CLIMATE NEUTRAL BY 2035

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Green skills: just another bubble in the education system or foundation for green transition?

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Sustainability transition

Sustainable development is a core principle of the Treaty on European Union and a priority objective for the Union's internal and external policies.

Green transition

The European Commission helps Member States to carry out reforms that create jobs, inclusive societies and sustainable growth.

In the digital transition, the European Union aims to harness digital technologies for sustainability and prosperity, and to empower citizens and business.

Successfully managing the green and digital 'twin' transitions is the cornerstone for delivering a sustainable, fair, and competitive future.

Towards Green Digital Future, 2022

Green transition

Supporting reforms to transition to a green economy and fight climate change.

Digital transition

Supporting reforms to unlock digital growth potential and deploy innovative solutions for citizens and businesses.

Prejudices

"It is yet another ideology? We have seen those before."

"University management must be bored to come up with another reform."

"We have been doing that same thing for 30 years."

"Let us instead discuss what China is doing."

"REEs are scarce, we are doomed to fail."

"So, now I am not allowed to drive a car and eat meat?"

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Risks

Uncertainty

- Lack of awareness and lack of action regarding green transformation.

- Lack of inclusive partnerships (also between various education institutions and education levels)

- Assessing the green skills needed - how many and what kind? (Auktor, 2020)

- Urgency of green skills (*The Great Reshuffle*) (ILO, 2019). New jobs/changed jobs are part of the conversation about achieving green transition (Duke, 2023). Many such jobs are only still taking shape.

- Lack of tutors with practical experience, few workplace scenarios replicated in training (Lettmayr & Nehls, 2012).

Lack of understanding

General cancel culture

"Kill the messenger!"; "Don't touch my silo!"
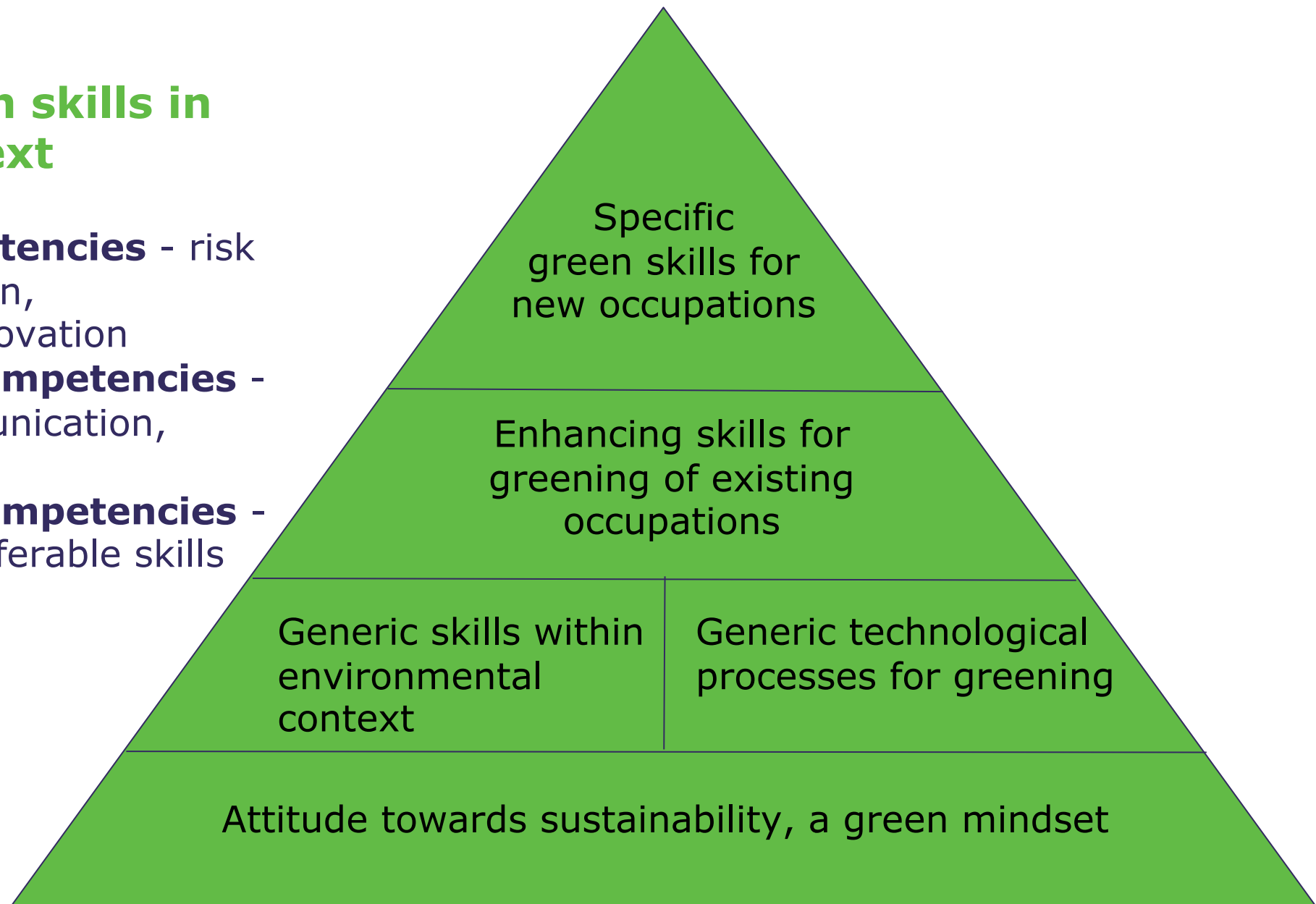
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Green skills

- Green skills are skills that are required to decrease environmental impacts and guide the transition towards sustainability in order to achieve co-operation of economy and society in a climate smart, resource efficient and environmentally considerate way.

- Green skills are a prerequisite for green innovation.

(Auktor, 2022)

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Examples of green skills in engineering context

- **Cognitive competencies** - risk analysis, evaluation, interpretation, innovation
- **Interpersonal competencies** - leadership, communication, marketing
- **Intrapersonal competencies** - adaptability, transferable skills

Specific green skills for new occupations

Enhancing skills for greening of existing occupations

Generic skills within environmental context

Generic technological processes for greening

Attitude towards sustainability, a green mindset

Adopted from Pavlova 2018

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Generic and specific skills for green jobs

- Engineering and technical skills
- Scientific skills
- Leadership and management skills
- Monitoring / Evaluation skills

(Burger et al., 2019; ILO, 2019; Cedefop, 2019; Maclean et al., 2017; Consoli, 2015; Vona et al., 2015; Government of the United Kingdom, 2011)

Expectations and goals

1. **Specifying** the needs and learning opportunities based on relevant internal and international regulations.

2. **Analyzing** existing curricula and determining up-to-date requirements for teaching green skills, including suggestions for the creation of new curricula.

3. **Defining** learning outcomes needed for acquiring green skills and where needed creating of new modules or courses.

4. **Making propositions** for professional standards and skill profiles to ensure the presence of competences necessary for green transition.

5. **Mapping** the training requirements for the pedagogical staff/employees of universities and vocational schools in order to teach green skills.

6. **Developing** teaching materials and methodical (including digital) guides to support the conduction of learning activities.

7. **Piloting** the modules/courses (including teaching materials) in advanced training programs and micro degree programs.

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Takeaways

- Green skills are similar to sustainability skills.

- No silver bullet in integrating sustainability into engineering education, only tailor-made solutions.

- Interdisciplinarity (technical sciences, social sciences etc.) is a precondition for sustainability (twin transition)

- Industry and society are awaiting for an updated educational offering.

- Greenwashing and greenhushing are the results of inactivity and incompetence, i.e. lack of education.

- The key for sustainability lies in organisation DNA.

- Universities are mission-driven organisations.

- Don't kill the messengers.

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Top 10 skills of 2023

1. Analytical thinking

2. Creative thinking

3. Resilience, flexibility and agility

4. Motivation and self-awareness

5. Curiosity and lifelong learning

6. Technological literacy

7. Dependability and attention to detail

8. Empathy and active listening

9. Leadership and social influence

10. Quality control

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