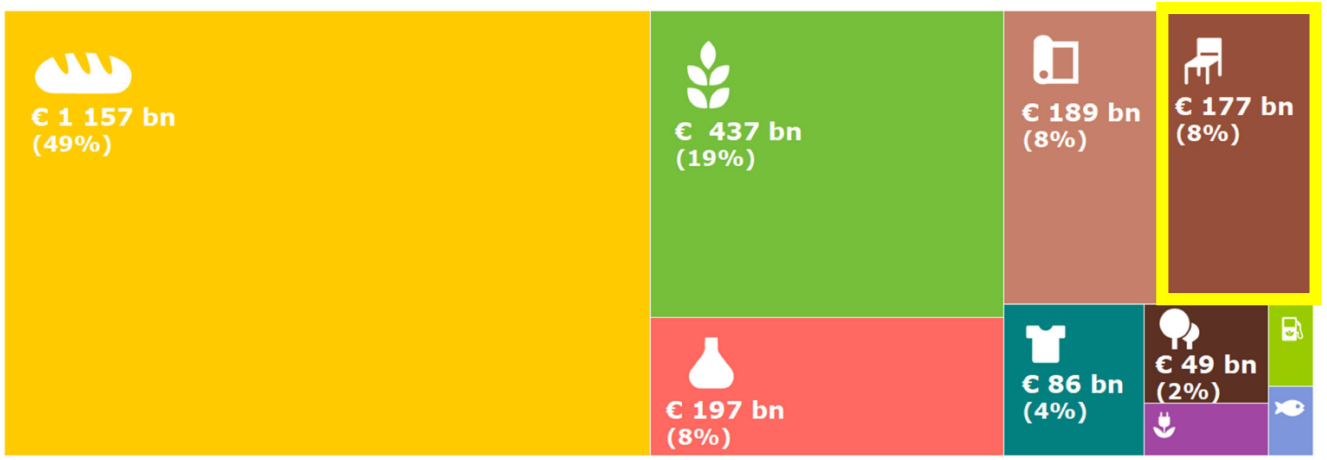


DATA ON BIOMASS PRODUCTION AND PROCESSING SECTORS IN THE EU-27 IN 2019

Added value – €657 billion



Turnover – €2.3 trillion



Legend:

- Forestry
- Agriculture
- Manufacture of paper
- Fishing and aquaculture
- Production of bioelectricity
- Manufacture of liquid biofuels
- Manufacture of bio-based textiles
- Manufacture of bio-based chemicals, pharmaceuticals, plastics and rubber
- Manufacture of food and beverages and other agro-manufacturing
- Manufacture of wood products and furniture

European Commission. (2018). Knowledge Centre for Bioeconomy. Jobs and Wealth in the European Union Bioeconomy. https://knowledge4policy.ec.europa.eu/bioeconomy/topic/economy_en

THE ROLE OF WOOD AND THE W&F INDUSTRY IN SOLVING CLIMATE AND ENVIRONMENTAL CHALLENGES

Due to its characteristics, wood is recognized as a key strategic raw material:

- It has **excellent properties** such as strength-to-weight ratio, toughness, seismic safety, and, last but not least, with modern processing and protection, it also exhibits resistance to environmental factors.
- The most **cost-effective** and **energy-efficient** building material. Energy efficiency and cost-efficiency are demonstrated throughout the lifespan and maintenance of structures constructed partially or entirely from wood or wood composites.
- **An environmentally friendly material**. Trees absorb carbon dioxide (CO2), which is stored in the wood product during its lifespan, making wood a **carbon-neutral material**.
- Wood is a **renewable resource**, and in Slovenia, we have an abundance of it (for now).
- Wood products can be **designed according to the principles of a circular economy** and are **fully biodegradable**.
- …

„The wood-based industry is thus one of the leading sectors with great development potential in achieving the goals of the European Green Deal.“ (Ministry of Economic Development and Technology in Slovenia, 2021)

INDUSTRY 4.0

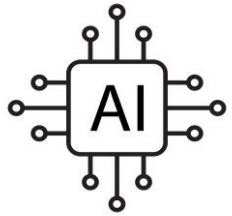
Due to rapid technological development and growing digitization, the production system and life in general are changing rapidly.


Cloud computing


The Internet of Things

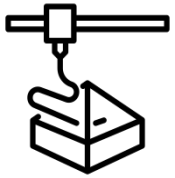

Big data


System integration



Artificial intelligence


Cyber security


Additive manufacturing
(3D, 4D printing)

Virtual reality


Autonomous robots


Simulations

More efficient use of wood for the development of wood products and composites is a key principle of the circular economy, which companies can also achieve by digitalization of processes and thus optimizing the use of raw materials, improving waste management and contributing to green development.

TWIN TRANSITION

„Europe embarks on its transition towards climate neutrality and digital leadership in an ever-changing and ever more unpredictable world. The European Industrial Strategy aims to ensure the leading role of European industry in the new era.“ European Commission, (2020). A New Industrial Strategy for Europe

However, organizations will not be able to implement this **digital** and **green transition** if the staff does not have the **right knowledge** and **skills**.

In 2020, a new Action Plan for digital education was adopted.

Reform of the University in Slovenia for a sustainable society: Comprehensive placement of competencies, key to a green and digital transition, in the curricula, taking into account the needs of the market for knowledge and skills.

€66 million for digitization of education
€40 million for the area of transformation in the direction of green and digital education

METHODOLOGY

ACQUISITION OF DATA

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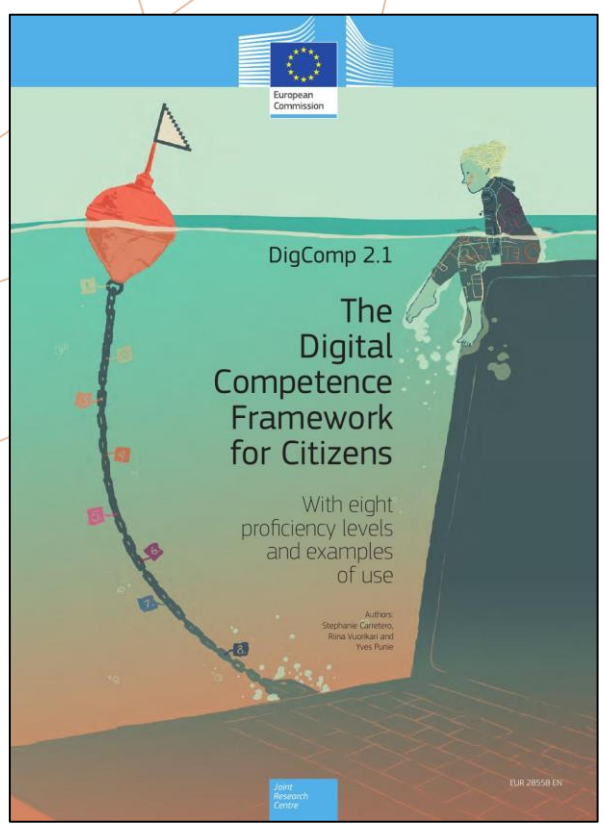
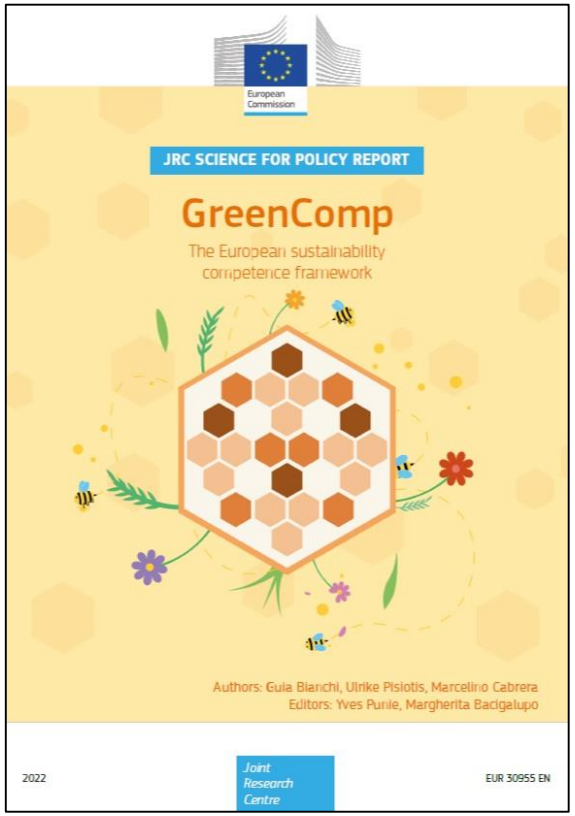


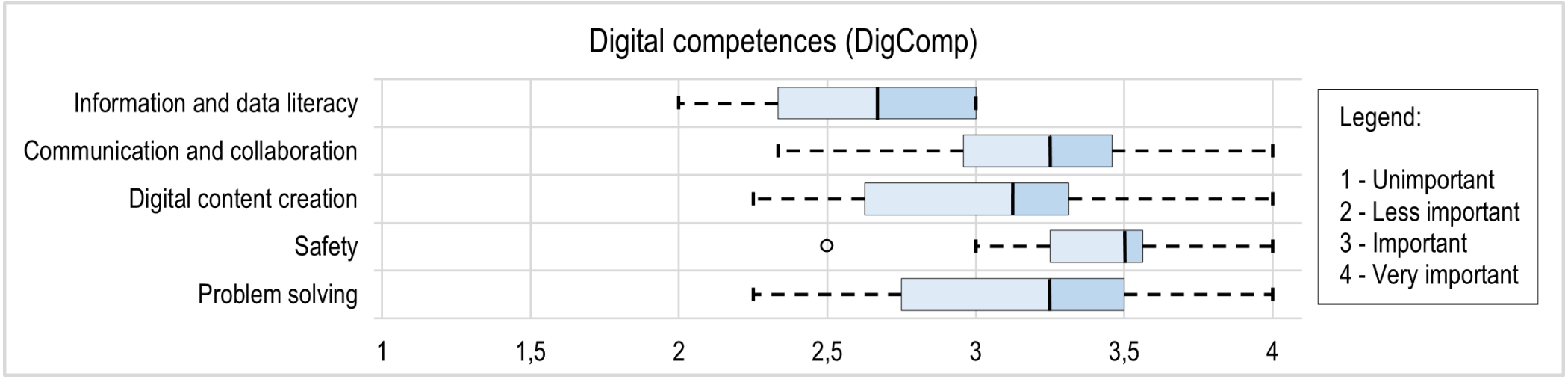


CPI
CENTER RS ZA POKLICNO IZOBRAŽEVANJE

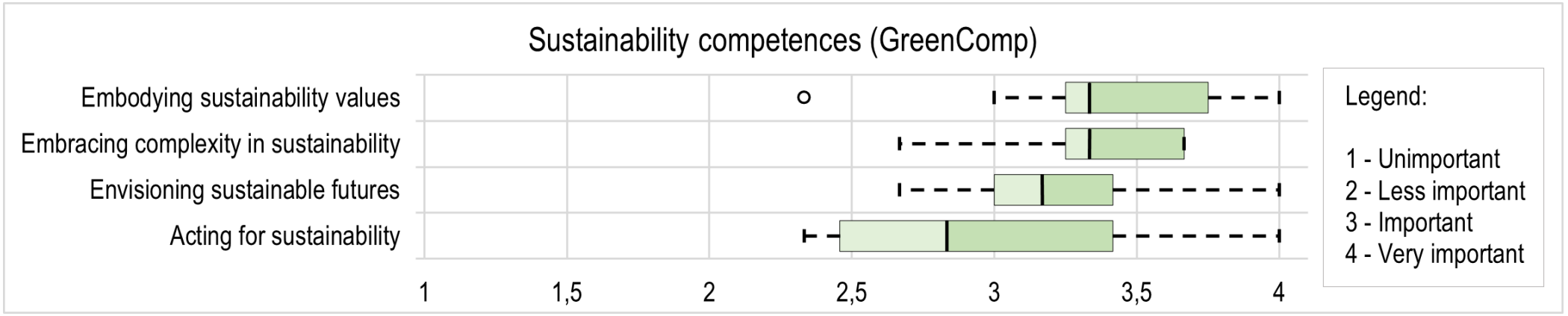
Lesarski grozd
WOOD INDUSTRY CLUSTER

RESULTS

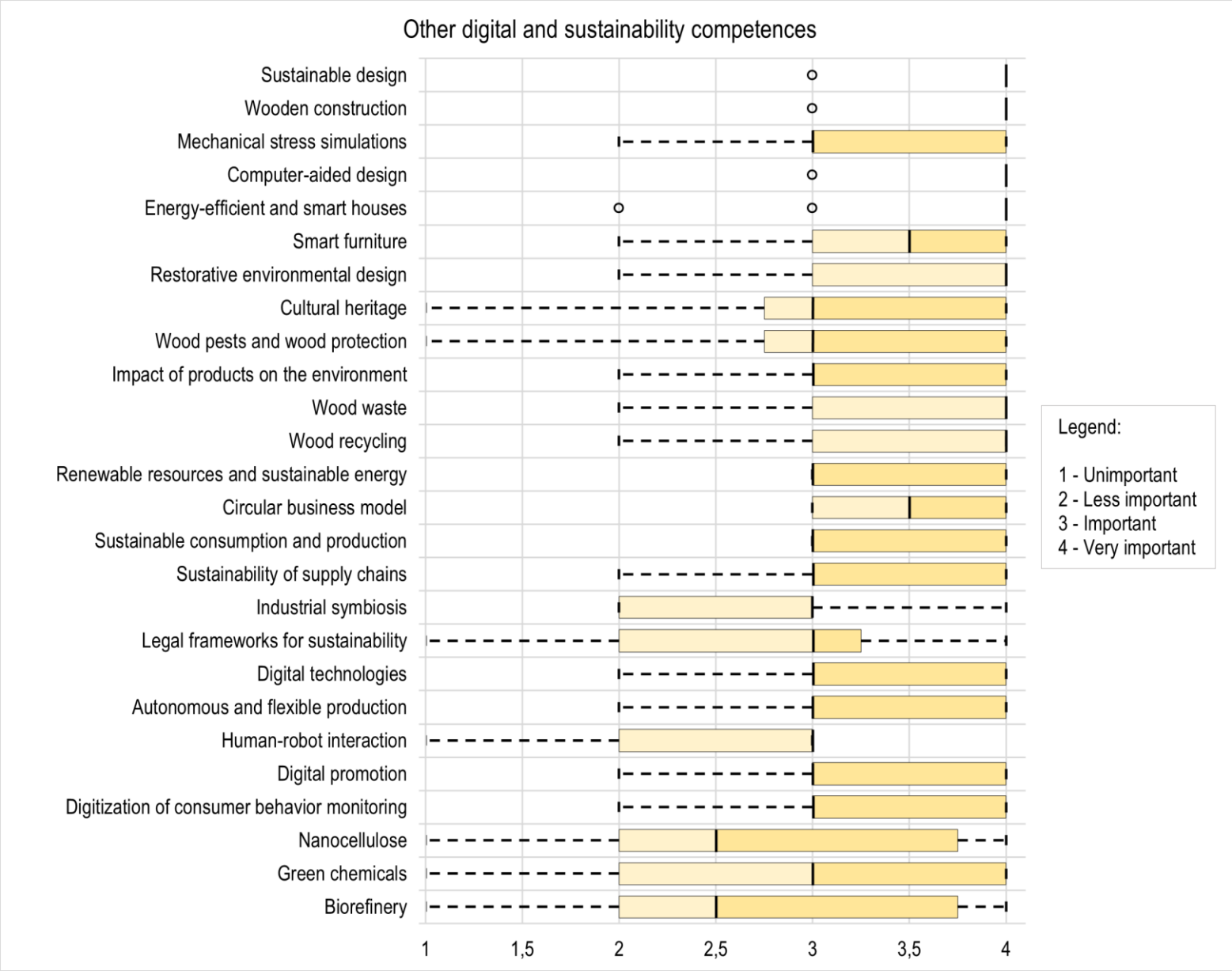
IMPORTANCE OF DIGITAL COMPETENCES



IMPORTANCE OF SUSTAINABILITY COMPETENCES



IMPORTANCE OF OTHER DIGITAL AND SUSTAINABILITY COMPETENCES



CONCLUSIONS

CONCLUSIONS

In the face of increasing global challenges, sustainability and digitalization are becoming increasingly important to policymakers, researchers, and industry.

The bioeconomy can address some of these challenges because of the benefits of renewable biological resources. However, we need to ensure that we adhere to sustainable principles, and digitalization can play an important role in this.

Therefore, we need to ensure that everyone is thinking sustainably as soon as possible and has the appropriate knowledge and skills. This can be achieved by including sustainability and digital topics in education, because the digital and sustainable transition of the wood and furniture industry is only possible with the appropriate competences.

The results show that all competences examined in this study are important to some extent for that transition. The experts rated some competences quite uniform, while the variability of ratings for others was quite high.

THANK YOU FOR YOUR ATTENTION

Luka GOROPEČNIK

Katarina REMIC

Matej JOŠT

Leon OBLAK

Jože KROPIVŠEK

luka.goropecnik@bf.uni-lj.si

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