

# Transformative Education for Sustainability at Eindhoven University of Technology Empowering the students of today to create the world of tomorrow

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## Problematization

Technical universities have a major responsibility to contribute to **sustainability transitions** as co-creators for sustainability solutions via offering space for critical reflection and nuance about technology's role.



Currently, TU/e's sustainability research is highly oriented to collaborating with powerful societal actors, particularly industry. And valorisation models see societal actors as recipients rather than co-creators of knowledge. This falls at the expense of research that prioritises learning with, from and for the general public alongside their local expertise and lived experiences. Likewise, SDGs are criticized too.

TU/e has funded a two-year study to explore existing and new possibilities for changing its research infrastructure in order to move in more transformative directions in support of its 2030 strategy (TU/e Strategy 2030).

## What is transformative education for sustainability?

At TU/e this means looking beyond only technology's impact on society and only SDGs, but also nurturing relationships with the university's partners together with and for society.

## Research question

What **tools** are necessary to integrate and evaluate sustainability in **engineering education** at TU/e and how can they be implemented?

## Objectives

### Guiding principles

SDGs are increasingly criticized for:

- not providing the best guidance for sustainability, especially at technical universities
- being formulated in an unclear way
- being difficult to operationalize because of being defined at a high level (Swain, 2018; Biermann et al., 2022).

At TU/e we will explore whether SDGs provide a suitable guide to link the university's education to sustainability.

## If not SDGs then what?

Literature knows other, more productive ways to guide the practical work on sustainability at universities, such as by using the notion of challenges, missions or other. These could provide a set of alternative guiding principles especially at technical universities. After a literature study and interviews with other universities, a choice can be made at TU/e as to how we want to assess sustainability in education.

## Assessment framework

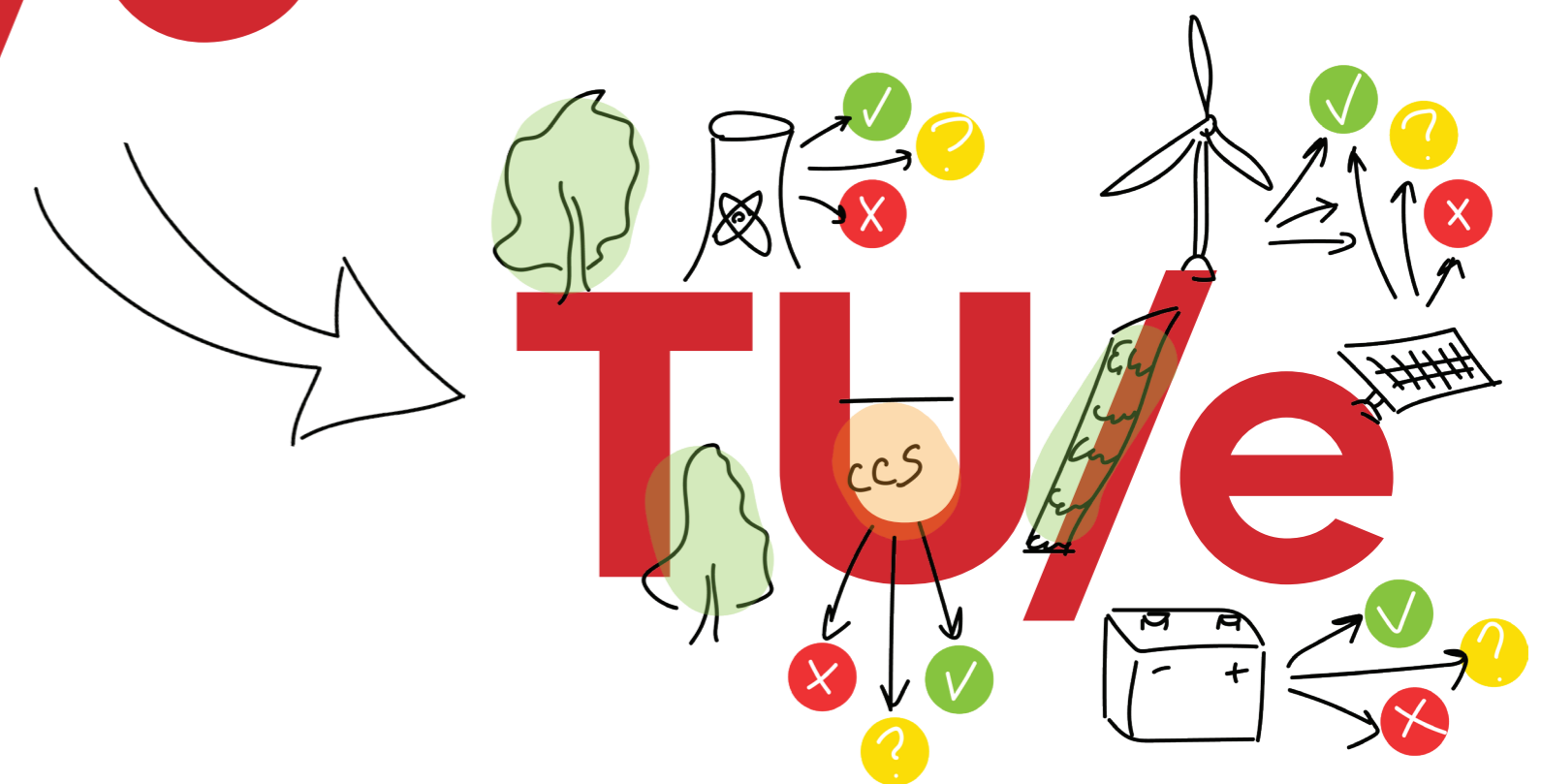
Most universities, including TU/e, make their assessment of sustainability based on **self-reporting**. We will explore whether we can develop a framework which operates on **more systematic and objective criteria**.

We will base it in:

- literature,
- interviews with other universities worldwide,
- interviews with professional bodies, including accreditation ones.

We will discuss and validate the findings in a workshop together with other (Dutch) universities and universities of applied sciences.

# TU/e



## Partnership assessment tool

TU/e adopts a challenge-based learning (CBL) approach that incentivizes collaborative and hands-on teaching and learning.

## What is CBL?

CBL prompts students to work with peers, teachers, and experts in their communities and around the world to ask good questions, develop deeper subject area knowledge, accept and solve challenges, and share their experience.

In CBL, companies or institutions can bring in **challenges that students can work on**. However, the question arises as to the extent to which TU/e and its students should engage in specific challenges that cater to the needs of specific companies. There is currently no screening of the offered challenges from sustainability perspective.

Such a screening tool can help assess and guide the partnerships and collaborations based on sustainability criteria. We will develop such a partnership assessment tool based on

- systematic academic and grey literature reviews,
- interviews with relevant organisations.

## Validation and experimentation

A debate and a critical reflection needs to take place with relevant stakeholders on the soundness of the developed approach and how to implement it at TU/e.

For this purpose, three workshops will be organized to discuss and legitimise the use of the developed approaches.

Tests are also planned for the implementation of the assessment framework, the guiding principles, and the partnership assessment tool.

## References

- Biermann, F., et al. (2022). Scientific evidence on the political impact of the Sustainable Development Goals. *Nature Sustainability*, 5(9), 795-800.
- Swain, R. B. (2018). A critical analysis of the sustainable development goals. *Handbook of sustainability science and research*, 341-355.
- TU/e Strategy 2030. <https://www.tue.nl/en/our-university/about-the-university/tue-strategy-2030/>, conducted at 22-11-2022

