

Sustainability in Teaching -course

Session 3



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Aalto University



**14.10.2022
12.15-15**

Outline, objectives

- Reflections on last weeks session
- Sustainable Development Goals (SDGs) in different contexts

Break

- SDGs in HEIs and teaching
- *Break*
- Hands-on work:
- SDGs in your field / teaching

Intended learning outcomes of the session

After this session you should be able to

- Reflect on how SDGs are used in business and HEIs
- relate the SDGs to your own specific subject field.

Designated group (note changes)

Group 1: Tamara, Victor, Janet, Marja

Group 2: Jouni, Sam, Henrikki, Janika

Group 3: Karolina, Irina, Henrik, Oguz

Group 4: Eeva B., Susan, Julia

Group 5: Ville, Eeva-L. R., Jacky, Eero



Your reflections

General guidelines:

Breakout room: 10 min

- Field specific groups
- Group chair: Longest hair

Topic of discussion:

How did the peer discussion go?

What new insights did you gain from the peer discussion?

Sustainable development goals



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Global roadmap to sustainability: one possible framework



- UN Agenda 2030 for Sustainable Development (in force since 2016)
 - Summary of complex set of environmental, socio-political and technological problems and the respective solutions
 - Political compromise
 - Holistic, thematic
- 17 goals
- 169 targets

Global roadmap to sustainability: one possible framework



Stockholm Resilience Centre

<https://www.stockholmresilience.org/research/research-news/2016-06-14-how-food-connects-all-the-sdgs.html>

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- 169 targets

SDGs in business

Jussi Impiö

Head of sustainable solutions

Aalto University



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Break



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Warm-up

- If you could choose **one** Sustainable development goal to be reached with a silver bullet, **which one would you choose?**

Answer and justify your choice in the chat!

Hold your answer until told to press “enter”



Complexity of sustainability targets

- Understanding linkages and interactions
- Taking advantage of synergies
- Understanding and addressing trade-offs
- Accepting complexity
- Dealing with conflicting views (values!)



Example 2:

- Climate action and SDGs: synergies and trade-offs
- Mitigation options assessed against SDG

IPCC WG III report (mitigation), p. 54

Mitigation options have synergies with many Sustainable Development Goals, but some options can also have trade-offs. The synergies and trade-offs vary dependent on context and scale.

Sectoral and system mitigation options	Relation with Sustainable Development Goals																	Chapter source
	1	2	3	4	5	6	7	8	9	10	11	12	14	15	16	17		
Energy systems	Wind energy	+	+															Sections 6.4.2, 6.7.7
	Solar energy	+	+	+														Sections 6.4.2, 6.7.7
	Bioenergy	+	+	+														Sections 6.4.2, 12.5, Box 6.1
	Hydropower																	Section 6.4.2
	Geothermal energy																	Section 6.4.2
	Nuclear power																	Section 6.4.2, Figure 6.18
	Carbon capture and storage (CCS)																	Section 6.4.2, 6.7.7
Agriculture, Forestry and Other Land Use (AFOLU)	Carbon sequestration in agriculture ¹	+	+															Sections 7.3, 7.4, 7.6
	Reduce CH ₄ and N ₂ O emission in agriculture																	Section 7.4
	Reduced conversion of forests and other ecosystems ²	+	+	+														Section 7.4
	Ecosystem restoration, reforestation, afforestation	+	+	+														Section 7.4
	Improved sustainable forest management	+	+															Section 7.4
	Reduce food loss and food waste	+	+	+														Section 7.5
	Shift to balanced, sustainable healthy diets	+	+	+														Section 7.4
Renewables supply ³	+	+	+														Section 7.6	
Urban systems	Urban land use and spatial planning	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	Sections 8.2, 8.4, 8.6
	Electrification of the urban energy system	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	Sections 8.2, 8.4, 8.6
	District heating and cooling networks	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	Sections 8.2, 8.4, 8.6
	Urban green and blue infrastructure	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	Sections 8.2, 8.4, 8.6
	Waste prevention, minimization and management	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	Sections 8.2, 8.4, 8.6
Integrating sectors, strategies and innovations	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	Sections 8.2, 8.4, 8.6	
Buildings	Demand-side management	+	+	+														Section 9.8, Table 9.5
	Highly energy efficient building envelope	+	+	+														Section 9.8, Table 9.5
	Efficient heating, ventilation and air conditioning (HVAC)	+	+	+														Section 9.8, Table 9.5
	Efficient appliances	+	+	+														Section 9.8, Table 9.5
	Building design and performance	+	+	+														Section 9.8, Table 9.5
	On-site and nearby production and use of renewables	+	+	+														Section 9.8, Table 9.5
	Change in construction methods and circular economy																	Sections 9.4, 9.5
Change in construction materials																	Section 9.4	
Transport	Fuel efficiency – light duty vehicle																	Sections 10.3, 10.4, 10.8
	Electric light duty vehicles																	Sections 10.3, 10.4, 10.8
	Shift to public transport	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	Sections 10.2, 10.8, Table 10.3
	Shift to bikes, ebikes and non motorized transport	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	Sections 10.2, 10.8, Table 10.3
	Fuel efficiency – heavy duty vehicle																	Sections 10.3, 10.4, 10.8
	Fuel shift (including electricity) – heavy duty vehicle																	Sections 10.3, 10.4, 10.8
	Shipping efficiency, logistics optimization, new fuels																	Sections 10.6, 10.8
Aviation – energy efficiency, new fuels																	Sections 10.5, 10.8	
Biofuels																	Sections 10.3, 10.4, 10.5, 10.6, 10.8	
Industry	Energy efficiency																	Section 11.5.3
	Material efficiency and demand reduction																	Section 11.5.3
	Circular material flows																	Section 11.5.3
	Electrification	+	+	+														Sections 11.5.3, 6.7.7
CCS and carbon capture and utilisation (CCU)																	Section 11.5.3	

Critique of the SDG-framework

E.g.

- Non-binding nature, collective responsibility
- Growth-paradigm
- Lack of financial means, prioritization of means, cost-efficiency
- Contested definitions of e.g. poverty, development, clean energy
- Measure and follow-up

E.g. Bali Swain (2017)

Measuring progress (towards goals)

Indicator (sets)

- Knowledge tool at different levels
- Monitoring and assessment instrument
- Policy tool
- Simplification of complex system
- Communicative function

Ideally

- Specific, measurable, accurate, relevant, timely (SMART)

What is the real societal influence of indicators?

Risks

- Over-use
- Non-use
- Mis-use



SDGs in higher education



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The SDG Accord

The University and College Sector's Collective Response to the Global Goals

SDG Accord signatories assert that “as leaders or individual practitioners, academics, students or researchers, we will [among others]:

Align all major efforts with the Sustainable Development Goals, targets and indicators, including through our [education](#), research, leadership, operational and engagement activities”

SDGs offer a broad and globally accepted definition for a sustainable university and offers universities framework to show their impact.

Aalto University is committed to the SDG Accord since 2018.

SDGs in higher education

Existing

- courses
- programs
- research projects /outputs
- activities

X



- Retrospective
- Reporting
- Crude focus areas
- Methodological challenges
- ? "SDG-wash"

Personal profile

Artistic and research interests

Mark Hughes holds a BS in Mechanical Engineering, obtained in 1984 from Pennsylvania State University, a MS in Forest Industries Technology from Bangor University, UK and a PhD in Wood Science, also from Bangor University, after obtaining his PhD in 2000. He worked for 4 years as a research engineer at the Biomimetics Centre, a contract research institute based at Bangor University, successfully setting up and managing the materials group there. He moved to Finland in 2006, taking up a position at Aalto University of Technology (now Aalto University). It is an exciting challenge and time as full professor, with effect from 1st January 2007. His research interests are diverse, ranging from structure-property relationships in wood and composite materials, through wood modification, to the use of wood in resource-efficient construction. In the last 9 years, he has been focused on improving the sustainability of wood construction by using it to enhance the energy efficiency of buildings as well as finding new circular economy principles that can be applied to the wood value chain. His research interests also encompass the role that biomimetics can play in mitigating climate change, when used in the built environment. He has authored or co-authored around 100 publications that have appeared in the scientific literature, were book chapters and contributed to a large number of conferences and other events over the years.

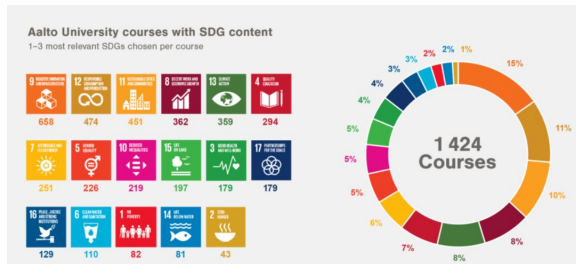
Expertise related to UN Sustainable Development Goals

In 2015, UN member states agreed to 17 global Sustainable Development Goals (SDGs) to end poverty, protect the planet and ensure prosperity for all. This project work contributes towards the following SDGs:

2 Towards Realising SDGs in the University of Helsinki



Fig. 2.1 SDG mapping of the selected university initiatives



SDG-approach to sustainability integration

- SDGs as a tool to connect course content and sustainability thematically
- Focus on 169 sub-targets in finding relevant and meaningful connection
- SDGs can be used to facilitate the learning of sustainability competencies
- Learning objectives (cognitive, socio-emotional, behavioural) and pedagogical approaches



The infographic is titled "Education for Sustainable Development Goals Learning Objectives". At the top left, it features the logos of the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the Sustainable Development Goals. The main title is displayed in three stacked horizontal bars: "Education for" (blue), "Sustainable Development Goals" (blue), and "Learning Objectives" (red). Below the title is a circular graphic with a blue globe in the center, surrounded by the 17 Sustainable Development Goals icons, each with its corresponding number and name. The icons are arranged in a ring around the globe, with the numbers 1 through 17 visible. At the bottom right of the infographic, the text "Education 2030" is displayed with a small globe icon.

SDG labels in Aalto courses

The aim of the SDG labels in course descriptions is

- to make visible the educational offering Aalto University has in the field of sustainability.
- to help students to find sustainability relevant courses within and beyond their own programmes.

The appropriate SDG tags help students to find courses that address sustainability challenges and solutions.

! To tag a certain SDG, the topic should be also visible in the course description (Sustainable development is core content or part of learning outcomes of the course)



How to add SDG tags to a course description?

1. Please familiarise yourself with the [Sustainable Development Goals and the targets under them](#) before adding any SDG tags to course descriptions.
2. Tag your course as sustainability-related if its learning outcomes or key contents address sustainability or the SDGs.
3. Select the sustainability theme that best describes your course. Select one or several **SDG tags** or **the wheel icon** denoting a comprehensive approach to sustainability if the course provides a comprehensive approach that goes beyond individual SDGs. Please ensure that the SDG tags you select are visible in the course description!

→ It is important that the SDG tags correspond to the actual course contents – after all, not all courses address sustainability. **If the course does not address sustainability or only does so in passing, select ‘no’.**



SDG tags

The wheel icon
(Comprehensive approach to sustainability)

Help and support:

- [Sustainable development goals in course descriptions | Aalto University](#)

Tool tip

Select 'yes', if course's core content or one or more of the intended learning outcomes relates to sustainability, Sustainable Development Goal(s) and/or their subtarget(s). Please make sure that the sustainability relevance is explicated also in the course description.

Select 'no', if the content of your course does not relate to sustainability or sustainability is only tangentially touched upon.

Link to: [Sustainable development goals in course descriptions | Aalto University](#)

Tool tip

If the core content or part of the learning outcomes of the course relates to particular Sustainable Development Goal(s), select appropriate one(s).

If the course deals with sustainability comprehensively beyond individual SDG topics, select the wheel icon ('Comprehensive approach to sustainability').

Link to: [Sustainable development goals in course descriptions | Aalto University](#)

Does the course relate to sustainability?

Aalto University develops solutions to global sustainability challenges, which can be addressed, e.g., through the United Nations Sustainable Development Goals (SDGs) (link: <https://sustainabledevelopment.un.org/topics/sustainabledevelopmentgoals>). Information about sustainability content of courses is collected to help students to find sustainability related courses at Aalto University.

Yes No

? Sustainable development is core content or part of learning outcomes of the course

? Specify the approach to SDGs or to sustainable development

Tool tip

7 Affordable and Clean Energy
Ensure access to affordable, reliable, sustainable and modern energy for all

Select the SDG:s relevant for the course



Select the wheel icon, if the course addresses sustainability comprehensively beyond individual SDGs



Questions?

Comments?

SDGs in analysing your field: Warm-up II

- What is the main, overarching *phenomenon* addressed in your course?
- How does it, or a (practical) application of it, relate to the SDGs (none, one or several)?
- Choose one relevant SDG for closer scrutiny
- Familiarize yourself with the respective SDG subtargets (5 min)



SDG-supported analysis of your course content and sustainability themes

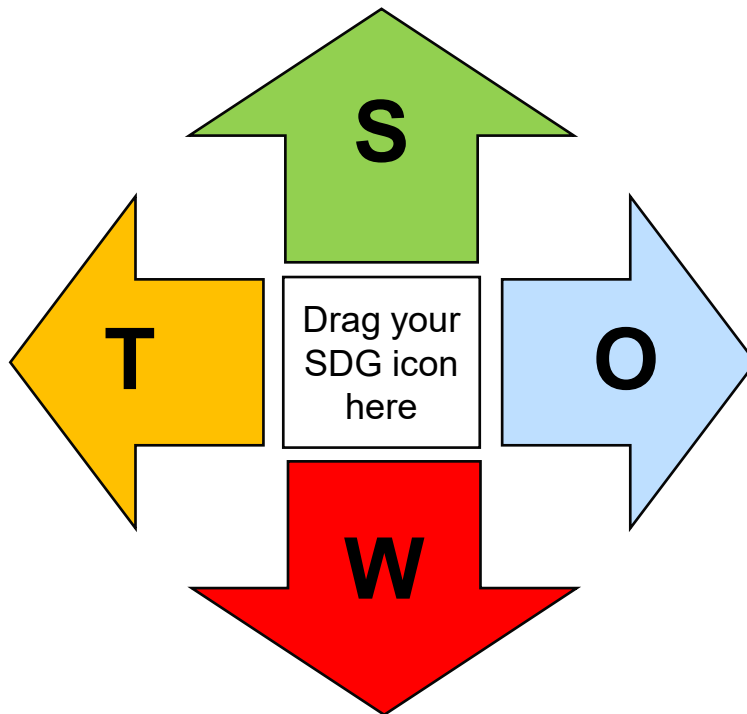
We work in Flinga: three breakout rooms, three Flingas

- Go to the Flinga board assigned to you (see chat). Choose one matrix, click the purple circle (upper left corner) and edit it by writing your name in it.
- Drag the icon of your chosen SDG to the centre of your canvas. If you concentrate on one subtarget, copy-paste its description next to the SDG icon.
- Work on the SDG- SWOT- analysis of your phenomenon and the related SDG (subtarget). Document your analysis in Flinga with adding text boxes.

15 min independent work, ~15 min discussion in groups



What actions or developments would strengthen the direction towards the SDG /SDG subtarget?



Would developments towards achieving your goal threaten the achievement of other SDGs?

Would development towards this goal create opportunities to achieve other SDGs?

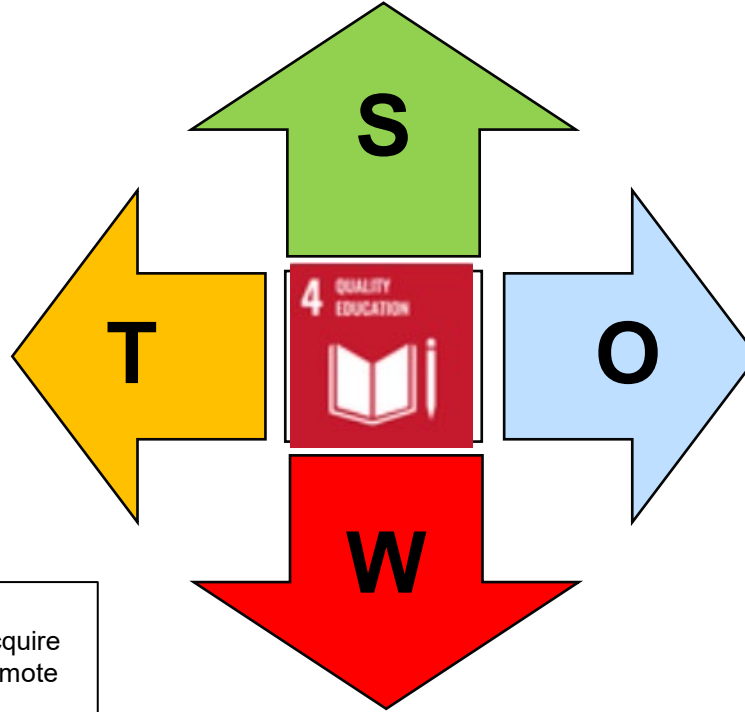
What actions or developments would weaken the direction towards the SDG /SDG subtarget?

EXAMPLE

What actions or developments would strengthen the direction towards the SDG /SDG subtarget?

- Incentives to take part in education
- Refine educational strategies to include required competences
- Integration ESD in all educational levels

Would developments towards achieving your goal threaten the achievement of other SDGs?



Would development towards this goal create opportunities to achieve other SDGs?

Subtargets:

4.7 By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development,...

4c By 2030, substantially increase the supply of qualified teachers...

What actions or developments would weaken the direction towards the SDG /SDG subtarget?

- Cuts in resources for education
- Decreasing motivation to participate in training

Instructions to Flinga

- Link to Flinga in the chat, when in the breakout room.
- Choose one matrix and write your name in the purple circle (in “Message”)
- You can move the SDG icons and add notes in the board by sending “messages”.
- Zooming functions can be found in the bottom corner.



GROUPS

Breakout room group 1 (Marja): <https://edu.flinga.fi/s/EE7NMH7>

Tamara, Victor, Janet, Marja, Eeva B., Susan

Breakout room group 2 (Meeri): <https://edu.flinga.fi/s/EWAEGN7>

Jouni, Sam, Henrikki, Janika, Karolina, Irina, Julia

Breakout room group 3 (Paula): <https://edu.flinga.fi/s/EDXWCRH>

Ville, Eeva-L. R., Jacky, Eero, Henrik, Oguz



Timeline of the course *(changes possible)*

Reading task for respective week	Mon	Tue	Wed	Thu	Fri
					9.9. Session 0: Course practicalities
Sustainability.n ow-material	12.9.	13.9.	14.9. Pre-assignment (questionnaire) Introduction	15.9.	16.9. Session 1: Introduction to sust. & Sust. in field specific context
Wiek et al 2011	19.9.	20.9.	21.9.	22.9.	23.9.
	26.9.	27.9. Homework from session 1	28.9.	29.9.	30.9. Session 2: Integration of sustainability in higher education, Competencies
	3.10.-7.10. Discussion with colleague (book time slot in time)				
SDG-articles, two options, read at least one	10.10.	11.10. Homework from session 2	12.10.	13.10.	14.10. Session 3: SDG framework
Video					

**COURSE
SESSION,**
at 12-15

**READING
TASKS**
(due
before
contact
sessions)

**Homework
assignment
DLs**

**OTHER
ASSIGNMENT**

Timeline of the course *(changes possible)*

Reading task for respective week	Mon	Tue	Wed	Thu	Fri
Tejedor et al	17.-21.10. Discussion with student (book time slot in time)				
Video	24.10.	25.10. Homework from session 3	26.10.	27.10.	28.10. Session 4: Teaching methods TapRoom
Reading task (tbc)	31.10.	1.11.	2.11.	3.11.	4.11.
	7.11.	8.11. SULITEST Homework from session 4	9.11.	10.11.	11.11. Session 5: Teaching and assessment methods Values in teaching
Reading task (tbc)	14.11.	15.11.	16.11.	17.11.	18.11.
	21.11.	22.11. Homework from session 5	23.11.	24.11.	25.11. Session 6: Dealing with emotions and anxiety Closing
Deadline of final reflection: 9.12.					

COURSE SESSION,
at 12-15 EET

READING TASKS
(due before contact sessions)

Home work assignment DLs

OTHER ASSIGNMENT

Next session...

1. **Written homework:** (DL Tue 25.10.)

- Getting back to your course's starting point regarding sustainability integration & reflecting on SDGs in own teaching
- Modifying / generating ILOs (*if applicable*)
- Looking ahead: Next week's theme is teaching methods. If you have specific questions regarding methods, please write them in your assignment.

2. **Two preparatory tasks for session 4:**

- Reading task: Tejedor et al. 2019. Didactic Strategies to Promote Competencies in Sustainability
- Inspirational video (10 min): Tomi Kauppinen / Encountering sustainability through using the SDGs as a topic of an assignment

3. **Book a meeting with a student**

- Aiming to understand student perceptions on sustainability-related content and teaching in their programmes/courses
- Prepare to share your “results” next time with others!

Literature

Bali Swain, Ranjula. (2017). A Critical Analysis of the Sustainable Development Goals. **In book: Handbook of Sustainability Science and Research (pp.341-355)** 10.1007/978-3-319-63007-6_20.

International Maritime organization (IMO) and SDGs:

https://wwwcdn.imo.org/localresources/en/MediaCentre/HotTopics/Documents/IMO%20and%20the%20Sustainable%20Development%20Goals_wheel%20graphic_2018_FINAL.pdf

IPCC AR 6 WGIII report (2022): Summary for policy makers,

https://report.ipcc.ch/ar6wg3/pdf/IPCC_AR6_WGIII_SummaryForPolicymakers.pdf

Lyytimäki, J, Salo, H, Lepenies, R, Büttner, L, Mustajoki, J. Risks of producing and using indicators of sustainable development goals. *Sustainable Development*. 2020; 28: 1528– 1538. <https://doi.org/10.1002/sd.2102>

Thomas, I. 2016. Challenges for Implementation of Education for Sustainable Development in Higher Education Institutions. In Barth, M. (Ed.), Michelsen, G. (Ed.), Rieckmann, M. (Ed.), Thomas, I. (Ed.). *Routledge Handbook of Higher Education for Sustainable Development*. London: Routledge. 56–71.

Independent Group of Scientists appointed by the Secretary-General, *Global Sustainable Development Report 2019: The Future is Now – Science for Achieving Sustainable Development*, (United Nations, New York, 2019) https://sustainabledevelopment.un.org/content/documents/24797GSDR_report_2019.pdf

United Nations Educational, Scientific and Cultural Organization, UNESCO (2017) Education for sustainable development goals: learning objectives. UNESCO, Paris, France. <https://unesdoc.unesco.org/image/s/0024/002474/247444e.pdf>.