Annual Report 2021

TU Delft

Acknowledgements

Publication
Delft University of Technology
April 2022

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Annual report 2021 Delft University of Technology

TU Delft

Preface

One theme dominated in 2021 once again: the coronavirus pandemic. Even though we were already accustomed to adapting to new sets of measures and switching between online and campus activities as an organisation, the second year of the crisis still took a heavy toll on staff and students whose well-being often suffered. By keeping our finger on the pulse through surveys and other means, combined with extra coaching and guidance, we've hopefully been able to prevent permanent damage. The Study Climate programme – financed through Van Rijn funds in 2021 – aims to entrench attention to student welfare throughout the education chain.

Steps were also taken in the transition to more hybrid education and hybrid working. The consensus is that we want to retain the good aspects of working online, as we have inevitably experienced in the past two years. As this was already an ongoing development in education by means of the flipped classroom method, for example, the temporary transition to fully online education has lowered the threshold for many teachers to start working with it. Even so, they are all delighted to be able to welcome students back to the campus. After all, the best teaching happens face to face. While large lectures might be a disappearing phenomenon, the campus will remain the place for many educational activities.

The same applies to research and support activities. Many staff members report that working partly from home helps improve their focus and work-life balance. But the campus still remains our base for vital meetings and exchanges, between colleagues and between generations. For this reason, we have declared that we are a campus university, which for many – although not all – functions means a minimum of 60% presence on campus is desirable. We will all have to find a new balance now that hopefully compulsory working from home is finally over.

Sheltered from these coronavirus-related developments, many activities continued as usual, albeit in an adapted form. Last year, for example, over 180 Master's students participated in the Joint Interdisciplinary Project (JIP), in which participants from different degree programmes work together on a real business case study with the help of coaches from 45 different companies. This unique opportunity helps students prepare to work on challenges that not only require knowledge from various disciplines, but also have social, economic and environmental aspects.

Climate was and remains an important driving force in research. In 2021, we launched our Climate Action Programme, in which we not only aim to strengthen climate research and education, but also to make our own campus more sustainable. Like all other major societal challenges of our time, a topic like climate change transcends the knowledge and skills of any single university. That is why we continued to expand our partnerships in and outside our campus and the region last year.

One such partnership is the Convergence Alliance, our intensive co-operation with Erasmus MC and Erasmus University, in which we try to break down the walls between disciplines and institutions. This also enables us to respond quicker to new developments. A prime example is the joint Pandemic and Disaster Preparedness Centre (PDPC) we have founded, which should make us better prepared for future disasters and virus outbreaks. Taking this convergence further, we ran our Tech for Health campaign in which alumni could get to know the people behind Delft's health and care research. The alumni were also asked to make a financial contribution and more than 1,000 of them responded.

Our co-operation extends beyond the academic world. In recent years, we have been transforming our campus into an ecosystem where co-creation with companies and societal partners can accelerate the innovation process. Last year, we opened our Electrical Sustainable Power Lab last year, where we work with partners such as TenneT on the electricity grid of the future. Elsewhere on campus, quantum technology remains an important topic for ground-breaking research and far-reaching co-operation. We keenly await the arrival of the House of Quantum, designed to become a meeting place around this topic and the heart of the Dutch quantum ecosystem. In this regard, the news that Professor Lieven Vandersypen, director of QuTech, had been awarded a Spinoza Prize was a highlight in an otherwise difficult year.

Meanwhile, the new year has started. While we seem to be at the tail end of the pandemic, other developments on the world stage are now a source of major concern. Yet it is heartening to see how students and staff spontaneously spring into action to try and make a positive contribution in this crisis too. In spite of everything, this inspires much hope for the future.

Prof.dr.ir. T.H.J.J. (Tim) van der Hagen Rector Magnificus/President of the Executive Board
Drs. M.E. (Marien) van der Meer Vice President Operations/member of the Executive Board
Prof.dr. R.F. (Rob) Mudde Vice-Rector Magnificus/Vice-President

Contents

Supervisory Board Report

Once again, the coronavirus pandemic and the national and global measures introduced to combat it dominated our lives in 2021. The Supervisory Board admires and appreciates how TU Delft has dealt with this challenging situation. This has required a great deal of flexibility from every individual and from the organisation as a whole. The pandemic has affected the work and well-being of the staff and certainly of the students. Despite all the restrictions, a lot has happened at TU Delft this year and that is a source of immense satisfaction.

Vision and strategy

In late 2017, the Supervisory Board approved the new strategic plan for the 2018–2024 period, 'Impact for a better society, TU Delft Strategic Framework 2018–2024'. The Supervisory Board also followed and oversaw the strategic developments at TU Delft in 2021 on the basis of this strategic plan. In keeping with the COVID-19 measures in 2021, six Strategic Response Teams adjusted the ambitions from the Strategic Framework to the restrictions that lasted for much of the year. The strategic priorities for the final years of the Strategic Framework have also been fleshed out and the Supervisory Board has been involved in this process. These strategic priorities will be presented to the Supervisory Board for approval at the start of 2022.

Strategic co-operation

TU Delft works with the three other universities of technology in the 4TU. Federation. Regionally, TU Delft has been working for some time with, among others, Leiden University, Erasmus University Rotterdam and others in the LDE alliance. Forms of co-operation such as these occur on the basis of Joint Regulations that the Supervisory Board has approved.

Exploring further co-operation with the Erasmus Medical Centre and Erasmus University Rotterdam also started in 2018 and culminated in the Convergence programme. The partners (TU Delft, Erasmus MC, Erasmus University Rotterdam and Leiden University) have started in different configurations with the three defined convergence themes:

- AI, Data & Digitalisation
- Health & Technology
- Resilient Delta Rotterdam

To this end, the Supervisory Board maintains close contact with the Executive Board and the partners' Supervisory Boards. The directors of the three themes regularly give presentations on the progress in their programmes. The chair of the Supervisory Board is a member of the Convergence Supervisory Board.

The chairs of all Supervisory Boards of universities in the Netherlands meet twice a year to discuss national developments relating to the regulation of higher education. The Minister of Education, Culture and Science attends one of these meetings each year.

Education and research

The Supervisory Board is actively involved in developments in the field of education. Matters such as new degree programmes, the relocation of degree programmes, the possible introduction of a cap on student intake for certain programmes (numerus fixus), intake management scenarios and quality-assurance policy are discussed with the Supervisory Board before they are implemented, both in regular meetings and strategy meetings with the Executive Board.
Accreditation and re-accreditation processes for the degree programmes and research assessments are also discussed twice a year with the Supervisory Board. However, there were almost no visitations and accreditations in 2021 because of the coronavirus measures.
Both the strategic developments in education and research and the ensuing activities are prepared in the Supervisory Board's Education and Research Quality Assurance Committee (cKOO).
The Quality Agreements and their progress are also discussed in the cKOO. The chair of the cKOO reports on this to the full Supervisory Board. The Supervisory Board has also approved the use of resources from the quality agreements to support student welfare.
The full Supervisory Board is informed about TU Delft's strategy and developments regarding online education and the Extension School.

Campus and real estate

Every three months, TU Delft's real-estate matters are discussed first in the Audit Committee meeting, followed by the meeting of the full Supervisory Board, and further decisions are made in the form of approval, if necessary. The Supervisory Board has paid close attention to the preparations for updating the campus strategy and its financing. Examples of real-estate topics that have received the Supervisory Board's approval, besides the update of the 2021 Campus Strategy, are the renovation plan for the high-rise section of building 36 (EEMCS) and the new TN Physics building on Campus South.

Administration and management

The Supervisory Board held five regular meetings with the Executive Board and met several times without the Executive Board in 2021. Two strategy meetings were also held, during which several strategic issues for TU Delft were discussed in detail with the Executive Board and subject experts. Examples included climate action, Convergence, student welfare and social cohesion and knowledge security. One strategy meeting was completely dedicated to 'the position of TU Delft in 2035' across the board.

Political developments and developments in national funding are also discussed at these meetings.

The Supervisory Board has three committees: the Remuneration and Appointments Committee, the Audit Committee (AC), and the Education and Research Quality Assurance Committee (cKOO). The Audit Committee met four times in 2021, and the Education and Research Quality Assurance Committee twice.
The members of the Remuneration and Appointments Committee (chair and vice-chair of the Supervisory Board) have been in regular contact on an individual basis regarding appointments, appraisals and vacancies in the Executive Board.

Supervisory Boards must also monitor the board's compliance with laws and regulations. To enable the Supervisory Board to perform this supervisory task properly, subjects including actual or anticipated amendments to the law, activities in the field of academic integrity, the Code of Ethics, safety and security (security risk profile), risk management and information security are discussed with the Supervisory Board on a regular basis. Twice a year, the Supervisory Board discusses an overview of current legislative developments relating to higher education and scientific research.

An overview of activities is also compiled for the Supervisory Board every quarter. This overview contains notable achievements, subjects and developments relating to all organisational units, faculties and departments.

Finances and operational management

Audit Committee

The AC oversees the efficient use of government funds. Important agenda items discussed in the AC included major investment projects (primarily in real estate), as well as the funding of these investments. Further items discussed were the quarterly reports, the audit plan, the planning and results of Internal Audit activities, and of course the financial reports on results and cash flow.

In April, the discussion of the 2020 audit report, the 2021 management letter and the associated improvement initiatives, and the 2022 budget were also on the agenda. The 2020 audit report and the 2021 management letter were discussed in the external auditor's presence. In 2021, this auditor was EY for the first time.

Supervisory Board

In its meeting on 19 April 2021, the Supervisory Board approved the 2020 Annual Report and the Financial Statements; in its meeting on 20 December 2021, the Board approved the Budget for 2022. In all its meetings, the Board focused much of its attention on TU Delft's financial position, prepared by the Audit Committee (see above). At each meeting, Finance presented a controller letter containing the results for the previous quarter.
The Supervisory Board concludes that TU Delft's financial position is sound, its control is in order, as is the efficient use of funds.

Representative bodies

The Higher Education and Research Act includes an independent right of direct consultation between the Representative bodies and the Supervisory Board, as well as the right to nominate one of the Board members and the right to be consulted about the profiles of Board members. The Supervisory Board and the representative bodies have made procedural arrangements concerning these matters. The member who in particular has the confidence of representative bodies, *drs.* Carolien Gehrels, consults with the chairs of the Works Council and Student Council before each Board meeting. She also attends Works Council and Student Council meetings several times a year, including twice a year on the subject of the 'General state of affairs'.

Personnel and internal affairs

On 7 January 2021, the Minister of Education, Culture and Science (OCW) retroactively appointed Heleen Wachters, MBA as a member of TU Delft's Supervisory Board retroactively as of 1 January 2021. On 22 April 2021, the Minister of OCW appointed Tijo J.G. Collot d'Escury as chair of the Supervisory Board as of 1 July 2021. Both appointments are for a four-year term.
In 2021, the Supervisory Board thus comprised:

- Drs. ir. J. van der Veer, chair, former CEO of Shell (appointed until 1 July 2021, second term)
- Ir. T. J.G. Collot d'Escury, chair, managing partner of Roland Berger BV (appointed from 1 July 2021 to 1 July 2025, first term)
- Prof.dr. L.L.G. Soete, vice-chair, former Rector Magnificus of Maastricht University (appointed until 1 May 2025, second term)
- Drs. C. G. Gehrels, member who, in particular, has the special confidence of the representative bodies, Global Director of Energy Transition at Arcadis (appointed until 1 June 2023, second term)
- Drs. G. de Zoeten, RC, Financial Director of Inchcape PLC (appointed until 1 May 2024, second term)
- Ir. H. L. Wachters, partner at Eden McCallum (appointed until 1 January 2025, first term)

On 1 July 2021, *drs.ir.* Jeroen van der Veer's chairmanship ended after two terms of office. The Board is most grateful for his contribution, dedication and direction in leading the Board over the past eight years and for his service to TU Delft.

Following the announced departure of the Vice President Operations as of 1 January 2021, the Remuneration and Appointments Committee started the procedure to recruit a successor for the resultant vacancy. This resulted in the appointment of *drs.* Marien van der Meer for a four-year term as of 1 August 2021. Besides a delegation from the Works Council and the Student Council, the Appointment Advisory Committee also included a dean and a director.
In April 2021, the Committee conducted annual appraisal interviews with the individual members of the Executive Board.

Under Article 4 of the TU Delft Supervisory Board Regulations, the Board is responsible for determining the quality of its own performance. To this end, each year the Supervisory Board discusses its own performance as well as that of the individual members, and the follow-up action required, without the Executive Board being present. The Supervisory Board also evaluated its chair under the supervision of the vice-chair. The self-evaluation for 2020 was completed in April 2021 based on a questionnaire that all members completed beforehand. The evaluation for 2021 will be completed in the first half of 2022.

The Supervisory Board also adopted updated Supervisory Board regulations on 27 September 2021, in line with the new UNL Code for Good Governance. This new Code came into effect on 1 January 2020. The Code aims to contribute to good governance by encouraging productive discussion about the governance of universities. It allows room for conversation, thus inviting administrators, supervisors and the representative bodies to discuss how they wish to implement the established principles of good governance.

The Board has also adopted Regulations for the Audit Committee. Because of the new VPO taking office, the Board has also adopted a new portfolio allocation for the Executive Board.

In conclusion

TU Delft's remuneration policy for Executive and Supervisory Board members is in line with the Senior Officials in the Public and Semi-Public Sector (Standards for Remuneration) Act (WNT) and with the agreements with the Ministry of Education, Culture and Science.

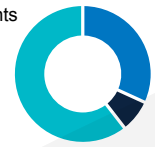
The Supervisory Board again honoured the principle of independence in 2021.

Lastly, the Supervisory Board thanks TU Delft and its administrators for their constructive cooperation.

Key indicators

Education

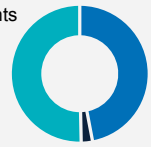
Intake of new Bachelor's students
2021: **3,684**
2020: 3,784



Intake of new Master's students
2021: **1,938**
2020: 1,684

Intake into the bridging programme
2021: **468**
2020: 423

Total number of Bachelor's students
2021: **13,949**
2020: 13,814



Total number of Master's students
2021: **13,029**
2020: 12,437

Total number of students in the bridging programme
2021: **753**
2020: 709

Positive Binding Recommendation on Continuation of Studies in the 1st year

Bachelor's degrees
2021: **2,826**
2020: 2,646

Master's degrees
2021: **3,983**
2020: 3,512

Research

Number of peer-reviewed publications
2021: **4,359**
2020: 4,033

Of which Open Access publications
2021: **3,514**
2020: 2,896

PhD pass rate within five years

PDEng degrees
2021: **23**
2020: 21

PhD defences
2021: **431**
2020: 374

Staff

Academic staff*,**
2021: **1,190** FTEs
2020: 1,124 FTEs

Other academic staff*
2021: **1,065** FTEs
2020: 1,109 FTEs

– and support staff*
2021: **2,476** FTEs
2020: 2,369 FTEs

PhD students (salaried)
2021: **1,616** FTEs
2020: 1,452 FTEs

Headcount Doctoral candidates (total***)
2021: **3,003**
2020: 2,933

Financial matters

Government funding
2021: **618.6** M€
2021: 591.8 M€

Indirect funding
2021: **58.5** M€
2021: 64.0 M€

Contract funding
2021: **147.6** M€
2021: 134.4 M€

Note: For additional figures, see https://www.tudelft.nl/en/about-tu-delft/facts-and-figures

* One-off different measurement date of 01/01/2022 instead of 01/03/2022 because of the replacement of the HR system
** Total FTEs for full professors, associate professors and lecturers.
*** Number of people following doctoral programmes at TU Delft, regardless of whether they have been appointed and/or are funded by TU Delft.


TU Delf
Kust- en Rivierenonderzo

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TU Delft

Institutional profile

With around 27,000 students and over 6,000 staff, TU Delft is the largest university of technology in the Netherlands. Born from a tradition of 180 years in civil engineering, we have developed a broad research portfolio that, divided across 38 departments and eight faculties, spans practically the entire range of engineering sciences.

The university's mission is to contribute to solving global challenges by training new generations of socially responsible engineers and expanding the frontiers of the engineering sciences.

Impact for a better society

TU Delft's strategic plan is set out in the 2018–2024 Strategic Framework 'Impact for a better society'. Several basic principles to be developed further in this period run as a common thread through this framework: excellence, impact, involvement and openness. These characteristics are reflected in all our core activities, which can be subdivided into four operational areas: Students & Education; Research & Innovation; People & Community; and Campus & Services. The Strategic Framework is available at https://www.tudelft.nl/en/about-tu-delft/strategy/.

The 2022–2024 Strategic Priorities complement this Strategic Framework. These priorities were developed in response to changes in recent years, including the coronavirus pandemic. More information can be found on page 92.

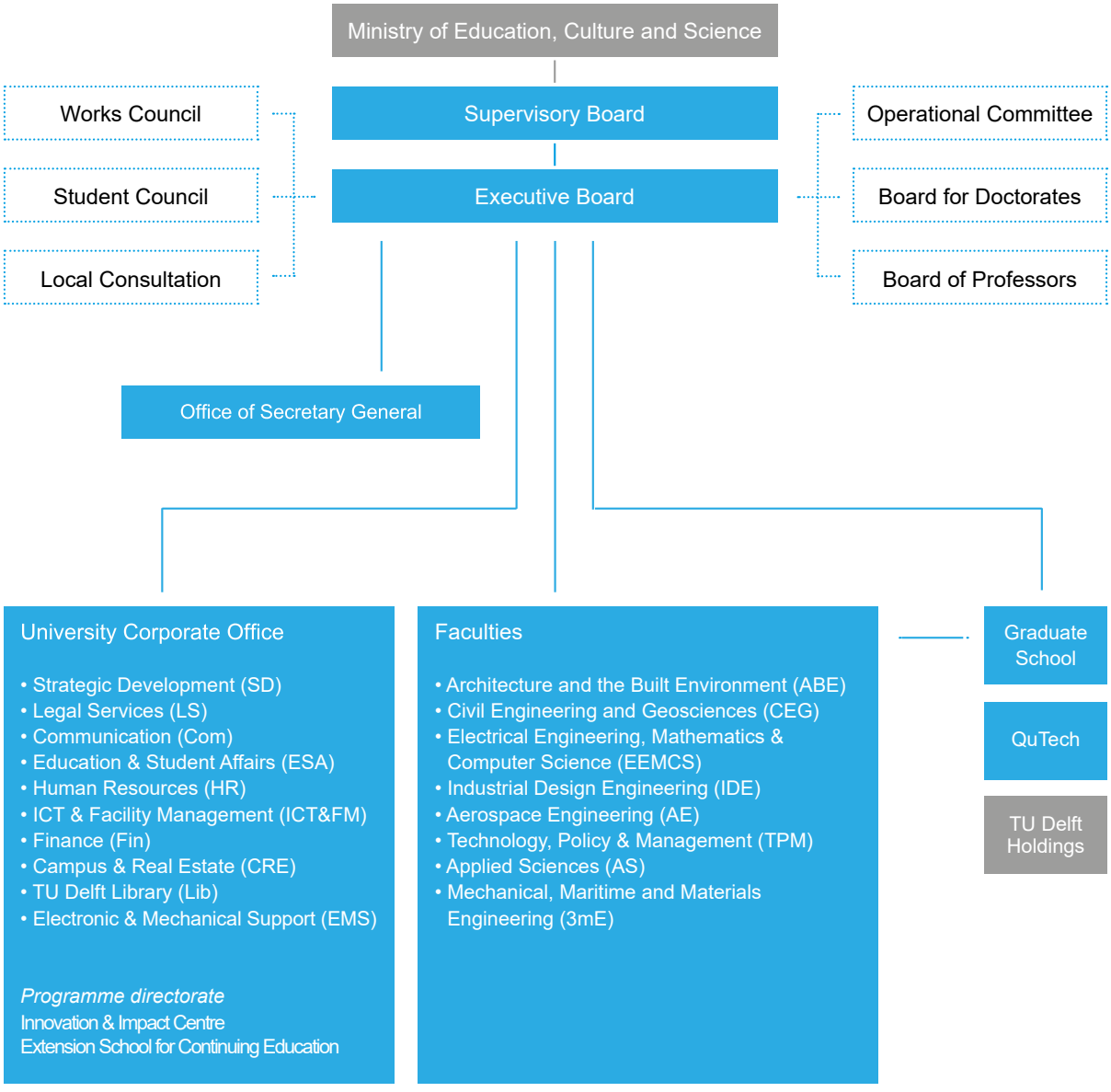
Management and organisation

Delft University of Technology, with its registered office at Stevinweg 1, 2628 CN Delft, www.tudelft.nl, is a higher education institution governed by public law under the Higher Education and Research Act. Its main tasks are to provide university education, perform scientific research, transfer knowledge to society and to promote a sense of social responsibility. The university is designated as a public benefit organisation.
TU Delft's main administrative structure is established in the Higher Education and Research Act and in the Executive and Management Regulations and the Mandate Regulations, which are based on that Act. TU Delft has three administrative levels: the Executive Board, the faculties and the academic departments. The principle of integral management applies at these three administrative levels: the Executive Board, the deans and the departmental directors are responsible for both the primary process and for support processes.
In addition to the statutory rules for university administration, TU Delft follows the UNL Code for Good Governance, which took effect on 1 January 2020. The Code sets out nine general principles based on which administrators (at both central and faculty level) and supervisors can implement good governance for the benefit of the university's social remit. In order to safeguard the code, a point-by-point analysis was

made in 2020. After the Executive Board adopted the analysis, it was shared with the Supervisory Board. Several action points were addressed in 2021, including in relation to the integral integrity policy. Progress was made in updating some regulations, strengthening risk management, continuing to expand the integrity infrastructure and encouraging good discussion in various forums. An example of the latter are initiatives aimed at strengthening internal decision-making around issues relating to entering into partnerships with international partners – a development in keeping with the emphasis that the Code for Good Governance places on a well-considered design for the governance of such partnerships.

Appendix 1 gives an overview of the faculties and departments. All support services have been clustered in University Services. In the period from January to July 2021, *Prof.dr.ir.* Theun Baller served as Temporary Manager of University Services until the position of Vice President Operations in the Executive Board was filled. *Drs.* Marien van der Meer has held this role since 1 August 2021.

Organogram TU Delft



2 Education & Students

In 2021, TU Delft still had (partial) online teaching. After the initial switch to online teaching in 2020, support for lecturers was expanded and further steps were taken in 2021 to properly facilitate students and instructors in the online environment.

Online teaching dominated in the third and fourth quarter of the 2020/2021 academic year. Preparations for the start of the 2021/2022 academic year were based on teaching on campus, between two and three days a week for each student. Because of a rise of infections in August/September, there was only a short period of physical teaching. As from the second quarter, the maximum group size allowed was 75 students, which meant that all large lectures had to be given hybrid or online. Vulnerable students who needed a place to study or guidance at the university received extra attention. The university introduction week and faculty introduction periods went ahead with some adjustments. Where necessary, assessments were monitored by online proctoring software. On-campus assessments have been reinstated from the 2021/2022 academic year.

As in 2020, the Ministry of Education, Culture and Science also announced measures that had to be rendered into regulations for TU Delft. An example of this is the adjusted BAMA scheme under which the Bachelor's-before-Master's (mobility between BSc and MSc) for students almost at the end of their undergraduate programme was abolished. Another new rule was that the temporary relaxation of the Bachelor's-before-Master's scheme also applied to intake in the BSc from the EU if this was also the case in the student's home country. A total of 432 students took advantage of the scheme. The binding recommendation on continuation of studies (BSA) was also lowered from 45 ECTS to 39 ECTS, except the Industrial Design programme for which a reduction to 37.5 was implemented. 13% of the entire BSA population received a positive recommendation through the application of this scheme. In both cases there was intensive coordination with the representation bodies.

2.1 Student in the right place

Alignment with VWO ('pre-university education')

Through a variety of activities, students in the final stage of their VWO ('pre-university education') are made aware of which personal characteristics and attitude to studying are conducive to successfully studying at a university of technology. During the TU Delft Pre-University Programme, around 210 students worked independently and mostly online on inspiring TU Delft subjects for several months. And around 400 students were

in contact to seek guidance with their coursework or final projects. TU Delft students act as knowledge providers and role models in this regard. Classes for the final stage of the VWO ('pre-university education') consist of guest lectures, in which students learn to think from a hypothesis to apply the VWO curriculum. In the 4TU context, we have started to develop a platform on which we provide jointly developed online learning materials. The basic idea behind the platform is to apply and integrate science subject matter and to develop academic and study skills.

Information

Because of the coronavirus pandemic, the 2021 informational activities were offered online even more so than in 2020. Partly because many educational activities in both secondary and tertiary education are also provided online, and other universities also tend to provide information online, prospective students seem to be comfortable with this.

One principle of the information is that prospective students will actively look for a degree programme that suits them ('making an effort is a qualifier'). That is why TU Delft's informational activities are based on the 'flipping the classroom' principle. All information about the content of a degree programme can be found online. The informational activities facilitate one-to-one contact to ask personal questions. In 2021, TU Delft organised more opportunities for (online) personal contact than in previous years.

Despite the coronavirus restrictions, TU Delft encouraged all prospective students to visit the campus and get a feel for their intended degree programme. Campus tours were organised every Friday afternoon and taster days were offered for each programme.

The path of dialogue and reflection, as well as of inspiring and informing, as started in 2020 has continued to take shape. Personal contact not only enables the student information officers to answer the prospective students' questions, but also creates the opportunity to enter into dialogue with them and ask reflection questions. The new campaign that TU Delft launched in 2021 ('Delft doe je niet zomaar') and a new online study choice tool (www.doejenietzomaar.nl) are the next steps to encourage prospective students to reflect.

Mandatory programme choice check

To help prospective Bachelor's students make a well-informed programme choice, TU Delft offers a programme choice check (PCC) with immediate feedback. For most degree programmes without a numerus fixus, this is a voluntary PCC, which can be used by those who apply before 1 May. However, the Bachelor's degree programmes in Electrical Engineering, Applied Physics, Applied Mathematics and Maritime Engineering have a mandatory programme choice check for the 2022/2023 academic year. The first experiences with this mandatory arrangement were gained in 2020/2021. Prospective students have a better idea of the degree programme, already know some fellow students and lecturers, and know how to find academic counsellors immediately, which all makes for a productive start to the academic year. And the department can better estimate how many first-year students will start and thus allocate staff and space more efficiently.

Co-operation with secondary school teachers

Bètasteunpunt Zuid-Holland is a network of 60 secondary schools. The network, organised as part of TU Delft's teacher training programme, works with secondary school science teachers to promote connection, progression and student success and to reduce the drop-out rate. Some 75 activities were held in the 2020/2021 academic year, with 651 teachers signing up for one or more activities.

Co-operation with universities of applied sciences

The 4TU.Federation's Sector Plan for Science and Technology Education is developing and implementing several projects, focused mainly on the Bachelor's programmes in Computer Science, Electrical Engineering and Mechanical Engineering. The projects aimed at improving the education chain involve co-operation with universities of applied sciences. These projects all started in 2020 and continued to be developed in 2021.

Co-operation also occurs with The Hague University of Applied Sciences, Rotterdam University of Applied Sciences and InHolland Delft as part of the Bètasteunpunt Zuid-Holland.

2.2 A positive study climate

Student development

Support for students and doctoral candidates

In the past year, TU Delft offered mainly online workshops and training courses in the areas of good study methods, personal development, programme choices, well-being and careers.

Walk-in and individual consultations with the student psychologists are offered both on campus and online, and more capacity was created. Two prevention psychologists have also set up TU Delft-wide services to support students in their degree programmes.

Studying with a disability

In 2021, the team of student counsellors worked on establishing a central (digital) desk called Horizon. Horizon aims to continuously improve and expand the facilities and guidance for students with a disability or additional educational support requirements. Since 1 September 2021, both students and staff can use Horizon for information, facilities and advice about studying with a disability or additional educational support requirements. Horizon also has two student teaching assistants who hold weekly open consultation hours for students and provide information to prospective students on information days. With the arrival of Horizon, the student counsellors work continuously on improving various processes in co-operation with other university departments and faculties. Horizon regularly coordinates its activities with the student platform *Student Onbeperkt*.

Implementation of English-language policy for doctoral candidates

The Graduate School has been working on implementing the English proficiency requirement in co-operation with Human Resources. The stricter requirement takes effect as of 1 January 2022 to ensure that doctoral candidates can express themselves at the desired level in English, both orally and in writing.

Within the Doctoral Education programme, the Graduate School offers doctoral candidates added training in time and project management skills to help them complete

their PhD programme in a focused manner. Since September, doctoral candidates can follow the PhD onboarding modules both online and on campus to get off to a good start and become part of the PhD community.

Career Centre

Once again, everything was in Dutch this year. Aided by additional funding, it was possible to launch job search groups to support students, doctoral candidates and alumni in their search for jobs during the coronavirus pandemic. The Career Centre organised two company days in 2021 with 50 companies and over 700 participants. Online webinars were organised in April and December for 1,300 parents of prospective students, giving them tools to guide their son or daughter through their programme choice process.

Campus, degree programme and study climate

The Study Climate programme aims to improve the study climate and prioritises student success. The past year was all about developing and nurturing the TU Delft education community to facilitate the exchange of good practices. Themes that were discussed included student welfare, a good start to the degree programme, and the personal and professional development of students. Following the first outline of Duty of Care questions for the university, a draft vision for Student Guidance and an overview of the entire supervision chain for policymaking on student guidance were developed.

Students were asked twice about their good and bad experiences in the Student Wellbeing Survey. Important points of concern from this survey about the study experience and the feeling of connection and well-being were shared with education management and the academic counsellors, among others. The campaign that followed was to reach out even more to students. International students require extra attention because they lack or only have a limited social safety net.

The challenges and needs of graduating Master's students from three-degree programmes (at the faculties of IDE, 3mE and EEMCS) were examined through co-creation. Interventions were then chosen with the programme teaching teams to support students in their motivation and results.

Lastly, research is being done into how personal development and well-being can be more firmly anchored in TU Delft's didactics from the start to the end of the degree programme. Study Climate was financed from the Van Rijn funds in 2021.

A balanced international classroom

For its English-language degree programmes, TU Delft aims to provide a balanced international classroom that guarantees access for Dutch students. Some degree programmes have had difficulties in creating a balanced classroom for the 2021/2022 academic year. This is because of legal restrictions on being able to select and refuse international students. TU Delft continues to attract a large number of students from abroad. Besides the international classroom, there are many ways – under normal circumstances – in which our students can do part of their programme (courses, internships or graduation projects) abroad, thus improving their cross-cultural capabilities. Exchanges were not facilitated in the 2020/2021 academic year because of the coronavirus pandemic.

Promoting a diverse international intake

Scholarships help to achieve a diverse international intake. Various Master's degree programme scholarships – e.g. Holland Scholarships – were awarded in 2021. Sixteen international students received a full grant from the Louise and Justus van Effen Scholarship Fund in 2021. The Delft Global Initiative will provide four grants to excellent students from Sub-Saharan Africa again in 2022.

2.3 Ongoing innovation

Extension School

After running as a programme for seven years, the Extension School for Continuing Education officially started as an independent unit within university services on 1 January 2021. The Extension School focuses on facilitating (online) education for professionals. It works closely with the faculties in developing and running courses and short learning programmes. The Extension School focuses on seven socially relevant themes: energy transition, sustainable cities, future of transportation, quantum technology, medical technical, digital society and skills for engineers.

Besides offering online education, the Extension School also provides workshops and training courses to help lecturers further develop their skills and competences for (online) education.

Professional education

The Extension School runs over 200 courses and 20 short programmes. In 2021, the MOOCs had more than 300,000 participants, over 40,000 of whom paid for a certificate. Over 1,000 participants also attended professional education courses and programmes.

To make the Lifelong Learning courses more accessible, a national catalogue has been launched in co-operation with the other universities. TU Delft and Open University were the driving force behind this initiative. The catalogue was launched in November on https://universitairdoorleren.nl/en.

Open education

The Executive Board (EB) has adopted the TU Delft Open Educational Resources (OER) policy. This has laid the foundation for working with OER in the curricula of the faculties, the Graduate School and the Extension School. The OER policy specifies the Creative Common licence to be used, describes the role of everyone involved in the teaching, takes account of students' intellectual property rights, and highlights the need for a solid, clear infrastructure for access to OER. In this way, publications, videos and other materials that TU Delft lecturers create – often in tandem with students – can be used and reused all over the world.

Working with businesses

To improve co-operation and connections with businesses, the Extension School is heading two projects. The Energy Switch project, initiated by the Economic Board Zuid-Holland, aims to improve supply and demand in the energy transition. The Extension School is also the project leader of the Lifelong Learning project of the 4TU sector plan for education that aims to improve the connection between higher education institutions and industry in the fields of electrical engineering and IT.

Innovation

The Extension School is involved in several projects to improve digital education and Lifelong Learning. It has teamed up with eleven other international universities (including MIT, Harvard, McMaster University, TU Munich, Technológico De Monterrey) to create the Digital Credentials Consortium that researches how the exchange of digital certificates can be improved with blockchain technology. TU Delft is affiliated with SURF's national pilot project for microcredentials.

European projects

In co-operation with the LDE-Centre for Education and Learning and ESA, the Extension School is involved in three Erasmus+ projects on developing lecturers' teaching skills in digital education, improving assessment in digital education and applying virtual reality in Lifelong Learning.

Education awards

The team of lecturers on the MOOC Introduction to Aerospace Structures and Materials, headed by *Dr.ir.* Gillian Saunders-Smits, is one of the ten finalists for the annual edX Prize for Innovation in Online Teaching. This is the third time TU Delft is among the finalists.

Teaching Lab

Lecturer of the year

On 4 November 2021, the TU Delft held its Education Day themed 'The Experiment'. At this event, attended by 180 lecturers and educational support staff online and in the Teaching Lab, the TU Delft lecturer of the year was also announced:
Dr.ir. T.E. Burdyny, assistant professor at the Faculty of Applied Sciences. All faculties had nominated their lecturer of the faculty for this election: Alper Alkan (ABE), Stefan Persaud (IDE), Ron Noomen (AE), Tom Burdyny (AS), Jan Kees Blom (CEG), Mauricio Aniche (EEMCS), Jan Anne Annema (TPM), and Peter Wellens (3mE).

Tom Burdyny will be nominated for the national Lecturer of the Year election.

Strengthening Engineering Education

Connecting, sharing, experimenting and showcasing are what the Teaching Academy and the Teaching Lab are all about. Inspiring each other, learning from each other's teaching, experiments, thoughts and ideas to strengthen engineering education together, across faculty boundaries, and to innovate where desired.

Various activities were organised last year: journal clubs (in which education-related publications are discussed), Education Conversations (in which current education themes are the subject of discussion), Meet & Eats (in which teachers share their educational renewal) and theme-based network meetings. Besides the activities, uplifting teaching stories were shared on the Teaching Academy website, teaching initiatives from the lecturing community were exchanged and various awards and fellowships for education were presented.

Master's degree programmes

Innovating Master's degree programmes

In February 2020, the EB agreed to the guiding principles for Master's degree programmes at TU Delft, laid down in the Framework for Future Master Education (95% version). The first follow-up step was to examine how this could be addressed further with the faculties. Given the coronavirus pandemic, there were no developments in this regard. After the summer of 2021, conversation picked up and a working group started to produce a 100% version and a concrete plan of action.

The first guiding principle of the framework is to create space for Interdisciplinary projects, such as the Joint Interdisciplinary Project (JIP). Students work on the project during the entire first quarter of their second Master's year. JIP is a unique opportunity for Delft Master's students to work in a multidisciplinary team with students from other degree programmes and from Leiden. It is often also the first and only time they work on an open problem from industry with societal, economic and environmental aspects.

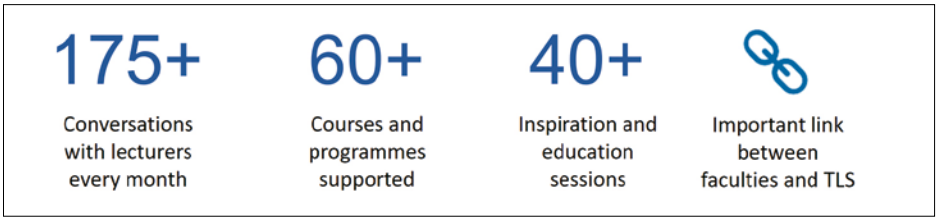
In 2021, the JIP grew to 180 students. Each of the 45 companies involved in the project provides a team coach with access to relevant information. The companies are from the fields of construction, soil mechanics, aviation and aerospace, retail, agriculture and horticulture, robotics, AI, archaeology, chemistry and healthcare.

2.4 Support and facilities

Lecturer support

The Teaching and Learning Services team (TLS) strives to continue providing the best possible support to lecturers. It also focuses on concrete support for TU Delft lecturers, for example with the TLS Support Help Desk, which lecturers can contact for all their (technical/didactical) questions about education. Demand for support surged during the first lockdown. It continues to increase now with the need for assistance in areas like hybrid education, where part of the students is educated on campus, but lecturers also offer synchronised online teaching for those at home.

TLS has also invested in expanding and updating the support website for lecturers. TLS continues to focus on didactic assistance for lecturers in online course development, supporting 224 new online courses in the past year and reviewing 985 existing courses. The Blended Learning Advisors team also focused on providing concrete support for lecturers in the areas of (blended) education, hybrid education, testing, feedback and curriculum development.



Training courses for lecturers

The TLS UTQ team's main task is to develop, evaluate and run courses to continue supporting the development of lecturers' teaching skills. As one of their tasks, this team offers the UTQ (University Teaching Qualification) to all lecturers who teach with an appointment of more than 0.2 FTE. Because of growth both in student numbers and the focus on education in the appointment of Tenure Trackers at each faculty, for example, TLS has witnessed a strong increase in the demand for training courses. This concerns both the UTQ training and extra training. In Q4 2021, for example, three new and demand-driven Board of Studies training courses ran in co-operation with the policy team.

2.5 Accreditation and accountability

Accreditation of Bachelor's and Master's degree programmes

In autumn 2021, the respective visitation committees positively assessed the Applied Sciences programmes of Science, Education and Communication (Master's degree, SEC), *Technische Natuurkunde* (Dutch Bachelor's degree in Applied Physics, TN) and Applied Physics (Master's degree, AP) on their individual quality standards and thus overall. The Accreditation Organisation of the Netherlands and Flanders (NVAO) accepted the findings of the visitation committees and extended the accreditations of these programmes.

New degree programmes

In 2021, several initiatives were taken to start new degree programmes, to make a track independent and to merge two already existing Master's degree programmes. These initiatives will be developed further internally and/or ratified externally in 2022.

Educational module

TU Delft is participating in the educational module experiment (under the Flexible Higher Education Experiments Decree). Thirty-six students participated in the 2020/2021 academic year, more than double the number in 2019/2020. The experiment was extended in 2019 to the end of June 2022. Because of the extension, the report on learning outcomes for the period 2016 to 2020 will be drawn up after 2022.

2.6 Van Rijn funds

Since December 2019, additional government funding has been allocated to TU Delft on a structured basis in response to the 'Wissels om' advisory report of the Van Rijn Committee. These funds can be used to solve existing bottlenecks, especially in education. In early 2020, decisions were made on the spending plans for the Van Rijn funds for the first phase (2020-2021), and through to 2022 for specific projects.
A crucial element of the plans is the ability to substantially increase staffing levels in the educational process. This is necessary to reduce the workload of academic staff and lecturers, to continue to accommodate as many students as possible and to maintain high quality. To put the recommendations of the Van Rijn Committee into practice in phase 1, faculties and departments of University Services were invited to submit proposals for using the funds based on four objectives, namely 'Reducing workload and increasing capacity', 'Boosting student success', 'Bottlenecks and priority areas of the sector plan' and 'Major programmes for strategic priorities at TU Delft to relieve workload and increase accessibility'. For the 2022 budget, the additional funds have been allocated to the faculties whose plans, after being checked against the sector plan and objectives, are decided in the budget process.


ORBEA

3

Research & Innovation

TU Delft champions high-quality research and innovation that combines science, technology and design while maintaining strong links to education. TU Delft regards it as its core duty to contribute to the United Nations Sustainable Development Goals, and its research is accordingly driven to a large extent by the demand for technological solutions to social problems. To this end, TU Delft develops ecosystems for innovation on and around campus – in collaboration with leading international research bodies, industry and local social partners.

Research and innovation during the pandemic

As in 2020, the coronavirus pandemic posed major challenges to research and innovation at Dutch universities in 2021. Despite some easing of restrictions in the summer, researchers continued to work from home as much as possible. The measures severely restricted capacity in labs and research facilities and made projects abroad more difficult.

The societal impact of research at TU Delft and the typical Delft mentality (‘getting things done’) is clear in various coronavirus-related projects. Many Delft scientific disciplines have helped curtail the coronavirus crisis and reopen society. Fluid mechanics and simulation experts worked on software to calculate the risks of contamination with coronavirus, water researchers worked on new detection methods, data and mathematical modelling helped to analyse the effect of measures and travel movements and served as a basis for political decision-making.

Despite the exceptional circumstances, TU Delft can look back on an exciting year in research and innovation, with numerous initiatives and continued development of existing activities.

3.1 Research policy

Research facilities

Scientific research at a university of technology such as TU Delft is characterised by a unique, large-scale infrastructure, basic infrastructure and a host of smaller-scale equipment. Research facilities are vital for TU Delft to do pioneering research, collaborate with partners and train the next generation of engineers. Much of Delft’s large-scale research infrastructure can be found on onderzoeksfaciliteiten.nl, the database of large-scale research facilities in the Netherlands.

A small sample of the developments follows: The brand new Electrical Sustainable Power Lab (ESP Lab) opened in the autumn, a facility that houses a wide range of infrastructure and research installations under one roof: power generation, energy conversion and storage, grid and micro-grid components, high, medium and low voltage power supplies and extensive IT facilities. The aim of clustering facilities and research in the ESP Lab is to prepare the electricity grid for the future. TU Delft also built its own supercomputer in 2021: DelftBlue. This high-performance computing facility complements existing national and cloud-based facilities and will provide computing power to scientists and students for solving and calculating complex problems from early 2022. The Quantum Network Explorer (QNE), a platform accessible to everyone to experiment with quantum networks, was launched in 2021 as a facility of the QuTech quantum institute. QNE is specifically aimed at researchers, students, software developers and future users of quantum network applications. The first modernisation phase of the research reactor and instruments was also completed in 2021. The modernisation project includes preparing and installing a cold neutron source in the heart of the research reactor. With this enhancement, the reactor facilitates more broad-based and advanced research in the areas of healthcare, the energy transition and the materials industry.

Research Software Policy

The Executive Board (EB) has approved the new 'TU Delft Research Software Policy' and the accompanying 'Guidelines on Research Software Licensing Registration and Commercialisation', making TU Delft the first university in the Netherlands to have drawn up such a policy.

The policy is to give research software recognition as scientific output in a FAIR (Findable, Accessible, Interoperable and Re-usable) way. It describes a simplified, streamlined process to help researchers manage and share software. The most important aspect is that by sharing their software, TU Delft researchers can be recognised for their contribution to science that until now was reserved for publications only.

3.2 Focus areas

Delft Research-Based Initiatives

Health, Energy and Deltas, Infrastructure & Mobility: these are major social themes in response to which TU Delft set up three Delft Research-Based Initiatives (DRIs) over ten years ago. The path it started on in 2019 will continue in 2021 with the DRIs' activities increasingly focusing on 'harvesting' a limited number of specific themes, including by further strengthening partnerships (including with the private sector and social partners), contributing to national and international agenda-setting, and raising external funding. This includes seeking and finding further embedment in the convergence initiatives.

The coronavirus pandemic brought additional major challenges for the fourth DRI – the Delft Global Initiative. In the past year, Delft Global has been working in a characteristic way to contribute towards the UN Sustainable Development Goals, even in times of crisis. For example, the TU Delft | Water for Impact programme was launched in September, focusing on water and the need for everyone to have access to safe and affordable water worldwide.

TU Delft Institutes

One new TU Delft Institute was launched in 2021: the TU Delft Rail Institute. The aim of this Institute is to promote state-of-the-art research in railway engineering and operations to ensure a sustainable, robust and future-proof railway system. The focus is on three themes: increasing capacity, improving asset management, and reducing the carbon and energy footprint. This brings the total number of TU Delft Institutes to 17: AgTech; Bioengineering; Climate; Computational Science & Engineering; Design for Values; E-Refinery; Optics; Powerweb; Process Technology; Rail; Robotics; Safety & Security; Space; Sports Engineering; Transport; Urban Energy and Wind Energy.

International involvement

The mid-term review (October 2021) of the focus countries, Brazil, China and India, part of the Global Engagement Framework 2018–2024, paid special attention to lessons learned and follow-up steps. The co-operation between researchers and partners was intensively online in 2021. Events included the symposium ‘Collaborating with China: in search for balance’ and the first ‘Agendas for Society’ meeting with Brazil, as well as five successful Dual Degree PhD defences. The China Tools and two strategic partnerships in India, IISc Bangalore and IIT Delhi, were approved.

TU Delft Climate Action programme

Anthropogenic greenhouse gas emissions are undoubtedly changing the environment. Climate change is in our hands. TU Delft uses its innovative power to help drive the global transition to non-fossil resources and the adaptation of the environment to the consequences of global warming. Although the problem is complex and urgent, TU Delft has no option but to be optimistic and use its capacity to meet the challenge, through its curricula and its research.

An extensive Climate Action Programme was launched in April 2021, aimed not only at additional investments in research and education, but also at making the TU Delft Campus more sustainable and strengthening co-operation with policymakers and the business community on this issue. Over the next decade, TU Delft will invest 22 million euros to set up and give further shape to this extensive programme. *Prof. dr. ir.* Herman Russchenberg is programme chair/director of research.

The four main research themes in the programme are climate science, climate change mitigation, climate change adaptation and climate change governance. These overarching themes form the basis for recruiting additional academics to work on climate solutions as part of seven flagship research programmes, including regional climate change monitoring and modelling, climate engineering, negative emissions, circularity, addressing urban heat and flood protection.

TU Delft AI Initiative

The TU Delft AI Initiative provides a central platform for research, education and innovation relating to AI, data and digitisation. The initiative facilitates the intensive co-operation of all eight TU Delft faculties with several partners and programmes. In 2021, the Labs & Talent programme expanded by 16 new TU Delft AI Labs and 12 new AI staff members. The new labs accommodate 64 PhD candidates who also contribute to AI courses in all eight faculties. Ten large-scale funding proposals for AI research and innovation have also been developed and submitted, related to these AI focus themes: AI for Energy & Sustainability; AI for Health & Care; AI for Ports & Maritime; AI for

Peace, Justice & Security; AI for Technological Industries; Human-Centred AI Systems, and Machine Learning. The wide range of AI education has been expanded with one minor in 'Engineering with AI', two new master blocks that have been developed for all TU Delft students as optional modules in Q5, and one new Master's degree programme. More information https://www.tudelft.nl/en/ai.

3.3 Research collaborations

Convergence Alliance

The complex societal challenges we face today – including climate change and urbanisation, the impact of digitisation and the increased role of technology, and the sustainability of our healthcare system – call for pioneering scientific insights with problem-solving approaches. For this reason, TU Delft, Erasmus University and Erasmus MC started intensively co-operating across disciplines and institutions in 2019. Knowledge and skills in arts and humanities, natural sciences, social sciences, medical sciences and engineering technology converge in this co-operation, creating new research and education infrastructures and possibly even new disciplines.

In 2021, the three Convergence pillars – Resilient Delta, Health & Technology and AI, Data & Digitalisation – started implementing their strategic plans, finding co-operation partners, and continuing to connect scientists. Two new programmes have also started bottom-up. One of these, the Pandemic and Disaster Preparedness Centre (PDPC), aims to research virus outbreaks and disasters to be better prepared in the future. The PDPC opened in May 2021 in the presence of the Mayor of Rotterdam, Ahmed Aboutaleb, and the Mayor of Delft, Marja van Bijsterveldt. The most recent programme – Healthy Start – has been set up by three enthusiastic scientists, *prof. dr.* Eveline Crone (EUR), *prof. dr.* Vincent Jaddoe (Erasmus MC) and *prof. dr.* Maaike Kleinsmann (TUD), with the aim of conducting research into improving the opportunities for children and young adults to achieve their full developmental potential. The ultimate goal of Convergence is to create social impact through co-operation across disciplines and institutes, with the region as a living lab. A good example of this co-creative approach is the Healthy Start conference that was held in November. Academics from social, medical and technical fields came together at this conference with social partners working with children and young people to contribute towards the equality of opportunity for young people.

Leiden-Delft-Erasmus Research Development Support

Following a decision by the LDE Universities administration, academics can now apply for LDE Research Development Support. This not only involves a financial contribution, but also additional guidance from the Research Development Offices of the three universities (at the TU Delft Innovation & Impact Centre).

The aim is to provide additional assistance in forming consortia from the three universities for the purpose of developing innovative, interdisciplinary research programmes. The Leiden-Delft-Erasmus Research Development Support gives researchers from the three universities the opportunity to develop new interdisciplinary collaborations from the bottom up.

University collaborations are discussed in more detail in Chapter 4.

Research schools

In 2021, TU Delft was the coordinating university for five research schools: the Advanced School for Computing & Imaging (ASCI), Centre for Technical Geoscience (CTG), Dutch Institute of Systems and Control (DISC), J.M. Burgerscentrum – Research School for Fluid Mechanics (JMBC) and Transport Infrastructure and Logistics (TRAIL). TU Delft has long-term financial arrangements with each of these research schools, which took effect in 2021 in particular.

QuTech

The Ministry of Economic Affairs and Climate Policy has announced that it will allocate €615 million to accelerating the development of quantum technology. QuTech is a proud partner of Quantum Delta NL, the recipient of the incentive. The budget will help rapidly increase the scale of the National Quantum Technology Agenda's long-term programme.

QuTech has put a website for conducting experiments with quantum networks online. Demonstrators such as these are important to QuTech because they make the practical application of quantum technology available to the general public. The Quantum Network Explorer is specifically aimed at researchers, students, software developers and future users of quantum network applications.

3.4 Research quality

Research assessments

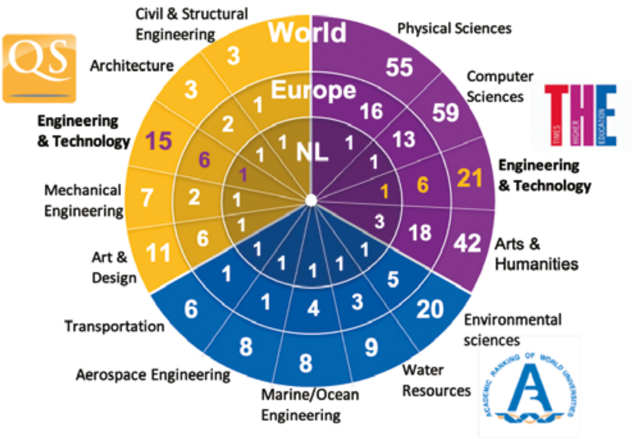
Once every six years, an independent international committee assesses all departments of TU Delft. The research assessments are held according to the Strategy Evaluation Protocol (SEP) 2021-2027 and the TU Delft Research Assessments Protocol (RAP). The Chemical Technology and Computer Science Engineering departments were assessed by the end of 2021; the Geosciences and Applied Mathematics departments will be assessed in early 2022. Because of the coronavirus situation, the visitation of the departments of the Faculty of Aerospace Engineering has been postponed again to spring 2022. All assessment reports and position documents of the EB are published on the website www.tudelft.nl/en/research/our-research-vision/quality-assurance.

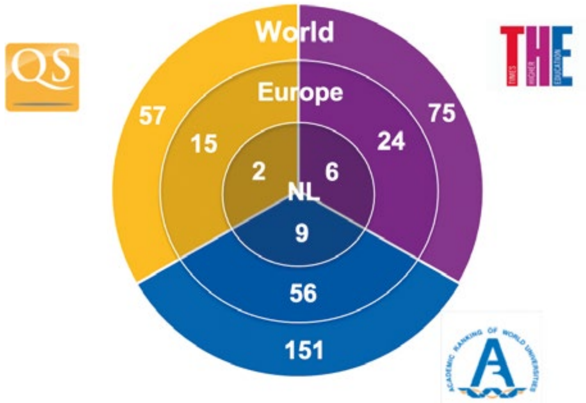
International rankings

Several organisations use international rankings to provide insight into the relative quality and positioning of universities. Although the methodologies of rankings have their shortcomings, it gives a rough indication of performance in certain areas. An overview of TU Delft's positioning in the three leading international rankings follows below. For more ranking information, go to: https://www.tudelft.nl/en/about-tu-delft/facts-and-figures/tu-delft-in-international-rankings.

Engineering & Technology

Because TU Delft is a university of technology, the Engineering & Technology rankings are particularly relevant. In the Times Higher Education (THE) Engineering & Technology rankings, TU Delft has been in a stable position, ranking around 20th worldwide for the past nine years. This year, for the third consecutive year, it ranked 21st worldwide, sixth in Europe and first in the Netherlands. TU Delft has been in the top 25 of the QS Engineering & Technology rankings every year since it began in 2003. In the past year, it ranked 15th worldwide, sixth in Europe and first in the Netherlands.





Subject rankings

Subject rankings are rankings that focus on specific fields and are particularly relevant to faculties or departments. QS and ARWU (Shanghai) publish more than 50 subject rankings each year; THE publishes 11. TU Delft is ranked in a number of top positions worldwide each year. TU Delft is among the world's top 10 in these fields: Civil & Structural (3), Architecture (3), Transportation (6), Mechanical (7), Marine/Ocean Engineering (8), Aerospace Engineering (8) and Water Resources (9). In Europe, TU Delft occupies top 3 positions in these fields: Aerospace Engineering (1), Civil & Structural (1), Transportation (1), Mechanical (2), Architecture (2) and Water Resources (3).

World university rankings

World university rankings, in which all universities are compared with each other, are published each year. As university of technology, TU Delft is compared with general and medical universities, among others. This year, TU Delft maintained its 57th position in the QS rankings, ranking 15th in Europe and second in the Netherlands. In the rankings, it is ranked 75th in the world and 24th in Europe. And in the ARWU, it is once again ranked in the 150-200 range. A back calculation based on points awarded shows that TU Delft is ranked 151st in the world, 56th in Europe and 9th in the Netherlands. The position in the last ranking differs because of a different focus and methodology.

Theme rankings

Besides the aforementioned rankings, there are all kinds of thematic rankings focusing on MOOCs, job security, reputation, impact, and so on. Last year TU Delft was placed in the following rankings, among others: 1st in THE Impact ranking Industry, Innovation and Infrastructure, 12th in THE Most International Universities in the World, 17th in the MOOCLab ranking, 39th in the QS Graduate Employability Ranking, 50th in the Reputation Ranking and 76th in the Global University Employability Ranking.

Prestigious awards (IC&C)

Spinoza Prize for Lieven Vandersypen

Prof. dr. ir. Lieven Vandersypen (TU Delft/QuTech) received the Spinoza Prize, the most prestigious award in Dutch science. This is the fourth consecutive time that an academic connected to TU Delft has been awarded the prize. This prize is awarded to researchers who are among the cream of the crop in science by international standards. Each of the laureates receives 2.5 million euros to spend on scientific research and activities relating to knowledge utilisation.

Inauguration of new KNAW members

The Royal Netherlands Academy of Arts and Science (KNAW) has elected twenty-three new members, including *prof. dr. ir* Serge Hoogendoorn. Members of the KNAW, distinguished scholars from all disciplines, are chosen for their academic achievements. The KNAW has around five hundred and fifty members. Membership is for life.

James Dyson Award for Jerry de Vos

When Delft Design alumnus Jerry de Vos had to invent something for his Master's degree programme, he produced his Plastic Scanner, a handy device that quickly shows you what type of plastic something is made from. This vital social innovation bagged him the prestigious James Dyson Award 2021 Sustainability Prize.

Royal honours for professors Pieternel Levelt, Jack Pronk and Kees Vuik

Prof. dr. Pieternel Levelt, professor of Remote Sensing of the Earth Atmosphere at the Faculty of Civil Engineering and Geosciences (CEG) and *prof.* Jack Pronk (Industrial Microbiology) were appointed Knights of the Order of the Netherlands Lion. And *prof. dr. ir.* Kees Vuik, professor of Numerical Analysis at the Faculty of Electrical Engineering, Mathematics & Computer Science (EEMCS), appointed Officer of the Order of Oranje-Nassau.

3.5 Valorisation

Valorisation indicators

In 2012, Dutch universities set their valorisation targets in their performance agreements with the Ministry of Education, Culture and Science. Following this, each university developed its own valorisation indicators to measure performance. The following valorisation indicators were established in 2015, along with the other Dutch universities of technology, and they have been published in the annual report since 2016.

Financial matters	
Government funding	€ 618.6 M
Indirect funding	€ 58.5 M
Contract funding	€ 147.6 M

Internships and thesis subjects for non-university institutions	
Master's	650
PD Eng	23

Co-publications with companies	
CWTS Leiden Ranking - University Industry Co-publications	#49
Proportion of publications with one or more companies as co-author	10.7%

Intellectual property	
Invention disclosure	98
Patent applications	69
Transfer agreements	8
Licences	2

Commercial activity	
Spin off with TU Delft-IP	3
TU Delft start-ups by current and former TU Delft staff without TU Delft-IP	0
Non-TU Delft start-ups by third parties with TU Delft-IP	0

Ancillary activities	
Number of professors with non-academic ancillary activities	128

Entrepreneurship programme	
Minors in Entrepreneurship (30 EC per minor)	262 students / 7860 ECTS
Additional Entrepreneurship subjects (5-8 ECTS per subject)	533 students / 2890 ECTS
Total number of ECTS for entrepreneurship programme	795 students / 10750 ECTS

Alumni careers	
Percentage of alumni working at non-academic organisations	85.1% (2019)

Public-private co-operation

Although the coronavirus pandemic continued to impose restrictions in 2021, TU Delft looks back on a year with many new initiatives. Several new public-private partnerships were launched and existing innovation clusters and field labs continued to evolve.

An increasing number of mainly large companies and other partners collaborate in the TU Delft Campus ecosystem because they know that co-creation is essential for successful innovation. Students, researchers, field labs, companies, knowledge institutions and governments are all indispensable in the innovation chain. Together, they lend a face every day to the unique proposition of the TU Delft Campus: *Accelerate your path to impact*.

Mercury Machine Learning Lab

The Mercury Machine Learning Lab, a partnership with the University of Amsterdam and Booking.com on research into improved recommendation systems, was announced in June 2021. This co-operation offers a unique opportunity to test AI techniques in the real world, enabling the safe development of new machine-learning methods for broad application, for example in mobility, energy or healthcare.

Opening of the Electrical Sustainable Power Lab

To ensure that the electricity grid is prepared for the future, TU Delft, the Dutch government and partners including grid operator TenneT have joined forces to build a brand-new laboratory: the Electrical Sustainable Power Lab, otherwise known as the ESP Lab. The laboratory – described as a ‘veritable temple of sustainability’ – was officially put into use on Friday, 1 October 2021.

Extreme Assembly Lab (X.AL)

The growing demand for computer chips is driven by the digital transformation that products and services are currently undergoing. Recent chip shortages show the importance of semiconductor stocks to the global economy. In November 2021, TU Delft and Dutch semiconductor equipment developer ITEC therefore launched the Extreme Assembly Lab (X.AL), where they jointly work on developing a new generation of ‘green’ chip assembly processes and equipment concepts.

Field labs and innovation clusters

The field labs, physical test sites on the TU Delft Campus where researchers, students, entrepreneurs and companies collaborate to accelerate innovation, have continued to evolve in the past year.

- On 11 November, the Do IoT Field Lab, the field lab for innovations around the Internet of Things, opened three 5G research facilities with the latest generation in mobile communication technology.
- RoboHouse focuses increasingly on the ‘future of work’. The field lab works on several initiatives to answer one of the main questions surrounding the societal impact of cognitive robotics: how do we make work healthy and empowering?
- In 2021, The Green Village was widely visible in the discussion on climate change, climate adaptation and the energy transition. With its broad range of projects, TGV contributes towards a sustainable and circular built environment.
- A special new test rig was installed at SAM|XL in October 2021: an eight-metre-long aircraft component made entirely of thermoplastic material. It is used for research into several new manufacturing techniques. In December, it was announced that the R&D Mobility Sectors grant scheme in which the SAM|XL field lab and TU Delft (Faculty of Aerospace Engineering) are jointly involved had approved three proposals. This involves total funding of €4.9 million for SAM|XL and the faculty.

Co-operation with businesses

Co-operation with companies continued to grow in 2021 based on the realisation that we cannot find the answers to the major societal issues on our own. Connecting entrepreneurs, knowledge institutions, investors and the government creates a breeding ground for innovation. Despite their differences, companies have similar innovation questions. By engaging in discussions and being open to learning and sharing experiences and new knowledge, companies can accelerate innovation with TU Delft and thus contribute towards a better society.

X!LEAD

X!LEAD, a trainee programme aimed at start-ups (entrepreneurial skills) and corporates (intrapreneurial skills) has been set up in the area of technical entrepreneurial talent to strengthen and accelerate innovation.

X!Maintenance

X!Maintenance programme has been set up in the area of inspection and maintenance to find technological solutions in the field of sensors, IoT, robotics and AI. The participants are the Port of Rotterdam Authority, VolkerWessels, Brunel and Nobian.

Executive education courses

To offer company employees the opportunity of continuous long-time learning, TU Delft now offers several executive education courses alongside the entire online MOOC offering of the Extension School.

Major new partnerships have also been set up in 2021 with:

- Shell on battery technology
- DSM on protein transition
- KLM, Schiphol and Airbus on sustainable flying

Entrepreneurship

Delft is one of the best places in the Netherlands for entrepreneurship. And this is evident everywhere on campus: from the TU Delft Impact Contest to the D:DREAM teams to the countless spin-offs and start-ups located in the YES! Delft, RoboHouse,

BKLaunch incubator or other locations near the TU Delft Campus. The convergence with Erasmus University Rotterdam and Erasmus Medical Centre offers opportunities to continue strengthening both the regional innovation ecosystem and beyond.

Graduate Entrepreneur

Enterpreneurial students and successful alumni of TU Delft and Erasmus University Rotterdam have joined forces to establish Graduate Entrepreneur, a structural co-operation that offers start-ups and scale-ups not only funding, but also a network and coaching. More information about *Graduate Entrepreneur* can be found on page 50, Chapter 4.

Impact Studio

Impact Studio, a pre-incubator with the mission to support TU Delft students, academics and professionals to start their own tech company, was launched in 2021. Impact Studio offers training for early customer identification and for creating teams and business models. Impact Studio is the product of the Innovation & Impact Centre, in cooperation with the Delft Centre for Entrepreneurship.

Delft Enterprises

Delft Enterprises B.V. (DE) is TU Delft's venture capital company. It invests in start-ups based on TU Delft knowledge in exchange for an equity interest. The investment can take the form of financial and/or non-financial contributions from DE or TU Delft, including know-how, intellectual property rights, facilities, support and (limited) start-up capital. As a shareholder, DE is actively involved in the start-ups. DE's philosophy is to connect innovation (promising ideas from TU Delft) to entrepreneurship (talented alumni and staff) and funding (e.g. the UNIQ proof-of-concept fund) to bring valuable knowledge from the university to market. In doing so, DE helps achieve TU Delft's impact objective.

At the end of 2021, DE held shares in 66 TU Delft spin-out companies. Many of these companies are located on or near the campus, for example in the YES!Delft incubator, RoboHouse and the Aerospace Innovation Hub. In 2021, it took an interest in three new companies: QphoX, IMSystems and Zero Energy Development. These companies were established based on knowledge development from the faculties at TU Delft. Some companies are patent-based. Three exits occurred in 2021, two of which were partial. Part of the income from these exits was fed back to the relevant faculties and inventors.

The most notable exit was Japanese technology company Rigaku Corporation's acquisition of MILabs. MILabs arose from the academic-entrepreneurial ecosystems of Delft and Utrecht, which originated from TU Delft and University Medical Center Utrecht. The company, founded in 2006, provides optical imaging equipment and specialised scanners for biomedical research.

TU Delft Services

TU Delft Services B.V. (TDS) supports and manages the activities of TU Delft that best fit a private legal entity. The activities of Affiliated Parties, entities in which TU Delft holds a majority of shares (private limited parties or BVs) or has dominant control (foundations), are either service activities for TU Delft or valorisation activities in field labs, for example. Tax reasons, risk management and control can be decisive in TU Delft's choice to place activities in an entity under TDS. At the EB's request, TDS sets up and manages the entities with the help of Finance and Legal Services. TU Delft's EB supervises the implementation of TDS's policy through the TDS director. TDS entities include the HollandPTC proton clinic, the YES!Delft incubator, and FlexDelft, TU Delft's internal payroll and secondment agency. Stichting RoboValley is one of the

field labs in which a robotics ecosystem has been set up that includes project activities with the business community in cooperation with TU Delft, among others, a start-up community and network activities. There is no exit policy for the entities under TDS.

HollandPTC, in particular, receives a relatively large amount of attention. Erasmus MC, LUMC and TU Delft established this entity in 2013. HollandPTC took out a loan of around €100 million from the European Investment Bank (EIB) to finance the construction and fitting-out of this proton clinic, for which each of the three founders have stood one-third surety. After a difficult start, the number of patients treated last year increased considerably, although not to the point that HollandPTC is breaking even yet. This situation is comparable to the two other proton centres in Groningen and Maastricht.

In December 2021, the EB decided to liquidate the Enterprises Accounting foundation and have TDS continue the foundation's activities as from 1 January 2022. This decision is now being implemented.

Intellectual property

The IP (Intellectual Property) team looks back on some fine results. Despite the coronavirus-related challenges, more than one hundred Invention Disclosure Forms were received in 2021. Support services have also been provided to the start-up ecosystem at TU Delft, including:

- The start-up Populytics, which uses established software technology (Wevaluate), generated an impact on Dutch coronavirus policy with this support in its first year of existence.
- The high-tech quantum-computing start-up QBlox was supported in securing access to know-how, and the acquisition and transfer of a patent from Intel was arranged for Qphox.
- Other examples of initiatives to have recently emerged from TU Delft patents are Mezt, a company that can solve the nitrogen problem in Dutch livestock farming; Respyre, a company helps improve the air quality in metropolitan areas; and Ziggy, an attachment that allows an attendant to walk alongside rather than behind a wheelchair.

The IP team also helped negotiate IP clauses for the 'market-based' and legally correct transfer of academic IP of several large co-operation projects with commercial companies, such as BASF, Van Oord, Boskalis, Stichting Deltares, Schiphol, Eneco, Shell and Siemens.

Lastly, the team was able to substantially contribute towards the establishing of the new IP guidelines of the EIT (European Institute of Innovation & Technology) Raw Materials & Manufacturing. This IP policy has now been both harmonised with Horizon Europe and updated to bring more policy-efficient (i.e. more targeted and less laborious) IP from public-private partnerships into society by securing the IP at an early stage, making it transparent and transferring it in a standardised manner (on FRAND conditions) to existing companies and start-ups. The local TU Delft IP policy is thus replicated in the European Union in these EIT projects.

Location for industry

The TU Delft Campus community, a community pioneering for change, continued to expand in 2021. Around 240 companies, ranging from start-ups and scale-ups to renowned tech companies, now employ over 4,300 people. Together with TU Delft and institutes of higher education, they work on radical innovations for a better society.

Co-operation occurs in the field labs, but the TU Delft Campus itself is also a 'living lab'. For example, a section of a smart cycle path that records how much traffic is passing over it, as well as speed and time data, was laid on the TU Delft Campus in 2021. The innovative sensors and unique combination of measurements that take place make this the smartest cycle path in the Netherlands.

Other notable developments on the TU Delft Campus in 2021 are listed below.

The TNO Building Innovation Lab

The TNO Building Innovation Lab was festively opened during the Dutch Green Building Week. The Lab, which conducts research into innovations in building materials, climate systems and construction, has been made possible by the ASR Dutch Science Park Fund.

Oldelft Ultrasound

Oldelft Ultrasound has moved into a new nature-inclusive and circular building of the ASR Dutch Science Park Fund. Oldelft develops and manufactures medical ultrasound diagnostics equipment.

NEXT Delft

Huge progress has been made towards the completion of NEXT Delft. The building facilitates the necessary transfer of scale-ups from YES! Delft. This creates space for new start-ups and offers room for innovative companies.

House of Quantum

On 1 June, Quantum Delta NL and ASR Science Park Fund signed a co-operation agreement at the TU Delft Campus where the House of Quantum will be built. House of Quantum will be the physical heart of the quantum ecosystem in the Netherlands. An open meeting place around quantum technology that integrates various functions: space for academics, start-ups and industry, along with rooms for meetings and interaction.

Firma van Buiten

Construction of a circular building for Firma van Buiten has started. The catering company will be housed in a 500m^2 building made of recycled or recyclable materials. Firma is a social work training company. This means that several target groups distanced from the labour market are trained to become hospitality professionals.

4

People & Community

TU Delft is all about people; they are the be-all and end-all of everything that happens at TU Delft. The coronavirus pandemic left its mark on 2021 and the TU Delft community. The year both began and ended at home for students and staff because of the restrictive measures. From this perspective, 2021 seems to have been dominated by the coronavirus pandemic. But if one delves deeper, one sees a year in which the daily activities of students and staff largely continued and the highlights of the annual calendar also took place. And that is to the credit of the community and the people of TU Delft.

TU Delft is committed to a culture in which students and staff feel challenged and enjoy working. The core values of Diversity, Integrity, Respect, Engagement, Courage and Trust are pivotal to this culture. The TU Delft community reaches beyond the campus and extends globally with the alumni network. International, national, regional and local cooperation are also instrumental to this. In 2021, social cohesion in the TU Delft community received close attention. To strengthen social cohesion, two TU Delft talk shows were organised during the year. The first one, held on 24 June, was entitled ‘The post-COVID university’, while the second talk show was on 9 December and dedicated to transitions. One of the six strategic response teams (SRTs) also worked on short- and long-term campaigns and priorities to further strengthen social cohesion.

4.1 Personnel policy

Staff changes in 2021

Table 4.1 lists the appointments made in 2021.

Date	Name	Position
1 January	prof. dr. ir. L.J. van Vliet	Dean of the Faculty of Electrical Engineering, Mathematics and Computer Science
1 January	Ir. N.M. Herkströter	CIO/IT Director
1 January	prof. dr. ir. A.A.J.F. van den Dobbelsteen	Sustainability Coordinator of TU Delft
1 January	prof. dr. A.M. Dogterom	Acting Dean of the Faculty of Applied Sciences
1 February	prof. dr. ir. J. Hellendoorn	Pro Vice Rector for Joint Educational Affairs
1 March	prof. dr. ir. P.M. Herder	Dean of the Faculty of Applied Sciences
1 April	drs. J.H.M. Zonneveld	Human Resources Director
1 May	prof. dr. ir. H.W.J. Russchenberg	Pro Vice Rector for Climate Action
1 June	prof. dr. B. van Arem	Pro Vice Rector for Doctoral Affairs
1 August	drs. M.E. van der Meer	Vice President Operations (VPO) on the Executive Board
1 September	prof. dr. ir. C.A. Ramírez Ramirez	Graduate School Director
1 September	prof. dr. ir. I.R. van de Poel	Integrity Officer
1 September	drs. J.A.W. Derkx	CIO/Acting IT Director
1 October	drs. M.C.O. Thomas	Acting Finance Director

Talent recruitment and intake

Moreover, in 2021, TU Delft focused on recruiting the right candidates and outstanding staff by, among other things, promoting the Netherlands as an attractive location for academic talent. Besides the job marketing campaigns with their direct recruitment goal, such as the joint LDE trainee programme of Leiden University, TU Delft, Erasmus University Rotterdam, and the Delft Technology Fellowship for talented female academics, a campaign aimed at employer branding in the broad sense was launched for the first time in 2021. A campaign on the theme of energy transition, one of the five main themes, went live on 31 January 2021, while the theme of health was highlighted in the summer.

The EU awarded the HR Excellence in Research logo quality mark to TU Delft in 2013 to contribute to a healthy and attractive research climate. This calls on research institutes to incorporate the Charter and the Code of Conduct into their policies. The European Commission awards the HR Excellence in Research logo to research institutes in recognition of the significant progress they have made in implementing the Charter and Code of Conduct in line with the EURAXESS Human Resources Strategy for Researchers (HRS4R). After an audit in 2020, the feedback from this audit and the implementation of the feedback in 2021, TU Delft may continue to use the logo.

A legislative proposal also obliges employers and intermediaries to have a procedure aimed at preventing discrimination in employee recruitment and selection. TU Delft applies the job application guidelines of the Dutch Association for Personnel Management & Organisational Development (NVP). Although the method is not new for TU Delft, it underlines the need for a sound procedure aimed at preventing

discrimination in candidate recruitment and selection. In 2021, TU Delft paid extra attention to this issue by developing initiatives including training courses for vacancy holders to write inclusive vacancy texts.

Talent development and sustainable employability

The Recognition & Rewards Committee investigated which practices and initiatives at TU Delft already contribute to the ambitions in that area and which do not. Based on a gap analysis between ambition and the current situation at TU Delft, the Committee formulated a proposition and tested it in the spring through dialogue sessions held with PhDs, post-doctoral researchers and other academic staff. The results were incorporated into the TU Delft perspective on Recognition & Rewards that was published internally and externally in June. In autumn, preparations were made for the resultant fifteen projects and a Steering Committee was established to monitor progress. At the end of November, a master class in strategic personnel development was organised for the new HR staff to transform the organisation's strategic direction into the ideal workforce with their Management Teams, so that they can shape new hires, career development and departing staff together. The onboarding programme was updated and new programmes and training courses in (personal) leadership were developed. These will be offered in 2022 based on a clear vision of development and leadership development.

A safe and challenging work environment

Measures relating to the coronavirus pandemic continue to affect the well-being of many staff. TU Delft has offered additional coaching and workshops for mental support. These included short-term individual coaching programmes for lecturers, staff and managers, and summer courses (interactive online workshops on exercise, sleep and recovery, healthy nutrition and walking in nature) for all employees. As in 2020, staff were able to participate in a diverse and hybrid programme of webinars and online workshops in November following on from the national Week of Work Stress. The theme for 2021 was 'Mentally Strong!'.

Since 1 July 2021, external service provider Mensely has provided university health services. The service provider was awarded this contract through a public tender. Vitality coaching, part of the TU Delft vitality programme, was also put out to tender at the beginning of the year. *Health Coach Program* (HCP) was selected as the best party and will provide intensive vitality coaching programmes.

In the context of the Implementation Plan for the Participation Act 2020–2024, the focus, in view of the coronavirus pandemic, was on retaining the current participation staff members. By the end of 2021, around 72 FTE positions (of 25.5 hours) were filled. Buddy training and autism training were also organised for supervisors and a social return on investment (SROI) policy was set up for which pilot projects are running.

To achieve a structured, well-founded and embedded improvement of the TU Delft occupational health and safety management system, a proposal for an improvement programme was made in the summer, incorporating the recommendations of an earlier evaluation.

Efficient HR support

A new recruitment system came into use throughout TU Delft in the spring of 2021. Among other features, this system ensures that the recruitment process is handled uniformly. Everything is managed from one recruitment system and all data are housed in one system. The system also makes it easy to comply with the GDPR (privacy legislation).

On 1 January 2022, TU Delft switched to a new HR system: My HR. This system offers an overview, self-service, transparency, clarity and speed. AFAS delivers the system and is responsible for implementing the first phase. The Executive Board (EB) has set up a steering committee to make decisions on implementation. All target groups are represented in a user group that was involved in testing. There is also a broad project team with an implementation, integration and transition team. The processes for employer's declarations, registrations and renewals of guests and external parties are automated using a robot. These processes were chosen because they are frequent and relatively simple tasks. In 2022, HR will integrate the knowledge it has gained into My HR, so that the volume of work that crosses people's desks is reduced, leaving time for more complex issues. Lastly, a digital place will be created where employees, managers and HR advisors can find all the development opportunities on offer at TU Delft. HR joined forces with other organisational units that provide programmes and training courses, also known as 'the TU Delft learning community', to create a digital place where staff can find and search through the entire range on offer: the *Learning Hub*. The facility started in 2021 and became operational in early 2022.

Integrity and Diversity & Inclusion

Integrity Office and Integrity Board

The Integrity Office dealt with several important issues in 2021. Among other things, the EB appointed four new internal confidential advisors. The team of seven confidential advisors serve as the point of contact, sounding board and guide for TU Delft students, staff and guests confronted by undesirable behaviour or a suspected breach of academic or other integrity. The EB also appointed *prof. dr. ir.* Ibo van de Poel (Faculty of Technology, Policy and Management (TPM)) as Integrity Officer and chair of the Integrity Board as from 1 September 2021. New members were also appointed to the Integrity Board, which is more diverse than before to prove the EB with advice on integrity matters from a wide range of perspectives.

Diversity & inclusion

In 2021, a Diversity & Inclusion (D&I) coordinator, policy advisor and management secretary strengthened the D&I Office. The first D&I week was organised to encourage dialogue on diversity and inclusion. Each faculty appointed a Faculty Diversity Officer (FDO). The FDO works with the D&I Office, staff and students to continue developing D&I policy in the faculty. All FDOs sit on the D&I Board. Other actors, such as the Student Council, HR and Education and Student Affairs also participate in the board. The board acts as an advisory and sounding board group for both the Diversity Officer and the D&I Office. In 2021, the D&I office formulated a gender equality plan (GEP) according to the EU Horizon guidelines.

4.2 Community

Alumni

The alumni community consists of more than 110,000 Delft engineers with an MSc, PhD or PDEng degree and retired professors. Alumni are kept informed about TU Delft research, the latest news and activities through the alumni magazine *Delft Integraal* and a wide range of online channels. Alumni can also participate in several events, including the annual alumni event, TU Delft for Life | Xperience Week, which was organised in 2021 from 7 to 11 June. The programme covered five inspirational evenings around the themes of Digital Society, Climate Action, Health & Care, Energy Transition and Urbanisation & Mobility. More than 1,500 alumni and associates, living in 41 countries with 45 different nationalities, registered for one or more sessions.

During the events, 25 guests were welcomed at the talk show table, twenty of whom were academics such as *prof. dr. ir.* Geert-Jan Houben, *prof. dr. ir.* Andy van den Dobbelsteen, *prof. dr. ir.* Miro Zeman, *prof. dr. ir.* Bas Jonkman, *prof. dr. ir.* Tim van der Hagen and *prof. dr.* Ernst Kuipers. The Alumnus of the Year 2021 was announced during *Xperience Week*: *ir* Karin Sluis, an alumna of the faculty of Civil Engineering and Geosciences (CEG). As a role model of distinction, her vision for infrastructure and the environment has greatly influenced the development of the Netherlands. During the Opening of the 2021 Academic Year, she inspired the TU Delft community as a speaker.

Delft University Fund 2021

Tech for Health | Better healthcare thanks to Delft technology

In March 2021, the University Fund launched the Tech for Health campaign. The aim was to draw attention to research in Delft that helps improve and make Dutch healthcare future-proof. About 30% of all research at TU Delft relates to health and care. The research is done in close co-operation with leading medical institutes such as Erasmus MC and LUMC. The integration of engineering, sciences, bioscience and humanities is resulting in the emergence of new disciplines. This approach is globally recognised as the best way to solve complex societal issues (also see the topic Convergence in more detail on page 54).

Delft alumni were invited to meet the academics behind this research and contribute towards their important work. Over 1,050 alumni made a financial contribution. Besides the donation proceeds and visibility for Delft health research, the campaign has also created connections between alumni and academics.

TU Delft Best Graduate Award Ceremony 2021

The Delft University Fund organises the TU Delft Best Graduate Award Ceremony each year. The ceremony was broadcast live from the Aula Building on 11 November. The eight best graduates from the respective faculties presented their final thesis and told the audience about their innovative research. The prestigious title of TU Delft Best Graduate 2021 was awarded to *ir* Zhuo-Ming Shia. Shia graduated from the Faculty of Architecture and the Built Environment and developed a socially responsible process for global housing design. Read more at www.tudelft.nl/en/bestgraduate

TU Delft Excellence Fund

The TU Delft Excellence Fund was established in 2019 to support TU Delft's excellence strategy. In 2021, the fourth top international academic could be appointed at TU Delft with the help of the Excellence Fund. Fifty alumni and friends of TU Delft make this possible. By November 2021, the founders of the Excellence Fund had committed €3.6 million. Alumni and friends of TU Delft who could consider making a very substantial donation are approached for this purpose. Donors become members of the Delft Leaders Programme. We work together in this way to create impact for a better society and help ensure that Delft technology can continue to be a key driver of the Dutch economy. Read more at: www.tudelft.nl/en/universiteitsfonds/excellencefund.

Graduate Entrepreneur Fund

Entrepreneurship is one of the main drivers of social impact. TU Delft and Erasmus University Rotterdam understand this like no other. Delft contributes to a better society through technology and innovation, while Rotterdam is known for its entrepreneurial mindset. In April 2021, students and alumni of both universities launched Graduate Entrepreneur, a platform to promote a start-up ecosystem that unites existing initiatives in Delft and Rotterdam. The new platform aims to unite existing activities and offer unique growth opportunities to start-ups and scale-ups in different sectors, including

artificial intelligence, technology, social sciences and medicine. TU Delft and Erasmus University Rotterdam will thus both give entrepreneurship a more prominent place on their campuses.

The Graduate Entrepreneur Fund, consisting of a Pre-Seed Fund and a Seed Fund, forms part of this ecosystem. The Delft University Fund and the Erasmus Trust Fund work together to give substance to the Pre-Seed Fund with donations from alumni. This fund has now invested in six companies and makes around two new investments every month. Young entrepreneurs with a good business plan can apply to the Pre-Seed Fund for capital, coaching by experienced entrepreneurs and building an attractive network. The Seed Fund focuses on investing in the most promising start-ups. Read more at www.tudelft.nl/en/delft-university-fund/support-us/graduate-entrepreneur-fonds.

Max Mulder | Professor of Excellence 2021

On 6 September, the Professor of Excellence Award 2021 was awarded to *prof. dr.ir.* Max Mulder, full professor of Control & Simulation at the Faculty of Aerospace Engineering (AE). Since 1994, the Delft University Fund has presented the prestigious Professor of Excellence Award annually to a full professor at TU Delft. Mulder was nominated by *prof. dr. ir.* Henri Werij (Dean of AE), colleagues from his field, the VSV 'Leonardo da Vinci' study association and former Master's students and doctoral candidates. Professors are at the top tier of TU Delft and know how to inspire and motivate the next generation of Delft engineers. Professors are not chosen because of pass-rate figures or impact scores or selected by the top brass. Read more at: www.tudelft.nl/en/delft-university-fund/we-support/awards/professor-of-excellence.

Local involvement

Students and the city of Delft

More emphasis has been placed on the relationship with the city in recent years. Volunteer work by students plays an important part in this relationship. TU Delft supports various student initiatives and organisations in the area of volunteer work: Student Volunteering Delft, Present Delft, Stichting Move, Stichting Social Hub and 180 Degrees. Doing volunteer work creates a good opportunity to build a network among Delft residents and fellow students. Projects range from helping the vulnerable or giving extra lessons to cleaning canals and more. During Reception Week (OWee), new students are given guidelines on desirable behaviour and volunteer opportunities.

Various student associations and umbrella organisations have now realised that the student image is under pressure and that more attention needs to be paid to connecting with other sections of the city. This is why they have joined forces to launch several initiatives, such as organising successful neighbourhood days, treasure hunts for children and Christmas activities.

A Student Officer (SO) has been recently appointed in Delft. As the contact person between the student community and the municipality, the SO holds office both at TU Delft and at city hall. TU Delft employs the SO with the specific task of optimising the relationship between students and the municipality. The SO also chairs a new initiative: the monthly student federation meeting. This is where student organisations VeRa, InterDelft, SR, SVR, SVD, Delft United and the Student Sports & Culture Council meet regularly with TU Delft.

TU Delft | WIJStad

TU Delft contributes ideas to Delft, and Delft residents contribute ideas to TU Delft. The WIJStad programme (www.tudelft.nl/wijstad) inspires and links up residents, students

and researchers to make a difference in Delft using research and science. The issues in the city are linked to the courses in the curricula and research, where possible. Some of the activities follow below.

Dr. R.J. Kleinhans completed the second year of his TU Delft Education fellowship in Community Engagement and resumed neighbourhood research with students in the Kuyperwijk. Read all about it at www.tudelft.nl/en/wijstad/verhalen/fresh-eyes-are-their-best-asset.

City Deal Kennis Maken (CDKM) has granted the programme manager of TU Delft | WIJStad, Pieke Hoekstra's application *Uit de bubbel: naar opschaling van stedelijke kennisvragen in ons onderwijs* (Beyond the bubble: towards upscaling urban knowledge questions in our education system). The amount awarded makes it possible to work intensively for a year on experimenting with issues from the city and challenge-based education. An implementation plan will be delivered in 2022.

The Special Interest Group Community Engagement in Design and Engineering Education grew out of the previous Community of Practice (CoP) on Community Engagement. Lecturers with an interest in urban issues in education are welcome to attend the group's productive meetings.

The only pop-up college of 2021 was held in June: an Olympic Games special. TU Delft's research that has led to improvements in the sports performance of our Olympic athletes was presented in Delft schoolyards. For example, bicycle dynamics expert at TU Delft, Marco Reijne, explained the track bicycle at International School Delft.

TU Delft | WIJStad participated in Delft with various social partners in BASI, Becoming a Social Innovator. Here, young people from the training college gained experience by doing various projects with the partners. Their love for technology was fostered at TU Delft with an adapted tour of The Green Village, a presentation to explain the hydrogen racing car Forze and a freerunning clinic by world freerunning champion Noa Diorgina Man in front of the Aula Building. BASI is a community service programme.

In 2021, the 'Soapbox Sessions', a collaboration between TU Delft | WIJStad and Studium Generale, started for academics wanting to share the story of their research with a broad audience. The academics are trained and given a podium through Studium Generale on the campus, and through TU Delft | WIJStad in the city of Delft.

In December, the partnership with JINC, which was entered into in 2020, was officially concluded. JINC is a national organisation with a branch in Delft whose objective is to offer every child equal opportunities and to bring them into contact with companies and organisations. For this purpose, a programme has been developed so Delft pupils (primary schools from certain neighbourhoods and pre-vocational secondary schools) can visit faculties. In 2021, TU Delft academics conducted several flash internships at schools in Delft. They also participated in the national JINC programme 'Boss of Tomorrow', in which Vice-Rector *prof. dr.* Rob Mudde gave his chair to two pupils of the Horizon primary school in Delft. The theme was inequality in education. Read all about it at https://www.tudelft.nl/wijstad/verhalen/mimi-en-rayan-zijn-voor-een-dag-de-baas-van-de-tu.

4.3 Administrative co-operation

Regional co-operation

Co-operating with the Municipality of Delft

Co-operation with the Municipality of Delft continued unabated in 2021, with regular meetings about mobility and accessibility, campus development, the links between the city and the university and other topics. This fits in with the vision for a Delft UniverCity that improves the co-operation between the university and its surroundings, with innovation as driving force to create a smart, sustainable and inclusive society.

Economic Board Zuid-Holland

TU Delft is an active partner in the Economic Board Zuid-Holland (EBZ). Private and public players in Zuid-Holland want to bring the region and thus the Netherlands into a structurally higher growth path. This achieves sustainable broad prosperity and well-being for the Netherlands in a changing world. The EBZ creates support and mobilises capacity for the major transitions the economy is facing.

The Zuid-Holland Regional Growth Agenda was launched in 2021. This is an ambitious action and investment agenda, based on which key players in Zuid-Holland, some eighty government bodies, businesses and knowledge institutions, will be investing €1.4 billion each year in the regional economy over the coming decade, in knowledge and innovation, the manufacturing industry, energy infrastructure, accessibility and human capital. The region uses this to combat the effects of the coronavirus pandemic, high unemployment and sluggish economic growth in the region.

City Deal Kennis Maken

TU Delft is participating in City Deal Kennis Maken (CDKM) along with the Municipality of Delft, The Hague University of Applied Sciences and Inholland University of Applied Sciences. CDKM intends to create momentum in addressing societal issues that face cities through the involvement of researchers, lecturers and students.

In 2021, priority was given to the Tanthof district in Delft, where a knowledge broker is working on a research agenda with a grant from Taskforce for Applied Research SIA. Part of this is the ‘Ageing’ City Lab, a long-term research project in which lecturers, researchers and students from The Hague University of Applied Sciences, Inholland University of Applied Sciences and TU Delft try to gain insight and offer solutions to the ageing issue in the Tanthof district. TU Delft focused on new residential concepts for senior citizens and the transformation of single-family dwellings with a graduation studio. Research is also being conducted in the districts that are part of the Delft district restorative programme, on issues such as energy transition, health and loneliness and targeted data collection. In the Kuyperwijk, TU Delft students analysed how residents perceive the Kuyperwijk for the Master’s course Social Inequality, Diversity and Design . In the Spoorzone, TU Delft is researching the influence of greenery on heat stress and how different tree models help in cooling the city. In 2021, a high-rise *challenge* took place with the help of the city architect of the Municipality of Delft. Students from the three knowledge institutions worked in multidisciplinary teams to design high-rise buildings at six locations in Delft. Funded by the Taskforce for Applied Research SIA, researcher Nina Bohm examined how students, course coordinators and municipalities define urban issues for challenge-based education and what forms these take in her Delft-based research ‘Routes to urban issues’.

Inter-university cooperation

Convergence: TU Delft, Erasmus MC and Erasmus University Rotterdam

As discussed in Chapter 3 (page 35), TU Delft, Erasmus MC and Erasmus University Rotterdam have co-operated administratively since 2019 under the Convergence programme. Besides substantive progress in research, the three Convergence institutions have also grown closer to each other in operations. The basis for this is the Framework Agreement signed in 2021, which lays down further arrangements for co-operation. Coordinated from the Convergence Office, working groups have been set up in several areas (HR, finance, legal, communication, data and IP, public affairs) to remove barriers and facilitate co-operation. Given the growing enthusiasm in the institutions, the Convergence Executive Board decided to double the available budget in 2021. Investments were also made in communication and the Convergence website was launched (www.convergence.nl). The first Convergence Square also opened in Erasmus MC. This is a meeting place where colleagues from the three institutions can work together and meet face to face. Both politicians and the business community have shown great interest in Convergence in 2021, which has resulted in several working visits.

Leiden-Delft-Erasmus Strategic Alliance

As part of the Leiden-Delft-Erasmus (LDE) strategic alliance, two new LDE minors were introduced in 2021: (i) Sustainable Chemistry and Biotechnology, in which students are introduced to sustainable chemical and biochemical processes, and (ii) Modes of Existence: Architecture and Philosophy, which offers students a theoretical and practical fusion of philosophy and architecture through speculative and other design. The minor in Sustainable Chemistry and Biotechnology is provided by TU Delft's department of Biotechnology and Chemical Engineering and Leiden University's Institute of Chemistry; the minor in Modes of Existence is provided by TU Delft's Faculty of Architecture and the Built Environment and the Erasmus School of Philosophy.

The LDE Centres and programmes have continued their work, with the start of The Hague South-West Thesis Workshop as one of the highlights. The thesis workshops consist of two thematic clusters, (i) Governance of Migration and Diversity (Master's degree) and (ii) Economic and Governance (Master's specialisation), in which small groups of students from different disciplines perform fieldwork in The Hague South-West. Depending on the specific research task, additional partners are involved, such as education institutions (The Hague University of Applied Sciences), policymakers, and social parties in the neighbourhood.

A new LDE programme launched in 2021 is Space for Science and Society. This programme connects the LDE universities with NL Space Campus in Noordwijk and, through this campus, with ESA-ESTEC, the technological heart of European space travel. By doing so, the LDE universities contribute to further strengthening and expanding the space knowledge and innovation ecosystem in the province of Zuid-Holland and beyond.

4TU.Federation

The 4TU.Federation is the partnership of the four universities of technology in Delft, Eindhoven, Enschede and Wageningen. 4TU aims to bundle, strengthen and maximise use of knowledge and creativity in the technology sector. Last year, a call was made for the High Tech for a Sustainable Future programme, which funds new thematic programmes to attract diverse talent and jointly realise scientific breakthroughs. Moreover, on 16 September, 4TU students delivered the Techrede, in which they presented initiatives for accelerating social transitions in consultation with politicians and industry.

International university networks

Besides regional and national co-operation, TU Delft also actively seeks co-operation with European partners. For example, TU Delft is an active member of several European university networks. The IDEA League is a strategic collaboration between five leading European universities of technology: TU Delft, RWTH Aachen, ETH Zürich, Chalmers University and Politecnico di Milano. TU Delft is also a member of the European Universities Association (EUA). As one of its founders, TU Delft is an active member of the Conference of European Schools for Advanced Engineering Education and Research (CESAER), a European non-profit association of more than fifty prominent European universities of technology and institutes of higher education in 26 European countries. TU Delft participates in the Global Engineering and Education Exchange (GlobalE3) and UNITECH. And TU Delft is also an active member of the European Society for Engineering Education (SEFI), the largest network of institutions of technical education in Europe.

5

Campus & Services

Coronavirus

In 2021, various national measures with an impact on the campus and campus activities were discussed because of the coronavirus pandemic. These included the curfew, ‘intelligent lockdown’, the closure of hospitality venues, terraces and shops, the instruction to work from home, the 1.5 m social-distancing rule, walking routes, wearing masks, ventilation measures, restrictions on indoor and outdoor sports at X (sports and culture centre), the closure of museums, maximum group sizes, self-testing and the possible introduction of test certificates. Under the direction of the TU Delft Relaunch and Restart Coordination Team, the Complex Management and Facilities Task Force (CenF) advised on implementing the announced measures and gave direction on organising a safe campus and buildings. The CenF Task Force held weekly meetings until the start of the 2021/2022 academic year; after that, meetings were held on an ad hoc basis.

Throughout the year, customised solutions were sought within the applicable solutions for the continuity of scientific research and university operations on the campus. Partly because of the importance of mental well-being, the focus was on making sufficient self-study places available for students. Laboratory courses, graduation sessions, doctoral defence ceremonies and examinations could also take place on the campus in a safe and orderly manner. The ventilation capacity in teaching spaces, meeting rooms and workspaces was assessed and measures were taken where necessary. Instructions were also provided on the proper use of the premises for the best use of natural and mechanical ventilation in the buildings. Measures were not only implemented in the faculty buildings. Throughout the year, the temporary and more lasting national measures also called for practical solutions in the buildings that fulfil special functions on the campus, such as the Aula Building, Library, Science Centre, X, and the various canteens and catering facilities.

After a period of scaling down campus activities, the CenF Task Force made proposals for a gradual start to campus activities during the transition to the endemic phase of the COVID-19 virus and in preparation for the 2021/2022 academic year, with the possibility for flexible scaling up and down.

In close cooperation with the Municipality of Delft, the Delft institutes of higher educations and the study and student associations, preparations have been made within the prevailing measures for the first-years’ weekends, the Reception Week (OWee) and introduction period (KMT). Timed to coincide with the start of 2021/2022 academic year, the Haaglanden Public Health Service ran a vaccination clinic on campus for a few days with testing opportunities. Providing information was the main

focus. The presence of the Public Health Service fulfilled a clear need, especially for new international students. All students and staff can also order free self-tests through the website www.zelftestonderwijs.nl.

Pilot rapid and other testing project in MBO and higher education

From the start of 2021, the Ministry of Education, Culture and Science facilitated eight regional pilot projects that investigated the use of rapid and other testing in MBO (senior secondary vocational education) and higher education. Much knowledge was gained in an extremely short space of time about the possibilities and obstacles of various tests and testing methods, behaviour, communication and organisation. In the Delft pilot region, the consortium of TU Delft, The Hague University of Applied Sciences and ROC Mondriaan chose to use technology for the responsible reopening of in-person teaching in addition to developing and applying self-testing and other testing strategies. This mainly involves measuring, modelling and predicting risky interactions between students and teaching staff, and developing and testing measures. This technological approach proves to have had clear added-value on top of testing.

Hybrid working

At the request of the Executive Board (EB), several departments of University Services (US) have developed an integrated outline policy for hybrid working. This involved looking at best practices at other large organisations and holding various interviews and discussions with staff and management to find a desirable and practical arrangement for TU Delft. Hybrid working is likely to remain the new reality; pilot projects are being conducted to prepare for this.

5.1 Campus development

Campus strategy

In the future, TU Delft also wants to have a campus where students, academics, staff and business partners meet, work together, learn, grow and excel. A green, lively environment with top-notch facilities. As the number of students has been increasing for years, keeping the buildings, grounds and facilities future-proof is a challenge. TU Delft's campus strategy provides a financial framework and guiding principles for the next ten to thirty years. This strategy is updated annually and provides direction for the short, medium and long term.

The oldest buildings are concentrated in the north of the campus. The focus here is on reducing square metres and finding a new use for these buildings. In the centre of the campus, the focus is on renovation, optimisation and efficient use of the buildings. There is room for new buildings on the south of the campus. The update of the campus strategy in 2021 involved a major push to include these aspects more explicitly in the strategy: mobility and accessibility, sustainability, campus grounds, and the companies on the campus. To achieve a strategic and long-term vision for the campus as a whole, the EB has commissioned the preparation of a campus vision in 2022. A CampusBoard chaired by the Vice President Operations (VPO) and consisting of deans and directors, was also established in 2021. The CampusBoard manages spatial developments on the TU Delft Campus for TU Delft's core activities of education, research and valorisation. Within the scope of the CampusBoard, the campus forms an integral part of the city of Delft, also providing space for living, social interaction and biodiversity.

Regulated parking

To maintain smooth and safe accessibility to the campus, parking regulations for the campus are being developed. Parking regulations will ensure that the parking spaces at six central locations on campus remain available to staff, students, visitors and the

companies/institutions on campus. Important preparations were made in 2021: the Municipal Council of Delft approved removing these central parking spaces from public use, the basic principles of the parking policy were administratively established and some temporary measures were adopted to reduce parking pressure at the busiest locations.

Besides the approach to regulated parking, all students and staff are offered the opportunity to use a shared bicycle. These bicycles can only be used on the campus. This allows visitors and users to reach where they are going, even if their parking spot is a little removed from their final destination. Shared bikes can be picked up and dropped off at all central car parks, at the Aula Building and at Coffee & Bikes.

Construction of the new Rotterdamseweg Car Park (P5)

In October 2021, the new multi-storey car park was opened on Rotterdamseweg (P5). The central parking location is being built in two phases. A basic three-storey car park with a timber façade, offering a total of 450 parking spaces, has been put into operation. During the second phase, an extra storey will be built and solar panels added to the building. This structure has been designed to be circular, enabling it to be reconstructed elsewhere in the future if required.

Maintenance of Building 22

Building 22 houses departments of the Faculty of Applied Sciences (AS) and the research institute QuTech. A complex and extensive maintenance programme is being carried out to ensure that education and research can be properly facilitated. While the 60-year-old building is being fully used for high-quality research, various technical building installations are being renewed. Sustainability upgrades are also being implemented. All work is aimed at maintaining the building until the new building for AS Physics and QuTech is completed.

New Echo Teaching Building

In 2021, the new Echo interfaculty teaching building took shape. This multi-purpose building contains teaching rooms, some of which can be flexibly divided into small halls to suit the desired teaching method. Column-free spaces also allow the building to be adapted to new teaching methods in the future. The building has an open and transparent character, circularity, sustainability and will produce energy. Insulation, thermal storage and 1,200 solar panels with a total surface area of 2,115m^2 on the roof contribute to this.

Construction is scheduled for completion in early 2022. Once the building has been fully fitted out and all the installations have been tested, trail lectures will be organised to finalise everything down to the last detail. The Echo teaching building will be put into use at the start of the 2022/2023 academic year.

ESP Lab is put into operation

The State Secretary for Economic Affairs and Climate Policy, Dilan Yeşilgöz, officially opened the new Electrical Sustainable Power Laboratory (ESP Lab) on 1 October 2021. Researchers from various fields of research work together under one roof at the ESP Lab to accelerate the transition to sustainable electricity. This is where the Dutch electricity grid is being prepared for the future. Smart innovations are being developed and tested in relation to the entire energy system. The construction of the technically complex lab involved close cooperation between Delft researchers, the Faculty of Electrical Engineering, Mathematics and Computer Science (EEMCS), grid operator TenneT and the installation and construction companies involved. Unconventional solutions have also been devised that make the lab do what it is supposed to do.

Renovation of the EEMCS faculty's high-rise building

Over the coming years, high-rise building 36 of the EEMCS faculty will be renovated in phases to make it future-proof. The focus will be on reducing energy consumption, user well-being, efficient use of space and circularity. This results in a modern, transparent and flexible working environment and more efficient use of the surface area. The interior building package of the first six floors was renovated first in 2020, with this approach extended to the other floors in 2021. The renovation of the interior building package should be completed on all floors in 2022, providing the EEMCS faculty with an up-to-date academic working environment.

Redevelopment of the Stevin area

The Stevin area, which includes the Faculty of Civil Engineering and Geosciences (CEG) and the new Echo building, has been transformed with the ambition of making it a lively and attractive area. In 2021 the underground cables, pipes and sewers were replaced. The pond at the front of the Bouwcampus has been completed and the greenery has created a pleasant place to stay. A connection to the visual appeal of Mekel Park has been made with the use of distinctive and durable paving materials, among other features. The disappearance of the parking spaces leaves much more room for greenery in the entire Stevin area through new trees and planting beds. And what is known as a wadi has been formed; a place where water is collected. The redesign of the Stevin area is expected to be completed in the second quarter of 2022.

Relocation of the Science Centre

Mijnbouwstraat 120, the building that houses the Science Centre, has been sold. A new location for the Science Centre has been found in building 26, in the Stevin area. To provide optimal accommodation for the building's current users and the Science Centre, a redivision and relocation plan has been drawn up in co-operation with all parties involved. The first steps in its implementation were taken in 2021; this will continue in 2022.

Site layout of the Kluyver area

There is room for new buildings on the south of the campus. At the beginning of 2021, the EB adopted the site layout and the plan of approach for developing the Kluyver area. The new buildings for AS Physics, QuTech, a general teaching building and the construction of the House of Quantum (see Chapter 3) are planned for this area. A new facility for the Logistics & Environment division is also being built. The area will also have central facilities for car and bicycle parking, catering, meeting places and greenery. By building these new facilities, conditions are created for scientists to conduct state-of-the-art research. Broadly speaking, scientific research in applied physics and quantum technology can benefit nationally and globally from the development of this area through high-quality facilities, research and other infrastructure and an innovative ecosystem. And this will also give a major boost to the liveliness of TU Delft Campus South and the sustainability of the real estate portfolio on the TU Delft Campus.

Campus South zoning plan

In November TU Delft and the Municipality of Delft signed the previous agreement for the southern part of the TU Delft Campus. This represented a milestone for the entire area to be developed. By signing the anterior agreement, the municipality has come another step closer to adopting the new zoning plan. Earlier, TU Delft drew up an urban development plan for Campus South in consultation with the municipality. This plan forms the basis for the new zoning plan. A new zoning plan is necessary to achieve the parties' ambitions for further development into an innovative ecosystem. An ecosystem with space for education, research, housing of partners, infrastructure, biodiversity and space for permanent and temporary student accommodation.

Art policy

TU Delft has a modern and contemporary art collection, the core of which are permanent fixtures on the campus grounds. The collection has not been proactively expanded for some time. In 2021, Library management and a campus-wide working group, Art Works on Campus, formulated a long-term vision for using and expanding the art collection: living campus, living art. This vision focuses on better placement, access to and breathing life into the art collection in relation to existing programming. TU Delft will also expand the collection in the long term, in synergy with the campus developments, with high-quality works of art that invite and challenge users to broaden their horizons. In this way, art clearly contributes to a lively campus where people meet, co-operate with each other and flourish.

5.2 Sustainability

TU Delft has continued to work on its sustainability ambition in the past year.

Organisational developments

The Climate Action Programme (CAP) was launched in April 2021. This major research programme, led by *Prof.dr.ir.* Herman Russchenberg focuses on climate science, climate adaptation, climate mitigation and climate governance. As of 1 January 2021, climate action had already been followed up on campus with the appointment of *Prof.dr.ir.* Andy van den Dobbelsteen as Sustainability Coordinator.

Making the campus more sustainable

The sustainability ambition is expressed at all levels, from real estate to land and infrastructure. For example, energy-efficiency system (EED+) analyses were performed for all buildings in 2021 to gain insight into energy-saving options for each building. This has created a basis for sustainability in the long-term maintenance plans of campus real estate. At the end of September 2021, the Netherlands Enterprise Agency (RVO) approved the EED report and stated that TU Delft complies with the EED obligation.

Another example is the expansion of biodiversity. This is achieved not only by letting stretches of grass and flowers flourish, but also by choosing natural banks along the ditches and species of trees that contribute towards biodiversity. Greenery has been introduced in less conspicuous places, such as in the stepped gables of the square near the Pulse education building. Where possible, nature itself lends a helping hand. For example, flocks of grazing sheep ‘mow’ the two stretches of grass on campus. And waterside plants are one method of maintaining the water quality in the ditches on campus. Because it is often very windy alongside the high-rise building of the Electrical Engineering, Mathematics and Computer Science (EEMCS) faculty, a ‘wind field’ full of flowers and long grasses has been created in co-operation with students from the Landscape Architecture track (Faculty of Architecture and the Built Environment).

Sustainability objectives

The goal is for TU Delft to be carbon-neutral, circular and climate adaptive by 2030. This relates to all activities occurring on and from the campus. The further goal is to make the campus more liveable and use it as a large living lab for sustainable innovations.

Carbon footprint

Measuring is knowing. In February, *ir.* Annika Herth and *Prof.dr.ir.* Kornelis Blok analysed the impact of procurement on the carbon footprint. In 2021, the 2019 CO_2 roadmap was followed up with the delivery of the 2019 and 2020 carbon footprint reports. Although the pandemic seems to have had a positive effect on reducing campus emissions, there is still much room for improvement.

Sustainability Action Plan

A draft action plan to make TU Delft more sustainable was completed by the summer of 2021. It was presented to the TU Delft community (faculties, managers, students and staff) in the autumn. Input from this round was incorporated into a final report presented to the EB.

Organisation of the sustainable TU Delft

The drive to make TU Delft more sustainable was tackled in 2021 with representation from managers, faculties and students. Teams worked on solutions for various sustainability themes, including the ecocampus, energy systems, new construction and renovation, mobility, food and beverages, procurement, waste management and IT, and AI and data management. Work has also been done on the themes of social engagement, communication, reporting and governance. Education was reviewed and analysed for climate and sustainability omissions along with students from GreenTU.

Milestones

Many projects and pilot initiatives are in progress. The CO_2 objective has led to stricter planning rules for renovations. Renovation work on the EEMCS faculty's high-rise building started in 2021. High sustainability requirements have been set for new buildings in the Kluyver area. The Faculty of Architecture and the Built Environment and the Aula Building are running a pilot project on separate waste collection. Various projects have been started on the campus to expand biodiversity. In May, the faculty of ABE opened a fully vegetarian restaurant, which attracted a lot of media attention. In August, the new Faculty Club followed suit and other faculties are also considering a more sustainable range of food.

Facility Management (FM) includes sustainability in the schedule of requirements for new contracts, and arrangements have been made with the external security company regarding CO_2 offsets for the company's vehicles.

The EEMCS and CEG faculties started a pilot initiative to ban air travel within a radius of 700 km or within eight hours of train travel. A general policy will be developed based on the experience gained.

In March, nearly 500 staff members called on the ABP pension fund to make more sustainable investments with pension money, followed by a letter from the EB and a meeting between the ABP board and TU Delft representatives.

Going forward

As from 2022, a TU Delft anniversary year themed energy transition, the transition to sustainability will be intensified even further. Results will be monitored and accounted for.

5.3 Safety

Safety

Safety and Security (IV) works together with other security and related departments to make the campus an inspiring and safe place for students, staff and third parties. The coronavirus pandemic and the safe reopening of education have been major issues for all security and related departments and faculties. Extra focus on student well-being this year has led, among other things, to added attention being paid to recognising and acting upon worrying behaviour. A large number of safe travel training courses were also organised during the year to help students travel safely abroad despite the coronavirus pandemic. In August, the new first-year students were able to safely

participate in a full Reception Week (Owee) because of a risk-oriented approach and a modular programme.

As part of Safe Design, safety advisors from Campus and Real Estate (CRE), IT/FM, HR/Health Safety and Environment (HSE) and Legal Services (LS)/IV broadly supervise developments on Campus South (such as Physics and Logistics & Environment). In October, during Security Week, special attention was paid to knowledge security, cybersecurity and road safety.

Knowledge security

The EB has identified the subject of Knowledge Security as a Strategic Priority. In June 2021, the Strategic Response Team (SRT) for Knowledge Security & International Partnerships advised the EB to develop a vision for knowledge security and have several actions implemented to strengthen chain support in international and other co-operation with third parties. Following this advice, the EB appointed a Knowledge Security programme director and adopted the Knowledge Security Terms of Reference in December 2021. The EB also approved the establishment of a Knowledge Security Steering Committee to give direction to the Knowledge Security programme and monitor its progress.

At the China Symposium Collaborating with China: in search of balance on 9 November 2021, attendees received an update on Partnering with China – Concrete Tools for TU Delft. The EB adopted these partnering tools, aimed at supporting academics co-operating with Chinese parties, on 2 March 2021.

The Knowledge Security programme builds on sectoral, international and national rules and guidelines, such as the Knowledge Security Framework of Dutch Universities. It distinguishes these focus areas: protection of core academic values, legal frameworks and codes of conduct, threat assessment and risk analysis, international partnerships, risk management and cybersecurity. In 2022, the Knowledge Security programme will be developed in more detail and implemented in various subprojects. Besides the subprojects, a separate working group is being established to develop a vision of knowledge security and a strategy for forming international partnerships.

5.4 Digital and facility services

IT

Over the coming years, IT will invest in making TU Delft's IT facilities future-proof. A strategy has been drawn up for this purpose. Mission: achieving and maintaining appropriate and qualitative information provision, services and infrastructure. This ensures optimal support for TU Delft's core processes, enabling the university to continue to excel.

In January 2021, the fastest High Performance Computing (HPC) of all Dutch universities was put into operation: DelftBlue. Flexibility is what makes DelftBlue special – there are few restrictions on hardware and software. This means that the system can be quickly adapted to the requirements of education and research. DelftBlue is part of the European HPC supercomputer ecosystem.

Besides developing HPC, IT has established a Cloud Centre of Expertise (COE) to find solutions for the ever-increasing demand for computing power and data storage. The COE and external partners investigate which cloud solutions could work for TU Delft. IT has also actively sought to co-operate and link up with the TU Delft AI Initiative. And IT contributed to several projects of other university departments in 2021. Examples include the renovation of the ESP lab, a measuring system for teaching rooms and the implementation of the new HR system, MyHR.

Information security and the continued implementation of the General Data Protection Regulation (GDPR) have remained a high priority for IT. By 2021, the necessary steps were thus taken to support safe digital working at TU Delft. The focus here was on technical possibilities, such as intercepting phishing mail, implementing eduVPN and securing systems. Investments were also made in responding promptly to possible cyberthreats and in creating awareness about this theme.

Business Intelligence

In 2021, the business intelligence expertise in TU Delft expanded and became more professional, in line with the principles adopted in the Strategic Framework. By opening up new data sources and offering new dashboards and analyses within the MiFOCUS business intelligence environment has increased the availability and usability of information. A small selection is now also available for the general public through the Facts and Figures page on the TU Delft website (www.tudelft.nl/en/about-tu-delft/facts-and-figures).

In May 2021, the EB adopted the Data Insights Strategy. This strategy describes the purpose, focus, priorities and principles of the Data Insights Team (Strategy Development). One top priority is to transform the organisational culture. Following the SRT for Information Strategy's recommendation, the EB has commissioned the development of a vision on information provision across the whole of TU Delft. This vision will be completed in 2022, including an accompanying roadmap to achieve it.

FM development

FM contributes to the quality of education and research at TU Delft by creating a working and study environment where staff and students can achieve their personal best. In 2021, for example, it organised practical issues such as how to get campus cards to first-year students in a coronavirus-proof manner and providing self-testing kits at the start of the academic year. And there was also a focus on making and implementing longer-term facility plans, such as ensuring the working-from-home furniture scheme and providing hybrid workplaces at TU Delft.

FM wants to manage all facility services and contribute proactive ideas at an operational, tactical and strategic level. FM is a professional department with knowledge of its user and a focus on co-operation. In 2021, these characteristics were defined as talent and the first steps were taken to develop them further under the name 'FM proudly presents'. This FM development will be continued in 2022.

5.5 Legal affairs

Regulations

Coronavirus

The coronavirus pandemic continued through 2021. Partly on the basis of the Coronavirus Emergency Act for Education, Culture and Science, the following was arranged, in line with the measures also taken a year previously:

- a temporary relaxation of the Bachelor's-before-Master's rule scheme for admission to the 2021–2022 academic year: a deficit of 15 ECTS is allowed and included in an addendum to the model Teaching and Examination Regulations (OER) and for each degree programme.
- the relaxation of the binding recommendation on the continuation of studies (BSA) for the 2020-2021 academic year has been included in the OER: the credits to be earned have been reduced from 45 to 39 ECTS (for IDE to 37.5 ECTS).
- financial provision for non-EEA students who have some add-on months to their programmes and pay the statutory tuition fee in those months instead of the much higher institutional tuition fee. This is regulated in the Enrolment and Tuition Fee Regulations.

On-campus teaching with some restrictions was possible in the second half of 2021. Announced legislation, such as the Test Certificates Act, had not yet been introduced.

Regular Teaching Regulations

Two regulations have been adopted:

Profiling Fund Scheme 2021 (RPF)

The TU Delft Profiling Fund Scheme, which came into effect on 1 September 2018, has a three-year cycle for recognising and awarding board scholarships for student clubs and organisations. Before the end of this cycle, the scheme was evaluated on its administrative activities. General implementation aspects and the force majeure component were included in the evaluation. It was concluded that the system of the three-year cycle with control over the budget is adequate for the board scholarships. This has led to clarification of administrative implementation provisions, and the content of the scheme has been changed on several points: the amounts for each board month have been adjusted for inflation; the number of committee months for study associations has been slightly increased; the condition of a maximum number of full-time administrators for each association has been dropped; and the existing practice of further arrangements between TU Delft and the student clubs and organisations has been included in the scheme. The scheme has been completely readopted, with the addition of the year 2021 in the scheme name and is valid until the year 2023/2024.

Regulation on Professional Doctorate in Engineering (PDEng)

The PDEng programme is a two-year postgraduate programme to become a technological designer, which fits in the third cycle of technical and scientific education, alongside the doctoral programme for the degree of PhD. Two faculties (AS and CEG) offer these PDEng programmes but it was decided preferable for the sake of uniformity to adopt a central regulation, like the other universities of technology. The regulation defines the content and duration of the programme, the technological design to be created and the tasks and powers of different bodies. Although the EB adopts the regulations, the Board for Doctorates has several important powers in this regard, including granting the 'PDEng' degree (not to be confused with a degree as referred to in the Higher Education and Research Act (WHW)), appointing an assessment committee and deciding on objections or disputes. PDEng is supported by the Graduate School (as is PhD).

Other

The annual changes to the model Teaching and Examination Regulations and Rules and Guidelines of the Board of Examiners have been implemented. The student charter has also been updated for the 2021/2022 academic year. The student charter lists students' rights and obligations and the relevant regulations for students. The documents have been updated to reflect new legislation and developments in practice.

Supervisory Board Regulations

Based on an analysis of the UNL Code for Good Governance (GG Code) that came into effect in 2020, the TU Delft Supervisory Board Regulations were amended in 2021. The main changes to the new GG Code compared to its predecessor are:

- A wider scope: besides the EB and Supervisory Board (SB) members, the GG Code also applies to deans and faculty boards;
- Explicit attention to the importance of an open culture and safe environment;
- Extra emphasis on the value of well-functioning representative bodies, which has also received more powers in recent years;
- Focused attention on organising robust governance of partnerships between the university and other parties.

The previous TU Delft Supervisory Board Regulations already had a good framework for implementing the GG Code. At the time of the review in 2021, the regulations were strengthened and supplemented on these points:

- Wording has been adapted in line with the purpose and terminology of the GG Code, particularly on the four points mentioned above.
- The articles on conflicts of interest and ancillary activities have been expanded. Although this did not follow automatically from the GG Code, it was considered advisable because of the intrinsic importance of ethical management, the increasing attention being paid to it by society and the protective effect of clear provisions.
- As prescribed by the GG Code, an article on disputes between the SB and EB has been added.
- The opportunity to incorporate terminology commonly used in TU Delft, such as 'risk management and control system' and 'innovation & impact' as a description of the third core activity was used.

As an extension of the new SB Regulations, the Audit Committee Regulations of the SB have also been updated. Pursuant to Article 16 of the SB Regulations, these regulations outline the composition, duties, powers and procedures of the Audit Committee, and describe the relationship with Internal Audit and the external auditor.

Projects

Legal Services (LS) works with other departments to give legal substance to policies or projects. The main policy and other projects were as follows.

Privacy

Register of processing activities updated

TU Delft is obliged to keep a register of processing activities (processing register). In this register, TU Delft records information about the personal data processed under its responsibility. This register has been almost entirely updated and adapted because of the Court of Justice of the European Union's judgment of 16 July 2020 (the 'Schrems II case') in which the Court held that the personal data protection in the United States of America for transfers of personal data from the European Union to the US does not meet the minimum GDPR requirements, despite the existence of the Privacy Shield concluded with the US.

Data Protection and Information Technology Committee

The Works Council has established the Data Protection and Information Technology Committee ('DIT Cmte') under the Works Councils Act (WOR). The DIT Cmte formulates positions and recommendations on current IT and data protection matters for the Works Council. The LS and IT/FM directors and the Data Protection Officer (DPO) hold regular meetings with the DIT Cmte.

Online proctoring

To ensure that students do not cheat during remote tests, TU Delft uses online proctoring. Surveillance during online tests occurs with the help of special software and cameras. The privacy team is involved in drafting the applicable regulations.

TU Delft privacy team and Chief Information Security Officer

The capacity of the privacy team, which consists of staff from IT&FM and LS, has been expanded with more professionals. Co-operation with the Chief Information Security Officer (CISO) has been intensified. The DPO and CISO meet regularly on security and privacy issues.

Real Estate

Technopolis/Campus South

To facilitate the new building for the AS faculty and QuTech on Campus South, the current zoning plan for this area must be adapted. For this purpose, an anterior agreement must be concluded between TU Delft and the Municipality of Delft. LS worked on this with CRE and the agreement was signed with the municipality on 17 November 2021.

New student accommodation

CRE and DUWO student accommodation providers have reached an agreement on a new student housing complex to be built on Balthasar van der Polweg on TU Delft Campus-Midden. LS has been involved in drafting the ground lease and advising the EB on this land transaction. Construction is expected to start soon.

Objections, appeals and complaints

TU Delft students and employees can object to or appeal against decisions made by TU Delft. For good governance, objections, appeals and complaints must be carefully handled. They also reflect how the organisation is functioning and can lead to improvement in the implementation or content of regulations. The various forms of legal protection are explained below; Appendix 3 to the Annual Report contains a list of the numbers of appeals, objections and complaints.

Objections and appeals

The EB decides on objections after full reconsideration. The EB is advised by the TU Delft Committee for Student Objections and other matters. The organisational aspects of this committee and the procedural provisions on objections are laid down in the Regulations on the TU Delft Committee for Student Objections and other matters, for which the basis is found in Article 7:13 of the General Administrative Law Act and Article 7.63a of the Higher Education and Research Act. Students may submit objections regarding rejections under the Profiling Fund Scheme concerning enrolment, unenrolment or tuition fees. The objections from staff concern their legal status. Based on the 2018 Doctoral Regulations, doctoral candidates are able to submit objections to decisions by or on behalf of the Board for Doctorates.

Appeals from students and external students concerning the binding recommendation on the continuation of studies (BSA), examinations, fraud, etc., based on article 7.60 of the Higher Education and Research Act are handled by the Examination Appeals Board (CBE). In view of Article 7.62 of the Higher Education and Research Act, the organisational aspects of the Examination Appeals Board and the procedural provisions on appeals have been laid down in the Regulations of the TU Delft Examination Appeals Board.

A student may appeal a decision on an objection or appeal to the Higher Education Appeals Tribunal (CBHO) under Article 7.66 of the Higher Education and Research Act.

Complaints

TU Delft provides various options for submitting a complaint. The options are set out in the following regulations, for which the basis is always found in the General Administrative Law Act or the Higher Education and Research Act. The TU Delft Regulations on Student Complaints allow students to submit complaints to the EB about how an administrative body of TU Delft or a person associated with the university has acted towards them or another person. The TU Delft Academic Integrity Complaints Procedure 2020 includes the right to submit a complaint if university staff breach or are suspected of breaching academic integrity. TU Delft Regulations for complaints about undesirable behaviour give someone confronted with the undesirable behaviour of an employee or student in a work or study situation the right to speak to a confidential advisor or to submit a complaint to the Undesirable Behaviour Complaints Committee (KOG). The TU Delft Regulations for Reporting Misconduct (Whistleblower Regulations) also offer the possibility to report misconduct.

6 Investments under the quality agreements

6.1 TU Delft quality agreements

In anticipation of the quality funding to be received, TU Delft has been pre-investing since 2015. As of 2015, this pre-investment was €6 million per year and was increased to €8 million per year as of 2017 in consultation with the representative bodies. These amounts were consistently divided among the faculties based on long-term, structural plans. As the pre-investments from 2015 to 2020 have not been offset against future income, this has given an extra boost to the quality of education from TU Delft's own funds.

A+BE	Investment in lecturer quality	300
CEG	Programme intensification; more small-scale teaching	900
EEMCS	Expansion of inter-faculty mathematics education	900
	Investment to improve ES mathematics	
	Teaching capacity in ES mathematics (from 2017)	500
IDE	Intensifying teaching capacity (student supervision)	500
AE	Intensifying teaching capacity (student supervision)	500
TPM	Programme intensification; increasing teaching capacity	300
AS	Future-proof education	500
3mE	Increasing BSc teaching capacity, supervising MSc students	1,500
	Additional teaching capacity for MSc students (from 2017)	1,500
General	Study spaces	100
	Student activities	300
	Activities for lecturers (training, further professional development)	200
	Total	**€8 million**

Continuation of structural investments from student loan system funds

In the Sector Agreement on University Education 2018, which was signed on 9 April 2018 by the Minister of Education, Culture and Science and the Association of Universities in the Netherlands (VSNU, now: Universities of the Netherlands) it was agreed to invest the funds from the student loan system in the years ahead based on quality agreements. At TU Delft, these procedural arrangements are recorded in an addendum to the strategic plan 2018–2024 TU Delft Strategic Framework, which the Minister approved in summer 2019.

The Executive Board (EB) and the General Assembly of Councils have agreed in the quality plan that the additional student loan system funds that become available as of 2021 will be used in two ways:

1) through an investment fund focusing on improvement programmes with a project-based character in which the representative bodies take the initiative, and
2) through faculty plans, aimed at structural facilities in which the representative bodies at faculty level become involved at an early stage.

This Strategic Framework acts as a compass, providing everyone in the organisation with guidelines for the coming years on how we can make the most of opportunities and deal with changes in our environment. We also apply this compass when making decisions about using funds of the quality agreements. The TU Delft Vision on Education was developed based on the 'Education and Students' chapter in the Strategic Framework and outlines the efforts that TU Delft will be making in the years ahead on the nationally defined themes to improve the quality of education. The allocation of these funds has not yet been specified in the quality plan – apart from the fact that they will contribute to the six themes – to make it possible to respond to the needs at that time.

In 2021, the quality funding that TU Delft received was higher than the consistent annual pre-investment of €8 million. Last year, additional quality funding was thus allocated to the faculties for the first time. In June 2020, an amount of €2 million was made available in the financial framework through the allocation ratio agreed in the quality plan. The faculties then drew up plans in co-operation and coordination with their decentralised employee and student representative bodies for this €2 million. The agreed plans were then tested at central level against the six national themes for quality agreements and formally approved with the adoption of the 2021 budget. In several cases, the response from the representative bodies led to adjustments of the submitted plans. If necessary, the representative bodies' response was discussed in the autumn meetings between the EB and the faculty.

Because of the coronavirus situation, the EB decided, in consultation with the representative bodies, to budget part of the available funding for 2021 (€1.4 million) on a one-off basis at central level and to spend it specifically on better student guidance and other mainly well-being-focused matters that the enrolled students needed because of the coronavirus pandemic. The Supervisory Board (SB) was also notified of this. The Student Council actively participated in the committee that advises the EB on awarding these projects. Although some of the awarded projects will continue into 2022, there is clear underspending. Partly due to the pandemic and other flows of funds such as the National Education Programme (NPO), many small projects were not implemented at all or not under the banner of the quality agreements; however, many study degree programmes did manage to organise activities for mostly first- and second-year students in small groups on the campus. It has also funded Walk and Talk activities, extra well-being courses that users have greatly appreciated during the coronavirus period.

From 2022 onwards, this €1.4 million has been structurally allocated through the agreed process in the quality agreements with the additional budgets available in 2022. This allocation is made through the budget in accordance with agreements, taking the representative bodies into consideration at university and faculty level.

The faculties periodically declare the costs incurred under the framework of the quality plans. Spending can be closely monitored this way. The quality agreements are incorporated in TU Delft's regular planning and evaluation (P&E) cycle. When the financial framework, the budget and the quarterly reports to the EB and SB are drawn up, the quality funds are always explained separately. It is also the subject of discussion between administration and representative bodies, as intended in the quality plan.

6.2 Expenditure and results achieved in 2021

For the overall picture, financial information is also provided on expenditure in previous years.

	2018 expenditure (K€)	2019 expenditure (K€)	2020 expenditure (K€)	2021 budget (K€)	2021 expenditure (K€)
Structural quality agreements	€ 8,553	€ 8,422	€ 8,374	€ 10,000	€ 9,788
Investment fund quality agreements	€ 245	€ 537	€ 163	€ 500	€ 262
Total	**€ 8,798**	**€ 8,959**	**€ 8,537**	**€ 10,500**	**€ 10,049**

Structural investments

Most of the structural budget of €12.4 million was spent in 2021. A few faculties contributed to implementing the plans from their own funds, making the total investment in these structural activities at least €10 million in 2021. Most of the one-off amount of €1.4 million reserved for student well-being in 2021, in consultation with the representative bodies and after approval by the SB, was not spent, partly because of the impact of the coronavirus pandemic (€93,000 was claimed in 2021, a small part will be finalised in 2022). This budget will be regularly allocated among the faculties in 2022. The second tranche of budgets that became available in 2021 also experienced some delays because of staffing at some faculties. It is expected that these delays will have been largely caught up by the start of 2022.

The table below shows the spending of the structural funds across the six themes for the 2018–2021 period. Brief notes are then given on the nature of the plans under the particular themes and the results to date. Each project is assigned to one theme in the table below. In many cases, the investments are such that partial results can be expected on more than that one theme.

Theme	Project	2018 expenditure (K€)	2019 expenditure (K€)	2020 expenditure (K€)	2021 budget (K€)	2021 expenditure (K€)
1. More intensive, smaller-scale education	**Total of projects for Theme 1**	**7,449**	**7,277**	**7,355**	**7,545**	**7,581**
	A+BE: Increasing teaching capacity	614	497	300	300	300
	CEG: improvement of quality, intensification and more smaller-scale education	878	901	910	900	996
	EEMCS: mathematics education and improvement of ES mathematics, including additional lecturers for Service teaching mathematics (2017)	1,500	1,400	1,461	1,400	1,400
	TPM: Programme intensification and increasing teaching capacity	300	300	300	300	300
	Applied Sciences: Future-proof education	0	0	0	180	57
	3mE: Strengthening BSc teaching capacity, supervising MSc students, including additional MSc teaching capacity from 2017	2,912	2,964	3,092	3,000	3,164
	IDE: Intensifying teaching capacity (student supervision)	691	748	700	500	538
	Applied Sciences: 2021 - Additional lecturers for laboratory course teaching	0	0	0	145	0
	AE: Intensifying teaching capacity (student supervision)	553	468	592	500	500
	AE: 2021 more intensive supervision in teaching	0	0	0	120	125
	TPM: 2021 smaller-scale education	0	0	0	200	200
2. More and better supervision of students	**A+BE: 2021, academic counsellors**	**764**	**841**	**690**	**1,235**	**1,372**
	IDE: 2021, Additional supervision	0	0	0	50	76
	Applied Sciences Future-proof education	0	0	0	140	201
	University Services: Student activities	464	541	390	290	628
	CEG: 2021, Additional supervision	300	300	300	300	300
	Applied Sciences: 2021 academic counsellors/TAs	0	0	0	300	84
	EEMCS: 2021 - supervision of BSc programme	0	0	0	55	0
	EWI: 2021-begeleiding BScprogramma	0	0	0	100	83
3. Study success	**Total of projects for Theme 3**	**0**	**0**	**0**	**150**	**111**
	EEMCS: 2021 learning tracks and programme choice checks (PCC)	0	0	0	150	111
4. Educational differentiation	**Total of projects for Theme 4**	**33**	**25**	**50**	**0**	**15**
	AS: online programming education / design lecturers	33	25	50	0	15
5. Appropriate and good educational facilities	**Total of projects for Theme 5**	**74**	**30**	**19**	**290**	**175**
	A+BE: 2021, digitisation and metaframe	0	0	0	110	94
	AE: 2021, better educational facilities	0	0	0	80	75
	University Services: Study spaces	74	30	19	100	6
6. Further professional development for lecturers	**Total of projects for Theme 6**	**233**	**249**	**260**	**780**	**534**
	3mE: 2021, further professional development for lecturers	0	0	0	300	210
	EEMCS: 2021 - lecturer quality training	0	0	0	50	3
	Applied Sciences: Future-proof education	33	49	60	30	0
	University Services: activities for lecturers (training, further professional development)	200	200	200	200	175
	IDE: 2021 lecturer training	0	0	0	60	74
	A+BE: 2021, training and circular education	0	0	0	140	72
Total structural investments		**8,553**	**8,422**	**8,374**	**10,000**	**9,788**

At TU Delft, the funds from the Student Loans (Higher Education) Act, i.e. the first €8 million of the quality agreements, are spent largely on teaching staff. This enables the quality of our education – especially the intensive, small-scale teaching methods used at TU Delft – to be maintained, even in the face of increasing student numbers. These investments have been used consistently to increase the staff complement and are thus continued after 2021. The second tranche (2021) has also been allocated to the faculties, with the plans tested against the preconditions of the quality agreements. Experience shows there are often some start-up issues relating to the labour market for plans to get off to a good start, which is also reflected in some of these plans.

These additional staff members are presented under Theme 1. These investments simultaneously have a major effect on many other themes, especially those of study success (Theme 3) and educational differentiation (Theme 4). By attracting people from specific fields of knowledge, the number of specialisations has increased, allowing a better response to the needs of students and reducing pressure on the other main subjects through a better distribution of students. This additional commitment to smaller-scale teaching also contributes to Theme 4, educational differentiation, in accordance with the agreed objectives. Several faculties have also stated in the plans that this use of staff is also used to pursue a greater focus on blended education (Theme 3), which is also reported on in terms of the use of blended education. Lastly, the increase in teaching capacity achieved in Theme 1 also has a positive effect on Theme 2: because of the increase, better personal supervision of students is included as a sub-objective in several proposals, which is also noted by most faculties.

A precondition for all these themes is the availability of sufficient high-quality teaching staff, which has been a challenge at universities of technology for years. Faculties may transfer limited budgets between tranches and projects if there is reason to do so and the original objectives are not put at risk.

Explanation of expenditure by theme

Theme 1: More intensive, smaller-scale education
Engineering education is intensive because of the large number of contact hours. To enable us to cope with the large rise in the number of students while maintaining quality, a substantial amount of money from the student loans scheme is being used for this purpose, including policy proposals for the number of academic staff and lecturers' work balance. As mentioned earlier, additional staff, mostly academic staff and in specific cases support staff, obviously also has a positive effect on themes 2, 3 and 4.

All faculties have used this in the following way, making a distinction where necessary between allocations in terms of annual instalments; namely, the structural use from the student loans scheme (tranche 1), almost all of which is allocated to Theme 1, and the later tranche allocated as from 2021. Experience has shown that there are some start-up issues relating to the labour market in the 2021 allocation (tranche 2).

Faculty of Architecture and the Built Environment

At the Faculty of Architecture and the Built Environment, €300,000 of the first tranche in 2021 has been claimed for personnel costs on Theme 1. The temporary projects agreed in 2015/2016 with corresponding objectives were revised in 2017. After the investments made in the University Teaching Qualification (UTQ) and English language proficiency (Theme 6), the student loan system funds were used as from 2017 to hire qualified people to work in education. By sharing the teaching duties among several people, the aim is to reduce work pressure and increase the quality of education. Seventeen lecturers have been hired (9.5 FTEs) with a positive effect on the aforementioned objectives.

Faculty of Civil Engineering & Geosciences (CEG)

The plans have been achieved by increasing the permanent staff with over 10 FTEs (11.1 FTEs in 2021). The objective was not only to improve the student/staff ratio, but also to create more space for graduates and to improve the courses on offer. By component: more small-scale teaching in the first year BSc Civil Engineering and Applied Earth Sciences for the tutorials and engineering practicals (+ 2.5 FTEs realised); developing more blended teaching in all BSc and MSc programmes and tracks through design teams working with lecturers on developing, maintaining and using blended/online teaching formats (+ 1.9 FTEs); expanding the central faculty Master's degree programme in Offshore & Dredging Engineering with 2 FTEs in the Fixed Bottom Founded Structures and Arctic & Wind specialisations; expanding the Rail Engineering (MSc) programme with 2 FTEs; and for design, in addition to the planned 1 FTE in the Department of Construction and Infrastructure and 1 FTE in the Hydraulic Engineering department, an additional lecturer (1 FTE) in design was recruited.

Faculty of Electrical Engineering, Mathematics & Computer Science (EEMCS)

Allocating these resources has led to the main objective of using additional teaching capacity. Specifically, it has led to (1) an increase in staff for service teaching mathematics education, (2) investment in improving mathematics education services (ES), and (3) an increase in staff for computer science engineering. The two allocations (tranche 1) jointly led to a total increase in staff of 15.1 FTEs, of which 12.1 FTEs intensified teaching (mathematics ES and computer science engineering) and 3.0 FTEs for innovation in teaching (mathematics ES). In accordance with the intended objectives, this effort has led to smaller-scale teaching and making the group sizes manageable in relation to the student/staff ratio.

Faculty of Mechanical, Maritime & Materials Engineering (3mE)

With the help of these additional resources, new research themes have been set up by which the students can be distributed better across the faculty, leaving more time available for student supervision. Additional themes started in this way: Intelligent Vehicles/Robotics (linked to a new Master's degree programme track), Energy Storage Systems, Offshore and Mechanics at nano-scale. A total of 12.9 FTEs were employed for this purpose in 2021.

The second allocation of funds from the student loan system (2017) again focused on reducing the size of student groups and offering a wider range of opportunities for graduates and areas of knowledge. For this purpose, additional investments were made in the knowledge areas of composites, systems and control, subsea engineering, and safe surgery design. A total of 21.9 FTEs were recruited for this purpose. Over time, you will see a shift of costs in these departments, partly due to the inclusion of staff members in the regular government funding and because of vacancies. However, the entire budget has been declared generous and also led to a decrease in the student/staff ratio from 40:1 to 36:1; the progression in the BSc in four years has also increased by 10%.

Faculty of Industrial Design Engineering (IDE)

In the investment category 'More intensive, small-scale education', the faculty has used €500,000 per year to make more time available to each student in the form of using additional FTEs for lecturers. From these resources, more than the intended 5.5 FTEs (6.3 FTEs) were used for this purpose. The salary costs exceed the available budget. This results in smaller teaching groups, a better balance between group and individual work and a lighter teaching load for current staff.

Faculty of Applied Sciences (AS)

To maintain the current successful formula of 'Learning to Research – Researching to Learn', three FTEs were recruited instead of the intended two to properly support the technical side of the laboratory courses in the various departments of Applied Sciences and to limit the group size. Extra investments were also made for lecturers and student assistants in design, programming and the studio classrooms, which made the guidance here both more personal and substantive. A considerable effort has also been made to strengthen programme coordination (including support for the examination committees and quality assurance) with 2.8 FTEs.

AS has partially used tranche 2 to reduce the group sizes for the BSc laboratory course teaching. The intended increase of 1.6 FTE lecturers was not fully achieved for this purpose in 2021. However, part of it has been temporarily achieved through the additional use of student assistants.

Faculty of Technology, Policy and Management (TPM)

To cope with the high workload in the entire faculty and to improve the quality of education (for example by being able to reduce the size of groups), three lecturers were recruited in the faculty (in the departments of Engineering Systems & Services, Multi Actor Systems and Values, Technology & Innovation), in accordance with the initial plans. One additional lecturer was also recruited for the service teaching at the University Institute for Languages and Academic Skills.
The 2021 allocation has also been used for this theme by facilitating the supervision of groups and the support of lecturers with a large group of senior student assistants. Partly because they are familiar with the education, they help to reduce the pressure on lecturers and can thus reduce the size of groups.

Faculty of Aerospace Engineering (AE)

In accordance with the objectives, the AE Faculty used all of the first tranche on additional staff in order to reduce the student/staff ratio and thus to be able to reduce the size of groups. For this purpose, 2 FTE lecturers were recruited for each department, 8 FTEs in total. A further 2 FTEs were recruited to support students in laboratory courses and in conducting research (measuring, testing, prototyping) for their graduation projects.
The 2021 tranche was used as planned in three departments to reduce the group size, to provide additional personal supervision for graduation projects, or to use specific wind tunnel facilities (including expanding the online programme). More than 2 FTEs have been used for this purpose through tutors (Control & Operations department), technical staff (Aerodynamics, Flight Performance and Propulsion & Wind Energy (AWEP) department) or junior lecturers (Aerospace Structures & Materials department).

Theme 2: More and better supervision of students

The increase in teaching capacity achieved under Theme 1 is also having a positive effect on Theme 2: the significant increase of lecturers often makes better personal supervision of students possible. Where necessary, supervision and training for lecturers have also been provided, and academic counsellors and university psychologists appointed, from the university's regular funds.

The following faculties have also made specific efforts in this area.

Faculty of Architecture and the Built Environment

In 2021, in accordance with the proposals, an additional academic counsellor (0.65 FTEs) was recruited to provide more and better guidance to students. This post was filled as of 1 January 2021 from student loan system funds; because of the coronavirus

pandemic, it started four months earlier from faculty funds. Because other plans came to a halt and in consultation with the representative bodies, an extra 0.8 FTE academic counsellor was also recruited.

Faculty of CEG

As from 2021, the faculty will use all the funds allocated within this theme to improve student supervision during the degree course programmes. Three FTE assistants have already been recruited in 2021 for this purpose. However, most of the effects will only be noticeable in 2022.

Faculty of EEMCS

From the funds available as from 2021, EEMCS started working in 2021 on a more diverse and inclusive Bachelor's degree programme, starting with a gender scan, so that every student feels at home in the TU Delft community. The faculty also started creating additional awareness among lecturers about student well-being and how to help with it.

Faculty of 3mE

Part of the first tranche at 3mE was used to recruit an academic counsellor to provide more student supervision, which is declared under Theme 1.

Faculty of IDE

In 2021, IDE made an additional commitment (of 1 FTE) for individual supervision of students who need it. Lecturers have also been trained to recognise more quickly whether students need additional help (in terms of content or from a well-being perspective).

Faculty of Applied Sciences

Using funding from the first tranche, AS appointed 1.2 FTEs to strengthen student-oriented services (including academic counselling, guidance during internships). This later partly shifted towards the use of student mentors to improve student well-being and guidance. Funding from the second tranche paid for an additional academic counsellor to ensure student supervision.

Theme 3: Study success

The efforts under this theme are designed mainly to improve 'studiability'. The curriculum of the Faculty of 3mE has also been revised, for example. The associated investments in staff have been classified under Theme 1.

Faculty of EEMCS

The theme of study success was shaped in two ways: by continuing to develop and making the programme choice check more professional for a better match between prospective students and the chosen degree programme, and by redeveloping subjects and using learning tracks in the course structure. In accordance with the long-term planning, this started in 2021.

University Services

From these funds, €100,000 per year is available for the Profiling Fund to give students the opportunity to engage in extracurricular activities alongside their degree course programme. The funds have been spent within the TU Delft Profiling Fund Scheme, but not on the quality agreements.

Theme 4: Educational differentiation

Some of the available expansion of staff (Theme 1) is designed specifically for educational differentiation. In line with the Strategic Framework, the room for electives

in the Master's degree programmes will be increased, enabling students to build a solid foundation in terms of interdisciplinary skills, sustainability, entrepreneurial thinking and entrepreneurship. Using these additional lecturers has also regularly improved the teaching concept used.

Theme 5: Suitable and high-quality teaching facilities

Faculty of Architecture and the Built Environment

Additional digital presentation facilities (photography and film equipment) were purchased from the 2021 tranche to improve these teaching facilities. Support for graduates can start in January 2022. This project is running according to plan.
In consultation with the representative bodies, additional investments were made in a test frame for demonstrating/experimenting with the mechanical reaction of materials and testing simple structural components.

Faculty of AE

The 2021 tranche was partly used to create more suitable teaching facilities, such as specific computer clusters including accompanying licences in two departments (Space Engineering and Aerodynamics, Wind Energy, Flight Performance and Propulsion, a Space Flight Collaborative Design Lab and the Virtual Space Systems Lab.

University Services

From the first tranche, €100,000 was made available to create study spaces. Although a large number of study spaces have been completed, there has been no financial accountability on these financial codes.

Theme 6: Further professional development for lecturers

We encourage and expect our academic staff to continuously strive to improve and develop themselves in the field of education. This is also part of the new policy on the theme of Excelling in Education that was defined in the second quarter of 2019. For this purpose, TU Delft also offered lecturers a whole variety of support, such as courses, in 2021.

Faculty of Architecture and the Built Environment

In 2021, the extra budget was used to make the team of lecturers more professional in various areas. Partly because of the intentional use of lecturers from practice, this is a point of concern. This involves training lecturers to assess and supervise uniformly, making proper use of the available digital and other design tools and integrating circularity in the various subjects at the faculty. The faculty started with this in 2021. Because of the review, a large part of the budget was spent on other projects.

Faculty of EEMCS

Part of the second tranche is being used to train student assistants and teaching support staff in didactic skills and quality awareness. The first step in this regard has been taken according to plan.

Faculty of 3mE

In accordance with the plan, an extra educational specialist was recruited for each department in 2021 to help the lecturers on the MSc programmes improve their knowledge and to assist the MSc coordinator by focusing on community building and mentoring Master's students. Education & Student Affairs also appointed an extra teaching advisor to support the Master's degree programmes. A total of eight people (5 FTEs) are involved.

Faculty of IDE

From the 2021 allocation, the Faculty of IDE has trained the first 150 lecturers on how to stimulate different/more effective learning behaviour of students by encouraging them to develop a personal profile as a designer and to learn autonomous study behaviour and critical academic reflection.

University Services

TU Delft is already making substantial investments in the innovation and digitisation of its education (including through Study Success projects and the Extension School) and recently, in co-operation with Leiden University and Erasmus University Rotterdam, also in educational research (through the Centre for Education & Learning). Although the corresponding activities under this theme have been started, they have not always been declared financially under the quality agreements. This budget also offers specific opportunities to excellent lecturers for educational improvements (such as TU Delft Lecturer of the Year). Implementation is lagging behind, partly because of the coronavirus pandemic.

Investment fund

Part of the TU Delft quality plan is an investment fund for smaller occasional improvement projects in education, within the six nationally defined themes. The Student Council takes the lead on behalf of the representative bodies (Student Council and Works Council) in collecting and compiling project plans and is assisted in this by TU Delft staff. These projects are monitored separately both financially and in terms of objectives. In the report, these plans are discussed by theme as they include many small projects. An amount of €500,000 is made available for this purpose each year. Experience shows that although many great initiatives are started with this, the execution is not always flawless. Since 2020, a TU Delft project manager has been explicitly requested for each project to monitor substantive progress or perform it themselves.

In December 2021, the Student Council put forward the following projects within the framework of the investment fund as described above, to start in 2022, which the EB then approved:

Investment category	Investment plan	Amount (K€)
Educational differentiation	Green thread: the strategy	215
Suitable and high-quality teaching facilities	Collegerama user environment: further wishes	65
Suitable and high-quality teaching facilities	Innovative student facilities as part of Society Library	95
Educational differentiation	PRogram of Innovation in MECHanics education (PRIMECH)	114

Short-term improvement projects have been implemented since 2018, initially funded with unspent funds from 2016 and 2017. From 2019, these have been implemented under the heading of the investment fund and the quality agreements. The sections below and the accompanying tables show the relative amounts of project expenditure declared under the various themes.

Investment fund				
Theme	**2018 expenditure (K€)**	**2019 expenditure (K€)**	**2020 expenditure (K€)**	**2021 expenditure (K€)**
1. More intensive, smaller-scale education	-	-	-	-
2. More and better supervision of students	69	150	135	53
3. Study success	9	9	-	-
4. Educational differentiation	44	84	-	54
5. Suitable and high-quality teaching facilities	123	294	28	20
6. Further professional development for lecturers	-	-	-	43
Total	**245**	**537**	**163**	**262**

Explanation of expenditure by theme

Explanation of Theme 1: More intensive, smaller-scale education

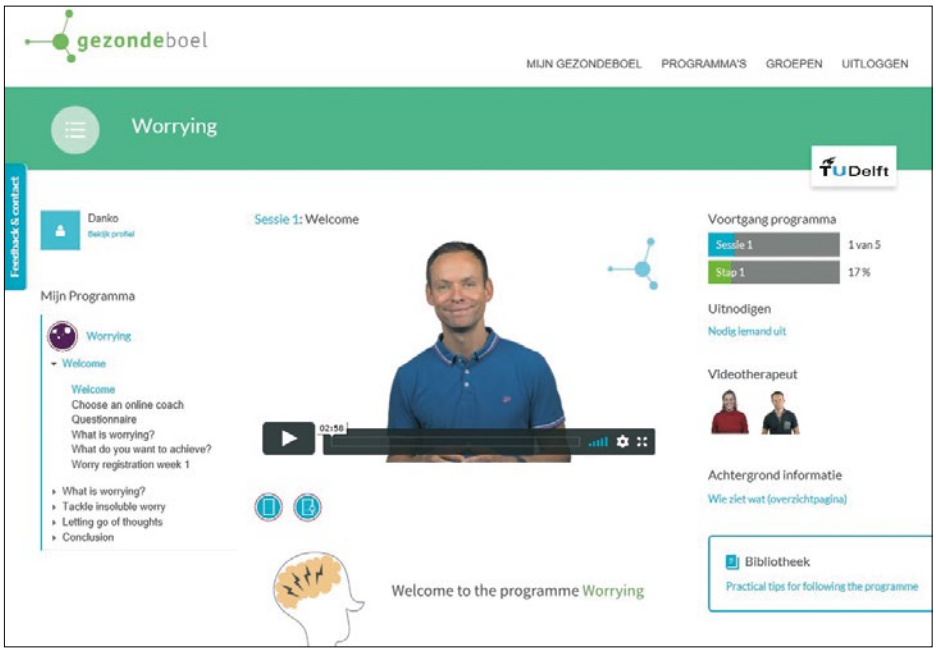
Project	2018 expenditure (K€)	2019 expenditure (K€)	2020 expenditure (K€)	2021 expenditure (K€)	Expenditure to 2021 (K€)	Allocated budget K€)	Status per project
University Services student loan system funds 2017: Encouraging blended learning	0	0	0	0	0	155	Completed

The Teaching and Learning Service has been working on this project for a year to support lecturers in the use of blended learning. Teaching and Learning Services fully completed this project in line with its objectives and it has led to a much broader base of blended learning at TU Delft (however, the costs incurred (€157,000) were not declared under the quality agreement funds). Many subjects were subsequently adapted and the experiences gained were also passed on to the eight blended learners appointed from Van Rijn funds.

Explanation of Theme 2: More and better supervision of students

Project	2018 expenditure (K€)	2019 expenditure (K€)	2020 expenditure (K€)	2021 expenditure (K€)	Expenditure to 2021 (K€)	Allocated budget (K€)	Status of project
University Services student loan system funds 2016: Project Online platform Career & Counselling services	69	101	45	5	220	200	Completed
University Services student loan system funds 2017: Additional university psychologist		49			49	60	Completed
University Services: IF2019 Increase offer and findability of the online career and counselling offer			90	48	139	139	Completed
University Services: IF2020 Relax zone				0	0	13	Ongoing

The forerunner of the investment fund has been used under this theme to initiate specific projects, namely an online platform for career and counselling services that offers e-health modules, for instance. This allows students to work (free of charge, anonymously and independently) on their mental and wider well-being. A prevention psychologist was also specially recruited from these funds, whose contract was subsequently extended from other funds, giving this initiative of the representative bodies a good start. In 2019, it was decided to offer supplementary modules on this same career and counselling platform. As of October 2020, the offer has been expanded and there are now 19 programmes available in English (instead of the previous five modules). Examples of new programmes: *Overactive and Inattentive, Worrying, Living in a different culture, Sleep well* and *Managing your money*. At the end of 2021, 63 courses were available through this platform in Dutch and 22 in English.



In 2020, the Career Toolkit was also updated and added to the 'Managing your Career' page. The Career Toolkit is now also available in Dutch 24/7, and exercises such as pitching and interview question practice are also available online: https://www.tudelft.nl/en/student/counselling/managing-your-career

The training for 'study buddies & student/teaching assistants' has also been adapted and made available online. This was completed at the end of 2020 and is now being integrated in the online platform. In 2021, it was widely available to all buddies, student assistants and student mentors, with a major impact throughout TU Delft.

Lastly an additional psychologist was appointed under this theme for a year to increase the availability of psychologists, and a small project was piloted on how to offer relaxation during the stressful exam weeks.

Explanation of Theme 3: Study success
Very limited effort was made in this area. Only one project from 2017 funds (2016 allocation) comes under this and this was partly completed in the following year and then closed.

Project	2018 expenditure (K€)	2019 expenditure (K€)	2020 expenditure (K€)	2021 expenditure (K€)	Expenditure to 2021 (K€)	Allocated budget (K€)	Status per project
University Services student loan system funds 2016: credits for MOOCs promotion	9	9			18	26	Completed

Explanation of Theme 4: Educational differentiation
In the theme of educational differentiation, the investment fund has focused on five projects.

Project	2018 expenditure (K€)	2019 expenditure (K€)	2020 expenditure (K€)	2021 expenditure (K€)	Expenditure to 2021 (K€)	Allocated budget (K€)	Status of project
University Services student loan system funds 2016: Digital skills in education project	44	84			128	200	Completed
University Services student loan system funds 2017: Microaggressions course						32	Not started
University Services: IF2019 TYou Delft – personal development course			0	0	0	50	Ongoing
University Services: IF2019 Promoting a ripple effect of educational innovation among lecturers				17	17	110	Ongoing
University Services: IF2020: TU Holoclass: Educational Holograms				37	37	190	Ongoing

The digital skills project has been completed, including the necessary support from student assistants to make it possible. The project was intended as a start-up project, after which the faculties continued it on a regular basis, partly through the blended learners appointed by each faculty. A microaggression project from the 2017 budget never got off the ground because of the lack of a project manager. A personal development programme has also been initiated, but the roll-out has been delayed because of the heavy workload of the lecturer involved. Parts of the subject have already been piloted in other subjects in 2020 and 2021 (both at TU Delft and MIT). Although the coronavirus pandemic caused a slight delay of the Holoclass, the project has a two-year duration, of which the first has now passed.

Explanation of Theme 5: Suitable and high-quality teaching facilities
TU Delft's aspiration is 'to offer an inspiring, fascinating, and attractive study environment that allows students to develop into critical, results-oriented, and socially responsible engineers'. It is precisely these facilities that are of great help. That is why many projects have been started for this purpose from the investment fund:

Project	2018 expenditure (K€)	2019 expenditure (K€)	2020 expenditure (K€)	2021 expenditure (K€)	Expenditure to 2021 (K€)	Allocated budget (K€)	Status of project
University Services student loan system funds 2016: Improving study workplaces in the Library and student loan system funds 2017: Electrical facilities in the Library	90	137	1		228	200	Completed
University Services student loan system funds 2016: Search tool for study workplaces		60	8	1	70	170	Ongoing
University Services student loan system funds 2017: Upgrade and expansion of use of 3mE assembly workshop		5			5	68	Completed
University Services student loan system funds 2017: Expansion and upgrade of 3mE study workplaces	3	9	8	8	28	75	Completed
University Services student loan system funds 2017: Upgrade of 3mE project tables		10	11	11	32	68	Completed
University Services student loan system funds 2017: Virtual Reality in education	30	57			87	40	Completed
University Services student loan system funds 2017: Collegerama (upgrade of user environment)					0	60	Completed
University Services student loan system funds 2017: Examination scan system		15			15	15	Completed
University Services student loan system funds 2017: Excellent digital services (in connection with findability of elective subjects)					0	51	On hold
University Services: IF2019 Collaborative design lab					0	75	Not started
University Services: IF2020 Findability of study spaces in university library					0	97	Proposal will be revised

To support the new design of the curriculum, modifications have been made to the building housing the Faculty of 3mE to create good (independent) study facilities.

These funds have also been used to make or improve additional self-study facilities and electrical facilities throughout the university, including the Library. In 2019, project tables were also replaced and the workshop was expanded for 3mE teaching. Although these investments have been fully completed, the presented (depreciation) costs are lagging behind because of the depreciation method of investments.

The beta version of the online search tool for study spaces (spacefinder.tudelft.nl) also became available in 2019. Because of the coronavirus pandemic, the formal roll-out in 2020 was put on hold. At the end of 2021, the project restarted again, with additional wishes from the student community also taken into account.

Virtual reality facilities (in the Library) were improved and expanded, and investments were made to improve an examination scanning system. Both facilities are heavily used to date.

The forerunner of the investment fund has been used under this theme to invest in Collegerama, a service that facilitates replaying recorded lectures. In 2020, a new online environment was created in which students can search for their desired videos more easily (with more search functionality than the current environment), can link related content more easily (you've watched this video, now this video might also be of interest to you) and see which courses are recorded and which are not.

The Digital Services project has been put on hold because TU Delft's Student Information System has to be adapted first (otherwise the investment would not be efficient). The Collaborative Design Lab project did not start in accordance with the prior arrangements made for this purpose with the representative bodies. The project to find study spaces in the university library was put on hold because it proved to be unsustainable. A different implementation is now envisaged in co-operation with the representative bodies.

Explanation of Theme 6: Further professional development for lecturers
We encourage and expect our academic staff to continuously strive to improve and develop themselves in the field of education. This is also part of the new policy on the theme of Excelling in Education that was defined in the second quarter of 2019. Usually, this takes place from within the faculties. A small number of initiatives are supported from the investment fund, namely:

Project	2018 expenditure (K€)	2019 expenditure (K€)	2020 expenditure (K€)	2021 expenditure (K€)	Expenditure to 2021 (K€)	Allocated budget (K€)	Status of project
University Services student loan system funds 2016: Platform for course evaluations					0	25	Not started
University Services: IF2019 Mechanics academic teaching community				12	12	140	Ongoing
University Services: IF2020 Educational Psychologist (2 years)				30	30	200	Ongoing

A platform for course evaluations was never started because of a lack of capacity and priority from IT and the required source systems. An academic teaching community project was started and has been running again since the end of 2021 (it had been put on hold because of the pandemic). This project received additional funding in 2021 and both projects are now being implemented in an integrated manner. The educational psychologist also started in 2021 and the work is integrated within the Teaching and Learning services.

6.3 2022 Budget

The 2022 budget was prepared in 2021. In accordance with the quality plan, the faculties have again been asked to plan for the additional funds expected in 2022 in this budget round. Proposals could be made in all six of the nationally defined themes, with the aim being for the faculty plans to focus on structural expenditure, as opposed to the more project-based nature of the expenditure under the investment fund. The decentralised representative bodies were generally closely involved in the decentralised planning process. The expected development of spending under the quality agreements in the coming years is explained further in the continuity section. Adjustments to budgets and content are discussed with the representative bodies. Although these are usually small shifts over the years, there may also be adjustments because, on closer inspection, spending on projects cannot be efficient.

The representative bodies are generally closely involved in this process. This has been a constant priority throughout the budget process. In April 2021, ahead of the start of the formal budget process, the faculties were informed of the expected available funds for each faculty for 2022, so they could start early with the planning and there was enough time to involve especially the student section of the representative bodies in this planning process. As the experiences in this regard have been mainly positive, this is certainly intended for the next tranches.
In 2022, the approach for the 2021 and 2022 budget years will be reflected on with the main stakeholders in the quality agreement process. To this end, we will use a thematic approach offering stakeholders the opportunity to share their experiences regarding progress of the plans and discuss how the implementation of the agreements contributes to achieving the intentions and the vision.

Reflection of representative bodies on expenditure of funds from student loans/ pre-investments in 2021

In 2018, following the agreements on funds from the student loan system, it was agreed that the structural investments of €8 million per year would be continued. The money was spent on all six themes, i.e. more intensive and small-scale teaching, more and better supervision of students, study success, educational differentiation, suitable and high-quality teaching facilities and further professional development for lecturers.

In 2018, it was also agreed to allocate an annual sum of €0.5 million from 2019 to 2025 to an investment fund for short-term one-off projects under the quality agreements. In 2021, a sum of €0.5 million was again made available for non-structural projects to improve education. This Investment Fund offers opportunities to take a broader approach to the various themes that are consistent with the aims expressed by both the Executive Board (EB) and the representative bodies.

In 2021, the faculties received additional funds for the first time.

Investment fund
It has been laid down formally that the representative bodies, primarily on the student side, are to take the lead in formulating project proposals for spending these funds, and that the management of these projects is the responsibility of the ESA (Education and Student Affairs). The Central Student Council (SC) formulated the proposals in close consultation with the faculties and teaching services. A formal decision was then taken at the General Assembly of Councils of the Works Council and the SC in November 2021, after which the proposals were submitted to the EB for final decision-making.

The SC has been closely involved at the central level in developing the projects; it has been given every opportunity to contribute its own plans, which has enabled the representative bodies to pay extra attention to what they consider important. The parties worked together constructively, with a willingness to co-operate from within the organisation. There is room for improvement on how the progress and process of projects are communicated to the SC and project managers.
Arrangements will be made in this regard.

The projects from 2020 started in 2021; they have been well received and already proved their worth. A good example from 2021 is the appointment of an additional educational psychologist. Students are pleased with this extra commitment towards their well-being. Especially during the coronavirus crisis, it is essential that adequate attention and assistance is available for students who are struggling to cope. The Relax Zone in the Library during XXL weeks is also highly appreciated. Students can relax and gather their thoughts with the help of the office dog, massage chairs and other initiatives.

Decentralised use of funds
As agreed, the funds were distributed among the faculties in 2021. New plans are detailed during the budget process by the deans in close consultation with the local faculty representative bodies (Faculty Student Council (FSC) and Personnel Committee (PC)).

At TU Delft it was agreed that the representative bodies would reflect on the process in a separate letter for each faculty. The letters show that although this process has been well received at several faculties, concerns are being expressed that there is still room for improvement at one faculty. The criticism mainly concerns the timing of the process; the FSCs would like to be involved in the planning at an earlier stage. Ideas about this are being shared. People would like to be involved early in the process so they can actually contribute to the plans.

In 2020, Finance explained the interpretation of the quality agreements, but this year it was decided to use the offer of the National Desk for Quality Agreements. At the end of August 2021, a training course was provided for members of the faculty student councils, precisely because of the role that the decentralised representative bodies play in implementing the quality agreements.

One point of criticism is that the time lapse between planning and executing the plans is too long. This can be frustrating for those involved because they want to get started quickly. However, people generally agree that the available funds are well spent. The objectives are often achieved and the results are generally very positive.

The Works Council and the Student Council are positive about the process and pleased that TU Delft can perform its Quality Agreements.


IEEE 39-BUS SYSTEM

7

TU Delft and the coronavirus pandemic

The impact of the coronavirus pandemic on higher education has been significant. Efforts are being made to minimise this impact through coronavirus support measures and the National Education Programme (NPO). It has been agreed in the NPO Education administration agreements that this will be accounted for in the administration report during the term of the NPO. This chapter discusses how the pandemic has been addressed at a central level; the plans, implementation and outlook for spending NPO funds; and the recovery and perspective support programme for researchers. Pages 16 and 24 describe how the coronavirus pandemic affected education and research at TU Delft in 2021.

7.1 Administrative action

On 28 January 2020, TU Delft's Central Coronavirus Crisis Team (CCT) met for the first time in response to COVID-19. The CCT comprises several subject experts from departments and faculties and is headed by the Chair of the Executive Board/Rector Magnificus. The CCT will continue to exist throughout the coronavirus pandemic and met three times in 2021, after having met 34 times in 2020. A consultative structure was established with the Student Council in mid-April 2020 in which the Vice-President for Education, a policy officer, and the chair and vice-chair of the Student Council continue to meet weekly.

In 2020, the Executive Board (EB) also set up five task forces, which advised the EB on restarting university activities, and on implementing central government coronavirus measures. Most of the task forces remained active in 2021:

1. Work and Well-Being Task Force
2. Students and Well-Being Task Force
3. Educational Quality and Organisation Task Force
4. Complex Management and Facilities Task Force
5. Business Opportunities, Research Funding and Third-Party Agreements Task Force

There is also a Restart Task Force coordination team tasked with promoting coordination between the different task forces and checking the completeness of their advice. The task forces report to the EB through the usual decision-making procedures and the existing coordination mechanisms.

In 2021, TU Delft scaled up and scaled down its campus activities several times based on the government's coronavirus policy. TU Delft's Restart Reference Framework was also adapted to this, where necessary. Some of last year's press conferences in this regard were memorable. The press conference on 20 January 2021 announced a curfew between 9 pm and 4:30 am, which came into effect on 23 January. The CCT met on 21 January and discussed a variety of topics including the necessary exemptions (employer's declarations) for employees and the additional action needed to flag any safety issues on campus.

In the first months of 2021, most teaching was still online. At the end of January 2021, several pilot projects were held for examinations on campus, guaranteeing the 1.5 m social distancing rule. These pilot projects were a success.

In the spring, the Educational Quality and Organisation Task Force, in co-operation with the faculties and various departments, identified several scenarios for education from the start of the 2021-2022 academic year. It was also stressed that it was important to maintain calmness and clarity for students and lecturers in the remaining weeks of the 2020-2021 academic year, which meant keeping to the sequence of the schedule and scaling up activities, where feasible.

On 13 August 2021, the government announced that the 1.5 m social distancing rule would be abandoned in MBO (senior secondary vocational education) and higher education as of 30 August. This was however subject to a maximum group size of 75 people. Teaching was scaled up with the aim of students being able to come to campus around three days a week. In August the OWee week, introduction week, could proceed partly in-person and partly online, in compliance with the coronavirus measures.

On 18 December 2021, the government announced that educational institutes, including universities, would have to close their doors from 20 December to 9 January 2022.

The government issued an (urgent) working-from-home recommendation for most of 2021. This measure also applied to TU Delft employees, except for staff with campus-related activities. In June 2021, the Work & Well-Being Task Force conducted a well-being survey among all employees, as it had done in June and December 2020. The results of these surveys have helped refine the support in employee well-being. The web page https://www.tudelft.nl/en/2021/tu-delft/coronavirus/work-and-well-being provides information to employees on initiatives and support in the area of work and well-being. The Study Climate programme conducted surveys on student well-being. Students can find more information on well-being support on the web page https://www.tudelft.nl/en/student/well-being-and-study.

Lastly, there has also been a focus on the long term at TU Delft. On 19 May 2020, the EB decided on a strategic reorientation as part of the 'Strategic-administrative assessment framework for the COVID-19 crisis'. In 2021, six Strategic Response Teams, led by deans, worked on the EB's instructions to draw up substantive strategic directions and proposals for targeted actions in several areas that are crucial to TU Delft. Although these areas receive continuous administrative attention, they have become more urgent because of the COVID-19 pandemic: quality of education; quality of research; additional research funding and activity; knowledge security and international partnerships; information strategy; and social cohesion.

In June 2021, the EB adopted the six Strategic Response Teams' opinions, consisting of short-term and long-term recommendations. An analysis of external drivers was carried out for TU Delft parallel to this advisory process. The COVID-19 pandemic emerged as one of the main external drivers in this analysis.

The opinions and environmental analysis have led to the development of the 2022–2024 Strategic Priorities, which will be finalised in 2022. The 2022–2024 Strategic Priorities are both an update of the current 2018–2024 Strategic Framework and preparation for the new 2024–2030 Strategic Framework.

7.2 NPO funds: Education

The coronavirus pandemic has had an enormous impact on education. The impact on education is shown in Chapter 2 Education (page 22).

Process-based

The spending plan for the NPO funds was drawn up with input from the faculties, degree programmes and departments. The General Assembly of Councils was involved in setting up the plans before the formal decision-making. The plan was approved on 8 July 2021. The EB then took a final decision on 13 July 2021.

The NPO central project manager and the finance department hold quarterly meetings on expenditure, so that any under-spending can be identified and adjustments can be made in time. The NPO central project manager meets with all project managers to discuss the progress of the projects at least twice a year. The first of these meetings was held in November/December 2021. The project manager is responsible for spending the project budget; item shifting is possible without central approval. However, consultation is necessary for a completely different project content or use of the money. If the content of the project differs from what was previously agreed with the representative bodies, this will also be discussed with them.

An update on the progress of the projects is sent to the representative bodies at least every two years. The first update was sent in December 2021. The representative bodies were informed in the update about the progress of the plans, the problems they encountered and the implementation of the projects in the regular operations. Some projects involve external stakeholders, such as internship supervisors, the municipality and other universities. The respective project manager involves them in carrying out the project. The degree of involvement depends on the context of the project.

Content

The original plan provides for projects in four areas:
- Intake and progression
- Well-being
- Internship issues
- Teacher training programme

The rising number of coronavirus infections, both in August and November, and the December lockdown affected many projects, resulting in postponements to a later date. There was also a noticeable shortage of personnel, as a result of which some projects have had to adapt their procedures or are expected to run over time.

Theme	Planned funding	Actual funding	Origin of funds	2021 expenditure	Expected expenditure in 2022, 2023
Intake and progression	€ 732,500		NPO	€ 71,507	€ 1,393,493
Well-being	€ 1,702,556		NPO	€ 201,407	€ 2,711,149
Internship issues	€ 60,000		NPO	€ 17,571	€ 137,492
Teacher training programme	€ 300,000		NPO	€ -	€ 300,000

Seven intake and mobility projects were eventually set up at TU Delft and are working on the national plan.

Several projects were delayed because of a lack of lecturers/project managers and the replacement of sick colleagues, among other things. The pre-Master Mathematics for Engineers MOOC is progressing according to plan and has a unique position within TU Delft because it is the first time that an open online book is being produced. The experiences gained in this project will be of added value for the entire institution. Guidance in the pre-university MOOCs, continued support for students on the Dutch language course and improved feedback to students will start in 2022. The Reflection as a Competence project started in 2021 with a project manager. PRogram of Innovation in MECHanics education (PRIMECH) is aimed at redesigning some courses. It commenced in 2021 and will be continued from NPO funds in 2022, commencing with the courses Statics, Mechanics of Materials and Dynamics.

On the topic of student well-being, eventually projects were set up at TU Delft and work has started on a national plan. The focus within well-being is mainly on prevention; for example, additional (prevention) psychologists have been recruited and an external temporary workforce was used for psychological services in 2021. Because of the rise in coronavirus infections, the sports festival, the X-voucher and the student society activities have not started; this is planned for 2022. However, activities were organised for the students to bond with the university, including an online Destress Festival twice. The required adjustments to the introduction week (OWee) because of the coronavirus measures were all made and we can reflect on a successful introduction period. The Dutch for prospective international students MOOC is progressing according to plan and will go live in 2022.

Tents during OWee

The coronavirus pandemic caused problems for the MSc internships in two degree programmes. The respective programmes are addressing the internship issues. The teacher training programme has developed its plan into seven subprojects. Because of the tight labour market, they have difficulty recruiting sufficient staff for all subprojects. Most of the activities will therefore take place in 2022 and 2023.

7.3 NPO funds: Research

Background

The coronavirus pandemic caused ongoing activities to come to a halt in 2020 and the postponement, adjustment or cancellation of future projects. Researchers worked from home as much as possible, crucial labs and research facilities were sometimes closed or severely restricted in capacity by the measures, and projects abroad were impeded. The physical limitations often resulted in research delays – most acutely among doctoral candidates and post-doctoral researchers on temporary contracts. Even though restrictive measures could be partially lifted in 2021, the impact of the pandemic on research and innovation continues.

Since autumn 2020, it has been possible for researchers whose work has been delayed due to coronavirus restrictions to have their employment contracts extended by an average of three months. This scheme for extending researchers' employment contracts ('the coronavirus scheme') was based on an arrangement in the 2020 collective labour agreement. The budget for these extensions was based on a non-recurring provision of 0.45% of the 2020 pay bargaining range (€1.4 million).

The coronavirus scheme has been continued beyond 2020. Since 2021, the coronavirus scheme has been financed from different budgets (based on sequential use):

1. For 2021, Netherlands Organisation for Scientific Research (NWO) provided the first extra funding to support researchers delayed by the coronavirus pandemic: €1,6 million for TU Delft;
2. NPO funds were then made available for education and research in 2021 and 2022. The NPO research funds made available to TU Delft amount to €5.3 million for both 2021 and 2022 (total of €10.6 million).
3. If the NPO funds are not spent in full in the 2021 and 2022 calendar years, these funds may be used in the 2023 and 2024 calendar years.

Process-based

The plan for spending the NPO research funds was drafted with input from the faculties and departments and shared with the Works Council and local trade unions on 8 December 2021. On 16 December 2021 the General Assembly of Councils agreed to the proposed use of the NPO research funds. The EB then took a final decision on 18 January 2022.

The central project manager of NPO research and the finance department have periodic expenditure meetings. The budget is monitored at a consolidated, TU Delft-wide level.

An update on the progress with spending NPO research funds is sent to the representative bodies at least every two years. The first update will be in May/June 2022. The update informs the representative bodies about the progress with the number of extension requests and gives an update on the plans for spending the NPO research funds on other measures.

In mid-2022, it will be considered whether there are any NPO research funds left and/or whether the coronavirus scheme for extending researchers' employment contracts can be continued in 2023.

Content

Use of NPO funds

TU Delft's approach in the past two years has always been to continue trying to complete projects within the project term and to do everything possible to facilitate employees to achieve this. Solutions should first be sought that will allow the research to be completed with the currently available resources and on schedule. However, if no other solution is found and the criteria are met, a request to extend the employment contract can be submitted.

Due to the sequential use of the various budgets for the coronavirus scheme in 2021, Netherlands Organisation for Scientific Research (NWO) funds were used first, followed by the NPO funds. Because the NWO funds have more stringent conditions and only the gross wage including social security costs could be paid from this, most researchers' extensions in 2021 were charged to the NWO funds. The number of researchers assisted at the expense of the NPO research funds in 2021 (20) is thus not representative for the total number of researchers assisted in 2021 (143). As only the NPO research funds are available in 2022, the spending of the NPO funds in 2022 will be much higher.

The allocation of the NPO research funds in 2022 will initially continue to be used as much as possible for the purpose of the coronavirus scheme, following the same procedure as that used since September 2020. The options for spending part of the NPO funds on measures other than extending employment contracts, to facilitate researchers in their efforts to limit research delays, will also be examined.

Use of own resources and financial and non-financial measures

Since 2020, general measures have been taken to facilitate employees in limiting research delays. These measures include helping to set up a proper home office, extended opening hours for labs and research infrastructure (some with 24-hour timetables), and specialised IT support facilitating the remote use of advanced computing and research equipment. These measures have helped reduce research delays but have not been able to eliminate them in many cases.
Besides the general measures, specific measures have also been taken at departmental level or within research projects. These include adjusting the research design, adjusting the research planning where possible, shifting project budgets to allow for additional assistance or contract extensions, and supporting or reducing teaching duties. But there have also been initiatives to pay added attention to the social preconditions: meetings/social contacts, additional personal attention for doctoral candidates and post-doctoral researchers from the supervisors and the Graduate School, and extra coaching.

The number of researchers helped by these general and specific measures cannot be quantified. For the general measures, this is because they were not reserved for a specific group and the benefit received by each researcher varies. And the specific measures are often applied at the level of an individual or research project as part of arrangements between a supervisor/project manager and doctoral candidate or post-doctoral researcher – the number of researchers helped by specific agreements is impossible to determine because of this customised approach.

	Number of researchers assisted	Total costs
NPO recovery and perspective support programme for researchers	20	€409,943
Own resources and financial and non-financial measures (estimated)	Not quantifiable	N/A

8

Financial report

8.1 Financial developments

Besides the effects of the coronavirus pandemic, the financial context in which TU Delft operates has been characterised for some years by rising student numbers and thus a heavy workload, as well as necessary innovations in the areas of real estate and sustainability. In the years up to 2019, the financial pressure therefore increased. Since 2019, additional government funding has been allocated to TU Delft on a structural basis in response to the recommendations of the Van Rijn Committee. With these funds, a start has been made to resolve the bottlenecks. Responding promptly to the increasing number of students, keeping the work pressure in check and TU Delft financially healthy while continuing to meet all quality and sustainability requirements remains a challenge in the longer term. Last year was dominated once again by the COVID-19 pandemic and the resultant measures and challenges. TU Delft used various schemes, including the National Education Programme, to compensate the extra costs resulting from the COVID-19 pandemic. These costs are explained in more detail in Chapter 7. The longer-term challenges are addressed in more detail in the continuity section.

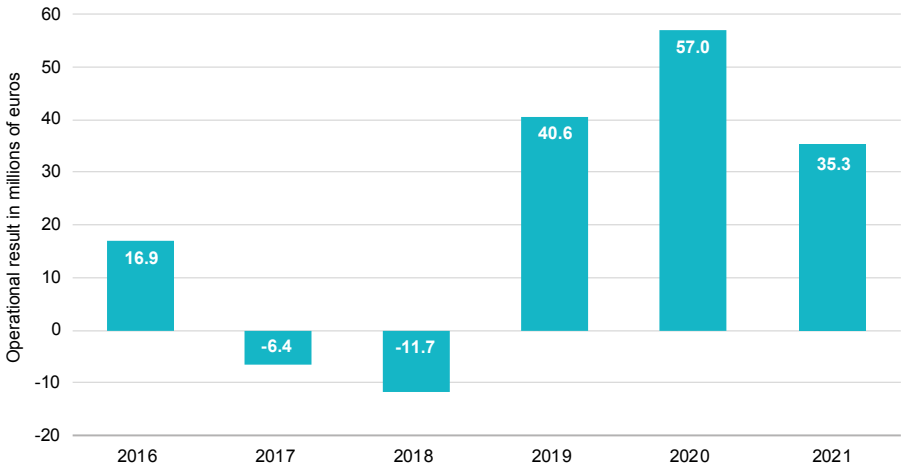
Result

In 2021, TU Delft achieved a positive result of €35.3 million, compared to a budgeted deficit of €15.9 million. This deviation from the budget is partly due to spending the additional funds that TU Delft receives as a result of following the recommendations of the Van Rijn Committee, the Quality Agreements and the Sector Plans for Science and Technology. These spending plans needed a longer lead time than planned, mainly due to the current labour market and the coronavirus pandemic. Despite the delays during the year, the planned FTE positions for 2021 were almost all filled by the end of the year. As the government and other contributions received were €37.7 million higher than budgeted and these extra funds were not all spent in 2021, this created a positive effect on the result compared to the budget. The budget included all the additional funds for quality agreements, Sector Plans for Science and Technology and the funds resulting from following the recommendations of the Van Rijn Committee, but there has been a delay in spending them. The budget did not consider other coronavirus-related effects on the national contribution, such as the National Education Programme. The result is further affected by lower income and expenses due to the measures taken because of the coronavirus pandemic and the market conditions. This mainly concerns lower travel and accommodation expenses, lower maintenance and management expenses and lower income at facility ‘X’. The table below specifies which financial effects have affected the 2021 result.

Explanations results *In millions of euro's*	
Delayed implementation quality agreements and sector plans	5,0
Administrative correction project with retroactive effect	6,2
Change reference projection due to NPO – one-time increase government funding	10,6
COVID-19 effects (lower travel and accommodation costs, delays in management and maintenance, loss of income)	10,0

The development of the result for the years 2016–2021 is shown in the chart below. Positive results were recorded up to and including 2016, some of which was saved for future investments in real estate. Annual results were negative in 2017 and 2018. The positive result in 2019 was mainly caused by income that preceded expenditure in terms of timing because of the appointment of new staff in a later period. The 2020 financial year was characterised by several incidental results, including a non-recurring VAT refund dated retroactively to 2018 (€10 million) and the sale of the 'Yellow Chemistry' building (€20 million).

Development operational result



Coronavirus pandemic

In 2021, the coronavirus pandemic had a significant impact on TU Delft, both for students and staff. Additional costs for education and contract extensions needed for research were compensated in 2021 by the National Education Programme (see Chapter 7 for more information) and the subsidy schemes 'Coronavirus jobs in higher education' and 'Extra help in the classroom', among others. In 2021, the pandemic also led to lower travel and accommodation expenses, delayed real estate maintenance and management expenses and lower depreciation costs because of postponed investments in recent years. TU Delft follows the policy and recommendations of the various national institutions and simultaneously does its utmost to continue all activities as well and as safely as possible without compromising the health of its staff and students. The interests of our suppliers are handled with care. Based on the available information, the institution does not expect any continuity risk in the short term. The liquidity and solvency position is solid enough, partly because of the extent of the government funding in the total income. The impact of the coronavirus pandemic on the financial position is not such that the Executive Board (EB) expects the continuity of the institution to be jeopardised in the short and/or medium term. The expected effects for the coming years are explained in the continuity section.

Expenditure under the Student Loans (Higher Education) Act – Quality Agreements

Total expenditure under the Quality Agreements amounted to €10.0 million. In 2021, €10.0 million was made available to the faculties for improving the quality of education through structural plans. In addition, a sum of €0.5 million was made available for an investment fund in short-term projects for which the Student Council takes the lead. Lastly, €1.4 million was allocated to student well-being projects, partly because of the coronavirus situation. The spending in 2021 is lower than budgeted. This is because there is an additional €3.9 million to spend from this year onwards. In accordance with the quality agreements, plans for this were included in the faculty budgets, but there was a lead time for their implementation. Additional information on the expenditure of the quality funds is provided in Chapter 6 of the annual report.

Expenditure on Sector Plans for Science and Technology

In 2021, a total of €9.3 million was spent on the Sector Plans for Science and Technology. As recruiting the right people for the sector plan positions is extremely difficult under current (market) and other conditions, all the funds have not been spent. At the end of the year, 69 (FTEs) of the allocated positions (75 FTEs) were filled. The funds remain available for the coming years.

Gravitation programmes

At the end of 2012, the Ministry of Education, Culture and Science approved an application for the 'Frontiers of Nanoscience' (Nanofront) proposal as part of its 'Gravitation' (Zwaartekracht) programme. A total sum of €37.0 million was awarded to the entire consortium for the 2012-2021 period. In 2017, a sum of €19.2 million was awarded to the proposal entitled Building a Synthetic Cell for the 2017–2026 period. As the cash flow from the government contribution does not coincide with the expenditure, an amount of €10.1 million (2020: €10.3 million) was included as still to be spent on the balance sheet at year-end 2021. The expenditure proceeds in line with internal plans and as coordinated with the Ministry and the Netherlands Organisation for Scientific Research (NWO).

Treasury Policy & Investment, Loan and Derivatives Regulations

TU Delft's treasury policy is laid down in the treasury charter that was readopted in 2021. The policy is in line with the Investment, Loan and Derivatives Regulations for Educational and Research Institutions 2016. The treasury function is aimed at the financial continuity of the institution and supports TU Delft in performing its core public activity. The policy is risk-averse; it is aimed at identifying, preventing and, where necessary, hedging risks. The treasury policy also intends to optimise the interest charges of loans and the return on available liquidity within the stated frameworks. The main treasury-related developments in 2021 are described below.

Public/private funds

TU Delft has made no distinction in its records between public and private funds, except for the private funds that are placed with specific affiliated and co-consolidated legal entities.

Liquid assets

All of TU Delft's temporary liquidity surpluses stemming from the core activities of education, research and knowledge valorisation are public funds. In 2021, the liquid assets were held at the Ministry of Finance (treasury banking) or at Dutch financial institutions with at least an A rating. The total balance of liquid assets on the balance sheet date is available immediately.

External Financing

TU Delft has not raised any external financing. TU Delft uses a long-term financial estimate model for liquidity and financing planning. The cash flow forecast uses information such as the real estate investment programme, the student population estimate and long-term budgets of the faculties and other management units.

Outstanding loans

TU Delft grants loans exclusively to legal entities that have close ties to the university or one of its core activities. The granted loans are included as of the balance-sheet date under the financial fixed assets. Because of a €2.5 million write-down of the loan to HollandPTC, the financial fixed assets decreased by €2.5 million in 2021. A provision has been made for this purpose, which is reflected in the operational result as other expenses.

Currency risks

A long-term research contract was extended in 2020, with incoming funds in US dollars. Because of the extension, TU Delft can expect to receive US Dollars at set times until the end of 2022. To hedge the related currency risk, forward exchange contracts were concluded in 2020. Two forward exchange contracts expired in 2021. At year-end 2021, two forward exchange contracts for a total amount of $3.7 million (2020: $7.8 million) remained with a maturity date in 2022. For its financial statements, TU Delft uses the opportunity to apply cost-price hedge accounting, in accordance with Guideline 290 of the Annual Reporting Guidelines. The foreign exchange position and strategy are evaluated periodically.

Forward exchange contract	To be paid in USD (x 1,000)	To be received in EUR (x 1,000)	Exchange rate (EUR/USD)	Expiry date
1	2.025	1.758	1,152	28 February 2022
2	1.688	1.459	1,157	30 September 2022

Invested capital

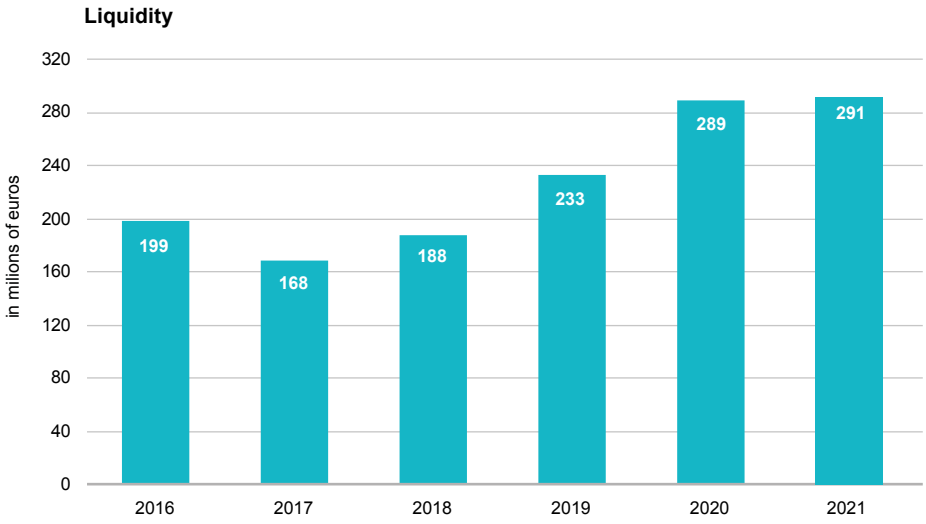
Securities amounting to a total of €13.0 million on the balance-sheet date are accounted for in the 2021 financial statements (2020: €12.2 million). These investments involve private resources belonging to the following consolidated legal entities included in the TU Delft financial statements: Stichting Nanoscience TU Delft and Stichting Het Lammingafonds. These legal entities have their own financial records, receive no public funds, and thus do not fall under the Investment, Loan and Derivatives Regulations for Educational and Research Institutions 2016, issued by the Ministry of Education, Culture and Science. The invested capital has been placed with external asset managers. The asset management is designed to be consistent with the objective of the legal entities and the long-term investment horizon. The securities portfolios have a neutral risk profile on average.

Long-term financial estimate

TU Delft uses a long-term financial estimate model for liquidity and financing planning (spread over periods of 5, 10 and 30 years). This model is based on the campus strategy (10 years), the estimate of the student population for the government contribution and tuition fees, long-term budgets of the faculties and other management units and some historical data. The results of this model are also the basis for the long-term budget presented in the continuity section (Chapter 9).

8.2 Liquidity position

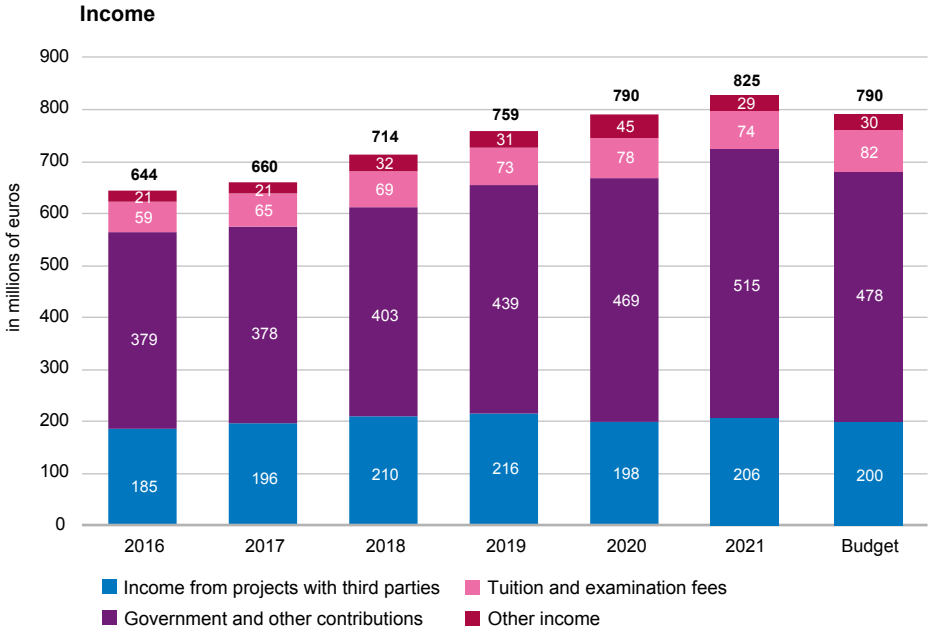
At year-end 2021, TU Delft's liquidity position was €290.8 million (€289.1 million at year-end 2020).



The position at year-end 2021 includes a sum of €13.1 million (2020: €15.8 million) in advance payments received for coordination activities. These amounts do not actually belong to TU Delft and must be passed on to other participants in indirect and contract funding projects.
The liquid assets balance is temporary in nature and will be needed in the coming years to finance the necessary investments in real estate and innovation in education. The long-term financial estimate shows that the liquidity position will diminish as a result of this in the coming years and that external funding will be required according to the latest estimates as from 2024. This is explained in the continuity section (Chapter 9).

8.3 Income analysis

Total Income (excluding financial income and the result from participating interests) in 2021 increased by €34.5 million to a level of €824.7 million. The chart below shows the development of income per category for the 2016–2021 period.



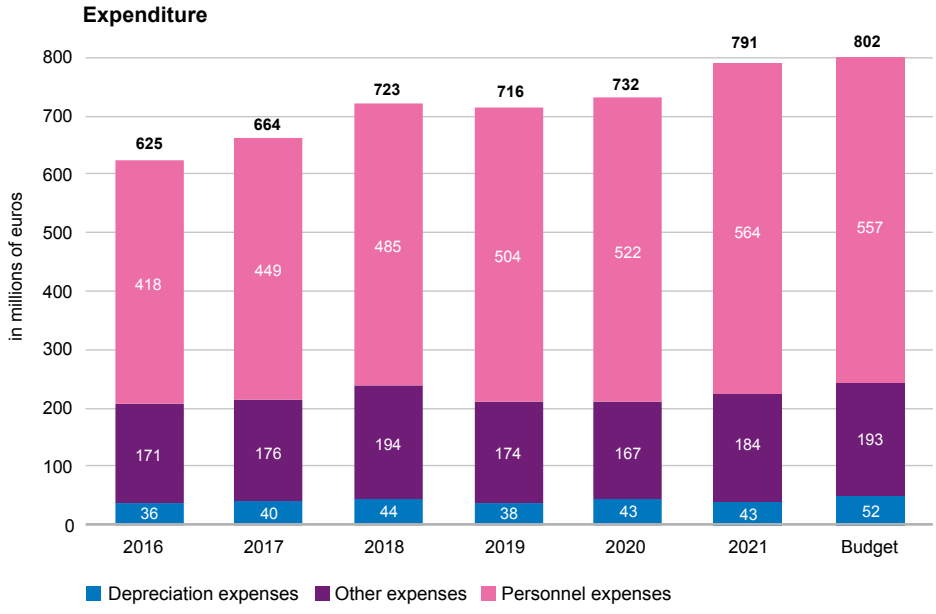
Government and other contributions increased by €46.7 million to €515.5 million (+9.8%) in 2021. The government and other contributions are €37.7 higher than the budget. The main reason is lower estimates were made for wage and price compensation because of the uncertain situation at the time of preparing the budget. In addition, €8.3 million in compensation was allocated through the government contribution for the lower tuition fees due to the halving of the statutory tuition fees for 2021/2022 as part of the National Education Programme.

Income from projects with third parties increased by €7.7 million to €206.1 (+4%) million in 2021. Income is €6.1 million higher than the budget. Because of the uncertainty surrounding the coronavirus pandemic, the budget was somewhat cautious. In the long-term development, the decrease in 2020 compared to 2019 was striking. This was due to a broad internal audit of the entire project administration, as a result of which more projects were closed with a positive result in 2019. As from 2020, the project administration processes have been tightened up, so incidental results like these are no longer expected.

The tuition fees received in 2021 amounted to €74.3 million, compared to €77.9 million in 2020. The student population has increased, with a rising effect on tuition fees, but statutory tuition fees were halved for the 2021/2022 academic year as part of the National Education Programme. TU Delft received compensation within the government contribution for this lower income from tuition fees. The ratio of students paying statutory tuition fees to students paying the institutional rate has remained stable at 90% and 10% respectively.

8.4 Expenditure analysis

Total expenses, excluding financial income and expenses, increased by €58.7 million to €791.0 million (+8%) in 2021. Personnel expenses increased by €41.8 million (+8%). Depreciation expenses increased by €16.7 million (+10%). The other expenses (including accommodation expenses) increased slightly by €0.2 million (1%) compared to 2020.



Personnel expenses

A breakdown of personnel expenses results in the following picture:

In millions of euros	2020		2021		Budget	
University personnel expenses	447.6	86%	490.9	87%	488.7	88%
Third-party personnel	58.7	11%	55.2	10%	51.5	9%
Change in provisions	3.1	1%	9.2	2%	0.0	0%
Other personnel expenses	13.0	2%	8.8	2%	16.9	3%
Total	**522.3**	**100%**	**564.1**	**100%**	**557.1**	**100%**

University personnel expenses

The increase in total personnel expenses by €43.4 million to €490.9 million is because of the increased number of FTEs and the salary increase of 1.64% under the Collective Labour Agreement (CLA) with effect from 1 July 2021 and a non-recurring payment of €650 per FTE. The budget did not take these CLA effects into account.

At year-end 2021, the institution's total staff amounted to 6.340 FTEs, representing an increase of 296 FTEs (+4.9%) compared to year-end 2020. The academic staff increased by 203 FTEs (+5%), of which 128 FTEs were researchers, doctoral candidates and other academic staff, and 75 FTEs were full professors, associate professors, assistant professors and lecturers. The support staff (including student assistants) increased by 90 FTEs (+4%).
A large part of the increase in FTEs concerns the use of additional resources that TU Delft has received since 2019 because of the reallocation following the recommendations of the Van Rijn Committee, Sector Plans for Science and Technology and the increasing quality funds.

Expenses for third-party personnel

Hiring of third-party personnel in 2021 increased compared to 2020. The specification is as follows:

Third-party personnel

in millions of euros	2020		2021		Budget	
Education (hiring of full professors & guest lecturers)	1.3	2%	1.7	3%	0.9	2%
Temporary agency workers	5.5	9%	3.7	7%	13.5	26%
Payment for services rendered by third parties	41.0	70%	47.0	85%	26.3	51%
Travel and accommodation expenses of third parties	0.8	1%	0.4	1%	1.1	2%
Government funding for personnel of third parties	48.7	83%	52.7	96%	41.9	81%
Contract and indirect funding for personnel of third parties	10.0	17%	2.4	4%	9.6	19%
Totaal	**58.7**	**100%**	**55.2**	**100%**	**51.5**	**100%**

Depreciation

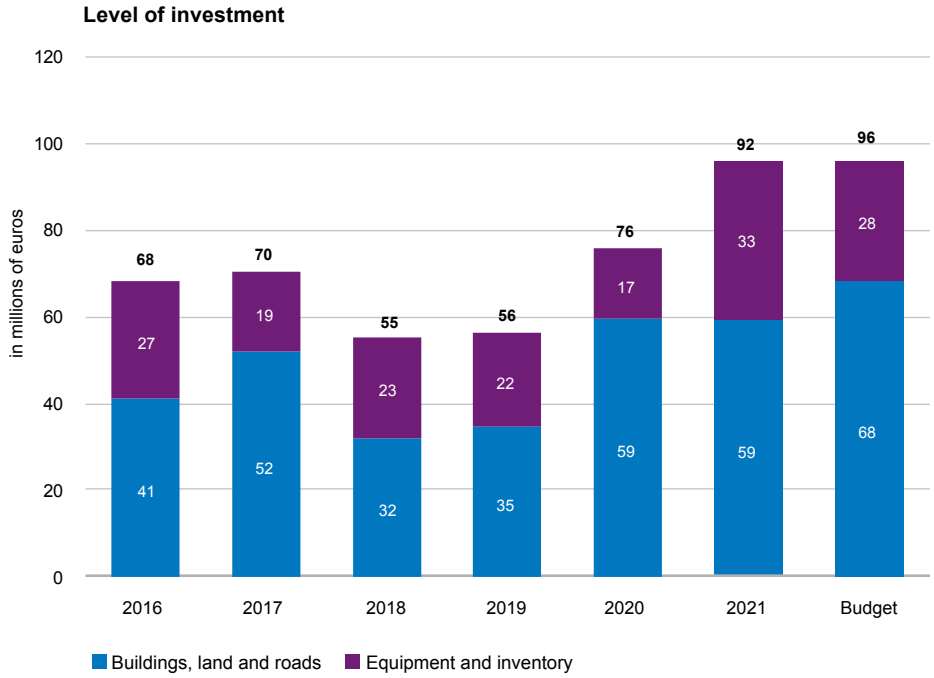
Depreciation increased slightly by €0.2 million. Depreciation of land, buildings and roads decreased by €0.8 million. Depreciation of equipment and inventory decreased by €1.0 million compared to 2020. The depreciation expenses were lower than budgeted, especially for equipment and inventory, which is in line with the investments that have been postponed in this category.

Other expenses (including accommodation expenses)

Other expenses (including accommodation expenses) increased by €16.7 million in 2021 compared to 2020. Accommodation expenses increased by €8.5 million and other expenses by €8.2 million. Because of the coronavirus measures, there was little travelling again. Travel expenses were €1.0 million lower than in 2020 and €4.1 million lower than budgeted.

8.5 Investments

Total investments in 2021 amounted to €91.8 million, an increase of €15.8 million compared to 2020. This increase mainly concerns investments in equipment and inventory, which increased by €16.3 million. Investments in land, buildings and roads decreased slightly by €0.5 million. The main investments in 2021 concerned the ECHO education building, the relocation of the EEMCS faculty to the high-rise building, the car park on Rotterdamseweg and the layout of the Stevin site. The chart below shows the level of investment during the 2016–2021 period. Investments in land, buildings and roads were lower than budgeted. Investments in equipment and inventory are higher than budgeted, which is partly explained by finalising postponed investments from 2020.



8.6 Profiling Fund provisions and accounting

In 2021, total provisions increased by €9.0 million, from €87,7 million at the start of the year to €96.7 million at the end of the year.

In millions of euros	Year end 2020	Changes in 2021			Year end 2021
		Allocation	*Release*	*Withdrawal*	
Staff provisions	32.5	14.6	5.4	7.4	34.3
Other provisions	53.6	12.7	0.0	5.7	60.5
Student provisions	1.6	2.0	0.0	1.7	1.9
Total	**87.7**	**29.2**	**5.4**	**14.9**	**96.7**

Staff provisions and redundancy pay

Staff provisions increased by €1.7 million. There were no extraordinary changes in 2021. For staff entitled to redundancy pay, TU Delft offers reintegration support in co-operation with an external party. This policy is aimed at actively guiding and supporting these staff in finding new employment.

Other provisions

Other provisions increased to €60.5 million. This represents an increase of €6.9 million in 2021. The largest increase was in the asbestos provision (+ €5.1 million).

Profiling Fund student provisions and accounting

The student provisions relate to the Profiling Fund. Through the Profiling Fund, certain students can apply for financial support if they experience delays in the progress of their studies due to special circumstances. In 2021, payments made from the Profiling Fund totalled €1,703,000. Of this amount, €857,000 was paid in relation to circumstances beyond students' control and €846,000 in relation to administration. In total, 1,371 students received a payment in 2021 (1,245 EEA students and 126 non-EEA students).

Applications to and the actual payments from the Profiling Fund do not necessarily occur in the same financial year. This is taken into account when creating the provision. The specification of the current provision is shown in the table below:

	Applications	Granted	Total allocated in euros	Average amount in euros	Average duration in months
Higher education students' unforeseen circumstances (illness, disability, family circumstances or non-studiable programme)	209	199	€ 377,523.00	€ 339.00	5.59
Financial support non-EER students	78	72	€ 552,654.00	€ 1.544.00	5.00
Board members of study or student associations or Student Council	955	888	€ 770,553.00	€ 234.00	3.70
Financial support non-EER students	29	29	€ 43,959.00	€ 977.00	1.55
Other: top-level sports or culture EER	4	3	€ 3,180.00	€ 265.00	4.00
Financial support non-EER students	0				

8.7 Capital position

Group equity increased compared to year-end 2020 by €35.3 million (+7.6%) to €494.9 million. The operating result of €35.3 million was allocated to the general reserve (€29.0 million) and the special-purpose reserve (€3.7 million). A sum of €2.6 million was allocated to the special-purpose fund. Group equity at the end of 2021 consisted of €31.6 million in private funds and €463.1 million in public funds.

8.8 Financial key indicators

Amount in millions of euros	Financial key indicators					
	2021	**2020**	**2019**	**2018**	**2017**	**2016**
Income	824.7	790.1	758.6	714.1	660.2	644.4
Government and other contributions	515.5	468.8	438.6	403.1	378.0	378.6
Income from projects with third parties	206.1	198.4	215.7	210.0	195.7	184.8
Expenditure	791.0	732.3	715.7	723.2	664.0	625.1
Financial income and expenditure	1.5	-1.2	0.2	-1.4	0.7	0.3
Result	35.3	57.0	40.6	-11.7	-4.7	19.5
Depreciation on fixed assets	42.7	42.6	37.7	43.6	39.6	36.3
Investments in fixed assets	91.8	76.1	56.3	55.1	70.4	67.7
Net cash flow	1.7	56.0	49.9	19.2	-30.5	-0.1
Liquidity position	290.8	289.1	233.1	187.5	168.3	198.8
Fixed assets	858.6	530.2	497.0	484.5	476.3	447.1
Working capital	-5.9	4.2	-29.8	-49.7	-57.4	-23.2
Equity capital	494.9	459.8	402.8	369.8	378.4	383.1
Provisions	96.7	87.7	87.2	82.9	61.4	61.9

	Ratio's						
	OCW	**2021**	**2020**	**2019**	**2018**	**2017**	**2016**
Total income growth	N/A	+4.4%	+4.2%	+6.7%	+8.2%	+2.5%	+5.2%
Work for third parties growth	N/A	+3.9%	-/- 8.0%	+2.7%	+7.3%	+5.9%	+7.0%
Total expenditure growth	N/A	+8.0%	+2.3%	-/- 0.6%	+8.9%	+6.2%	+3.0%
Government contribution/total income	N/A	62.5%	59.3%	57.6%	56.4%	57.3%	58.8%
Work for third parties/total income	N/A	25.0%	25.1%	28.3%	29.4%	29.7%	29.8%
Personnel expenses/total expenses	N/A	71.3%	71.3%	70.1%	67.5%	67.8%	66.9%
Solvency I ratio	N/A	48.7%	47.4%	44.0%	44.6%	46.4%	47.5%
Solvency II ratio	30.0%	58.2%	56.4%	54.6%	54.6%	54.3%	55.1%
Current ratio	0.75	1.0	1.0	1.0	0.9	0.9	1.0

The solvency II ratio ((equity capital + provisions) / total capital) is within the trigger ratio set by the Ministry of Education, Culture and Science (at least 30%). The current ratio of 1.0 is also above the trigger ratio of 0.75.

The equity capital (EC) is below the trigger ratio of excessive EC. The EC has increased in recent years because of the positive results. It is expected that results will be negative in the coming years, resulting in a decreasing EC and thus a decreasing EC compared to the trigger ratio. However, the current positive result still ensures an increase in equity capital.

8.9 Remuneration of the Executive Board and Supervisory Board members

The remuneration of the individual EB and Supervisory Board members is recorded in TU Delft's financial statements and is in line with the accountability obligation arising from the Annual Reporting Regulations for Education.

8.10 Expense claims

The expenses claimed by the EB members are shown in the financial statements, in accordance with the format prescribed by the State Secretary. The State Secretary defines expense claims as: reimbursements for costs incurred or services provided, which the individual board members have claimed from TU Delft. The expense claims for each board member are specified in the table below.

Expense claims in 2021	Prof.dr.ir. Tim van der Hagen	Prof.dr. Rob F. Mudde	Mw. Drs. Marien E. van der Meer
Travel and accomodation expenses within the Netherlands	€ 8,002	€ 1,007	€ 718
Travel and accommodation expenses outside the Netherlands	€ 307	€ 114	€ -
Representation expenses	€ 180	€ 332	€ 250
Other expenses by virtue of position	€ 80	€ 1,000	€ -

9

Continuity section

9.1 Introduction

In accordance with the requirements of the Annual Reporting Regulations for Education, this section provides insight into the policy for the coming years, along with the expected consequences for TU Delft's financial position. The data have been taken from TU Delft's 2022 budget, as approved in the Supervisory Board meeting of 20 December 2021.

As for the effects of the coronavirus pandemic, the budget and long-term financial estimate are based on the assumption of stable operations.

9.2 Developments in key indicators (Part A1)

Expected student numbers

In accordance with the estimate at the time of preparing the 2022 budget, the number of students at TU Delft will continue to increase over the coming years. This increase is steeper than previous estimates. The coronavirus pandemic has led to a slight shift in the number of non-EEA students and Dutch students. The table below shows the expected development of the student population. This concerns the estimated 1 December status figures per year of the students who pay tuition fees to TU Delft. These status figures have been used to estimate the tuition fees for the coming years. The bridging students and students following a joint degree programme at Erasmus University Rotterdam or Leiden University and pay tuition fees there are added to this. These numbers are not included in the student numbers in the table below but reported separately. In 2021, this concerns around 1,400 students who put pressure on teaching capacity in addition to those students who pay tuition fees.

Table: student numbers

estimated position 1/12	2021	2022	2023	2024	2025	2026
Student numbers	**26,700**	**27,500**	**28,100**	**28,400**	**28,800**	**29,100**
Growth compared to previous year		3%	2%	1%	1%	1%
Growth compared to 2021		3%	5%	6%	8%	9%
Bridging students/ students on joint degree programme	**1,400**	**pm**	**pm**	**pm**	**pm**	**pm**

The number of students has grown by around 55% in the past ten years. Along with this growth, the student/staff ratio has come under pressure. This has deteriorated from around 16 to 1 in 2011 to around 21 to 1 in 2019 (according to the definition used in the UNL context)[1]. In recent years, the student/staff ratio has decreased again (from 18 to 1 in 2021 and to 17 to 1 in the 2022 budget). This is because of staff recruitments paid for from additional funds such as the quality funds and the funds resulting from following Van Rijn Committee recommendations.

Most staff in the full professor, associate professor and assistant professor categories are responsible for conducting scientific research in addition to teaching. The ratios stated above are the average for the entire institution. For some degree programmes, the ratio is more than 30 to 1. The use of the Van Rijn funds from 2020 and the increasing quality funds will thus partially alleviate these bottlenecks, but this improvement is under pressure because of the rapidly rising number of students.

Expected staff numbers

The table below shows the expected development of the FTE numbers with an appointment at TU Delft. A distinction is made between the job groups 'academic staff', 'support staff' and 'student assistants'. This division is consistent with the usual system applied at TU Delft.

Besides salaried staff, TU Delft also has registered individuals who are unpaid voluntary staff. These employees largely determine the required capacity of permanent academic staff, support, accommodation, IT facilities and so on. The total number of doctoral candidates at TU Delft is particularly important in this context; after all, their supervision places a burden on the capacity of full, associate and assistant professors. At the end of 2020, 2,911 doctoral candidates were registered at TU Delft. By the end of 2021, this number had grown to 3,003 (of which 1,387 FTEs are unpaid).

FTE development

	Actual	Actual	Budget	Budget	Budget	Budget	Budget
	2021 (year-end)	**2021 (average)**	**2022 (average)**	**2023 (average)**	**2024 (average)**	**2025 (average)**	**2026 (average)**
Academic staff	**3,892**	**3,765**	**4,120**	**4,142**	**4,186**	**4,244**	**4,288**
Full professors, associate professors, assistant professors, lecturers	1,484	1,452	1,602	1,657	1,674	1,698	1,715
Researchers, doctoral candidates, other academic staff	*2,408*	*2,313*	*2,518*	*2,485*	*2,512*	*2,547*	*2,573*
Administrative and support staff	**2,415**	**2,377**	**2,603**	**2,610**	**2,637**	**2,674**	**2,701**
SAs	**33**	**34**	**51**	**50**	**50**	**50**	**50**
Total	**6,340**	**6,176**	**6,774**	**6,802**	**6,873**	**6,968**	**7,039**

The above figures reflecting the expected trend in teaching staff (full professors, associate professors, assistant professors, lecturers) take account of the same student/staff ratio as in the 2022 budget. The job groups of researchers, doctoral candidates and other academic staff and administrative and support staff have been extrapolated to future years on the basis of historical ratios.

[1] Definition Student/staff ratio: number of students/teaching staff (full professors, associate professors, assistant professors and lecturers)

At the end of 2021, the total staff increased by 296 FTEs compared to the previous year. Recruiting good quality staff remains difficult due to international and other competition, while the ongoing coronavirus pandemic has presented an additional challenge. At the same time, staff also depart on a regular basis.

As the student population continues to rise in the current estimate, teaching staff capacity will need to be increased in the years ahead. This naturally also affects the number of FTEs required as support staff. Because of the overlapping nature of education and research, this growth will also have an effect on the required number of research FTEs. Although the funds resulting from the Van Rijn Committee recommendations offer opportunities to solve several existing bottlenecks in education, this is still a separate issue from the expected student growth in the years ahead. As the challenge of recruiting the right people in time is increasing, HR is also supporting and monitoring this process.

9.3 Long-Term Budget (Part A2)

2022 Budget

TU Delft's budget for 2022 will grow by 5.4% in the coming year, reaching a total of €873 million. The budget deficit amounts to €11.7 million (1.3%) and results from a conscious policy to reduce faculty reserve positions to within the desired reserve policy range. Investments are also being made to make the support services more professional with the aim of increasing efficiency in the future.

Staff numbers will grow to an average FTE size of 6,774 in 2022 (+10.5% compared to the 2021 average). This growth is closely related to the additional funds from the Student Loans (Higher Education) Act and the funds resulting from the Van Rijn Committee recommendations.

NPO – National Education Programme

The allocated funds from the National Education Programme (NPO) amount to €2.9 million for education and €5.3 million for research in 2022. These funds are only accounted for when the expenditure has been incurred; the Ministry of Education, Culture and Science allows for this until 2023. The budget thus only considers income that will also be spent in 2022. The representative bodies agreed to this expenditure in 2021. The funds from NPO are explained in more detail in Chapter 7.

Quality agreements – Student Loans (Higher Education) Act

TU Delft obviously invests continuously in the quality of its education. In recent years TU Delft also invested annually an extra amount in the quality of education, partly in advance of the expected funds from the Student Loans (Higher Education) Act. Since 2019, this has been €8.5 million a year. Income from the Student Loans (Higher Education) Act of €15.5 million has been taken into account for 2022. Ongoing structural plans were already in place for €10 million of this in 2021. In addition, an annual sum of €0.5 million was made available for short-term projects in which the Student Council takes the lead.

Under the approved quality plan, €5 million of the available funds were made available to the faculties for new plans as from 2022. Income from the Student Loans (Higher Education) Act is expected to continue increasing in the coming years to an amount of €18 million in 2024. These funds will be allocated and spent as set out in TU Delft's quality plan. Chapter 6 explains the expenditure and allocations in more detail.

Income from government funding

Income from tuition fees is increasing because of rising student numbers and the second phase of the redistribution following the Van Rijn Committee recommendations in 2019.

Income from the government contribution for 2022 is estimated at €543.3 million and is influenced by funds received for specific purposes such as the Sector Plan for Science and Technology (€12.2 million) and the funds from the Student Loans (Higher Education) Act (€15.5 million). A wage and price compensation of 2% has been taken into account for 2022.

Investments

The investments in land and buildings are estimated at €115 million, and the investments in equipment and inventory at €25 million. These include investments in IT facilities and in the pool of teaching rooms. The real estate-related investments are mainly part of the campus strategy and concern several ongoing and new projects. The list of projects is extensive. The largest projects are EEMCS relocation, 2nd phase, Faculty of Applied Sciences building 22 and Applied Physics.

Coronavirus pandemic

The 2022 budget assumes stable operations in relation to coronavirus pandemic developments. NPO will compensate various costs relating to the pandemic. At the time of preparing the budget, no material effects of the pandemic could be estimated at institutional level. In the longer term, there is more uncertainty, for instance in the development of student numbers, income from projects with third parties, new ways of working and macroeconomic developments.

Long-term financial estimate

Besides the development of the student population, real estate plays a significant role in the long-term budget. The student population translates into extra income (government contribution and tuition fees) but also into higher personnel expenses. The need for a comprehensive real estate investment plan remains high, not only because of the condition of the current buildings but also to facilitate growth. These developments have been incorporated into the long-term projections. Based on the most current estimate, the details of the long-term financial estimate show that the ratios will remain within the set limits for the next five years. Based on current estimates, the result in subsequent years will be adversely affected by higher depreciation and interest costs because of the occupation of new buildings and increasing debt, respectively.

The higher government contribution resulting from the Van Rijn Commission recommendations for 2019–2021 will be used primarily to expand the capacity of the teaching academic staff. This paves the way for tackling the problems of work pressure.

The sharp rise in student numbers will result in an increase in the capacity of academic staff and the necessary support. The additional resources (Van Rijn funds, Sector Plans for Science and Technology, quality funding) also increase the staffing capacity. This additional capacity must also be able to make use of the appropriate education and research facilities.

A substantial part of TU Delft's real estate portfolio no longer meets the requirements. The need for investment and necessary maintenance remains high. The condition of the current buildings, the high maintenance and energy costs associated with them,

now and in the future, and the quality and sustainability requirements for today's education and research facilities have led to an extensive investment programme. But facilitating the aforementioned growth also plays a role. The latest insights into real estate requirements were taken into account in preparing the long-term budget. The updated campus strategy was taken as the point of departure.

The coronavirus measures have also made us work in different ways. To what extent this will still affect the required and desired facilities and the associated investments after the pandemic is currently being investigated with our international and national partner universities and will be incorporated into the campus strategy.

The overview below shows the estimate for the period 2022–2026. The effects of wage and price adjustments and the possible compensation from the Ministry of Education, Culture and Science after 2022 are disregarded for this purpose. The 2022 price level is assumed for the years 2023–2026.

Investments to be made in the short term (one to five years) have largely been decided already. Any adjustments to the investment plans that have been completed or yet to be developed will mainly have an effect in the medium term (five to ten years).

Statement/Estimate of income and expenses

Amount in millions of euros	Actual 2021	Budget 2022	Budget 2023	Budget 2024	Budget 2025	Budget 2026	Expected 2030
Income							
Government funding	514	543	533	538	541	544	547
Other government contributions and subsidies	1	0	0	0	0	0	0
Tuition and examination fees	74	73	94	94	95	95	96
Income from work commissioned by third parties	206	216	221	222	221	223	225
Other income	29	29	29	29	29	29	29
Total income	**825**	**861**	**877**	**883**	**885**	**891**	**897**
Expenses							
Personnel expenses	564	622	626	629	630	632	633
Depreciation	43	49	44	48	47	52	74
Accommodation expenses	76	79	81	81	76	81	86
Other expenses	108	123	113	113	113	113	113
Total expenses	**791**	**873**	**864**	**871**	**865**	**877**	**905**
Balance of income and expenses	**34**	**-12**	**13**	**12**	**21**	**14**	**-9**
Balance of income and expenses from financial operations	2	0	0	-3	-6	-7	-8
Total result	**35**	**-12**	**13**	**10**	**14**	**7**	**-16**

The above long-term budget is based on the 2022 price level. It can be concluded that the Van Rijn funds will enable TU Delft to partly alleviate the existing financial constraints. As a result, positive results are expected in the period 2023–2026. This is in line with the overall picture for Dutch universities as described in the PwC report on research into the adequacy of the macro budget, efficiency of expenditure, costs and cost allocation in academic education and research (Onderzoek naar de *toereikendheid van het macrobudget, doelmatigheid van de bestedingen kosten(toerekening) in het wo&o*). This report concludes that although universities manage to keep their spending within the limits of their income, the productivity and work pressure of academic staff have increased while the budget for independent research has decreased. The additional income has provided little room for investment in facilities and accommodation. According to the PwC report, the positive results mask the underinvestment in people and resources needed for a healthy workload at the desired quality level of education and research.

Expected investments in the 2023–2026 planning period have been incorporated in accordance with the latest campus strategy update, as adopted in 2021. This assumes a total investment of €650 million over the next ten years. The investments include large-scale renovations of buildings and new construction plans for facilities such as laboratories and educational buildings. Depreciation expenses will rise in the longer term because of the necessary investments. Interest expenses will also increase over time because estimates show that borrowed capital will have to be raised as from 2024.

The long-term estimate takes the current basis for the government contribution and a continuation of the quality funds after 2024 into account, including if the student loan system is abolished. These funds are needed to continue financing the structural nature of the expenditure on quality. The income from projects with third parties is also not yet at the level it was before the coronavirus pandemic, and the long-term estimate accounts for the fact that it will lag behind the organisation’s growth in the coming period.

The conclusion is that TU Delft expects positive results in the shorter term (the planning period until the end of 2026), but that this will only have a temporary effect until the additional academic staff that will be attracted because of the growth and the use of the additional funds are actually recruited. In the longer term, there are still challenges, especially in the area of the real-estate strategy, but also in resolving the workload. These challenges will lead to declining results in the years after 2026, until a negative result of €16 million in 2030. In the longer term, there are also still uncertainties regarding future sustainability requirements for investments and macroeconomic developments. This, combined with the continuing growth in student numbers, will put further pressure on the institution’s results. Operational measures will inevitably be necessary in the future to remain financially healthy in the longer term without compromising on quality and sustainability.

Lastly, there are also several strategic matters that TU Delft would like to shape further, but which cannot be fully quantified yet in the long-term estimate. Two examples are the Convergence with Erasmus University Rotterdam and Erasmus MC, and the South Holland Growth Agenda. To be able to shape these activities properly and include them firmly in the long-term financial estimate, TU Delft is still looking for financial cover.

The estimate below describes the balance sheet for 2022–2026:

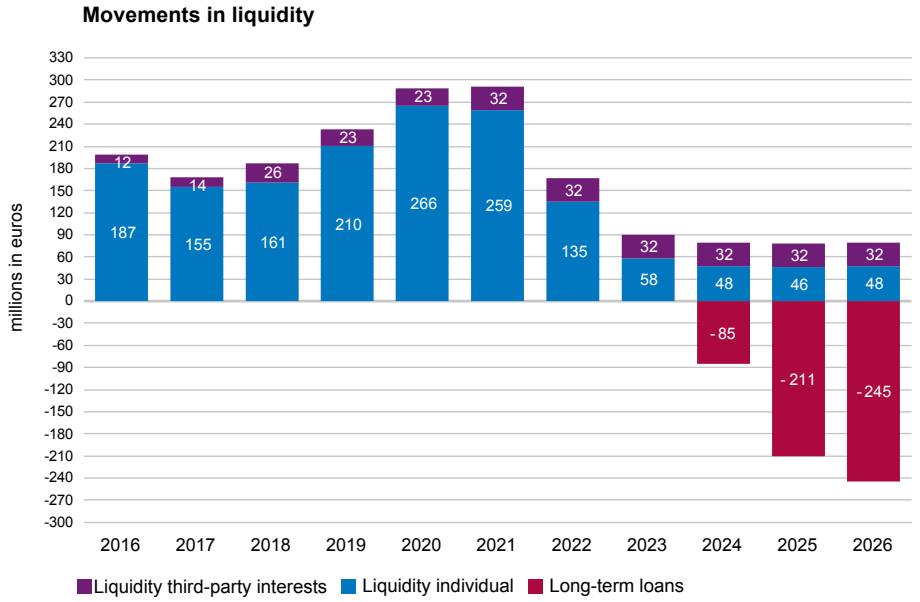
Balance sheet estimate

Assets	Actual 2021 M€	Budget 2022 M€	Budget 2023 M€	Budget 2024 M€	Budget 2025 M€	Budget 2026 M€
Fixed assets						
Intangible fixed assets	0	0	0	0	0	0
Tangible fixed assets	586	675	754	855	992	1,023
Financial fixed assets	10	13	12	12	12	12
	596	**687**	**766**	**867**	**1,004**	**1,035**
Current assets						
Inventories	2	1	1	1	1	1
Accounts and other Receivables	114	124	124	124	124	124
Current Securities	13	12	12	12	12	12
Cash and cash equivalents	291	167	90	80	78	80
	421	**304**	**227**	**216**	**215**	**216**
Total assets	**1,016**	**991**	**994**	**1,083**	**1,219**	**1,251**

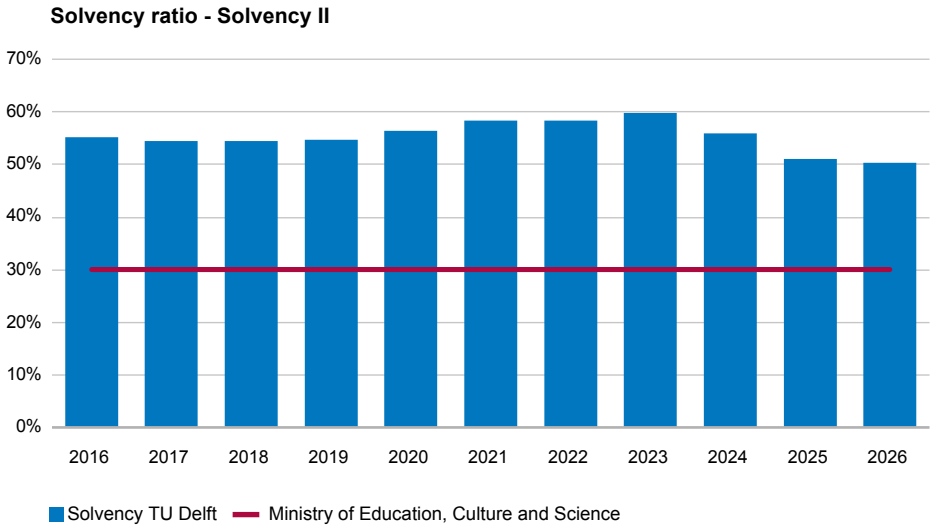
Liabilities	Actual 2021 M€	Budget 2022 M€	Budget 2023 M€	Budget 2024 M€	Budget 2025 M€	Budget 2026 M€
Group Equity						
General reserve	467	456	469	479	493	499
Special-purpose reserves	27	22	22	22	22	22
Other reserves/funds	0	0	0	0	0	0
	495	**478**	**491**	**501**	**515**	**521**
Provisions	97	101	102	105	107	107
Long-term liabilities	11	11	11	96	222	256
Current liabilities	413	401	389	381	375	366
Total equity and liabilities	**1,016**	**991**	**994**	**1,083**	**1,219**	**1,251**

Extensive investments, for which the decisions have already been made, will lead to an increase in tangible fixed assets in the coming years. On the other hand, it will also result in decreasing liquid assets. This trend will continue and will lead to TU Delft having to borrow money from 2024 onwards. There will then no longer be a surplus of financial resources. Following the Executive Board's (EB's) handling of the 2021 Campus Strategy and reaching the determined funding limits under the current long-term scenarios, the university has started exploring the expansion of borrowing capacity through treasury banking.

Liquid assets are shown in the chart below.



Because of negative operating results in the longer term (after the 2026 planning period) the solvency II[2] ratio will decrease. However, as the chart shows, this will remain above the trigger ratio of 30% set by the education inspectorate of the Ministry of Education, Culture and Science.



[2] Definition of Solvency II: ((group equity + provisions)/total equity and liabilities).

9.4 Report on the presence and operation of the internal risk management and control system (part B1)

The university is characterised by the decentralised organisation of science, with a high level of autonomy for scientists and faculties. The university's primary tasks – scientific research and education, and the valorisation of research, as described in the Higher Education and Research Act – are carried out by the faculties. Moreover, universities are open network organisations. The academic staff is connected to global academic networks and thereby also to the global, social and economic environment. These complex networks complicate planning and decision-making processes within the university.

A broad set of instruments

Universities are largely publicly funded organisations that are required to give a proper account of their actions to society. To achieve the proper planning and accountability within this complex organisation, it is essential that the many internal processes that keep the university in operation are strictly controlled. Because of the university's organisational character, TU Delft pays attention to both hard control instruments (e.g. rules and monitoring reports) and soft planning aspects (e.g. shared values and dialogue). To this end, the control instruments are organised into four groups:

- *Culture, behaviour and integrity*
  What core values are part of the culture of the organisation? One example would be delivering academic excellence in the name of academic integrity.

- *Communication*
  What strategic plans, risks, opportunities, uncertainties and especially global developments are being discussed in various formal and informal discussions?

- *Policy and regulations*
  What policy guidelines, laws and regulations are in place to assess activities and to avoid risks?

- *Monitoring and reporting*
  What quantitative and qualitative administrative information and information systems are being used to monitor the progress and efficacy of strategic plans? Are we on the right track or are adjustments needed?

Planning and evaluation cycle

The TU Delft internal risk management and control system is an ongoing process, which also has a place within the university's planning and evaluation cycle (P&E cycle). This cycle includes administrative consultation between the EB and the dean or manager of the unit. It is a framework that enables the administration and management of the university to formulate strategic and derived policy objectives, to identify and mitigate risks and opportunities, to monitor processes and to adjust them in a timely manner. Within the P&E cycle, the strategic planning and internal process management is analysed and discussed from the four aforementioned perspectives. It is a structured working method, supported by a system of instruments, systems and agreements, and driven by values, standards and regulations aimed at the realisation of the strategic objectives. As part of the P&E cycle, the EB and the management units make administrative working arrangements, as derived from the 2018–2024 Strategic Framework. The progress of the administrative arrangements is part of the administrative consultations between the EB and the management units.

Decentralised risk management and control

In addition the central risk management and the continuous dialogue in P&E cycle, risk management tools (including risk matrices) are used in several relevant supporting domains. Risk registers are used for systematic monitoring of risks and special developments. TU Delft applies the Three Lines Model in which the responsibility for risk management is distributed throughout the organisation and clearly differentiated into levels.

The 2018–2024 Strategic Framework includes the aspiration to develop a risk and compliance policy. The EB aspires to have a way of identifying, controlling and monitoring risks at various organisational levels and in various risk categories more systematically, with the aim of dealing with risks and opportunities responsibly in achieving the institution's goals. In this risk management method, risks are assessed for likelihood of occurrence, as well as for the impact that they would have if they were to occur. To make the risk management measures as appropriate as possible, the risk appetite is also recorded.

The risk management is based on:
- insight into opportunities and risks that influence the organisation's objectives
- control over the risks that put the organisational objectives, including the operational and financial objectives, at risk
- encouraging proper compliance with laws and regulations

Since 2019, TU Delft has made a start on implementing a unified risk and control system. TU Delft uses ISO31000 as one of its frameworks for risk management. This method focuses on identifying risks and opportunities, based on the organisation's objectives and strategies, which leads to informed decision-making.

The main tactical and strategic risks are identified in terms of probability and impact and then recorded in a risk register, supplemented by control measures, among other things.

Risk management is an ongoing process, which means that continuous attention is required to monitor – and, where necessary, adjust – the risks and control measures. Aided by the risk registers, the organisation ensures the continuous risk management process from which results can also be distilled periodically. By applying this risk and control system, TU Delft is agile and ready for the future.

Specific internal bodies

Internal Audit

Internal Audit is an independent function that delivers added value by carrying out audits and advisory assignments in a consistent and structured manner by providing certainty, making recommendations and suggesting improvements. The services of Internal Audit are intended for internal use within TU Delft, focusing on internal operations. Assurance and advice are directed towards governance, risk management and internal planning and management with regard to operations and IT. Internal Audit supports the EB, the deans and the directors of TU Delft by providing them with analyses, findings, evaluations, assessments and recommendations concerning the activities that have been investigated. In doing so, Internal Audit plays an important supporting role for the EB, the deans and the directors of TU Delft, helping them to be in control of implementing, improving and accounting for their activities.

Audit Committee

The Supervisory Board's Audit Committee advises and supports the Supervisory Board on the effectiveness of the design and operation of the university's internal risk management and control systems. The Audit Committee always focuses on monitoring compliance with relevant laws and regulations, the TU Delft treasury charter and the effect of the integrity code. The Audit Committee is authorised to receive written and oral information about all matters relating to internal risk management and assesses the EB's response in this regard. The Audit Committee thus gains insight into the areas in which the greatest risks are run and into how the EB manages these risks effectively.

Audit by the external auditor

The external auditor's audit report is intended to assess the legitimacy of the financial statements and whether they provide a true and fair view of the financial situation. The certainty that the external auditor provides with this report is important for the discharge procedure, and it supports the Supervisory Board in exercising its responsibility, including ensuring that the funding obtained is lawfully acquired and effectively and lawfully allocated and used. In addition to the audit report, the external auditor provides an auditor's report and a report of interim findings. In these documents, the external auditor reports independently on the quality of the internal management and gives recommendations for improvements to be made. As a basis for the audit of the financial statements, the external auditor conducts an annual risk analysis, in dialogue with TU Delft. The external auditor consults periodically with the Audit Committee of the Supervisory Board, the EB, Internal Audit and Finance.

Changes and ambitions for the risk management and control system

In 2021, further steps were taken to raise risk awareness by facilitating various risk sessions in the organisation. The aim was to integrate risk management in existing processes and procedures. To achieve Enterprise Risk Management, it is essential for risk management to be explicitly applied in all organisational layers.

The intention as from 2021 was to link the risks and control measures from the risk register more closely to the administrative working arrangements between the EB and the administrative units and to the administrative consultations between the EB and faculties as part of the P&E cycle.

It was also the ambition to use the Management Information business intelligence environment in FOCUS to monitor the quantitative progress on the administrative working arrangements from 2021, where applicable.
Because of the coronavirus pandemic, no administrative working arrangements have been made by the EB and the units for 2021. As a result, the above objectives could not be achieved. The ambition is to achieve both objectives in 2022.
Further efforts will be made to embed Enterprise Risk Management in 2022.

Results of the risk management and control system

The results of the risk management and control system are manifold. Some examples are also highlighted.

The university attaches great importance to the mental and wider health of both students and staff. In this context, two ombudsmen have been appointed to whom students and staff can make reports. The number of confidential advisors in the organisation has also increased.

The increase in market and other prices has prompted a response by adjusting the ambition and thus keeping the campus strategy manageable.

At an early stage, arrangements were already made with suppliers who were at risk of running into financial and other problems because of the coronavirus measures, which meant they could no longer deliver to the university.

The university depends on IT for many of our processes. To ensure business continuity, projects were launched in 2021 to raise awareness of the risks and make our systems more resilient, among other things.

Lastly, there are global risks for the research community regarding Open Science and knowledge security. In a letter to the House of Representatives, the government announced a series of measures to increase knowledge security in the Netherlands. This is primarily based on self-regulation by the higher education institutions. In response to the above letter, the EB established a Strategic Response Team (SRT) for Knowledge Security and International Partnerships to implement the measures.

9.5 Description of the most important risks and uncertainties (Part B2)

The university operates in an increasingly competitive and rapidly changing environment and although developments in some areas could lead to a short-term increase in risk at a lower level, the risk of not implementing the planned strategic developments could be much higher in the long term.

External risks are beyond the university's control and no separate risk appetite position has been determined for these risks. However, external risks will be considered in the overall context of their impact on the other risk categories in the description of the most important risks and uncertainties.

The consequences of the coronavirus pandemic have clearly affected the university's risks. The mental and wider health of students and staff receive constant attention. Developments in the tight labour market simultaneously remain a risk that will have an impact in the years ahead. The university also sees opportunities for organising a good work-life balance for staff and thus helping to reduce the work pressure they experience. Ultimately, this contributes to the positive effects of mental and wider health.

It remains important to minimise risks relating to reputation, laws and regulations, and finance. At the same time, the university is willing to accept and embrace more risks while pursuing its strategic objectives relating to the primary processes. It is aware that accepting risks is always subject to ensuring that the potential benefits and risks are known.

The table below shows the risks and uncertainties[3] by risk area according to the classification under the 2018–2024 Strategic Framework. In accordance with the UNL Code for Good Governance 2020, Article 9, paragraph 2, the risk appetite for each risk area is also mentioned.

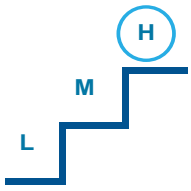
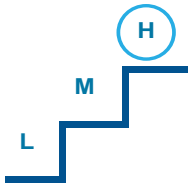
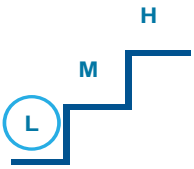
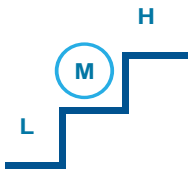
[3] TU Delft follows Frank Knight's distinction of 'Knightian uncertainty'. This means that some matters mentioned cannot be quantified or can only be quantified to a limited extent.

Risk area	Risks & Uncertainties	Management measure
Concerns all risk areas; Students & Education/ Research & Innovation/ People & Community/ Campus & Services	Uncertainty regarding further developments of the coronavirus pandemic relating to: • Shortages in the labour market, which means that insufficient qualified staff can be recruited. • Staff absences preventing optimal staffing for the organisation's primary and other facilitating and support needs. • Disrupted logistics processes that contribute to delivery problems.	The coronavirus pandemic has affected how the core activities of education, research and valorisation have taken place. In-person activities have been exchanged for digital alternatives because of various lockdowns and strict measures. The change has also affected the cohesion of the TU Delft community, the use of the campus and the various forms of service provision. It is uncertain how long the effects of the coronavirus pandemic will last and what its medium- and long-term consequences will be. In 2020, the EB set up Strategic Response Teams, tasked with developing scenarios and preparing recommendations for strategic reorientation to be better prepared for the future. The short-term recommendations were implemented after being adopted, while the longer-term recommendations were incorporated in the 2022–2024 Strategic Priorities. The probability of this risk is high because the effects of the coronavirus pandemic are expected to last a long time.
Students & Education	Unbalanced increase in students.	TU Delft strives for a valuable diversity of students and a proper balance between Dutch and international students. An essential aspect of this is the quality of our teaching. To meet high educational quality standards, it is essential for the university to have the right student/staff ratio. Because of the ever-increasing number of students and the limited government funding, the university is constantly searching for the right balance. Abolishing or restricting the cap on student intake for certain programmes (numerus fixus) would put pressure on this ratio and also increase the probability of this risk materialising.
Students & Education	Being able to provide optimal support for a broad student experience that focuses on both physical and mental health.	The university is committed to providing a challenging and safe environment with the right support so that all students experience an enjoyable and successful study period. Ensuring this is achieved requires investment in teaching and learning facilities and constant updating and revision of the curriculum. We recognise that developing a wider range of educational offerings – including digital, distance and lifelong learning – poses an increased risk and we accept this risk. Among other things, a student ombudsman was recruited in 2021 to better monitor and mitigate this risk. The probability of this risk cannot be substantiated with data or figures. However, it can be stated with certainty that the coronavirus pandemic has increased the probability.
Research & Innovation	Increasing dependence on government funding, indirect funding and contract funding: • Government funding: the funding of higher education, including government contributions, is inadequate. • Indirect funding: reducing the remuneration opportunities and budgets. • Contract funding: public-private research collaboration funding is strongly linked to the economic situation. In times of economic recession, this flow of funds is under pressure.	As the increasing number of students and the government funding are out of sync, government funding is insufficient to provide quality education. TU Delft participates in joint programmes to contribute towards solving social problems. It aims to maintain a high degree of transparency, accountability and financial control. Indirect and contract funding are usually temporary; current and future income generation from these sources is uncertain and fluctuates. The probability of this risk is high.

Risk area	Risks & Uncertainties	Management measure
People & Community	Heavy workload and increasing pressure for staff and students.	As it is important to TU Delft for staff to have the time and means to perform their work to the best of their ability, this is one of our priorities that we always discuss during Result & Development Cycle meetings. An Employee Survey is also being conducted to identify areas for improvement that can be tackled to reduce work pressure, among other things. Educational duties are distributed as evenly as possible among the teaching staff. And students are given the opportunity to achieve their ambitions over a longer period, provided that they use their time wisely. Another important measure is the recruitment of staff, where necessary and possible. The 2020 Employee Survey shows that the workload in general has remained the same compared to the previous measurement in 2017. Academic staff, in particular, still regularly experience work pressure. Other surveys were conducted in the context of Work & Well-Being, including in December 2020 and June 2021. These show a picture similar to that of the Employee Survey. The surveys conducted in March, July and November 2021 under the Study Climate Programme show that perceived well-being among students remains low and that students are more concerned. This has led to even more reaching out to students and supporting them – where possible – through social sessions. The probability of students and staff experiencing high workloads and increasing pressure is high. The coronavirus pandemic is a major contributor towards this.
People & Community	Ensuring a safe environment (both physical and mental safety) in a constantly changing world.	The university strongly believes it is important to positively engage all stakeholders and provide a safe working environment, by constantly paying attention to raise safety awareness. The university's safety profile provides insight into physical risks and control measures, including raising awareness of safe access facilities. In a dynamic and rapidly evolving environment, in which well-being is becoming increasingly important, methods are actively sought to implement actions from the Employee Survey. The 2020 Employee Survey shows that TU Delft employees are positive on average about safety on the campus. Almost one-quarter of TU Delft staff reported having experienced one or more incidents of inappropriate personal treatment by colleagues, managers, students or strangers.
Campus & Services	Continuously adapting the campus strategy in an environment that is volatile, uncertain, complex and ambiguous ensures the continuity of primary processes and makes us a future-proof and sustainable university.	The university develops in line with the 2018–2024 Strategic Framework, and unforeseen events, such as the coronavirus pandemic, require continuous adaptation and foresight. Striving for sustainability is another of our priorities. The sustainability objective involves additional financial expenses. The development of the campus takes this into account. The university follows structured processes and procedures in which financial planning, budgeting, reporting and control are part of all plans. The probability of this risk is high because this is an ongoing process in which the right balance must be found between wishes and objectives on one side and financial and alternative resources on the other, especially in view of the constantly rising costs of construction and renovation.

Risk area	Risks & Uncertainties	Management measure
Campus & Services	The ability to offer optimal service despite disruption to operations because of staff absences.	The organisation depends on people, mainly the organisational components that contribute to the continuation of the primary processes, but also to a pleasant and safe working and learning environment. Looking ahead, it could be a major risk if we experience long-term staff absences, for example in the aftermath of the coronavirus pandemic. The organisation is preparing for this by providing optimal support for staff, making resources available so they can work healthily. The recruitment of new staff is a constant point of attention to reduce the workload. The probability of this risk is low because we have sufficient capacity to cope with it for the time being.
Campus & Services	Information security risks and cybersecurity risks	Even before the coronavirus pandemic, there was an increasing dependence on the digital world and available applications (for the primary processes, among other things). The pandemic has accelerated the pace of that dependency. Because of the coronavirus measures, people have switched to working from home, which has increased the probability of cybersecurity risks. As cyber-attacks and data breaches are already on the rise, the research community is paying extra attention to raising awareness about working and storing data safely. The university takes its responsibility for ensuring the security and privacy of the personal data it holds very seriously. Awareness campaigns are used to raise the level of awareness on this topic. The probability of this risk is high because cyber risks are a continuous threat.
Concerns all risk areas; Students & Education/ Research & Innovation/ People & Community/ Campus & Services	Reputational risk resulting from an event.	The university has an established track record of world-class international and national education, research and valorisation. The events that can lead to reputational risk are very diverse. The control measures therefore concern the regular measures that apply to all identified risks. For these reasons, estimating the probability of this risk is difficult. In 2020, one Academic Integrity Committee (CWI) case started that has yet to be completed. It concerned an instruction by the EB to the CWI to investigate aspects of academic integrity. In early 2021, the CWI issued an opinion in this case and the EB made an initial decision. The case has been submitted to the Netherlands Board on Research Integrity (LOWI), which will rule on it in the course of 2022, after which the EB will make a final decision. It is not yet known what the decision will be and whether it will lead to the conclusion that there is – or has been – any violation of academic integrity (research misconduct). An estimate of the risks of any financial claim (from any side) is therefore not opportune.
Concerns all risk areas; Students & Education/ Research & Innovation/ People & Community/ Campus & Services	Risks relating to compliance with laws and regulations, integrity and ethics.	The university strives to maintain the highest standards of integrity, compliance and ethics. The university expects all employees to comply with policies and procedures in accordance with codes, laws and regulations, professional standards and research ethics. By following processes and procedures, the probability of this risk is low.

Risk appetite for each risk area

Students & Education/		the amount of risk that the university is prepared to accept or retain to achieve its objectives is high, given its statutory duty of providing university education.
Research & Innovation/		the amount of risk that the university is prepared to accept or retain to achieve its statutory and other duties and objectives is high, given its statutory duty of conducting scientific research and transferring knowledge for the benefit of society.
People & Community/		the amount of risk that the university is prepared to accept or retain to achieve its objectives is low because the risks in this risk area have a greater impact on people, society and the organisation.
Campus & Services		the amount of risk that the university is prepared to accept or retain to achieve its objectives must be proportional to the anticipated benefits. The organisation is mostly inclined to accept a moderate level of risk here to achieve acceptable outcomes.

9.6 Report by the supervisory body (Part B3)

The report by the Supervisory Board can be found on page 10 of this annual report.

Appendices

Appendix 1

Faculties and departments
(overview as of 31 December 2021)

Faculty of Architecture and the Built Environment (A+BE)	
Dean: Prof.ir. D.E. (Dick) van Gameren	
Department	**Chair**
Architecture	Prof.ir. C.H.C.F. (Kees) Kaan
Architectural Engineering & Technology	Prof.dr.ir. M.T. (Michiel) Kreutzer
Management in the Built Environment	Prof.dr. E.M. (Ellen) van Bueren
Urbanism	Prof.dr. M. (Maarten) van Ham
Faculty of Civil Engineering and Geosciences (CEG)	
Dean: Prof.dr.ir. J.D. (Jan Dirk) Jansen	
Department	**Chair**
Engineering Structures	Prof.dr. A. (Andrei) Metrikine
Geoscience & Engineering	Prof.dr.ir. T. (Timo) Heimovaara
Geoscience & Remote Sensing	Prof.dr.ir. H.W.J. (Herman) Russchenberg
Hydraulic Engineering	Prof.dr.ir. S.G.J. Aarninkhof
Materials, Mechanics, Management & Design	Prof.dr.ir. L.J. (Bert) Sluys
Transport & Planning	Prof.dr.ir. S.P. (Serge) Hoogendoorn
Water Management	Prof.dr.ir. L.C. (Luuk) Rietveld
Faculty of Electrical Engineering, Mathematics and Computer Science (EEMCS)	
Dean: Prof.dr.ir. L.J. (Lucas) van Vliet	
Department	**Chair**
Applied Mathematics	Prof.dr.ir. G. (Geurt) Jongbloed
Electrical Sustainable Energy	Prof.dr.ir. M. (Miro) Zeman
Intelligent Systems	Prof.dr. A. (Alan) Hanjalic
Microelectronics	Prof.dr. K.A.A. (Kofi) Makinwa
Quantum and Computer Engineering	Prof.dr. S. (Said) Hamdioui
Software Technology	Prof.dr. A. (Arie) van Deursen
Faculty of Industrial Design Engineering (IDE)	
Dean: Prof. ir. M.A. (Ena) Voûte	
Department	**Chair**
Sustainable Design Engineering	Prof.dr.ir. A (Alessandro) Bozzon
Human-Centered Design	Prof.dr.ir. P.M.A. (Pieter) Desmet
Design Organisation and Strategy	Prof.dr.ir. R. (Ruth) Mugge

Faculty of Aerospace Engineering (AE)	
Dean: Prof.dr. H.G.C. (Henri) Werij	
Department	**Chair**
Aerodynamics, Wind Energy, Flight Performance and Propulsion	Prof.dr.ir. L.L.M. (Leo) Veldhuis
Control and Operations	Prof.dr.ir. J.M. (Jacco) Hoekstra
Aerospace Structures & Materials	Prof.dr.ir. R. (Rinze) Benedictus
Space Engineering	Prof.dr.ir. P.N.A.M. (Pieter) Visser
Faculty of Technology, Policy and Management (TPM)	
Dean: Prof.drs. A.S. (Aukje) Hassoldt	
Department	**Chair**
Engineering Systems and Services	Prof.dr.ir. CC.G. (Caspar) Chorus
Multi-Actor Systems	Prof.dr. M.E. (Martijn) Warnier
Values, Technology and Innovation	Prof.dr. S. (Sabine) Roeser
Faculty of Applied Sciences (AS)	
Dean: Prof.dr.ir. P.M. (Paulien) Herder	
Department	**Chair**
Bionanoscience	Dr. S.M. (Martin) Depken
Biotechnology	Prof.dr. J.T. (Jack) Pronk
Chemical Engineering	Prof.dr. B. (Bernard) Dam
Imaging Physics	Prof.dr. S. (Sjoerd) Stallinga
Quantum Nanoscience	Prof.dr. L. (Kobus) Kuipers
Radiation Science & Technology	Prof.dr.ir. J.L. (Jan-Leen) Kloosterman
Faculty of Mechanical, Maritime & Materials Engineering (3mE)	
Dean: Prof.dr. T.S. (Theun) Baller	
Department	**Chair**
Biomechanical Engineering	Prof.dr. H.E.J. (DirkJan) Veeger
Cognitive Robotics	Prof.dr.ir. J. (Hans) Hellendoorn
Delft Center for Systems and Control	Prof.dr.ir. B. (Bart) De Schutter
Maritime and Transport Technology	Prof.dr.ir. B.J. (Bendiks Jan) Boersma
Materials Science and Engineering	Prof.dr. J. (Joris) Dik
Precision and Microsystems Engineering	Prof.dr.ir. J.L. (Just) Herder
Process and Energy	Prof.dr.ir. C. (Christian) Poelma

Appendix 2

Overview of ancillary activities of the Executive Board, Supervisory Board and Deans

(overview as of 31 December 2021)

Ancillary activities of members of the Executive Board

Tim van der Hagen

Rector Magnificus/President of the Executive Board

Ancillary positions connected to main position:

- Chair of the board of the Leiden-Delft-Erasmus Alliance (LDE)
- Member of the Board of 4TU.Federation Foundation
- Board member of Economic Board Zuid-Holland
- Member of the Supervisory Board of Medical Delta
- Member of the Board of GROW (Growth through Research, Development and Demonstration in Offshore Wind)
- Member of the board of NICAS (Netherlands Institute for Conservation, Art and Science)
- Member of the board of NERA (Netherlands Energy Research Alliance)
- Member of the board of the Delft University Fund
- Member of the Supervisory Board of Theater de Veste, Delft
- Technology and Innovation Committee of VNO-NCW (Confederation of Netherlands Industry and Employers)

Ancillary activities:

- Member of the Advisory Council for Science, Technology and Innovation (AWTI) (administratively through Van der Hagen Delft B.V.)
- Member of COVRA's Supervisory Board (administratively through Van der Hagen Delft B.V.)

Marien van der Meer

Vice-President for Operations

- No ancillary activities

Rob Mudde

Vice-Rector Magnificus/Vice-Chair

- Member of the board of KIVI (Royal Institution of Engineers)
- Member of the Supervisory Board of ISPT (Institute for Sustainable Process Technology)
- Member of the Governing Board of IHE (Delft Institute for Water Education)
- Member of the board of Universities of the Netherlands

*The members of the Executive Board hold their ancillary positions with the consent of the Supervisory Board. This consent is not automatic. Further information on the TU Delft policy concerning ancillary positions can be found on the TU Delft website (*https://www.tudelft.nl/en/about-tu-delft/strategy/integrity-policy/organisational-integrity*).*

Ancillary activities of members of the Supervisory Board

Tijo Collot d'Escury

Managing partner of Roland Berger BV

- Chair of the Supervisory Board of Delft University of Technology
- Member of the Supervisory Board of Van Leeuwen Buizen Groep B.V., also vice-chair
- Member of the Supervisory Board of the Investment Fund for Health in Africa (IFHA)
- Member of the board of the Social Investor Foundation for Africa
- Member of the board of the Roosevelt Foundation
- Member of the board of the Association for Fauna Conservation in Kloosterzande and environs
- Member of the board of the Collot d'Escury Foundation
- Director of Succia BV
- Member of the board of Vitestro Investors Trust Office Foundation
- Recommendations Committee of Mattheus Passion Delft

Luc Soete

Former Rector Magnificus of Maastricht University:

- Member of the Supervisory Board of Delft University of Technology, also vice-chair
- Member of the Royal Netherlands Academy of Arts and Sciences (KNAW)
- Member of the Higher Education Efficiency Committee (CDHO)
- Supervisory director of Mediahuis Limburg and independent director of Stichting De Zeven Eycken
- Dean of Brussels School of Governance, Vrije Universiteit Brussel
- Member of the Advisory Board of Sussex Business School, University of Sussex

Carolien Gehrels

Global Director Energy Transition Arcadis

- Member of the Supervisory Board of Delft University of Technology
- Member of the board of Worldwaternet
- Member of the Dutch Creative Council, Ministry of Economic Affairs
- Member of the board of the Urban Renewal Platform
- Chair of the Foundation for More Music in the Classroom and the Platform for Music Education Ambassadors
- Member of the Supervisory Board of the Royal Concertgebouw Orchestra
- Member of the board of the Stichting Vrienden van de Amsterdamse Politie
- Member of the board of the Johan Cruyff Foundation
- Member of the Advisory Council of ASN Bank
- Member of the Supervisory Board of Okura Hotel
- Member of the Supervisory Board of EBN
- Chair of Holland Festival

Gijsbert De Zoeten

CFO InchCape

- Member of the Supervisory Board of Delft University of Technology
- Chair of the HDM Youth Academy Foundation

Heleen Wachters

Partner at Eden McCallum

- Member of the Supervisory Board of Delft University of Technology
- Member of the CoV of the Netherlands Red Cross, for support in international partnerships

Ancillary activities of the Deans

Theun Baller

Dean of the Faculty of Faculty of Mechanical, Maritime & Materials Engineering

- Chair of the Supervisory Board of YES!Delft
- Member of the Supervisory Board of Fontys University of Applied Sciences
- Member of the board of The Green Village
- Member of Holland High Tech Executive Council
- Member of the board of the TKI/Maritime Knowledge Centre Foundation
- Supervisory director of the Supervisory Board of the TKI HTSM Foundation
- Chair of the Scientific Advisory Council for the Faculty of Military Sciences, Netherlands Defence Academy
- Chair of the Supervisory Board of Delft Enterprises B.V.

Dick van Gameren

Dean of the Faculty of Architecture and the Built Environment

- Advisor to the Municipality of The Hague
- Advisor to Mecanoo Architects

Aukje Hassoldt

Dean of the Faculty of Technology, Policy and Management

- Member of the Supervisory Board of TRAIL Research School
- Chairman of the Social Advisory Council of the VNCI (Royal Association of the Dutch Chemical Industry)
- Member of the Steering Committee of Safety Delta Netherlands (Ministry of Infrastructure and Water Management)
- Chair of the National Network for Risk Management

Paulien Herder

Dean of the Faculty of Applied Sciences

- Chair of the GroenvermogenNL writing team
- Member of the Netherlands Academy of Technology and Innovation
- Member of the board of the Nanoscience Foundation
- Chair of the Energy Taskforce of the Zuid-Holland Economic Board (EBZ)
- Member of the Scientific Sounding Board Committee of the North Sea Consultative Body (NZO-WKC)
- Member of the Supervisory Board of TKI Energy
- Member of the Supervisory Board of The Hague Hotel School
- Member of the Strategic Advisory Council for TNO Energy Transition
- Chair of the DIFFER Institute Advisory Council
- Member of the Energy Top Team (Ministry of Economic Affairs and Climate Policy)
- Member of the HyDelta Sounding Board

Jan Dirk Jansen

Dean of the Faculty of Civil Engineering and Geosciences

- Member of 4TU Centre Resilience Engineering
- Member of the Mining Council
- Member of the Supervisory Board of TRAIL Research School
- Member of the board of the Molengraaff Fund

Lucas van Vliet

Dean of the Faculty of Electrical Engineering, Mathematics and Computer Science

- Member of the Supervisory Board of the Chip Integration Technology Center (CITC)
- Member of the Supervisory Board of Bioprocess Pilot Facility B.V.
- Chair of the Supervisory Board of the Planet B.io Foundation
- Member of the Supervisory Board of HollandPTC Proton Therapy Centre
- Member of the Board of the International Association for Pattern Recognition
- Member of the board of the E.R.R. Fund Foundation
- Member of the board of the Delft University Fund
- Member of the board of Stichting Justus & Louise van Effen Fonds

Ena Voûte

Dean of the Faculty of Industrial Design Engineering

- Member of the Supervisory Board of the HKU University of the Arts Utrecht
- Chair of the board of the Robovalley Foundation

Henri Werij

Dean of the Faculty of Aerospace Engineering

- Member of the Advisory Council of the Royal Netherlands Aerospace Centre
- Member of the KNMI Social Advisory Council
- Chair of the DIFFER Scientific Advisory Committee
- Member of the Advisory Council of the Woensdrecht Air Base

*The deans hold their ancillary positions with the consent of the Executive Board. This consent is not automatic. Further information on the TU Delft policy concerning ancillary positions can be found on the TU Delft website (*https://www.tudelft.nl/en/about-tu-delft/strategy/integrity-policy/organisational-integrity*).*

Appendix 3

Objections, appeals and complaints

Objections and appeals

The table below shows the number of settled objections and appeals (54 and 255 respectively) in 2021 by category and type of decision. The total number of objections and appeal is 309, an increase of almost 7% compared to 2020 (289).

Category	Founded	Unfounded	Inadmissible	Withdrawn	Total
EAB (appeals) (students)	5	32	10	208	**255**
Doctoral candidates	-	-	-	-	**-**
Student	0	9	2	43	**54**

The number of appeals handled by the Examination Appeals Board (EAB) in 2021 increased significantly: 255 appeals compared to 192 in 2020, 126 in 2019, 148 in 2018, 145 in 2017 and 115 in 2016. This increase can partly be explained by the coronavirus pandemic, as a result of which most teaching and examinations took place remotely. A large number of EAB cases were withdrawn: 208 in 2021 compared to 176 in 2020. A large number of EAB case withdrawals can partly be explained by the fact that many foreign students enrol at more than one university and decide to enrol in another programme, so that continuing the appeal is no longer necessary. The out-of-court settlement procedure also plays a role in the number of appeal cases withdrawn. A relatively large number of appeals against the decisions concerning the binding recommendation on the continuation of studies (BSA) were thus settled.

The number of student objections handled in 2021 has decreased compared to 2020: 54 compared to 92 in 2020. This decrease can largely be explained by a lower number of objections handled against decisions of the Profiling Fund Scheme: only 7 in 2021 compared to 33 in 2020. The number of objections handled from doctoral candidates decreased to 0 in 2021 from 2 in 2020.

Complaints

Complaints about undesirable behaviour

The Undesirable Behaviour Complaints Committee (KOG) handled one complaint in 2021. This complaint was eventually declared inadmissible.

Complaints about academic integrity

Two complaints from 2019 were completed in early 2021, both inadmissible; the Netherlands Board on Research Integrity (LOWI) upheld one complaint.
The EB dealt with the only complaint submitted in 2020 with an initial decision in 2021; the case is still pending before the LOWI. The EB can only render a final decision after the LOWI has ruled on the case.
Eight complaints were filed in 2021, four of them in the last months of the year.
The cases have not been completed.

Whistleblowers

No complaints have submitted or dealt with based on the TU Delft Regulations for Reporting Misconduct (Whistleblower Regulations).

Appendix 4

Clarity notes

Clarity notes

These notes provide further clarification of several accountability items in the annual report, including the outsourcing of teaching duties, the investment of public funds in private activities, exchange agreements with foreign institutions and the development of customised tracks.

Own staff and initial degree programme

Data on the enrolment of staff for an initial degree programme is not aggregated. If this happens, they are very few in number.

Outsourcing to private organisations

The degree programmes registered in the CROHO are provided by the institution itself, with several programmes provided fully or partially with fellow universities. There is no outsourcing to private organisations. TU Delft uses no public funds for private educational activities.

Granting of exemptions

Exemptions are granted by the Board of Examiners and are processed with the date of approval of the exemption.

Use of public funds in private activities

TU Delft spends public funds in private activities such as for facilities for students (accommodation or other facilities). The extent of this is extremely limited, permitted within laws and regulations and makes a particularly positive contribution to raising the quality of education and/or research. No amounts from the government contribution are spent on investments in private activities.

Tailored tracks

There are no paid tailored tracks for external organisations and/or companies in the existing degree programmes.

Following modules

Some students follow programme modules without intending to actually obtain the final degree certificate. These students belong to the HBO bridging student group and are enrolled in Bachelor’s courses to follow bridging programmes under an agreement with the Ministry.

Emergency fund

An emergency fund exists for students with financial problems. The emergency fund is only used in exceptional cases, always involves a loan and in all cases involves costs other than tuition fees, such as hospital costs. Tuition fees are never reimbursed. It is not possible to follow a programme other than that for which you are enrolled at TU Delft.

Exchange agreements

TU Delft has exchange agreements with a broad range of foreign knowledge institutions. All incoming and outgoing exchanges were cancelled in the 2020/2021 academic year because of the coronavirus pandemic. An overview of the knowledge institutions with which TU Delft has an exchange agreement can be found at https://www.tudelft.nl/studenten/ondersteuning/study-internship-abroad/university-exchange-partners-networks

10. Financial statements 2021

The financial statements in this annual report are a print of the original annual financial reporting, including the financial statements pursuant to Section 2:361 of the Dutch Civil Code. These financial statements are an English translation of the financial statements adopted on 29 April 2022. In case of any discrepancies between the English translation and the financial statements adopted on 29 April 2022, the latter prevail. The original financial statements can be obtained at the TU Delft website under Annual reports in section Facts and Figures.

10. CONSOLIDATED FINANCIAL STATEMENTS

10.1 Consolidated balance sheet as at 31 December 2021

Amounts in thousands of euros (after appropriation of result)

Assets		31-12-2021	31-12-2020
Fixed assets			
Tangible fixed assets	1	585,550	530,176
Financial fixed assets	2	10,108	12,141
Total fixed assets		595,658	542,317
Current assets			
Inventories	3	2,416	986
Accounts receivables and other receivables	4	114,358	125,866
Current securities	5	12,978	12,238
Cash and cash equivalents	6	290,755	289,067
Total current assets		**420,507**	**428,157**
Total assets		**1,016,165**	**970,474**
Equity and liabilities			
Group equity	7	494,935	459,770
Provisions	8	96,667	87,695
Long-term liabilities	9	11,126	11,258
Current liabilities	10	413,437	411,751
Total equity and liabilities		**1,016,165**	**970,474**

10.2 Consolidated statement of income and expenses for the year 2021

Amounts in thousands of euros

		Realization 2021	Budget 2021	Realization 2020
Income				
Government funding	11	514,450	477,756	468,693
Other government funding and subsidies	12	1,026	0	90
Tuition and examination fees	13	74,252	82,312	77,949
Income from work commissioned by third parties	14	206,096	199,951	198,397
Other income	15	28,901	25,186	45,007
Total income		**824,725**	**785,205**	**790,136**
Expenses				
Personnel expenses	16	564,145	560,546	522,334
Depreciation	17	42,744	52,016	42,552
Accommodation expenses	18	76,346	78,939	67,854
Other expenses	19	107,775	108,686	99,561
Total expenses		**791,010**	**800,187**	**732,301**
Operating result		**33,715**	**-14,982**	**57,835**
Financial income and expenses	20	1,522	1,501	-1,211
Result		**35,237**	**-13,481**	**56,624**
Taxes	21	62	86	108
		35,299	-13,395	56,732
Result from participations	22	0	-2,500	259
Result after taxes		**35,299**	**-15,895**	**56,991**
Minority interest	23	-27	41	-24
Net result		**35,272**	**-15,854**	**56,967**

10.3 Consolidated cash flow statement for the year 2021

Amounts in thousands of euros

	2021		2020	
Cash flow from operating activities				
Operating result		33,715		57,835
Adjustments for				
Depreciation	42,744		42,552	
Result from participating interests	-3,928		0	
Change in provisions	11,472		1,828	
Change in deferred taxation Other income and expense items without case flow	-76		-125	
Overige posten staat van baten en lasten die geen invloed hebben op ontvangsten en uitgaven	-6,252		0	
		43,960		44,255
Changes in current assets				
Inventories	-1,430		-825	
Accounts receivable and other receivables	11,508		18,793	
Current securities	-740		-703	
Current liabilities	1,686		13,009	
Other cash flows	-2,178		0	
		8,846		30,274
		86,521		132,364
Cash flows from (used in) operating activities				
Interest received	1,872		383	
Dividends	350		486	
Change in value of financial fixed assets	-700		-1,235	
Interest paid	0		-845	
Income tax received	62		108	
Minority interest	-27		-24	
Result from participations	0		259	
		1,557		-868
		88,078		131,496
Cash flow from investment activities				
Investments in tangible fixed assets	-91,846		-76,073	
Change in loans as part of financial fixed assets	6		-2,463	
Proceeds from the disposal of tangible fixed assets	25		-1,404	
Other changes in tangible fixed assets	-45		1,714	
Change in participations	-373		130	
Other changes in participations interest	-354		300	
Disposal of particpating interests	6,436		0	
		-86,151		-77,796
Cash flow from financing activities				
Change in reserves	-134		0	
Third-party interest in consolidated parties	27		24	
Long-term liabilities	-132		2,224	
		-239		2,248
Change in cash and cash equivalents		**1,688**		**55,948**
Movement in cash and cash equivalents				
Cash and cash equivalents at the beginning of the period		289,067		233,119
Change in cash and cash equivalents		1,688		55,948
Cash and cash equivalents at the end of the period		**290,755**		**289,067**

10.4 General notes to the consolidated balance sheet and statement of income and expenses

Entity Information

Business address from and trade register number

The registered and actual address of Delft University of Technology is Stevinweg 1, 2628 CN in Delft. Delft University of Technology is registered at the Chamber of Commerce under number 27364265.

General notes

Activities

Delft University of Technology (TU Delft) has been granted its legal form based upon Section 1.2 of Book 2 of the Dutch Civil Code and Section 1.8 of the law for Higher Education and Research (WHW).

The statutory duty of the university is described in Section 1.3.1 of the WHW: Universities are responsible for providing scientific education and conducting scientific research. In any case they provide initial degree programmes in scientific education, conduct scientific research, train scientific researchers and technical designers and transfer knowledge for the benefit of society.

Going concern

The financial statements, and the accounting principles and policies used, have been prepared in accordance with the going concern assumption.

Estimates

In order to be able to apply the principles and rules for preparing the financial statements, the management of the institution must form an opinion on various matters, and the management must make estimates which can be essential for the amounts included in the financial statements. If necessary for providing the insight required in Book 2, Section 362, paragraph 1 of the Dutch Civil Code, the nature of these opinions and estimates, including the corresponding assumptions, has been included in the notes to the relevant items of the financial statements.

TU Delft is pursuing an extensive investment programme for renewal of its educational and research facilities. A decision to sell off or demolish a building has implications for the valuation of these existing buildings.

There were no fundamental changes in accounting estimates in 2021.

Consolidation

The consolidation includes the financial statements of the institution, its group companies and other institutes over which it has control or which are under its central management. Group companies are legal entities over which the institution can exercise control, directly or indirectly, due to the fact that it holds the majority of the voting rights or can control the financial and operational activities in any other way. Potential voting rights that can be exercised on the balance sheet date are also taken into account.

The head of the group is TU Delft in Delft. The financial statements of the institute are included in the consolidated financial statements of TU Delft in Delft.

The group companies and other legal entities over which the institution can exercise control or which are under its central management are fully consolidated. The third-party interest in the group equity and the group result is stated separately. Participating interests over which no control can be exercised (associates) are not included in the consolidation.

In case of a joint venture, the relevant interest is proportionally consolidated. A joint venture is deemed to exist if, as a result of a collaboration agreement, the control is exercised jointly by the participants.

Intercompany transactions, intercompany profits and mutual claims and debts between group companies and other consolidated legal entities are eliminated, when as the results have not been realised through transactions with third parties outside the group. Unrealised losses on intercompany transactions are also eliminated unless an impairment is applicable. Accounting principles of group companies and other consolidated legal entities have, where needed, been amended in order to conform with the current accounting principles for the group.

Along with associates, several participating interests which are individually and jointly of immaterial significance are not included in the consolidation.

Related parties

All legal entities over which control, joint control or significant influence can be exercised are considered to be related parties. Legal entities that can exercise control are also considered to be related parties.
The members of the Board under the articles of association, other key officials in the institution's management and close relatives are also related parties.

Significant transactions with related parties are commented on when they have not been concluded at arm's length. In this respect, the nature and size of the transaction are clarified, as well as other information that is needed to provide insight.

For an overview of related parties, reference is made to Model E: Related parties as included in this annual financial statement.

Acquisitions and disinvestments of group companies

With effect from the acquisition date, the results and the identifiable assets and liabilities of the acquired institution are included in the consolidated financial statements. The acquisition date is the date from which control can be exercised over the institution concerned.

The acquisition price is the sum of money (or equivalent) agreed for the acquisition of the institution, plus any directly allocatable costs. If the acquisition price is higher than the net fair value of the identifiable assets and liabilities, the excess amount will be capitalised as goodwill under intangible fixed assets. If the acquisition price is lower than the net fair value of the identifiable assets and liabilities, the difference (negative goodwill) will be recorded under accrued liabilities.

The companies involved in the consolidation will remain in the consolidation until they are sold; deconsolidation takes place when control is transferred.

General accounting policies

General

The consolidated financial statements have been prepared in accordance with the Dutch Annual Reporting Regulation for Education, Part 9, Book 2 of the Dutch Civil Code, and Section 660 of the Dutch Accounting Standards and the authoritative statements in the other sections of the Dutch Accounting Standards, issued by the Foundation for Annual Reporting, and with the regulations of the Public and Semi-public Sector Senior Officials (Standard Remuneration) Act (WNT) .

Assets and liabilities are generally stated at their acquisition or manufacturing price or current value. If no specific accounting policy is specified, valuation is based on the acquisition price. References are included in the balance sheet, the statement of income and expenses and the cash flow statement. These references refer to the explanatory notes.

The financial statements are presented in euros and in thousands, unless stated otherwise.

Comparison with previous financial year

The accounting principles for valuation and determination of results have not changed compared to the previous reporting year. The accounting principles for valuation regarding the cash flow statement have been adjusted as of book year 2021. See section cash flow statement for more information.

Foreign currency

Assets and liabilities denominated in foreign currency are translated into euros at the exchange rate prevailing on balance sheet date. Gains and losses arising from transactions in foreign currencies are translated at the exchange rate prevailing on transaction date. All exchange rate differences are accounted for in the statement of income and expenses.

Changes in accounting principles

The accounting principles for valuation and determination of results have not changed compared to previous year.

Accounting policies for the valuation of assets and liabilities

Tangible fixed assets

Land and buildings

Buildings and land are stated at their acquisition price, including additional costs or the manufacturing price minus straight-line depreciation throughout the estimated useful life. Land is not subjected to depreciation. Impairments expected at the balance sheet date have been taken into account. For guidance regarding when a tangible fixed asset is subject to impairment, refer to the paragraph below: Impairments of fixed assets.

Category fixed asset	Annual depreciation rate
• Land and roads	0 - 3.33%
• Completed buildings	1,7 - 6.67%

Other fixed assets are stated at their acquisition or manufacturing price value including direct allocatable costs, minus straight-line depreciation throughout the expected useful life. Impairments expected at the balance sheet date have been taken into account. For guidance when a tangible fixed asset is subject to impairment, refer to the paragraph below: Impairments of fixed assets.

The manufacturing price consists of the acquisition price of raw materials and consumables including additional (installation) costs which can be attributed directly to the manufacture. If a considerable amount of time is needed to prepare for manufacture, the interest costs are also included in the manufacturing price.

Investments in 2th/3th funding projects are capitalised in the year of purchase and are directly and fully part of the cost of the project.

Investments in equipment and inventory of less than K€ 25 as well as expenditures on books and artworks, are directly accounted for in the statement of income and expenses.

Category fixed asset	Annual depreciation rate
• Apparatuur en inventaris	10 - 33.33%

Major maintenance costs are capitalised according to the component method. Major maintenance is defined in line with the Dutch Accounting Standards. TU Delft has a threshold amount of K€ 150 for capitalisation. TU Delft rents out part of its space to third parties. Rental income is included as other income in the statement of income and expenses.

Financial fixed assets

Participations
Participations in which significant influence can be exercised are valued according to the equity method (net asset value method). When 20% or more of the voting rights can be exercised, significant influence is assumed.

The net asset value is calculated according to the accounting principles that apply for these financial statements; for participations for which insufficient details are available for adjustment to these principles, the accounting principles of the participations concerned are used. If, according to the net asset value, the valuation of a participation is negative, this participation is valued at zero.

If and to the extent that the institution guarantees in whole or in part the liabilities of the participation, or has the firm intention of enabling the participation to settle its debts, a provision is created for this. The initial valuation of purchased participation is based on the fair value of the identifiable assets and liabilities at the time of acquisition. For the subsequent valuation, the accounting principles that apply to these financial statements are applied, based on the values of the initial valuation. The result is recorded as the amount by which the book value of the participation has changed since the previous financial statements as a consequence of the result achieved by the participation.

Participations in which no significant influence can be exercised are stated at their acquisition price. If there is a permanent impairment, valuation occurs at the realisable value; downward valuation changes are charged to the statement of income and expenses. The participating interests of Delft Enterprises
B.V. are stated at cost or lower market value. An exit strategy is maintained for the participating interests. The policy states that the participating interest will be disposed of in due course (the aim is a period between five and ten years).

Participating interests
The participating interests of Delft Enterprises B.V. are stated at cost of if applicable lower market value.

Receivables from participations
Receivables included under financial fixed assets are initially stated at fair value after deduction of transaction costs (if material). These receivables are subsequently stated at amortised cost, taking into account any value reductions.

Deferred tax assets
Deferred tax assets are recognised for unused tax losses and deductible temporary differences between the value of the assets and liabilities measured for tax purposes and according to the accounting principles applied in these financial statements to the extent that it' is probable that future taxable profits will be available against which temporary differences and losses can be utilised.

The deferred tax assets are measured using the tax rates applicable at the end of the reporting year or when applicable at the enacted rates for the coming year. Deferred tax assets are stated at nominal value.

Other Receivables
Other receivables included under the financial fixed assets consist of loans granted and other receivables. These receivables are initially stated at fair value. Subsequently these loans and bonds are stated at amortised cost. Impairments are deducted from the amortised cost and directly accounted for in the statement of income and expenses.

Impairment of fixed assets
At balance sheet date, the institution assesses if indications exist whether a fixed asset is subjected to impairment. When indications exist, the realisable value of the asset is determined. If it's not possible to determine the realisable value for the individual asset, the realisable value of the cash flow generating unit to which the asset belongs is determined. An impairment exists if the book value of an asset is higher than the realisable value; the realisable value is the higher of the net realisable value and the value in use. An impairment loss is recorded as an expense in the statement of income and expenses while reducing the book value of the asset concerned.

If it's established that a previously recorded impairment no longer exists or has decreased in value, the increased book value of the asset concerned is not set higher than the book value that would have been determined if no impairment had been recorded for the asset.

Inventories
Inventories are valued at cost as determined by acquisition price according to the FIFO (first in, first out) method or net realisable value, whichever is lower. The net realisable value is the estimated selling price less directly allocable selling expenses. Obsolete inventories are taken into account when determining the net realisable value.

Cryptocurrency
The Faculty of Electrical Engineering, Mathematics and Computer Science (EWI) has a research group known as the Delft Blockchain Lab (DBL), which focuses on research and education in the field of blockchain technology. This research group participates in the national collaboration, known as the Dutch Blockchain Coalition.
To enable the investigation of blockchain initiatives, TU Delft holds a limited number of bitcoins. The bitcoins are valued at cost, given the high volatility of this cryptocurrency.

Fissile material
The Reactor Institute Delft (RID) is part of the faculty of Applied Sciences (TNW) and the Dutch knowledge centre for scientific research and education in the field of radiation. The RID manages a research reactor that serves as a neutron and positron source for research instruments. Nuclear fuels are used to keep the nuclear reactor operational. The fissile materials are valued at cost price.

Receivables
Receivables are initially recognized at fair value based on amounts exchanged and subsequently at amortised cost. Trade receivables are valued at amortised cost after initial valuation and have a maximum duration of a year. Provisions for doubtful receivables are deducted from the book value of the receivable.

The balance arising from projects with third parties results in a receivable or a debt on the balance sheet. Projects with prepaid expenses that exceed the instalments invoiced in advance are included under receivables. Projects with instalments invoiced in advance that exceed the prepaid expenses are included under liabilities. Any additional own contribution deemed necessary for a project arising from projects performed with third parties is deducted.

Current securities
Current securities that are a part of the trading portfolio are stated at fair value.
TU Delft includes the direct transaction costs attributable to the purchase of shares and obligations in the statement of income and expenses. Changes in value are directly accounted for in the statement of income and expenses.
Current securities classified as current assets have a duration of less than one year.

Cash and cash equivalents
Cash and cash equivalents consist of cash, bank balances and deposits with a duration of less than twelve months. Current account debts with banks are included under current liabilities. Cash and cash equivalents are stated at nominal value.

Equity
Equity consists of general and statutory reserves and funds for special purposes.
The statutory reserves are reserves with a restricted disbursement of funds, as imposed by the Board.

Minority interests
Minority interests as part of the group equity are stated at the amount of the net interest in the net assets of the group companies concerned.
If a group company concerned has a negative net asset value, the negative value together with any further losses is not charged to the minority interest, unless the third party shareholders have a constructive obligation and are able to bear the losses.
As soon as the net asset value of the group companies becomes positive once again, results are allocated to the minority interest.

Provisions

General
Provisions are recognized for present legal or constructive obligations arising from past events, for which an outflow of economic benefits is probable and a reliable estimate of the amount can be made. Provisions are stated at the best estimate of the amounts necessary to settle the liabilities at balance sheet date. Other provisions are stated at the nominal value of the expenditures expected to be required to settle the liabilities, unless stated otherwise.

If a third party is expected to compensate for the liabilities and it's probable that the compensation will be received upon settlement of the liability, than the compensation will be included as an asset on the balance sheet.

Provision for anniversary benefits
The provision for anniversary benefits is stated as the cash value of the expected payments in the course of the employment. The expected salary increases and the likelihood of employment duration are taken into consideration in the calculation of the provision. In calculating the present value, a discount rate of 1.5% has been applied (2020: 1.5%).

Asbestos provision
The asbestos provision concerns the future costs of removing asbestos within TU Delft buildings. The provision is valued at present value with a discount rate of 1.5% (2020: 1.5%).

Sewer system provision
In the calculated sewer system provision a discount rate of 1.5% has been applied (2020: 1.5%)

RID dismantling provision
The provision for dismantling the RID concerns a present value of the expected future costs of dismantling the RID.

Other provisions
Other provisions are stated at nominal value of the expenditures deemed necessary for the settlement of the provision.

Current liabilities
Current liabilities are initially stated at fair value. Current liabilities are subsequently stated at amortised cost, which is determined by the amount received, taking into account premiums or discounts and after deduction of transaction costs. This is usually the nominal value.

Leasing

Operational leasing
Lease contracts might be applicable in the institution for which many of the advantages and disadvantages of ownership are not the responsibility of the institution. These lease contracts are recorded as operational leasing. Lease payments are included in the statement of income and expenses on a linear basis for the duration of the contract, taking into account the payments received from the lessor.

Financial instruments and risk management
Financial instruments comprise of investments in shares and bonds, trade and other receivables, cash, loans and other financing obligations, trade and other payables. Financial instruments are initially stated at fair value. After initial valuation the financial instruments not included in the trading portfolio are stated at amortised cost based on the effective interest method, minus impairment losses.

Currency risk
The institution operates primarily in the Netherlands. The currency risk for the institution mainly relates to positions and future transactions in US dollars. Based on a risk analysis, the Board of the institution has determined that some of these currency risks are to be covered. Forward exchange contracts are used for this purpose.

Interest rate risk and cash flow risk
The institution is subjected to an interest rate risk on the interest bearing receivables (mostly regarding financial fixed assets, current securities and cash and cash equivalents) and interest bearing long term and short term liabilities (including debts to credit institutions).

Credit risk
The institution does not bear any significant credit risk.

Accounting policies for valuation of statement of income and expenses

General
Income and expenses are recognised in the applicable book year. Results are only recognised when realised at balance sheet date. Losses and risks originating before the end of the reporting year are recognized, provided that they have become known before the adoption of the financial statements.

Government funding
Government funding is recognised as revenue in the statement of income and expenses in the applicable year. The costs associated with the granted non-normative government funding have been recognised in the statement of income and expenses. The not utilized part is included as liability in the balance sheet.

Other government funding and subsidies
Subsidies attributable to the statement of income and expenses are recognised as revenue in the year in which the subsidised costs were incurred or revenue was lost, or when a subsidised operating deficit occurred. Revenue is recognised when receipt is probable and the institution can demonstrate the conditions for receipt.

Subsidies related to investments in tangible fixed assets are deducted from the asset concerned and included as part of the depreciation in the statement of income and expenses or deferred as amounts received in advance.

Project revenues and project costs
For projects of which the result can be reliably determined, the project income and project costs are stated as net turnover and costs in the statement of income and expenses in proportion to the progress made at balance sheet date. The progress of the performance completed is determined as the ratio between the realised project costs as of balance sheet date and estimated total project costs.

If the result at balance sheet date cannot be estimated reliable, the revenues will be recorded as net turnover in the statement of income and expenses up to the amount of the realised project costs. The result is determined as the difference between project revenues and project costs. Project revenues are the contractually agreed revenues, revenues from additional or reduced work, claims and reimbursements, if and to the extent that it's probable that these will be realised and if a reliable estimate of the amount can be made. Project costs are the costs directly related to the project, the costs that are generally attributed to project activities and can be attributed to the project, and other costs contractually attributable to the commissioning party.

All the projects of TU Delft are budgeted as 'budget neutral', which means that the costs are equal to the income generated. If a part of the costs are not covered by 2th /3th funding, TU Delft allocates an own contribution in the project budget. The own contribution is recognised in the statement of income and expenses based on the progress of the performance completed.

If the total project costs are likely to exceed the total project revenues, the expected losses will be immediately included in the statement of income and expenses. For TU Delft, project revenues represent a structural contribution to the financial result, TU Delft has a wide variety in subsidy arrangements. The agreed upon project conditions serve as guidelines for determining the result.

Revenue recognition

Rendering services
Revenues attributable to the provision of services are accrued in proportion to the services delivered, based on the services rendered up at balance sheet date in relation to the total services to be rendered.

Goods sold
Income from the sale of goods is recognised when the significant risks and rewards of ownership of the goods are transferred to the buyer.

Gifts
Income received in the form of goods or services is stated at fair value.

Other Income
Other income comprises income from rental, sale, secondment, contribution by third parties and other income.

Depreciation of intangible and tangible fixed assets

Intangible and tangible fixed assets are depreciated as of the month following the date of first use over the expected future useful life of the asset. Land is not depreciated. If there is a change in the estimate of the future useful life, the future depreciations are adjusted accordingly. Gains and losses from the non-recurring sale of material fixed assets are included in the statement of income and expenses.

Employee benefits

Periodic remuneration
Wages, salaries and social security contributions are included in the statement of income and expenditures on the basis of employment conditions as far as they classify as payables to employees or the tax authorities.

Pensions
The institution has a pension scheme with ABP Pension Fund. This pension scheme is subject to the Dutch Pensions Act, and contributions are paid by the institution on a compulsory or contractual basis. The pensionable salary at ABP is based on the average wages during an employee's working career. ABP tries to raise the pensions each year by the average wage increase in the government and education sectors. Indexation is possible at a coverage ratio of 110% or more. Indexation does not take place at a coverage ratio between 104% and 110%. If the coverage ratio falls below 104%, the pension fund must take measures. The contributions are stated as personnel costs when they become payable. Prepaid contributions are included as prepayments if they result in a repayment or a reduction in future payments. Contributions that have not been paid accordingly are included in the balance sheet as current liabilities. No further liabilities remain after the contributions have been paid.

As of 31 December 2021, the policy-funding ratio of the ABP Pension Fund is 102.8%.

Exceptional items

Exceptional items are income or expenses arising from events or transactions that are part of the ordinary operations but which, for the purpose of comparison, are explained separately on the basis of the nature, scope or non-recurring nature of the item.

Financial income and expenses

Interest income and interest expenses

Interest income and interest expenses are included on a time-proportionate basis, taking into account the effective interest rate of the respective assets and liabilities.

Dividends

Dividends received from participations and current securities that are not accounted for at net asset value are recognised as soon as TU Delft has acquired the applicable rights.

Exchange rate differences

Exchange rate differences that arise due to the settlement or translation of monetary items are recorded in the statement of income and expenses in the period in which they arise. Transactions in foreign currency carried out during the reporting period are included in the financial statements at the exchange rate applying on the transaction date.

Taxation

The taxation is calculated over the result before taxation in the statement of income and expenses, taking into account the available, offset table taxation losses from previous financial years (unless they are included in the deferred tax assets), exempt profit components and after the addition of non- deductible expenses. Also changes that occur in the deferred tax assets and deferred tax liabilities as a result of changes in the applicable tax rate, are taken into account.

Result from participations

The result from participations is the amount by which the book value of the participation has changed since the previous financial statements as a consequence of the result attributable to the participation.

Accounting policies for the valuation of cash flow statement

Cash flow statement

TThe cash flow statement is prepared in according with the indirect method. The cash amounts in the cash flow statement consist of the cash and cash equivalents, excluding deposits with a term of more than three months. Cash flows in foreign currencies have been converted at an estimated average rate. Receipts and payments on interest and dividends received have been included in the cash flow from operating activities. The acquired financial interests have been included in the cash flow from investing activities. Changes in the reserves and minority interests in consolidated parties are included under cash flow from financing activities.

In compliance with RJ660-model C: Cash flow model, certain activities have been added or clarified. In this model the operating result is used as the starting point instead of net result. Due to the reallocations the comparative figures cannot be reconciled to the cash flow statement included in the financial statements of 2020.

10.5 Notes to the consolidated balance sheet

Assets

Fixed assets

1. Tangible fixed assets

	31-12-2021 K€	31-12-2020 K€
Land and roads	65,603	62,328
Completed buildings and installations	339,119	337,178
Building and installations under construction	94,789	65,686
Equipment and inventory	56,363	54,276
Advance payments	29,676	10,708
	585,550	**530,176**

Tangible fixed assets	**Land and roads**	**Completed buildings**	**Building and installations**	**Equipment and inventory**	**Advance payments**	**Total**
Balance as at 1 January 2021						
Cumulative purchase cost	69,916	834,415	65,686	248,322	10,708	1,229,047
Accumulated depreciation	-7,588	-497,237	0	-194,046	0	-698,871
Book value as at 1 January 2021	**62,328**	**337,178**	**65,686**	**54,276**	**10,708**	**530,176**
Investments	0	2,512	56,360	4,432	28,542	91,846
Transfer to land and roads	3,904	0	-3,904	0	0	0
Transfer to completed buildings	0	24,104	-24,104	0	0	0
Transfer to equipment and inventory	0	0	0	15,826	-15,826	0
Depreciation	-1,180	-23,408	0	-18,146	0	-42,734
Disposals	0	0	0	-17,533	0	-17,533
Depreciation on disposals	0	0	0	17,508	0	17,508
Other changes	551	-1,267	751	0	6,252	6,287
Balance movements	**3,275**	**1,941**	**29,103**	**2,087**	**18,968**	**55,374**
Balance as at 31 December 2021						
Cumulative purchase cost	74,279	859,856	94,789	251,048	29,676	1,309,648
Accumulated depreciation	-8,676	-520,737	0	-194,685	0	-724,098
Book value as at 31 December 2021	**65,603**	**339,119**	**94,789**	**56,363**	**29,676**	**585,550**

Land, Roads and buildings

- Campus Zuid
  The amount for land and roads includes a value of M€ 20 with regard to the Campus Zuid area. The current value of buildings and land has not been determined.

- Sale object Mijnbouwkunde
  Due to the sale of the Mijnbouwkunde object, both an impairment and divestment were done on the book value of buildings completed in 2020. Transfer of the Mijnbouwkunde object is planned in 2022.

- Land development
  The University develops land for the allocation of plots of leasehold land. These costs are capitalised and depreciated over the term of the lease after the plots have been allocated. The leases acquired are included under long-term liabilities and, also during the term of a long-term lease, are released to the income statement. This is included separately under the item other changes.

- Collateralization
  Related to the financial security for the dismantling of the Reactor Institute Delft (RID), two buildings are subjected to a mortgage.

Equipment and inventory

- Books / media collection
  Purchases with the purpose of maintaining the collection of the university library are charged to the operating account in the year of purchase. In 2021 this concerned an amount of M€ 8,0 (2020: M€ 8,2).

Advance payments

Some of the other movements have a connection from the past due to a research asset that was initially valued as a research project but actually concerns a tangible fixed asset. This correction is not significant, therefore the figures of the previous years have not been adjusted.

2. Financial fixed assets

	31-12-2021 K€	31-12-2020 K€
Participations	3,168	2,795
Participating interests	5,980	5,956
Loans	75	2,581
Deferred tax assets	885	809
	10,108	**12,141**

	31-12-2020	Additions	Disposals	Result	31-12-2021
Participations					
Bioprocess Pilot Facility B.V.	45	0	0	-45	0
Blue Sparrows Medtech Finance B.V.	39	30	0	0	69
Chrysalix RoboValley US Limited Partners	107	128	0	-21	214
Dutch Greentech Fund B.V.	348	22	0	-12	358
HollandPTC B.V.	0	0	0	0	0
ICOS Cleantech Early Stage Fund II B.V.	93	0	0	0	93
Innovation Industries Fund II Cooperatief U.A.	46	68	-6	-29	79
Mainport Innovation Fund B.V.	1,052	37	-14	0	1,075
Mainport Innovation Fund II B.V.	129	47	0	-9	167
ROM InnovationQuarter B.V.	428	0	0	0	428
Shift Invest III Cooperatief U.A.	2	19	0	-4	17
Shift Invest Cooperatief U.A.	147	18	0	-6	159
Teggwins IA B.V.	250	150	0	0	400
TUD Beijing Institute WFOE	76	0	0	0	76
UNIIQ B.V.	11	0	0	0	11
VINwater	22	0	0	0	22
Total	**2,795**	**519**	**-20**	**-126**	**3,168**
Participaties					
Adjuvo Motion B.V.	156	0	0	0	156
ADR Technology B.V.	250	0	0	0	250
Allotropica Technologies Inc.	0	0	0	0	0
APTA Technologies B.V.	25	0	0	0	25
Battolyser B.V.	0	0	0	0	0
BIOND Solutions B.V.	50	97	0	0	147
Blue Phoenix Group B.V.	25	0	-15	0	10
C2CA Technology B.V.	3	1	0	0	4
CarbonX B.V.	308	0	0	0	308
City Analytics B.V.	0	0	0	0	0
Clear Flight Solutions B.V.	125	0	0	-125	0
CloudCuddle B.V.	112	0	0	0	112
CognitiveIC B.V.	0	0	0	0	0
Cool Separations B.V.	296	0	0	0	296
Councyl B.V.	61	0	0	0	61
City Analytics	0	0	0	0	0
DE-Birds B.V.	0	0	0	0	0
Delft Advanced Biofuels B.V.	137	0	0	0	137
Delft IMP B.V.	250	360	-250	0	360
Delmic B.V.	307	419	-250	0	476
DENSsolutions B.V.	100	0	0	0	100
E-Stone Batteries B.V. (liquidated)	250	0	0	-250	0
Enevate B.V.	68	0	0	0	68
EXO Ligament B.V.	100	0	0	0	100
Fastree3D B.V.	0	0	0	0	0
Field Factors B.V.	20	0	0	0	20

	31-12-2020	Additions	Disposals	Result	31-12-2021
Fizyr B.V.	357	0	0	0	357
Flapper Drones B.V.	40	0	0	-40	0
FlexSol Building Solutions B.V.	150	0	0	0	150
GBM Works B.V.	35	25	0	0	60
Gilbert Technologies B.V.	0	0	0	0	0
Green Basilisk B.V.	274	0	0	0	274
Hardt Group B.V.	150	0	0	0	150
HOMIE B.V.	0	0	0	0	0
IMSystems Holding B.V.	150	150	-150	0	150
InexTeam B.V. (sold)	0	0	0	0	0
Innatera Nanosystems B.V.	0	0	0	0	0
Interactive Robotics B.V.	18	0	0	0	18
Magneto B.V.	0	34	0	0	34
Mayht B.V.	280	0	-17	0	263
Metropolder B.V.	0	0	0	0	0
MEZT B.V.	3	0	0	0	3
MILabs B.V. (sold)	225	0	-225	0	0
Mobile Canal Control B.V.	0	0	0	0	0
Nature's Principles B.V.	0	21	0	0	21
OfficeVitae B.V.	0	0	0	0	0
ParaPy Holding B.V.	60	0	0	0	60
PATS Indoor Drone Solutions B.V.	100	25	0	0	125
PHYSEE Group B.V.	20	0	0	0	20
Plotwise Holding B.V.	166	0	0	0	166
Populytics B.V.	0	10	0	0	10
PV Works B.V.	0	1	0	0	1
Qblox B.V.	100	0	0	0	100
QdepQ Systems B.V.	268	0	0	-18	250
Qphox	0	90	0	0	90
Qualinx B.V.	188	0	0	0	188
QuantWare Holding	0	100	0	0	100
Respyre B.V.	15	0	0	0	15
Sandgrain B.V.	141	0	0	-141	0
Scrapscanner B.V.	50	0	0	0	50
Slimy Green Stuff B.V.	0	0	0	0	0
SolvGE B.V.	0	0	0	0	0
SpringScan IP Holding B.V.(liquidated)	0	0	0	0	0
Stokhos B.V.	0	0	0	0	0
Teller B.V.	250	0	0	0	250
Tiler B.V.	100	38	0	0	138
TUDesc B.V.	0	0	0	0	0
Urban Mining Corp B.V.	148	173	-64	0	257
Vertigo Technologies B.V.	0	0	0	0	0
Villari B.V.	25	10	0	0	35
VSParticle B.V.	0	0	0	0	0
Wegain B.V.	0	0	0	0	0
Whiffle Holding B.V.	0	0	0	0	0
Zero Energy Development	0	15	0	0	15
Total	**5,956**	**1,569**	**-971**	**-574**	**5,980**
Loans					
Study and student associations Foundation	29	0	-4	0	25
Laboratoriumvliegtuig NLR/ TU Delft	34	0	0	0	34
Student Emergency Fund	18	0	-2	0	16
Holland PTC B.V.	2,500	0	-2,500	0	0
Total	**2,581**	**0**	**-2,506**	**0**	**75**

Study and student associations

Concerns three long-term interest-free loans. Nothing has been agreed with regard to collateral.

Foundation Laboratoriumvliegtuig NLR/ TU Delft

In 2011, an interest-free loan was granted to Foundation Laboratoriumvliegtuig NLR/ TU Delft. The foundation requires this loan in order to reinvest in an aircraft cockpit for research purposes at TU Delft. The principal of the loan is K€ 341 and is repayable in ten equal annual instalments. Up to 2021, nine instalments have been repaid, totalling K€ 307. Nothing has been agreed with regard to collateral.

Student Emergency Fund

An emergency fund exists for students with financial problems. The emergency fund is only used in exceptional cases, always involves a loan and in all cases involves costs other than tuition fees, such as hospital costs. Tuition fees are not reimbursed.

HollandPTC B.V

TU Delft Services B.V. has granted a loan with a principal of M€ 2,5 and a bridging loan amounting to M€ 2,5 to HollandPTC B.V. This participation has a negative equity value of M€ 6,4, therefore TU Delft has created a provision to account for this. Consolidated, the balance of the loans has been written down with the provision.

Deferred tax assets

	31-12-2020	Additions	Disposals	Result	31-12-2021
	K€	K€	K€	K€	K€
Deductible temporary differences	553	0	-389	0	164
Available carry-forward of losses	256	465	0	0	721
Total	**809**	**465**	**-389**	**0**	**885**

Deferred tax assets have arisen from deductible temporary differences and available carry-forward of losses in the consolidated parties of the wholly-owned participation TU Delft Services B.V.

Deductible temporary differences

This item concerns a temporary valuation difference in the book value of the buildings Yes!Delft 1 and Yes!Delft Labs due to the minimum book value being reached. These properties are owned by the consolidated party: Technostarters Delft Vastgoed B.V.

Available carry-forward of losses

This item arose as a result of the future probability of taxable profits within the tax group of the following consolidated parties: Delft Projectmanagement B.V., FlexDelft B.V., FlexDelft Detacheringen B.V., Technostarters Delft Vastgoed B.V. and Suenso Molengraaffsingel B.V.

Current assets

3. Inventories

	31-12-2021 K€	31-12-2020 K€
Consumer goods	2,416	986

During the year, more stock was purchased (M€ 1,4) than was consumed (K€ 110), which resulted in an increase in the stock position.

4. Accounts receivables and other receivables

Accounts receivables	15,530	23,155
Receivables relating to government funding	900	3,302
Prepaid expenses of multi-year projects and grants	74,008	74,432
Other receivables, prepayments and accrued income	23,920	24,977
	114,358	**125,866**

Accounts receivables

Receivables on accounts receivable	16,996	26,314
Receivables on related parties	1,318	922
	18,314	27,236
Provision for doubtful debts	-2,784	-4,081
	15,530	**23,155**

Accounts receivable include receivables aged over one year up to an amount of K€ 2,727 (2020 K€ 3,926).

Receivables relating to government funding

BaMa compensation	900	3,302

BaMa compensation
The claim on the Ministry of Education, Culture and Science concerns compensation for missing out on funding as a result of the introduction of the bachelor-master structure in the period 2003-2008.

In 2021, a repayment of K€ 2,402 was received (2020: K€ 2,214). At the end of 2021 a claim of K€ 900 remains (2020: K€ 3,302).

Prepaid expenses of multi-year projects and grants

Prepaid expenses of projects and grants with a debit balance	395,764	404,709
Progress payments	-290,730	-301,195
Contingency own contribution	-31,026	-29,082
	74,008	**74,432**

The term of the receivable depends on the degree of advance funding by these external funders. These receivables have a term of more than one year.

	31-12-2021 K€	31-12-2020 K€
Other receivables, prepayments and accrued income		
Tuition and examination fees	97	32
Advances to staff	88	17
Prepaid amounts	14,264	16,436
Interest receivable	0	17
Amounts to be charged	9,421	8,425
Funds to be received for Professional Learning Communities	50	50
	23,920	**24,977**

5. Current securities

The movements of the current securities are as follows:		
Book value as at 1 January	12,238	11,535
Purchase	2,398	4,117
Sale	-2,853	-3,429
Revaluation	1,195	15
Book value as at 31 December	**12,978**	**12,238**

This concerns the portfolios of Foundation Het Lammingafonds of K€ 3,152 and Foundation Nanoscience TU Delft of K€ 9,826. The current securities portfolio consists of K€ 6,434 in shares and K€ 6,544 in bonds, and is at the free disposal of the legal entities.

6. Cash and cash equivalents

Cash in hand	42	28
Cash at bank	44,341	68,250
Current account treasury banking	246,372	220,789
	290,755	**289,067**

All cash and current account balances are at free disposal by TU Delft and its consolidated entities.

The interest paid on these accounts is variable and linked to the development of the Euribor-rate and the interest rate policy of commercial banks.

The interest rate on the current account treasury banking is based on EONIA fixing. In case of negative interest rates, this interest rate is equalled to zero.

Equity and liabilities

7. Group equity

	31-12-2021 K€	31-12-2020 K€
Group equity		
General reserve	467,255	438,398
Statutory reserves (public)	-4,132	-4,778
Statutory reserves (private)	6,728	3,677
Special-purpose fund (private)	24,823	22,239
Minority interest*	260	233
	494,935	**459,770**

*) This concern the non-controlling in Yes!Delft B.V.

The proportion of equites in Yes!Delft is divided as follows:

60% TU Delft Services B.V. (2020: 60%)
20% Municipalty of Delft (2020: 20%)
20% TNO Deelnemingen B.V. (2020: 20%)

Group equity Technische Universiteit Delft

	31-12-2021	31-12-2020
Balance as at 1 January	459,537	402,570
Result for the financial year	35,272	56,967
Other charges	-134	0
Balance as at 31 December	**494,675**	**459,537**

	Balance as at 1-1-2021	Proposed result	Other changes	Balance as at 31-12-2021
General reserve				
General reserve	438,398	28,991	-134	467,255
	438,398	28,991	-134	467,255
Statutory reserves (public)				
TU Delft Services B.V.	-6,262	1,363	0	-4,899
LDE Alliance	1,484	-716	0	768
	-4,778	646	0	-4,132
Statutory reserves (private)				
Delft Enterprises B.V.	3,677	3,051	0	6,728
	3,677	3,051	0	6,728
Special-purpose fund (private)				
Foundation Nanoscience TU Delft	11,529	902	0	12,431
Foundation Het Lammingafonds	2,836	295	0	3,131
Consolidated foundations TU Delft Services B.V.	7,875	1,386	0	9,261
	22,240	2,583	0	24,823
	459,537	**35,272**	**-134**	**494,675**

Group equity Technische Universiteit Delft

	Balance as at 1-1-2020 K€	Proposed result K€	Other changes K€	Balance as at 31-12-2020 K€
General reserve				
General reserve	383,206	55,193	0	438,399
	383,206	55,193	0	438,399
Statutory reserves (public)				
TU Delft Services B.V.	-6,413	151	0	-6,262
LDE Alliance	1,705	-221	0	1,484
	-4,708	-70	0	-4,778
Statutory reserves (private)				
Delft Enterprises B.V.	3,393	284	0	3,677
	3,393	284	0	3,677
Special-purpose fund (private)				
Foundation Nanoscience TU Delft	11,356	173	0	11,529
Foundation Het Lammingafonds	2,730	105	0	2,836
Consolidated foundations TU Delft Services B.V.	6,593	1,282	0	7,875
	20,679	1,560	0	22,239
	402,570	**56,967**	**0**	**459,537**

General reserve

Other changes includes the parking revenues regarding Camps-Zuid which have not been recorded in accordance with laws and regulations at an earlier stage. It's not a material misstatement therefore error recovery is not applicable.

Statutory reserves

This concerns the reserves formed based on an Executive Board decision intended for specific expenditures on education and research at the faculties and services.

public

- Related to the public activities of TU Delft Services B.V.
- Resources made available in context of the partnership between Leiden University, TU Delft and Erasmus University Rotterdam (LDE).

private

Related to the private activities of Delft Enterprises B.V.

Special-purpose funds

These reserves are formed because of restrictions in spending, imposed by third parties.

private

- Foundation Nanoscience TU Delft: the promotion of scientific research in the area of nanoscience, in particular within the Kavli Institute of Nanoscience Delft of Delft University of Technology.
- Foundation Het Lammingafonds: financial support to research projects, within the hydraulic domain of Civil Engineering, which are significant for developing countries.
- Related to the private activities of TU Delft Services B.V

	31-12-2021 K€	31-12-2020 K€
Minority interest		
Balance as at 1 January	233	209
Change to minority interest	27	24
	260	**233**

Profit appropriation

Provisions on the appropriation of profit in the statutes

TU Delft has no statutes of foundation. Therefore, provisions on the appropriation of profit under the articles of association are not applicable.

The result of K€ 35,272 (positive) is appropriated as follows:	
Addition to the general reserve	28,991
Addition to the statutory reserve	4,414
Withdrawal from statutory reserve	-716
Addition to special-purpose funds	2,583
Withdrawal from special-purpose funds	0
	35,272

Equity

Reconciliation of company and consolidated equity capital	
Equity in company financial statements	479,112
Equity of Foundation Nanoscience TU Delft	12,432
Equity of Foundation Het Lammingafonds	3,131
	494,675
Equity of minority interest	260
Equity in consolidated financial statements	**494,935**

Result

Reconciliation of company and consolidated result	
Result in company financial statement	34,075
Result Foundation Nanoscience TU Delft	902
Result of Foundation Het Lammingafonds	295
Result in consolidated financial statements	**35,272**

8. Provisions

	31-12-2021	31-12-2020
	K€	K€
Staff provisions	34,258	32,515
Student provisions	1,912	1,615
Miscellaneous provisions	60,497	53,565
	96,667	**87,695**

Staff provisions

	31-12-2020	Release	Allocation	Utilisation	31-12-2021
Redundancy pay	10,596	-1,782	5,529	-3,672	10,671
Sabbatical leave	1,647	-428	604	0	1,823
Recalibration	514	-161	0	-56	297
Reorganisation	2,032	-1,435	0	-222	375
Anniversary benefits	8,615	-1,104	3,207	-487	10,231
Transitional provision	5,931	-239	3,331	-2,379	6,644
Own risk insurance ZW-flex	300	-241	641	-232	468
Own risk insurance WGA	2,880	0	1,259	-390	3,749
Total	**32,515**	**-5,390**	**14,571**	**-7,438**	**34,258**

Redundancy pay

This concerns the provision for future payments to (former) employees who claim or are eligible to claim benefits under the redundancy pay scheme.

Sabbatical leave

This concerns the provision for the liabilities related to sabbatical leave.

Recalibration

This provision was created to fund the organisational changes resulting from the review process. Provisions are valued at net present value, taking into account a wage indexation of 2.9% per year and a discount rate of 1.5%.

Reorganisation

This provision relates to the liabilities arising from the reorganisation in respect of the organisational units. Provisions are valued at net present value, taking into account a wage indexation of 2.9% per year and a discount rate of 1.5%.

Anniversary benefits

Concerns the provision for the liabilities related to anniversary bonuses. Provisions are valued at net present value, taking into account a wage indexation of 2.9% per year and a discount rate of 1.5%.

Transitional provision

This concerns the provision for future transition payments to employees on termination of temporary employment of 2 years or more.

Own risk insurance ZW-flex

These concern provisions for future benefit payments to employees and former employees under the Sickness Benefit Act (ZW).

Own risk insurance WGA

These concern provisions for future benefit payments to employees and former employees under the Return to Work (Partially Disabled Persons) Regulation (WGA). Provisions are valued at net present value, taking into account a wage indexation of 2.9% per year and a discount rate of 1.5%.

Student provisions

	31-12-2020	Release	Allocation	Utilisation	31-12-2021
	K€	K€	K€	K€	K€
Student Financial Support Fund	1,615	0	2,000	-1,703	1,912
Total	**1,615**	**0**	**2,000**	**-1,703**	**1,912**

Concerns the provision for the liabilities related to the financial support of students, whom incurred a study delay due to special circumstances.

Miscellaneous provisions

	31-12-2020	Release	Allocation	Utilisation	31-12-2021
	K€	K€	K€	K€	K€
Fissionable materials	3,203	0	0	-3	3,200
Asbestos	14,792	0	6,833	-1,756	19,869
Sewer system	5,116	0	1,544	-3,981	2,679
RID Dismantling	25,979	0	3,345	0	29,324
Other	4,475	0	950	0	5,425
Total	**53,565**	**0**	**12,672**	**-5,740**	**60,497**

Fissionable materials

This provision is made up of the costs arising from the disposal and storage of fissionable materials. The amount is determined according to the nature of the individual activities of disposal and storage and is calculated by an internal specialist on the basis of external contracts (COVRA).

Asbestos

In the provision for asbestos removal, the amount is based on an inventory of the whole TU Delft campus, with costs calculated per building on the basis of empirical data for each type of asbestos. The actual expenditures relating to asbestos depend on the coordination of asbestos removal with demolition and renovation programmes. The provision is carried at net present value, with a discount rate of 1.5%.

Sewer system

TU Delft has included a provision to replace the sewer systems in the coming years because of their poor condition. The provision is carried at net present value, with a discount rate of 1.5%.

RID Dismantling

Based on the Nuclear Energy Act, TU Delft is a licensee of the Reactor Institute Delft (RID), as referred to in Article 15b of the Nuclear Energy Act. As of April 1, 2011, an amendment to the Nuclear Energy Act in force in which (among other things) an obligation for the license holders of nuclear power plants and reactors is included to provide financial security to propose the costs that are
associated with the decommissioning and decommissioning of a nuclear power plant or reactor by the license holder. For financial security, two TU Delft buildings are subject to a mortgage.

A provision for the future dismantling of the RID has been formed in the annual accounts, to which is doped annually according to time-proportional use. The RID removal provision is periodically tested. The last time in 2020, no changes of a material nature have arisen from this.

Other

This consists of several provisions created from contractual obligations that TU Delft has committed to in the past and that relate to projects in the context of realizing the campus vision.

The duration of the provisions is as follows:

	Balance	Breakdown of balance		
		< 1 year	1 - 5 years	> 5 years
Staff provisions	34,258	8,565	17,814	7,879
Student provisions	1,912	1,109	803	0
Miscellaneous provisions	60,497	4,416	14,637	41,444
Total provisions	**96,667**	**14,089**	**33,254**	**49,323**

9. Long-term liabilities

	31-12-2021	31-12- 2020
Long lease ground rent	11,126	11,258

10. Current liabilities

Accounts payable	140	2,238
Turnover tax	1,984	2,997
Payroll tax	22,922	21,148
Pension contributions	6,592	5,730
Advance payments for multi-year projects and grants	200,761	209,041
Accruals and deferred income	181,038	170,597
	413,437	**411,751**

The current liabilities all have a remaining duration of less than one year. The fair value of current liabilities approximates the book value because of their short-term nature.

Advance payments for multi-year projects and grants

Progress payments	533,150	475,506
Prepaid expenses of projects with a credit balance	-339,611	-272,560
Contingency own contribution	7,222	6,095
	200,761	**209,041**

Accruals and deferred income

Accrued holiday entitlements	21,907	24,424
Amounts payable	74,696	55,639
Interest payable	0	69
Tuition and examination fees received in advance (1 January - 31 August)	31,669	37,909
Holiday allowances payable (1 June - 31 December)	14,133	13,125
Gravitation programme earmarked funds	7,672	0
Gravitation programme funds still available: Frontiers of Nanoscience	8,454	8,267
Gravitation programme funds still available: Building a Synthetic Cell	1,668	2,076
Advance payments received for coordination activity	13,122	15,811
Advance payments	7,717	13,277
	181,038	**170,597**

Model G: Accounting for subsidies

Amounts in thousands of euros

G1 Accounting for subsidies of which a surplus will be added to the lump sum (without settlement clause)

Description	Allocation		The performance at the end of the reporting year is in accordance with the granting decision:	
	Reference	Date	completed in full	not entirely completed
Open and online higher education - Urban Resilience	OL19-08	30-04-2019	x	
Open and online higher education - Labrador	OO19-06	30-04-2019	x	
Open and online higher education - Enchancing student interaction	OO20-07	29-04-2020	x	
Open and online higher eudcation - OLMO	OO20-08	29-04-2020		x
Extra help for the class	COHO21-20036	7-10-2021	x	

G2 Accounting for subsidies that have to be spent entirely for the applicable purpose/activity with settlement clause regarding a surplus

G2.A. Settlement clause expiring at the end of the reporting year

Description	Allocation		Amount of allocation	Received by 1 January 2021	Grants received up to 2021	Other receipts up to 2021	personnel contribution up to 2021	Expenses in 2021	Total costs as at 31 December 2021	Balance as at 31 December 2021
	Reference	Date								
Corona jobs in higher education	COHO-210038	13-04-2021	420.342	0	420.342	0	0	0	172.478	247.864
		Total	**420.342**	**0**	**420.342**	**0**	**0**	**0**	**172.478**	**247.864**

G2.B. Settlement clause continuing into the following reporting year

Description	Allocation		Amount of allocation	Received by 1 January 2021	Grants received up to 2021	Other receipts up to 2021	personnel contribution up to 2021	Expenses in 2021	Total costs as at 31 December 2021	Balance as at 31 December 2021
	Reference	Date								
Not applicable			0	0	0	0	0	0	0	0
		Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Commitments and contingencies

Reactor Institute Delft

TU Delft is the licence holder of the Reactor Institute Delft (RID), in accordance with Section 15b of the Nuclear Energy Act. On 1 April 2011, an amendment to the Nuclear Energy Act took effect, which (among other things) obliges licence holders of nuclear plants and reactors to provide financial security for the costs related to the shutdown and dismantlement of the nuclear plant or reactor by the licence holder. For the purpose of this financial security, two buildings of the TU Delft have been secured by a mortgage. The final agreement for the financial security is in consultation with the involved Ministries following the approval in 2021 on the reassessed dismantle plan.

At the end of 2021, a provision of M€ 29,3 (2010: M€ 26,0) for the future dismantling of the RID is included in the financial statements. Annually an allocation is made, proportional to the period of use.

Investment obligations

At the end of the financial year, TU Delft has outstanding investment obligations equivalent to M€ 20,4 (2020: M€ 41,7).

Forward exchange contract

In order to reduce material financial risks, TU Delft has concluded a number of forward exchange contracts. The total value of the hedged item was M$ 3,7 at the end of 2021 (2020: M$ 7,8) corresponding to the contribution from external parties laid down contractually. These future incoming funds will be received in 2022. The value adjustment of the transactions of the hedged items amount to a K€48 loss gain at year end 2021 (2020: K€ 487 positive).

For its financial statements, TU Delft applies cost price hedge accounting, in accordance with Guideline 290 of the Dutch Accounting Standards. The foreign exchange position and strategy are evaluated periodically.

Guarantees for HollandPTC B.V.

TU Delft is for 33.33% guarantor regarding the guarantee loan from the European Investment Bank (EIB) to HollandPTC B.V. The guarantee agreement obligates every shareholder a guarantor for 33.33% of outstanding liabilities (interest and repayments). At the start of the agreement this amounts to a maximum of M€ 38.5 per shareholder.

Agreements have been made between HollandPTC B.V. and TU Delft regarding the guarantee loan of the EIB. At year-end 2021 HollandPTC has a total loan amount outstanding at the EIB of M€ 77.0 (2020: M€ 82.5). This corresponds with a guarantee amount of M€ 32.0 (2020: 34.3) per shareholder.

The HPTC guarantees comprise one for a principal amount and one for a (penalty) interest. TU Delft is guarantor for 33.33% regarding the principal amount of M€ 25.7 and for an estimated (penalty)interest of M€ 6.3. The (penalty)interest remains an estimation due to the possibility of a daily changing interest rate.

Quantum Technology (QuTech)

TU Delft signed a covenant for strategic partnership with the Minister of Economic Affairs, the Minister of Education, Culture and Science, the Netherlands Organisation for Applied Scientific Research (TNO), the Netherlands Organisation for Scientific Research (NWO) and Foundation TKI HTSM regarding the field of quantum technology (QuTech). The covenant has a duration until 1 July 2025.

The resulting financial obligation for TU Delft is an in kind contribution of M€ 3 (2020: M€ 3) per year and a cash contribution of approximately M€ 3 (2020: M€ 3) per year.

VAT on overhead costs

Delft University of Technology is in a conversation with the Dutch Tax and Customs Administration about

the claimed tax receivable relating to overhead costs from financial year 2019 and further. TU Delft and the Dutch Tax and Customs Administration have the intention to bring this case to court in order to obtain clarity. The outcome of this procedure cannot be predicted in advance. Furthermore, the Dutch Tax and Customs Administration has partially agreed to accommodate the point of view from TU Delft. The numerical effect of the concession for the year 2019 and further must be further aligned with the Dutch Tax and Customs Administration and is estimated at this moment at M€ 10.

Lease obligation

At the end of this financial year, TU Delft has no operational lease obligations outstanding (2020: K€ 0).

Related parties

All legal entities over which control, joint control or significant influence can be exercised are considered to be related parties. Legal entities that can exercise control are also considered to be related parties.
The members of the Board under the articles of association, other key officials in the institution’s management and close relatives are also related parties.

Significant transactions with related parties are commented on when they have not been concluded at arm’s length. In this respect, the nature and size of the transaction are clarified, as well as other information that is needed to provide insight.

For an overview of related parties, reference is made to Model E: Related parties as included in this annual financial statement.

10.6 Notes to the consolidated statement of income and expenses

ITU Delft ended 2021 with an operational result of M€ 35,2 compared to a budgeted result of -/- M€ 15,8. The operational result is highly influenced by several incidents.

The government and other funding contributions increased in 2021 with an amount of M€ 46,7 to a total amount of M€ 515,5. The important effects for this increase relate to a higher loan- and price compensation compared to a budget of M€ 11,6, compensation tuition fee M€ 8,7, NWO contribution for PhD candidates M€ 1,6, COVID-19 rapid tests M€ 1,3 and depleted NPO funds regarding education and research M€ 0,7.

The realised tuition fees in 2021 amount M€ 74,2 compared to M€ 77,9 in 2020. The decrease is caused due to a decrease in tuition fee, which is compensated in the government funding for M€ 8,7.

Income from work commissioned by third parties increased from M€ 7,7 to M€ 206. This relates to a higher number of written hours because of more project activities.

Total personnel costs have risen to M€ 564,1 due to an increase in the collective labour agreement (CAO) as of 1 July 2021 and an one-time disbursement set by the collective labour agreement. Shortage on the labour market led to an increase in third-party personnel to fill in job positions. Also a higher allocation was made to the staff provisions.

The deprecation costs of M€ 42,7 remained relatively stable compared to the previous year.

The accommodation expenses have increased from M€ 5,4 to M€ 76,3 compared to last year. This relates to an additional allocation to the asbestos provision.

The other expenses have risen with M€ 8,2 because of an impairment regarding the loan to HollandPTC B.V. and the readjustments for the 30% arrangement from previous years.

Income

	Realization 2021 K€	Budget 2021 K€	Realization 2020 K€
Government funding	514,450	477,756	468,693
Other government funding and subsidies	1,026	0	90
Tuition and examination fees	74,252	82,312	77,949
Income from work commissioned by third parties	206,096	199,951	198,397
Other income	28,901	25,186	45,007
	824,725	**785,205**	**790,136**

11. Government funding

Government funding	**514,450**	**477,756**	**468,693**

Government funding

Government funding Ministry of Education, Culture and Science*	496,860	477,756	452,000
Other allocations	24,792	0	16,538
From (+) / to (-) balance sheet	-7,202	0	155
	514,450	**477,756**	**468,693**

* As of the financial year 2008, TU Delft has acted as an intermediary for the Government allocations for the IHE Delft Institute for Water Education. In 2021 this amounted to M€ 11,4. This amount is not included in the item Government funding M€ 514,4, as this has been transferred to IHE Delft Institute for Water Education.

Other allocations

Gravity program: Frontiers of Nanoscience	2,933	0	2,866
Gravity program: Building a Synthetic Cell	1,543	0	1,603
Sectonplan B/T	12,188	0	11,911
National education program	8,126	0	0
BaMa compensation, price adjustment	2	0	158
	24,792	**0**	**16,538**

From (+) / To (-) balance sheet

Gravity program: Frontiers of Nanoscience	-188	0	-378
Gravity program: Building a Synthetic Cell	408	0	533
National education program	-7,422	0	0
	-7,202	**0**	**155**

	Realization 2021 K€	Budget 2021 K€	Realization 2020 K€
12. Other government funding and subsidies			
Other government funding and subsidies	**1,026**	**0**	**90**
Other government funding and subsidies			
Allocations	1,273	0	90
From (+) / to (-) balance sheet	-247	0	0
	1,026	**0**	**90**
Other government funding and subsidies			
Open and online higher education - Urban	0	0	51
Betasteunpunt Zuid-Holland	0	0	114
Foundation SOFOKLES (VSNU)	-80	0	-75
Subsidy corona jobs	420	0	0
Subsidy for extra help for the class	933	0	0
	1,273	**0**	**90**
From (+) / To (-) balance sheet			
Subsidy corona jobs	-247	0	0
	-247	**0**	**0**
13. Tuition and examination fees			
Tuition fees for university education sector	**74,252**	**82,312**	**77,949**
14. Income from work commissioned by third parties			
National governments	40,172	28,587	28,365
International governments	18,508	21,264	21,099
Other non-profit organisations	20,087	11,993	11,900
Companies	68,828	73,582	73,010
NWO	57,005	64,494	63,933
KNAW	1,496	31	30
	206,096	**199,951**	**198,337**

Income from work commissioned by third parties divided into organisational units

	Realization 2021 K€	Budget 2021 K€	Realization 2020 K€
Primary organisational units			
Faculty of Architecture and the Built Environment	9,504	9,289	8,675
Faculty of Civil Engineering and Geosciences	31,463	36,850	33,080
Faculty of Electrical Engineering, Mathematics and Computer Science	28,723	27,135	24,299
Faculty of 3mE	27,943	21,011	25,606
Faculty of Industrial Design Engineering	6,251	5,764	5,792
Faculty of Applied Sciences	41,842	44,491	41,969
Faculty of Aerospace Engineering	15,775	13,359	12,623
Faculty of Technology, Policy and Management	10,292	9,845	8,338
QuTech	19,748	16,399	19,004
	191,541	**184,143**	**179,386**
General organisational units			
University Services	8,332	4,023	8,403
Valorisation Centre	7,716	11,088	10,415
Consolidated participations	-1,493	697	193
	14,555	15,808	19,011
	206,096	**199,951**	**198,397**

15. Other income

Sales to third parties*	1,389	1,522	1,165
Rental property	6,198	5,794	5,961
Specific contributions from third parties	4,121	6,342	5,513
External contribution to Kavli Foundation	176	0	163
Financial management foundation of the 4TU.Federation	275	0	301
Other	16,742	11,528	31,904
	28,901	**25,186**	**45,007**
* Relates to the balance from sales of materials and consists of:			
Turnover	1,705	1,522	1,509
Cost price of turnover	-316	0	-344
	1,389	**1,522**	**1,165**

	Realization 2021 K€	Budget 2021 K€	Realization 2020 K€
16. Personnel expenses			
Wages and salaries	387,350	385,660	358,012
Social security costs	103,573	103,053	89,547
Other personnel expenses	64,041	68,397	71,655
Staff provisions	9,181	3,436	3,120
	564,145	**560,546**	**522,334**
Wages and salaries			
Salaries	349,826	359,560	322,366
Overtime allowances	147	100	129
Bonuses	2,153	2,000	2,066
Holiday allowances	24,225	17,000	22,839
Other allowances	10,999	7,000	10,612
	387,350	**385,660**	**358,012**
Social security costs			
Contribution pursuant to Healthcare Insurance Act	20,520	15,000	18,127
Pension contribution	56,969	43,000	48,756
Contribution pursuant to social security laws	26,084	45,053	22,664
	103,573	**103,053**	**89,547**
Other personnel expenses			
Third-party personnel	55,194	51,460	58,659
Change to holiday entitlements reserve	-2,507	0	1,316
Education and training	5,932	3,284	5,519
Conferences and symposia	805	15	859
Other	4,617	13,638	5,302
	64,041	**68,397**	**71,655**
Staff provisions			
Allocation to/release from provision redundancy pay	3,746	3,436	-234
Allocation to/release from provision sabbatical leave	176	0	76
Allocation to/release from provision recalibration	-161	0	-74
Allocation to/release from provisions reorganisation	-1,435	0	-795
Allocation to/release from provisions anniversary benefits	2,103	0	441
Allocation to/release from transition provision	3,093	0	2,914
Allocation to/release from provision own risk insurance ZW-flex	400	0	-20
Allocation to/release from provision own risk insurance WGA	1,259	0	812
	9,181	**3,436**	**3,120**

Personnel costs divided into organizational units

	Realization 2021 K€	Budget 2021 K€	Realization 2020 K€
Primary organisational units			
Faculty of Architecture and the Built Environment	41,816	40,864	39,654
Faculty of Civil Engineering and Geosciences	61,174	62,696	58,897
Faculty of Electrical Engineering, Mathematics and Computer Science	71,318	72,271	63,743
Faculty of 3mE	55,529	55,538	50,604
Faculty of Industrial Design Engineering	27,788	27,148	25,705
Faculty of Applied Sciences	69,512	78,704	74,940
Faculty of Aerospace Engineering	35,651	34,012	31,847
Faculty of Technology, Policy and Managem ent	30,945	32,550	27,593
QuTech	14,706	14,463	13,840
	408,439	**418,246**	**386,823**
General organisational units			
University Services	135,389	118,050	115,315
Valorisation Centre	15,824	16,645	12,330
Consolidated participations	4,493	7,605	7,866
	155,706	142,300	135,511
	564,145	**560,546**	**522,334**

Staffing overview

Staffing of the organisational units in FTEs at the end of the financial year was as follows:

Organisational units	Academic staff		Support staff		Total	
	2021	2020	2021	2020	2021	2020
Faculty of Architecture and the Built Environment	345.2	336.8	75.4	77.5	420.6	414.3
Faculty of Civil Engineering and Geosciences	591.2	561.1	129.7	133.6	720.9	694.7
Faculty of Electrical Engineering, Mathematics and Computer Science	736.4	675.0	146.6	148.7	883.0	823.7
Faculty of 3mE	568.0	526.6	116.6	108.5	684.6	635.0
Faculty of Industrial Design Engineering	221.7	225.8	56.7	57.9	278.4	283.7
Faculty of Applied Sciences	625.7	637.7	267.8	262.7	893.5	900.4
Faculty of Aerospace Engineering	343.1	324.0	73.2	73.1	416.3	397.1
Faculty of Technology, Policy and Management	298.1	266.2	57.7	49.7	355.8	315.9
QuTech	137.2	134.3	41.6	33.1	178.8	167.4
University Services	0.0	0.0	1,484.2	1,410.0	1,484.2	1,410.0
	3,866.7	**3,687.4**	**2,449.5**	**2,354.7**	**6,316.2**	**6,042.1**

Staff resources divided into functions per FTE at the end of the financial year:

	BK	CiTG	EWI	3mE	IO	TNW	LR	TBM	QuT	UD	Total
Academic staff											
Professor	31.2	46.4	50.2	33.8	25.3	48.7	18.6	24.7	0.0	0.0	278.9
Associate Professor	40.6	52.1	57.9	41.4	15.0	44.0	29.4	33.3	0.0	0.0	313.7
Assistant Professor	77.2	86.5	118.3	85.6	45.4	60.6	65.9	53.6	0.0	0.0	593.1
Doctoral candidates	60.5	243.3	355.2	274.1	58.5	282.6	159.8	93.3	89.0	0.0	1,616.3
Trainee research assistants	0.0	4.0	0.0	0.0	0.0	51.0	0.0	0.0	0.0	0.0	55.0
Other academic staff	135.7	158.9	154.8	133.1	77.5	138.8	69.4	93.2	48.2	0.0	1,009.6
Total	**345.2**	**591.2**	**736.4**	**568.0**	**221.7**	**625.7**	**343.1**	**298.1**	**137.2**	**0.0**	**3,866.7**
Administrative and support staff											
Rank category scale 16 and higher	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	11.8	12.8
Rank category scale 11 to 15	14.3	19.9	46.1	33.8	18.9	45.6	19.9	12.1	17.3	611.0	838.9
Rank category scale 1 to 10	48.3	92.6	100.5	82.8	37.4	222.2	50.2	45.6	23.3	854.9	1,557.8
Student teaching assistants	12.8	16.7	0.0	0.0	0.4	0.0	3.1	0.0	0.0	0.4	33.4
Other	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.1	6.6
	75.4	129.7	146.6	116.6	56.7	267.8	73.2	57.7	41.6	1.484.2	2,449.5
Total	**420.6**	**720.9**	**883.0**	**684.6**	**278.4**	**893.5**	**416.3**	**355.8**	**178.8**	**1,484.2**	**6,316.2**

Staffing in the consolidated participations of TU Delft Services B.V. was 55.24 FTEs at the end of the financial year (2020: 77.74 FTEs). The other consolidated participations do not employ staff.

There were no employees working outside the Netherlands in 2021 (2020: 0.0 FTEs)

	Realization 2021 K€	Budget 2021 K€	Realization 2020 K€
17. Depreciation			
Depreciation	**42,744**	**52,016**	**42,552**
Depreciation			
Depreciation costs land and roads	1,190	909	1,006
Depreciation costs buildings	23,408	25,144	24,483
Depreciation costs equipment and inventory	18,146	25,963	17,063
	42,744	**52,016**	**42,552**
18. Accommodation expenses			
Rent	773	1,211	1,066
Legislative charges	2,360	2,397	2,266
Maintenance and operation	27,223	31,212	29,622
Energy	12,892	10,442	11,984
Allocation to/release from RID dismantling provision	3,345	2,700	3,017
Allocation to/release from sewer system provision	1,544	4,286	83
Allocation to/release from asbestos provision	6,833	1,000	1,389
Other accommodation expenses	21,376	25,691	18,427
	76,346	**78,939**	**67,854**
19. Other expenses			
Equipment and inventory	44,972	45,750	45,133
Miscellaneous expenses	62,803	62,936	54,428
	107,775	**108,686**	**99,561**
Equipment and inventory			
Maintenance	18,960	17,527	17,351
Rental	3,153	3,554	2,384
Other equipment	22,859	24,669	25,398
	44,972	**45,750**	**45,133**
Miscellaneous expenses			
Material-related expenses	19,497	17,680	11,076
Administrative overheads	4,725	4,981	4,375
Travel and accommodation expenses	1,328	7,499	2,315
Funds and contributions	22,181	17,485	25,447
Costs of subcontracted work	5,165	10,157	3,194
Impairment loan HollandPTC B.V.	2,500	0	1,345
Allocation to/release from student provision	2,151	0	1,879
Allocation to/release from provision for doubtful debt	-443	0	1,348
Allocation to/release from tram line provision	950	2,065	3,150
Allocation to/release from Balthasar van der Polweg provision	0	0	1,325
Other *	4,749	3,069	-1,026
	62,803	**62,936**	**54,428**

* The balance ‘other’ includes an amount of K€ 586 (2020: - K€ 684) relating to exchange rate differences.

Depreciation, accommodation expenses and other expenses divided into organisational unites

	Realization 2021 K€	Budget 2021 K€	Realization 2020 K€
Primary organisational units			
Faculty of Architecture and the Built Environment	3,033	4,336	3,334
Faculty of Civil Engineering and Geosciences	8,147	16,488	9,753
Faculty of Electrical Engineering, Mathematics and Computer science	10,365	12,985	10,230
Faculty of 3mE	10,758	12,446	11,553
Faculty of Industrial Design Engineering	2,141	2,966	2,523
Faculty of Applied Sciences	25,359	28,172	27,325
Faculty of Aerospace Engineering	5,414	6,866	5,570
Faculty of Technology, Policy and Management	2,302	2,932	2,369
QuTech	8,202	6,828	6,693
	75,721	**94,019**	**79,350**
General organisational units			
University Services	141,537	125,781	119,807
Valorisation Centre	6,944	11,919	5,156
Consolidated participations	2,663	7,922	5,654
	151,145	145,622	130,617
	226,865	**239,641**	**209,967**

	Realization 2021 K€	Budget 2021 K€	Realization 2020 K€
20. Financial income and expenses			
Interest income	1,872	934	383
Dividends	350	821	486
Value adjustments to financial fixed assets	-700	-254	-1,235
Interest expenses	0	0	-845
	1,522	**1,501**	**-1,211**

Value adjustments to financial fixed assets	Realization 2021	Realization 2020
Battolyser B.V.	0	0
BIOND Solutions B.V.	0	0
Bioprocess Pilot Facility B.V.	-45	-651
Blue Phoenix Group B.V.	0	0
Blue Sparrows Medtech Finance B.V.	0	2
C2CA Technology B.V.	0	0
CarbonX B.V.	0	0
Chrysalix RoboValley US Limited Partners	-21	-26
City Analytics B.V.	0	0
Clear Flight Solutions B.V.	-125	0
CloudCuddle B.V.	0	0
CognitiveIC B.V.	0	0
Cool Separations B.V.	0	0
Councyl B.V.	0	0
DE-Birds B.V.	0	-251
Delft Advanced Biofuels B.V.	0	0
Delft IMP B.V.	0	0
Delmic B.V.	0	0
DENSsolutions B.V.	0	0
Dutch Greentech Fund B.V.	-12	67
E-Stone Batteries B.V.	-250	0
Enevate B.V.	0	0
EXO Ligament B.V.	0	0
Fastree3D B.V.	0	0
Field Factors B.V.	0	0
Fizyr B.V.	0	0
Flapper Drones B.V.	-40	0
FlexSol Building Solutions B.V.	0	0
GBM Works B.V.	0	0
Gilbert Technologies B.V.	0	0
Green Basilisk B.V.	0	0
Hardt Group B.V.	0	0
HOMIE B.V.	0	0
ICOS Cleantech Early Stage Fund II B.V.	0	7
IMSystems Holding B.V.	0	0
InexTeam B.V.	0	0

	Realization 2021	Realization 2020
Innatera Nanosystems B.V.	0	0
Innovation Industries Fund II Cooperatief U.A.	-29	-7
Interactive Robotics B.V.	0	0
Mainport Innovation Fund II B.V.	-9	-3
Magneto B.V.	0	0
Mayht B.V.	0	0
Metropolder B.V.	0	0
MEZT B.V.	0	0
MILabs B.V.	0	0
Mobile Canal Control B.V.	0	0
Nature's Principles B.V.	0	0
OfficeVitae B.V.	0	0
ParaPy Holding B.V.	0	0
PATS Indoor Drone Solutions B.V.	0	0
PHYSEE Group B.V.	0	0
Plotwise Holding B.V.	0	0
Populytics B.V.	0	0
PV Works B.V.	0	0
Qblox B.V.	0	0
QdepQ Systems B.V.	-18	0
Qphox	0	0
Qualinx B.V.	0	0
QuantWare Holding	0	0
Respyre B.V.	0	0
ROM InnovationQuarter B.V.	0	-28
Sandgrain B.V.	-141	0
Scrapscanner B.V.	0	-4
Shift Invest III Cooperatief U.A.	-4	-3
Shift Invest Cooperatief U.A.	-6	-44
Slimy Green Stuff B.V.	0	-5
SolvGE B.V.	0	0
SpringScan IP Holding B.V.	0	0
Stokhos B.V.	0	0
Teller B.V.	0	0
Tiler B.V.	0	0
Tocano B.V. (liquidated)	0	-232
TUDesc B.V.	0	0
UNIIQ B.V.	0	-9
Urban Mining Corp B.V.	0	0
Vertigo Technologies B.V.	0	0
Villari B.V.	0	0
VSParticle B.V.	0	0
Wegain B.V.	0	-48
Whiffle Holding B.V.	0	0
	-700	**-1,235**

	Realization 2021 K€	Budget 2021 K€	Realization 2020 K€
Interest expenses			
Interest expenses	**0**	**0**	**845**

21. Taxes

Corporate income tax consolidated participations	**62**	**86**	**108**

The following consolidated participations are liable for corporate income tax: Delft Projectmanagement B.V., FlexDelft B.V., FlexDelft Detacheringen B.V., Foundation Enterprises Accounting, Foundation SAM|XL, Foundation RoboValley, Suenso Molengraaffsingel B.V.,Technostarters Delft Vastgoed B.V., TU Delft Services B.V. and YES!Delft B.V.
TU Delft is not liable for corporate income tax.

22. Result from participations

Result participations	**0**	**-2,500**	**259**
Result participations			
HollandPTC B.V.	0	-2,500	0
Mainport Innovation Fund B.V.	0	0	247
TUD Beijing Institute WFOE	0	0	12
VINwater	0	0	0
	0	**-2,500**	**259**

23. Minority interest

Minority interest	**-27**	**41**	**-24**

11. COMPANY FINANCIAL STATEMENTS

11.1 Company balance sheet as at 31 december 2021

Amounts in thousands of euros (after appropriation of result)

		31-12-2021	31-12-2020
Assets			
Fixed assets			
Tangible fixed assets	24	555,690	500,949
Financial fixed assets	25	55,873	50,788
Total fixed assets		**611,563**	**551,737**
Current assets			
Inventories	26	2,416	986
Accounts receivables and other receivables	27	110,717	121,931
Current securities		0	0
Cash and cash equivalents	28	258,878	265,575
Total current assets		**372,011**	**388,492**
Total assets		**983,574**	**940,229**
Equity and liabilities			
Equity Delft University of Technology	29	479,112	445,172
Provisions	30	101,667	90,195
Long-term liabilities	31	11,126	11,258
Current liabilities	32	391,669	393,604
Total equity and liabilities		**983,574**	**940,229**

11.2 Company statement of income and expenses for the year 2021

Amounts in thousands of euros

		Realization 2021	Budget 2021	Realization 2020
Income	33			
Government funding	34	514,450	477,756	468,693
Other government funding and subsidies	35	1,026	0	90
Tuition and examination fees	36	74,252	82,312	77,949
Income from work commissioned by third parties	37	207,590	200,765	200,701
Other income	38	15,088	12,794	34,380
Total income		**812,406**	**773,627**	**781,813**
Expenses				
Personnel expenses	39	559,654	554,782	517,327
Depreciation	40	40,570	49,623	40,610
Accommodation expenses	41	75,519	77,535	67,481
Other expenses	42	108,114	106,796	100,791
Total Expenses		**783,857**	**788,736**	**726,209**
Operating result		**28,549**	**-15,109**	**55,604**
Financial income and expenses	43	434	518	-499
Result		28,983	-14,591	55,105
Result from participations	44	5,092	0	1,584
Net Result		**34,075**	**-14,591**	**56,689**

11.3 Notes to the company balance sheet

Assets

Fixed assets

24. Tangible fixed assets

	31-12-2021 K€	31-12-2020 K€
Land and roads	62,171	58,896
Completed buildings and installations	313,771	312,447
Building and installations under construction	94,789	65,686
Equipment and inventory	55,283	53,212
Advance payments	29,676	10,708
	555,690	**500,949**

Statement of movements	Land and roads	Buildings completed	Installations under construction	Equipment and inventory	Advance Payments	Total
Balance as at 1 January 2021						
Cumulative purchase cost	66,382	802,967	65,686	245,860	10,708	1,191,603
Accumulated depreciation	-7,486	-490,520	0	-192,648	0	-690,654
Book value as at 31 December 2021	**58,896**	**312,447**	**65,686**	**53,212**	**10,708**	**500,949**
Investments	0	0	56,360	4,145	28,542	89,047
Transfer to land and roads	3,904	0	-3,904	0	0	0
Transfer to completed buildings	0	24,104	24,104	0	0	0
Transfer to equipment and inventory	0	0	0	15,826	-15,826	0
Depreciation	-1,180	-21,505	0	-17,875	0	-40,560
Disposals	0	0	0	-17,533	0	-17,533
Depreciation of disposals	0	0	0	17,508	0	17,508
Other changes	551	-1,275	751	0	6,252	6,279
Balance movements	**3,275**	**1,324**	**29,103**	**2,071**	**18,968**	**54,741**
Balance as at 31 December 2021						
Cumulative purchase cost	70,847	825,796	94,789	248,298	29,676	1,269,406
Accumulated depreciation	-8,676	-512,025	0	-193,015	0	-713,716
Book value as at 31 December 2021	**62,171**	**313,771**	**94,789**	**55,283**	**29,676**	**555,690**

Land, Roads and buildings

- Campus Zuid
  The amount for land and roads included a value of M€ 20 with regard to the Campus Zuid area. The current value of buildings and land has not been determined.

- Sale object Mijnbouwkunde
  Due to the sale of the Mijnbouwkunde object, both an impairment and divestment were done on the book value of buildings completed in 2020. Transfer of the Mijnbouwkunde object is planned in 2022.

- Land development
  The University develops land for the allocation of plots of leasehold land. These costs are capitalised and depreciated over the term of the lease after the plots have been allocated. The leases acquired are included under long-term liabilities and, also during the term of a long-term lease, are released to the income statement. This is included separately under the item other changes.

- Collateralization
  Related to the financial security for the dismantling of the Reactor Institute Delft (RID), two university buildings are subjected to a mortgage.

Equipment and inventory

- Books / media collection
  Purchases with the purpose of maintaining the collection of the university library is charged to the operating account in the year of purchase. In 2021 this concerned an amount of M€ 8,0 (2020: M€ 8,2).

Advance payments

Some of the other movements have a connection from the past due to a research asset that was initially valued as a research project but actually concerns a tangible fixed asset. This correction is not significant, therefore the figures of the previous years have not been adjusted.

25. Financial fixed assets

	31-12-2021 K€	31-12-2020 K€
Participations	36,498	31,407
Loans	19,375	19,381
	55,873	**50,788**

	31 December 2020	Additions	Disposals	Result	31 December 2021
Participating interests					
TU Delft Services B.V.*	27,729	0	0	2,040	29,769
Delft Enterprises B.V.*	3,678	0	0	3,051	6,729
Total	**31,407**	**0**	**0**	**5,091**	**36,498**

* This 100% participation is valued at net asset value.

Loans	31 December 2020	Additions	Disposals	Result	31 December 2021
Study associations and student associations	29	0	-4	0	25
Foundation Laboratoriumvliegtuig NLR/TU Delft	34	0	0	0	34
Student Emergency Fund	18	0	-2	0	16
TU Delft Services B.V.	19,300	0	0	0	19,300
Total	**19,381**	**0**	**-6**	**0**	**19,375**

Study and student associations

Concerns three long-term interest-free loans. Nothing has been agreed with regard to collateral.

Foundation Laboratoriumvliegtuig NLR/ TU Delft

In 2011, an interest-free loan was granted to Foundation Laboratoriumvliegtuig NLR/ TU Delft. The foundation requires this loan in order to reinvest in an aircraft cockpit for research purposes at TU Delft. The principal of the loan is K€ 341 and is repayable in ten equal annual instalments. Up to 2021, nine instalments have been repaid, totalling K€ 307. Nothing has been agreed with regard to collateral.

Student Emergency Fund

An emergency fund exists for students with financial problems. The emergency fund is only used in exceptional cases, always involves a loan and in all cases involves costs other than tuition fees, such as hospital costs. Tuition fees are not reimbursed.

TU Delft Services B.V.

Four loans have been granted to TU Delft Services B.V. for the purpose of financing the development of real estate. This concerns loans with principals of M€ 6,6, M€ 2,5, M€ 6,5 and M€ 5,0. Repayment is variable and no end date has been agreed.

Current assets

	31-12-2021 K€	31-12-2020 K€
26. Inventories		
Consumer goods	**2,416**	**986**

During the year, more stock was purchased (M€ 1,4) than was consumed (K€ 110), which resulted in an increase in the stock position.

27. Accounts receivables and other receivables

Accounts receivables	15,501	22,815
Receivables relating to government funding	900	3,302
Prepaid expenses of multi-year projects and grants	74,008	74,432
Other receivables, prepayments and accrued income	20,308	21,382
	110,717	**121,931**

Accounts receivables

Receivables on accounts receivable	15,682	23,924
Receivables on related parties	2,603	2,690
	18,285	26,614
Provision for doubtful debts	-2,784	-3,799
	15,501	**22,815**

Accounts receivable include receivables aged over one year up to an amount of K€ 3,901 (2020: K€ 5,250).

Receivables relating to government funding

BaMa compensation	**900**	**3,302**

The claim on the Ministry of Education, Culture and Science concerns compensation for missing out on funding as a result of the introduction of the bachelor-master structure in the period 2003-2008.

A repayment of K€ 2,402 was received (2020: K€ 2,214). At the end of 2021 a claim of K€ 900 remains (2020: K€ 3,302).

Prepaid expenses of multi-year projects and grants

Prepaid expenses of projects and grants with a debit balance	395,764	404,709
Progress payments	-290,730	-301,195
contingency own contribution	-31,026	-29,082
	74,008	**74,432**

The term of the receivable depends on the degree of advance funding by these external funders. These receivables have a term of more than one year.

	31-12-2021 K€	31-12-2020 K€
Other receivables, prepayments and accrued income		
Tuition and examination fees	97	32
Advances to staff	88	17
Prepaid amounts	15,001	17,778
Interest receivable	0	17
Amounts to be charged	5,072	3,488
Funds to be received for Professional Learning Communities	50	50
	20,308	**21,382**

28. Cash and cash equivalents

Cash in hand	42	28
Cash at bank	12,464	44,758
Current account treasury banking	246,372	220,789
	258,878	**265,575**

All cash and current account balances are at free disposal by TU Delft and its consolidated entities.

The interest paid on these accounts is variable and linked to the development of the Euribor-rate and the interest rate policy of commercial banks.

The interest rate on the current account treasury banking is based on EONIA fixing. In case of negative interest rates, this interest rate is equalled to zero.

Equity and liabilities

	31-12-2021 K€	31-12-2020 K€
29 Equity Delft University of Technology		
Balance as at 1 January	445,172	388,483
Result for the year	34,075	56,689
Other changes	-135	0
Balance as at 31 December	**479,112**	**445,172**

	Balance as at 1-1-2021 K€	Proposed result K€	Other changes K€	Balance as at 31-12-2021 K€
General reserve				
General reserve	443,688	34,791	-135	478,344
	443,688	**34,791**	**-135**	**478,344**
Statutory (public)				
LDE Alliance (public)	1,484	-716	0	768
General reserve	1,484	-716	0	768
	445,172	**34,075**	**-135**	**479,112**
General reserve				
General reserve	386,778	56,910	0	443,688
	386,778	**56,910**	**0**	**443,688**
Statutory (public)				
LDE Alliance (public)	1,705	-221	0	1,484
General reserve	1,705	-221	0	1,484
	388,483	**56,689**	**0**	**445,172**

Bestemmingsreserve (publiek)

This concerns the reserves formed based on an Executive Board decision intended for specific expenditures on education and research at the faculties and services.

public

Resources made available in context of the partnership between Leiden University, TU Delft and Erasmus University Rotterdam (LDE).

30. Provisions

	31-12-2021	31-12-2020
	K€	K€
Staff provisions	34,258	32,515
Student provisions	1,912	1,615
Miscellaneous provisions	65,497	56,065
	101,667	**90,195**

Staff provisions

	31-12-2020	Release	Allocation	Utilisation	31-12-2021
	K€	K€	K€	K€	K€
Redundancy pay	10,596	-1,782	5,529	-3,672	10,671
Sabbatical leave	1,647	-428	604	0	1,823
Recalibration	514	-161	0	-56	297
Reorganisation	2,032	-1,435	0	-222	375
Anniversary benefits	8,615	-1,104	3,207	-487	10,231
Transitional provision	5,931	-239	3,331	-2,379	6,644
Own risk insurance ZW-flex	300	-241	641	-232	468
Own risk insurance WGA	2,880	0	1,259	-390	3,749
Total	**32,515**	**-5,390**	**14,571**	**-7,438**	**34,258**

Redundancy pay

This concerns the provision for future payments to (former) employees who claim or are eligible to claim benefits under the redundancy pay scheme.

Sabbatical leave

This concerns the provision for the liabilities related to sabbatical leave.

Recalibration

This provision was created to fund the organisational changes resulting from the review process. Provisions are valued at net present value, taking into account a wage indexation of 2.9% per year and a discount rate of 1.5%.

Reorganisation

This provision relates to the liabilities arising from the reorganisation in respect of the organisational units. Provisions are valued at net present value, taking into account a wage indexation of 2.9% per year and a discount rate of 1.5%.

Anniversary benefits

Concerns the provision for the liabilities related to anniversary bonuses. Provisions are valued at net present value, taking into account a wage indexation of 2.9% per year and a discount rate of 1.5%.

Transitional provision

This concerns the provision for future transition payments to employees on termination of temporary employment of 2 years or more.

Own risk insurance ZW-flex

These concern provisions for future benefit payments to employees and former employees under the Sickness Benefit Act (ZW).

Own risk insurance WGA

These concern provisions for future benefit payments to employees and former employees under the Return to Work (Partially Disabled Persons) Regulation (WGA). Provisions are valued at net present value, taking into account a wage indexation of 2.9% per year and a discount rate of 1.5%.

Student provisions

	31-12-2020 K€	Release K€	Dotation K€	Withdrawal K€	31-12-2021 K€
Student Financial Support Fund	1,615	0	2,000	-1,703	1,912
Total	**1,615**	**0**	**2,000**	**-1,703**	**1,912**

Concerns the provision for the liabilities related to the financial support of students, whom incurred a study delay due to special circumstances.

Miscellaneous provisions

	31-12-2020 K€	Release K€	Dotation K€	Withdrawal K€	31-12-2021 K€
Fissionable materials	3,203	0	0	-3	3,200
Asbestos	14,792	0	6,833	-1,756	19,869
Sewer system	5,116	0	1,544	-3,981	2,679
RID Dismantling	25,979	0	3,345	0	29,324
Guarantee HollandPTC B.V.	2,500	0	2,500	0	5,000
Other	4,475	0	950	0	5,425
Total	**56,065**	**0**	**15,172**	**-5,740**	**65,497**

Fissionable materials

This provision is made up of the costs arising from the disposal and storage of fissionable materials. The amount is determined according to the nature of the individual activities of disposal and storage and is calculated by an internal specialist on the basis of external contracts (COVRA).

Asbestos

In the provision for asbestos removal, the amount is based on an inventory of the whole TU Delft campus, with costs calculated per building on the basis of empirical data for each type of asbestos. The actual expenditures relating to asbestos depend on the coordination of asbestos removal with demolition and renovation programmes. The provision is carried at net present value, with a discount rate of 1.5%.

Sewer system

TU Delft has included a provision to replace the sewer systems in the coming years because of their poor condition. The provision is carried at net present value, with a discount rate of 1.5%.

RID Dismantling

Based on the Nuclear Energy Act, TU Delft is a licensee of the Reactor Institute Delft (RID), as referred to in Article 15b of the Nuclear Energy Act. As of April 1, 2011, an amendment to the Nuclear Energy Act in force in which (among other things) an obligation for the license holders of nuclear power plants and reactors is included to provide financial security to propose the costs that are associated with the decommissioning and decommissioning of a nuclear power plant or reactor by the license holder. For financial security, two TU Delft buildings are subject to a mortgage.

A provision for the future dismantling of the RID has been formed in the annual accounts, to which is doped annually according to time-proportional use. The RID removal provision is periodically tested. The last time in 2020, no changes of a material nature have arisen from this.

Guarantee HollandPTC B.V.

TU Delft has included a provision for a 33.3% participation in HollandPTC B.V. for which a guarantee has been provided.

Other

This consists of several provisions created from contractual obligations that TU Delft has committed to in the past and that relate to projects in the context of realizing the campus vision.

The duration of the provisions is as follows:

	Balance K€	Breakdown of balance < 1 year K€	1 - 5 years K€	> 5 years K€
Staff provisions	34,258	8,565	17,814	7,879
Student provisions	1,912	1,109	803	0
Miscellaneous provisions	65,497	4,416	19,637	41,444
Total provisions	**101,667**	**14,089**	**38,254**	**49,323**

31. Long-term liabilities

	31-12-2021	31-12- 2020
Long lease ground rent	**11,126**	**11,258**

2.4 Current liabilities

Accounts payable	1,160	1,378
Turnover tax	1,985	3,143
Payroll tax	22,922	21,148
Pension contributions	6,592	5,730
Advance payments for multi-year projects and grants	200,761	209,041
Accruals and deferred income	158,249	153,164
	391,669	**393,604**

The current liabilities all have a remaining duration of less than one year. The fair value of current liabilities approximates the book value because of their short-term nature.

Advance payments for multi-year project and grants

Progress payments	533,150	475,506
Prepaid expenses of projects with a credit balance	-339,611	-272,560
Contingency own contribution	7,222	6,095
	200,761	**209,041**

Accruals and deferred income

Accrued holiday entitlements	21,469	23,977
Amounts payable	56,611	42,804
Interest payable	0	69
Tuition and examination fees received in advance (1 January - 31 August)	31,669	37,909
Holiday allowances payable (1 June - 31 December)	14,133	13,125
Gravitation programme earmarked funds	7,672	0
Gravitation programme funds still available: Frontiers of Nanoscience	8,454	8,267
Gravitation programme funds still available: Building a Synthetic Cell	1,668	2,076
Advance payments received for coordination activity	13,122	15,811
Advance payments	3,451	9,126
	158,249	**153,164**

Commitments and contingencies

Reactor Institute Delft

TU Delft is the licence holder of the Reactor Institute Delft (RID), in accordance with Section 15b of the Nuclear Energy Act. On 1 April 2011, an amendment to the Nuclear Energy Act took effect, which (among other things) obliges licence holders of nuclear plants and reactors to provide financial security for the costs related to the shutdown and dismantlement of the nuclear plant or reactor by the licence holder. For the purpose of this financial security, two buildings of the TU Delft have been secured by a mortgage. The final agreement for the financial security is in consultation with the involved Ministries following the approval in 2021 on the reassessed dismantle plan.

At the end of 2021, a provision of M€ 29,3 (2010: M€ 26) for the future dismantling of the RID is included in the financial statements. Annually an allocation is made, proportional to the period of use.

Investment obligations

At the end of the financial year, TU Delft has outstanding investment obligations equivalent to M€ 20,4 (2020: M€ 41,7).

Forward exchange contract

In order to reduce material financial risks, TU Delft has concluded a number of forward exchange contracts that relate directly to future funding that will be received from external parties in US dollars. This is in accordance with the TU Delft treasury policy.

The total value of the hedged item was M$ 3,7 at the end of 2021 (2020: M$ 7,8) corresponding to the contribution from external parties laid down contractually. These future incoming funds will be received in 2022. The value adjustment of the transactions of the hedged items amount to a K€48 loss gain at year end 2021 (2020: K€ 487 positive).

For its financial statements, TU Delft applies cost price hedge accounting, in accordance with Guideline 290 of the Dutch Accounting Standards. The foreign exchange position and strategy are evaluated periodically.

Guarantee for HollandPTC B.V.

TU Delft is for 33.33% guarantor regarding the guarantee loan from the European Investment Bank (EIB) to HollandPTC B.V. The guarantee agreement obligates every shareholder a guarantor for 33.33% of outstanding liabilities (interest and repayments). At the start of the agreement this amounts to a maximum of M€ 38,5 per shareholder.

Agreements have been made between HollandPTC B.V. and TU Delft regarding the guarantee loan of the EIB. At year-end 2021 HollandPTC has a total loan amount outstanding at the EIB of M€ 77,0 (2020: M€ 82,5). This corresponds with a guarantee amount of M€ 32,0 (2020: 34,3) per shareholder.

Quantum Technology (QuTech)

TU Delft signed a covenant for strategic partnership with the Minister of Economic Affairs, the Minister of Education, Culture and Science, the Netherlands Organisation for Applied Scientific Research (TNO), the Netherlands Organisation for Scientific Research (NWO) and Foundation TKI HTSM regarding the field of quantum technology (QuTech). The covenant has a duration until 1 July 2025.

The resulting financial obligation for TU Delft is an in kind contribution of M€ 3 (2020: M€ 3) per year and a cash contribution of approximately M€ 3 (2020: M€ 3) per year.

VAT on overhead costs

Delft University of Technology is in a conversation with the Dutch Tax and Customs Administration about the claimed tax receivable relating to overhead costs from financial year 2019 and further. TU Delft and the Dutch Tax and Customs Administration have the intention to bring this case to court in order to obtain clarity. The outcome of this procedure cannot be predicted in advance. Furthermore, the Dutch Tax and Customs Administration has partially agreed to accommodate the point of view from TU Delft. The numerical effect of the concession for the year 2019 and further must be further aligned with the Dutch Tax and Customs Administration and is estimated at this moment at M€ 10.

Lease obligation

At the end of this financial year, TU Delft has no operational lease obligations outstanding (2020: K€ 0).

Related parties

All legal entities over which control, joint control or significant influence can be exercised are considered to be related parties. Legal entities that can exercise control are also considered to be related parties.
The members of the Board under the articles of association, other key officials in the institution's management and close relatives are also related parties.

Significant transactions with related parties are commented on when they have not been concluded at arm's length. In this respect, the nature and size of the transaction are clarified, as well as other information that is needed to provide insight.

For an overview of related parties, reference is made to Model E: Related parties as included in this annual financial statement.

11.4 Notes to the company statement of activities

	Realization 2021 K€	Budget 2021 K€	Realization 2020 K€
33. Income			
Government funding	514,450	477,756	468,693
Other government funding and subsidies	1,026	0	90
Tuition and examination fees	74,252	82,312	77,949
Income from work commissioned by third parties	207,590	200,765	200,701
Other income	15,088	12,794	34,380
Total income	**812,406**	**773,627**	**781,813**
34. Government funding			
Government funding	**514,450**	**477,756**	**468,693**
Government funding			
Government funding Ministry of Education, Culture and Science*	496,860	477,756	452,000
Other allocations	24,792	0	16,538
From (+) / to (-) balance sheet	-7,202	0	155
	514,450	**477,756**	**468,693**

* As of the financial year 2008, TU Delft has acted as an intermediary for the Government allocations for the IHE Delft Institute for Water Education. In 2021 this amounted to M€ 11,4. This amount is not included in the item Government funding M€ 514,4, as this has been transferred to IHE Delft Institute for Water Education.

Other allocations			
Gravity program: Frontiers of Nanoscience	2,933	0	2,866
Gravity program: Building a Synthetic Cell	1,543	0	1,603
Sectonplan B/T	12,188	0	11,911
National education program	8,126	0	0
BaMa compensation, price adjustment	2	0	158
	24,792	**0**	**16,538**
From (+) / To (-) balance sheet			
Gravity program: Frontiers of Nanoscience	-188	0	-378
Gravity program: Building a Synthetic Cell	408	0	533
National education program	-7,422	0	0
	-7,202	**0**	**155**

	Realization 2021 K€	Budget 2021 K€	Realization 2020 K€
35. Other government funding and subsidies			
Other government funding and subsidies	**1,026**	**0**	**90**
Other government funding and subsidies			
Allocations	1,273	0	90
From (+) / to (-) balance sheet	-247	0	0
	1,026	**0**	**90**
Other government funding and subsidies			
Open and online higher education - Urban	0	0	51
Betasteunpunt Zuid-Holland	0	0	114
Foundation SOFOKLES (VSNU)	-80	0	-75
Subsidy corona jobs	420	0	0
Subsidy for extra help for the class	933	0	0
	1,273	**0**	**90**
From (+) / To (-) balance sheet			
Subsidy corona jobs	-247	0	0
	-247	**0**	**0**
36. Tuition and examination fees			
Tuition fees for university education sector	**74,252**	**82,312**	**77,949**
37. Income from work commissioned by third parties			
Contractual research			
National governments	40,578	32,733	32,724
International governments	18,695	20,697	20,690
Other non-profit organisations	20,291	11,674	11,670
Companies	69,525	71,618	71,595
NWO	57,005	64,012	63,992
KNAW	1,496	31	30
	207,590	**200,765**	**200,701**

Income from work commissioned by third parties divided into organisational units

	Realization 2021 K€	Budget 2021 K€	Realization 2020 K€
Primary organisational units			
Faculty of Architecture and the Built Environment	9,504	9,289	8,675
Faculty of Civil Engineering and Geosciences	31,463	36,850	33,080
Faculty of Electrical Engineering, Mathematics and Computer Science	28,723	27,135	24,299
Faculty of 3mE	27,943	21,011	25,606
Faculty of Industrial Design Engineering	6,251	5,764	5,792
Faculty of Applied Sciences	41,842	44,491	41,969
Faculty of Aerospace Engineering	15,775	13,359	12,623
Faculty of Technology Policy and Management	10,292	9,845	8,338
QuTech	19,748	16,399	19,004
	191,542	**184,143**	**179,386**
General organisational units			
University Services	8,332	4,023	8,403
Valorisation Centre	7,716	12,599	12,912
	16,048	16,622	21,315
	207,590	**200,765**	**200,701**

38. Other income

Rental property	3,794	3,500	3,686
Sales to third parties*	1,389	1,522	1,165
Specific contributions from third parties	227	378	285
Financial management foundation of the 4TU.Federation	275	0	301
Other	9,403	7,394	28,943
	15,088	**12,794**	**34,380**
* Relates to the balance from sales of materials and consist of:			
Turnover	1,705	1,522	1,509
Cost prices of turnover	-316	0	-344
	1,389	**1,522**	**1,165**

39. Personnel expenses

	Realization 2021 K€	Budget 2021 K€	Realization 2020 K€
Wages and salaries	373,249	372,484	345,931
Social security costs	99,513	102,138	86,319
Other personnel expenses	77,711	76,724	81,957
Staff provisions	9,181	3,436	3,120
	559,654	**554,782**	**517,327**
Wages and salaries			
Salaries	335,725	346,384	310,285
Overtime allowances	147	100	129
Bonuses	2,153	2,000	2,066
Holiday allowances	24,225	17,000	22,839
Other allowances	10,999	7,000	10,612
	373,249	**372,484**	**345,931**
Social security costs			
Contribution pursuant to Healthcare Insurance Act	20,520	15,000	18,127
Pension contribution	56,969	43,000	48,756
Contribution pursuant to social security laws	22,024	44,138	19,436
	99,513	**102,138**	**86,319**
Other personnel expenses			
Third-party personnel	68,999	59,927	69,170
Change to holiday entitlements reserve	-2,507	0	1,186
Education and training	5,932	3,284	5,519
Conferences and symposia	805	15	859
Other	4,482	13,498	5,223
	77,711	**76,724**	**81,957**
Staff provisions			
Allocation to/release from provision redundancy pay	3,746	3,436	-234
Allocation to/release from provision sabbatical leave	176	0	76
Allocation to/release from provision recalibration	-161	0	-74
Allocation to/release from provision reorganisation	-1,435	0	-795
Allocation to/release from provision anniversary benefits	2,103	0	441
Allocation to/release from transition provision	3,093	0	2,914
Allocation to/release from provision own risk insurance ZW-flex	400	0	-20
Allocation to/release from provision own risk insurance WGA	1,259	0	812
	9,181	**3,436**	**3,120**

Personnel costs divided into organizational units

	Realization 2021 K€	Budget 2021 K€	Realization 2020 K€
Primaire organisational units			
Faculty of Architecture and the Built Environment	41,816	40,864	39,654
Faculty of Civil Engineering and Geosciences	61,174	62,696	58,897
Faculty of Electrical Engineering, Mathematics and Computer Science	71,318	72,271	63,743
Faculty of 3mE	55,529	55,538	50,604
Faculty of Industrial Design Engineering	27,789	27,148	25,705
Faculty of Applied Sciences	69,512	78,704	74,940
Faculty of Aerospace Engineering	35,651	34,012	31,847
Faculty of Technology, Policy and Management	30,945	32,550	27,593
QuTech	14,706	14,463	13,840
	408,440	**418,246**	**386,823**
General organisational units			
University Services	135,390	119,891	115,315
Valorisation Centre	15,824	16,645	15,189
	151,214	**136,536**	**130,504**
	559,654	**554,782**	**517,327**

Staffing overview

Staffing of the organisational units in FTEs at the end of the financial year was as follows:

Organisational unit	Academic staff		Support staff		Total	
	2021	2020	2021	2020	2021	2020
Faculty of Architecture and the Built Environment	345.2	336.8	75.4	77.5	420.6	414.3
Faculty of Civil Engineering and Geosciences	591.2	561.1	129.7	133.6	720.9	694.7
Faculty of Electrical Engineering, Mathematics and Computer Science	736.4	675.0	146.6	148.7	883.0	823.7
Faculty of 3mE	568.0	526.6	116.6	108.5	684.6	635.1
Faculty of Industrial Design Engineering	221.7	225.8	56.7	57.9	278.4	283.7
Faculty of Applied Sciences	625.7	637.7	267.8	262.7	893.5	900.4
Faculty of Aerospace Engineering	343.1	324.0	73.2	73.1	416.3	397.1
Faculty of Technology, Policy and Management	298.1	266.2	57.7	49.7	355.8	315.9
QuTech	137.2	134.3	41.6	33.1	178.8	167.4
University Services	0.0	0.0	1,484.2	1.,410.0	1,484.2	1,410.0
	3,866.7	**3,687.4**	**2,449.5**	**2,354.7**	**6,316.2**	**6,042.1**

Staff resources divided into functions per FTE at the end of the financial year:

	BK	CiTG	EWI	3mE	IO	TNW	LR	TBM	QuT	UD	Total
Academic staff											
Professor	31.2	46.4	50.2	33.8	25.3	48.7	18.6	24.7	0.0	0.0	278.9
Associate Professor	40.6	52.1	57.9	41.4	15.0	44.0	29.4	33.3	0.0	0.0	313.7
Assistant Professor	77.2	86.5	118.3	85.6	45.4	60.6	65.9	53.6	0.0	0.0	593.1
Doctoral candidates	60.5	243.3	355.2	274.1	58.5	282.6	159.8	93.3	89.0	0.0	1,616.3
Trainee research assistants	0.0	4.0	0.0	0.0	0.0	51.0	0.0	0.0	0.0	0.0	55.0
Other academic staff	135.7	158.9	154.8	133.1	77.5	138.8	69.4	93.2	48.2	0.0	1,009.6
Total	**345.2**	**591.2**	**736.4**	**568.0**	**221.7**	**625.7**	**343.1**	**298.1**	**137.2**	**0.0**	**3,866.7**
Administrative and support staff											
Rank category scale 16 and higher	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	11.8	12.8
Rank category scale 11 to 15	14.3	19.9	46.1	33.8	18.9	45.6	19.9	12.1	17.3	611.0	838.9
Rank category scale 1 to 10	48.3	92.6	100.5	82.8	37.4	222.2	50.2	45.6	23.3	854.9	1,557.8
Student teaching assistants	12.8	16.7	0.0	0.0	0.4	0.0	3.1	0.0	0.0	0.4	33.4
Other	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.1	6.6
	75.4	129.7	146.6	116.6	56.7	267.8	73.2	57.7	41.6	1.484.2	2,449.5
Total	**420.6**	**720.9**	**883.0**	**684.6**	**278.4**	**893.5**	**416.3**	**355.8**	**178.8**	**1.484.2**	**6,316.2**

There were no employees working outside the Netherlands in 2021 (2020: 0,0 FTEs).

	Realization 2021 K€	Budget 2021 K€	Realization 2020 K€
40. Depreciation			
Depreciation	40,570	49,623	40,610
Depreciation			
Depreciation costs land and roads	1,190	909	1,006
Depreciation costs buildings	21,505	23,034	22,813
Depreciation costs equipment and inventory	17,875	25,680	16,791
	40,570	**49,623**	**40,610**
41. Accommodation expenses			
Rent	384	857	649
Legislative charges	2,360	2,397	2,266
Maintenance and operation	27,223	31,212	29,622
Energy	13,139	10,349	12,690
Allocation to/release from RID dismantling provision	3,345	2,700	3,017
Allocation to/release from sewer system provision	1,544	4,286	83
Allocation to/release from asbestos provision	6,833	1,000	1,389
Other accommodation expenses	20,691	24,734	17,765
	75,519	**77,535**	**67,481**
42. Other expenses			
Equipment and inventory	44,972	44,459	45,137
Miscellaneous expenses	63,142	62,337	55,654
	108,114	**106,796**	**100,791**
Equipment and inventory			
Maintenance	18,960	17,093	17,351
Rental	3,153	3,438	2,384
Other equipment	22,859	23,928	25,402
	44,972	**44,459**	**45,137**
Miscellaneous expenses			
Material-related expenses	19,497	17,419	11,076
Administrative overheads	4,375	4,791	4,050
Travel and accommodation expenses	1,277	7,356	2,217
Funds and contributions	24,707	19,618	28,092
Costs of subcontracted work	5,155	9,817	3,184
Allocation to/release from student provision	2,151	0	1,879
Allocation to/release from provision for doubtful debt	-446	0	1,185
Impairment loan HollandPTC B.V.	2,500	0	1,345
Allocation to/release from tram line provision	950	2,040	3,150
Allocation to/release from Balthasar van der Polweg	0	0	1,325
Other*	2,976	1,296	-1,849
	63,142	**62,337**	**55,654**

* The balance 'other' includes an amount of K€ 586 (2020: - K €684) relating to exchange rate differences.

Depreciation, accommodation expenses and other expenses divided into organisational units

	Realization 2021 K€	Budget 2021 K€	Realization 2020 K€
Primary organisational units			
Faculty of Architecture and the Built Environment	3,033	4,336	3,334
Faculty of Civil Engineering and Geosciences	8,147	16,488	9,753
Faculty of Electrical Engineering, Mathematics and Computer Science	10,365	12,985	10,230
Faculty of 3mE	10,758	12,446	11,553
Faculty of Industrial Design Engineering	2,141	2,966	2,523
Faculty of Applied Sciences	25,359	28,172	27,325
Faculty of Aerospace Engineering	5,414	6,866	5,570
Faculty of Technology, Policy and Management	2,302	2,932	2,369
QuTech	8,202	6,828	6,693
	75,721	**94,019**	**79,350**
General organisational units			
University Services	141,538	128,016	119,807
Valorisation Centre	6,944	11,919	9,725
	148,482	139,935	129,532
	224,203	**233,954**	**208,882**

43. Financial income and expenses

Interest income	576	518	447
Interest expenses	-142	0	-946
	434	**518**	**-499**

44. Result from participations

Result from participations	**5,092**	**0**	**1,584**

External auditor’s fees

Specification of fees paid to the house auditor (amounts including turnover tax):

	2021	2020
Audit of the financial statements	494	402
Other audit assignments	430	388
Advisory services on tax matters	0	163
Other non-audit services	56	26
	980	**979**

For the determination of the auditor’s fees, the method used is that the costs are recorded in the year in which the invoices were paid.

Model E: related parties

Amounts in thousands of euros

Name	Place of business	Activity code	Year	Equity capital	Result	Turnover	Participating interest %	Art 2:403
Consolidated affiliated parties:								
TU Delft Services B.V. *	Delft	4	2021	27,729	1,300	2,040	100%	No
Delft Enterprises B.V. **	Delft	4	2021	6,729	3,051	5,023	100%	No
Foundation Het Lammingafonds	Delft	4	2021	3,131	295	0	100%	No
Foundation Nanoscience TU Delft	Delft	2	2021	12,431	902	0	100%	No
Non-consolidated affiliated parties:								
Foundation Bedrijvenspiegel	Delft	4	2016	75	-14	N/A	N/A	No
Foundation Biotechnology Academy Delft	Delft	1	2020	994	10	N/A	N/A	No
Foundation Far and Large Offshore Wind	Amsterdam	2	***	0	0	N/A	N/A	No
Foundation financieel beheer 4TU.Federatie	Delft	4	2020	0	0	N/A	N/A	No
Foundation FMLC	Delft	4	2020	185	-1	N/A	N/A	No
Foundation Universiteitsfonds Delft	Delft	4	2020	5.785	710	N/A	N/A	No
Foundation Laboratoriumvliegtuig NLR/TU Delft	Haarlemmermeer	2	2021	1	0	N/A	N/A	No
Foundation Molengraaff-Funds	Delft	4	2021	1.147	141	N/A	N/A	No
Foundation BlueBox Events	Delft	4	2021	-3	2	N/A	N/A	No
Foundation DCMC	Woensdrecht	2	2016	0	0	N/A	N/A	No
*: **Consolidated affiliated parties of TU Delft Services B.V.:**								
Delft Project Management B.V.	Delft	4	2021	578	-5	1.712	100%	No
FlexDelft B.V.	Delft	4	2021	3.159	1.456	1.875	100%	No
FlexDelft Detacheringen B.V.	Delft	4	2021	643	120	159	100%	No
Foundation Bijlboegfonds	Delft	4	2021	44	44	10	100%	No
Foundation Enterprises Accounting	Delft	4	2021	160	-48	391	100%	No
Foundation Green Village	Delft	3	2021	24	16	1.438	100%	No
Foundation Materials innovation institute (M2i)	Delft	F4	2021	2.920	-59	1.120	100%	No
Foundation RoboValley	Delft	4	2021	-28	-5	1.136	100%	No
Foundation SAM|XL (Smart Advanced Manufacturing XL)	Delft	4	2021	-816	170	1.123	100%	No
Foundation Techno Impuls	Delft	4	2021	8.474	1.268	1.447	100%	No
Foundation Urban Mobility Observatory	Delft	4	2021	-1	0	0	100%	No
Suenso Molengraafsingel B.V.	Rotterdam	4	2021	648	128	1.133	100%	No
Technostarters Vastgoed B.V.	Delft	3	2021	8.336	-189	2.731	100%	No
YES!Delft B.V.	Delft	4	2021	651	68	2.861	60%	No
*: **Non-Consolidated affiliated parties of TU Delft Services B.V.:**								
Blue Sparrows MedTech Funds	Leiderdorp	4	2020	781	-4	3	4%	No
Bioprocess Pilot Facility B.V.	Delft	4	2020	24.790	-4.709	4.961	19%	No
Dutch Greentech Fund B.V.	Amsterdam	4	2019	16.697	10.120	10.405	5%	No
Holland Particle Therapy Centre B.V.	Delft	4	2020	-12.137	-8.672	10.132	33%	No
ICOS Cleantech Early Stage Fund II B.V. (ICF II)	Badhoevedorp	4	2020	2.428	46	-99	4%	No
Mainport Innovation Fund B.V.	Amsterdam	4	2020	12.4 54	149	279	25%	No
Mainport Innovation Fund II B.V.	Amsterdam	4	2020	7.125	-817	75	2%	No
ROM Innovation Quarter B.V.	Den Haag	4	2020	49.681	-2.475	10.869	1%	No
Shift Invest Cooperatief UA	Amstelveen	4	2019	9.188	-1.2 78	-563	2%	No
TUD Beijing Institute WFOE		4	**				100%	No
Vinwater		4	2020	60	5	20	49%	No
: **Non-consolidated affiliated parties of Delft Enterprises B.V.:								
Adjuvo Motion B.V.	Delft	4	2018	-70	-185	18	7%	No
ADR Technology B.V.	Rotterdam	4	2019	-302	-50	93	100%	No
Allotropica B.V.	Chapel Hill	4	**				7%	No
APTA Technologies B.V.	Den Haag	4	**				15%	No
Battolyser B.V.	Schiedam	4	2019	-129	-129	604	10%	No
BIOND Solutions B.V.	Den Haag	4	2018	-8	-10	26	21%	No
Blue Phoenix Group (Inashco)	Rotterdam	4	2020	37.177	5.397	67.379	0%	No
C2CA Technology B.V.	Utrecht	4	2017	7	-3	-	50%	No
Carbon X B.V.	Amsterdam	4	2020	-1.695	-874	6	5%	No
CFS GreenX Holding B.V.	Enschede	4	2018	813	-967	362	5%	No
City Analytics B.V.	Delft	4	**				18%	No
CloudCuddle B.V.	Delft	4	2019	-27	-75	112	36%	No
CognitiveIC B.V.	Delft	4	**				20%	No
Councyl B.V.	Delft	4	**				45%	No

Name	Place of business	Activity code	Year	Equity capital	Result	Turnover	Participating interest %	Art 2:403
DE-Birds B.V.	Delft	4	2019	242	-16	3	50%	No
Delft Advanced Biofuels B.V.	Delft	4	2019	298	-678	12	32%	No
Delft IMP B.V.	Delft	4	**				19%	No
Delmic B.V.	Delft	4	2019	-4.805	-835	2.496	11%	No
DENS solutions B.V.	Delft	4	2018	680	184	4.932	27%	No
EFC Holding B.V.(Cool Seperations)	Rotterdam	4	2020	-1.144	-490	251	45%	No
Enevate B.V.	Delft	4	**				15%	No
Exo Ligament B.V.	Delft	4	2018	-419	-342	226	25%	No
Fastree 3D B.V.	Amsterdam	4	**				15%	No
Field Factors B.V.	Delft	4	2020	121	36	396	20%	No
Fizyr B.V.	Delft	4	2019	434	-274	376	15%	No
Flapper Drones B.V.	Delft	4	019/202	8	-33	68	20%	No
GBM Works B.V.	Den Haag	4	2019	-152	-152	0	15%	No
Gilbert Technologies B.V.	Naarden	4	2017	7.369	-1.293	0	15%	No
Green Basilisk B.V.	Delft	4	2020	502	-283	144	33%	No
Hardt Group B.V.	Delft	4	**				0%	No
HOMIE B.V.	Den Haag	4	2020	-672	-612	201	7%	No
IM Systems Holding B.V.	Delft	4	**				0%	No
Innatera Nanosystems B.V.	Delft	4	**				6%	No
Interactive Robotics B.V.	Delft	4	2017	42	3	137	19%	No
Magneto B.V.	Leiden	4	2019	3	3	27	12%	No
Mayht B.V.	Amsterdam	4	2019	-15	-673	107	12%	No
Metropolder Company B.V.	Rotterdam	4	2020	43	9	175	25%	No
METZ B.V.	Den Haag	4	2021	10	0	14	25%	No
Mobile Canal Control B.V.	Brouwershaven	4	2013	62	44	96	4%	No
Nature's Principles B.V.	Den Haag	4	**				20%	No
OfficeVitae B.V.	Delft	4	2017	21	1	42	33%	No
ParaPy Holding B.V.	Delft	4	2018	127	154	504	9%	No
PATS B.V. (MU-G Knowledge Management)	Delft	4	**				16%	No
Physee B.V.	Amsterdam	4	2018	3	1	169	11%	No
Plotwise B.V. (Clinct Holding)	Delft	4	2019	-1.574	-1.403	414	0%	No
Populytics B.V.	Delft	4	**				18%	No
PV Works B.V.	Delft	4	**				20%	No
QdepQ Systems B.V.	Delft	4	2018	-303	-7	3	35%	No
Qphox B.V.	Delft	4	**				5%	No
Qualinx B.V.	Delft	4	2017	-132	-130	248	34%	No
Respyre B.V.	Amsterdam	4	**				23%	No
Sandgrain B.V.	Delft	4	**				40%	No
Scrapscanner B.V.	Delft	4	2018	-221	-120	0	30%	No
Slimy Green Stuff B.V.	Delft	4	2019	1	0	0	100%	No
SolvGE B.V.	Delft	4	**				10%	No
Stokhos B.V.	Amsterdam	4	2019	102	-298	206	0%	No
Teller B.V.	Den Haag	4	2014	-149	-89	0	10%	No
Tiler B.V. (Fesla Charge)	Delft	4	**				24%	No
TUDesc B.V.	Delft	4	**				20%	No
Umincorp B.V.	Delft	4	2020	3.548	-3.233	2.582	12%	No
Vertigo Technologies B.V.	Delft	4	**				31%	No
Villari Holding B.V.	Delft	4	2020	-32	-57	47	6%	No
VSParticle B.V.	Delft	4	2020	-1.365	-919	583	8%	No
Wegain B.V.	Delft	4	**				25%	No
Whiffle Holding B.V.	Delft	4	2017	-7	-56	0	9%	No
Zero Energy Development B.V.	Delft	4	**				18%	No

***: no financial figures were available at the time of preparation of these financial statements

Explanation of activity code

1 = contract education

2 = contract research

3 = real estate

4 = other Activity code

Standards of Remuneration Act (SRA)

The Standards of Remuneration Act applies to TU Delft. The applicable maximum remuneration for TU Delft is € 209,000 in 2021.

Complexity points per criterion:	
1A Three-year average of total income	10
1B Three-year average of funded students	4
1C The weighted number of types of education or sectors	5
Total	**19**

With a total of 19 complexity points, TU Delft is classified into category G of the regulations on the remuneration of senior officials in the Education, Culture and Science sectors.

1. Remuneration of senior officials

1a. Executive senior officials with an employment relationship and executive senioer officials without an employment relationship from the 13th month of the fulfilment of duties as well as those who are still considered senior officials for a further four years on the basis of their previous position, in so far these officials are not included in Table 1b.

Data 2021

amounts x € 1	Prof.dr.ir. T.H.J.J. van der Hagen	Prof.dr. R.F Mudde	Mw. Drs. M.E. van der Meer
Job details	**Rector Magnificus/ President**	**Vice Rector Magnificus/ Vice President**	**Vice President Operations**
Commencement and termination of duties in 2021	01/01 – 31/12	01/01 – 31/12	01/08 – 31/12
Part-time factor in FTEs	1.0	1.0	1.0
(Fictitious) employment relationship?	yes	yes	yes
Remuneration			
Remuneration plus taxable expense allowances	€ 185,185	€ 184,906	€ 77,697
Remuneration payable in the future	€ 23,815	€ 24,094	€ 9,911
Subtotal	*€ 209,000*	*€ 209,000*	*€ 87,608*
Individual applicable maximum remuneration	€ 209,000	€ 209,000	€ 87,608
-/- Undue payment	N/A	N/A	N/A
Total remuneration	**€ 209,000**	**€ 209,000**	**€ 87,608**
Reason why the excess is or is not permitted	N/A	N/A	N/A
Explanation of the claim due to undue payments	N/A	N/A	N/A

Data 2020

amounts x € 1	Prof.dr.ir. T.H.J.J. van der Hagen	Prof.dr. R.F Mudde	N.v.t
Job details	**Rector Magnificus/ President**	**Vice Rector Magnificus/ Vice president**	
Commencement and termination of duties in 2020	01/01 – 31/12	01/03 – 31/12	
Part-time factor in FTEs	1.0	1.0	
(Fictitious) employment relationship?	yes	yes	
Remuneration			
Remuneration plus taxable expense allowances	€ 179,169	€ 174,336	
Remuneration payable in the future	€ 21,831	€ 21,993	
Subtotal	*€ 201,000*	*€ 196,329*	
Individual applicable maximum remuneration	€ 201,000	€ 201,000	
Remuneration	**€ 201,000**	**€ 201,000**	
Total remuneration	**€ 0**	**€ 0**	

1c. Supervisory senior officials

Data 2021

amounts x € 1	Drs.ir. J. van der Veer	Ir. T.J.G. Collot d'Escury	Prof.dr. L.L.G. Soete
Job details	**Chairman**	**Chairman**	**Member**
Commencement and termination of duties in 2021	01/01 – 30/06	01/07 – 31/12	01/01 – 31/12
Remuneration			
Remuneration	€ 12,872	€ 13,086	€ 17,651
Individual applicable maximum remuneration	€ 15,546	€ 15,804	€ 20,900
-/- Undue payment	N/A	N/A	N/A
Remuneration	**€ 12,872**	**€ 13,086**	**€ 17,651**
Reason why the excess is or is not permitted	N/A	N/A	N/A
Explanation of the claim due to undue payments	N/A	N/A	N/A

Data 2020

amounts x € 1	Drs.ir. J. van der Veer	N/A	Prof.dr. L.L.G. Soete
Job details	**Chairman**		**Member**
Commencement and termination of duties in 2020	01/01 – 31/12		01/01 – 31/12
Remuneration			
Remuneration	€ 25,000		€ 17,000
Individual applicable maximum remuneration	€ 30,150		€ 20,100

Data 2021

amounts x € 1	Drs. G. de Zoeten	Mw. drs. C.G. Gehrels	Mw. Ir. H.L. Wachters
Job details	**Member**	**Member**	**Member**
Commencement and termination of duties in 2021	01/01 – 31/12	01/01 – 31/12	01/01 – 31/12
Remuneration			
Remuneration	€ 17,651	€ 17,651	€ 17,651
Individual applicable maximum remuneration	€ 20,900	€ 20,900	€ 20,900
-/- Undue payment	N/A	N/A	N/A
Remuneration	**€ 17,651**	**€ 17,651**	**€ 17,651**
Reason why the excess is or is not permitted	N/A	N/A	N/A
Explanation of the claim due to undue payments	N/A	N/A	N/A

Data 2020

amounts x € 1	Drs. G. de Zoeten	Mw. drs. C.G. Gehrels	N/A
Job details	**Member**	**Member**	
Commencement and termination of duties in 2020	01/01 – 31/12	01/01 – 31/12	
Remuneration			
Remuneration	€ 17,000	€ 17,000	
Individual applicable maximum remuneration	€ 20,100	€ 20,100	

2. Payments due to the termination of duties regarding senior officials

Data 2021

amounts x € 1	Mw. Drs. MBA N.A. Vermeulen
Job details	
Job function regarding termination of duty	Vice President Operations
Part-time factor in FTEs	1.0
Year of termination date	2020
Payment due to the termination of duties	
Agreed upon payment due to the termination of duties	€ 75,000
Individual applicable maximum remuneration	**€ 75,000**
Total payments due to the termination of duties	**€ 75,000**
Payed in 2021	€ 75,000
-/- Undue payment	N/A
Amount and reason why the excess is or is not permitted	N/A
Explanation of the claim due to undue payments	N/A

3. Salary of non-senior officials

Data 2021

amounts x € 1	Dean	Dean	Dean
Job details			
Part-time factor in FTEs	1.0	0.4	1.0
Remuneration			
Remuneration plus taxable expense allowances	€ 189,327	€ 74,416	€ 191,460
Remuneration payable in the future	€ 23,365	€ 9,510	€ 23,959
Total remuneration	**€ 212,692**	**€ 83,926**	**€ 215,419**
Individual applicable maximum remuneration	**€ 209,000**	**€ 83,600**	**€ 209,000**
Mandatory justification in case of an excess of the individual applicable maximum remuneration	Reward for exceptional performances	Reward due to labour market considerations and maintaining qualified employees	Salary in accordance with previously agreed contract and adjustments in accordance with Collective Labour Agreement, including compensation for pension capping.

Data 2020

amounts x € 1	N/A	N/A	Dean
Job details			
Part-time factor in FTEs			1.0
Remuneration			
Remuneration plus taxable expense allowances			€ 186,707
Remuneration payable in the future			€ 22,045
Total remuneration			**€ 208,752**

Signed in Delft, 29 April 2022

On behalf of the Executive Board,

Prof.dr.ir. T.H.J.J. van der Hagen
Rector Magnificus / President

Prof.dr. R.F. Mudde
Vice Rector Magnificus / Vice-president

Mw. Drs. M.E. van der Meer
Vice President Operations

Signed in Delft, 29 April 2022

On behalf of the Supervisory Board

Ir. T.J.G. Collot d'Escury

Prof.dr. L.L.G. Soete

Drs. G. de Zoeten RC

Mw. drs. C.G. Gehrels

Mw. Ir. H.L. Wachters

11. Other information

Reference to the auditor's opinion

The independent auditor's report shall be added separately.

Treasury policy & investment and pledge regulations

TU Delft carries out its treasury transactions in accordance with the TU Delft treasury policy. The treasury policy focuses mainly on identifying – and, where necessary, covering – risks relating to temporary surplus of cash and cash equivalents, and maximising the interest earned on these.

The content of the treasury policy was amended in accordance with the Investment, Loan and Derivatives Regulations for Educational and Research Institutions 2016, which were finalised by the Ministry of Education, Culture and Science on 6 June 2016.

For the full treasury policy is referred to the report of the Executive Board.