ESD in higher education: Developing key competencies for sustainable development

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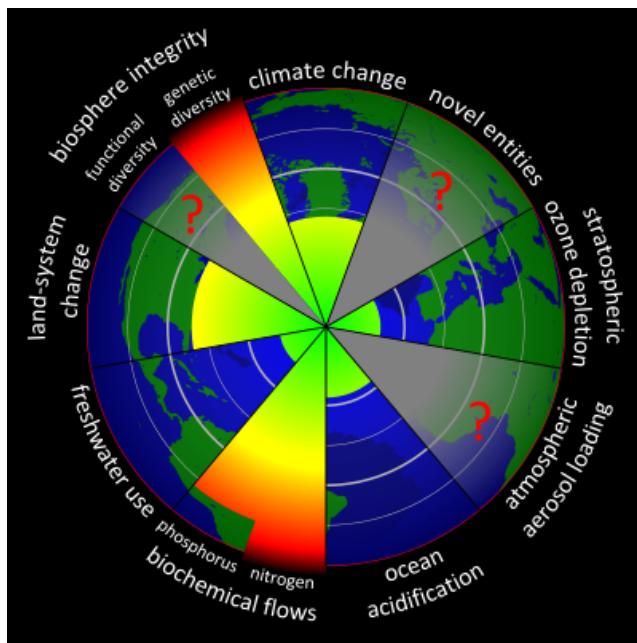Seminar of the Research Centre of Science, Mathematics and Engineering Education Research (SMEER)

Getting to know each other

- Who are you? (name, affiliation)
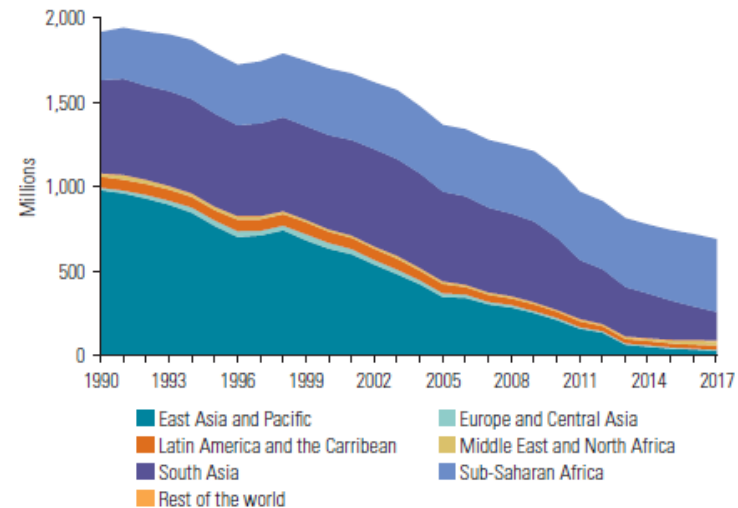- Do you have experience with Education for Sustainable Development (ESD)?

Planetary boundaries and boundaries of misery

Steffen et al. 2015;
Rockström et al. 2009

World Bank 2020

Ecological footprint of humankind
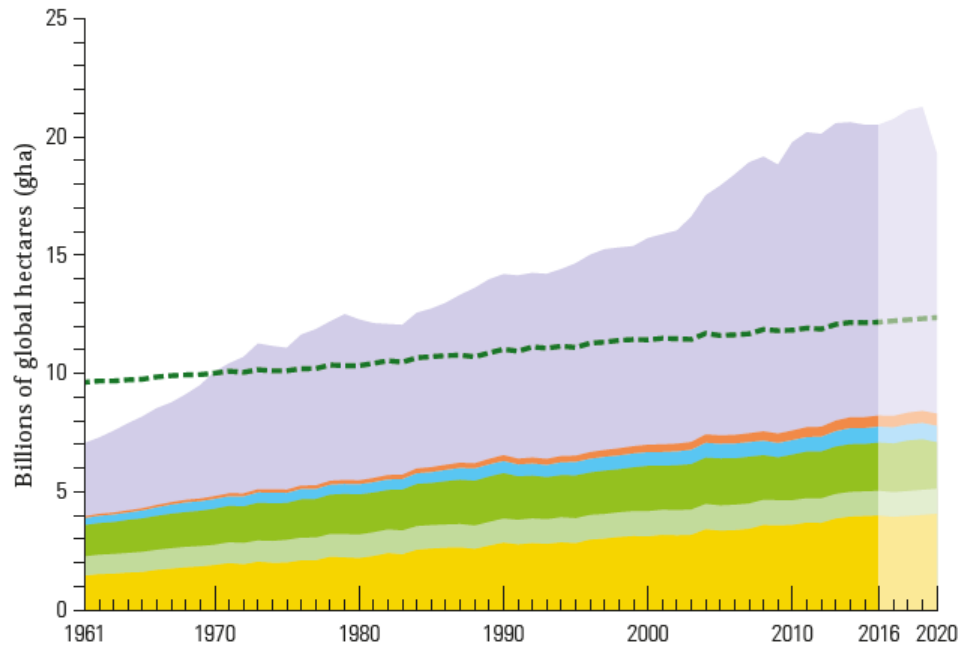
Figure 12: Humanity's Ecological Footprint against Earth's biocapacity in global hectares, 1961-2020
Global overshoot, starting in the early 1970s, has increased since. The COVID-19 related footprint contraction - in lighter colours from 2016 onwards - is an estimate [30, 31].

Key

- **Carbon footprint** [34] for absorbing emissions from fossil fuel burning and cement production
- **Built-up land footprint** for accommodating roads and buildings
- **Fishing grounds footprint** for wild and farmed seafood from oceans and freshwater
- **Forest product footprint** for fuel wood, pulp and timber
- **Grazing land footprint** for meat, dairy, leather and wool
- **Cropland footprint** for food, fibre, oil and feed crops, including rubber
- - - - World biocapacity

WWF (2020)

Sustainable Development Goals

- 17 Goals
- 169 Subgoals
- 2015 published by the UN
- Succession of the MDGs
- SDGs concern development in all countries of the world

Education for Sustainable Development (ESD)

■ **SDG 4, Target 4.7:** By 2030, *ensure that all learners acquire knowledge and skills needed to promote sustainable development*, including, among others, *through education for sustainable development* and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development.
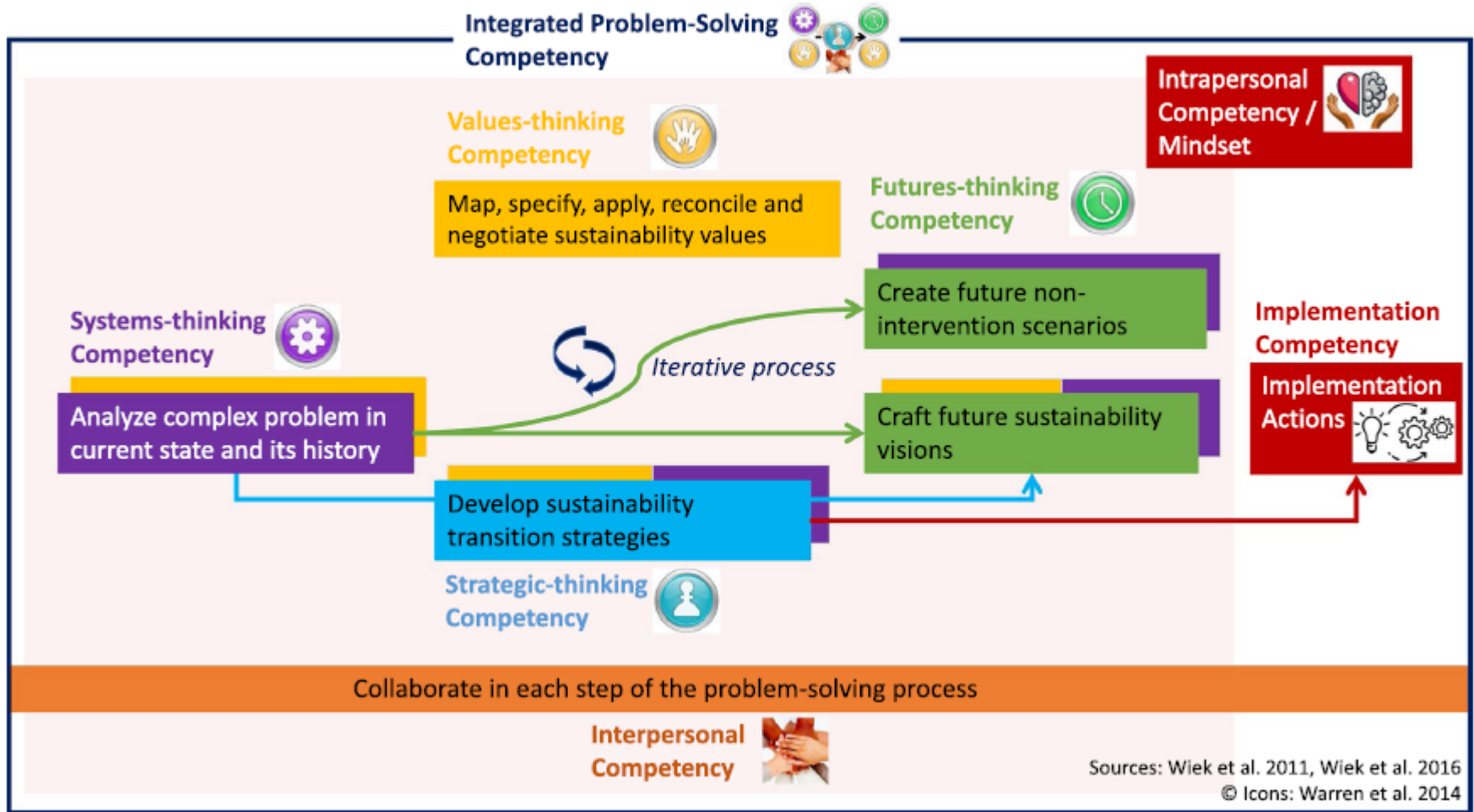
Education for Sustainable Development

■ *Education for Sustainable Development* should promote the development of such key competencies / generic skills which enable individuals to contribute to sustainable development (cf. Brundiers et al. 2021; Rieckmann, 2018, Wiek et al., 2011).

Sustainability Competencies

Brundiers et al., 2021

ESD approaches

ESD 1 / instrumental	> Erziehung
Promoting/facilitating changes in what we do	
Promoting (informed, skilled) behaviours and ways of thinking, where the need for this is clearly identified and agreed	
Learning *for* sustainable development	

ESD 2 / emancipatory	> Bildung
Building capacity to think critically about [and beyond] what experts say and to test sustainable development ideas	
Exploring the contradictions inherent in sustainable living	
Learning *as* sustainable development	

Vare & Scott 2007; Wals 2011; Rieckmann 2020

Transformative education / value orientation

- Conceptual change: changing fundamental orientations (values and attitudes) through education.

- Conservation of natural resources
- Human dignity
- Justice

- Contribution to value clarification and a critical discourse on values
- Suggestions to reflect on one's own values and to take a stand on them
- Broadening the learners' horizon of values

Rieckmann 2018, 2020

Action-oriented transformative pedagogy

■ empowering and motivating learners to become active sustainability citizens who are capable of critical thinking and able to participate in shaping a sustainable future

UNESCO 2017; Rieckmann 2018, 2020

Action-oriented transformative pedagogy

- Learner-centredness and accessibility
- Action and reflection orientation
- Transformative and transgressive learning
- Participatory orientation
- Discovery learning
- Networked learning
- Vision orientation
- Combining social, self-centred and method-oriented with subject-based learning

Rieckmann 2018; UNESCO 2017

ESD methods

- *Collaborative real-world projects* such as a service-learning project and campaigns for different sustainability topics;
- *Vision-building exercises* such as future workshops, scenario analyses, utopian/dystopian story-telling, science-fiction thinking, and fore and back-casting;
- *Analysis of complex systems* including community-based research projects, case studies, stakeholder analysis, actor analysis, modelling and systems games;
- *Critical and reflective thinking* including through fish-bowl discussions and reflective journals.

UNESCO 2017

Whole-institution approach

- HEIs as a place of learning and experience for sustainable development.
- Integration of sustainability into all areas of the HEIs: curriculum, operations, organisational culture, learner participation, leadership and management, community relations, ...
- Institution as a role model for learners

UNESCO 2017

Questions?

Programm „ESD for 2030"

Priority action areas

Advancing policy
Transforming learning environments
Building capacities of educators
Empowering and mobilizing youth
Accelerating local level actions

UNESCO 2020

ESD competencies

- Development of sustainability competencies (cf. Rieckmann, 2018; Wiek et al., 2011)

- ESD competencies, which can be described as the ability of educators to support learners in developing sustainability competencies through a range of innovative teaching and learning practices (cf. Bertschy et al., 2013)

- Approaches / models for ESD competencies: CSCT model (Sleurs, 2008), UNECE model (UNECE, 2012), KOM-BiNE model (Rauch & Steiner, 2013) and the approach developed by Bertschy et al. (2013) (see also Corres et al., 2020)

A Rounder Sense of Purpose – Project aims

- Develop a practical model based on competences in Education for Sustainable Development (ESD) that teacher educators can use in any European context

- Develop continuing professional development (CPD) programmes that will reflect the role of formal education in supporting sustainable development.

- Develop and disseminate a 'tools and guidelines' document to help teacher educators implement the model in a variety of contexts

- Funded by ERASMUS+ Strategic Partnerships

https://aroundersenseofpurpose.eu/

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RSP framework for ESD competencies

- The educator needs to have:
    - a critical understanding of sustainable development and ESD
    - a grounding in the pedagogy of education for sustainable development (ESD)
    - ability to practice an action-oriented, transformative pedagogy

12 Competences

,Distilling' the UNECE competences (refining, filtering, extracting essential elements), see Vare et al. 2019

https://aroundersens
eofpurpose.eu/frame
work/table/

Thinking Holistically	Envisioning Change	Achieving Transformation
Integration:		
Systems The educator helps learners to develop an understanding of the world as an interconnected whole and to look for connections across our social and natural environment and consider the consequences of actions.	**Futures** The educator helps learners to explore alternative possibilities for the future and to use these to consider how behaviours might need to change.	**Participation** The educator helps learners to contribute to changes that will support sustainable development.
Involvement:		
Attentiveness The educator helps learners to understand fundamentally unsustainable aspects of our society and the way it is developing and increases their awareness of the urgent need for change.	**Empathy** The educator helps learners to respond to their feelings and emotions and those of others as well as developing an emotional connection to the natural world.	**Values** The educator develops an awareness among learners of how beliefs and values underpin actions and how values need to be negotiated and reconciled.
Practice:		
Transdisciplinarity The educator helps learners to act collaboratively both within and outside of their own discipline, role, perspectives and values.	**Creativity** The educator encourages creative thinking and flexibility within their learners.	**Action** The educator helps the learners to take action in a proactive and considered manner.
Reflexivity:		
Criticality The educator helps learners to evaluate critically the relevance and reliability of assertions, sources, models and theories.	**Responsibility** The educator helps learners to reflect on their own actions, act transparently and to accept personal responsibility for their work.	**Decisiveness** The educator helps the learners to act in a cautious and timely manner even in situations of uncertainty.

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For example: *Futures Competence*

■ *The educator helps learners to explore alternative possibilities for the future and to use these to consider how behaviours might need to change.*

■ **Learning objectives: The educator helps learners to…**

  ■ *5.1 Envision a range of futures, considering and evaluating likely impacts (potentials and risks) attached to different scenarios*

  ■ *5.2 Identify and analyse the steps that would need to be taken to reach desired and possible future scenarios*

  ■ *5.3 Recognise relations and possible evolutions between the past, present, near future and far future*

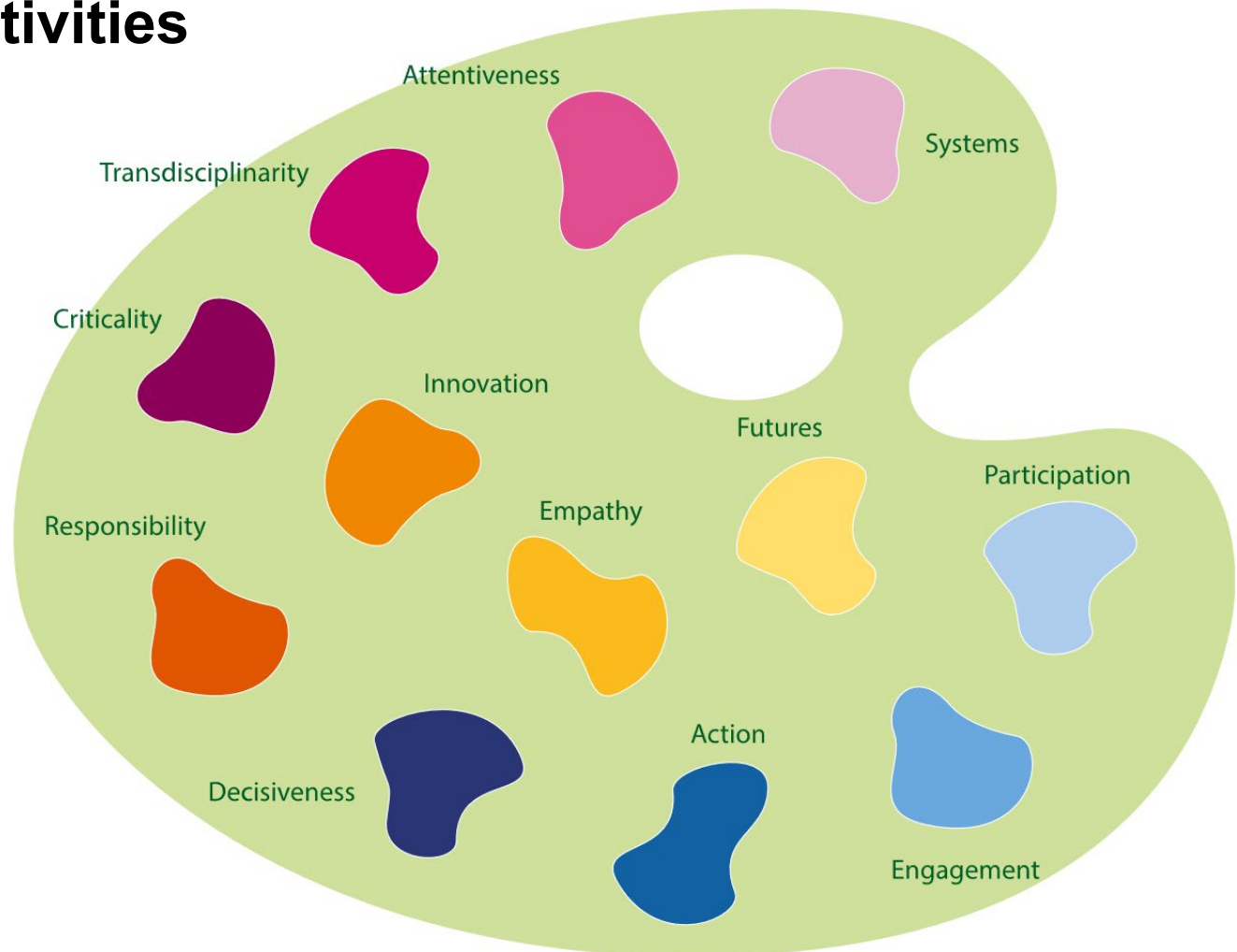| **Underpinning Components for the educator**
In order to achieve the above Learning Outcomes the educator should be able to: |
|---|
| UC 5 Utilise future studies techniques such as simulation games, future newspaper, scenario analysis and back casting |
| UC 5.1a Creatively imagine a number of different future scenarios while sharing worldviews and ideas, and discuss whether they are sustainable |
| UC5.1b Understand how the world might change as we project into the future and how these changes might be considered from different perspectives |
| UC5.2 Know about possible ways to make societal change become real through individual and collective actions |
| UC5.3a See how changes that take place are linked to past actions and evolve over time |
| UC5.3b Analyse and look for causes of change from different perspectives |

Example activities

https://aroundersenseofpurpose.eu/framework/palette/

https://aroundse
nseofpurpose.eu/
sdgs/

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Systems + SDG1 No poverty

Understand the worldwide and/or local systems that cause or diminish poverty.

For example:
Students work in groups to research and analyse, using data, different area's around the world/in their country/region with different wealth/ poverty levels.
Discuss, using multi-perspective background (e.g. social, political, economic, cultural and ecological) as input, possible causes of these differences.
Analyse connections between these perspectives.
Write up the report and use it as a starting point for discussions with local authorities, social workers and cultural leaders about the situation in the school's neighbourhood: do they recognize the team output and in what way are they working on improvement, against the background of the targets and indicators of SDG1?
Seek contact with a school in a different social area and work on an exchange of ideas and people; and seek how these schools can support each other.

Background reading *Piketty, Le Capital au XXIe siècle, Paris 2013* and *Atkinson, Inequality, London 2015*

Questions

Working with the tool

■ Please open the website.

■ Select one SDG: https://aroundersenseofpurpose.eu/sdgs/, and one competency, look at the given example activities and reflect on how you could use these in your classes.

Exchange about working with the tool

- How does the website work for you?
- Exchange about some ideas for your classes.

Thank you for your attention!

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