4TU.RSC

# 4TU.Responsible Sustainability Challenge 2022-2025


TU Delft Delft University of Technology

TU/e Eindhoven University of Technology

University of Twente.

Wageningen University & Research

4TU.

# Contents



Photo cover:
Eneritz Murillo Luaces

# 4TU.Responsible Sustainability Challenge

An organisational perspective on a 4TU. MSc honours programme 2022-2025

**This document reviews the 4TU.RSC's impact and lessons learned.**

**The 4TU.Responsible Sustainability Challenge demonstrates the power of challenge-based learning in fostering sustainability leadership.**

**Its lessons offer a roadmap for future collaborations, if institutions are willing to invest in coordination and a shared vision.**

## Executive Summary

The 4TU.Responsible Sustainability Challenge (4TU.RSC) was a 15 ECTS honours programme for motivated master students from Delft University of Technology, Eindhoven University of Technology and University of Twente developed in 2021. The 4TU.RSC was designed to foster creative, transdisciplinary problem-solving in sustainable technology, focusing on energy, materials, and ethics aligning with the EU Green Deal.

Student groups with 5-8 members from diverse backgrounds selected real-world sustainability challenges, collaborating with both academic experts and external stakeholders to ensure relevance. Results from the students' work ranged from concrete technological solutions to analyses that drove further conversation within the companies that were involved. In total 34 students participated in the 4TU.RSC.

The 4TU.RSC ran for three academic years (2022–2025) and featured workshops, micro-courses, coaching, and peer reviews to enhance the learning experience. The structure balanced academic rigor with practical, real-life application. Challenges were offered by ProRail, KLM, Twence, Heliostrome, Quantum Energy and Engineering, Alliander-AI Lab and NMI.

The programme was highly evaluated by the participants. From inception to final project, the organisation of the 4TU.RSC demonstrated an iterative evolution for everyone involved. Evidence of this can be seen in the considerable upgrades in the consecutive syllabuses, reflecting a substantial development.

In 2025, the 4TU.RSC has come to an end. Since the start of the 4TU.RSC, there has been a greater focus on transdisciplinary collaboration across the board in education at the four universities individually. Therefore, there is now less need for a coordinated effort from the 4TU. Concluding, we are certain that the 4TU.RSC inspired and created awareness for sustainability within the 4TU.Federation.


Workshop:
4TU Energy

This document focuses on the lessons learned from executing the 4TU.RSC programme, particularly with regard to organisational aspects. This approach sheds light on the complexities and challenges encountered during the preparation and implementation of the 4TU.RSC programme, offering valuable insights for those planning a challenge-based learning experience or an interuniversity collaboration.

First, the setup of the 4TU.RSC programme in accordance with its three pillars: 'responsibility', 'sustainability' and 'challenge' is reviewed.

Secondly, this document addresses the lessons learned during the execution of the 4TU.RSC programme, such as defining roles and responsibilities, navigating the myriad rules and regulations of each university, planning educational initiatives and recruiting students.

Thirdly, the long-term outcomes of the programme for universities, companies and students are listed.

In conclusion, the 4TU.Responsible Sustainability Challenge was far more than the sum of its parts. As a transformative experience for students, staff, and participating companies, the initiative demonstrates what can be achieved through collective effort, leaving behind a legacy of accomplishment that the 4TU.RSC organisation is proud of.

# The 4TU.RSC Programme Overview

The 4TU.Responsible Sustainability Challenge was named after three core pillars of the programme:

- **RESPONSIBLE:** The programme integrated ethics and normative aspects into scientific and engineering work, encouraging students to critically analyse the societal, cultural, and economic consequences of their solutions.
- **SUSTAINABILITY:** It addressed urgent sustainability issues, particularly in areas such as high-tech materials and energy, within the context of the European Union Green Deal.
- **CHALLENGE:** the 4TU.RSC used a Challenge-Based Learning (CBL) approach, in which students tackle real-world, complex problems. This methodology fosters transdisciplinary collaboration, leadership, and communication skills – essential for educating the engineer of tomorrow.

Working in transdisciplinary teams, students engaged with stakeholders and experts to co-create solutions. For example, they focused on the disposal programme of end-of-life vehicles at KLM. The 4TU.RSC trajectory prepared them to address the challenges of a rapidly changing world.

## Sustainability in high-tech materials and energy



Before 2021, students at Delft University of Technology, Eindhoven University of Technology and University of Twente, did not always have the opportunity to study sustainability as part of their bachelor or master programmes. This honours programme provided an opportunity to pursue interests in sustainability and technology.

The European Green Deal, launched in 2020, provided the context for sustainability. Compared to the Sustainable Development Goals, the ambitions of the EU Green Deal are more focused. For example, on creating economic growth decoupled from resource use, reaching net-zero greenhouse gas emissions, and transforming the EU economy with clean energy and sustainable industry. This focus fits seamlessly with the missions of both 4TU.High-Tech Materials and 4TU.Energy. 4TU.Ethics and Technology complemented this outlook by providing stakeholder management workshops throughout the three editions of the 4TU.RSC.

Students working with Heliostrome had the unique opportunity to work across disciplines, combining business administration, computer science, and geoinformation systems for Earth observation. They had access to a variety of international experts in fields such as irrigation and farming, who provided input for their analysis of Heliostrome's business case. The company aims to develop software that enables the design, modelling and simulation of solar irrigation systems, helping the transition from diesel to solar energy for irrigation.

## Challenge-based learning

The 4TU.RSC actively developed and studied the educational approach of challenge-based learning (CBL). As Nelleke van Adrichem, Honours Programme Director at the University of Twente, noted, CBL was still an emerging concept at the University of Twente in 2021: "At the time, CBL was a buzzword, but it had not yet been integrated into many courses or programmes. Only a handful of university teachers had experience with it. From the outset, we talked extensively with various partners about how to set this up. The challenge lay in the collaboration, in the design and the implementation of the CBL approach."

From an educational perspective, testing the philosophy behind CBL and studying its effects was fascinating. Marc Fuentes Bongenaar and two colleagues, who were all students at the time, studied the outcomes from an educational perspective and they contributed a paper to the 2024 SEFI conference, the European community of engineering educators and engineering education researchers. In addition, Marc wrote his master's thesis on this topic.

Figure 1 (p9) provides an overview of the tasks and learning pathways that students undertook to visualise the programme's structure.

The 4TU.RSC programme unfolded over a period of eight months for edition one and two, edition three ran for five months. Figure 2 (p10) shows an overview of the process.

The 4TU.RSC would typically start with an in-person meeting to kick off the programme and explain challenge-based learning. Workshops and micro-courses were organised to explore topics, peer review in the second half of the trajectory and coaching to help students in their group dynamics. Throughout the organisation of the editions, roles and milestones became clearer, as figure 2 illustrates.

"Defining the challenge itself was certainly a daunting task, as it is something you are not accustomed to doing. The process of arriving at a challenge required some guidance, which is why we engaged a coach for the students in the second edition of the 4TU.RSC."

Aarezo Sha, Corporate Controller at Witteveen+Bos

## Companies brought in real-life cases

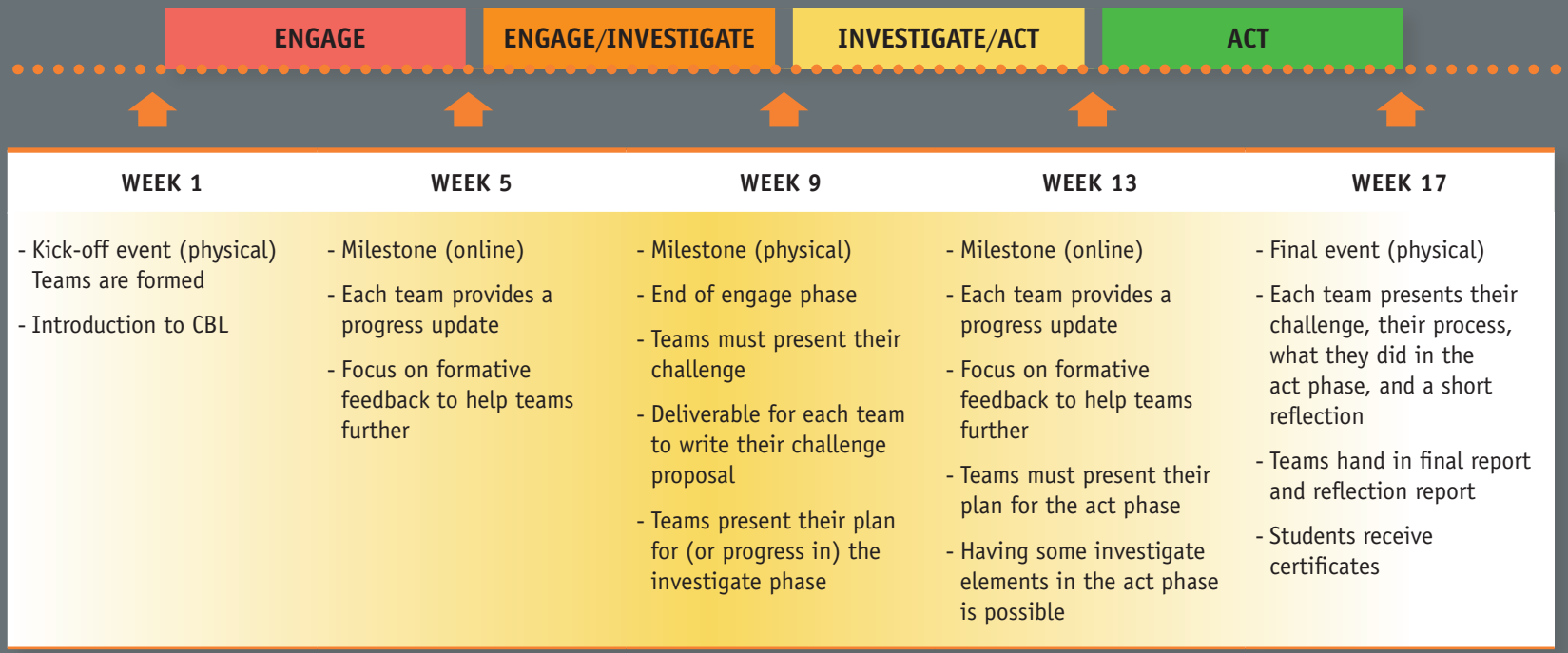
At the start of an 4TU.RSC edition, real-life cases were presented by the companies that were involved in the programme. Students actively researched the cases, identifying and prioritising the problems they wanted to tackle. This process not only honed their analytical skills but also encouraged negotiating skills. Surprisingly, the project was not about finding deeply engineered solutions, but rather about building a collaboration in which analysis and teamwork skills played

FIGURE 1 TRACK OVERVIEW AND TASKS PER MODULE

| | IDENTIFY YOUR MAIN CHALLENGE & STAKEHOLDERS | CHOOSE YOUR INVESTIGATION METHODS | EXECUTE/GIVE AN IMPLEMENTABLE PROPOSAL |
|---|---|---|---|
| **CHALLENGE WORK 10 ECTS** | **ENGAGE** | **INVESTIGATE** | **ACT** |
| Individual Growth | Set learning goals through reflection | Reflect on your learning and what is needed | Reflect on the challenge process and your own role in the identified challenge and in the team |
| Team Growth | Engage as a team through coach guidance | Divide and conquer through coach guidance | |
| Societal Growth | Engage with stakeholders and the challenge | Investigate the challenge with expert guidance | Report findings and propose/execute implementation |
| **INDIVIDUAL WORK 5 ECTS** | **LEARN**<br>- Sustainability Perspectives & Models<br>- Stakeholder Management<br>- Group Management<br>- Challenge Based Learning | **EXPERIENCE**<br>- Flexible Investigation and Group Learning Path<br>- We offer a teacher network for investigation support | **DISCUSS**<br>- Your Experience on Sustainability<br>- Your Group Dynamics<br>- Managing Solutions |
| Individual Growth | Reflect on what you want to learn and how | Choose knowledge specialisation track | Reflection on specialisation role and team/challenge contribution |
| Team Growth | Reflect on group dynamics and expertise | Coach support on how to integrate knowledge as a group | |
| Societal Growth | Reflect on what knowledge is needed | Expert support on how to integrate knowledge on the challenge | Mini-assessment on specialisation |
| | **LEARN**<br>- What do you want to learn? | **EXPERIENCE**<br>Choose from our specialisation tracks and content<br>- mini-lecture material (online or recorded)<br>- discussion sessions and talks with experts<br>- relevant to the project and self-chosen<br>- reading material<br>- potential mini-assignment (P/F) | **DISCUSS**<br>- How did your new broadening or specialised knowledge help you? |

FIGURE 2 PROCESS OVERVIEW WITH MILESTONES





a major role. This sparked further discussions within the companies that provided a case, resulting in valuable insights at the time.

Life-events were organised by Sha Lou and Reina Boerrigter on behalf of the centres 4TU.High-Tech Materials, 4TU.Energy and 4TU.Ethics and Technology. These meetings focused on project status presentations and offered networking opportunities for students, university staff and companies. The collaborative atmosphere that developed during these meetings was highly appreciated by the companies involved.

"In 2025, the students focused on alternative materials for the stove that we developed, currently made of 304 stainless steel. They created an algorithm that would help us to choose materials from a large pool, taking into consideration social, technical and economic aspects, all of which are very valuable.

I would consider participating in similar inter-university programmes again. It would be beneficial for students to see the impact and value of their work. Our company found value in the students' work."

Diego Quan Reyes – Founder of Quantum Energy & Engineering

## Stakeholder management in practice



Stakeholder management played a central role in the 4TU.RSC. Rather than reading about it, students were able to learn by doing. Participating in this programme also increased students' self-confidence in their chosen career paths after graduation, so they said in their evaluations. They felt that they were better able to collaborate with different people.

Last but not least, the students enjoyed talking to their peers from different master programmes and working interdisciplinarily. They also appreciated the opportunity to speak with working professionals. One of the major organisational challenges was planning meetings around complex rosters. As the 4TU.RSC evolved, additional tools and support were introduced to help overcome these issues.

"The 4TU.RSC was interesting because it introduced students to the breadth of their field and encouraged them to look beyond its boundaries. I find that the biggest challenge is working together to achieve something, even more so than designing the technological solution."

Marc Fuentes Bongenaar - Learning and Development Consultant at Next Learning Valley

## The start of developing a shared vision

In 2021, Delft University of Technology, Eindhoven University of Technology and University of Twente offered honours programmes for MSc students. Although Wageningen University & Research (WUR) did not have a master honours programme at that time, staff was involved in preparations and in delivering core university teachers.

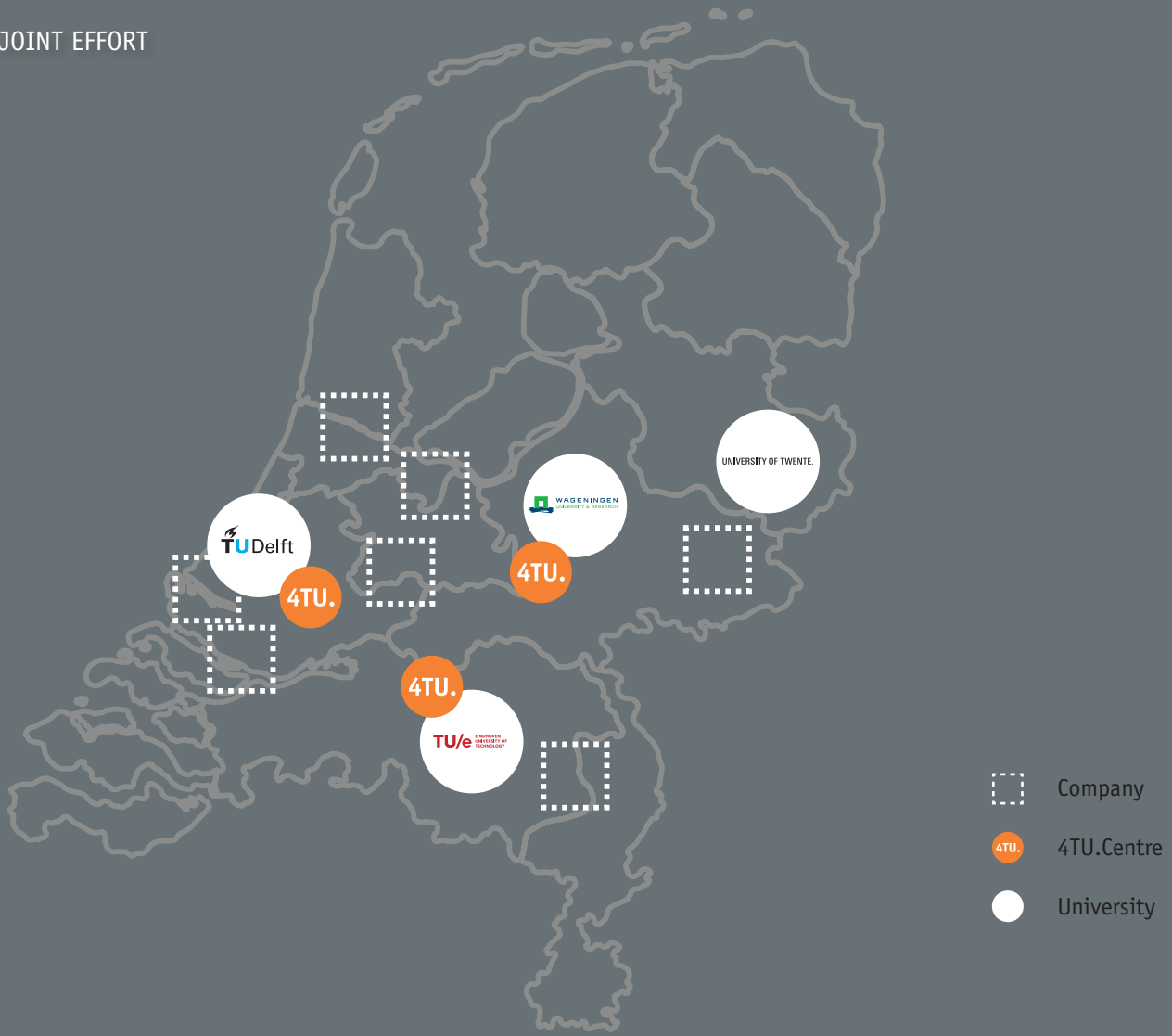
'Core' university teachers refers to the roles that were negotiated during the preparation of the programme. The core university teachers' role was structural in the programme, to guarantee educational quality and to grade students' work. Other university teachers were involved as well, but on a less structural basis.

Besides university teachers from each institution, also support staff were involved, including experts on CBL, centre coordinators (4TU.HTM and 4TU.Energy), and university subject teachers. Together they launched the first edition in September 2022.


On an organisation level, support staff from the Honours Programme Delft, Honors Academy and the support department Innovation Space at Eindhoven University of Technology, which is the centre of expertise for challenge-based learning and the Honours Office Twente were involved in the 4TU.RSC. The Honours Office Twente took on a leading role in the support tasks throughout the trajectory.

Figure 3 (p13) illustrates a spatial overview of the joint effort for the 4TU.RSC. Per edition of the 4TU.RSC at least 10 students and in total 7 companies were involved.

FIGURE 3 OVERVIEW OF JOINT EFFORT



# Outcomes and Impact

## Lessons learned during execution of the 4TU.RSC

Four key lessons were central to the learning experience for all staff involved in developing and executing the 4TU.RSC programme.

1. *Collaboration between universities: defining roles and responsibilities*
   Staff that was involved in the early stages of developing the 4TU.RSC overcame collaboration challenges through flexible solutions, ensuring the programme's success despite initial hurdles. As earlier mentioned, WUR did not offer a master honours programme at the time. However, through working together, WUR was able to make university core teachers available – affiliated with the 4TU.Alliance on Energy Access – in the second edition of the 4TU.RSC.

   Overall, staff involved definitely took on an extra effort. One of the key difficulties they ran into was defining roles and responsibilities. For example, a university subject teacher took on organisational tasks; and a CBL-expert who also taught students. There was a clear need for a central coordinator, but no means available to create this role.

   Reina Boerrigter, coordinator of 4TU.High-Tech Materials, illustrates this with her observation that in Eindhoven, the focus was initially on the involvement of subject teachers. Thanks to Maja Rücker's efforts, university subject teacher, Eindhoven University of Technology became involved and later on the Honours Programme Support Service at Eindhoven University of Technology stepped in to help out with the organisational aspects of the project in Eindhoven.

> "I am particularly proud that the programme was up and running at all! University teachers have started collaborating with each other. People believed in the 4TU.RSC idea, which is why they came to the first meeting. Quite a few issues came to light. Yet a number of people stayed on board, these people didn't give up. They took ownership of the project and just got on with it!"
>
> Lianne de Jong, expert on interuniversity collaborations and challenge-based learning at Eindhoven University of Technology

2. *Rules and regulations per university*
   The organisational structure and application of rules and regulations differed at each university. In Delft, the intake for each honours programme varied greatly from faculty to faculty, whereas in Eindhoven, students had to enrol first before they could start a specific course. In Twente, students applied for a specific subject and were then selected to enrol. Also, the number of ECTS credits needed to fit the master programmes differed per university. The solution to this problem was found in offering micro-courses, so

students could select the right number of micro-courses and lectures to earn the right amount of ECTS credits. In addition, the individual university rosters were sometimes rigid; more flexibility was needed for enrolment and finalising the honours programme.

During all phases of the collaboration in challenge-based learning, Liselotte Rijnders-Gijsbers, Strategist at ProRail, noticed that it was quite complicated for the students to coordinate synchronous work, given their different locations, different schedules and exams to prepare for. Liselotte: "A number of students were always well prepared for the discussion, but never all at the same time." This lesson was addressed in offering more coaching for students in the second and third edition and explaining the nature of collaboration between students and companies in subsequent project editions.

3. *Planning and execution of educational efforts*
As an outcome of different rules and regulations per university, planning issues in education arose. Especially at the start it was unclear how to make university teachers available in the planning of curricula with so many uncertainties regarding the number of hours that might be required to offer education. Efforts were made to develop a good match between the students' need for in-depth subject courses and micro-courses on offering. Last but not least, tools and resources could also bring their own problems. For example, it was not always easy to use the Canvas platform as an external user. Along the way, these problems were dealt with.

4. *Student recruitment*
The CBL approach was key to defining the target group. The targeted student should feel comfortable in their scientific field in order to be able to work with challenge-based learning. Therefore, the decision was made to focus on master students rather than bachelor students. In addition, the students should be able to work independently and self-starting. Thus, the 4TU.RSC became an honours programme. This focus could have been a limiting requirement in the intake of students.

Student recruitment proved challenging. The University of Twente has an orchestrated effort to inform bachelor students of their options in the master programmes. But his is not the case in Delft and Eindhoven. While lessons can be learned from the recruitment strategies in Twente, organisational structure also played a role in the ability to inform students timely of the 4TU.RSC. Sadly, student numbers declined over time, especially at Eindhoven University of Technology, falling below the threshold of viability.

Major problems were tackled during the development and execution of the 4TU.RSC, the most difficult challenge proved to be student recruitment for a healthy number of participating students.

## Outcomes for universities

### Addressing sustainability and climate change in education

Today, sustainability and climate action are inseparable. All four universities now provide comprehensive resources linking sustainability education to climate challenges, benefitting students, staff, and industry partners.

- Delft University of Technology offers a comprehensive overview of sustainability and climate embedded in education www.tudelft.nl/en/sustainability/education
- Eindhoven University of Technology offers an overview for students where they can find education related to "Take urgent action to combat climate change and its impacts, SDG 13" www.tue.nl/en/our-university/about-the-university/sustainability/education/sustainable-development-goals-in-education/13-climate-action
- University of Twente has developed a portal in which students and staff can search education that has a link with climate challenges www.utwente.nl/en/climate-centre/education/
- In addition to a strong focus on sustainability and climate in their bachelor and master programmes, Wageningen University & Research offers educational for professionals with a focus on environment and climate www.wur.nl/en/education-programmes/education-for-professionals/environment-and-climate-1.htm

"There has always been interest from UT students. Even now after finalising the last edition! So now we are looking at alternatives within UT, in terms of courses with the same gist. It is not easy to disappoint students and refer them to something else."

Nelleke van Adrichem on the impact of the 4TU.RSC honours programme at the University of Twente

### Developing CBL as a modern educational approach

The 4TU.RSC has had an influence on the development of CBL in Delft, Eindhoven and Twente in the bachelor and master programmes, but this is difficult to quantify. Eindhoven University of Technology is the most outspoken about using the CBL approach in their education. They use it as a unique selling point to come study at Eindhoven University of Technology.

A notable outcome underscoring the development of CBL as a modern educational approach within the 4TU.RSC is a conference paper for the European Society for Engineering Education (SEFI) by Fuentes Bongenaar, Karegeorgiou and Sha, presented 2 September 2024 in Lausanne, Switzerland.

"When I started working with the 4TU.RSC as a university subject teacher, I had no real experience of challenge-based learning. However, I was familiar with some components of CBL through MSc and PhD supervision, so it wasn't completely unfamiliar territory. Nevertheless, it was a step further from what I was used to.

The emphasis on interdisciplinary work, including collaboration with companies, was more complex. I am proud of the three editions we have organised and of overcoming the organisational challenges that this programme presented. Overall, the 4TU.RSC has been very well received by both students and companies."

Shoshan Abrahami, university teacher in Materials Science and Engineering at Delft University of Technology

## Long-term outcomes

Looking back at the 4TU.RSC, Nelleke van Adrichem says: "There was a lot of enthusiasm among the teachers and support staff and a lot of commitment. People didn't just do it 'for the sake of it'. The 4TU.RSC was also about creating an interesting workplace where scientific staff and support staff enjoy working on projects and feel encouraged to contribute their own ideas."

To sum up, the lessons learned from executing the 4TU.RSC programme lie with the alignment of organisational tasks and rosters and developing a shared vision of the educational approach, guiding the execution of the process. Overall, it has been a process of learning to embrace uncertainties and training in inclusivity.

"My personal learning experience has been about dealing with uncertainty. This is a very important skill. Should we deal with, cope with or embrace uncertainty? This is also a key feature of my work: the possibilities and limitations are always uncertain for everyone involved."

Lianne de Jong, expert on interuniversity collaborations and challenge-based learning at Eindhoven University of Technology

## Outcomes for companies

Companies became involved once the educational element of the 4TU.RSC had been developed further, see following impressions.

### Heliostrome – a startup company based in Delft

Heliostrome develops software that enables the design, modelling and simulation of solar irrigation systems. An experience shared by Rishabh Ghotge, co-owner and founder of Heliostrome, illustrates opportunities that were embraced along the process of participating in the 4TU.RSC:

"One of the aspects was the opportunity to validate a business idea for a startup like Heliostrome. For students, the experience to research the product-market fit highlighted the critical difference between success and failure in the real world. Engaging with experts in the field further enriched their learning: they connected with international specialists in irrigation in Ghana, an experimental farm in Pakistan, as well as several experts in India. Students started realising how interconnected the world is and how companies work together."

This way of working together enabled Rishabh to build valuable connections and insights for Heliostrome. While the company will be discontinued in 2025 due to external factors, the experience underscored the importance of real-world validation and global collaboration, key takeaways that continue to benefit participants in their future endeavours.

### Quantum Energy & Engineering – a spin-off company based in Eindhoven

Diego Quan Reyes: "We were involved in the latter two editions of the 4TU.RSC. Both times, students were able to add value. The first edition, the students worked their way through making a life cycle assessment of our product, a clean biomass cooking stove designed for people living in poverty. The second edition, the students focused on alternative materials for the stove. They created an algorithm that would help us choose materials out of a large pool, taken into consideration social, technical and economical aspects."

### ProRail – Dutch Railway Operator based in Utrecht

Although there were some hiccups in the execution of the first edition of the CBL process, Liselotte Rijnders-Gijsbers, Strategist at ProRail, reflects on the experience with satisfaction: "I learned a lot on a personal level during this process. In future collaborations, I will seek the help of my specialist colleagues sooner. In terms of the process itself, I learned a great deal about what a group of students needs and what they are going to work on."

## Outcomes for students

Recent graduates reflected on how the 4TU.RSC impacted their early careers, describing it as an eye-opening experience. Attending presentations exposed participants to diverse perspectives on sustainability, energy access, and innovative research ideas. Through the programme, students developed collaboration and project management skills across disciplines, providing a valuable foundation for their current professional roles.

The 4TU.RSC also broadened their understanding of sustainability and its wide-ranging implications. Graduates now apply this perspective in their work, where they navigate company goals, regulations and cultural differences. Additionally, the programme enabled students to network and connect with experts in energy and high-tech materials, fostering opportunities to ask questions and gain insights that continue to inform their careers today.

Figure 4 (p20) provides an overview of the students and their cases per 4TU.RSC edition.

"I learned about project management; collaboration was challenging at times. Nowadays I work with colleagues in three different time zones. I am glad I have had this kind of experience beforehand!"

Atis Kazaferi, Integration Services Developer at Eaton

FIGURE 4 AN OVERVIEW OF STUDENTS AND CASES PER 4TU.RSC EDITION



| TRACK YEAR | COMPANY | STUDENTS INVOLVED | CASE |
|---|---|---|---|
| 2022-2023 | KLM | 5 | Disposal programme of end-of-life vehicles |
| 2022-2023 | ProRail | 5 | Partial electrification railroads in the Netherlands |
| | | **10** | |
| 2023-2024 | Heliostrome | 3 | Analysis of business case to develop software for solar irrigation systems |
| 2023-2024 | Quantum Energy & Engineering | 5 | Life cycle assessment of a clean biomass cooking stove |
| 2023-2024 | Twence | 4 | Integrating battery energy storage in a solar park |
| | | **12** | |
| 2024-2025 | Alliander-AI Lab | 2 | Local energy recommendation simulation |
| 2024-2025 | Quantum Energy & Engineering | 5 | Development of a materials selection tool for the Brava stove |
| 2024-2025 | NMI | 5 | Development a sustainable assessment framework for electric vehicle charging stations |
| | | **12** | |

# Concluding


The 4TU.RSC has set an example in transdisciplinary collaboration in education. By integrating sustainability as a central theme, the programme aligned seamlessly with engineering education and student interests, all while remaining true to the principles of challenge-based learning.

Reflecting on the developments across the participating universities, it is evident that the 4TU.RSC has been part of a broader emphasis on transdisciplinary collaboration. Furthermore, there is a growing recognition of the need to embed sustainability and climate change more deeply within academic curricula.

With the programme now closed, it marks the culmination of a transformative experience for students, staff, and involved companies alike. The 4TU.Responsible Sustainability Challenge is a prime example of the strength of collective effort, leaving behind a legacy of achievement and setting a precedent for future interuniversity collaborations and challenge-based learning initiatives.


4TU.RESPONSIBLE
STAINABILITY CHALLENGE
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Y OF TWENTE.

# Access to expertise



## Contacts

**Delft University of Technology**
Honours Programme:
www.tudelft.nl/en/education/programmes/honours-programme-delft-hpd

**Eindhoven University of Technology**
Honors Academy: educationguide.tue.nl/programs/honors-academy
Innovation Space: www.tue.nl/en/education/tue-innovation-space

**University of Twente**
Honours Office: www.utwente.nl/en/honours

**Wageningen University & Research**
Bachelor Honours: www.wur.nl/en/education-programmes/bachelor/practical-information/bsc-honours-programme.htm
Master Honours: www.wur.nl/en/education-programmes/master/practical-information-masters/msc-honours-programme-1.htm

**4TU.Centres involved**
4TU.Energy: www.4tu.nl/energy
4TU.Ethics and Technology: www.4tu.nl/ethics
4TU.High-Tech Materials: www.4tu.nl/htm

To find more information on Engineering Education, challenge-based learning and other didactical approaches for engineering education, please refer to

**4TU.Centre for Engineering Education:**
www.4tu.nl/cee

## Online resources

On our webpage www.4tu.nl/htm/education/4tu-responsible-sustainability-challenge we offer the following resources:

- An online version of this document as a downloadable PDF
- The article for the SEFI conference:
  M.S. Fuentes Bongenaar, O. Karageorgiou and A. Sha, 2024,
  4TU.Responsible Sustainability Challenge: developing and running an inter-university challenge-based master honours programme.
  Presented at the SEFI conference, 2024, Lausanne, Switzerland.
- 4TU.RSC Course Design 2021
- The outline of the 4TU.RSC programme 2022
- The syllabus for the 4TU.RSC edition 2022-2023
- The syllabus for the 4TU.RSC edition 2023-2024
- The European Green Deal

# Colophon

## 4TU.Responsible Sustainability Challenge

An organisational perspective on a 4TU. MSc honours programme 2022-2025


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**Photo source** Reina Boerrigter

Thank you for your contribution to this publication, in alphabetical order:
Aarezo Sha, Atis Kazaferi, Diego Quan Reyes, Lianne de Jong, Liselotte Rijnders-Gijsbers, Marc Fuentes Bongenaar, Nelleke van Adrichem, Reina Boerrigter, Rishabh Ghotge, Sha Lou, Shoshan Abrahami.

Thank you, Remon Rooij, chair of 4TU.CEE, for your insightful feedback on this document.

To cite this document:

4TU.Responsible Sustainability Challenge. An organisational perspective on a 4TU. MSc honours programme 2022-2025 (September 2025)

4TU.RSC