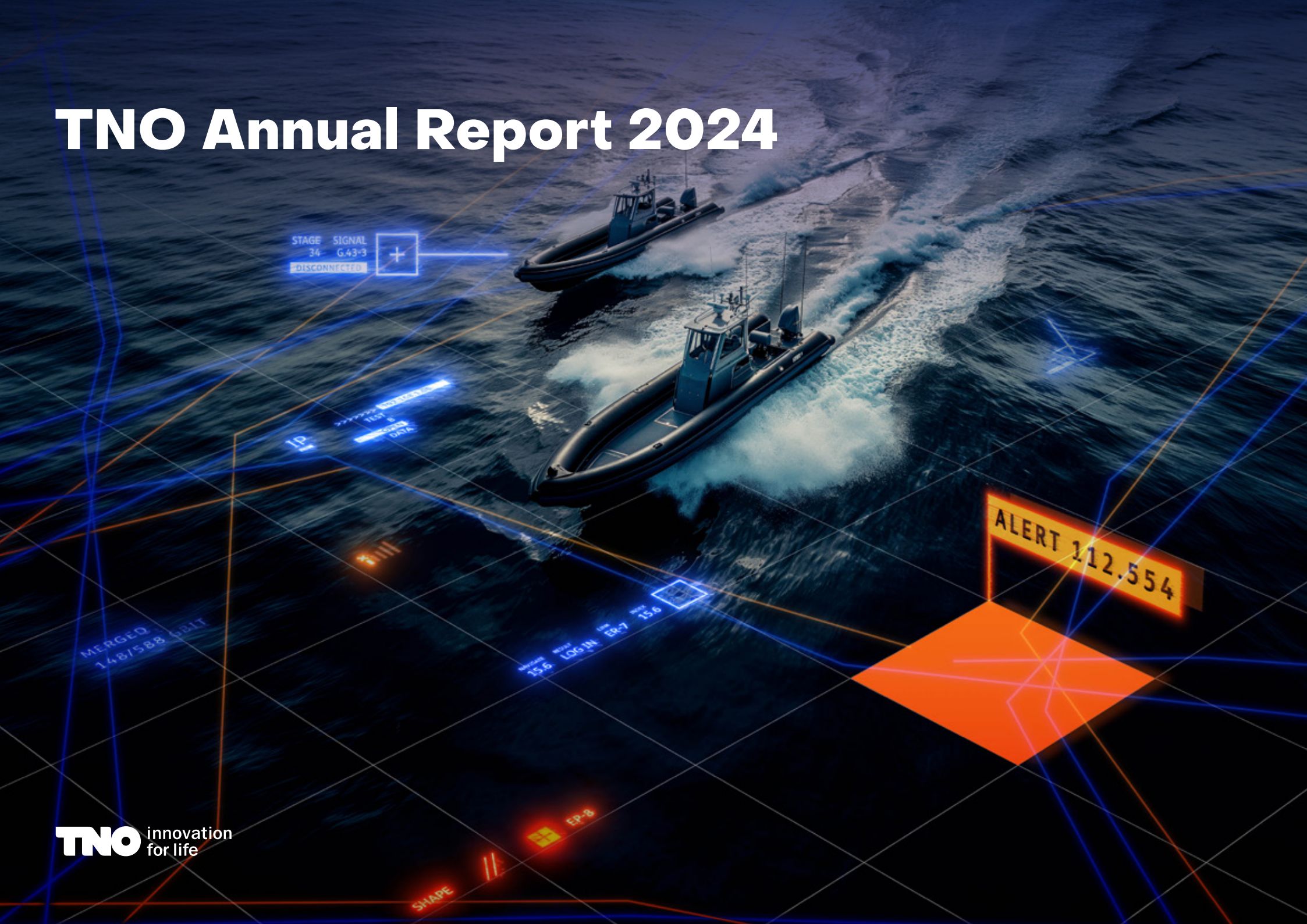


TNO Annual Report 2024





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Impactful collaborations



Rijkswaterstaat **14**



MIS7 **17**



Bosch Tilburg **20**



FSO Instruments **39**

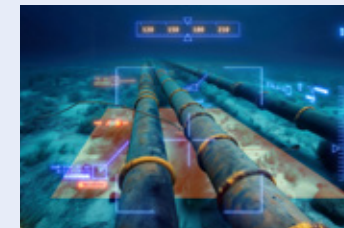


Torwash **42**

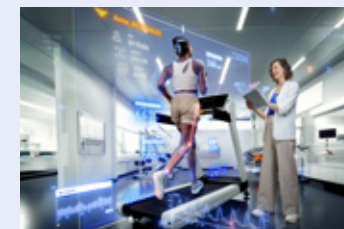


Braskem **49**

Stories of progress



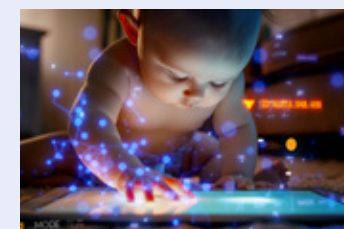
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Preface

In 2024, no one could ignore Mario Draghi's report. With this wake-up call, Europe has been put on alert (once again). Because innovation is essential for our prosperity and security, and for accomplishing complex, costly, and disruptive societal tasks. If we do not innovate, or fail to do so sufficiently, we will fall even further behind the US and be overtaken by China. Both economically and geopolitically. Transitions and the European socio-economic model will then also be at risk.

TNO is taking up this gauntlet and translating it to its own organisation. Let us start with focus. To maximise our impact, we need to deploy our scarce resources as effectively as possible. With a focus on the areas where TNO is clearly one of the leading players and where there are favourable conditions and market structure. Where TNO has a 'right to play'.

In addition, TNO is going to work more actively on deficiencies in the innovation chain. On the one hand, we will focus even more strongly on starting up innovative new businesses (spin-offs). On the other hand, TNO is taking a more active role in providing guidance and assistance towards rapid growth and the success of its own spin-offs and other deep-tech start-ups. Often in partnership with Venture Capital funds and InvestNL. This may even take the form of an investment by TNO. In this way, we are contributing to making the Valley of Death less wide, deep and deadly.

In 2024, TNO added four new companies to its dozens of TNO spin-offs. Some of the existing spin-offs experienced solid growth last year. One example is Nearfield Instruments. This spin-off is developing machines that can detect inaccuracies in chip production at the atomic level. With Samsung as its client and a strong injection from venture capital funds, Nearfield Instruments has huge future earning potential for its clients. LeydenJar, with the development of a sustainable battery, and Carbyon, with an innovation that enables carbon to be captured from the air, have also made great strides. It makes me proud to see how TNO employees are taking on the challenge as entrepreneurs, to bring an innovation to market.

The fact that our research also has impact is shown by the practical tools it provides for government policy. For instance, we have mapped energy and transport poverty, as well as the challenge of renewing Dutch infrastructure. To paint a clear picture of the Dutch R&D landscape, we released the R&D top 30 together with Technisch Weekblad and employers'

“It makes me proud
to see how TNO
employees are taking
on the challenge as
entrepreneurs, to
bring an innovation
to market”



organisation VNO-NCW. This is a list of companies that are of great value to the Dutch economy, employment and geopolitical position.

As clients' testimonies in this report show, collaboration results in more in-depth knowledge and technology. Among our clients and partners, but also for our experts. The fact that we are actually able to bring that accumulated knowledge to the market through innovations makes working for TNO special. Last year, we welcomed a large number of new colleagues, representing 33 nationalities. This diversity leads to inspiring new insights.

Our role is indispensable, our work matters, and together with our partners and clients in the public sector and industry, we ensure that we make a lasting difference.

On behalf of the Executive Board,

Tjark Tjin-A-Tsoi
Chair and CEO

About this report

The Annual Report 2024 describes TNO's strategy and the results for the year, and focuses only on TNO as a legal entity under public law.



Sources of capital

Creating impactful innovations for the sustainable well-being and prosperity of society is inextricably linked to the capital resources needed to do so. TNO's sources of capital are described on the right. The page numbers refer to descriptions of how TNO uses these sources of capital to make an impact.





TNO key figures



Relationship capital

Number of PPPs*

1,345 ▲ 26.1%
2023: 1,067

Revenue of PPPs (in millions of €)

252.0 ▲ 19.0%
2023: 211.8



Intellectual capital

Professors and professors of applied science***

59 ▼ -4.8%
2023: 62

Publications and proceedings***

793 ▼ -6.3%
2023: 846

Patent families***

1,014 ▲ 8.2%
2023: 937

Premier depot**/***

90 ▲ 34.3%
2023: 67



Human capital

Number of FTE workforce*** (as at 31 December)

4,408 ▲ 5.5%
2023: 4,178

New hires

590 ▼ -20.7%
2023: 744

Internships

446 ▲ 2.8%
2023: 435



Physical capital (in millions of €)

Tangible fixed assets

288.7 ▲ 19.3%
2023: 241.9

Investments

82.3 ▲ 81.3%
2023: 45.4



Natural capital

Carbon footprint (kilotonnes of CO2-eq)

264 ▲ 23.4%
2023: 214

EcoVadis score***

54/100
2023: 48/100



Financial capital

Revenue (in millions of €)

764.3 ▲ 11.1%
2023: 687.8

Research hours (million)

3.7 ▲ 7.7%
2023: 3.5

Total business valuation of spin-offs (in millions of €)

664.4 ▲ 100.4%
2023: 331.5

* Public-private partnerships.

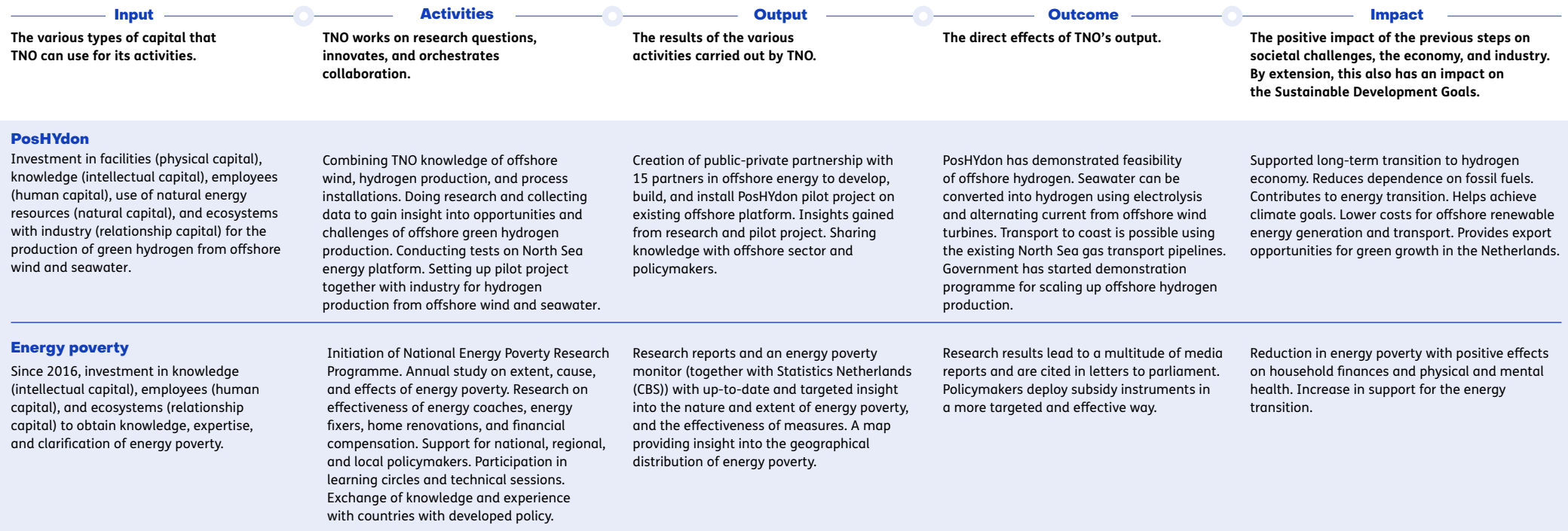
** Premier depot of a patent application on a specific date.

*** In 2024, a limited assurance statement was issued for this KPI by our external auditor. The Appendix explains the definition of this KPI.



Value creation

TNO's mission is to create impactful innovations for the sustainable well-being and prosperity of society. The value creation model shows two examples from TNO in which the value creation chain leads to impact.



Relationship capital (ecosystems)



Intellectual capital (knowledge)



Human capital (employees)



Physical capital (facilities)



Natural capital (natural resources)



Financial capital (Funding)

Examples of activities are:

- Research
- Measuring and testing
- Modelling
- Programming
- Building
- Orchestrating (initiating and coordinating)

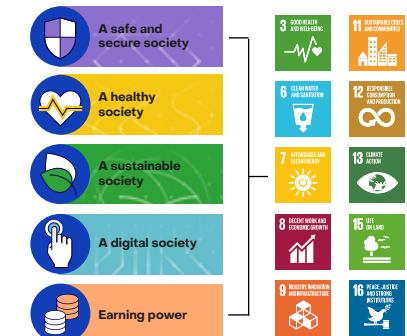
Examples of outputs are:

- Prototypes and demonstrators
- Solutions
- Tools (e.g., models, digital twins, and instruments)
- Intellectual property (IP)
- Spin-offs
- Research reports and studies
- Policy recommendations
- Publications

Examples of outcomes are:

- Market success of products/services based on TNO innovations
- Use by clients of TNO results/solutions
- Value growth of spin-offs
- Employment through spin-offs
- Licences on IP
- New or adjusted policy as a result of TNO research reports and studies
- Citations of TNO publications

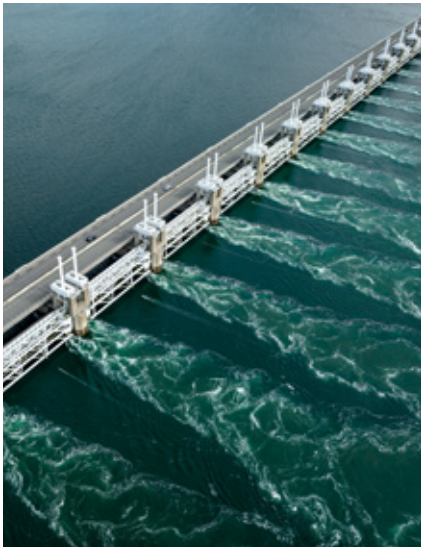
Strategic themes & SDGs:



External developments



Events in the outside world affect TNO in many ways. TNO translates national and international challenges, trends, and developments in society into innovations for the future. In this fast-changing world, organisations have to adapt constantly to these external changes in order to maintain their competitive advantage. The overview below shows the ten most important trends that influence our strategy, based on our analysis of political, economic, social, legal, and ecological factors. To address these trends, we will continue to work on pioneering innovations in defence, climate adaptation, high-tech, AI, and labour productivity, as well as many other innovations that contribute to the sustainable well-being and prosperity of society.



Climate change continues to be a major challenge. In addition, the need for climate adaptation is growing.

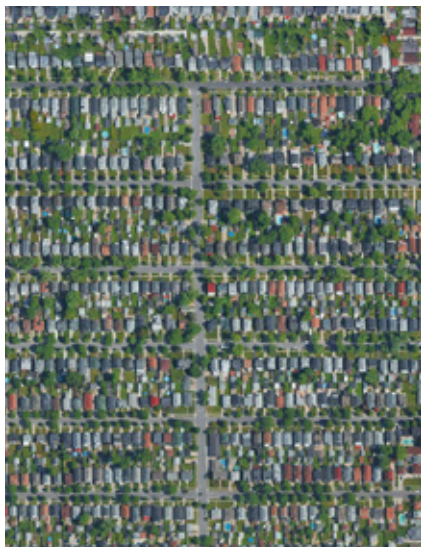
Climate change continues to be a major challenge that requires continuous efforts and innovative solutions. Although society is already doing a lot to reduce our carbon footprint, there are still many more possibilities. As well as preventing climate change, we need to start adapting to changing conditions to protect our society. Innovation plays a crucial role in developing new technologies and strategies to deal with climate change.



Global security crises require us to strengthen our national defence, resilience, and strategic autonomy.

Global security crises show that we need to strengthen our national defence, resilience, and strategic autonomy. In addition, we need to invest in robust infrastructures and systems that can respond quickly to crises. Strategic autonomy reduces undesirable dependencies on parties that pose a risk to prosperity and well-being. By becoming stronger in these areas, we will be better prepared for future challenges and able to ensure the security and stability of our society. This requires executive power from government and industry.

External developments



Through innovation, we can keep our living environment healthy, safe, and sustainable.

The environment in which we live in the Netherlands seems to be in order, but it is coming under pressure from urbanisation, air pollution, the nitrogen problem, and intensive agriculture. There is strong demand for new housing and infrastructure, which puts additional pressure on the available space. To address these challenges, we need to invest in innovation in sustainable urban planning and infrastructure improvements. By focusing on innovative solutions, we can maintain a healthy and resilient living environment that can withstand future challenges.



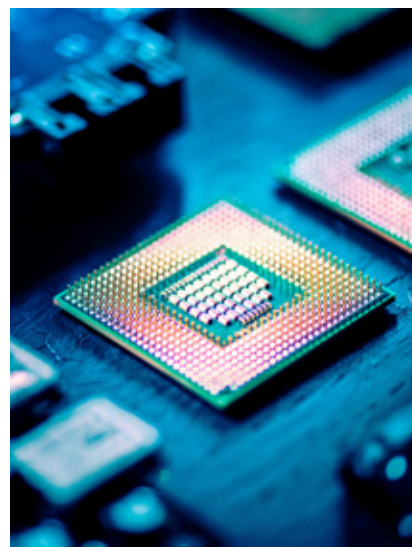
The Dutch and European entrepreneurial and innovation climate is not yet competitive enough.

The Dutch business environment faces a number of challenges. There is uncertainty and a lack of consistent support for innovation and entrepreneurship. As a result, further growth from start-ups to scale-ups often lags behind. Collaboration between policymakers and stakeholders is essential to create a stable and supportive environment in which start-ups can flourish and grow into successful scale-ups. This requires targeted investment, favourable regulations, a strong focus on stimulating innovation, and a cumulative innovation effort of at least 3% of GDP.



Our daily lives are changing with the digitalisation and data-driven nature of society, and the further adoption of AI.

Digitalisation has already significantly changed and improved our work and lives. And its impact will increase further with the emergence of generative AI. It is essential to focus on responsible application and be aware of the increasing vulnerability of – and demands placed on – cybersecurity. Proper preparation for this transition, through additional training, continuous learning, and adaptation to new technologies, ensures that individuals and organisations can effectively navigate these changes and benefit from them.



High-tech offers major growth opportunities for the Netherlands and promotes our strategic independence.

The high-tech sector is of major importance for the Dutch economy and shows that our country leads the world in innovation. The Netherlands and the EU are therefore focusing on key high-tech sectors, such as biotech, cleantech, semicon, photonics, quantum, and defence technology. This focus highlights how important high-tech is for economic growth and strategic independence.

External developments



With shifts in global value chains, control points give the Netherlands and the EU unique competitive advantages.

Recent geopolitical developments are altering global value chains and this may change international relations. To reduce risks posed by these trends, it is important to exploit control points. The Netherlands and the EU have secured key positions in the high-tech value chain. This ensures continued relevance in the global economy and thus leverage in international relations, which benefits our security and resilience.



Labour productivity in the Netherlands continues to lag behind, while at the same time, a scarce workforce is ageing further.

The growth rate of labour productivity in the Netherlands is slowing down, especially in comparison with other countries. Much progress has been made in the manufacturing industry with the help of innovation. However, the service sector, which is so important for the Dutch economy, is lagging behind. In addition, the Dutch labour force is changing, partly due to an ageing population. With an increasing demand for highly skilled professionals, especially in the beta sector, the urgent need for international talent is increasing. Having multiple nationalities and generations in one team creates a more diverse working environment.



The healthcare system is under pressure due to growing demand from a less healthy population and an increasingly fragile supply.

The healthcare system is experiencing growing demand from an ageing and less healthy population. There is an increase in the number of people with chronic diseases and a greater need for long-term care. At the same time, costs are rising and shortages of healthcare staff are worsening, piling further pressure on the system. To tackle these challenges, it is important to invest in innovative healthcare solutions, more efficient healthcare processes, and preventive health measures. Only through an integrated approach can we maintain a sustainable and accessible healthcare system for the future.



Societal transitions are becoming increasingly complex and multifaceted.

The challenges we face are becoming increasingly intertwined. Changes in technology, the economy, the environment, and social structures influence each other, making it harder to find solutions that are effective on all fronts. Differing interests and views of various groups in society also play a role, making the transition processes more complex. To make progress in social transitions, we need system innovation, collaboration, innovative thinking, and the ability to tackle various aspects simultaneously.

Developments supported by the public sector

The government that took office in 2024 has announced policy changes regarding R&D that also affect TNO.

The National Growth Fund (NGF), in place since 2022, will not be continued. This means there will be no more new rounds of investment and the three ongoing rounds will be completed in the coming years. This removes an important large-scale tool for theme-based public-private partnerships. In addition, the remaining budget for Applied Research Facilities (Faciliteiten Toegepast Onderzoek) has been reduced by €75 million to €125 million, although there are still many requests specifically for investment in facilities. And even though the Government programme excludes implementing organisations from cutbacks, TNO, because of its legal status, is the only one in the TO2 Federation to have a 'solidarity cut' imposed. By 2029, this will rise to 2.5% of public funds that can be freely spent. This means it will not be possible to carry out as much research as in the past.

At the same time, the government is maintaining the target of spending 3% of GDP on R&D. The above policy changes run counter to this 3% R&D target. In addition, TNO points out that budget cuts put pressure on the quality and vitality of the organisation in the future. TNO has grown in recent years, but we see that this growth is now starting to level off and is expected to end after 2027. That is when the work under the National Growth Fund will come to an end. There is a risk that the collaborative partnerships created in public-private ecosystems in the National Growth Fund programmes will be phased out. A commitment to putting these partnerships on a long-term basis is therefore key.

In consequence, there is an increasing challenge to boost private R&D in the Netherlands. Last year, the government published the National Technology Strategy. This strategy will largely guide the policy of the Ministry of Economic Affairs in the coming years. This year, the government also signalled its intention to adjust and simplify industrial and innovation policy. The above developments are important inputs for the TNO Strategic Plan 2026-2029.

In 2024, programme funding by the Ministry of Defence again increased significantly. This trend is expected to continue due to geopolitical conditions. In recent years, TNO has received targeted programme funding from other line ministries to shape major transitions in areas such as health and the environment.

Developments supported by the private sector

The innovation gap between the Netherlands and its 'peers' is growing. Private research and development spending in the Netherlands is equal to 1.56% of GNP and together with government spending, this should reach a total of 3%*. While the Netherlands scores just above the EU average of 1.48%* with this level of R&D funding, it clearly does not reach the rates of its 'peers' such as Sweden (2.51%*), Belgium (2.53%*), and Austria (2.20%*), as well as industrial powerhouses such as South Korea (3.90%*), the US (2.68%*), Japan (2.51%*), and Germany (2.11%*).

In addition, R&D research in the Netherlands is generally further from the market than the R&D research of the aforementioned 'peers'. This is because the Netherlands invests relatively more in fundamental research and less in research that is already more advanced, i.e., experimental development. This leaves the practical application of new knowledge lagging behind, which may weaken the competitive position of the Netherlands.

The Draghi report¹ also states that Europe needs to significantly increase its innovation capacity to remain competitive on the global stage. Compared to their US counterparts, European companies invest significantly less in research and development, especially in the technical sector. In 2021, European companies spent about half of what US companies spend on R&D, measured as a percentage of GDP.

In the Netherlands, a limited number of large companies, such as ASML, Philips, Janssen, KPN, and DSM, are the main contributors to private R&D spending. Research spending by these companies is similar to that of their international peers, making further growth in this group unlikely.

To ensure future structural economic growth and deal with the transitions we are facing, the intensity of research in the Netherlands must be increased. This can be done by creating new business activity in research-intensive sectors. And by spending more on research aimed at applying fundamental knowledge based on market needs.

¹ Draghi, M. (2024). The Future of European Competitiveness: A Competitiveness Strategy for Europe. European Commission.

* Source: Eurostat, 2024: R&D expenditure by sector of performance - 2022 or latest available year.



R&D TOP 30

| R&D spending in the Netherlands in millions of euros | | 2023 |
|--|--|-------|
| 1 | ASML Holding N.V. | 2,813 |
| 2 | Royal Philips N.V. | 700 |
| 3 | Booking.com B.V. | 420 |
| 4 | Koninklijke KPN N.V. | 307 |
| 5 | Johnson & Johnson | 293 |
| 6 | NXP Semiconductors N.V. | 265 |
| 7 | DAF Trucks N.V. | 181 |
| 8 | VDL Groep B.V. | 175 |
| 9 | Thales Nederland B.V. | 144 |
| 10 | Canon Production Printing Netherlands B.V. | 135 |
| 11 | Rijk Zwaan Zaadteelt en Zaadhandel B.V. | 130 |
| 12 | Unilever PLC | 99 |
| 13 | Vanderlande Industries B.V. | 90 |
| 14 | Royal FrieslandCampina N.V. | 74 |
| 15 | Lely Industries N.V. | 67 |
| 16 | DEMCON | 66 |
| 17 | Akzo Nobel N.V. | 60 |
| 18 | Tata Steel Netherlands B.V. | 59 |
| 19 | Enza Zaden Beheer B.V. | 52 |
| 20 | Nexperia B.V. | 50 |
| 21 | Nedap N.V. | 47 |
| 22 | ASM International N.V. | 37 |
| 23 | Airbus Netherlands B.V. | 35 |
| 24 | Teijin Aramid B.V. | 21 |
| 25 | Priva Holding B.V. | 20 |
| 26 | VMI Holland B.V. | 20 |
| 27 | Royal HaskoningDHV Group B.V. | 16 |
| 28 | Technolution B.V. | 16 |
| 29 | Sdu B.V. | 12 |
| 30 | SMART Photonics B.V. | 10 |



Source: R&D Top 30 published on 6 December 2024 by TW, VNO NCW, and TNO.

TNO can play a major role in driving innovation in sectors and taking research further into practical application in the economy. By setting up spin-offs, TNO creates new R&D-intensive business activity. In addition, companies can reduce innovation costs by using our research capacity: They do not have to maintain facilities and employ researchers themselves for occasional projects that are new to them or that are not part of their core activities. Collaboration also increases the chances of an innovation project succeeding, as companies can build on TNO's broad and deep knowledge base, and our experience with previous – possibly similar – innovation projects.

Knowledge chain developments

FAST expertise centre

The FAST expertise centre (centre for Future Affordable Sustainable Therapy development) became part of TNO on 1 January 2025. FAST was part of the Netherlands Organisation for Health Research and Development (ZonMW) and is an expertise centre for therapy development. It provides support to therapy developers, both academic and private, by giving access to knowledge and expertise, and encouraging collaboration. FAST's activities complement TNO's work in the Healthy Living & Work unit. The arrival of FAST gives TNO the opportunity to explore new areas.

European collaboration

In 2024, TNO was again successful in the European Horizon Europe research programme. Initial discussions have begun on shaping the next Framework Programme 10. Developments that are potentially influential are the Draghi report and discussions on the funding of applied research facilities – Technology Infrastructure – at European level.

European Research & Technology organisations

Many partners in the knowledge chain are located in the Netherlands. TNO also works intensively with European colleagues, such as Fraunhofer Gesellschaft (Germany), VTT (Finland), Imec (Belgium), and CEA (France). In 2024, collaboration on energy and virtual reality intensified. Together with the European Association of Research and Technology Organisations (EARTO), where our CEO is a board member, we worked on improving the position of applied research in an European context, in preparation for Framework Programme 10 (2028-2034).

TO2 Federation

TNO collaborates in the TO2 Federation with the other four Dutch knowledge institutions for applied research: Deltares, MARIN, NLR, and Wageningen Research. As the portfolios of the various institutions complement each other, we join forces in various fields and projects. Some great examples of such collaboration are highlighted in the annual TO2 Impact Report.

Universities

Intensive collaboration with universities and universities of applied sciences (hereafter: universities) is an essential element of TNO's strategy. Universities engage in fundamental research, among other things, which TNO is keen to build on. Moreover, the knowledge held by universities often complements that of TNO. Universities are also places from which young researchers can take the next step in their development, through a job at TNO.

TNO collaborates with universities in various ways. For instance, a sizeable group of top researchers is attached to universities as part-time professors or are lecturers at universities of applied sciences: at the end of 2024, there were 52 professors and 7 lecturers. Some 240 researchers conducted PhD research at TNO in 2024.

TNO, universities, and universities of applied sciences are also partners in major national and international research programmes, and National Growth Fund projects, such as NXTGEN Hightech, Future Network Services, and Polaris. TNO is also setting up the PIXEurope programme together with Eindhoven University of Technology (TU/e) and the University of Twente. With the University of Twente, TNO is strengthening collaboration in photonics, organ-on-a-chip, and building innovation.

Internationally, a Memorandum of Understanding has been signed with Yamagata University in Japan on sustainable printed electronics and with the Land and Housing Corporation Research Institute in South Korea on urban planning.

'Making wireless data traffic more secure, reliable, and cost-effective'

Niek Doelman, Principal Scientist at TNO and, since 2024, professor at TU/e.



Niek Doelman develops innovative technologies that enable optical wave fields in free space to be measured, modelled, and controlled. 'Sending data wirelessly is now mostly done via radio waves,' Niek explains. 'But if you use optical waves, you can send substantially more data at a higher speed, and it can also be more energy- and cost-efficient. But the challenge is that this method is more susceptible to disruptions, caused by atmospheric and other kinds of turbulence, for example. In such cases, data do not always arrive in good order. With the recent appointment at TU/e, I can focus strongly on developing smart control technology to minimise those dynamic disruptions.'

In terms of expertise, TNO has a very broad orientation, while at TU/e you can do very in-depth work: a rock-solid combination. I really enjoy using new technology to tackle complex challenges. The need to transmit data wirelessly is increasing all over the world. Preferably from and to anywhere, quickly, cheaply, and safely. With optical waves, you can also transmit keys for quantum encryption, which makes it harder to intercept or hack messages. And at a time of increasing global instability, that's a great advantage.'



Innovative collaboration

Rijkswaterstaat's renewal challenge

"You can see that the people working at TNO genuinely feel deeply about the task we have. I think that's really great."

Rijkswaterstaat faces a huge issue: the maintenance and renewal of Dutch infrastructure. This requires smart solutions and close collaboration with partners such as TNO. Henrik Hooimeijer, director of Engineering and Technical Management at Rijkswaterstaat, talks about the fruitful collaboration with TNO, based on the solid foundation of their shared sense of urgency.

Keeping all national roads and national waterways open, while still providing the essential maintenance and the necessary renewal, is no small task. Henrik explains: "A key aspect is the use of smarter calculation methods, reinforcement methodologies, and solid research. We see TNO as a vital partner in tackling the challenge of renewing infrastructure, to achieve together a better distribution over time. This will avoid our having to replace all bridges in five years' time, for example."

"More data-driven asset management, for instance, may be an answer to the problem. It enables you to measure remotely how long a bridge can last. This is still in the research phase. It would be hugely beneficial if you could use this as an intrinsic part of the work and, over the long term, you would not just be making a visual inspection." And in addition to distributing the task of renovating bridges, the collaboration also focuses on accelerating replacement. "Together with TNO, we are thinking about standard designs, such as a standard bridge. Then you would no longer have to do replacements structure by structure, but instead work in series," Henrik says. "We do this not only for Rijkswaterstaat, but also for other infrastructure managers, such as municipalities and provinces."

The collaboration is not limited to the exchange of knowledge. Proudly, Henrik talks about a traineeship set up jointly: "At TNO, at Rijkswaterstaat, and at technical consultancy Arup, we found that the specialist knowledge of steel structures was vulnerable. We therefore devised a traineeship together, in which trainees work in all three organisations for a period of time. And it doesn't really matter whether those people come to work with me, or at TNO.

The most important thing for us is to add to the reservoir of knowledge."

Henrik emphasises the well-developed relationship with TNO as partner. "TNO offers hands-on practical knowledge combined with research power. In a crisis, we can always rely on TNO's expertise, in order to act quickly and effectively. That also helps us create calm and confidence among our board members." Finally, Henrik adds, "You can see that the people working at TNO genuinely feel deeply about the task we have. I think that's really great."



Strategy

Mission

TNO's mission is to create impactful innovations for the sustainable wellbeing and prosperity of society.

Vision

Innovation is crucial in realising a secure, sustainable, healthy and digital society...

As we navigate the first half of the 21st century, we encounter several significant challenges. To shape a better future, society must limit climate change while also adapting to it. Our economy needs to foster innovation and competitiveness, while embracing sustainability, including circular practices. Our population is ageing, and we all want to lead longer, more prosperous, healthy lives – at work and at home. In a changing geopolitical landscape, marked by rising military conflicts and a greater emphasis on strategic autonomy, people are seeking greater security. Simultaneously, as societies grow more complex, there is a growing demand for reliable information to inform evidence-based policymaking and effective governance. We must harness the full potential of digitalisation and information technology to achieve these goals.

Technical novelties and scientific insights only have a significant impact on society and economic development if they are used, at scale, in the real world. Not every ingenious invention or insight meets a significant need or can feasibly be produced or adopted on a large scale. Therefore, a keen understanding of customer needs, international supply chains, and the broader landscape of national, European, and global market trends is vital. As global investments in research and development (R&D) surge, and value chains span multiple borders, the innovation arena is transcending national boundaries. It is increasingly becoming a fiercely competitive landscape, in which TNO has to articulate its right to play in each of the fields in which it is active. Just like any other region, country, or organisation, the Netherlands in general, and TNO in particular, must amplify their collective innovation efforts. This means leveraging our unique strengths in specific fields – those that hold the most promise – to secure sustainable competitive advantages and establish strategic footholds (control points) within global value chains.

... With TNO as leading innovator







TNO, as a trusted, independent, and pioneering applied science and technology organisation, plays a multifaceted role. We innovate, investigate, and orchestrate, collaborating closely with governments, universities and the private sector. We inform government on policies and empower evidence-based decision-making through rigorous investigations, cutting-edge scientific insights, and reliable measurements. By building national and international consortia and ecosystems, we drive technological and methodological breakthroughs that help to realise a secure, sustainable, healthy, and digital society, and strengthen the earning power of the Dutch economy.

TNO aims to help elevate the cumulative innovation effort in the Netherlands towards R&D investment of at least 3% of GDP, an increase of 30% (more than €6.7 billion) compared to 2022, mainly from private contributions. Therefore, we also have to increase TNO's innovation effort, as a core part of the Dutch innovation ecosystem. To maximise the impact of our innovative efforts, we concentrate on fields where we truly excel – where we lead the way in innovation – and where our contributions therefore have the most impact. We base our decisions in this regard on a thorough grasp of societal and market needs, a realistic assessment of emerging value chains and industrial hubs in the Netherlands, as well as the international competitive landscape. These factors co-determine the success or failure of an innovative effort. We remain committed until technical and social inventions evolve into successful innovations.

Together, we will forge a more focused and responsive organisation: one that thrives on collaboration and agility, where our employees can flourish, and where they feel empowered to create truly impactful innovations that contribute to the sustainable wellbeing and prosperity of society.

Stakeholders

TNO creates value for a wide range of stakeholders:

| Stakeholder | Value created |
|--|---|
|  Society All inhabitants of the Netherlands | Demonstrated impact with innovations applied for the sustainable well-being and prosperity of society. |
|  Public partners National, regional, and local governments and independent government bodies | Sustainable knowledge development used for public policy and applied to meet societal challenges. |
|  Private partners Dutch and international large companies and SMEs, and their representatives (VNO-NCW, MKB NL, industry associations) | Product, service, and process innovation for greater earning power and innovative applications for more sustainable operations. |
|  Knowledge partners Dutch and European knowledge partners, such as EARTO, other TO2 Federation institutions, universities (including 4TU), and universities of applied sciences | Better knowledge development through collaboration on both research and the knowledge organisation. |
|  Suppliers Dutch and international organisations providing materials, facilities, premises, and services to TNO | Generating revenue and encouraging responsible and sustainable business operations. |
|  Employees Future, current, and former employees | Self-development with equal opportunities, resulting in engaged and motivated employees who contribute to societal impact. |

Core tasks

TNO has two core tasks:

- The first core task is to support the Dutch government in carrying out statutory government tasks in the public interest. Through research and advice, TNO works on the one hand to provide facts and science-based insights as input for policy processes. On the other hand, TNO supports the effective and efficient execution of government tasks through research, consultancy, testing and innovation. This ranges from research for the Ministry of Defence to mapping the subsurface, and from policy advice for all ministries to supporting the energy transition.
- The second core task is to support companies in innovation, thus contributing to the earning capacity of the Dutch economy and increasing employment. To this end, we deploy applied research, valorisation, innovation and collaboration. In addition, we develop intellectual property, for which licences are granted. TNO also founds new companies (spin-offs) based on technological innovations, in addition to other forms of valorisation. In this way, we support the pursuit of a competitive, innovative, and dynamic knowledge economy that will ensure prosperity in the Netherlands well into the future and provide the financial and economic capacity necessary to finance solutions to major societal challenges.



Representation of the themes from TNO's strategy and the SDGs to which they contribute.



Innovative collaboration

Martin Voorma and TNO tackle vibrations

"The team was enthusiastic right after the initial calculations. And if it makes a scientist happy, that means it's quite promising."

'Devise an innovative solution to ground vibrations caused by passing trains': this was the challenge thrown down by ProRail two years ago. Such vibrations may cause damage to buildings and nuisance to local residents. Martin Voorma of the company MIS7 was picked as the winner. His unique solution, respectful of nature and the environment, was a master stroke. The result was that his idea needed to be worked out in every detail. Martin knew that as a small company, he would be unable to carry out the calculations and implementation without help. Previous experience of collaboration with TNO meant he was quick to engage the organisation. Now, two years later, Martin, together with TNO Fast Track, has advanced several stages.

Martin Voorma is a biologist and for 10 years, he has been developing pipes that are biodegradable in the ground. This formed the basis of his innovation for ProRail: "Worldwide, thousands of kilometres of plastic pipes are placed in the ground. These pipes eventually degrade and microplastics enter our environment and drinking water. I think that will be the new situation as regards PFAS in 10 or 20 years. And the pipes I develop are made from biopolymers with a degradation trigger. The addition of another substance causes the pipe to degrade completely. When ProRail's challenge came my way, I was reminded of a scientific paper on phononic crystal, which would absorb those vibrations. The combination of the crystal and the fact that it is 100% biodegradable ensured the win."

"The real calculation work and in-depth scientific research to see exactly how it works – I couldn't do that alone. I engaged TNO and fortunately everything was handled very well by Aart Willem Benschop and his team," Martin explains. "Usually, scientists are very reserved in their statements. The team was enthusiastic right after the initial calculations. And if it makes a scientist happy, that means it's quite promising."

Together with TNO, Martin was able to go through the feasibility study phase and the second phase of the field trial followed. "I provided the piece of land and TNO provided the computer simulation model that calculates at what depth and width the pipes made of the phonic crystal needed to be put into the ground. We laid out the pipe system and simulated the vibrations in various phases using a drop weight. Measuring the vibrations was outsourced to Movares and TNO processed the data in a simulation model. Weather conditions and broken sensors caused many delays, but finally the last measurements were taken in December 2024. It's always exciting to wait for the results. Fortunately, in early 2025, the results appeared positive, so we can fine-tune further to absorb the vibration from a train."

Martin is proud of the collaboration with TNO Fast Track and the results they have achieved. "When I say that I'm working with TNO, it opens a lot of doors. It's so incredibly important to work together on innovation in order to make any progress at all."



Strategic Plan

In May 2021, the Strategic Plan 2022-2025 was presented to the Dutch Ministry of Economic Affairs and Climate Policy. And it was further refined in 2023.

Three times a year, the Executive Board discusses progress on TNO's activities, the impact, and the strategic plan with the teams of directors of the units. Key figures are also discussed during these consultations. The units also regularly discuss implementation of the TNO strategy in their unit with their Strategic Advisory Council.

In 2024, TNO began preparations for the new strategic plan. This plan will focus on strengthening our position as a leading innovator.

Impact

TNO focuses on four strategically important societal themes where we aim to make an impact. We contribute to shaping a safe, healthy, sustainable, and digitally connected society.

Valorisation

TNO constantly works to build a strong knowledge base and specifically follows relevant scientific and technological trends. We see value in scientific insights, technical inventions, and demonstrators. To achieve real impact, we focus on the difficult last steps to the successful market launch of a product or service. In doing so, we seek to collaborate with companies, public authorities, and investors with knowledge of end markets and value chains.

TNO grants many licences to national and international companies every year, based on rates that are in line with the market. In this process, we take into account the degree of use desired by the licensee. In this way, we can deploy technology in multiple sectors as efficiently as possible. This approach also ensures that we can share underlying development costs. If TNO no longer considers a technology to be strategic, the patent position will be divested or sold.

Most of the IP licences granted in 2024 were on a royalty basis. In this case, revenues depend on the turnover achieved by the licensee. In 2024, TNO earned €4.7 million from existing licences, compared to €4.5 million in 2023.

Spin-offs

Four new spin-offs were set up in 2024, compared to three in 2023. From the launch of the Tech Transfer programme in 2017 to the end of 2024, a total of 45 spin-offs were created. The total value of these companies is €664 million and the spin-offs have provided 712 jobs. In 2024, €200 million in funding was raised by these spin-offs.

Start-ups, scale-ups, and SMEs

Start-ups, scale-ups, and small and medium-sized enterprises (SMEs) are an essential part of the Dutch economy. They are active in all economic chains and play a crucial role in implementing key transitions, such as the energy transition, the growth of high-tech manufacturing, and improvements in healthcare. The Netherlands lags behind neighbouring countries when it comes to scaling up from start-up to scale-up. Scaling up highly innovative start-ups to scale-ups is relevant to achieving the R&D objective of the Netherlands and Europe. Expanding market share in this target group is one of TNO's priorities for the coming years.

TNO Fast Track

TNO has a specialised team that supports companies with short-cycle projects, contributing to their technological growth. The core competence of this team is translating questions from entrepreneurs into TNO's available knowledge and facilities. To make this support more accessible, TNO Fast Track was launched: a platform specifically aimed at start-ups and SMEs. TNO Fast Track provides an easily accessible way for entrepreneurs to ask their questions regarding technology or innovation. They are paired with a relevant expert who arranges a meeting to address their question. This initiative has already resulted in 600 initial meetings with entrepreneurs and the launch of more than 150 actual projects. The offer ranges from brief expert sessions to extensive collaborative projects, depending on the needs of the entrepreneur. In this way, TNO helps companies take innovative steps faster and achieve their technological ambitions.

Spin-in model

TNO has launched a spin-in model, in which TNO becomes a shareholder of promising existing start-ups. Through a strategic partnership, these start-ups are then supported with TNO knowledge and limited financial capital, to ease their way to developing into a scale-up. In doing so, we contribute to an eco-system of start-ups in areas where TNO conducts research. An initial spin-in took place in 2024.

Strategic programmes

Systems thinking and system innovation

Complex societal challenges involve both great risks and great opportunities. There are no quick fixes: such challenges call for transitions – shifts to a new balance between actions and reactions in a system, setting a new course. To achieve such transitions, we need to understand how the complex system works and why system innovation is needed. TNO focuses on the development and application of a hands-on methodology for transitions in complex issues. We apply this methodology, called Unlock, in what are termed Unlock processes or 'system tables'. These are multi-day workshops in which TNO and the participating parties explore a tough issue or transition in depth. In terms of methodologies, these workshops have delivered the first products: 'More health through less care' and 'Sustainable handling of scarce raw materials and security of supply of Critical Raw Materials'. The first system table 'Disadvantaged neighbourhoods in the Waterway Region' also yielded results. Municipalities and educational institutions took part in this initiative. This year, eight practitioners and five coaches completed their two-day basic training, preparing them to guide Unlock processes in practice.

Fit and healthy organisation

In light of the challenges posed by the growth of the TNO organisation in recent years, we launched the Vital Organisation programme in late 2022. TNO's growth places demands on recruitment, retention, and continued employability of employees. Good employment practices are central to this issue and existing initiatives on employee fitness and health, hybrid working after the COVID-19 pandemic, and cutting red tape have been brought together in this programme. Initiatives and interventions have been developed, targeting the individual, the team, and the organisation as a whole. In 2024, TNO continued to split up large departments, to reduce the 'span of control' of managers and sharpen their focus on individual employees. A leadership programme was launched, aimed at communicating a shared vision of leadership and developing leadership qualities. In addition, in 2024, the range of preventive and curative support options for the physical and mental well-being of our employees was expanded. With a network of ambassadors throughout the organisation, local initiatives to strengthen togetherness and vitality are developed and best practices are exchanged. We are pleased with the figures for recruitment, retention, and absence. This is the final year of the programme and we are therefore preparing to embed these initiatives in the existing organisation.

Customer Excellence

In-depth analysis and a good understanding of the markets and the environment in which our clients operate is essential for formulating the right proposition. Customer Excellence focuses on optimising the experiences of clients and partners with TNO. From 1 January 2024, this programme has been structurally incorporated into the new Market Office. Last year, the Market Office supported the units with nine projects related to propositions. These included projects such as the recycling of stony materials in the construction sector and the Space for Energy programme, which studies the influence of energy infrastructure on spatial planning. We also introduced a new market dashboard in 2024, optimised the process around account management (including key accounts), and developed the customer excellence learning programme.

TNO in the media

In 2024, TNO was mentioned in some 2,200 articles in Dutch print media, such as newspapers and magazines, and 250 times in foreign print media. For online media, those figures are 4,500 mentions in the Netherlands and 500 abroad. Our press officers received some 680 queries from more than 450 different journalists. TNO also approached journalists proactively. The top five media outlets that contacted us were: Financieel Dagblad, Trouw, BNR, Telegraaf, and Algemeen Dagblad. TNO employees spoke on the radio around 80 times and appeared on TV in some form more than 70 times in 2024.



Innovative collaboration

Bosch Tilburg together with TNO towards strong market position in electrolyser technology

"We knew that TNO is working on electrolyzers and decided to leverage their knowledge and network to make faster progress."

Over recent decades, Bosch Tilburg has been known for producing pushbelts for CVT transmissions. With the announcement that pushbelt production in Tilburg would end by 2028, the company had to focus on alternative products. Under the leadership of Thilo Mueller, Bosch Tilburg has embarked on a new course and to this end, it has entered into a partnership with TNO. The company's focus is now on developing Thin Metal Technologies, with a major role for the development of electrolyser stacks. Electrolyser stacks are an important product for hydrogen production.

Bosch Tilburg began collaborating with TNO in 2021. "We knew that TNO has a strong position in electrolyser technology and decided to leverage their knowledge and network to make faster progress," says Thilo. "One of our key areas of expertise is thin metal technology. We can produce thin metals very precisely. But an electrolyser is more than just a mechanical product; it requires in-depth knowledge of electrochemical processes. Thanks to TNO, we were able to quickly develop and test an initial version of our product."

The collaboration brought the partners not only comprehensive knowledge about electrolyzers, but also a broad network of Dutch and international companies with which to tackle joint challenges. For example, TNO enabled Bosch Tilburg to participate in programmes to develop test protocols for electrolyzers. "It's much more effective to face these kinds of challenges together," notes Thilo. "It's helpful for us to collaborate with other companies and develop standards that move the technology forwards."

Although electrolyser stacks are assembled in Germany, Bosch Tilburg remains responsible for the design and development of future generations of electrolyser stacks. "We've developed a high level of competence and are now Bosch's pre-development centre for electrolyser stack technology," Thilo says proudly. Thilo believes strongly in the power of partnerships. "Nobody can deal with the risks alone, even a successful company like us.

Together with TNO, we have a better understanding of the risks and opportunities, both technological and economic. And with regard to intellectual property, too, we have always reached agreement. What are you going to do? What are we going to do? And who will take what from the partnership? We always find a solution and can talk about it easily and openly with each other."

The collaboration between Bosch Tilburg and TNO shows that innovation cannot happen without close collaboration. "It's incredibly important to collaborate on innovation, in order to bring new technologies and products to market successfully and quickly," concludes Thilo Mueller.





TNO spin-offs

It is crucial for TNO knowledge to find its way into new products and services that offer solutions for a safe, healthy, sustainable, and digital society.

We 'cash in' on our knowledge (valorisation) by setting up spin-offs and granting licences, among other activities. The Tech Transfer programme helps with valorisation

by providing support in developing business cases, finding the best route to market, and encouraging entrepreneurship. The programme explores whether setting up a new company – a TNO spin-off – is a good route or whether granting a licence to an existing party is a better valorisation option. The aim is to maximise TNO's impact and put more TNO knowledge onto the market faster.

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|  |  |  |  TECHNOLOGY FOR A BETTER PLANET |  |  | Established in 2024 |
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Carbyon

Carbyon develops technology to remove CO₂ from the air. Carbyon's innovative machine uses a combination of thin film technology and a unique process to efficiently adsorb CO₂ using minimal energy. This lowers the cost of carbon capture to around €100 per tonne. Carbyon's technology makes it possible to remove 1,000 tonnes of CO₂ per system annually. The carbon that is captured enables the production of green fuels and chemicals, and can also be stored underground. This helps in efforts to reduce CO₂ levels to pre-industrial values. Carbyon works with partners in the Brainport Eindhoven region to scale their technology globally and invites new partners to contribute to their mission.

[Read more](#)


Delta Life Science

Delta Life Science focuses on accelerating research into new drugs and diagnostic tools. It develops innovative biosensors. Its product inQuiQ®, launched in 2024, uses Nanophotonic Evanescent Field Sensing technology to quickly and accurately measure molecular interactions without labels. This significantly speeds up drug and diagnostic test development. inQuiQFS Me Pro offers up to 16 analyses per run and is affordable and compact. With support from the National Growth Fund programme NXTGEN Hightech, Delta Life Science is continuing to innovate and work on the next generation of its technology. Its ambition is to be a global leader in the life sciences sector.

[Read more](#)


Nearfield Instruments

Nearfield Instruments develops advanced nanoscale metrology machines. These machines measure critical structures of microchips during the manufacturing process without damaging the chips, which improves the efficiency of chip production. Nearfield recently raised €135 million in an investment round with top global investors. The technology is essential for inspecting microchips made with ASML's EUV lithography machines, among others. Nearfield is targeting a \$5-6 billion market by 2027 and already has partnerships with companies such as Samsung Semiconductor. The metrology machines are used worldwide and production of a second series is about to start. Nearfield continues to innovate, to be able to measure the latest generations of chips, with ongoing support from TNO.

[Read more](#)

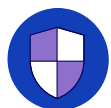


Strategic theme: Safe and secure society

Protecting what is dear to us and ensuring people can live together in freedom and safety. That's what we stand for. Therefore we develop strategic knowledge, technology and capabilities.

With our impact within the Safe and Secure Society theme, TNO contributes to the following Sustainable Development Goals:





Strategic theme: Safe and secure society

Photo: Central government media library



Research

Winter study Marine Corps Joint Arctic Training

To gain experience of operations in extremely cold conditions and be as well-prepared as possible for conflict, the Dutch Marine Corps is training in Bardufoss, northern Norway. TNO, together with Defence, investigated how best to protect soldiers operating in extremely cold conditions from hypothermia and frostbite.

We have considerable expertise at TNO with regard to safe and healthy performance in extreme conditions. By gathering knowledge on the ground, we can further support our marines in performing their duties in the best way possible.

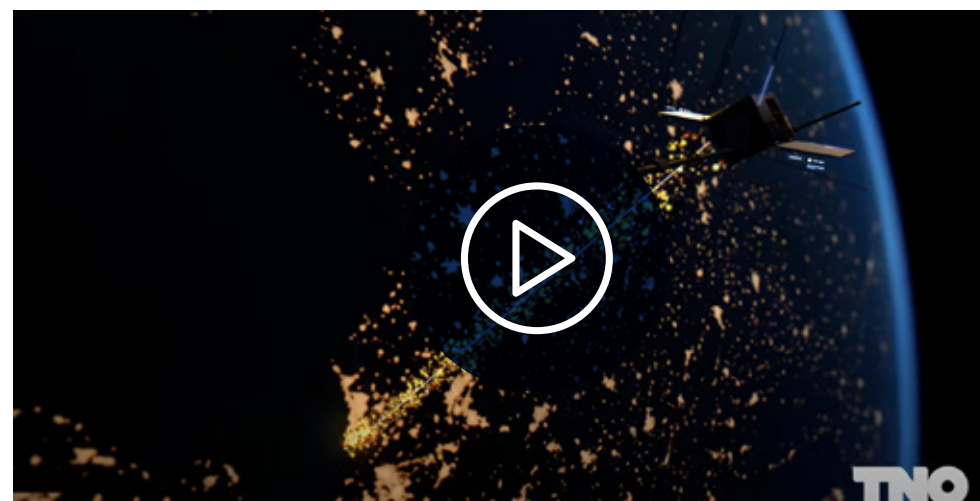
[Read more \(in Dutch\)](#)

Licence

TNO has entered into a licence and collaboration agreement with FSO Instruments

With this agreement, FSO Instruments acquires global rights to industrialise and commercialise TNO's laser satellite communication technology. This optical technology enables much faster and more secure broadband connectivity than with

the radio frequencies that are currently used. The agreement confirms the two parties' commitment to a long-term partnership to establish a European ecosystem for laser satellite communications in the Netherlands.

[Read more](#)



Strategic theme: Safe and secure society



Research

Investigation into El-Chaab incident

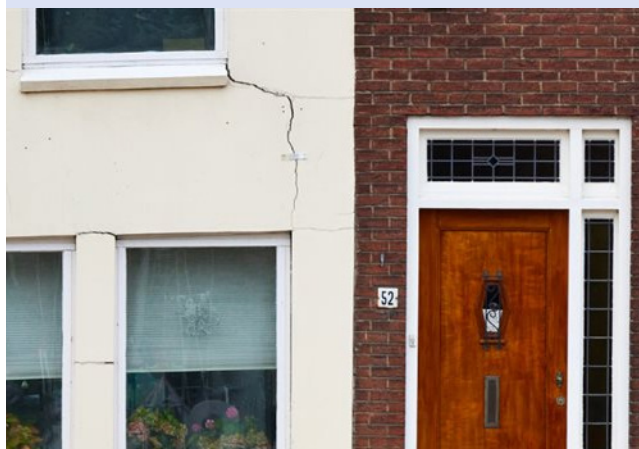
On 13 October 2023, a group of journalists were hit by ammunition near the village of Aalma El-Chaab in southern Lebanon, near the demarcation line between Lebanon and Israel, also known as the United Nations 2000 Blue Line. A Reuters video journalist was killed and two other Reuters journalists were injured in the incident. Journalists from Agence France-Presse and Al Jazeera were also injured. Reuters asked TNO for an analysis of the incident. To this end, TNO examined audio, video, and photographic material from various news organisations. The position from which the journalists came under fire was determined using triangulation. Metal fragments from the incident were also examined. The conclusions of the study were shared in the research report.

[Read more](#)

Research

Building damage due to subsidence

Soil subsidence is a silent but very real threat to large parts of the built environment in the Netherlands, as in other low-lying areas. The 'Subsidence and Building Damage' research programme combines the strengths and insights of three TNO units to link subsidence to building damage. By developing a model chain, it is possible to identify risks of building damage due to subsidence at an early stage. This enables TNO to establish a causal link before the harm has been done. Being proactive rather than reactive. If we do nothing, the cost of repairing damage will run into tens of billions of euros.

[Read more](#)

White papers

Strategic autonomy of the Netherlands and Europe

Strategic autonomy is of crucial importance to the Netherlands and Europe. TNO Vector has published papers on four key pillars of strategic autonomy. The 'Economic Security' paper discusses geopolitical developments and the vulnerabilities that result in economic dependence. 'National Security' is a paper in which TNO addresses the assessment of risks that could endanger national security. The 'Energy Supply Security' paper looks closely at the urgent need for new policy on energy security. And the fourth paper, 'Digital Sovereignty', deals with the understanding needed to be able to take measures for digital autonomy.

Read more:

[Economic Security](#)[Energy Supply Security](#)[National Security](#)[Digital Sovereignty](#)



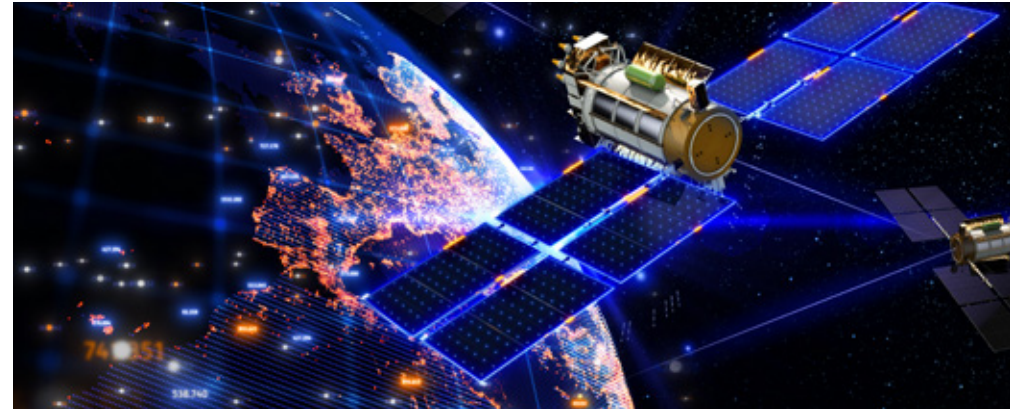
Strategic theme: Safe and secure society

Collaboration

SeaSEC Experience research centre: safety of undersea infrastructure

SeaSEC was established by the defence ministries of the Netherlands, Denmark, Germany, Finland, Norway, and Sweden to secure undersea infrastructure. In this research centre, they work with TNO and other partners, focusing on the safety of internet cables and energy pipelines. The threat of sabotage and cyber attacks

is very real. The international SeaSEC Experience event at Campus@Sea in Scheveningen highlighted innovative solutions from companies such as Lobster Robotics, Nokia, and Fugro.

[Read more](#)


60 years of innovation in space

In 2024, TNO celebrated the 60th anniversary of its first space instrument, the S59 spectrophotometer. This instrument, designed for the early satellites of the European Space Agency, marked the beginning of our long-standing collaboration with the European space industry. A relationship that has only grown stronger since that time.

During six decades of space instrumentation, TNO has built up a rich legacy of technological innovation. From advanced solar sensors and

Earth observation systems to next-generation laser data transmission, our work has shaped the future of space research and global communications. Whether it is a matter of improving our understanding of the universe, monitoring greenhouse gas emissions, or ensuring secure, high-speed data networks, our contributions are crucial.

Space technology plays a major role in the National Technology Strategy and influences areas such as optics, mechatronics, and quantum. TNO is therefore working on new innovations that will determine the future of space technology and exploration. We proudly celebrated this milestone at international exhibitions and conferences, a summit on laser satellite communication, and a series of publications in the national media.



Strategic theme: Healthy society

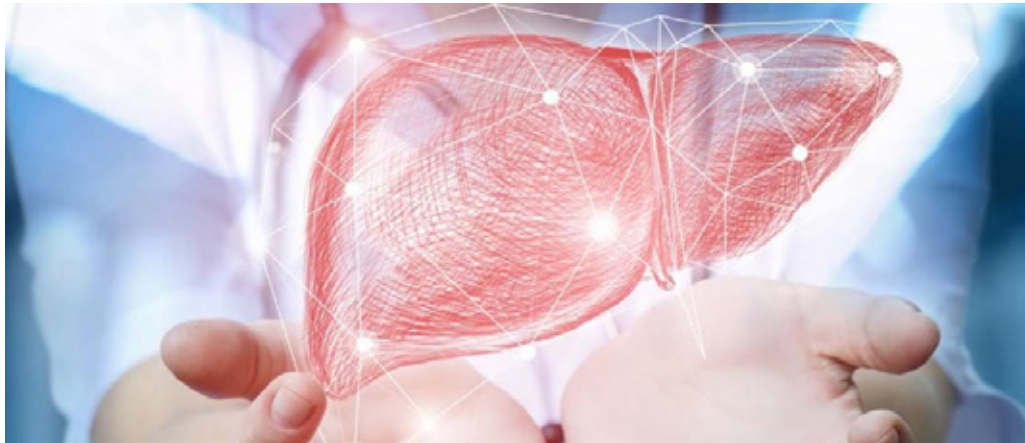
Improving the health of citizens physically and mentally. Strengthening the adaptability of people and organisations to ensure that employees remain healthy, safe and productive. That is our ambition. This requires innovation and a new perspective on health, healthcare, work and the labor market. Our living- and work environment plays an important role. Because healthier environments prevent almost a quarter of all diseases.

With our impact within the Healthy Society theme, TNO contributes to the following Sustainable Development Goals:





Strategic theme: Healthy society



Research

New method discovered for diagnosing liver disease

TNO, in collaboration with the University Medical Centres of Amsterdam, Leiden, and Copenhagen, has discovered a new method, in which measuring three specific proteins is enough to determine the severity of liver fibrosis. Liver fibrosis is regularly diagnosed by taking a liver biopsy, which means removing a small piece of the liver. This is an expensive and painful procedure that is not without risk. The new method also has a positive

impact on the clinical pretest for demonstrating the effectiveness of a drug.

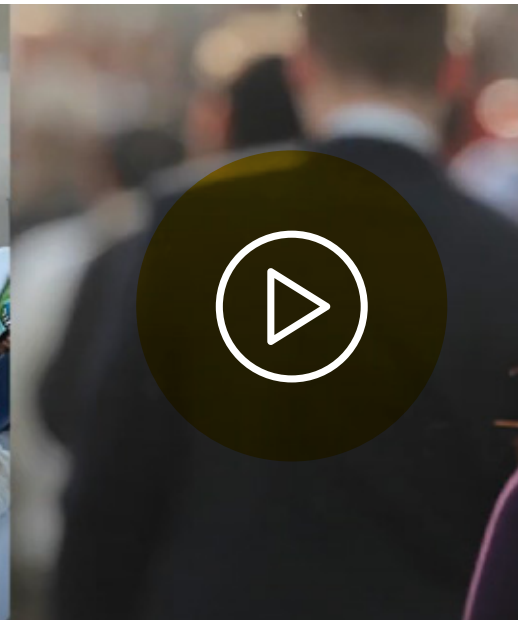
Pharmaceutical companies can use the TNO biomarker set to identify more quickly and accurately the patients who are or are not eligible to participate in the clinical trial.

[Read more](#)

Research

Five-step plan lowers health risks from polluted air

TNO has developed a five-step plan that uses sensors to make targeted interventions to reduce health risks from exposure to polluted air. Companies from sectors working with hazardous substances are strongly invested in their employees' health and safety. However, more than 3,000 current and former employees still die every year due to exposure to carcinogenic substances or dangerous concentrations of particulate matter, for example.

[Read more](#)



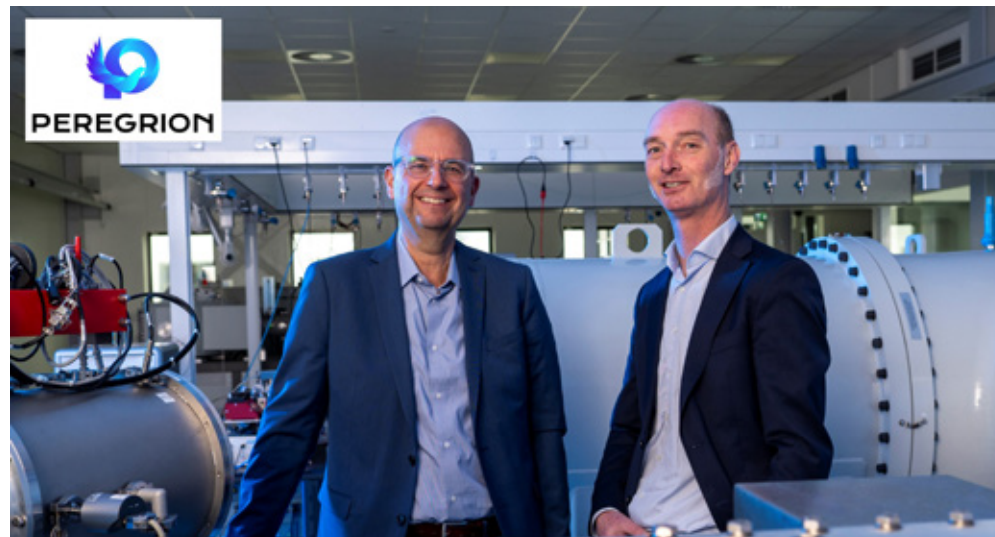
Strategic theme: Healthy society

Spin-off

Peregrion: Accelerating drug development with innovative AMS technology

Peregrion is a TNO spin-off in the field of absorption, distribution, metabolism, and excretion (ADME) research for preclinical and clinical drug development. The spin-off focuses on the research and development of methods to detect drugs and metabolites using biomedical accelerated mass spectrometry (AMS). In 2024, 20% of the 50 newly registered small molecule drugs had an hADME study conducted through AMS. With more than a decade of investment in facilities,

knowledge, employees, and ecosystems with industry, Peregrion has developed pioneering methods to detect drugs and their metabolites produced by the body. As a result, clinical trial times are shorter and costs are significantly lower, and are conducted without any animal experiments. New drugs will therefore become available to patients faster.

[Read more](#)

(From left to right) Founders Steven Erpelinck and Wouter Vaes



Research

The future of chemicals is Safe and Sustainable by Design

TNO is working on an approach to developing safe and sustainable chemicals, materials, and products. In our daily lives, we come into contact with chemicals in the products we use. We badly need most of these chemicals, for example in the energy transition. However, these chemicals, both new and existing, sometimes carry potential risks that are often unknown. We can currently see only the tip of this iceberg of adverse effects from chemicals. For the majority of the substances, we have

insufficient knowledge of the risks. TNO is working on an integrated approach that enables companies to identify potential risks in the early stages of their design process and take measures to avoid reputation damage and high costs.

[Read more](#)[Download the white paper](#)



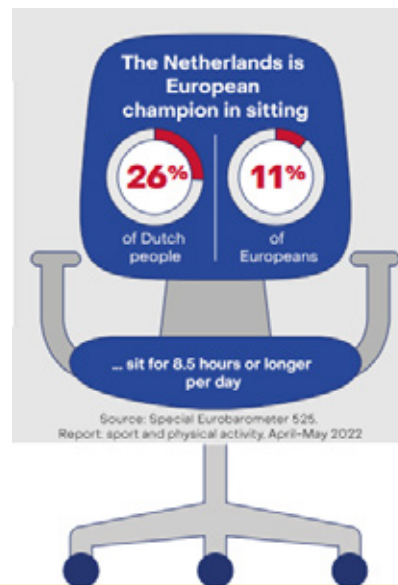
Strategic theme: Healthy society

Innovation

Tailor-made food from the 3D printer

Personalised nutrition can help people live healthier lives and improve performance and recovery. 3D food printing enables the production of ready-to-eat meals. Research by TNO and Wageningen University & Research, together with partners, has resulted in an innovative mobile mini-factory for 3D printing of food. The machines can print a different product each time and make real-time adjustments. In this way, it can produce a food product for each individual, varying in calories, macronutrients, shape, and taste.

Two field studies with military personnel and hospital patients showed that the 3D food printer could produce Nutri-Bites for various purposes and that the product was acceptable in taste and perception.

[Read more](#)


Research

The Netherlands is European champion in sitting

Research by TNO has shown that 26% of the Dutch population aged 15 and over sit for more than 8.5 hours on an average day. This makes the Netherlands the 'European champion in sitting'. In the rest of the EU, the proportion of the population is 11%. Previous research by the Health Council of the Netherlands* shows that prolonged sitting increases the risk of cardiovascular disease. TNO has released a fact sheet with all the facts and figures, and comparisons between occupations and sectors, with advice for achieving greater variety and a healthy balance.

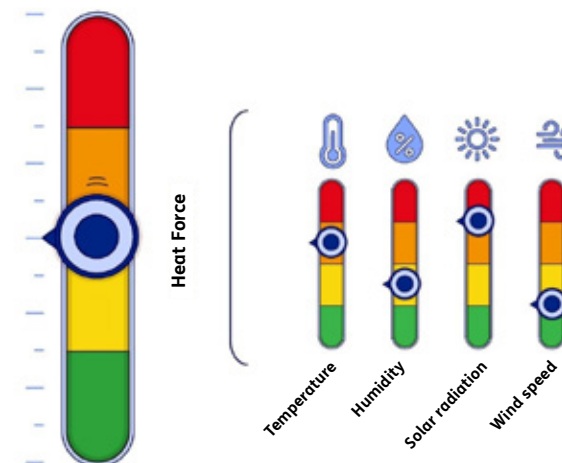
* Health Council of the Netherlands; Sedentary behaviour and risk of chronic diseases, background document to Dutch Physical Activity Guidelines 2017, The Hague

[Fact sheet sitting while working \(in Dutch\)](#)
[Read more \(in Dutch\)](#)

Innovation

Heat Force – a new warning system

Heat Force is a new system developed by TNO, KNMI, RIVM and VU University of Amsterdam. It is an index used to express exposure to heat. It combines temperature, humidity, solar radiation, and wind speed into a single metric. As with the term 'wind force', it should make it clearer to people when heat is problematic for humans. Due to climate change, we are seeing ever more days of extreme heat. This new system ensures we are better prepared for such days.





Strategic theme:

Sustainable society

At TNO we aim for a sustainable society. A society that can withstand the changing climate and contribute to a circular economy. A society with a sustainable living environment, sustainable energy and a sustainable industry.

With our impact within the Sustainable Society theme, TNO contributes to the following Sustainable Development Goals:





Strategic theme: Sustainable society

Research

Measuring Uruguay's air pollution from space

Air pollution is a global problem. Many countries measure air pollution through nationwide ground-based monitoring networks. Satellite data also offer the possibility of measuring air pollution across borders or in areas where there is no ground infrastructure for measurements. TNO develops satellite instruments to measure air pollution and emissions using satellite data and

atmospheric simulations. We use the Dutch TROPOMI satellite instrument to measure air pollution. In January 2024, TNO launched a project for Uruguay's Ministry of Environment. We also train ministry employees to use a simulation model to predict air quality.



Innovation

Green hydrogen from sea to land

Large-scale production of hydrogen can make energy-intensive industries more sustainable. With hydrogen produced by offshore wind power and transported through existing gas pipelines. PosHYdon forms the basis for plans involving large-scale hydrogen production from offshore wind. Numerous research questions have now been answered, from how the technology works to safety issues and commercial viability. Final research results are expected in 2025 and it will be possible to produce the hydrogen.

[Read more](#)

Innovation

Smart windows save energy

TNO has developed the SunSmart window. By blocking solar heat in summer and letting it pass in winter, the SunSmart window can reduce the use of air conditioning and heating. As a result, an average household

can save several hundred euros a year on energy bills. TNO expects SunSmart windows to be ready for large-scale production in 2025.

[Read more](#)



Strategic theme: Sustainable society

Research

China's role in wind energy and electrolysis supply chains

China holds an increasingly dominant market position in offshore wind technology and electrolysis for green hydrogen production. To reduce strategic dependencies, Europe can take action. But the geopolitical consequences could be far-reaching and have a direct impact on the pace and cost of our energy transition. This is shown in the research by TNO and The Hague Centre for Strategic Studies (HCSS). The study includes an analysis of China's current and future role in wind energy and electrolysis supply chains. It combines the geopolitical analyses by HCSS with TNO's technological and market expertise in energy and materials.

[Read the report](#)
[Read more](#)


Research

Energy poverty in the Netherlands

In 2023, an estimated 400,000 households were struggling with energy poverty, the TNO and CBS Energy Poverty Monitor shows. TNO conducted new research in 2024, for the first time studying the extent of energy poverty among households. By measuring the energy poverty gap, researchers determined the level of energy poverty for the first time.

The study assumed different energy price levels (low, medium, and high) without compensatory measures. It shows that at a median energy price, the total energy poverty gap is €250 million a year. This is the total amount that all energy poor households combined need per year to be above the energy poverty threshold.

[Read more](#)
[Energy poverty map \(in Dutch\)](#)
[Report 'The energy poverty gap in the Netherlands' \(in Dutch\)](#)

Energiearmoede heeft meer impact buiten de Randstad

Energiearmoede slaat het hardst toe buiten de Randstad. Dat blijkt uit een nieuw onderzoek van TNO, dat voor het eerst de ernst van energiearmoede in kaart bracht bij de ruim half miljoen huishoudens die hiermee kampen. Lage inkomens wonen er vaak in grotere, minder goed geïsoleerde woningen.

David Bremmer
Rotterdam

Ruim 530.000 huishoudens in Nederland kampen met energiearmoede: ze hebben een laag inkomen én een hoge energierekening of slecht geïsoleerd huis. Hierdoor hebben deze gezinnen nog minder te besteden, wat hen kwetsbaar maakt voor schulden. TNO onderzocht nu voor het eerst de verschillen binnen deze groep.

Uit de studie blijkt dat energiearme huishoudens gemiddeld 472 euro per jaar meer kwijt zijn aan gas en licht, vergeleken met lage inkomens in beter geïsoleerde woningen. Maar voor ruim 50.000 huishoudens ligt dit bedrag veel hoger: zij betalen jaarlijks minstens 1000 euro extra. De zwaarst

getroffen groep, ongeveer 9000 huishoudens, ziet hun energierekening zelfs met 2000 euro stijgen.

Vooraf in de provincies Drenthe, Groningen, Friesland, Gelderland, Overijssel en Limburg zijn veel huishoudens met torenhoge energiekosten te vinden. „Woningen buiten de Randstad zijn vaak groter”, legt Peter Mulder, onderzoeker bij TNO, uit. „Ook lagere inkomens wonen er vaker in een vrijstaand of halfvrijstaand huis. Dat maakt hun energierekening aanzienlijk hoger.”

In de Randstad is het beeld anders. Hier wonen minima vaker in kleinere woningen, bijvoorbeeld galerijflats in Amsterdam-West of Rotterdam-Zuid. „Hoewel de isolatie slecht is, blijven de energiekosten lager doordat deze huizen kleiner zijn”, zegt Mulder.

Met de resultaten van TNO in de hand kan het kabinet energiearmoede veel gericht aanpakken, zegt Mulder. „Tot nu toe zijn de maatregelen vaak ongericht en daardoor duur. Als de hulpkanterechtkomen bij de huishoudens die het hardst worden getroffen, kunnen we maatregelen effectiever én goedkoper maken.”

Article in Algemeen Dagblad 17 September 2024

**Strategic theme: Sustainable society****Research****Transport poverty: 'side effect' of the transition to sustainable mobility**

Between 113,000 and 270,000 households in the Netherlands have low incomes and high fuel costs. Most of them live in medium-sized towns. This group of 'at-risk households' is vulnerable to tax measures and other policies that drive more sustainable mobility behaviour. Reducing excise duty is not a cost-effective measure to help these households, because 98% of this does not reach the most vulnerable households.

TNO used microdata that had not previously been combined to investigate how many households in the Netherlands are potentially vulnerable to the mobility implications of the energy transition. In the study, TNO shows which households in the Netherlands combine low income with high car mileage, making them vulnerable to higher fuel costs, for example due to carbon pricing.

[Read more](#)

Volgens het Armoedefonds zou gratis openbaar vervoer voor kwetsbare huishoudens een oplossing kunnen zijn.
FOTO: JESSE VAN GELDEREN

Voor lage inkomens is werk vaak letterlijk buiten bereik**Vervoersarmoede**

Mensen met een laag inkomen kunnen lang niet overal komen. Groen reizen is al helemaal geen optie, stelt TNO.

Joost van Velzen
redactie duurzaamheid&economie

Een beroepje aan een oude klagenoot of een autorit naar een sollicitatiegesprek is niet voor iedereen vanzelfsprekend. Mensen met een laag inkomen kunnen zich nauwelijks een auto permitteren. Vervoersarmoede wordt dat genoemd, en dat is niet alleen beperkend, maar op termijn ook niet milieuvriendelijk, waarschuwt TNO in een nieuwe studie.

Het gaat in Nederland om tussen de 113.000 en 270.000 huishoudens (vaak met een uitkering of pensioen), die veelal wonen in middelgrote steden en in landelijke gebieden, zoals de kop van Noord-Holland, de Achterhoek of delen van Zeeland. Ik zie vaak zijn het gezinnen met kinderen die niet overal kunnen komen. Dat wil zeggen: ze kunnen wel overal komen, maar kunnen de brandstof niet betalen. Een maatregel als accijnsverlaging helpt daarbij niets, berekende TNO. Slechts 1 procent daarvan komt terecht bij de kwetsbare huishoudens. Daarnaast is zo'n verlaging ook al niet.

Groener reizen is sowieso langer voor deze groep. Omdat 'risicohuishoudens' de groene mobiliteit hebben om de vindingen aan elkaar te knopen,

zijn ze ook kwetsbaar voor lokale maatregelen en ander beleid dat voortvloeit uit de mobiliteitsplanning, concludeert de onderzoeker.

"Omdat de brandstofkosten worden omhooggedrukt, is de verwachting dat milieubelasting de prijzen van benzine en diesel verder zal doen stijgen", zegt TNO-onderzoeker Peter Mulder. Overschakelen naar een dure elektrische auto ligt al helemaal buiten het bereik van armoedeblijven met een laag inkomen. Het openbaar vervoer is voor een deel van deze groep huishoudens over het algemeen niet haalbaar, omdat de

Het is vaak geen alternatief, omdat de verbindingen te wensen overlaten

kwaliteit van de verbindingen met bus en trein te wensen overlaten. "In de energietransitie wordt het gebruik van een brandstofauto steeds verder ontmoedigd door regels en heffingen, denk aan milieuzones in steden en hogere brandstofprijzen door milieubelastingen", zegt Mulder. "Deze maatregelen zijn bedoeld om de uitstoot te verminderen, maar het is belangrijk om oog te houden voor de huishoudens die niet op eigen kracht mee kunnen doen aan de groene transitie naar duurzaam vervoer."

Plus dat de andere beperkingen die mensen tegenkomen als vervoer onbetaalbaar voor hen wordt: een

nieuwe baan komt dan letterlijk en figuurlijk buiten bereik te liggen en dat fysiek contact met die vriendin uit Zorghen dreigt te verwaaien, omdat hoge vervoerskosten een bezwaar zijn in de weg staan.

Volgens het Armoedefonds, dat lokale hulporganisaties helpt om 'armoede te verlichten', zou gratis openbaar vervoer voor kwetsbare huishoudens een oplossing kunnen zijn. "Maar we moeten oppassen dat we niet steeds de oplossingen voor de problemen veranderen", laat het fonds weten. "Om het probleem echt aan te kunnen pakken, is een structurele en blijvende oplossing nodig in de vorm van een hoger minimumloon en hogere uitkeringen."

De TNO-studie zoekt de oplossingen meer in het samenvoegen van alternatieve vervoersmiddelen, zoals de elektrische fiets, deels vervoer op openbaar vervoer. Subsidie op de aanschaf van elektrische auto's blijft volgens TNO een optie. In er zou beter moeten worden gekeken naar niet-werkende locaties in de buurt van ov-knooppunten en voorzieningen, om mensen minder afhankelijk te maken van de auto.

De onderzoekers van TNO kwamen overigens nog voor een raadsel te staan. De risicogroep van arme huishoudens blijkt veel meer woonkilometers per jaar af te leggen dan gemiddeld (-40 procent).

Mulder: "Een keer dat blijkt dat dit niet alleen door woon-werkverkeer komt, we zien een soortgelijk reisgedrag onder gepensioneerden en mensen met een uitkering. Het is meer onderzoek nodig naar de achtergrond hiervan."

**White paper
Scenarios for a climate-neutral energy system**

If the production volume of energy-intensive industry in the Netherlands does not change, this sector will continue to consume 40 to 50% of total Dutch energy demand. Access to sufficient renewable energy and sustainable carbon is therefore essential. This is one of the conclusions from the white paper entitled 'Future of the Dutch energy system'. The study outlines in two scenarios what a future climate-neutral energy system could look like and the sector's interest in achieving the energy transition. This latest 2024 scenario study is based on enhanced national and European targets and how to achieve them.

[Read more](#)[White paper summary of 2024 scenario study \(in Dutch\)](#)[Article in Trouw 14 February 2024](#)



Strategic theme: Digital society

The Netherlands as a digital frontrunner in Europe. That is what TNO wants to contribute to. Because digital technology supports, and accelerates all major innovation challenges. In addition, digitisation has a far-reaching effect on society as a whole.

With our impact within the Digital Society theme, TNO contributes to the following Sustainable Development Goals:

9 INDUSTRY, INNOVATION
AND INFRASTRUCTURE



11 SUSTAINABLE CITIES
AND COMMUNITIES





Strategic theme: Digital society



GPT-NL boosts Dutch AI autonomy, knowledge, and technology

TNO is collaborating with SURF and NFI on its own Dutch language model, GPT-NL. With the introduction of GPT-NL, the Netherlands will soon have its own language model and ecosystem, developed according to Dutch values and guidelines. GPT-NL will be a virtual facility of knowledge institutions, companies, governments,

and users. A secure, reliable, and open environment to study and try out large language models and specific applications. There is also a focus on sustainability aspects, such as the energy consumption of this type of AI.

[Read more \(in Dutch\)](#)


TNO's data spaces software ready for the market

TNO has received the IDSA Certification Award from the International Data Spaces Association (IDSA) for the TNO Security Gateway. It is only the third time that software like this has been officially certified worldwide. TNO Security Gateway is a connector that enables companies to participate in international data spaces – decentralised platforms for sovereign and secure data sharing. The certification means that the TNO Security Gateway meets all security standards and is ready for the market. In the Netherlands, it is already being used in an operational data space, the Smart Connected Supplier Network (SCSN).

[Read more](#)


Quantum internet via space

TNO is to investigate the role space can play for quantum information networks. The quantum internet, which is supposed to connect quantum devices worldwide, can only exchange information over a few hundred kilometres. This is because it depends on networks on the ground. Satellites can help achieve global connectivity, but as yet there is no overall architecture for a worldwide quantum internet. The Netherlands is capable of creating this due to its strong position in quantum technology, optics, and photonics.

[Read more](#)



Strategic theme: Digital society



AI in training: FATE develops digital doctor's assistant

How would you imagine a responsible and more reliable collaboration between a doctor and a digital assistant? That question is at the heart of the FATE project, in which TNO is working to develop the AI-based digital doctor's assistant of the future. The predictive power of AI can detect diseases early or even prevent them. With technologies that safeguard privacy, data can be exchanged securely between healthcare providers. Those data are plentiful, but healthcare providers are still reluctant to make their data available. Other challenges include combining data stored in different ways and recognising any biases that end up in models.

[Read more](#)

Dutch satellite instrument sends data to Earth via laser for first time

Researchers at TNO have succeeded in sending data from a satellite to a ground station on Earth using laser communication technology they have developed. This is the first time this has been achieved with a Dutch satellite instrument. This technology works with invisible laser signals. It enables much faster and more secure data traffic compared to radio frequencies that are currently used everywhere for communication. This success is a major step in the development of fast and secure laser satellite communications. Therefore, a reliable laser communication network ultimately requires a constellation of satellites.

[Read more](#)

TNO spin-off Scenexus makes area development tangible

From San Diego to Amsterdam, Scenexus ensures that city administrators, policymakers, planners, and developers understand the impact of their plans on the environment through its digital twin platform. Within minutes, you can see what effect a change has on traffic, liveability, resident sentiment, financial growth, safety, well-being, and other factors. At the heart of the software are powerful algorithms and graphical processing units. The same processors as those used in video games and AI technology. The software processes thousands of data points in parallel, achieving results 1,000 times faster than with leading planning software on the market. Commissioned by major cities in Europe, Asia, and North America, TNO has provided city stakeholders with more in-depth and valuable insights in less time than was ever possible before.

[Read more](#)



Strategic theme: Digital society

Innovation and collaboration

Building on 6G – Future Network Services

TNO is building 6G with Future Network Services (FNS). With 60 partners involved, the focus is on radio components, network software, and mobile applications. As a frontrunner in these aspects of 6G, the Netherlands is well-placed to gain a strong position in that next generation of mobile networks. The first test setup of a wireless factory has now been carried out in Eindhoven.

[Read more](#)




TNO licence

FSO Instruments' quest for secure communications

“We know exactly what we want to achieve and how we want to achieve it, and we want all partners to play the roles that fit them best.”

The method of the future for safe, hard-to-hack communications uses laser satellite links in space to transmit information over long distances. Will Crowcombe, managing director of FSO Instruments, leads a dynamic company that has made significant strides in the field of optical communications. FSO Instruments delivers laser communications equipment for use in satellites and ground stations. FSO was established two years ago as a joint venture between DEMCON and VDL, and has quickly grown to a team of about 50 people, combining the agility of a startup with the credibility of its large shareholders.

FSO Instruments leverages TNO's unique technology in optical communications, combined with the vast infrastructure of its shareholders to develop cutting-edge products. Will explains: "We tap into TNO's technology and know-how of optical comms. DEMCON helps us engineer our products. And VDL's vast knowledge of high-tech manufacturing makes it possible to reliably build our products."

Will's 11-year tenure at TNO, culminating in his role as a principal system engineer, has been instrumental in the start of FSO Instruments. "I was at the birth of the laser satellite programme. After years of pushing the technology at TNO, we came to a point where people wanted to buy the products. It was logical to start this joint venture so I could stop pushing and start pulling."

The company's product roadmap includes the Resolite 20, 50 and 80. Will notes: "The Resolite 20 is a further development of the CubeCAT system that was launched by TNO a year and a half ago. We've taken that under license and redesigned it to make it more manufacturable. Now we're selling it commercially to the market." The cooperation with TNO, VDL, and DEMCON is central to FSO Instruments' success. Will explains: "Essentially, the institutes engineer the low TRL technologies – the Technology Readiness Level – and then as it goes up in TRL, we take over, industrialise,

and manufacture. We pay a licence fee to TNO, which helps in spinning this kind of development flywheel. The license fees support development of the next technologies, creating a sustainable circular model."

With a new project like the PAMI-1 mission on its way, FSO is also addressing a higher societal purpose. "We've set up a satellite mission. The satellite is 7 metres tip to tip, about 400 kilos, and will contain a camera with a half-metre aperture telescope for imaging the ground. A constellation of these satellites will give the Dutch government sovereign capability to monitor the North Sea, to meet its NATO contributions."



FSO Instruments works very transparently. Will concludes: "We work very openly with our partners. We're not particularly worried about intellectual property or where it comes from. More important is a well-oiled ecosystem. We know exactly what we want to achieve and how we want to achieve it, and we want all partners to play the roles that fit them best. It'll take a few years to see whether or not we're truly successful. But things are going pretty good."

People and organisation

As investigators, we are a cornerstone of evidence-based decision-making. As innovators, we craft solutions to pressing problems, fostering economic growth, creating jobs, and fuelling dynamism. And as orchestrators, we unite diverse stakeholders to address complex, multi-dimensional challenges with a systematic and collaborative approach. The execution of these roles relies on people with passion working in a focused and agile organisation.



The Executive Board consists of (from left to right) Maarten Tossings (COO), Susan Swarte (CFO), and Tjark Tjin-A-Tsoi (CEO).



Home for talent

To continue creating impactful innovations that contribute to the sustainable well-being and prosperity of our society, TNO invests in its talent. A focus on talent and leadership development, a transparent job classification system, effective recruitment of new talent, and an inclusive culture where everyone feels at home form an inseparable part of these efforts.

Growth

TNO grew by 417 FTE over the period 2022-2024. This meant growth levelled off in 2024 compared to 2023. Driven by increasing demand from the security domain, National Growth Fund programmes, and programme funding, we managed to recruit qualified employees. The total number of new employees for these years was 1,965. Further slight growth is expected until 2027, when National Growth Fund activities will peak. After that year, these activities will decline. Depending on other developments, capacity will be adjusted.

Key figures

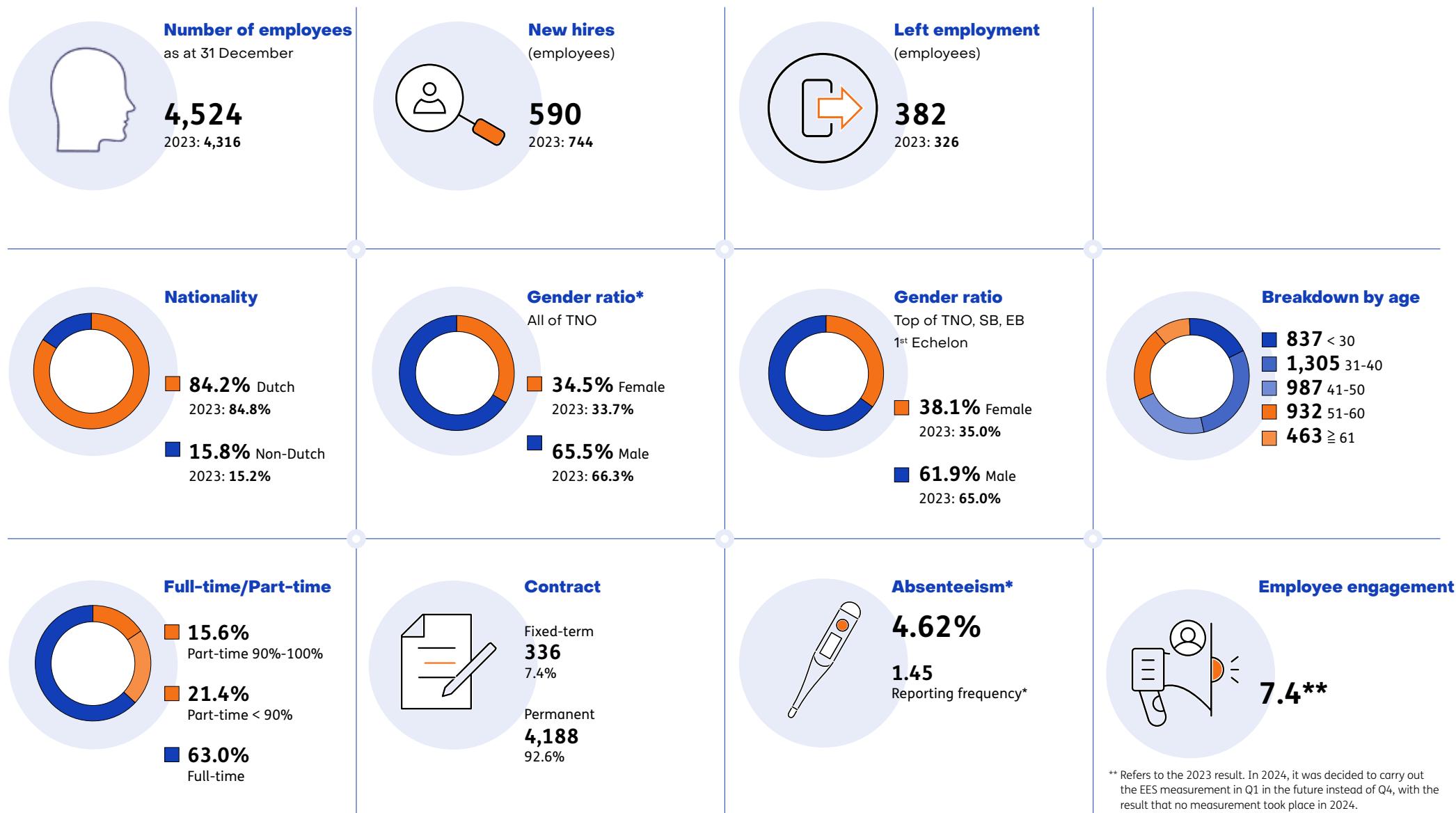
In 2024, the proportion of 'internationals' (non-Dutch employees) at TNO increased (+0.6%) to 15.8%, and the number of women in the total TNO population grew (+0.8%) to 34.5%. At the top of the organisation, the percentage of women increased (+3.1%) to 38.1%. TNO uses a number of tools to improve the gender balance. For example, there are several training courses specifically for women that are aimed at career growth. Gender differences in career growth are also analysed for pointers to appropriate action. And externally, there is greater emphasis on TNO as a diverse and inclusive organisation, and on highlighting TNO's female role models to attract talent.

Leadership and talent development

Good leadership is essential for employee well-being, talent development, and organisational success. Equality and reciprocity play a crucial role here. In dialogue and with joint responsibility, managers and employees discuss professional and personal development opportunities and goals, with the aim of employees taking control of their own development. TNO is developing a leadership programme. This is based on six principles of leadership derived from interviews with TNO managers. The foundations for this leadership programme were laid in 2024 and management within TNO will take part in the programme in 2025.



Home for talent indicators



** Refers to the 2023 result. In 2024, it was decided to carry out the EES measurement in Q1 in the future instead of Q4, with the result that no measurement took place in 2024.



From innovation to spin-off

Torwash transforms waste management

"We are really turning sewage sludge into a fuel product. The results are promising."

When Torwash was founded in January 2020, Pavlina Nanou faced a big challenge. As a spin-off from TNO, Torwash had to prove itself in the world of waste management. "During a bridging year, I worked partly at TNO and partly at Torwash. That gave us the stability we needed at the initial stage," says Pavlina, who founded the company together with Jan Pels and Levien de Legé.

Torwash focuses on converting organic waste streams into useful products. "Our technology is mainly intended for wet organic waste streams, such as sewage sludge. This is produced during water treatment, thickened with fossil chemicals, and then transported to sludge incinerators. A costly process. We are really turning that sewage sludge into a fuel product. The results are promising," Pavlina explains.

In July 2021, Torwash received funding for a demonstration plant, which was built at the Land van Cuijk water treatment plant. "The demonstration plant was able to process 10% of the waste stream. Now we're working on an installation that's ten times bigger," Pavlina says proudly. The first tests were successfully completed in August 2024 and now the team is concentrating on the design of a full-scale plant.

Torwash's technology is modular, which means the reactors can be flexibly switched on and off. "This is crucial for wastewater treatment plants because they need to remain operational at all times," Pavlina stresses. The ambition is to commission the first module of the full system in 2026, have four full-scale plants operational in 2030, and then sell at least one under licence. The company is also looking at international expansion, with opportunities in Germany and the UK.

In addition to her work at Torwash, Pavlina was awarded the Prince Friso Engineering Prize in 2024. "It was an honour to be nominated and eventually win. It was a surreal experience to talk about my work with Princess Mabel and Princess Beatrix at the award ceremony," she says. "It also gave our company the exposure it needed at a time when all the tests were running perfectly and we could prove that it works."

Torwash continues to innovate and contribute to a more sustainable future. "Our hearts are in the right place, and we have the passion to do this," concludes Pavlina. With their technology and vision, Torwash is poised to transform the world of waste management.



New job classification system

TNO is working on a future-proof job classification system and a salary structure to match. The new job classification system will give employees insight into their current position and grading compared to all other positions within TNO. This will give employees a clear understanding of career opportunities and remuneration prospects. The Korn Ferry Hay methodology for job evaluation was chosen for this purpose. This methodology provides an objective and structured way to evaluate jobs within organisations, which results in transparency and fairness in remuneration structures. The plan is to implement the job classification system and salary structure in 2025.

Ease of use in HR processes

TNO is always on the lookout for opportunities to make processes, systems, and working conditions progressive, transparent, and more user-friendly. In 2024, it was decided to implement a new Human Resources IT system landscape. The aim is to increase the ease with which employees and managers can deal with personnel matters by offering an integrated application. This will help TNO to optimise the management of personnel data and processes in relation to the onboarding of new employees, talent management, and strategic personnel management.

Smart and effective recruiting

After two years of strong growth, the number of vacancies posted, and therefore the number of newly recruited employees, stabilised in 2024. Smart and effective recruitment remains the watchword in today's challenging labour market.

The 2023 branding campaign continued in 2024. This made TNO visible both on TV and online to the broad recruitment target group. In 2024, the campaign was expanded to include more real-life stories from TNO employees about the impact of their work. The goal of the campaign is to further boost TNO's brand awareness, put a face to the impactful work done by its employees, and thus strengthen TNO's appeal as an employer.

Operationally, we also considered in 2024 how TNO can be even more effective in meeting future recruitment needs. The aforementioned new Human Resources IT landscape with integrated recruitment module will help achieve this goal.

Employee Engagement Survey

In order to focus on the right topics in our operations, it is important to understand employee well-being, difficulties in daily work, and personal development. For this reason, TNO conducts an employee engagement survey. In 2024, based on feedback from the organisation, it was decided to move the October 2024 survey date to February 2025 to avoid peak load.

Pensions

On 1 July 2023, the Future Pensions Act (Wtp) came into force. The employer, TNO, and the TNO Works Council worked jointly with the TNO Pension Fund Foundation in 2023 and 2024 on the transition to the new system. The Transition Plan sets out how accrued pension entitlements and rights will be handled, and also sets the target pension. The accrued pension entitlements will be transferred into the new scheme. The transfer date has currently been set at 1 July 2026. The final Transition Plan was adopted in early 2025.

Diversity, Equity & Inclusion

TNO wants to be a place where all employees feel at home and dare to be themselves. An organisation where there are equal and appropriate opportunities for everyone to participate and develop.

Raising awareness

Throughout 2024, our DEI office provided TNO teams with practical tips and advice on raising awareness and dealing with diversity, equity, and inclusion issues. In addition, managers were supported in having talks with employees on topics such as micro-aggression and allyship. The 2WayMentoring programme was set up to encourage employees to learn from each other's perspective. In this pilot project, thirteen pairs worked together for seven months. In addition, the Dutch Inclusiveness Monitor (NIM) was repeated after an initial measurement in 2021. The outcome of the NIM is an important source for setting the new DEI strategy 2026-2029.

DEI activities

The DEI employee networks organise opportunities to meet, webinars, and lectures on inspiring and enriching topics. One example was the organisation of an Iftar – a communal evening meal during Ramadan. TNO also participated in Pride Leiden with its own boat full of TNO employees. A DEI month was organised from mid-September to mid-October, focusing on the themes of diversity, equity, and inclusion. Employees had the opportunity to participate in various workshops and events at different TNO locations.



"Supporting millions of people with a groundbreaking innovation that makes a real difference"

Charlotte Kjellander

Senior Materials Scientist at TNO and founder and Managing Director of TNO spin-off Touchwaves

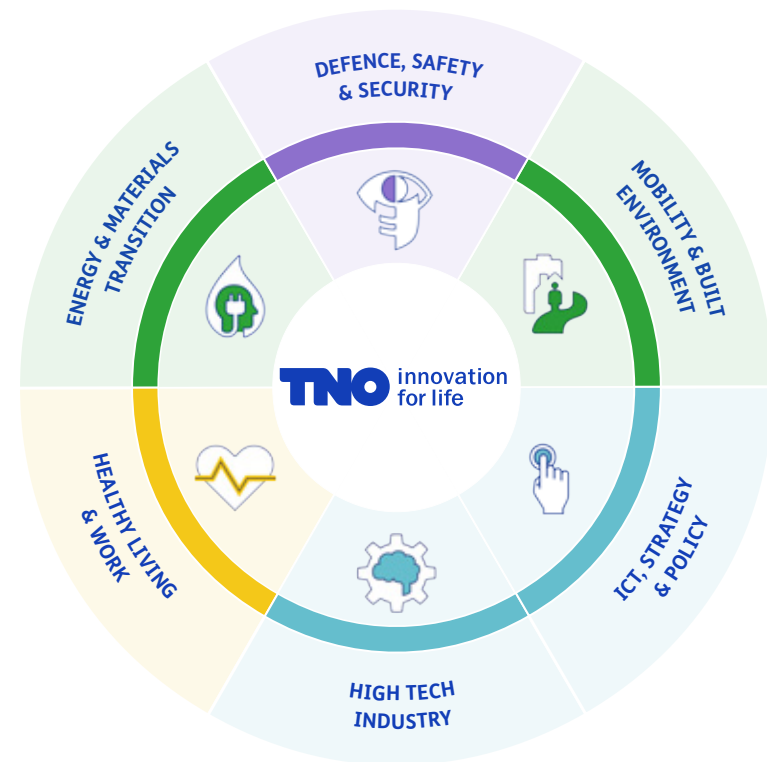
Charlotte Kjellander, together with fashion tech designer Pauline van Dongen, developed a ground-breaking innovation at TNO: MYSA, an intelligent and interactive garment. Through the TNO Tech Transfer programme, Charlotte and her team founded Touchwaves, a TNO spin-off that is taking this innovation to market. "In our hectic world, we are constantly overstimulated," Charlotte explains. "MYSA, equipped with flexible and thin electronics that are seamlessly integrated into textiles, delivers gentle vibrations across your back, like pleasant waves of touch that help slow down your breathing. The effect has been proven, not only because I myself am free from my chronic headaches without medication thanks to MYSA, but also because research shows that the product increases body awareness and promotes deep breathing, which are crucial elements for managing anxiety and strengthening mental and physical resilience."

"MYSA is thus a valuable tool in anxiety management and other mental challenges, supporting the work of psychologists and psychotherapists. At a time when stress is increasing and access to care is under pressure, this innovation is of great importance. There is positive Interest from the clinical sector, as well as from defence and security, where human performance is crucial. Promising projects are currently underway with the Dutch Royal Air Force. Our mission? Using technological innovations to support millions of people worldwide with a holistic wearable product that makes a real difference."

Organisational structure

Units

Complex challenges call for a diverse range of expertise. There are six units to drive development, expertise, and propositions.



Organisational changes

The organisation's growth in recent years has made organisational change necessary. A divisional structure has been introduced within the major units of Defence, Safety & Security, and Energy & Materials Transition. The objectives of the new organisational model are to create a simpler organisation with more integrated management and strengthen the strategic focus of the unit's Team of Directors. In addition, the change will result in a scalable organisation in which growth and contraction can be accommodated. This will ensure a workable span of control for managers.



Defence, Safety & Security

Safety and security cannot be taken for granted. We use our knowledge and technology to create innovations for people who are dedicated to our peace and security. Whether they work in defence, the police, justice and security, the business community, or other sectors, TNO is the ally of military and security professionals.



Mobility & Built Environment

The Dutch are placing increasingly high demands on transport, infrastructure, and housing. This combination increases pressure on the liveability of our society. TNO is working on solutions for more efficient transport, sustainable living, and future-proof infrastructure.



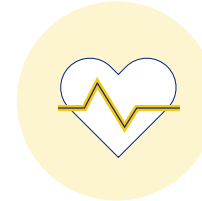
ICT, Strategy & Policy

The major questions of our time require innovative answers. This calls for innovations that connect people, society, and technology. TNO combines digital innovations with societal innovations and gets things moving when transitions grind to a halt. That means we work on making breakthroughs and creating support.



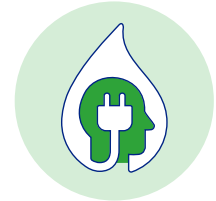
High Tech Industry

The Dutch high tech sector is a research and development hub that plays a key role in European and global solutions to the major societal challenges we face. TNO works with local, regional, and international partners to enable effective, sustainable, and revolutionary technological innovation.



Healthy Living & Work

Diseases and chronic disorders related to our lifestyle are on the increase. This development requires us to take a different view of health and care, and combine prevention and treatment. At TNO, we work on social and technological innovations that help people make choices for better health and greater participation in society.



Energy & Materials Transition

Climate change, climate adaptation, increasing scarcity of raw materials, and waste streams make the sustainability of our society one of the biggest challenges for the coming decades. TNO works on accelerating the energy and resource transition.

Strategic Advisory Councils

All TNO units have a Strategic Advisory Council (SAC) with representatives from industry, government, science, civil society organisations, and NGOs. The SAC advises on substantive priorities and draws

attention to new trends and developments. The appendices to this annual report include an overview showing the composition of the Strategic Advisory Council by unit.

Services Organisation

The Services Organisation acts as a direct partner of the units, thus directly influencing TNO's impact. The Services Organisation consists of Human

Resources, Marketing & Communications, Business Information & Operations Services, Finance, Procurement, Legal, and Strategy.

Corporate Governance

Each unit and part of the Services Organisation has a Managing Director. They report to the Executive Board, which is accountable to the

Supervisory Board. In addition to the Executive Board, the Defence Research Council has specific, statutory powers with regard to defence research.

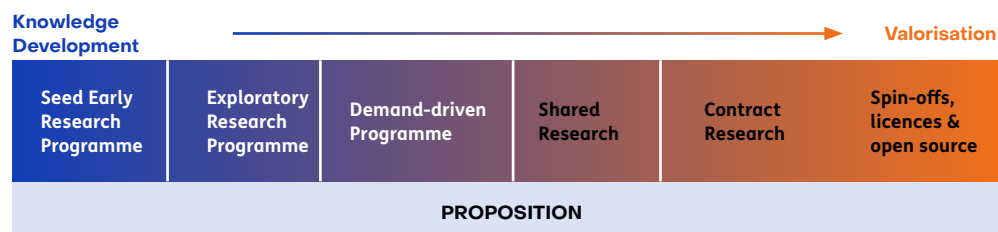
TNO's corporate governance is based on the TNO Act and can be found at www.tno.nl.



Knowledge development and application

TNO has a structured process of knowledge development. This precompetitive and public-private knowledge development focuses to a great extent on research areas identified in the Dutch government's Mission-driven Top Sectors and Innovation Policy.

The agenda and programming of knowledge development at TNO are drawn up in close coordination with partners and clients, as laid down in the Knowledge and Innovation Covenant (KIC) 2024-2027, and driven by TNO's vision of technology development in those areas where TNO has a 'right to play'. In addition, knowledge development is based on national and international (European) policy and statutory tasks, such as defence research and the Geological Survey of the Netherlands.



Propositions

TNO manages strategic research programming through a portfolio of 62 propositions. Propositions are logical combinations of offers and opportunities, with the unique promise of adding value for clients in the relevant market. This value is expressed in terms of the social and economic impact of the intended product-market combinations. To this end, TNO uses a mix of technologies, methodologies, and funding sources and investments.

Exploratory Research Programme

An Exploratory Research Programme (ERP) focuses on a new, urgent issue with great societal and economic potential. With this programme, TNO renews and maintains its knowledge portfolio. Ten 'Seed ERPs' were launched in 2024. These are one-year programmes in which TNO explores the potential of a new technology or methodology. The focus in a Seed ERP is on substantive feasibility, expected impact, and establishing partnerships with the necessary partners. The most promising Seed ERPs advance to a four-year programme: the 'Full ERP'. Five new Full ERPs were launched in 2024: 'Sustainable ICT', 'Empowering citizens' collectives', 'Polymer design by machine learning', 'Atmospheric models for optical solutions', and 'Asphalt rejuvenation using micro-algae'.

Demand-driven programmes

TNO collaborates with government, industry, and other knowledge institutions on innovations within the Mission-Driven Top Sectors and Innovation Policy (MITB). This collaboration leads to research with government and industry in coordinated demand-driven programmes. More than half of the government funding TNO receives is used for the four MITB themes 'Energy & Sustainability', 'Health & Care', 'Security', and 'Key Technologies'. In 2024, TNO organised studies in 26 demand-driven programmes. Energy and sustainability programmes continued to grow in 2024, thanks to additional contributions from line ministries. Topics in the biggest demand-driven programmes within Energy & Sustainability are renewable energy, sustainable construction, and carbon-neutral industry.

A new demand-driven programme will be created in 2025: Formation of the Netherlands Materials Observatory (NMO). With this programme, as in 2023, TNO aims to identify the most important critical raw materials for the Netherlands. A demand-driven programme should eventually produce an 'outcome', the final stage of the value creation model, through contract research, licensing, and spin-offs.

National Growth Fund

TNO is a major participant in the National Growth Fund (NGF), taking part in 31 NGF programmes with a total financial share of over €580 million. These programmes run over a period from 2023 to 2030, with peak spending in 2027. The programmes fit within the knowledge development phase of shared research and should therefore lead over time to a follow-up in the knowledge development chain.

Quality of research

An external audit committee evaluates the various units within TNO every four years. This committee consists of leading representatives from science and industry who carry out a Knowledge Position Audit (KPA). In addition to observations and recommendations, the committee also makes a quantitative assessment of each research group in the unit. The assessment concerns three aspects: quality, impact, and viability. A KPA was conducted in the Mobility & Built Environment unit in 2024.

In addition, TNO was evaluated at the end of 2024 as part of the four-yearly TO2 evaluation commissioned by the Ministry of Economic Affairs. The evaluation committee consists of six experts from the Dutch knowledge and innovation field. In spring 2025, the committee will send its 2020-2023 evaluation report to the Ministry of Economic Affairs.



World-class facilities

High-quality research facilities are of crucial importance to us. In these facilities, TNO works with partners in the relevant ecosystems. It is important to maintain the quality of these valuable and leading research facilities, build on them and create new ones. The government created the Applied Research Facilities subsidy scheme to meet the need to fund investment in experimental – and therefore high-risk – facilities. Under the scheme, €100 million has been made available to two research facilities in which Dutch knowledge institutions are collaborating. In the first round, TNO submitted 12 proposals for new facilities, of which five were awarded funding in 2024: GPT-NL, Innovation Centre for Sustainable Power Trains, Biobased Building Materials Innovation Centre, Digilab (together with Deltaris, MARIN, NLR, Wageningen Research, KNMI, and RIVM), and facilities for climate and sustainability (together with KNMI, Wageningen Research, and RIVM). While this represents a significant step forwards in the renewal of facilities, a significant multi-year investment agenda remains to be set. TNO is seeking other sources of funding for urgent investments where possible.

Accommodation

In 2024, there were nine large-scale construction or renovation projects in progress. The expansion of the Rijswijk Kesslerpark location was completed during 2024, after which part of the EMT unit moved there from Delft Leeghwaterstraat. At the Leiden Sylviusweg location, a renovation has created space for the new TNO spin-off Peregrin.

Large IT projects

In 2024, TNO successfully completed a major IT migration project. This involved the implementation of a new version (S/4HANA) of the SAP Enterprise Resource Planning system. Thanks to the unwavering efforts of a large group of employees, operational management and information provision were uninterrupted. The update of HR systems within the SAP environment is planned for 2025.

PIXEurope

TNO has been asked to lead a consortium to build a photonics pilot line in the Netherlands. Partners are Eindhoven University of Technology, the University of Twente, and SmartPhotonics. This project has been designated an IPCEI (Important Project of Common European Interest). A total of five pilot lines will be realised in Europe. The programme is funded by the Dutch government and the European Commission. The technical programme was drawn up in 2024. The final decision on this programme will be made in 2025.

"Working on road safety with hybrid AI"

Chris van der Ploeg,
mid-level scientist specialist



Chris van der Ploeg won the Young Excellent Researcher prize 2024, a TNO award for young, inspired researchers who can boast exceptional achievements. Chris studies how self-driving cars can learn to understand themselves and the environment as well as humans do. "The system I'm developing with the team for this purpose reasons not only based on data, but also on knowledge we already have of the system and the environment. Call it hybrid AI. Really fascinating subject matter."

"As a motorcyclist, I know how vulnerable you can be in traffic. To enhance safety, I want vehicles to understand what constitutes a traffic situation. A self-driving vehicle then becomes a kind of enhanced human. This is necessary because if you only use AI, can you assess while the vehicle is driving whether the algorithm always has the right information to make the right choices? In fog, can you expect AI to detect a person crossing the road? I want to fully understand why a vehicle makes a decision. With our approach, you can follow the line of reasoning. And vehicle systems are currently very much focused on reacting, whereas anticipation is much more important. I also want to make that switch, using hybrid AI."

Highlighted research facilities



MARQ: **Advanced mobility test facilities**

MARQ is the new smart mobility innovation and research centre at the Automotive Campus in Helmond. This centre, developed by TNO in collaboration with the Province of North Brabant and Municipality of Helmond, focuses on safe, efficient, and clean mobility. MARQ offers advanced testing and research facilities, including vehicle labs, HIL/SIL setups, a dynamic driving simulator, and a data & control centre. These facilities enable us to test and validate mobility solutions under realistic conditions. MARQ encourages collaboration between the automotive industry, the ICT sector, the traffic industry, and public authorities. It also contributes to the development of international standards for smart mobility. In doing so, MARQ is accelerating the mobility transition and strengthening the position of the Netherlands in innovation.

[Read more](#)


Quantum Application Lab: **From theory to use**

The Quantum Application Lab (QAL) is a public-private partnership that aims to make quantum computing usable in various sectors. The lab provides access to specific knowledge and technical infrastructure, enabling organisations to explore the benefits of quantum technology. Initiators include the University of Amsterdam, TNO, and IBM Quantum. Quantum computers compute with quantum bits, which results in a fundamentally new way of processing information. This offers unprecedented opportunities for applications such as addressing optimisation issues, simulating quantum mechanical systems, and machine learning. The QAL helps companies and organisations understand and adopt this technology, despite current barriers such as high costs and technical complexity.

[Read more](#)


SWITCH field lab: **Innovation in renewable energy**

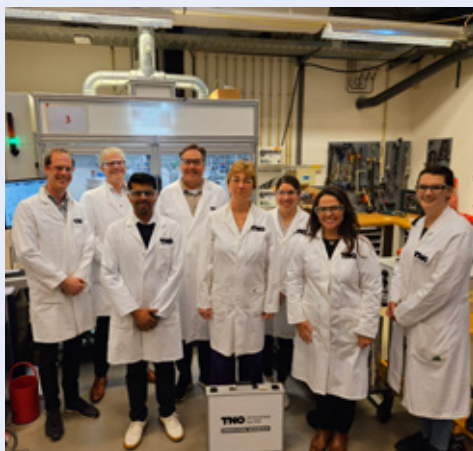
The SWITCH field lab in Lelystad, a collaboration between TNO and Wageningen University & Research/ACRRES, opened on 27 March 2024. This field lab focuses on renewable energy solutions by integrating wind turbines, solar panels, and electrolyser and battery systems. This enables a better alignment of the energy supply to market demand and optimum use of the power grid. The SWITCH field lab provides a platform for companies, government, and knowledge institutions to test and develop innovative solutions, with the goal of achieving a stable and affordable future energy system. This is crucial to address the challenges of the energy transition and relieve pressure on the power grid, especially with the expected increase in wind power generation by 2030.

[Read more](#)


Using TNO's equipment for research

TNO has a wide range of advanced research equipment for various scientific and industrial applications. The FT-IR Spectrometer, for example, provides accurate molecular analysis, while the diamond wire saw can be used to cut hard materials, such as ceramics and tungsten. The MTS Fatigue Test Bench 350kN performs fatigue tests on materials such as steel and composite, and the optical light microscope MeF4M examines the microstructure of materials. These devices support various research needs and contribute to finding innovative solutions. For specific information and quotes, you can contact TNO, where an expert will help you choose the right equipment and analysis techniques.

[Read more](#)



Innovative collaboration

Braskem and TNO work on the future of plastic recycling

“If you want to recycle it, you need to remove all contaminants and additives, which is not an easy step. That's where TNO's technology comes in.”

Braskem, a major global player in the chemical industry, is focused on developing new technologies to help meet its sustainability-related goals. Its partnership with TNO focuses on TNO's Möbius dissolution technology, a solvent-based process that enables efficient and sustainable recycling of polymers and additives, as it is set to significantly enhance the purity of recycled plastics.

Project leader Ana Camilo has been with Braskem for more than 10 years and is part of the innovation technology team. “A challenge we've been facing with facilitating the use of recycled plastics relates to the composition of the plastic waste, especially regarding its origin and its behaviour when used. As a result, it's challenging to define a recycling technology that can treat all types of plastic waste raw materials,” describes Ana.

Narayanan Raman, a chemical engineer based at Braskem European Technology Center in Wesseling, Germany, adds: “Plastic materials have a lot of variations due to polymer types and additives. If you want to recycle it, you need to remove all contaminants and additives, which is not an easy step. That's where TNO's technology comes in. It's dissolution-based, cleaning the plastic to achieve a purified form that can be reused.”

Claudio Neves, part of the Innovation & Technology Team at Braskem, with over 30 years of experience, played a key role in establishing the joint development agreement with TNO to contribute to the further development of the technology. “There are other technologies that could be in our portfolio that might help us reach our goals,” Claudio explains. “But we chose TNO and their Möbius technology, as we would rather have the opportunity to make contributions to the technology, than just licensing the commercial use. We see the combination of TNO's technology and our experience in the final market as a good synergy.”

Looking ahead: “A key goal is to make this technology food compliant,” says Claudio. This goal especially relies on the near-virgin quality of the recycled resins that can be achieved by using the TNO Möbius technology.

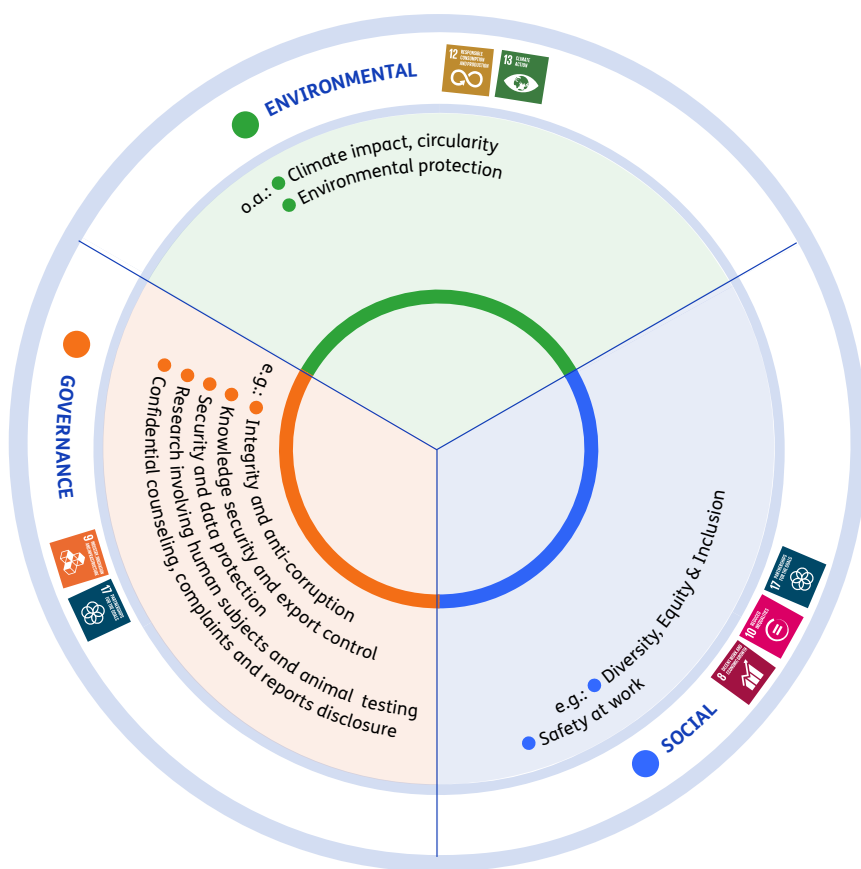
Narayanan highlights the progress made so far. “We are still in the initial stages, but we have been picking up momentum. We are laying the foundation for the project and getting into the technical side of it.” Key to progress in developing this technology is the pooling of resources and experiences, and the team especially stresses that the constructive exchange of feedback is the way towards building a good working relationship with fruitful collaboration.



Sustainable and responsible business conduct



TNO's mission to make demonstrable social impact is inextricably linked to the organisation's own operations. TNO wants to be an organisation that takes its social responsibility in line with its mission. TNO does so with a focus on the topics to which we also make our greatest substantive contribution: we practice what we preach.



The key points of TNO's Corporate Social Responsibility (CSR) policy are the following:

- TNO aims to have made its operations climate-neutral by 2040.
- TNO is committed to the UN Global Compact (UNGC) and subscribes to the 10 principles of sustainable business practices.
- TNO recognises its supply-chain responsibility towards both suppliers and customers.
- TNO focuses in particular on themes that are in line with its primary process: integrity, energy and sustainability, diversity and inclusion, and working conditions.

The graphic to the left shows TNO's priorities for sustainable and responsible operations, clustered according to a classification and linked to Environment, Social and Governance (ESG) topics. Finally, the topics are also linked to the SDGs, the United Nations' sustainability goals.

EcoVadis score

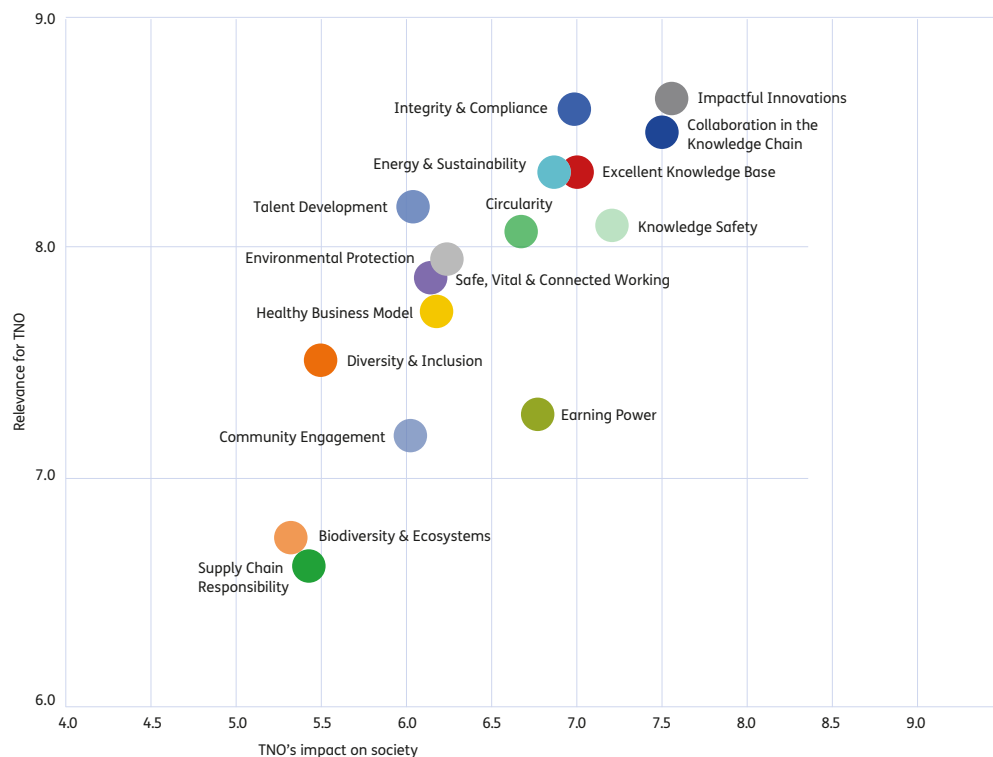
EcoVadis provides sustainability assessments of companies based on four themes (the environment, labour and human rights, ethics, and sustainable procurement), each with a maximum score of 100. The overall assessment consists of the average for the four themes, based on the documentation supplied. In the 2024 audit, TNO turned its progress on sustainable and responsible operations into a substantial increase from 48 points (2022) to 54 points*. With this result, TNO scored above average in the 'Scientific Research and Development' sector. This earned TNO a 'Committed' badge. Despite the higher points score, TNO lost its 'Bronze' status, due to EcoVadis changing its standardisation.



* Context: EcoVadis adjusted its standardisation after the previous audit, so the scores are not fully comparable. In 2024, a limited assurance statement was issued for this KPI by our external auditor. The Appendix gives the definition of this KPI.

Materiality analysis

To effectively create value for our stakeholders, it is important to understand which issues are significant to them. In addition to regularly measuring client satisfaction and employee engagement, TNO conducted a stakeholder analysis. A materiality analysis was also carried out in line with the cycle of the strategic plan. This resulted in a list of sixteen material themes. In this analysis, the principle of 'double materiality' was applied: the 'inside-out' and 'outside-in' perspective. The inside-out perspective looks at TNO's impact on society, specifically Environmental, Social & Governance ('ESG') issues; the outside-in perspective focuses on society's external impact on TNO. The list of sixteen material themes, including definitions, was drawn up on the basis of desk, peer, and media research, as well as TNO's own strategy. The resulting materiality matrix helps TNO determine the themes on which to focus its attention when forming its strategy, carrying out its activities, reporting, and in disclosures.



During 2024 and in 2025, TNO has been updating the double materiality analysis (DMA). We are doing so according to the principles of the Corporate Sustainability Reporting Directive (CSRD) and the associated European Sustainability Reporting Standards (ESRS). In our strategy and strategy formation, we constantly seek connections with the DMA and material themes, and vice versa. We continuously optimise our processes with regard to data collection and verification on non-financial topics and KPIs. We will publish the new materiality matrix, resulting from the DMA, in the 2025 Annual Report.

Supply chain responsibility

TNO recognises its supply chain responsibility. This is also specifically included in our CSR policy. We prioritise acting responsibly in our dealings with suppliers, clients, and partners.

TNO embraces the principles of Responsible and Sustainable Procurement (RSP) and has enshrined these in its procurement policy. In addition, we drafted a Supplier Code of Conduct in 2024 and commenced implementation. The principles of the UNGC form the basis of this Supplier Code of Conduct. We are also increasingly leveraging natural opportunities within procurement processes, as well as the use of contract, category, and supplier management, to integrate CSR topics into our operations. To strengthen collaboration in the supply chain, key performance indicators (KPIs) have been drawn up and embedded in the procurement process. TNO also has an RSP expert team that encourages the use of the Ambition Web methodology, among other things. This methodology has been applied since 2023 in the sourcing and specification phase to determine the impact and the ambition in relation to TNO's CSR themes.

With regard to clients and partners, in 2024 we undertook preparations to implement measures promoting integrity and due diligence. We expect to complete this process in 2025.



Environment

TNO takes responsibility for its consumption of natural resources. Every year we report our carbon footprint to provide insight into TNO's impact on the climate.

We also show what steps we are taking in terms of local environmental protection, natural ecosystems, and biodiversity.

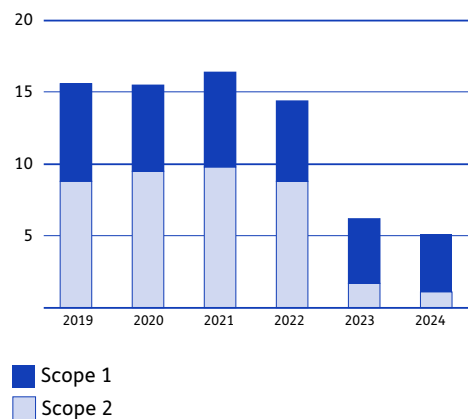
Climate impact

As a leading innovator in the energy and materials transition, TNO naturally takes responsibility for the direct (Scope 1), indirect (Scope 2), and supply chain (Scope 3) emissions of greenhouse gases resulting from its own operations. Our ambition is to achieve climate-neutral operations (net zero) by 2040 at the latest. The carbon footprint is determined annually according to the [TNO calculation method](#), in line with the Greenhouse Gas (GHG) protocol.

For 2024, TNO's total carbon footprint was 264 kilotonnes CO₂-eq, a small increase of 1% compared to the footprint in the base year 2019. A comprehensive overview of emission figures in the years 2019 to 2024 is shown on page 53.

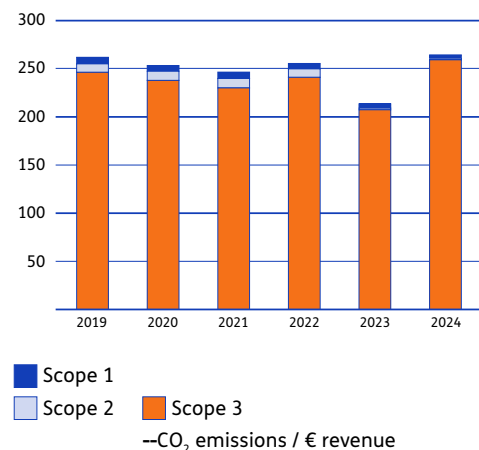
Scope 1 and 2 CO₂ emissions

(ktonnes CO₂)



Scope 1, 2, and 3 CO₂ emissions

(ktonnes CO₂)



--CO₂ emissions / € revenue

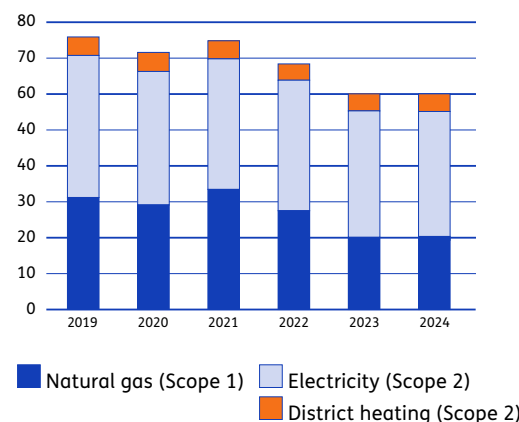
As the chart on the left below shows, TNO's direct and indirect emissions again fell sharply, dropping by 21% in 2024 compared to 2023. With a total reduction of 67% within scope 1 and 2, compared to 2019, we are on track at the end of 2024 to meet the 'TNO Climate Neutral 2040' target. Scope 3 emissions have increased by 1% compared to 2019. This can mainly be explained by an increase in revenue in the categories calculated using the spend-based method. Around half of the calculated scope 3 categories are calculated using the activity-based method (e.g. number of kWh, litres or kilos), while for the other half, the spend-based method (number of euros) is used. No inflation adjustment is made with the spend-based method.

Direct and indirect emissions (Scope 1 and Scope 2)

Since 2023, TNO has pursued a sustainable mobility policy based on the best practices of the Alternative Travel Coalition, which TNO joined in 2021. As a result, only fully electric cars will be issued, bringing an all-electric fleet ever closer. Since 2019, there has been a 37% drop in the use of fossil fuels, but the number of kWh for EV charging has increased by a factor of almost 10. In addition, there is full reimbursement for public transport and hybrid working is facilitated. International travel for distances under 700 km is done by train.

Energy consumption

(GWh)



| Emissions (in kilotonnes) | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|--|-------------|-------------|-------------|-------------|-------------|-------------|
| Combustion of natural gas | 6.0 | 5.6 | 6.5 | 5.9 | 3.7 | 3.7 |
| TNO vehicles | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lease cars | 1.0 | 0.7 | 0.6 | 0.7 | 0.5 | 0.3 |
| Refrigerant leakage | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Direct lab emissions (CO ₂ , CH ₄ , N ₂ O, HFCs, PFCs, SFe, NF ₃) | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 0.0 |
| Total Scope 1* | 7.1 | 6.4 | 7.1 | 6.6 | 4.5 | 4.0 |
| Electricity (market method) | 8.2 | 9.4 | 9.1 | 8.2 | 1.4 | 0.4 |
| Electric lease cars (market method) | 0.0 | 0.1 | 0.1 | 0.2 | 0.2 | 0.3 |
| Heat, district heating | 0.6 | 0.0 | 0.6 | 0.4 | 0.4 | 0.4 |
| Total Scope 2 (market method)* | 8.8 | 9.5 | 9.8 | 8.8 | 2.0 | 1.1 |
| Electricity (location method) | 14.3 | 15.1 | 14.7 | 13.5 | 10.2 | 9.7 |
| Electric lease cars (location method) | 0.0 | 0.1 | 0.2 | 0.2 | 0.2 | 0.3 |
| Heat, district heating | 0.6 | 0.0 | 0.6 | 0.4 | 0.4 | 0.4 |
| Total Scope 2 (location method)*/** | 14.9 | 15.1 | 15.5 | 14.1 | 10.8 | 10.3 |
| Total Scope 1 & 2 (market method)* | 15.9 | 15.9 | 16.9 | 15.4 | 6.4 | 5.1 |
| Total Scope 1 & 2 (location method)*/** | 22.0 | 21.5 | 22.5 | 20.8 | 15.3 | 14.4 |

* In 2024, a limited assurance statement was issued for these figures by our external auditor.

See the auditor's report for further information.

** The location method is included in the table for transparency purposes, but is not added to the total emissions, as TNO uses the market method as a basis.

In addition, there is a carbon charge (€100/tonne CO₂) on top of the ticket price of air travel. The objective of the Alternative Travel Coalition is a 50% reduction in emissions per FTE within business travel and commuting by 2030 compared to 2016. TNO has achieved this reduction and is now at a 52% reduction per FTE.

The biggest reduction we have achieved comes from energy savings from TNO's buildings and facilities. Several projects were launched in 2024 to make our accommodation portfolio more sustainable. Solar panels have been installed on the roofs of various TNO buildings. At TNO's The Hague Ypenburgse Boslaan location, a heat and cold storage (HCS) system will be installed, and The Hague Oude Waalsdorperweg will be fitted with a heat recovery façade. We expect a substantial reduction in gas consumption from the latter installation.

| Emissions (in kilotonnes) | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|---|--------------|--------------|--------------|--------------|--------------|--------------|
| Products and materials units | 39.2 | 39.8 | 42.3 | 43.5 | 49.4 | 62.2 |
| Services Unit (Lab & research services) | 18.1 | 16.5 | 16.0 | 15.0 | 14.5 | 17.6 |
| Products & materials Service Organisation | 24.4 | 26.6 | 19.6 | 29.2 | 34.0 | 51.0 |
| Services Service Organisation | 30.4 | 27.8 | 34.7 | 39.2 | 40.0 | 61.6 |
| Hiring of employees | 2.5 | 2.2 | 2.6 | 2.5 | 2.9 | 3.6 |
| Fuel and energy (market method) | 2.6 | 3.0 | 2.9 | 2.9 | 2.0 | 1.6 |
| Transport to TNO | 1.1 | 1.0 | 1.3 | 1.5 | 1.6 | 0.8 |
| Waste | 0.5 | 0.6 | 0.5 | 0.5 | 0.2 | 0.2 |
| Business transport | 5.0 | 1.1 | 0.8 | 3.1 | 3.5 | 4.4 |
| Home-work commute | 8.3 | 8.1 | 5.6 | 6.4 | 2.7 | 2.9 |
| Energy consumption of tenants | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 |
| Investments | 114.1 | 111.3 | 103.8 | 97.2 | 56.6 | 53.4 |
| Total Scope 3 (market method) | 246.3 | 237.9 | 230.1 | 241.1 | 207.4 | 259.3 |
| Fuel and energy (location method) | 2.9 | 3.3 | 3.3 | 3.4 | 2.8 | 3.5 |
| Total Scope 3 (location method) | 246.6 | 238.3 | 230.5 | 241.5 | 208.1 | 261.1 |
| Total Scope 1, 2 & 3 (market method) | 262.2 | 253.8 | 247.0 | 256.5 | 213.8 | 264.4 |
| Total Scope 1, 2 & 3 (location method) | 268.6 | 259.8 | 253.1 | 262.3 | 223.4 | 275.5 |
| CO₂ per € Revenue | 0.5 | 0.5 | 0.4 | 0.4 | 0.3 | 0.4 |
| CO₂ per FTE | 85.1 | 78.3 | 75.4 | 75.2 | 55.9 | 64.4 |

Next to our reduction in gas consumption, our goal is to use 100% renewable electricity by 2025. In 2024, 96% of our total electricity consumption was renewable, and 2% was generated by our own solar panels. The energy needs for our housing, was virtually the same in 2024 as in 2023. In 2024, 6,112 more kWh were consumed compared to 2023 (+0.02%), 59,920 m³ less gas was consumed (-2.76%), and 627 GJ more heat was consumed (+2.09%). Electricity generated by our own solar panels increased substantially, by 61,350 kWh (+9.2%), despite the disappointing amount of sunshine during the year. In our last annual report, there was double counting in the district heating category. The electricity and the heat produced by the HCS at The Hague Ypenburgse Boslaan location were both counted, although the produced heat results solely from the operation of the HCS. This double counting has been corrected retrospectively (-0.3 kilotonne CO₂ in 2023) and included in the table.

In line with the GHG-categories, both location-method and market-method emissions are reported for TNO's Scope 2 emissions. The location method looks at the carbon emissions of the local energy mix. Under this method, an organisation can only influence electricity consumption. The market method includes the purchase of renewable electricity (certificates) in addition to consumption figures. TNO has been using the market method as a basis since 2023, but reports both numbers. TNO's location-based Scope 2 emissions for 2024 total is 9.68 ktonnes, compared to 10.23 ktonnes in 2023. This is a 5.4% decrease, which was mainly achieved through the sustainability of the electricity mix in the Netherlands.

Chain emissions (Scope 3) and circularity

As the middle chart on page 52 shows, Scope 3 constitutes by far the largest share of emissions: in 2024, 98% of TNO's emissions came from Scope 3. Chain emissions include several GHG categories, such as procurement, waste, business transport, and investments*. Nearly 50% of such emissions are from the procurement of products and materials. Procurement therefore represents a large share of our emissions, which is expected to increase in the coming years. For this reason, TNO is setting ever higher sustainability requirements for procurement.

TNO's chain emissions increased by 24% last year compared to 2023. This is mainly due to revenue growth in the categories that are calculated using the spend-based method. Around half of the calculated Scope 3 categories are calculated using the activity-based method (e.g. number of kWh, litres, or kilos), while for the other half, the spend-based method (number of euros) is used. In addition to inflation (which is not corrected for in the spend-based method), the increase in revenue is largely due to growth in TNO's core activities. As a result, procurement expenditure also increased sharply. Emissions per euro of revenue declined by 30% in 2024 compared to 2019. Furthermore, TNO is experiencing significant growth in employee numbers, while its relative emissions are decreasing. In relation to the number of employees, relative carbon emissions fell by 24% from 85 to 65 tonnes per FTE. The increase in chain emissions compared to base year 2019 has been limited to 1%.

Paradoxically, the increase is mainly due to investments to make our buildings more sustainable. In addition, we have also included GHG category 15 – investments – in our emissions. We calculate the emissions of the pension fund (18% of total TNO emissions) and TNO spin-offs (2.3% of total TNO emissions). We are developing policies and taking additional measures to achieve an absolute reduction in TNO's chain emissions in the long term.

Three pilot projects on circularity and its impact on chain emissions were launched in 2024. These involved calculating the footprint of labs and of a satellite, and exploring the possibilities of recycling research materials. We intend to scale up these pilot projects over the coming years.

CO₂ compensation

Since 2022, TNO has offset 100% of Scope 1 and 2 carbon emissions for all locations through Gold Standard Verified Emission Rights. Compensation for all air travel was added in 2023. The tendering process for a specialised party in this field was completed in 2024. In 2025, TNO will work with this party for central purchasing of certificates.

Environmental protection

TNO meets at least the legal requirements imposed in the area of environmental protection. For some topics, TNO goes beyond what is required by law. For example, TNO has developed policies on refrigerants that go beyond the legislation and regulations that regulate this issue. Furthermore, in the case of construction activities in the vicinity of a nitrogen-sensitive Natura 2000 site, TNO takes appropriate measures, so that any increase in deposition due to the activities is negligible.

* Our calculation method was updated in 2024. Within scope 3, the category 'investments' was added, which includes the pension fund. This caused an increase in emissions compared to previous years. The comparative figures were retrospectively adjusted accordingly.



Social

TNO is committed to equal relations with its employees and between employees.

We foster a safe, healthy, and connected way of working that is geared towards the sustained employability of employees. This includes a diverse and inclusive culture. TNO provides a workplace where everyone feels at home and has equal opportunities for development. Finally, TNO recognises its responsibility in the chain, setting ESG (Environmental, Social en Governance) requirements for suppliers of products and services, for example.

Diversity, Equity, and Inclusion

TNO has embedded Diversity, Equity, and Inclusion (DEI) in its organisational structure.

The DEI employee networks are Cultural Diversity@TNO, Women@TNO, Neurodiversity@TNO, and Rainbow@TNO. These networks play a crucial role in fostering an inclusive work environment. Moreover, several units have their own DEI Teams and in each team of directors, someone is responsible for DEI within their organisational unit.

The DEI Office is responsible for preparing and implementing TNO-wide DEI policy and acts as a hub for DEI initiatives and activities within TNO. It also advises managers on issues at hand. The DEI Office works together closely with the DEI Board. The chair of the DEI Board is Tjark Tjin-A-Tsoi, CEO of TNO. Members of the DEI Board include several unit and service organisation directors, and a representative of the employee networks. This composition ensures broad representation and involvement from within the organisation, and direct employee influence on policy.

Works Council

The Works Council is involved in policy preparation on a large number of topics. TNO considers it important to involve the Works Council more than is required by law. This creates a good relationship between the company and the Works Council, and improves the quality of policy preparation.

Safety at work

To ensure a safe working environment, TNO undertook a number of Health, Safety, and Environment (HSE) initiatives in 2024.

We focused strongly on working safely with carcinogenic, mutagenic, and reprotoxic substances (CMR substances). These substances cause serious health effects even in small amounts. If there is the intention to work with a CMR substance, efforts are made to identify a safer alternative. If this is not feasible, an exposure assessment is conducted. Employees who work with these CMR substances undergo mandatory training and are included in the CMR register.

When designing new setups and machinery, TNO takes account of safety as required by the European Machinery Regulation published in 2023. Accordingly, a new tool has been developed to conduct risk assessments. In addition, a format for a Machine Safety Chart has been developed. This chart clearly summarises information about dangerous machinery for the user.

TNO will also actively use tools and practices developed in TNO research in its own organisation. A safety culture measurement is being prepared in all units and departments. Leadership by management and a willingness among employees to address issues and hold one another to account are key principles in this respect.

TNO wants employees to report dangerous situations and incidents, and learn from them. The number of reports increased in 2024 compared to the previous year. In 2024, reports were followed up promptly and accurately in 98% of cases.

TNO conducts structured accident investigations into the causes of serious incidents and dangerous situations. In 2024, investigations were launched into 16 incidents. None of the incidents required reporting to the Dutch Labour Inspectorate. Learning points from these accident investigations are shared in the relevant departments and also throughout TNO.

TNO Social Personnel Fund

The TNO Social Personnel Fund (SPF) supports participants in need of financial assistance, while maintaining complete privacy. The fund is an independent foundation that supports participants in need of financial assistance. SPF regularly organises campaigns linked to themes including sustainability and energy saving.

It can be difficult for people to ask for help. For this reason, the focus is always on lowering barriers and raising awareness of the SPF. In 2024, 1,808 TNO employees and 1,166 retired TNO employees were members of the SPF.

The SPF is an independent foundation, established in 1951.

Governance

TNO aims to live up to the highest standards of integrity in its operations. This forms the basis of our licence to operate. Integrity is part of our employees' DNA and is enshrined in the TNO code.

Integrity and anti-corruption

Research integrity is very important for independent, high-quality applied scientific research. TNO has committed itself to the Netherlands Code of Conduct for Research Integrity (NCCRI). An internal audit of the implementation of the NCCRI was completed in 2023. In response to the findings of this audit, improvements were made in 2024 to governance, prioritisation, and demonstrable compliance with the code of conduct. TNO also participated in the external evaluation committee of the NCCRI. The report of this committee was delivered in July 2024. In 2025, the authors of the NCCRI will follow up on the committee's findings.

The TNO Code is the basis for our social, business, and scientific integrity. It is an integral part of TNO's terms and conditions of employment, and all TNO employees need to be familiar with the code and act in accordance. Furthermore, all TNO employees have to report their ancillary positions that are relevant to TNO each year. There is also an ongoing dialogue with management on issues such as conflicts of interest and corruption risks. In the context of anti-corruption, measures have been taken to raise awareness about risks of bribery and corruption. We have offered various in-person and online training courses for specific target groups.

In addition, we have performed a risk assessment on anti-corruption with the help of an external party.

Research involving human subjects and animal testing

TNO's work also covers research involving human subjects and research for which personal data are collected. Some of this research is subject to the Medical Research Involving Human Subjects Act ('WMO') and is reviewed by an external medical research ethics committee. The part that is not subject to the Act is reviewed by TNO's Internal Review Board. In 2024, this Board reviewed 146 proposals. During the year, the approval process was digitised, which simplified the submission of proposals. The internal review is itself evaluated annually and the results are reported to the CEO.

TNO conducts biomedical research with a view to improving human health. TNO's ambition is to keep animal testing to an absolute minimum. Wherever testing is unavoidable, TNO does its utmost to carry out the research involved in a meaningful way, using as few animals and causing as little distress as possible. In doing so, TNO follows the Three Rs policy: replacing animal testing with non-animal innovations, reducing the number of laboratory animals, and refining animal testing. This policy ensures that the results translate well to humans and that the tests cause as little distress to the animals as possible. To carry out animal testing, TNO has obtained several project licences, which were granted by the Central Authority for Scientific Procedures on Animals (CCD) after external review by an independent Animal Tests Committee (DEC). We also have our own Animal Welfare Department, which is responsible for internal oversight, reviews, advice, and policy in the area of animal welfare in animal testing and laboratory animals.

Confidential counselling

TNO has appointed confidential counsellors. These are colleagues who, in addition to their daily work, are available as confidential counsellors for up to one day a week. They support employees who want to speak in confidence about undesirable behaviour or a suspicion of wrongdoing. In addition, two external confidential counsellors are available from the occupational health and safety service Beter. Coordination is led by a Central Confidential Counsellor who can – in cooperation with HR – advise on complex cases. During 2024, one confidential counsellor stopped performing that role. In terms of staffing, there is a need for more confidential counsellors at three locations. The search for new confidential counsellors started in late 2024. Over the past year, the confidential counsellors were approached 71 times. In 20% of the situations, colleagues received more long-term guidance from a confidential counsellor or a confidential counsellor was approached jointly by several colleagues.

Complaints

TNO has an Individual Complaints Procedure, an External Complaints Procedure, and a system for addressing cases in which wrongdoing is suspected. In 2024, five complaints were submitted based on TNO's External Complaints Procedure. These complaints have been settled. TNO's Individual Complaints Procedure was not invoked in 2024. There were no complaints from our supply chain in 2024.

Reports

Since July 2024, the new Regulations Governing Suspicion of Wrongdoing TNO have been in force. The Regulations are in line with the current Dutch Whistleblower Protection Act and replace the old regulations and related documents.

In 2024, the Integrity Hotline received two reports and declared them admissible. These were a report about the use of the latest insights in emissions modelling and a report regarding a suspected conflict of interest involving a hybrid employee (employed by both TNO and a TNO spin-out/spin-off). In October 2024 and December 2024, respectively, reports of these suspicions were made to the managers of the units concerned and the Executive Board. Both investigations revealed no integrity violations. However, the Hotline did make recommendations for the organisation, which were adopted by the managers.

An appeal from the reporting person related to an Integrity Hotline position statement from 2023 was received by the Executive Board. In 2024, the Executive Board reviewed the appeal in more detail and responded to the reporting person. This appeal did not lead to a different position statement.

Disclosure

In 2024, TNO prepared for future developments under the new Open Government Act, which replaced the Government Information (Public Access) Act. Through process optimisation, TNO aims to handle all issues involved effectively and efficiently. In 2024, 64 requests were received under the Open Government Act. Of these, seven were addressed directly to TNO, and 57 involved a request for the opinion of another administrative body.

This is an increase compared to 2023. All requests were dealt with in accordance with the statutory requirements. On one occasion in 2024, an objection was raised against a primary decision by TNO not to disclose information. In one case, an objection was lodged against a TNO decision on a complaint. In 2024, three appeal cases were pending in relation to an appeal that had been lodged previously against a TNO decision on a complaint.

Safety awareness

The focus on safety awareness is undiminished in 2024. New employees in positions involving confidentiality are required to complete what is called Certificate of No Objection training in the first week of work. The members of this group also attended a security awareness session for positions involving confidentiality. As in 2023, these were two international sessions organised jointly with the Dutch Military Intelligence and Security Service. These sessions looked in detail at current threats, classic espionage, and social engineering: manipulative techniques used by criminals to uncover confidential company or other data. The sessions contributed to the security awareness of employees whose work involves confidentiality and TNO's resilience.

In addition, three new security awareness training courses were set up in 2024 and will be rolled out online in 2025:

- an annual mandatory security awareness training course for all TNO employees
- an onboarding training course for all new TNO employees not in positions involving confidentiality
- an in-depth training course for employees who are in positions involving confidentiality.

Data protection

In 2024, we completed two large multi-year projects that made it easier for the organisation to assess and document compliance with the General Data Protection Regulation (GDPR). We also started updating the register of processing activities and carrying out monitoring work. Furthermore, the entry into force of the AI Act led to the creation of an internal regulation for the use of 'off-the-shelf' generative AI systems within the organisation.

Nine data breaches were reported in 2024, two of which resulted in reports to the Dutch Data Protection Authority. So far, the Authority has not requested further information in response to these reports. Furthermore, two GDPR requests were submitted in 2024. These were dealt with within the stipulated timeframe.

Knowledge security and export control

In 2024, as in 2023, there was a strong focus on knowledge security. At the request of the Ministry of Education, Culture, and Science and the Ministry of Economic Affairs, TNO conducted a second inventory of sensitive knowledge and technology areas within the organisation.



The Ministry of Education, Culture and Science (OCW) organised four expert sessions, in which TNO participated to provide feedback on the list of sensitive knowledge and technology areas drawn up by OCW and the Ministry of Economic Affairs. Written feedback was also submitted, which enabled us to pinpoint where these sensitive knowledge areas are located within the organisation. This provides a good starting point for further action. Finally, TNO contributed to discussions and working groups of the two ministries on the drafting of the Knowledge Security Screening Bill (wetsvoorstel screening kennisveiligheid) and how it aligns with existing processes at knowledge institutions, universities, and universities of applied sciences.

While both ministries were working on the final list of sensitive areas of knowledge and technology, and the implementation of a screening act, TNO provided customised advice. TNO also clarified additional organisational measures to keep knowledge and information secure.

In addition to these safety measures, TNO complies with the sanctions and export control regulations applicable to project and research activities. Compliance is guaranteed by the TNO Export Control Internal Compliance Programme (EC ICP). TNO regularly reviews the effectiveness of the EC ICP and updates it when necessary.

Healthy financial management



Financial indicators (consolidated result)

(in millions of €)

| TNO consolidated result | 2024 | 2023 | 2022 |
|---|-------|-------|-------|
| Operating income | 785.8 | 702.4 | 608.0 |
| Revenue | 764.3 | 687.8 | 590.7 |
| Other operating income | 21.5 | 14.6 | 17.3 |
| Revenue breakdown | | | |
| Market revenue | 403.3 | 348.0 | 292.0 |
| State funding | 361.0 | 339.8 | 298.7 |
| Costs | | | |
| Operating expenses | 768.4 | 692.9 | 610.3 |
| Personnel costs | 511.6 | 455.0 | 392.6 |
| Impairments | 0.2 | 0.4 | 1.1 |
| Net result | 20.3 | 16.4 | 0.5 |
| Result from participating interests | -1.9 | 2.5 | 1.3 |
| Cash flow for the financial year | 50.7 | -2.0 | -21.5 |
| Capital | | | |
| Operating capital invested | 468.6 | 445.9 | 435.8 |
| Equity | 411.4 | 391.2 | 374.8 |
| Solvency ratio | 47% | 52% | 48% |
| Assets | | | |
| Tangible fixed assets | 288.7 | 241.9 | 233.4 |
| Investments in tangible fixed assets | 82.3 | 45.4 | 56.5 |

| Employees (effective) | 2024 | 2023 | 2022 |
|--|--------------|--------------|--------------|
| Number of TNO organisation employees (average FTE) | 4,098 | 3,809 | 3,461 |
| Number of group company employees (average FTE) | 109 | 2 | 2 |
| Total number of employees (average FTE) | 4,207 | 3,811 | 3,463 |
| Number of TNO Organisation employees (FTE at year-end) | 4,177 | 3,982 | 3,595 |
| Number of group company employees (FTE at year-end) | 109 | 2 | 2 |
| Total number of employees (FTE at year-end) | 4,286 | 3,984 | 3,597 |



Sound financial foundation

TNO's mission is to create impactful innovations for the sustainable well-being and prosperity of society. To this end, TNO acquires funding in the form of a contribution from the Dutch central government, grants, joint initiatives with companies and government in public-private partnerships, and carrying out contract research. Employees and facilities are the driving force for achieving TNO's mission. The resulting costs are structurally balanced by revenue. In this way, TNO works to ensure a sound financial foundation that safeguards the continuity of the organisation.

In 2024 and previous years, the government made substantial contributions through the National Growth Fund, the Ministry of Defence's innovation agenda, and specific programme funding. TNO receives this specific programme funding for its role as orchestrator in major transitions, such as pandemic preparedness, lifestyle influencing, and the follow-up to the Parliamentary Inquiry into Natural Gas Extraction in Groningen (PEAG). This development has been in part responsible for a relative decline in TNO's private revenue. TNO feels a responsibility to implement the resulting knowledge development more broadly in line with its mission.

TNO's financial model is expressed in the following business terms. Revenue reflects work done on impactful projects in 2024. An operating profit is a requirement for sound financial management, to provide a buffer for setbacks and also to create scope for investment in innovation. Our equity enables us to accelerate our investments in knowledge and facilities. Sound risk management enables TNO to weigh up risks in the light of organisational objectives.

Revenue

The following sources of funding are translated into projects for the TNO Organisation.

- **Institutional funding:** funds made available by the central government through the Ministry of Economic Affairs. The aim of this funding is to develop, apply, and disseminate knowledge, and resolve societal issues. In doing so, TNO strengthens the government in carrying out its tasks and policy, and boosts the innovation power and competitiveness of the Netherlands. The Early Research Programmes (fundamental knowledge development to strengthen TNO's own knowledge base) and Demand-Driven Programmes, among others, are funded in this way. In 2024, €200 million of acquired institutional funding was spent on research (2023: €202 million).
- **Programme funding:** earmarked funds from various ministries. Each ministry involved indicates the topic or subject for which these funds should be used. An important and special part of this is the task-related funding for carrying out delegated knowledge-intensive, statutory public tasks for the Ministry of Defence and the Geological Survey of the Netherlands. In 2024, €161 million of programme funding provided by ministries was converted into research by TNO (2023: €138 million).
- **Competitive funding:** contributions from partners in collaborative projects with TNO. These include contributions from public authorities and industry in public-private partnerships, as well as the competitive acquisition of grants, such as the EU Horizon Europe programme. In 2024, partner contributions to collaborative projects totalled €165 million (2023: €133 million). The costs of these projects were not fully covered by the parties involved. For such projects, TNO matches the contributions with institutional funding or programme funding.
- **Contract funding:** fully external public or private funding for contract research, which TNO obtains by making offers and winning contracts. The research focuses on the specific request, with TNO taking care to ensure that the work remains in line with the mission. In 2024, contract research worth €215 million was carried out, equal to the amount in 2023.

All funding, much of which is long-term, is used to implement projects and is therefore accounted for as revenue. TNO has the duty to use the state funding it receives as effectively as possible and to achieve the right balance between this income (programme and institutional funding) and third-party contributions (competitive and contract funding). The relationship between these two sources of income is expressed by what is called the 'multiplier': total revenue divided by the amount of state funding. In 2024, the average ratio of public funding to market revenue was €1.05. In 2023, this ratio was €1.02.

TNO seeks contributions from third parties to maintain and renew its knowledge base, in addition to the funding it receives from the government. This also enables TNO to demonstrate that its knowledge base is relevant to the outside world. The ratio in relation to state funding varies by research area, but should result in a multiplier of between 2 and 3 on average. Too low a multiplier could mean that public and private partners, as well as clients, do not find TNO research relevant enough for investment.

Too high a multiplier could mean that the portfolio activities are now 'mature' and can be left, at least partly, to market forces. Continuing to achieve a multiplier of between 2 and 3 will prove challenging in the next few years, as private investment in the Netherlands is not growing strongly and companies are using 'corporate venturing' as an alternative to in-house R&D. Moreover, the National Growth Fund enables companies with government grants to collaborate with knowledge institutions. To assess the effective use of government funding, TNO therefore looks not only at third-party revenue at TNO, but also at third-party contributions to collaborative projects funded by the National Growth Fund.

Knowledge is transferred to market forces through the Tech Transfer programme, which ensures the creation of new companies, such as spin-offs and carve-outs. Licences are also granted to existing companies, which use them to apply and further develop the knowledge. Tech Transfer is funded by TNO itself and the long-term aim is for investments to generate revolving returns in the form of licensing income and revenue from selling shareholdings in spin-offs.

Operating result

Revenue was up by €76.5 million to €764.3 million in 2024 from €687.8 million in 2023. Other operating income totalled €21.5 million in 2024, which was €6.9 million higher than in 2023 (€14.6 million). This increase mainly consisted of compensation from the Ministry of Economic Affairs for non-deductible VAT on rent from previous years. Total operating expenses increased by €75.4 million to €768.3 million in 2024 from €692.9 million in 2023. This produced an operating profit before interest, participating interests, and taxes of €17.4 million, from a €9.5 million profit in 2023.

The operating expenses consist of direct project costs, personnel expenses, depreciation, impairments, and other operating expenses. Direct project costs declined by €5.6 million to €73.9 million. Personnel costs increased by €56.6 million in 2024 to €511.6 million. Of this rise, €51.3 million can be attributed to the increase in staffing in 2024, as well as the organic growth in salaries of 3.25% implemented on 1 January 2024. Other personnel expenses rose by €5.3 million, mainly due to higher hiring costs. Depreciation increased by €1.8 million in 2024 to €27.5 million. Other operating expenses were up by €22.8 million to €155.1 million, mainly as a result of strategic investments, higher accommodation costs due to VAT compensation to lessors, and higher consultancy costs due partly to the transition to a new ERP system. These cost increases are offset by a reduction in changes in provisions.

Financial income and expenses increased by €3.4 million to a positive €12.4 million in 2024. In 2023, this was a positive €9.0 million. For 2024, we expect a corporate income tax expense of €7.7 million. In 2023, this expense was €4.6 million. The corporate income tax returns to the end of 2023 have been finalised by the Dutch Tax and Customs Administration.

In 2024, the result of participating interests was a loss of €1.9 million. In 2023, this was a positive €2.5 million. As a result of the above, a net result of €20.3 million remains, compared to €16.4 million in 2023.

Equity

Of TNO's equity totalling €411.4 million at the end of 2024, €154.6 million relates to TNO's research for the Dutch Ministry of Defence. The allocated reserve for the new construction for Defence fell by €19.7 million in 2024 and amounted to €8.8 million at the end of 2024. This reduction is due to additions to this allocated reserve of €15.3 million and withdrawals based on investments of €35.0 million. The statutory reserve, containing non-distributable profits from participation by group companies, decreased by €1.6 million and stood at €7.9 million at the end of 2024.

Taken together, the above changes and the positive result of €20.3 million lead to a €41.6 million increase in the general reserve. The general reserve has grown sharply over the past few years as a result of the sale of participating interests. In coordination with the Ministry of Economic Affairs, it will be used for strategic investments in research and innovation.

Liquid assets

At the end of 2024, the balance of liquid assets stood at €400.8 million (against €350.2 million at the end of 2023). The €50.7 million increase in liquid assets in 2024 had a number of causes that are explained in more detail below:

- Intangible fixed assets include €8.2 million of goodwill in 2024 resulting from the purchase of the remaining 55% of shares in National Metrology Institute Van Swinden Laboratory (VSL). After regular amortisation, the balance of intangible assets increased by €6.9 million at the end of 2024.
- In 2024, TNO invested €87.2 million in tangible fixed assets (including investments of €8.9 million financed from the 'climate envelope', the FTO programme, and other finance obtained through state funding). The level of investment in 2024 exceeded the depreciation charges of €27.0 million, increasing the balance of tangible fixed assets by €46.8 million.
- Working capital reduced by €83.8 million. Current receivables increased by €17.9 million due to more projects in progress and more prepaid items such as rent and service contracts. This increase in working capital is offset by a rise in current liabilities of €101.7 million, mainly accrued state funding, and accruals and deferred income, such as amounts that will be passed on to consortium partners.
- Long-term liabilities show a net decrease of €5.5 million, related to the equalisation account.
- The positive net result, including the result of participating interests of €20.3 million and other balance sheet movements of €8.2 million, made a positive contribution of €28.5 million to net liquid assets at the end of 2024.

Of the liquid assets, an amount of €148.4 million was reserved for public funding yet to be spent on the one hand and for the settlement of funds received in advance in the context of the coordinated partnerships on the other. In 2023, this was €69.0 million. An amount of €8.8 million in liquid assets was also set aside for future investments in housing for defence research.

The investment budget for 2025 is around €62.4 million.

Solvency ratio

In 2024, the solvency ratio was 47%. At the end of 2023, the ratio was 52%.



In control statement

The Executive Board considers internal controls and risk management with regard to finance, privacy, information services, export control, and sanctions are properly designed and proved to be sufficiently effective during 2024. There are no indications to the contrary. As far as the other aspects of operations are concerned, no evidence has emerged that these do not comply with current requirements. However, it should be noted that risks may also occur that cannot be anticipated, and that not all inaccuracies, losses, fraud, or non-compliance with legislation and regulations can be ruled out.

Finance

| Objective | Risks | Controls |
|---|--|---|
| Reliable and sound financial management | Control information unreliable | 1. Planning and control cycle: framework letter, bottom-up budget process, adoption of budget, adoption of annual plan, monthly reporting, monthly reviews, and forecasting. 2. Description of the financial model, definition of target values, translation of target values for the various units, follow-up on improvement plans, and inclusion of these in the budget. |
| | Incorrect financial accounting | Process and data-oriented checks to guarantee accuracy, timeliness, and completeness of financial data reported. |
| | Unlawful use of public funds | 1. Predefined process within the Knowledge Procedure. 2. Formulating knowledge plans for projects paid for entirely through state funding. 3. The use of state funding in Mixed Funding is audited by the Internal Audit Committee. 4. Monitoring of projects with regard to time, content, and funding. 5. End-of-year review by Corporate Control of the use of state funding in Mixed Funding. |
| | Non-compliance with tax legislation | Tax Control Framework. |
| | Insufficient insurance coverage | Risks are identified and insured in consultation with the insurer. |
| | Non-compliance with European tendering rules | 1. Capacity planning for the procurement department. 2. Spend analysis. 3. Tender reporting. |

Compliance

| | | |
|--|--|--|
| Compliance with legislation and regulations, and ethical standards | Non-compliance with sanctions and export control regulations | 1. Risk-based checks on all opportunities and/or projects for risks with respect to (i) international sanctions, (ii) presence of controlled technology and related compliance requirements (e.g. permit requirements). 2. Applying for the required permits. |
| | Failure to demonstrate GDPR compliance | 1. TNO has a detailed GDPR step-by-step plan in which personal data are handled with the utmost care. 2. Data breach protocol: TNO has a protocol for reporting data breaches and learning from incidents. 3. Rights under the GDPR: TNO gives information about data processing on the website and provides the possibility of exercising rights. 4. TNO has records of data processing operations. 5. TNO has a privacy policy and related regulations. IT measures are described in the TNO security policy. 6. TNO concludes GDPR contracts with partners and suppliers with which personal data are exchanged, using, where applicable, Standard Contractual Clauses of the European Commission. |

Information Services

| | | |
|--|--|--|
| Safeguarding the availability, integrity, and confidentiality of IT services | Outsourced information provision does not meet reliability and continuity requirements | A SOC1 or ISAE 3402 statement is submitted annually by the implementing organisations (issued by an independent auditing entity) on the design, existence, and operation of the control framework associated with the contracted services. |
| | Internal control processes not up to standard | The Information Security Management System (ISMS) is operational. Information Services has been ISO27001 certified with effect from 12 March 2024. |

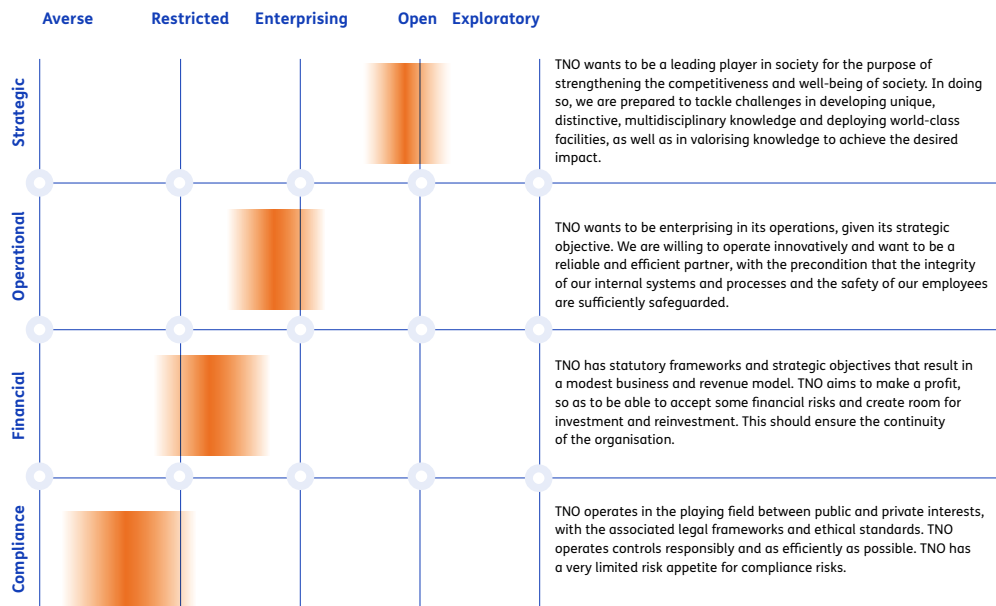
Risk management

TNO wants to protect its legitimacy and continuity, to be able to achieve its strategic goals. To this end, we carry out risk management in which we weigh up both the opportunities and risks. The Executive Board is responsible for developing, implementing, and monitoring TNO's comprehensive risk management and control system.

In 2024, the Executive Board decided to update the risk management process, taking an integrated approach to strategic and operational risks across the organisation. In a uniform manner, the updated process gives insight into the description, risk appetite, control measures, evaluation, and monitoring for each risk.

Risk appetite in 2024

TNO's risk appetite is linked to its objectives and to the unique nature of TNO as a Research and Technology Organisation (RTO). Risk management is about creating the right assessment frameworks and addressing the question of whether risks can be reduced, consciously accepted, or avoided. We describe TNO's risk appetite as follows:



TNO-wide risk analysis for 2024

TNO's Executive Board identified the following four risks as strategic risks for 2024. These risks emerged in an ongoing consultation process between the Executive Board and the Managing Directors. This process is part of the 2024 budget process.

| | Risk description | Owner |
|---|---|-------|
| 1 | Risk that the organisation does not respond quickly and sufficiently to client demand, resulting in a volatile client base and limited impact/valorisation of innovations in the outside world. | CEO |
| 2 | Risk of public funding lagging behind due to insufficient relationships with public authorities or political decision-making, leading to contraction in the organisation. | CEO |
| 3 | Risk of insufficient availability of the right employees due to labour market scarcity or ineffective retention measures, leading to loss of revenue in projects. | COO |
| 4 | Risk that insufficient protection causes TNO to fall victim to a cyber incident, resulting in damage to its reputation and business operations. | COO |

Throughout 2024, the Executive Board reviewed these risks and mitigation measures on a quarterly basis. It was concluded that the measures contributed to risk mitigation. The Executive Board also assessed what new risks have emerged during 2024. These risks have been identified and addressed.

No major shortcomings were identified in the way the current risk management and control system functions. This is confirmed in the internal and external audit reports received in 2024.

Report of the Supervisory Board



Supervisory Board at end-2024 (from left to right) Miriam van Dongen, Peter van Laarhoven, Louise Verheij van Wijk, Gijs de Vries, Hester Bijl, Marko Hekkert, and Baptiest Coopmans.

Made up of seven members, the Supervisory Board is tasked with overseeing the policy pursued by the Executive Board and with offering it advice.

Topics

In a general sense, the Supervisory Board has overseen the policy pursued by TNO in 2024. A number of significant issues are examined in more detail below.

Strategy

In 2024, TNO started the strategy process that will provide the input for the 2026-2029 Strategic Plan. TNO's mission and vision have been reviewed and these form the basis of the strategic choices. The Supervisory Board has been informed of the choices made in the strategy process. The Board endorses the approach and remains involved in the process.

Tech Transfer

Progress made on the Tech Transfer programme was discussed with the Supervisory Board. A total of 45 spin-offs have now been established. The Supervisory Board was consulted on the development of Tech Transfer in the new strategy period. In this regard, the Supervisory Board encouraged TNO's spin-in policy.

National Metrology Institute Van Swinden Laboratory

With the approval of the Supervisory Board and after careful coordination with the Ministry of Economic Affairs, TNO became sole owner of the National Metrology Institute Van Swinden Laboratory in 2024.

SME policy

Once a year, the Supervisory Board receives an update on the SME strategy. In 2024, the focus was on the highlights of 2023 and the next steps. TNO Fast Track is a great example of how TNO helps entrepreneurs accelerate innovation within a start-up, scale-up or SME.

Knowledge position

Once every four years, the technology portfolio of each unit undergoes a Knowledge Position Audit (KPA), conducted by an external committee. In April 2024, the Quality Committee discussed the results of the Knowledge Position Audit of TNO Vector (part of the ICT, Strategy & Policy unit) and considered the recommendations and next steps.

TO2 evaluation

Late 2024 saw the external TO2 evaluation that is conducted every four years, focusing on the quality, impact, and vitality of the institutions over the period 2020-2023. The Quality Committee was consulted as part of the self-evaluation.

Employees

Responsibility within the Services Organisation Finance Procurement & Legal has been split. The Legal section remains under the direct responsibility of the CFO. The Finance & Procurement section comes under the responsibility of a Managing Director appointed by the Supervisory Board in 2024.

TNO was able to bring 590 new employees into the organisation last year and also to maintain the level of retention. A large number of foreign employees were recruited, in line with the international course TNO is following. The Supervisory Board greatly appreciates this huge effort, which also reflects TNO's excellent reputation as an employer.

The Selection and Remuneration Committee held a session with the Executive Board and the HR department to consider potential successors for the Executive Board within the organisation. The methodology used at TNO for this talent review was qualified by the Supervisory Board as very transparent and best practice.

Future Pensions Act Transition Plan

The Supervisory Board was informed about the decisions taken by TNO to fulfil the obligations of the new Dutch Future Pensions Act and the design of the transition by means of the Transition Plan.

Finance

On 13 March 2024, the Supervisory Board approved the 2023 financial statements and on 11 December 2024, it approved the budget for 2025. EY conducted the annual audit in 2024.

With regard to the CSRD, progress was made, for example, by expanding the scope of the Assurance engagement in the sustainability report from 8 to 11 KPIs, pending the outcome of the new double materiality analysis to be carried out.

Compliance, audit, and risk management

The Supervisory Board and Executive Board regularly discuss TNO's compliance with the various laws and regulations. Last year, after discussion in the Audit Committee, the Supervisory Board approved the Internal Audit multi-year audit plan 2025-2029 and the updated Internal Audit Charter 2025, which set out the frameworks for the Internal Audit function. The risk management reporting was discussed in the Audit Committee.

Performance of the Supervisory Board and evaluation of the Executive Board

The Supervisory Board keeps track of developments in relevant areas through the Audit Committee, the Quality Committee, and the Selection and Remuneration Committee. The Supervisory Board also obtains information during meetings, for example with the Executive Board, by inviting experts from the organisation. Furthermore, it carries out periodic working visits. A Supervisory Board delegation also attended two consultation meetings between the Executive Board and the Works Council. The Executive Board informs the Supervisory Board periodically with an adequate overview that includes relevant management information. The members of the Supervisory Board briefly discuss the meetings in advance and also regularly reflect on their own performance and evaluation aspects between meetings. There is a supervision agenda that formulates priorities for supervision and there is an annual focus on the education of Supervisory Board and Executive Board members.

The Supervisory Board conducted a self-evaluation using an electronic questionnaire from an external agency. This showed that Supervisory Board discussions and interaction with the Executive Board are being conducted properly. It was agreed that the next external evaluation will review the vision for supervision. Furthermore, potential successors for the Executive Board will be looked at again in 2025. The Supervisory Board will ensure that it is explicitly informed about the strategy process set out and will exchange ideas and opinions on the subject with the Executive Board. At the end of Supervisory Board meetings, there is always a check-out to discuss briefly the course and outcome of the meeting.

To evaluate the Executive Board and its individual members, the Supervisory Board conducted the annual round of performance reviews with both the Chair and the members of the Executive Board.

Composition of the Supervisory Board and its committees

In 2024, Jolanda Lamse-Minderhoud stepped down from the Supervisory Board when her second term came to an end. The Supervisory Board is very grateful to Jolanda Lamse-Minderhoud for the way she has fulfilled her role as member of the Supervisory Board, as well as serving as Chair of the Audit Committee for ten years. She was succeeded by Miriam van Dongen. The Supervisory Board also thanks Aloys Maas for his efforts in the position of Secretary of the Supervisory Board, which he carried out until 23 September 2024.

In addition, Gijs de Vries and Louise Verheij van Wijk were reappointed for a second term in 2024.

| | Audit Committee | Quality committee | Selection and Remuneration Committee |
|--------------------------|----------------------------|-------------------|--------------------------------------|
| Gijs de Vries | | | Member |
| Peter van Laarhoven | | | Chair |
| Hester Bijl | | Chair | |
| Baptiest Coopmans | Member | | |
| Miriam van Dongen | Chair (from 1-11-2024) | | |
| Marko Hekkert | | Member | |
| Jolanda Lamse-Minderhoud | Chair (until 1-11-2024) | | |
| Louise Verheij van Wijk | Member | | Member |

Independence

In the opinion of the Supervisory Board, the requirements related to independence of action, as specified in provisions 2.1.7 to 2.1.9 of the Dutch Corporate Governance Code, were satisfied.

Meetings

The Supervisory Board met five times in 2024, the Audit Committee met four times, and the Selection and Remuneration Committee and Quality Committee both met twice in 2024. Outside the meetings, there was contact between the committee members as necessary. Representatives from the Supervisory Board attended two Works Council meetings.

Attendance

The attendance record of the individual members of the Supervisory Board at its own meetings and those of its permanent committees in 2024 was as follows:

| | SB meetings | Committee meetings |
|---|-------------|--------------------|
| Gijs de Vries (Chair of SB) | 5 (of 5) | 2 (of 2) |
| Peter van Laarhoven (Vice-Chair of SB) | 4 (of 5) | 2 (of 2) |
| Hester Bijl | 5 (of 5) | 2 (of 2) |
| Baptiest Coopmans | 4 (of 5) | 3 (of 4) |
| Miriam van Dongen (from 1-11-2024) | 2 (of 2) | 1 (of 1) |
| Marko Hekkert | 5 (of 5) | 2 (of 2) |
| Jolanda Lamse-Minderhoud RA (until 1-11-2024) | 3 (of 3) | 3 (of 3) |
| Louise Verheij van Wijk | 5 (of 5) | 6 (of 6) |

Conclusion

In 2024, TNO made a relevant contribution on numerous fronts to its advisory function in various fields and to increasing the earning capacity of Dutch businesses. A huge effort has been made to adjust the strategic direction, to give TNO's 'right to play' greater focus and meaning. As 'time setters', our people are highly involved in TNO's various activities, giving the 'This is our time' campaign its own individual identity. At this point, great credit is due to all TNO employees, whose efforts contribute to numerous innovative projects and studies involving intensive collaboration with a wide variety of stakeholders. This ecosystem is of great value to the Dutch economy.

Report of the Council for Defence Research



At the end of 2024, the Council for Defence Research consisted of (from left to right) Rear Admiral Ad van de Sande (Defence), Dr Hendrik-Jan van Veen (TNO), Brigadier General Dr Lenny Hazelbag (Defence), Rear Admiral Maarten Tossings (TNO, Chair), Ms Vera de Witte (Defence, Vice-Chair), Major General Harold Boekholt (Defence), and Mr Harold Bousché (TNO, Secretary).

The Council for Defence Research approves the policy to be pursued with regard to TNO's Defence, Safety & Security (DSS) unit in accordance with the TNO Act and with due regard to the provisions regarding the Executive Board, and supervises the use of funds intended for defence research assigned to TNO. The details and interpretation of these terms of reference are set out in the Council for Defence Research Regulations, which is part of TNO's Organisational Regulations.

The research sponsored by the Ministry of Defence and contract research from the Materiel and IT Command (COMMIT) together form the core of the DSS unit's activities. This led to the decision to expand the Council for Defence Research to include a member on behalf of COMMIT. The regulations have been amended accordingly, and the opportunity was taken to update the texts in the regulations.

In 2024, the Council for Defence Research said goodbye to Marc Gazenbeek and Auke Venema as Council for Defence Research members on behalf of Defence and welcomed as their successors Ms Vera de Witte (Deputy Secretary-General) and Brigadier-General Lenny Hazelbag (Director Strategy and Knowledge). In addition, Major General Harold Boekholt (Deputy COMMIT Commander) was welcomed as a new member of the Council for Defence Research. The Council for Defence Research met five times in 2024.

DSS Vision & Mission



Safety and security cannot be taken for granted.

Sometimes peace needs fighting for.

We are convinced that technology and science make a decisive contribution to a safe world.



We stand shoulder to shoulder with our partners for safety and security.

We innovate for those who safeguard law and order. For the Dutch military, security services, and our country's allies.

For the Dutch industrial base.



We provide the Netherlands with the best possible information and knowledge. With superior support and preparation. And state-of-the-art materiel.

We push boundaries globally, with science and innovation at the front line.

The further deteriorating security situation in 2024 gives additional weight to the vision and mission of DSS, with a stronger focus on Defence and a substantial increase in employees. The Ministry of Defence and TNO have been working closely together since 1947. TNO fulfils the role of 'home laboratory' for the Ministry of Defence. The connection between Defence and TNO, and the security situation, justify the regular discussions held in the Council for Defence Research in 2024 on ways in which TNO can support Defence even better in this context and the form of collaboration in the event of a war situation. With rising tensions in the world, DSS employees are carrying out their work in even closer collaboration with – and more often within – the defence organisation.

Changed organisation

Upon taking up his position in February 2023, the Managing Director DSS was tasked by the Executive Board and the Council for Defence Research to carry out the following within two years:

- adapt the unit's organisation and management to accommodate its strong growth;
- elaborate and establish a more integral form of planning and control;
- create a culture in which collectivity, supportive leadership, mutual respect, and inclusiveness are key.

Among other things, this resulted on 1 January 2024 in an entirely new Team of Directors under the MD's leadership and a new organisational structure, with five divisions and 23 smaller research departments. The directors and new department heads were recruited on the basis of a newly developed leadership profile focused on collaboration. A behaviour and leadership programme was launched to effect the culture change.

Integral management

In 2024, TNO began to develop the organisation-wide transition to more integral management based on integral unit plans, propositions, and closer collaboration between market, knowledge, and operations. To properly shape this integral management, changes were made to the organisational structure of the two largest TNO units, one of which is DSS. In the process, the integral management of market, knowledge, and operations was placed at a lower level in the unit (at divisional level), which improves manageability, agility, and scalability.

The priority of the Council for Defence Research in 2024 was 'Joint Strategic Programming', in which Defence and TNO jointly programme the research underlying the propositions. The aim is to work together to give direction to the portfolio. Together with Defence, joint programming was undertaken for the first set of propositions. It should be noted here that there are still major differences in maturity between the propositions.

Accelerating innovation and strengthening the defence industry

The raison d'être of DSS is and continues to be to maintain the broad defence-specific knowledge base. Knowledge is the basis for technology and innovation. Defence and TNO are developing initiatives to broaden the knowledge base, with the involvement of universities and universities of applied sciences, and put knowledge into practice faster, with the involvement of Dutch industry. In this context, in 2024, the Council for Defence Research considered TNO's role in organising collaboration with universities and industry, and deploying tech-transfer tools, such as spin-offs and licences. The Council for Defence Research also discussed in the same context the smart materials ecosystem as a relaunch

of the rejected growth fund proposal, as well as the new Defport platform. Defport is a Defence initiative to work with industry and knowledge institutions to strengthen production and supply security, and accelerate the scaling-up of the Dutch technological and industrial base. TNO is strongly aligned with this initiative.

Employees

The unit grew from 892.3 to 982.6 FTEs (+10%) in 2024. In early 2024, inflow was slightly delayed compared to what had been planned, due to the Team of Directors and a large share of the department heads being new. Inflow did catch up later in the year, but on average, employee numbers in 2024 remained slightly below the targeted and budgeted level. In February 2024, the new organisation was given a festive kick-off. The employee satisfaction measurement, which took place every year in October, was postponed throughout TNO until early 2025. The absenteeism rate at DSS is exceptionally low and there is now a distinctly positive organisational culture. However, growth is leading to short-term bottlenecks in both office space and research facilities.

Real estate and research facilities

In the past, the policy choice was made that DSS can only build up a financial reserve for maintenance and replacement of real estate. Financing of new real estate and research facilities was always tailored to a specific situation. The growth of DSS makes this model no longer tenable; the unit's growth requires additional investments that cannot be financed from the accumulated reserve. A growth plan for property and research facilities has been drawn up and submitted to the Council for Defence Research. Solutions have now been found for the most pressing needs. This concerns a number of extensions and adaptations at The Hague Ypenburgse Boslaan location, including additional office space to accommodate the rapidly growing number of employees.

Further property-related matters of particular interest to the Council for Defence Research in 2024 were:

- Extension of the new CBRN building at The Hague Ypenburgse Boslaan for dedicated testing capacity.
- The renovation of a wing of The Hague Oude Waalsdorperweg in preparation for Defence moving in.
- Defence has stated that it sees possibilities to take over and develop the Rijswijk Lange Kleiweg location to be divested by TNO as part of the growth of the defence organisation.

Finance

On 14 February 2024, the Council for Defence Research approved the 2023 financial statements of the Defence Division and the 2024 rates, and, on 27 November 2024, the budget for 2025. The gross revenue of DSS rose from €174 million in 2023 to €191 million in 2024. The frequency of the rate review by the Central Government Audit Service has been reduced to once every three years at the request of the Ministry of Defence, provided that TNO projects for the US government are not affected.

Other topics

- The Royal Netherlands Navy Command and TNO signed a framework agreement in 2024 that significantly streamlines the awarding of contracts process. This agreement builds on an earlier, similar agreement with the Materiel and IT Command. The positive results have prompted an exploration of the possibilities of extending this model to other defence divisions.
- The Council for Defence Research has adopted updated versions of the reference documents 'TNO programme for Defence management' and 'Relationship between TNO and Defence'. 'TNO programme for Defence management' incorporates the decision to broaden the TRL level of grant research to the legal frameworks (TRL6 instead of TRL4).
- The Team of Directors of the DSS unit is assisted by a Strategic Advisory Council. The Strategic Advisory Council met twice in 2024, with the meetings chaired by acting Chair Prof. Erwin Muller. Themes were relevant external developments for the TNO and DSS strategy, and the DSS proposition of resilient society.
- As part of the preparation for the 2026-2029 TNO Strategic Plan, which will be presented to the ministers of Economic Affairs and Defence by summer 2025, strategic coordination between Defence and TNO was initiated in 2024.
- TNO expressed concern in the Council for Defence Research about the few concrete results of the Knowledge and Innovation Agenda (KIA) Security within the Mission-Driven Top Sectors and Innovation Policy.
- Furthermore, the Council for Defence Research reflected on 75 years of Human Factors research at TNO and on the highly successful Innovation in Defence in October 2024, where TNO, NLR, and MARIN presented the results of defence research.

On behalf of the Council for Defence Research,
Maarten Tossings, Chair

Composition of the Executive Board, Supervisory Board, CDR, and Strategic Advisory Councils

Composition of the Executive Board

Distribution of portfolios on the Executive Board

CEO:

- External positioning and profiling of TNO, corporate strategy, corporate governance, point of contact for the Supervisory Board and Works Council, strategic advisory councils, marketing, communication and public affairs, human resources, internal audit, scientific integrity
- Chair of Executive Board, Chair of Integrity Advisory Board, Chair of Diversity & Inclusion Board, and Chair of Science Board

COO:

- Operations of units, property & facilities, information services, operational excellence & auditing, security, investment in research facilities, corporate social responsibility
- Chair of CDR, Chair of Investment Board, member of CSR Board

CFO:

- Planning & control, financial policy & reporting, risk management, treasury, procurement, business intelligence, legal & compliance, valorisation, Tech Transfer & IP, market strategy, point of contact for TNO Pension Fund Foundation and point of contact for Supervisory Board Audit Committee
- Chair of Governance, Risk & Compliance Advisory Board, Chair of Tech Transfer Board

Dr T.B.P.M. (Tjark) Tjin-A-Tsoi, Chair/CEO (1966)

Since 01-06-2022.

Executive and supervisory positions:

- Executive Board member, Federatie van Samenwerkende Organisaties in het Toegepast Onderzoek (Federation of Applied Research Institutes, TO2)
- Member, Zuid-Holland Economic Board
- Supervisory Board member, Vrije Universiteit Amsterdam (VU)
- Supervisory Board member, PreWonen
- Supervisory Board member, Dutch National Opera & Ballet
- Member, 'Raad van Nesteliers' (Advisory Council), Royal Netherlands Marechaussee
- Member, Royal Holland Society of Sciences and Humanities

Mr M.G.L.H. (Maarten) Tossings, COO (1962)

Since 15-03-2019.

Executive and supervisory positions:

- Board member, The Netherlands Industries for Defence & Security (NIDV)
- Member of the Executive Committee, NIDV Naval Construction Cluster (NMC)
- Board member, Stichting Maritiem Kenniscentrum (MKC) (Centre for Maritime Expertise)
- Chair, Digital Task Force, Zuid-Holland Economic Board
- Supervisory Board member, Holland Metrology (until 30 January 2024)
- Supervisory Board member, Stichting Bibliotheek Krimpenerwaard (Krimpenerwaard Library Foundation)
- Board member Stichting Welzijn Krimpenerwaard (Krimpenerwaard Welfare Foundation) (from 25 September 2024)

Ms S.M. (Susan) Swarte RC, CFO (1968)

Since 01-05-2021.

Executive and supervisory positions:

- Non-executive director, Toxys BV
- Supervisory Board member, Audit Committee chair, and Remuneration Committee member, Acta Marine Holding BV
- Advisory Board member, Top Woman of the Year Foundation
- Supervisory Board member, Biotech Booster BV

Dr W.C.A. (Aloys) Maas, Secretary (1967)

From 01-01-2018 (to 23-09-2024).

Ms S.G. (Sanne) Huveneers MA, secretary a.i. (1985)

Since 24-09-2024.

Composition of the Supervisory Board

Mr P.G. (Gijs) de Vries, Chair (1958)

Since 01-07-2019; second term runs until 01-07-2029.

Professional activities outside TNO:

- Chair of the Supervisory Board, Arbo Unie (occupational health service) (until August 2024)
- Chair of the Supervisory Board, Netherlands Comprehensive Cancer Organisation (IKNL)
- Chairman of the Supervisory Board of Slachtofferhulp Nederland (Victim Support Services Netherlands) and Perspectief Herstelbemiddeling (Perspective Restorative Mediation)
- Chair of the Board, National Monument Camp Amersfoort Foundation
- Chair of the Supervisory Board, Sint Maartenskliniek
- Coach at Executive Sherpa Coaching
- Core teacher and coach for Ebbinge's Leergang Toezicht nieuwe stijl (course on new style of supervision)

Dr P.J.M. (Peter) van Laarhoven, Vice-Chair (1959)

Since 01-10-2016; second term runs until 01-10-2026.

Professional activities outside TNO:

- Chair of the Supervisory Board, Port of Moerdijk
- Chair of the Supervisory Board, Arnhem and Nijmegen University of Applied Sciences Foundation
- Vice-Chair of the Supervisory Board, CB Logistics (to end-May 2024)
- Chair of the Supervisory Board, CB Logistics (from June 2024)
- Member of the Supervisory Board, H&S Group (to end-March 2024)
- Vice-Chair, the Netherlands National Commission for UNESCO
- Chair of the Supervisory Board, Dutch Touring Opera
- Chair of the Board, Association of University Supervisors

Ms L. (Louise) Verheij van Wijk (1964)

Since 01-10-2019; second term runs until 01-10-2029.

Professional activities outside TNO:

- Supervisory Board member, Curam Holding B.V. (from 01-04-2024)
- Chair of the Supervisory Board, Star-shl
- Chair of the Supervisory Board, MRI Centre

Prof. M.P. (Marko) Hekkert (1971)

Since: 01-05-2022; first term runs until 01-05-2027.

Professional activities outside TNO:

- Director, Netherlands Environmental Assessment Agency (PBL)
- Professor of Dynamics of Innovation Systems, Copernicus Institute of Sustainable Development, Utrecht University

Prof. H. (Hester) Bijl (1970)

Since 01-09-2018; second term runs until 01-09-2028.

Professional activities outside TNO:

- Rector Magnificus, Executive Board, Leiden University
- Professor of Numerical Mathematics, Mathematical Institute, Leiden University
- Board member, Leiden Bio Science Park Foundation
- Supervisory Board member, Impuls Zeeland

Mr J.B.P. (Baptiest) Coopmans (1965)

Since 01-02-2021; first term runs until 01-02-2026.

Professional activities outside TNO:

- Senior Vice-President, Executive Leadership Team member, Liberty Global
- Supervisory Board member, Burg Group
- Supervisory Board member, VodafoneZiggo
- Supervisory Board member, Royal FrieslandCampina

Ms J.D. (Jolanda) Lamse-Minderhoud RA (1969)

Since 01-11-2014; second term runs until 01-11-2024.

Professional activities outside TNO:

- Interim director, Dordrecht Foundation for Cultural Education (from 22-01-2024 to 15-07-2024)
- Vice-Chair of Nyenrode University (from 01-11-2024; started at Nyenrode on 01-09-2024)
- Supervisory Board member, Amphia Ziekenhuis (from 01-03-2024)

**Ms M.R. (Miriam) van Dongen (1969)**

Since 01-11-2024; first term runs until 01-11-2029.

Professional activities outside TNO:

- Supervisory Board member, Rabobank
- Supervisory Board member, Achmea
- Supervisory Board member, Optiver
- Supervisory Board member, Land Registry
- Supervisory Board member, Het Balletorkest
- Independent Chair, Advisory Council uMunthu I and II impact fund, Goodwell Investments
- Senior advisor, BlackFin Capital Partners

Dr W.C.A. (Aloys) Maas, Secretary (1967)

From 01-01-2018 (to 23-09-2024).

Ms S.G. (Sanne) Huveneers MA, secretary a.i. (1985)

Since 24-09-2024.

All members are Dutch nationals.

Composition of the Council for Defence Research**Rear Admiral M.G.L.H. (Maarten) Tossings,**

Chair, TNO, Executive Board member/COO

Ms V.J. (Vera) de Witte

Vice-Chair, Ministry of Defence, Deputy Secretary-General

Rear Admiral A. (Ad) van de Sande

Member, Ministry of Defence, Directorate-General for Policy, Director of Operational Policy and Plans

Brigadier General Dr L.J. (Lenny) Hazelbag

Member, Director of Strategy and Knowledge, Directorate-General for Policy, Ministry of Defence

Major General H.G.S. (Harold) Boekholt

Member, Ministry of Defence, Deputy Commander Materiel and IT Command

Dr H.A.H.C. (Hendrik-Jan) van Veen

Member, TNO, Managing Director TNO Defence, Safety & Security

Mr H.F. (Harold) Bousché

Secretary, TNO



Composition of the Strategic Advisory Councils

List of SAC members as at 31 December 2024

| Unit | Mr/Ms | Name | Organisation | Position/department |
|----------------------------------|-------|-------------------------------------|---|---|
| Defence, Safety & Security | Ms | Prof. B.A. de Graaf | Utrecht University | Humanities Faculty Professor, Dept. History and Art History and History of International Relations |
| | Ms | I.C. Bryan | Dutch Institute for Vulnerability Disclosure (DIVD) | Chair of the Board |
| | Mr | K.M. Davidse | Ministry of Defence | Director-General for Policy |
| | Mr | J.C. Dicke | Ministry of Economic Affairs | Commissioner of Military Production |
| | Mr | Major General J.P.L. Duckers | Ministry of Defence | Deputy Army Commander (PCLAS) |
| | Mr | H.G. Geveke | National Police | Member of the Corps |
| | Ms | Prof. E. Giebels | University of Twente | Professor of Social Psychology of Conflict and Safety |
| | Mr | G.A. Kuiper | Ministry of Defence | Administrative Staff, Programme Director Strategic Advice |
| | Mr | H.J.J. Lenferink | Province of Gelderland | Acting King's Commissioner |
| | Mr | M.T.C. van Lieshout | Amsterdam-Amstelland Safety Region | Fire Service Commander/Director of the Amsterdam-Amstelland Safety Region/ Chair of the Netherlands Fire Service |
| | Mr | Prof. E.R. Muller | Leiden University | Vice-Rector of Organisational Development, Director of Campus The Hague, and Professor of Security and Law |
| | Mr | Commodore (ret) Prof. F.P.B. Osinga | Leiden University - Institute of Security and Global Affairs | Professor of War Studies |
| | Mr | L. Roffel | Thales Nederland | Chief Technical Officer |
| | Ms | H.M.J. Somsen | Ministry of Foreign Affairs | Dutch ambassador to Berlin |
| Energy & Materials Transition | Ms | T.J.A. Wagenaar | | Supervisor/manager |
| | Mr | Prof. K. Blok | Delft University of Technology | |
| | Mr | O.F. de Bont | Renewi | CEO |
| | Ms | Prof. H.C. de Coninck | Eindhoven University of Technology | Professor of Socio-Technical Innovation and Climate Change |
| | Mr | B.F.E. Everts | Shell Netherlands B.V. | CEO |
| | Mr | M.E. Galjee | HyCC | Managing Director |
| | Mr | Dr M.G. Heijdra | Ministry of Economic Affairs / Ministry of Climate Policy and Green Growth | DG Climate and Energy |
| | Mr | J.W. van Hoogstraten | EBN | CEO |
| | Ms | J.C.M. Sap | | Supervisory Board member |
| | Mr | W.N. Schouten | Impact Economy Foundation | Director |
| | Mr | Prof. G. van der Steenhoven | Ministry of the Interior and Kingdom Relations (Senior Civil Service) and University of Twente | Advisor to the Ministry of the Interior and Kingdom Relations, Part-time professor UT |
| | Mr | M. Tabak, MSc, MA | RWE Generation SE | Chief Operating Officer & RWE Country Chair NL |
| | Mr | R. van Tilburg | Natuur & Milieu (Nature & The Environment) | Head of Programmes |
| | Ms | J.C.V. Vaessen | Chemistry NL | Chair, Chemicals Top Sector |
| | Ms | L. de Vries | | Climate Ambassador |
| | Mr | M. Waas | Nobian | Chief Technology and Sustainability Officer |
| | Mr | Prof. E. Worrell | Utrecht University (Copernicus Institute of Sustainable Development) | Professor |



| Unit | Mr/Ms | Name | Organisation | Position/department |
|------------------------------|-------|--|--|--|
| Health & Work | Mr | J.P.H. Daems | CNV trade union federation | Board member |
| | Mr | Prof. A.J. van Gool | Radboud UMC | Professor of Personalized Healthcare |
| | Ms | M.E.Y. Koster | | Advisor, supervisor |
| | Ms | N. Meijer | De Buitenboordmotor | Co-founder |
| | Mr | T.A.J. Oostrom | Dutch Kidney Foundation (Nierstichting) | Director |
| | Ms | Dr V.C.M. Timmerhuis | ZonMw (Netherlands Organisation for Health Research and Development) | Managing Director |
| High-Tech Industry | Mr | M.H. Hendrikse | Holland High Tech | Figurehead of the High-Tech Systems & Materials Top Sector (HTSM) |
| | Mr | Prof. F.P.T. Baaijens | Eindhoven University of Technology | Full Professor of Soft Tissue Biomechanics and Tissue Engineering |
| | Ms | B.L.J.M. van Dijk-van de Reijt MSc MBA | The Brabant Development Agency (BOM) | Managing Director |
| | Mr | M. Geraets | NXP Semiconductors Netherlands B.V. | Executive Director |
| | Mr | S. Hamminga | Robin Radar Systems B.V. | CEO |
| | Mr | Dr H. van Houten | | |
| | Mr | Dr P.J. Nieuwenhuizen | Enerkem | Vice President Technology Strategy & Deployment |
| | Mr | R. Postma | Airbus Netherlands B.V. | CEO |
| | Ms | Prof. B. Redlich | Felix Laboratory Nijmegen/Radboud University | Director |
| | Mr | Prof. G. van der Steenhoven | Ministry of the Interior and Kingdom Relations (Senior Civil Service) and University of Twente | Advisor to the Ministry of the Interior and Kingdom Relations, Part-time professor UT |
| | Mr | H.G. Tappel | Bronkhorst High-Tech B.V. | Managing Director |
| ICT, Strategy & Policy | Ms | S. van Heukelom-Verhage | Pels Rijcken | Chair of the Board |
| | Ms | Prof. N.M.P. Bocken | Maastricht University | Maastricht Sustainability Institute (MSI) |
| | Ms | M. Demmers MBA | Natuur & Milieu (Nature & The Environment) | Managing Director |
| | Mr | Prof. M.L.P. Groenleer | Tilburg University | Professor of Public Governance, Department of Public Law & Governance / Tilburg Center for Regional Law and Governance |
| | Mr | S.B. Luitjens | Ministry of the Interior and Kingdom Relations | Director |
| | Mr | Prof. M.R. van Steen | University of Twente | Scientific Director, Digital Society Institute |
| | Mr | J.H. Dronkers | Ministry of Infrastructure and Water Management | Secretary-General |
| Mobility & Built Environment | Ms | M. van Dijk | MOVARES | Department Manager Business in Development |
| | Mr | C.F. Eggink | HeartWork | Co-founder |
| | Ms | M.H.T. Jansen | Ministry of the Interior and Kingdom Relations | Director-General of Spatial Planning |
| | Mr | B. Janssen | Deltalinqs | Managing Director |
| | Ms | C. Kremer | Vereniging Eigen Huis homeowners association | Director |
| | Ms | N. van 't Riet-Visser | DB Cargo NL | CEO |
| | Mr | B.P. Smolders | Heijmans | Director of Infra |
| | Mr | F. Vermeulen BA | Municipality of Wageningen | Mayor |
| | Mr | W. Vossebelt | V-Tron | CEO |
| | Mr | R.P. van Wingerden MBA | Strukton, Topteam Logistiek, among others | CEO |
| | Mr | Prof. R. Zuidwijk | Rotterdam School of Management, EUR | Professor of Global Supply Chains and Ports |



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Consolidated balance sheet as of 31 December 2024

(in thousands of euros)

After profit appropriation

| | Note | 31-12-2024 | 31-12-2023 |
|-------------------------------|------|----------------|----------------|
| Fixed assets | | | |
| Intangible assets | 1 | 8,951 | 2,000 |
| Property, plant and equipment | 2 | 288,675 | 241,924 |
| Financial assets | 3 | 24,235 | 22,050 |
| | | 321,861 | 265,974 |
| Current assets | | | |
| Inventories | | 168 | 212 |
| Receivables | 4 | 152,413 | 134,490 |
| Cash and cash equivalents | 5 | 400,834 | 350,176 |
| | | 553,415 | 484,878 |
| Total | | 875,276 | 750,852 |

| | Note | 31-12-2024 | 31-12-2023 |
|------------------------------|------|----------------|----------------|
| Group equity | | | |
| General reserve | 6 | 385,668 | 344,083 |
| Statutory reserve | 7 | 7,878 | 9,475 |
| Special reserves | 8 | 17,892 | 37,605 |
| Minority interest | 8 | -78 | -45 |
| | | 411,360 | 391,118 |
| Provisions | 9 | 10,247 | 13,230 |
| Long-term liabilities | 10 | 47,002 | 41,549 |
| Current liabilities | 11 | 406,667 | 304,955 |
| Total | | 875,276 | 750,852 |

Consolidated income statement 2024

(in thousands of euros)

| | Note | 2024 | 2023 |
|--|------|-----------------|-----------------|
| Revenue | 12 | 764,298 | 687,798 |
| Other operating income | 13 | 21,496 | 14,617 |
| Total operating income | | 785,794 | 702,415 |
| Direct project costs | 14 | -73,887 | -79,463 |
| Personnel expenses | 15 | -511,565 | -454,984 |
| Amortisation intangible assets | 16 | -750 | -470 |
| Depreciation of property, plant and equipment | 17 | -26,796 | -25,256 |
| Impairment losses property, plant and equipment | | -229 | -419 |
| Other operating expenses | 18 | -155,125 | -132,326 |
| Total operating expenses | | -768,352 | -692,918 |
| Operating profit (loss) | | 17,442 | 9,497 |
| Finance income and expenses | 19 | 12,413 | 8,969 |
| Profit (loss) from ordinary activities before tax | | 29,855 | 18,466 |
| Corporation tax | 20 | -7,719 | -4,613 |
| Share of profit (loss) of participating interests | 21 | -1,894 | 2,468 |
| Profit (loss) from ordinary activities after tax | | 20,242 | 16,321 |
| Minority interest | | 33 | 45 |
| Net profit (loss) | | 20,275 | 16,366 |

Profit appropriation

| | Note | 2024 | 2023 |
|---|------|---------------|---------------|
| Net profit (loss) | | 20,275 | 16,366 |
| Addition to: | | | |
| - special reserve for construction of new defence buildings | | -15,333 | -9,999 |
| | | -15,333 | -9,999 |
| Withdrawal from: | | | |
| - statutory reserve | | 1,597 | -3,277 |
| - special reserve for construction of new defence buildings | | 35,046 | 11,467 |
| | | 36,643 | 8,190 |
| Profit (loss) after changes in special reserves | | 41,585 | 14,557 |
| Change in general reserve | | -41,585 | -14,557 |
| | | - | - |



Consolidated cash flow statement

(in thousands of euros)

| | 2024 | 2023 |
|---|-----------------|----------------|
| Operating profit (loss) | 17,442 | 9,497 |
| Amortisation | 1,295 | 470 |
| Depreciation | 27,025 | 25,675 |
| Change in provisions | -2,983 | -1,857 |
| Change in working capital, excl. cash and cash equivalents | 104,806 | 5,996 |
| Cash flow from business operations | 147,585 | 39,781 |
| Interest received | 12,236 | 7,359 |
| Dividends received | 1,229 | 100 |
| Interest paid | -458 | -1 |
| Corporation tax | -6,302 | -2,502 |
| Cash flow from operating activities | 154,290 | 44,737 |
| Investments in intangible assets | -8,246 | - |
| Investments in property, plant and equipment | -87,194 | -44,638 |
| Investments in financial assets | -8,397 | -3,350 |
| Disposals of property, plant and equipment | - | 1,069 |
| Movement in minority interest | -33 | -45 |
| Disposal of participating interests | 282 | 218 |
| Repayments and dividends received | - | 10 |
| Cash flow from investing activities | -103,588 | -46,736 |
| Loans drawn | 150 | 551 |
| Repayments on loans | -170 | -572 |
| Cash flow from financing activities | -20 | -21 |
| Cash flow for financial year | 50,682 | -2,020 |
| Cash and cash equivalents as of 1 January | 350,176 | 352,176 |
| Cash flow for financial year | 50,682 | -2,020 |
| Exchange differences | -24 | 20 |
| Cash and cash equivalents as of 31 December | 400,834 | 350,176 |

Statement of comprehensive income 2024

(in thousands of euros)

| | 2024 | 2023 |
|--|---------------|---------------|
| Consolidated net profit (loss) after tax | 20,275 | 16,366 |
| Comprehensive income | 20,275 | 16,366 |

Notes to the 2024 consolidated financial statements

Accounting policies

1.1 General

TNO's mission is to create impactful innovations for the sustainable well-being and prosperity of society.

Name: Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek TNO.

Legal form: Public corporate body with statutory task.

Chamber of Commerce number: 27376655

TNO has its registered office in Delft, the Netherlands.

Reporting period

These financial statements have been prepared for a reporting period of one calendar year.

Basis of preparation

The financial statements of TNO are prepared in accordance with the TNO Guidelines for Financial Reporting issued by the Ministry of Education, Culture and Science.

The TNO Guidelines for Financial Reporting are based on the statutory provisions of Part 9, Book 2 of the Dutch Civil Code. A supplementary order issued by the Ministry of Education, Culture and Science, by means of a letter dated 21 February 2014 with reference OWB/FO/2004/8195, exempts TNO from the provisions of Dutch Accounting Standard 271 'Employee benefits'. Specifically, the provisions from pensions are declared not applicable. TNO does form an obligation for holiday pay and holidays, as well as a provision for jubilee benefits.

The accounting policies that are applied for the valuation of assets and liabilities and the determination of profits or losses are based on the historical cost convention. For the implementation of the Senior Officials in the Public and Semi-Public Sector (Standards for Remuneration) Act (Wet normering bezoldiging topfunctionarissen in de (semi) publieke sector (WNT)), TNO has complied with the policy rules on the application of this Act, which rules set the standards for the preparation of these financial statements.

Comparative figures

Where necessary, the comparative figures for 2023 have been reclassified to improve comparability with the figures for 2024.

These financial statements have been prepared based on the going concern assumption.

1.2 Accounting policies

Unless stated otherwise, assets and liabilities are stated at historical cost.

An asset is recognised in the balance sheet when it is probable that the future economic benefits associated with the asset will flow to TNO and the value of the asset can be measured reliably. A liability is recognised in the balance sheet when it is probable that its settlement will involve an outflow of resources and the amount can be measured reliably. An asset or liability is derecognised from the balance sheet when a transaction results in the transfer of all or substantially all future economic benefits and all or substantially all risks associated with an asset or a liability to a third party. Furthermore, assets and liabilities are derecognised from the date on which they no longer meet the criteria regarding the probability of the future economic benefits or the reliability of their measurement.

Income is recognised in the income statement when there is an increase of the economic potential associated with an increase in an asset or a reduction of an obligation, the size of which can be reliably determined. Expenses are recognised when a decrease in future economic benefits related to a decrease of an asset or an increase of an obligation has arisen, the size of which can be measured reliably.

Expenses are allocated to the period to which they relate.

The financial statements are presented in euros, TNO's functional currency. All financial information in euros has been rounded to the nearest thousand.

Notes to the 2024 consolidated financial statements

1.3 Consolidation principles

The consolidated financial statements include the financial data of TNO, its group companies and other legal entities over which TNO can exercise decisive control or which are under its centralised management. Group companies are participating interests in which the company has a controlling interest, or in which a significant policy-making influence can be exercised in some other way. Financial instruments containing potential voting rights that have economic significance are also taken into account. Interests held exclusively with a view to resale are not consolidated if there was already an intention to sell the interest at the time of its acquisition, it is probable that the interest will be sold within a year and the other relevant indicators are met. These interests are recognised under current assets, as part of the securities (held exclusively for resale). Newly acquired participating interests are consolidated from the date on which a significant policy-making influence can be exercised.

Items in the consolidated financial statements are prepared in accordance with uniform accounting principles of the group.

Participating interests that have been sold are consolidated up to the date on which significant influence can no longer be exercised over their business and financial policy.

In preparing the consolidated financial statements, intra-group debts, receivables and transactions are eliminated. The group companies are consolidated in full and the third-party minority interest is disclosed separately.

Where losses attributable to the third-party minority interest exceed the minority interest in the equity of the consolidated company, this excess and any further losses are charged in full to the majority shareholder. The third-party share in the profit (loss) is disclosed separately as the final line item in the consolidated income statement and deducted from the group profit (loss).

A list of the consolidated group companies and non-consolidated participating interests is included in the notes to the company financial statements.

1.4 Principles for the translation of foreign currency

Foreign currency transactions

Transactions denominated in foreign currency are translated into the relevant functional currency of the group companies at the exchange rate applying on the transaction date. Monetary assets and liabilities denominated in foreign currency are translated into the functional currency on the balance sheet date at the exchange rate applying at that date. Currency translation gains and losses are recognised in the income statement.

Foreign operations

The assets and liabilities of foreign operations, including goodwill and fair value adjustments arising on consolidation are translated into euros at the exchange rate prevailing on the reporting date. Income and expenses of foreign operations are translated into euros at the average exchange rate for the reporting period, which is a good approximation of recognition based on the exchange rate applying on the transaction date.

Translation gains and losses are recognised in the reserve for translation differences. When a foreign operation is sold in whole or in part, the relevant amount in the reserve for translation differences is transferred to the income statement.

1.5 Financial instruments

Financial instruments include (other) receivables, cash, loans and borrowings and trade and other payables.

Financial instruments are initially recognised at fair value, which includes the share premium or discount and directly attributable transaction costs. If subsequent to initial recognition, instruments are not measured at fair value through profit or loss, then any directly attributable transaction costs are included in the initial recognition.

Embedded financial instruments which are not separated from the host contract are recognised in accordance with the host contract.

Subsequent to initial recognition, financial instruments are measured in the manner described below.

Notes to the 2024 consolidated financial statements

Loans granted, (other) receivables, loans drawn and trade and other payables.

These financial instruments are measured at amortised cost on the basis of the effective interest method.

The effect of discounting is generally insignificant for current receivables and payables with short maturities for which no explicit interest is calculated. The amortised cost of these items is therefore deemed to consist of their nominal value.

Where necessary, the value of loans granted and (other) receivables is adjusted for impairment losses.

Deferred tax assets are stated at present value.

Long-term loans drawn are stated at fair value upon initial recognition. Subsequent to initial recognition, they are measured at amortised cost.

Derivatives

Derivatives are stated at cost or lower market value, except if hedge accounting under the cost price hedge accounting model is applied.

TNO makes limited use of forward exchange transactions to hedge foreign exchange risks arising from purchasing and selling transactions. If foreign exchange contracts are concluded to hedge monetary assets and liabilities, cost price hedge accounting is applied. Hedge accounting is applied to ensure that the results recognised in the income statement as a result of the conversion of monetary items are offset by changes in the value of foreign exchange contracts at the spot rate on the reporting date. The difference between the spot rate of the forward exchange contract at the date of inception and its forward rate is amortised over the term of the forward exchange contract and taken to the income statement.

When cost price hedge accounting is applied, derivatives are measured at fair value upon initial recognition. Derivatives are not remeasured as long as the derivative hedges the specific risk of an expected future transaction. As soon as the expected future transaction leads to the recognition of value changes in the income statement, the gain or loss associated with the derivative is recognised in the income statement. When the hedged item relating to an expected future transaction leads to the recognition of a non-financial asset in the balance sheet, TNO adjusts the cost price of this asset by offsetting it against the hedging gains and losses that have not yet been recognised in the income statement.

If a derivative instrument expires or is sold, the hedging relationships are terminated. The cumulative gain or loss that has not yet been recognised in the income statement until that moment is recognised as an accrued or deferred item in the balance sheet until the hedged transactions occur. If the transactions are no longer expected to occur, the cumulative gain or loss is transferred to the income statement.

TNO documents its hedge relationships in specific hedge documentation and regularly reviews the effectiveness of the hedge relationships by establishing that there is no overhedging.

1.6 Intangible assets

Goodwill represents the excess of the cost of acquisition of the participating interests over TNO's interest in the net fair value of the assets acquired and the liabilities assumed from the acquiree, less accumulated amortisation, depreciation and any impairment losses. Goodwill is amortised over the expected useful life of the acquired participating interest.

The other intangible assets relate to development costs.

They are capitalised insofar as they relate to projects deemed commercially feasible. The development of an intangible asset is considered to be commercially feasible if the completion of the asset is technically feasible, TNO intends to complete the asset and it can then be used or sold (and there are also adequate technical, financial and other resources available to achieve this), TNO has the ability to use or sell the asset, it is probable that the asset will generate future economic benefits and the expenses incurred during the development phase can be determined reliably. Development costs are stated at production cost, less accumulated amortisation and any impairment losses. These costs mainly comprise the salary costs of the relevant employees and the cost of obtaining external expertise, including fees paid to third parties for research and development, licence rights and software programs. Upon termination of the development phase, the capitalised costs are amortised over the expected useful life of the asset, which in principle does not exceed five years, using the straight-line method.

A statutory reserve is formed for the part of the capitalised development costs that has not yet been amortised.

Notes to the 2024 consolidated financial statements

1.7 Property, plant and equipment

Items of property, plant and equipment intended for TNO's own use are stated at cost of acquisition or, if they have been constructed by TNO itself, at cost of manufacture, less accumulated depreciation and any accumulated impairment losses, plus any costs incurred to bring the asset to its ultimate location. No interest expenses have been included in the cost of acquisition of items of property, plant and equipment. Subsequent expenditures that meet the capitalisation criteria are recognised as part of the cost price of property, plant and equipment.

Depreciation is calculated as a percentage of the cost of acquisition according to the straight-line method on the basis of the asset's useful life. Company land, and property, plant and equipment under construction and prepayments on land, property, plant and equipment are not depreciated. When over time changes occur with respect to the expected depreciation method, useful life and/or residual value, such changes are accounted for as a change in estimates.

When costs are incurred due to an obligation relating to the dismantling and removal of an asset and the restoration of the site where the asset is located, and this obligation is the result of the fact that TNO has put the asset in place on the site, these restoration costs are included in the carrying amount of the asset and a provision for the same amount is recognised simultaneously. Decommissioned items of property, plant and equipment are measured at their carrying amount or lower fair value less costs to sell. Items of property, plant and equipment are derecognised in the balance sheet following their disposal or if no future economic benefits are expected to arise from their use or disposal. The income or expense arising from the disposal is recognised in the income statement.

1.8 Financial assets

Non-consolidated participating interests in which the group exercises significant influence on business and financial policy are valued using the equity change method. In assessing whether TNO can exercise significant influence over the entity's business and financial policy, financial instruments containing potential voting rights that have economic significance are also taken into account. In accordance with the equity change method, the participating interests are recognised in the balance sheet at the group's share of the net asset value of these entities. The following is added to the net asset value of the

group's participating interests in these entities: its share in the direct changes in the equity of the participating interest from the moment of acquisition, determined in accordance with the principles stated in these financial statements and less its share in the dividend payments of the participating interests.

The group's share of the profits or losses of these entities is recognised in the income statement under 'Share or profit (loss) of participating interests'. Where TNO cannot effect the unlimited payment of dividends to TNO in respect of profits of these entities, TNO's share of these profits is added to a statutory reserve. The group's share of the direct increases and decreases in the equity of the entities in which it has a participating interest is also recognised in the statutory reserve.

Following the application of the equity change method, the group determines whether it needs to recognise impairment losses for any of its participating interests. As at each balance sheet date, the group assesses whether there are objective indications that a participating interest may have been impaired. If that is the case, the group recognises an impairment loss for the amount by which the carrying amount of the participating interest exceeds its recoverable amount. This impairment loss is recognised in the income statement.

If the value of a participating interest according to the equity change method has become nil, this method is no longer applied and the participating interest continues to be measured at nil as long as the circumstances do not change. Any other long-term interests of the group in the entity in which it has a participating interest that effectively qualify as a part of the group's net investment are also included in the measurement. A provision is recognised if and to the extent that the group guarantees the debts of the entity in which it has a participating interest or has a constructive obligation to enable the entity to pay its debts.

Any share of the entity's profit subsequently acquired is recognised only if and to the extent that the group's cumulative unrecognised share of the entity's loss has been made good.

Notes to the 2024 consolidated financial statements

Participating interests where no significant influence can be exercised over the entity's business and financial policy are measured at cost of acquisition less any impairment losses. Dividends qualify as profit and are recognised under finance income and expenses. Profits or losses on transactions with and between entities in which the group has non-consolidated participating interests that are measured at net asset value are recognised proportionally. Profits or losses on transactions with and between entities in which the group has non-consolidated participating interests that are measured at cost are recognised in full, except if they have in effect not been realised. Loans to entities in which the group has a non-consolidated participating interest are stated at amortised cost using the effective interest rate method, less any impairment losses.

Dividends are accounted for in the period in which they are declared. Interest income is recognised in the period to which it relates, using the effective interest rate method of the relevant asset item. Any gains or losses are recognised under finance income and expenses.

1.9 Impairment losses

As of each balance sheet date, the group assesses whether a non-financial asset or a group of non-financial assets may have been impaired. At each balance sheet date, the group assesses whether there are indications that a fixed asset may have been impaired. If there are such indications, the recoverable amount of the asset is determined. If it is not possible to determine the recoverable amount of the individual asset, the recoverable amount of the cash-generating unit to which the asset belongs is determined. An impairment occurs when the carrying amount of an asset is higher than the recoverable amount; the recoverable amount is the highest of the fair value and the value in use. An impairment loss is accounted for by recognising it directly in the income statement as an expense and simultaneously reducing the carrying amount of the relevant asset.

The asset's fair value less selling costs is initially determined on the basis of a binding sales agreement. If there is no such agreement, the fair value less selling costs is determined on the basis of the active market, whereby the prevailing bid price is typically considered the market price. If there is no such active market, the fair value less selling costs is determined based on generally accepted valuation models. The results of these models are verified on the basis of a multiple of the profit, quoted prices of listed

companies and other available fair value indicators. The costs to be deducted in determining the fair value less selling costs are based on the estimated costs that are directly attributable to the sale or which are necessary to realise the sale.

To determine the value in use, the future net cash flows that would be derived from the continued use of the asset or cash-generating unit are estimated. These cash flows are then discounted using a pre-tax discount rate that reflects the time value of money on the basis of both the market expectations and the specific risks for the asset. The discount rate does not reflect any risks which have already been taken into account in determining the future cash flows.

As at each balance sheet date, the group assesses whether there are indications that an impairment loss recognised previously for a fixed asset no longer exists or has decreased. If there are such indications, the recoverable amount of the asset or the cash-generating unit to which the asset belongs is determined. A previously recognised impairment loss is only reversed if there has been a change in the estimates used to determine the recoverable amount since the last impairment loss was recognised.

If it is determined that a previously recognised impairment loss no longer exists or has decreased, the increased carrying amount of the relevant asset set will not exceed the carrying amount that would have been determined if no impairment loss had been recognised for the asset. An impairment loss recognised for goodwill is not reversed.

1.10 Inventories

Raw materials and consumables are stated at their cost of acquisition or lower net realisable value. The valuation of the inventories takes into account any impairment losses that may have arisen as of the balance sheet date.

1.11 Projects in progress

Projects in progress concern projects carried out under contracts. Included in the valuation of projects in progress are the costs that relate directly to the relevant contract (for example, personnel costs for employees whose activities relate directly to the contract and the costs of raw materials and consumables), the costs that are attributable to the contract activities in general and can be allocated to the relevant contract, and other costs chargeable to the client under the terms of the contract. Expenditures related to project costs that will lead to the completion of required deliverables after the balance

Notes to the 2024 consolidated financial statements

sheet date are capitalised if it is probable that they will lead to revenue in a subsequent period. Where necessary, a provision for expected losses is deducted from projects in progress. Amounts billed in advance are deducted from projects in progress.

1.12 Receivables

The principles applied for the valuation of receivables are described under the heading ‘Financial instruments’.

1.13 Cash and cash equivalents

Cash and cash equivalents are stated at nominal value. Where cash and cash equivalents are not at TNO’s free disposal, this is reflected in their valuation.

Cash and cash equivalents denominated in foreign currency are translated at the balance sheet into the relevant functional currency at the exchange rate applying at that date. For further information, see the accounting principles for the costing of foreign currency transactions.

1.14 Equity

Financial instruments that qualify as equity instruments by virtue of their economic substance are presented under equity.

Financial instruments that qualify as financial liabilities by virtue of their economic substance are presented under liabilities. Gains, losses, income and expenses with respect to these financial instruments are recognised in the income statement as finance income or expenses.

Statutory reserves

The statutory reserve concerns intangible assets and non-distributable profits from the group companies’ participating interests measured at net asset value.

Special reserves

In accordance with Section 22 of the TNO Act and Sections 4 and 5 of the TNO Guidelines for Financial Reporting, special reserves may be formed to allow for future expenditures or costs, or to cover economic and technical risks. Withdrawals are charged to the special reserves as part of the appropriation of the profit (loss) for the year, provided they are in accordance with the special purposes of these reserves.

The special reserve for ‘civil’ operating risks is formed to cover economic and technical risks. Until the maximum amount of this special reserve has been reached, TNO’s Executive Board annually determines and adds a percentage of the funding and contracts from both the national government and third parties to the reserve as part of the appropriation of the profit (loss) for the year. A maximum amount of €9.1 million was agreed with the national government at the time.

The special reserve for new construction related to defence research has been created to cover future investments in renovation and/or new construction projects. Additions to and withdrawals from this reserve are made annually during the appropriation of the profit (loss) on the basis of specific agreements with the Council for Defence Research (RDO).

1.15 Minority interest of third parties

The minority interest of third parties is valued at their share in the net asset value of consolidated participating interests. The minority interest is measured in accordance with TNO’s accounting policies.

1.16 Provisions

A provision is recognised in the balance sheet when:

- TNO has a present legal or constructive obligation as a result of a past event; and
- the amount can be estimated reliably; and
- if it is probable that an outflow of resources will be required to settle the obligation.

Unless stated otherwise, provisions are stated at present value, which is determined by using the relevant discount rate that reflects the current market interest rate.

The provision for employee and post-employment benefits has been formed to cover current benefits and agreed future benefits payable to former and current employees of TNO under TNO’s Terms and Conditions of Employment. The portion of the provision relating to current pension benefits is based on actuarial calculations.

The jubilee provision is a provision for future jubilee benefits.

The provision concerns the present value of the jubilee benefits to be paid out in the future. The provision is based on promises made, the likelihood of staff staying and age.

Notes to the 2024 consolidated financial statements

The provision for claims has been formed for potential liabilities arising from ongoing legal proceedings.

The provision for restructurings has been formed to cover costs associated with ongoing or announced (partial or full) restructurings.

The provision for redundancies has been formed to cover the expected costs associated with the planned termination of employment contracts with employees, other than in the context of restructurings. The other provisions have been formed mainly to cover the expected costs of onerous tenancy contracts.

The most important estimated items relate to the restructuring provision, the provisions for redundancies and claims and the other provisions.

1.17 Employee Benefits/Pensions

TNO has a number of pension schemes. The most significant pension scheme is administered by Stichting Pensioenfonds TNO and qualifies as a defined benefit pension plan.

An order issued by the Ministry of Education, Culture and Science exempts TNO from the provisions of Dutch Accounting Standard 271 'Employee benefits'. The basic principle is that the pension expense to be recognised in the reporting period is equal to the pension contributions payable to the pension fund for the period. To the extent that the contributions payable have not yet been paid as of the balance sheet date, a liability is recognised.

If as of the balance sheet date, the contributions already paid exceed the contributions payable, an asset is recognised under 'Prepayments and accrued income' to account for any refund by the pension fund or settlement with future pension contributions payable.

In addition, a provision is recognised as of the balance sheet date for existing additional obligations towards the pension fund and the employees, if it is probable that there will be an outflow of resources to settle the obligations and the amount of the obligations can be estimated. The existence or non-existence of additional obligations is assessed on the basis of the administration agreement with the pension fund, the pension agreement with the employees and other (explicit or implicit) commitments made to employees. The provision is stated at the best estimate of the present value of the amounts expected to be required to settle the obligations at the balance sheet date.

1.18 Long-term liabilities

Grants provided by the national government or third parties to compensate TNO for the investment in an asset are recognised as liabilities in the balance sheet and systematically credited to the income statement over the useful life of the asset.

1.19 Current liabilities

The valuation of current liabilities is explained in the section on financial instruments.

1.20 Revenue recognition

Revenue is defined as the total of:

- contract revenue;
- national government funding.

Contract revenue comprises the amounts invoiced for work performed, less any value added tax and changes in projects in progress. Revenue is recognised for each separate performance obligation. In the event of multiple performance obligations in a contract, the total transaction price is allocated to the performance obligations in proportion to the value of the performance obligations. TNO concludes that the commitments in contracts together form a performance obligation. The reason for this is that TNO has established that clients cannot independently utilise the benefits of such commitments. Revenue from contracts is recognised in the agreed period in proportion to the performances delivered. Because there is a steady flow of projects that are completed at regular intervals throughout the year, and most are completed within one year, the profits on projects in progress are recognised upon the completion of the projects.

The national government funding is used to support the demand-driven programme research for Top Sectors and societal transition themes. These funds are recognised as revenue in proportion to the stage of completion of the relevant work. Direct project costs are defined as the tangible costs (including costs of outsourced work) that are directly attributable to a project.

1.21 Government grants

Government grants are initially recognised in the balance sheet as deferred income when it is reasonably certain that they will be received and that TNO will comply with the conditions associated with the grant. Grants that compensate TNO for expenses incurred are systematically recognised in the income statement as revenue in the same period as in which the expenses are incurred.

Notes to the 2024 consolidated financial statements

For information on grants that compensate TNO for an investment in an asset, see under ‘Long-term liabilities’.

1.22 Other operating income

If the result of a transaction relating to the performance of services can be reliably estimated and it is probable that revenue will be received for these services, revenue is recognised in proportion to the stage of completion of these services. Licence revenues are recognised in the income statement in accordance with the accrual basis of accounting, in accordance with the content of the agreement, if their amount is determinable and their receipt probable.

1.23 Share of profit (loss) of participating interests

The share of the profit (loss) of participating interests consists of TNO’s share of the profits or losses of the entities in which it has a participating interest, determined on the basis of the group’s accounting policies.

Gains or losses on transactions are not recognised in the consolidated income statement if they cannot be deemed to have been realised.

The profits or losses of participating interests acquired or disposed of during the financial year are included in TNO’s profit (loss) for the year from the date of acquisition or until the date of disposal, respectively.

1.24 Finance income and expenses

Interest income is recognised in the period to which it relates, taking into account the effective interest rate for the relevant asset. Interest expenses and similar expenses are recognised in the period to which they relate, taking into account the effective interest rate.

1.25 Corporation tax/deferred tax assets

TNO has been subject to corporation tax on the integrated profit (loss) since the financial year of 2016.

As at 1 January 2016, when TNO first became liable for corporation tax, the opening tax balance sheet was prepared on the basis of the applicable tax accounting policies.

TNO Tech Transfer Holding BV and TNO Affiliates Holding BV and all their Dutch subsidiaries are also subject to corporation tax.

Tax comprises the current corporation tax payable or recoverable for the reporting period and deferred corporation tax. Tax is recognised in the income statement, except to the extent it relates to items recognised directly in equity, in which case it is recognised in equity.

The tax payable (recoverable) for the financial year is the expected tax payable (recoverable) in respect of the taxable profit (tax loss) for the financial year, calculated using tax rates enacted or substantively enacted at the reporting date, and any adjustment to tax payable in respect of previous years.

A provision for deferred tax liabilities is recognised for taxable temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the tax bases of these assets and liabilities.

Deferred tax assets are recognised for deductible temporary differences, unused tax loss carryforwards and unused tax credits, provided that it is probable that taxable profits will be available in future against which they can be offset or utilised. Deferred tax assets are reviewed at each reporting date and reduced to the extent that it is no longer probable that the related tax benefit will be realised.

Deferred tax assets are stated at present value.

1.26 Cash flow statement

The cash flow statement is prepared using the indirect method. Cash flows in foreign currency are translated into euros using the average exchange rates for the relevant periods.

Notes to the 2024 consolidated financial statements

1.27 Fair value measurement

A number of accounting policies and disclosures in the financial statements of TNO require the fair value measurement of both financial and non-financial assets and liabilities. For valuation and information purposes, fair values are determined based on the following methods.

(Other) receivables

The fair value of trade and other receivables is estimated based on the present value of the future cash flows.

Derivatives

The fair value of forward exchange contracts and interest rate swaps is based on their quote market price, where available. If a quoted market price is not available, the fair value is estimated by discounting the expected cash flows to their present value using current interest rates, which include a risk premium for the relevant risks.

Non-derivative financial liabilities

The fair value of non-derivative financial liabilities (loans) is determined for information purposes only and is calculated based on the present value of future principal and interest payments, discounted at the market interest rate at the reporting date.

If applicable, further information about the principles of fair value measurement is provided in the notes applicable to the relevant asset or liability.

1.28 Use of estimates

The preparation of the financial statements requires that management makes judgements, estimates and assumptions that affect the application of accounting policies and the reported amounts of assets, liabilities, income and expenses. Actual results may differ from these estimates.

The estimates and the underlying assumptions are constantly assessed. Revisions of estimates are recognised in the period in which the estimate is revised and in future periods for which the revision has consequences.

The estimates mainly relate to fixed assets, projects in progress, deferred tax assets and provisions (including provisions for restructurings, redundancies, claims and onerous contracts).

1.29 Related parties

Transactions with related parties occur when a relationship exists between TNO, its participating interests and their directors and key management personnel. As part of its ordinary activities, TNO provides and receives services to and from various related parties in which TNO has an interest of 50% or less. These transactions are conducted at arm's length on terms similar to those of transactions with third parties.

Notes to the consolidated balance sheet as of 31 December 2024

(in thousands of euros)

1 Intangible assets

Changes in intangible assets in 2024:

| | Goodwill |
|---|--------------|
| Balance as of 31-12-2023 | |
| Cost of acquisition | 4,705 |
| Accumulated depreciation and impairment | -2,705 |
| Carrying amount | 2,000 |
| Change in carrying amount | |
| Investments | 8,246 |
| Amortisation | -1,295 |
| | 6,951 |
| Balance as of 31-12-2024 | |
| Cost of acquisition | 12,951 |
| Accumulated amortisation and impairment | -4,000 |
| Carrying amount | 8,951 |

On 1 April 2018, TNO took over the energy activities of Stichting Energieonderzoek Centrum Nederland (NRG). The acquisition was measured according to the purchase accounting method. The goodwill amounted to €4.7 million and is amortised over a period of 10 years.

TNO acquired the remaining 55% of the shares of National Metrology Institute Van Swinden Laboratory (VSL) on 16 February 2024. The acquisition has been recognised retroactively as of 1 January 2024. The goodwill amounted to €8.2 million and is amortised over a period of 10 years.

As of 31 December 2024, there was no reason to recognise an impairment loss.

Notes to the consolidated balance sheet as of 31 December 2024

2 Property, plant and equipment

Changes in property, plant and equipment in 2024:

| | Land and buildings | Plant and equipment | Other operating assets | Fixtures and fittings | Assets under con- struction and devel- opment | Property, plant and equipment not used in operations | Total |
|--|-----------------------|---------------------------|------------------------------|--------------------------|---|--|----------------|
| Balance as of 31-12-2023 | | | | | | | |
| Cost of acquisition | 113,239 | 155,659 | 181,643 | 12,140 | 53,766 | 19,665 | 536,112 |
| Accumulated depreciation and impairment | -64,771 | -90,841 | -116,427 | -6,594 | - | -15,555 | -294,188 |
| Carrying amount | 48,468 | 64,818 | 65,216 | 5,546 | 53,766 | 4,110 | 241,924 |
| Change in carrying amount | | | | | | | |
| Investments | 1,129 | 1,144 | 13,979 | 858 | - | - | 17,110 |
| Impact consolidations/deconsolidations | - | - | 3,699 | 28 | - | - | 3,727 |
| Disposals | - | -4 | -50 | -12 | - | - | -66 |
| Reclassifications | 517 | 804 | - | - | - | -1,321 | - |
| Reclassifications of cumulative depreciation | -517 | -287 | - | - | - | 804 | - |
| Impairment losses | -89 | -209 | 69 | - | - | - | -229 |
| Depreciation | -1,813 | -10,269 | -24,310 | -1,378 | - | -454 | -38,224 |
| Assets under construction and development recognised in financial year | - | 17,211 | 14,857 | 43 | -32,910 | 799 | - |
| Disposal of assets under construction | - | - | - | - | 759 | - | -759 |
| Assets under construction, new investments in 2024 | - | - | - | - | 65,192 | - | 65,192 |
| | -773 | 8,390 | 8,244 | -461 | 31,523 | -172 | 46,751 |
| Balance as of 31-12-2024 | | | | | | | |
| Cost of acquisition | 114,885 | 174,862 | 234,122 | 13,889 | 85,289 | 18,381 | 641,428 |
| Accumulated depreciation and impairment | -67,190 | -101,654 | -160,662 | -8,804 | - | -14,443 | -352,753 |
| Carrying amount | 47,695 | 73,208 | 73,460 | 5,085 | 85,289 | 3,938 | 288,675 |

The 'depreciation of property, plant and equipment' item recognised in the income statement also includes the release from the investment grants equalisation account.

The carrying amount of property, plant and equipment as of 31 December 2024 includes land, buildings, plant and equipment in the amount of €39.4 million (2023: €32.5 million), of which TNO solely has economic ownership. This relates to investments in rented premises.

Notes to the consolidated balance sheet as of 31 December 2024

Applied depreciation periods in years

| | 2024 | 2023 |
|------------------------|------|------|
| Land | nil | nil |
| Buildings | 40 | 40 |
| Plant and equipment | 15 | 15 |
| Renovations | 4-15 | 4-15 |
| Computer hardware | 3-5 | 3-5 |
| Other operating assets | 5 | 5 |
| Fixtures and fittings | 10 | 10 |

3 Financial assets

| | Non-consolidated participations | | Deferred tax asset | Total |
|---|---------------------------------|--------------|--------------------|---------------|
| | Share in equity | Loans | | |
| Balance as of 31-12-2023 | 15,576 | 474 | 6,000 | 22,050 |
| Changes: | | | | |
| Acquisition of majority interest | -2,171 | | | -2,171 |
| Investments and loans granted | 5,810 | 2,587 | - | 8,397 |
| Disposals and repayments | -338 | - | - | -338 |
| Conversion loan into shares | 459 | -459 | | - |
| Value changes | 64 | - | - | 64 |
| Share of profit (loss) of participating interests | -1,161 | - | - | -1,161 |
| Movement in loans | - | -677 | | -677 |
| Dividends | -1,229 | - | - | -1,229 |
| Change in deferred tax asset | - | - | -700 | -700 |
| Balance as of 31-12-2024 | 17,010 | 1,925 | 5,300 | 24,235 |

A list of all direct and indirect participating interests of TNO is included in the notes to the company financial statements.

Deferred tax asset

| | 2024 | 2023 |
|--------------------------------------|--------------|--------------|
| Balance as of 1 January | 6,000 | 5,400 |
| Change in tax deviating measurements | -700 | 600 |
| Balance as of 31 December | 5,300 | 6,000 |

The deferred tax asset is stated at present value. For the present value calculation, an interest rate of 3.0% is used. The nominal value of the deferred tax asset is €9.7 million (2023: €10.9 million). The present value of the deferred nominal tax asset is €6.6 million (2023: €6.9 million).

Of the deferred tax asset, €4.8 million has an anticipated set-off term of more than one year (2023: €4.7 million).

Due to a limited profit target and insufficient certainty, not all tax positions can be realised. The valuation of the deferred tax asset as of 31 December 2024 was reviewed and set at €5.3 million (2023: €6.0 million).

4 Receivables

| | 31-12-2024 | 31-12-2023 |
|--------------------------------|----------------|----------------|
| Contract receivables | 50,601 | 33,584 |
| Projects in progress | 78,070 | 73,369 |
| Other receivables | 5,346 | 13,328 |
| Prepayments and accrued income | 18,396 | 14,209 |
| Total | 152,413 | 134,490 |

The other receivables with a term longer than one year amount to €0.1 million (2023: nil). Of the prepayments and accrued income, €1.4 million has a term of more than one year (2023: €1.4 million).

Notes to the consolidated balance sheet as of 31 December 2024

Projects in progress

| | 31-12-2024 | 31-12-2023 |
|--|----------------|----------------|
| Accumulated costs less provisions for losses and risks | 298,712 | 242,679 |
| Debit: Cumulative declared instalments | -364,856 | -296,330 |
| Total projects in progress | -66,144 | -53,651 |
| Of which recognised under current receivables | 78,070 | 73,369 |
| Of which recognised under current liabilities | -144,214 | 127,020 |

The 'Projects in progress' item includes a provision for losses and risks of €3.7 million (2023: €5.0 million).

5 Cash and cash equivalents

The balance of cash and cash equivalents of €394.3 million exceeds the special reserve of €17.9 million by €376.4 million.

6 General reserve

| | 2024 | 2023 |
|----------------------------------|----------------|----------------|
| Balance as of 1 January | 344,083 | 329,526 |
| Profit appropriation | 41,585 | 14,557 |
| Balance as of 31 December | 385,668 | 344,083 |

7 Statutory reserve

| | 2024 | 2023 |
|----------------------------------|--------------|--------------|
| Balance as of 1 January | 9,475 | 6,198 |
| Change | -1,597 | 3,277 |
| Balance as of 31 December | 7,878 | 9,475 |

The statutory reserve concerns non-distributable profits from participating interests measured at net asset value.

8 Special reserves

| | Balance as of 31-12-2023 | Withdrawn in 2024 | Added in 2024 | Balance as of 31-12-2024 |
|---------------------------------------|--------------------------|-------------------|---------------|--------------------------|
| Civil operating risks | 9,075 | - | - | 9,075 |
| Construction of new defence buildings | 28,530 | 35,046 | 15,333 | 8,817 |
| Total | 37,605 | 35,046 | 15,333 | 17,892 |

9 Provisions

| | Balance at 31-12-2023 | Impact consolidations/deconsolidations | Withdrawn in 2024 | Added in 2024 | Release in 2024 | Balance as of 31-12-2024 |
|---------------------------------------|-----------------------|--|-------------------|---------------|-----------------|--------------------------|
| Employee and post-employment benefits | 330 | - | 82 | - | 112 | 136 |
| Jubilee provision | 3,292 | - | 352 | 437 | - | 3,377 |
| Claims | 1,050 | - | - | - | 250 | 800 |
| Restructurings | 790 | - | 790 | - | - | - |
| Redundancies | 81 | 12 | 297 | 1,324 | 44 | 1,076 |
| Other | 7,687 | - | 2,306 | 534 | 1,057 | 4,858 |
| Total | 13,230 | 12 | 3,827 | 2,295 | 1,463 | 10,247 |

Of the other provisions, €4.6 million concerns onerous contracts (2023: €7.4 million).
 Of the provisions, approximately €7.0 million is of a long-term nature (2023: €9.4 million).

Notes to the consolidated balance sheet as of 31 December 2024

10 Long-term liabilities

| | 31-12-2024 | 31-12-2023 |
|--|---------------|---------------|
| Investment grants equalisation account | 42,869 | 36,900 |
| Other loans | 4,865 | 5,755 |
| Present value correction interest-free loans | -732 | -1,106 |
| Total | 47,002 | 41,549 |

Investment grants equalisation account

| | 2024 | 2023 |
|--|---------------|---------------|
| Balance as of 1 January | 36,900 | 40,946 |
| Impact consolidations/deconsolidations | 861 | - |
| Grants awarded | 17,081 | 6,069 |
| | 54,842 | 47,015 |
| Release added to profit for the year | -11,973 | -10,115 |
| Balance as of 31 December | 42,869 | 36,900 |

Of the investment grants equalisation account, €11.8 million has a term of less than one year (2023: €9.3 million); €6.6 million has a term of more than five years (2023: €4.7 million).

Other loans

| | 2024 | 2023 |
|--|--------------|--------------|
| Balance as of 1 January | 5,755 | 6,032 |
| Loans drawn | - | 552 |
| Repayments on loans | -170 | -572 |
| Change in short-term part of the loans | -720 | -257 |
| Balance as of 31 December | 4,865 | 5,755 |

Of the other loans, €2.2 million has a term of between one and five years (2023: €2.6 million). The remainder of the other loans, amounting to €1.9 million, has a term of more than five years (2023: €2.0 million).
No securities have been issued. The other loans are interest-free.

11 Current liabilities

| | 31-12-2024 | 31-12-2023 |
|--|----------------|----------------|
| Payables | 13,815 | 13,311 |
| Taxes and social insurance contributions | 33,925 | 32,240 |
| Holiday pay | 13,323 | 11,872 |
| Outstanding leave entitlement | 28,152 | 25,512 |
| Other liabilities | 24,820 | 26,047 |
| Accruals and deferred income | 53,129 | 37,279 |
| Accrued national government funding | 95,257 | 31,674 |
| Projects in progress | 144,214 | 127,020 |
| Total | 406,667 | 304,955 |

The other liabilities largely relate to costs accounted for in 2024 for which settlement will take place in 2025. These current liabilities do not bear interest. Accruals and deferred income largely relate to advances received in respect of specific research projects. The accruals and deferred income recognised in 2024 include €25.3 million (2023: €22.9 million) in investment grants, as well as €27.8 million (2023: €14.4 million) in advances received for research projects that must be transferred to third parties. Of the accruals and deferred income, €29.1 million has a term of more than one year (2023: €24.9 million).

TNO cannot claim back the VAT paid for non-economic activities and applies the pre-pro rata method.

This method involves elements of estimation.

Projects in progress

The 'projects in progress' item is explained under current receivables (see point 4).

Notes to the consolidated balance sheet as of 31 December 2024

Financial instruments

General

As part of its ordinary activities, TNO uses various financial instruments that expose TNO to market and/or credit risks. These financial instruments, as well as forward exchange contracts and interest rate swaps for hedging future transactions, cash flows and interest rate risks, are recognised in the balance sheet.

TNO does not trade in these financial instruments and has in place procedures and a code of conduct to limit the amount of credit risk to which it is exposed in respect of each counterparty or market. If a counterparty defaults on payments due to TNO, any risks arising from this default are limited to the market value of the relevant instruments. The contract value or notional principal amounts of the financial instruments serve only as an indication of the extent to which such financial instruments are used, and not of the amount of the credit or market risks.

Interest rate risk

The interest rate risk is limited to any changes in the market value of the loans drawn and loans granted and cash and cash equivalents. The interest rate risk for cash and cash equivalents concerns the risk of fluctuations in the fair value of the future cash flows of financial instruments due to changes in market interest rates.

As the current cash position does not bear interest at a fixed rate, TNO is exposed to interest rate risk on this position. It is preferable for all loans to have a fixed interest rate throughout their term to maturity. If a loan does not have a fixed interest rate, it is TNO's policy to use derivatives to control (interim) interest rate fluctuations. The loans are held to maturity.

Credit risk

TNO runs a credit risk by virtue of transactions. This risk relates to the loss that may occur when a counter party remains in default. This risk is limited due to the large number and diversity of parties from which TNO's receivables are due. There is only a concentration of credit risk in terms of the geographic spread of the outstanding receivables, which is concentrated in the Netherlands. TNO has spread its risk over various banks.

Market value

The market value of most of the financial instruments recognised in the balance sheet, including loans granted, (other) receivables, cash and cash equivalents and trade and other payables, approximates their carrying amount. TNO has remeasured all individual contracts by recalculating from the price at the date of inception to the price at the balance sheet date. The hedged position as of the balance sheet date and as of the date on which the hedge was entered into (€7.0 million and €6.7 million respectively) is presented in the notes. The market value of the outstanding USD forward contracts is €7.0 million and the contract value is €6.7 million (2023: €8.7 and €8.8 million). At year-end 2024, there are no GBP forward contracts (2023: nil) and no JPY forward contracts (2023: nil).

Off-balance sheet assets and liabilities

As of 31 December 2024, the total operating lease liabilities for the period from 2024 to 2029 inclusive amounted to approximately €6.6 million (2023: €5.0 million), of which €2.5 million falls due in 2025 (2023: €2.2 million) and €4.1 million (2023: €2.8 million) falls due between one and five years. In 2024, the operating lease payments amounted to €3.5 million (2022: €2.9 million).

Rental obligations totalled €177.4 million (2023: €139.2 million), of which €23.5 million (2023: €22.8 million) falls due within one year, €80.5 million (2023: €62.2 million) falls due between one and five years, and €73.4 million (2023: €54.2 million) falls due in more than five years. In 2024, the amount paid in rent was €26.9 million (2023: €19.7 million).

As of 31 December 2024, investment obligations in respect of property, plant and equipment totalled €2.3 million (2023: €1.9 million). As of 31 December 2024, a TNO subsidiary, TNO Tech Transfer Holding BV, has investment obligations totalling €4.8 million (2023: €5.1 million) in a number of funds in which it participates.

The total of bank guarantees issued is €1.2 million (2023: €1.1 million). The total credit facility and bank guarantee facility amount to €13.3 million (2023: €13.3 million) and €11.0 million (2023: €11.0 million), respectively.



Notes to the consolidated balance sheet as of 31 December 2024

Other securities and conditions for the total credit facility consist of:

- negative pledge/pari passu and cross-default clause;
- joint account and co-liability agreement (CJMO), security type: RC plus one party.

As at year-end 2024, the sureties furnished totalled nil (2023: nil).

TNO is currently a litigant in various legal proceedings that relate to its ordinary activities.

TNO does not expect that the total liabilities arising from these proceedings will be of material significance to its financial position.

Provisions have been made for all disputes and legal proceedings based on the nominal value of the expenditures that are expected to be required to settle the liabilities and losses.

Notes to the 2024 consolidated income statement

(in thousands of euros)

12 Revenue

| | 2024 | 2023 |
|--------------------|----------------|----------------|
| Contract revenue | 403,294 | 348,011 |
| Government funding | 361,004 | 339,787 |
| Total | 764,298 | 687,798 |

Revenue includes the change in projects in progress of negative €13.0 million (2023: positive €14.4 million).

Contract revenue

Contract revenue breaks down by category as follows:

| | 2024 | 2023 |
|---|----------------|----------------|
| Domestic contract revenue | | |
| Government | 183,912 | 145,079 |
| Industry | 111,678 | 91,365 |
| Total domestic contract revenue | 295,590 | 236,444 |
| International contract revenue | | |
| International organisations | 10,180 | 6,774 |
| Other | 97,524 | 104,793 |
| Total international contract revenue | 107,704 | 111,567 |
| Total | 403,294 | 348,011 |

13 Other operating income

| | 2024 | 2023 |
|---|---------------|---------------|
| Gain (loss) on disposals of property, plant and equipment | -58 | 22 |
| Other income | 21,554 | 14,595 |
| Total | 21,496 | 14,617 |

Other income includes income from licences and patents, non-project-related income and costs charged on to external parties.

14 Direct project costs

Direct project costs are defined as the tangible costs (including costs of outsourced work) that are directly attributable to a project.

15 Personnel expenses

| | 2024 | 2023 |
|---|----------------|----------------|
| Wages and salaries | 344,640 | 304,836 |
| Pension costs | 46,298 | 40,750 |
| Other social expenses | 51,902 | 44,273 |
| Other personnel expenses | 66,562 | 61,245 |
| Change in outstanding leave entitlement | 2,078 | 4,650 |
| Utilisation and release of provisions: | | |
| - employee and post-employment benefits | -194 | -88 |
| - jubilee | -352 | -372 |
| - redundancies | -340 | -494 |
| - restructurings | -790 | -713 |
| | 509,804 | 454,087 |
| Addition to provisions: | | |
| - employee and post-employment benefits | - | - |
| - jubilee | 437 | 580 |
| - restructurings | - | - |
| - redundancies | 1,324 | 317 |
| Total | 511,565 | 454,984 |

Notes to the 2024 consolidated income statement

The average number of FTEs for 2024 is 4,207, of which 3 are outside the Netherlands (2023: 3,811, of which 3 are outside the Netherlands). The remuneration, including pension contributions, of the members of TNO's Executive Board totalled €0.7 million (2023: €0.7 million). The remuneration of the members of TNO's Supervisory Board totalled €0.1 million (2023: €0.1 million).

As of 31 December 2023, the preliminary policy funding ratio of Stichting Pensioenfonds TNO (12-month rolling average of the market value of the plan assets expressed as a percentage of the defined benefit obligation according to the accounting policies of the Dutch central bank (DNB)) came to 123.4% (31 December 2023: 122.6%). From 1 January 2024, pensions will be indexed at 0%. As of 1 January 2025, the total of missed indexations is 10.3%.

The social partners have set the premium for 2025 at 20.34% (2024: 20.34%). This allows for an accrual rate of 1.75% (2024: 1.75%).

16 Amortisation of intangible assets

| | 2024 | 2023 |
|--|--------------|------------|
| Amortisation on: | | |
| - goodwill | 1,295 | 470 |
| | 1,295 | 470 |
| Release from: | | |
| - investment grants equalisation account | -545 | - |
| Total | 750 | 470 |

17 Depreciation of property, plant and equipment

| | 2024 | 2023 |
|--|---------------|---------------|
| Amortisation on: | | |
| - buildings | 1,902 | 1,902 |
| - plant and equipment | 10,478 | 10,703 |
| - other operating assets | 24,241 | 21,229 |
| - fixtures and fittings | 1,378 | 1,297 |
| - Property, plant and equipment not used in operations | 454 | 659 |
| | 38,453 | 35,790 |
| Release from: | | |
| - investment grants equalisation account | -11,428 | -10,115 |
| Total | 27,025 | 25,675 |

18 Other operating expenses

| | 2024 | 2023 |
|---------------------------------|----------------|----------------|
| Accommodation costs | 65,974 | 55,558 |
| Costs of materials | 6,107 | 6,391 |
| Use of operating assets | 20,858 | 18,398 |
| General administrative expenses | 28,871 | 23,442 |
| Outsourced work | 18,068 | 17,186 |
| Changes in provisions | -3,080 | -1,087 |
| Other expenses | 17,770 | 11,380 |
| Contributions paid | 557 | 1,058 |
| Total | 155,125 | 132,326 |

Notes to the 2024 consolidated income statement

19 Finance income and expenses

| | 2024 | 2023 |
|----------------------|---------------|--------------|
| Interest income | 12,885 | 8,950 |
| Interest expenses | -448 | -1 |
| Exchange differences | -24 | 20 |
| Total | 12,413 | 8,969 |

20 Corporation tax

| | 2024 | 2023 |
|------------------------------|--------------|--------------|
| Current tax expense | | |
| Current financial year | 7,060 | 5,009 |
| Previous financial year | -41 | 204 |
| Deferred tax expense | | |
| Change in deferred tax asset | 700 | -600 |
| Total | 7,719 | 4,613 |

When TNO first became liable for corporation tax, the opening tax balance sheet was prepared on the basis of the applicable tax accounting policies. A deferred tax asset was formed for the difference between the valuation on the fiscal balance sheet (tax base) and the balance sheet for reporting purposes (commercial carrying amount). The commercial measurement is lower than the fiscal measurement, which results in a deferred tax asset of €5.3 million (2023: €6.0 million).

The reconciliation between the Dutch nominal tax rate and effective tax rate is as follows:

| | 2024 | 2023 |
|---|--------------|--------------|
| Nominal tax rate in the Netherlands | 25.8% | 25.8% |
| Non-tax-deductible items and restatements for prior financial years | 0.1% | -0.8% |
| Effective tax burden | 25.9% | 25.0% |

21 Share of profit (loss) of participating interests

| | 2024 | 2023 |
|--|---------------|--------------|
| Participating interests: | | |
| - Non-consolidated participating interests | -1,161 | 2,112 |
| - Result on loans and other investments | -677 | -559 |
| - Disposal of participating interests | -56 | 915 |
| Total | -1,894 | 2,468 |

22 Auditor's fee

The following fees as referred to in Article 2:382a of the Dutch Civil Code were charged to TNO, its subsidiaries and other consolidated companies by Ernst & Young.

| | 2024 | 2023 |
|-----------------------------------|------------|------------|
| Audit of the financial statements | 345 | 345 |
| Other audit engagements | 306 | 288 |
| Other non-audit services | 240 | 96 |
| Total | 891 | 729 |

This statement does not include fees of €0.1 million charged by external auditors to our majority shareholdings for the review of their financial statements.

22 Subsequent events

There are no significant events after the balance sheet date.



TNO balance sheet as of 31 December 2024

(in thousands of euros)

after profit appropriation

| | Note | 31-12-2024 | 31-12-2023 |
|-------------------------------|------|----------------|----------------|
| Fixed assets | | | |
| Intangible assets | 1 | 1,530 | 2,000 |
| Property, plant and equipment | 2 | 281,498 | 241,823 |
| Financial assets | 3 | 148,849 | 154,312 |
| | | 431,877 | 398,135 |
| Current assets | | | |
| Inventories | | 168 | 212 |
| Receivables | 4 | 148,198 | 126,975 |
| Cash and cash equivalents | | 282,701 | 219,921 |
| | | 431,067 | 347,108 |
| Total | | 862,944 | 745,243 |

| | Note | 31-12-2024 | 31-12-2023 |
|------------------------------|------|----------------|----------------|
| Equity | | | |
| General reserve | | 385,668 | 344,083 |
| Statutory reserve | | 7,878 | 9,475 |
| Special reserves | | 17,892 | 37,605 |
| | 5 | 411,438 | 391,163 |
| Provisions | 6 | 10,165 | 13,230 |
| Long-term liabilities | 7 | 41,541 | 41,549 |
| Current liabilities | 8 | 399,800 | 299,301 |
| Total | | 862,944 | 745,243 |



TNO 2024 income statement

(in thousands of euros)

| | Note | 2024 | 2023 |
|--|------|-----------------|-----------------|
| Domestic and international contract revenue | | 196,733 | 202,760 |
| Contract revenue government | | 183,912 | 145,079 |
| Market sales | | 380,645 | 347,839 |
| Collaborative Research Funding | | 200,494 | 201,498 |
| Task financing | | 160,510 | 138,289 |
| National government contribution | | 361,004 | 339,787 |
| Revenue | 9 | 741,649 | 687,626 |
| Other operating income | | 22,624 | 14,929 |
| Total operating income | | 764,273 | 702,555 |
| Direct project costs | | -72,787 | -79,546 |
| Personnel expenses | 10 | -499,415 | -454,640 |
| Amortisation intangible assets | | -470 | -470 |
| Depreciation of property, plant and equipment | | -25,542 | -24,848 |
| Impairment losses property, plant and equipment | | -229 | -419 |
| Other operating expenses | | -148,769 | -131,904 |
| Total operating expenses | | -747,212 | -691,827 |
| Operating profit (loss) | | 17,061 | 10,728 |
| Finance income and expenses | 11 | 8,227 | 6,018 |
| Result before extraordinary income and charges | | 25,288 | 16,746 |
| Extraordinary income | | - | - |
| Extraordinary charges | | - | - |
| Profit (loss) from ordinary activities before tax | | 25,288 | 16,746 |
| Corporation tax | 12 | -6,221 | -4,732 |
| Share of profit (loss) of participating interests | | 1,208 | 4,352 |
| Net profit (loss) | | 20,275 | 16,366 |



Notes to the TNO 2024 financial statements

General

TNO's mission is to create impactful innovations for the sustainable well-being and prosperity of society.

Name: Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek TNO.

Legal form: Public corporate body with statutory task.

Chamber of Commerce number: 27376655

TNO has its registered office in Delft, the Netherlands.

Accounting policies

As regards the accounting policies, reference is made to the notes to the consolidated financial statements. This also applies to the other notes, to the extent they are not included below. The TNO financial statements are the separate financial statements for the TNO organisation.



Notes to the TNO balance sheet as of 31 December 2024

(in thousands of euros)

1 Intangible assets

Changes in intangible assets in 2024:

| | Goodwill |
|---|--------------|
| Balance as of 31-12-2023 | |
| Cost of acquisition | 4,705 |
| Accumulated amortisation and impairment | -2,705 |
| Carrying amount | 2,000 |
| Change in carrying amount | |
| Amortisation | -470 |
| | -470 |
| Balance as of 31-12-2024 | |
| Cost of acquisition | 4,705 |
| Accumulated amortisation and impairment | -3,175 |
| Carrying amount | 1,530 |

On 1 April 2018, TNO took over the energy activities of Stichting Energieonderzoek Centrum Nederland (NRG). The acquisition was measured according to the purchase accounting method. The goodwill amounted to €4.7 million and is amortised over a period of 10 years.

As of 31 December 2024, there was no reason to recognise an impairment loss.

Notes to the TNO balance sheet as of 31 December 2024

2 Property, plant and equipment

Changes in property, plant and equipment in 2024:

| | Land and buildings | Plant and equipment | Other operating assets | Fixtures and fittings | Assets under con- struction and devel- opment | Property, plant and equipment not used in operations | Total |
|--|-----------------------|---------------------------|------------------------------|--------------------------|---|--|----------------|
| Balance as of 31-12-2023 | | | | | | | |
| Cost of acquisition | 113,239 | 155,659 | 181,541 | 12,140 | 53,766 | 19,665 | 536,010 |
| Accumulated depreciation and impairment | -64,771 | -90,841 | -116,426 | -6,594 | - | -15,555 | -294,187 |
| Carrying amount | 48,468 | 64,818 | 65,115 | 5,546 | 53,766 | 4,110 | 241,823 |
| Change in carrying amount | | | | | | | |
| Investments | - | 1,084 | 11,858 | 620 | - | - | 13,562 |
| Disposals | - | -4 | -1,317 | -12 | - | - | -1,333 |
| Reclassifications | 517 | -1,864 | - | - | - | 1,347 | 0 |
| Reclassifications of cumulative depreciation | -517 | 374 | - | - | - | 143 | 0 |
| Impairment losses | -89 | -209 | 69 | - | - | - | -229 |
| Depreciation | -1,813 | -10,087 | -22,783 | -1,348 | - | -634 | -36,665 |
| Assets under construction and development recognised in financial year | - | 17,211 | 14,857 | 43 | -32,910 | 799 | 0 |
| Disposal of assets under construction | - | - | - | - | -759 | - | -759 |
| Assets under construction, new investments in 2024 | - | - | - | - | 65,099 | - | 65,099 |
| | -1,902 | 6,505 | 2,684 | -697 | 31,430 | 1,655 | 39,675 |
| Balance as of 31-12-2024 | | | | | | | |
| Cost of acquisition | 113,756 | 172,134 | 180,549 | 12,582 | 85,196 | 21,049 | 585,266 |
| Accumulated depreciation and impairment | -67,190 | -100,811 | -112,750 | -7,733 | - | -15,284 | -303,768 |
| Carrying amount | 46,566 | 71,323 | 67,799 | 4,849 | 85,196 | 5,765 | 281,498 |

The 'depreciation of property, plant and equipment' item recognised in the income statement also includes the release from the investment grants equalisation account. The carrying amount of property, plant and equipment as of 31 December 2024 includes land, buildings, plant and equipment in the amount of €38.2 million (2023: €32.5 million), of which TNO solely has economic ownership. This relates to investments in rented premises.

Notes to the TNO balance sheet as of 31 December 2024

3 Financial assets

| | Group companies | Loans | Deferred tax asset | Total |
|---|-----------------|----------|--------------------|----------------|
| | Share in equity | | | |
| Balance as of 31-12-2023 | 141,725 | 6,887 | 5,700 | 154,312 |
| Changes: | | | | |
| Investments and loans granted | 2,217 | - | - | 2,217 |
| Disposals and repaid loans | - | -6,887 | - | -6,887 |
| Share of profit (loss) of participating interests | 1,208 | - | - | -1,208 |
| Dividends | -1,601 | - | - | -1,601 |
| Change in deferred tax asset | - | - | -400 | -400 |
| Balance as of 31-12-2024 | 143,549 | - | 5,300 | 148,849 |

Of the 'loans' item, €0.0 million relates to loans to group companies (2023: €6.9 million).

Deferred tax asset

| | 2024 | 2023 |
|----------------------------------|--------------|--------------|
| Balance as of 1 January | 5,700 | 5,400 |
| Tax deviating measurements | -400 | 300 |
| Balance as of 31 December | 5,300 | 5,700 |

The deferred tax asset is stated at present value. For the present value calculation, an interest rate of 3.0% is used. The nominal value of the deferred tax asset is €9.7 million (2023: €10.6 million).

The present value of the deferred nominal tax asset is €6.6 million (2023: €6.6 million). Of the deferred tax asset, €4.8 million has an anticipated set-off term of more than one year (2023: €4.7 million).

Due to a limited profit target and insufficient certainty, not all tax positions can be realised. The measurement of the deferred tax asset as of 31 December 2024 was reviewed and set at €5.3 million (2023: €5.7 million).

4 Receivables

| | 31-12-2024 | 31-12-2023 |
|----------------------------------|----------------|----------------|
| Contract receivables | 48,273 | 33,536 |
| Receivables from group companies | 533 | - |
| Projects in progress | 77,945 | 73,369 |
| Other receivables | 3,051 | 5,861 |
| Prepayments and accrued income | 18,396 | 14,209 |
| Total | 148,198 | 126,975 |

The other receivables with a term longer than one year amount to €0.1 million (2023: nil). Of the prepayments and accrued income, €1.4 million has a term of more than one year (2023: €1.4 million).

Projects in progress

| | 31-12-2024 | 31-12-2023 |
|--|----------------|----------------|
| Accumulated costs less provisions for losses and risks | 296,498 | 242,679 |
| Debit: Cumulative declared instalments | -361,263 | -296,330 |
| Total projects in progress | -64,765 | -53,651 |
| Of which recognised under current receivables | 77,945 | 73,369 |
| Of which recognised under current liabilities | -142,710 | -127,020 |

The 'Projects in progress' item includes a provision for losses and risks of €3.7 million (2023: €5.0 million).

5 Equity

For information on TNO's equity, please refer to the notes on the 'Equity' item in the consolidated financial statements.

Notes to the TNO balance sheet as of 31 December 2024

6 Provisions

| | Balance as of 31-12-2023 | Withdrawn in 2024 | Added in 2024 | Release in 2024 | Balance as of 31-12-2024 |
|---------------------------------------|--------------------------------|----------------------|------------------|--------------------|--------------------------------|
| Employee and post-employment benefits | 330 | 82 | - | 112 | 136 |
| Jubilee provision | 3,292 | 352 | 437 | - | 3,377 |
| Claims | 1,050 | - | - | 250 | 800 |
| Restructurings | 790 | 790 | - | - | - |
| Redundancies | 80 | 285 | 1,242 | 43 | 994 |
| Other | 7,688 | 2,307 | 534 | 1,057 | 4,858 |
| Total | 13,230 | 3,816 | 2,213 | 1,462 | 10,165 |

Of the other provisions, €4.6 million concerns onerous contracts (2023: €7.4 million).
Of the provisions, approximately €7.0 million is of a long-term nature (2023: €9.4 million).

7 Long-term liabilities

| | 31-12-2024 | 31-12-2023 |
|--|---------------|---------------|
| Investment grants equalisation account | 37,408 | 36,900 |
| Other loans | 4,865 | 5,755 |
| Present value correction interest-free loans | -732 | -1,106 |
| Total | 41,541 | 41,549 |

Of the investment grants equalisation account, €11.0 million has a term of less than one year (2023: €9.3 million) and €4.4 million has a term of more than five years (2023: €4.7 million). No securities have been issued. The other loans are interest-free. Of the other loans, €2.2 million has a term of between one and five years (2023: €2.6 million). The remainder of the other loans, amounting to €1.9 million, has a term of more than five years (2023: €2.0 million). See the consolidated financial statements for a statement of changes of the equalisation account and other loans.

8 Current liabilities

| | 31-12-2024 | 31-12-2023 |
|--|----------------|----------------|
| Payables | 12,832 | 13,226 |
| Amounts owed to group companies | 32 | - |
| Taxes and social insurance contributions | 33,453 | 32,107 |
| Holiday pay | 12,977 | 11,872 |
| Outstanding leave entitlement | 27,590 | 25,512 |
| Other liabilities | 21,820 | 20,610 |
| Accruals and deferred income | 53,129 | 37,280 |
| Accrued national government funding | 95,257 | 31,674 |
| Projects in progress | 142,710 | 127,020 |
| Total | 399,800 | 299,301 |

Of the other liabilities, €6.7 million has a term of more than one year (2023: €22.5 million). These current liabilities do not bear interest. Accruals and deferred income largely relate to advances received in respect of specific research projects. Of the accruals and deferred income, €29.1 million has a term of more than one year (2023: €24.9 million). TNO cannot claim back the VAT paid for non-economic activities and applies the pre-pro rata method. This method involves elements of estimation.

Projects in progress

The 'projects in progress' item is explained under current receivables (see point 4).



Notes to the 2024 TNO income statement

(in thousands of euros)

9 Revenue

| | 2024 | 2023 |
|--|----------------|----------------|
| Domestic industry contract revenue | 89,030 | 91,193 |
| International organisations contract revenue | 10,179 | 6,774 |
| International contract revenue | 97,524 | 104,793 |
| Total international contract revenue | 107,703 | 111,567 |
| Government contract revenue | 183,912 | 145,079 |
| Market sales | 380,645 | 347,839 |
| National government contribution | 361,004 | 339,787 |
| Total | 741,649 | 687,626 |

Revenue includes the change in projects in progress of negative €11.1 million (2023: positive €14.4 million).

10 Personnel expenses

| | 2024 | 2023 |
|---|----------------|----------------|
| Wages and salaries | 336,541 | 304,782 |
| Pension costs | 45,193 | 40,750 |
| Other social expenses | 50,601 | 44,253 |
| Other personnel expenses | 64,987 | 60,975 |
| Change in outstanding leave entitlement | 2,078 | 4,650 |
| Changes in provisions | 15 | -770 |
| Total | 499,415 | 454,640 |

The average number of FTEs for 2024 is 4,098, of which 1 is outside the Netherlands (2023: 3,809, of which 1 is outside the Netherlands).

The remuneration, including pension contributions, of the members of TNO's Executive Board totalled €0.7 million (2023: €0.7 million).

The remuneration of the members of TNO's Supervisory Board totalled €0.1 million (2023: €0.1 million).

11 Finance income and expenses

| | 2024 | 2023 |
|----------------------|--------------|--------------|
| Interest income | 8,698 | 5,999 |
| Interest expenses | -447 | -1 |
| Exchange differences | -24 | 20 |
| Total | 8,227 | 6,018 |

12 Corporation tax

| | 2024 | 2023 |
|------------------------------|--------------|--------------|
| Current tax expense | | |
| Current financial year | 5,862 | 4,828 |
| Previous financial year(s) | -41 | 204 |
| Deferred tax expense | | |
| Change in deferred tax asset | 400 | -300 |
| Total | 6,221 | 4,732 |

When TNO first became liable for corporation tax, the opening tax balance sheet was prepared on the basis of the applicable tax accounting policies.

A deferred tax asset was formed for the difference between the valuation on the fiscal balance sheet (tax base) and the balance sheet for reporting purposes (commercial carrying amount). The commercial measurement is lower than the fiscal measurement, which results in a deferred tax asset of €5.3 million (2023: €5.7 million).



Notes to the 2024 TNO income statement

The reconciliation between the Dutch nominal tax rate and effective tax rate is as follows:

| | 2024 | 2023 |
|---|--------------|--------------|
| Nominal tax rate in the Netherlands | 25.8% | 25.8% |
| Non-tax-deductible items and restatements for prior financial years | -1.2% | 2.5% |
| Effective tax burden | 24.6% | 28.3% |

The taxable profit for 2024 amounts to €22.8 million. This taxable profit results in a current tax expense of €5.9 million (i.e. a tax rate of 25.8%).

13 Subsequent events

There are no significant events after the balance sheet date.



Report of TNO compliance with the standards for remuneration (WNT) for 2024

(in € x 1)

The Senior Officials in the Public and Semi-Public Sector (Standards for Remuneration) Act (WNT) came into effect on 1 January 2013. This compliance report has been prepared based on the following regulation applicable to TNO: The general maximum remuneration under the WNT Act.

The maximum remuneration for TNO in 2024 was €233,000.00. This has been determined on the basis of the Reduction of Maximum Remuneration (WNT) Act (Wet verlaging bezoldigingsmaximum WNT), which came into effect on 1 January 2015. The displayed applicable WNT maximum per person or per position is calculated in proportion to the magnitude (and for senior officials also the duration) of employment, where for the purpose of calculation the magnitude of employment can never exceed 1.0 FTE.

An exception applies to the Supervisory Board. The WNT maximum for the Chair and the other members of the Supervisory Board is 15% and 10%, respectively, of the applicable general WNT maximum.

The identified senior management officials of TNO are not employed as senior management officials at multiple institutions that fall under the WNT (under employment contracts entered into effective from 1 January 2018).

Mr Werkhoven is no longer a member of the TNO Executive Board with effect from 1 January 2023. As a former senior official, he will be regulated as a senior management official until 2026.

Remuneration of senior officials

1. Senior management officials

Details for 2024

| | Dr. T.B.P.M. Tjin-A-Tsoi | Drs. S.M. Swarte RC | Ir. M.G.L.H. Tossings | Prof. P.J. Werkhoven |
|---|-----------------------------------|-------------------------------|-------------------------------|--|
| Position details | Member of Executive Board (Chair) | Member of the Executive Board | Member of the Executive Board | Former member of Executive Board / Chief Scientist |
| Position start and end date in 2024 | 01/01 - 31/12 | 01/01 - 31/12 | 01/01 - 31/12 | 01/01 - 31/12 |
| Employment in FTEs | 1.0 | 1.0 | 1.0 | 0.75 |
| Employed? | yes | yes | yes | yes |
| Remuneration | | | | |
| Remuneration plus taxable expense allowances | 216,515.04 | 216,512.16 | 216,172.24 | 152,646.44 |
| Long-term and post-employment benefits | 16,472.16 | 16,472.16 | 16,472.16 | 12,354.12 |
| Subtotal | 232,987.20 | 232,984.32 | 232,644.40 | 165,000.56 |
| Applicable individual maximum remuneration | 233,000.00 | 233,000.00 | 233,000.00 | 174,750.00 |
| -/- amount paid in excess of statutory maximum that has not been refunded yet | n/a | n/a | n/a | n/a |
| Total remuneration for 2024 | 232,987.20 | 232,984.32 | 232,644.40 | 165,000.56 |
| Further information about the claim for undue payment | n/a | n/a | n/a | n/a |



Report of TNO compliance with the standards for remuneration (WNT) for 2024

Details for 2023

| | Dr. T.B.P.M. Tjin-A-Tsoi | Drs. S.M. Swarte RC | Ir. M.G.L.H. Tossings | Prof. P.J. Werkhoven |
|---|-----------------------------------|-------------------------------|-------------------------------|--|
| Position details | Member of Executive Board (Chair) | Member of the Executive Board | Member of the Executive Board | Former member of Executive Board / Chief Scientist |
| Position start and end date in 2023 | 01/01 - 31/12 | 01/01 - 31/12 | 01/01 - 31/12 | 01/01 - 31/12 |
| Employment in FTEs | 1.0 | 1.0 | 1.0 | 0.75 |
| Employed? | yes | yes | yes | yes |
| Remuneration | | | | |
| Remuneration plus taxable expense allowances | 207,548.64 | 207,546.12 | 207,329.96 | 149,357.09 |
| Long-term and post-employment benefits | 15,444.36 | 15,444.36 | 15,444.36 | 11,583.25 |
| Total remuneration for 2023 | 222,993.00 | 222,990.48 | 222,774.32 | 160,940.34 |
| Applicable individual maximum remuneration | 223,000.00 | 223,000.00 | 223,000.00 | 167,250.00 |
| -/- amount paid in excess of statutory maximum that has not been refunded yet | n/a | n/a | n/a | n/a |



Report of TNO compliance with the standards for remuneration (WNT) for 2024

2. Supervisory Board members (1)

Details for 2024

| | Mr. P.G. de Vries | Prof. dr. ir. H. Bijl | Ir. J.B.P. Coopmans | Drs. M.R. van Dongen | Prof. M.P. Hekkert |
|---|--|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| Position details | Member of Supervisory Board (Chair) | Member of Supervisory Board | Member of Supervisory Board | Member of Supervisory Board | Member of Supervisory Board |
| Position start and end date in 2024 | 01/01 - 31/12 | 01/01 - 31/12 | 01/01 - 31/12 | 01/11 - 31/12 | 01/01 - 31/12 |
| Remuneration | | | | | |
| Remuneration plus taxable expense allowances | 32,940.00 | 21,288.00 | 21,288.00 | 3,548.00 | 21,288.00 |
| Applicable individual maximum remuneration | 34,950.00 | 23,300.00 | 23,300.00 | 3,883.33 | 23,300.00 |
| -/- amount paid in excess of statutory maximum that has not been refunded yet | n/a | n/a | n/a | n/a | n/a |
| Total remuneration for 2024 | 32,940.00 | 21,288.00 | 21,288.00 | 3,548.00 | 21,288.00 |
| Reason why the transgression is permitted or not | n/a | n/a | n/a | n/a | n/a |
| Further information about the claim for undue payment | n/a | n/a | n/a | n/a | n/a |

Details for 2023

| | Mr. P.G. de Vries | Prof. dr. ir. H. Bijl | Ir. J.B.P. Coopmans | Drs. M.R. van Dongen | Prof. M.P. Hekkert |
|--|--|--------------------------------|--------------------------------|----------------------|--------------------------------|
| Position details | Member of Supervisory Board (Chair) | Member of Supervisory Board | Member of Supervisory Board | | Member of Supervisory Board |
| Position start and end date in 2023 | 01/01 - 31/12 | 01/01 - 31/12 | 01/01 - 31/12 | | 01/01 - 31/12 |
| Total remuneration for 2023 | | | | | |
| Remuneration plus taxable expense allowances | 31,440.00 | 20,292.00 | 20,292.00 | | 20,292.00 |
| Applicable individual maximum remuneration | 33,450.00 | 22,300.00 | 22,300.00 | | 22,300.00 |



Report of TNO compliance with the standards for remuneration (WNT) for 2024

2. Supervisory Board members (2)

[Details for 2024](#)

| | Dr. ir. P.J.M. van Laarhoven | Drs. J.D. Lamse-Minderhoud RA | Ir. L. Verheij van Wijk |
|---|--------------------------------|--------------------------------|--------------------------------|
| Position details | Member of Supervisory Board | Member of Supervisory Board | Member of Supervisory Board |
| Position start and end date in 2024 | 01/01 - 31/12 | 01/01 - 31/10 | 01/01 - 31/12 |
| Remuneration | | | |
| Remuneration plus taxable expense allowance | 21,288.00 | 17,740.00 | 21,288.00 |
| Individually applicable maximum remuneration | 23,300.00 | 19,416.67 | 23,300.00 |
| -/- amount paid in excess of statutory maximum that has not been refunded yet | n/a | n/a | n/a |
| Total remuneration for 2024 | 21,288.00 | 17,740.00 | 21,288.00 |
| Reason why the transgression is permitted or not | n/a | n/a | n/a |
| Further information about the claim for undue payment | n/a | n/a | n/a |

[Details for 2023](#)

| | Dr. ir. P.J.M. van Laarhoven | Drs. J.D. Lamse-Minderhoud RA | Ir. L. Verheij van Wijk |
|--|--------------------------------|--------------------------------|--------------------------------|
| Position details | Member of Supervisory Board | Member of Supervisory Board | Member of Supervisory Board |
| Position start and end date in 2023 | 01/01 - 31/12 | 01/01 - 31/12 | 01/01 - 31/12 |
| Total remuneration for 2023 | 20,292.00 | 20,292.00 | 20,292.00 |
| Individually applicable maximum remuneration | 22,300.00 | 22,300.00 | 22,300.00 |



Report of TNO compliance with the standards for remuneration (WNT) for 2024

3. Remuneration of non-senior officials (1)

The maximum remuneration does not apply to these officials. Disclosure of their remuneration is mandatory, however.

Details for 2024

| Position details | Director | Director | Director | Director | Director |
|---|-------------------|-------------------|-------------------|-------------------|-------------------|
| Position start and end date in 2024 | 01/01 - 31/12 | 01/01 - 31/12 | 01/01 - 31/12 | 01/01 - 31/12 | 01/01 - 31/12 |
| Employment in FTEs | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Remuneration | | | | | |
| Remuneration plus taxable expense allowances | 235,401.88 | 235,951.21 | 218,853.08 | 228,248.20 | 225,206.26 |
| Long-term and post-employment benefits | 16,472.16 | 16,472.16 | 16,472.16 | 16,472.16 | 16,472.16 |
| Total remuneration for 2024 | 251,874.04 | 252,423.37 | 235,325.24 | 244,720.36 | 241,678.42 |
| Individually applicable remuneration threshold | 233,000.00 | 233,000.00 | 233,000.00 | 233,000.00 | 223,000.00 |
| Mandatory justification for exceeding the individually applicable remuneration threshold | a | a | a | a | a |

a. The WNT does not apply to these officials. Disclosure of their remuneration is mandatory, however. The remuneration threshold is exceeded due to remuneration arrangements that were agreed when these officials were appointed.

Details for 2023

| Position details | Director | Director | Director | Director |
|--|-------------------|-------------------|-------------------|-------------------|
| Position start and end date in 2023 | 01/01 - 31/12 | 01/01 - 31/12 | 01/01 - 31/12 | 01/01 - 31/12 |
| Employment in FTEs | 1.0 | 1.0 | 1.0 | 1.0 |
| Remuneration | | | | |
| Remuneration plus taxable expense allowances | 229,520.56 | 224,198.75 | 210,531.32 | 214,648.47 |
| Long-term and post-employment benefits | 15,444.36 | 15,444.36 | 15,444.36 | 15,444.36 |
| Total remuneration for 2023 | 244,964.92 | 239,643.11 | 225,975.68 | 230,092.83 |



Report of TNO compliance with the standards for remuneration (WNT) for 2024

3. Remuneration of non-senior officials (2)

The maximum remuneration does not apply to these officials. Disclosure of their remuneration is mandatory, however.

Details for 2024

| | |
|---|-------------------|
| Position details | Director |
| Position start and end date in 2024 | 01/01 - 31/12 |
| Employment in FTEs | 1.0 |
| Remuneration | |
| Remuneration plus taxable expense allowances | 218,296.24 |
| Long-term and post-employment benefits | 16,472.16 |
| Total remuneration for 2024 | 234,768.40 |
| Individually applicable remuneration threshold | 233,000.00 |
| Mandatory justification for exceeding the individually applicable remuneration threshold | a |

- a. The WNT does not apply to these officials. Disclosure of their remuneration is mandatory, however.
The remuneration threshold is exceeded due to remuneration arrangements that were agreed when these officials were appointed.



Details of participating interests

As at year-end 2024, TNO has direct participating interests in the following companies

| Name | Registered office | Percentage |
|-----------------------------------|-------------------|------------|
| TNO Affiliates Holding BV | Delft | 100% |
| TNO Japan KK / TNO Japan Co. Ltd | Yokohama | 100% |
| TNO South Korea LLC | Seoul | 100% |
| TNO Tech Transfer Holding BV | Delft | 100% |
| VSL BV (via Holland Metrology BV) | Delft | 100% |
| Peregrion BV | Leiden | 91% |

The following companies are not consolidated

| Name | Registered office | Percentage |
|---|--------------------------------------|------------|
| Blue Heart Energy BV | Alkmaar | 6% |
| Innovation Industries Fund II Coöperatief UA | Amsterdam | <1% |
| Innovation Industries Fund III Coöperatief UA | Amsterdam | <1% |
| MILENA-OLGA Joint Innovation BV | Amsterdam | 50% |
| SHIFT Invest III Coöperatief UA | Amsterdam | 2% |
| Sightlabs BV | Amsterdam | 19% |
| Studio Automated Holding BV | Amsterdam | 25% |
| VCC Deep Tech Fund Coöperatief UA | Bilthoven (Municipality of De Bilt) | 2% |
| Cellcius BV | Breda | 15% |
| Linksight BV | Bunnik | 20% |
| TORWASH BV | Burgerbrug (Municipality of Schagen) | 25% |
| Nearfield Instruments BV | Delft | 6% |
| Orange Quantum Systems Holding BV | Delft | 13% |
| Relement BV | Delft | 47% |
| TBQ BV | Delft | 22% |
| Valley Optics Holding BV | Delft | 17% |
| Novatrust BV | Delft | 20% |
| Aircision BV | Eindhoven | 7% |
| AMSYSTEMS BV | Eindhoven | 23% |

The following companies are not consolidated

| Name | Registered office | Percentage |
|---|-------------------|------------|
| Carbyon Initial Investors Capital BV | Eindhoven | 44% |
| DeeptechXL Fund I Coöperatief UA | Eindhoven | 2% |
| Eindhoven Engine BV | Eindhoven | 33% |
| FononTech Holding BV | Eindhoven | 7% |
| HighTechXL Group BV | Eindhoven | 15% |
| istart.nl Fund Coöperatief UA | Eindhoven | 7% |
| Keiron Printing Technologies BV | Eindhoven | 10% |
| LionVolt BV | Eindhoven | 18% |
| Lumo Fund II Coöperatief UA | Eindhoven | 5% |
| SparkNano BV | Eindhoven | 22% |
| touchwaves BV | Eindhoven | 20% |
| TracXon BV | Eindhoven | 43% |
| AIKON Technologies BV | Eindhoven | 25% |
| PhotonVentures Fund I Coöperatief UA | Eindhoven | 1% |
| Innovation Industries Fund Coöperatief UA | Enschede | 2% |
| SHM Next BV | The Hague | 20% |
| Urban Strategy Holding BV | The Hague | 25% |
| UNIIQ BV | The Hague | <1% |
| Newton Energy Solutions Holding BV | Haarlemmermeer | 12% |
| Movanta Holding BV | Heemstede | 20% |
| RetinaScope BV | Naarden | 20% |
| STAK Leydenjar Technologies Investors | Oegstgeest | 2% |
| Delta Diagnostics BV | Rotterdam | 11% |
| Tiledmedia BV | Rotterdam | 7% |
| Brightlands Circular Space Facilities BV | Sittard-Geleen | 33% |
| Calosol BV | Stadskanaal | 30% |
| Pharmaprint BV | Utrecht | 22% |
| CollaneX Therapeutics BV | Voorhout | 19% |

Delft, 13 March 2025



Other information

Profit appropriation

Article 4 of the TNO Guidelines for Financial Reporting issued by the Ministry of Education, Culture and Science stipulates as follows: Reserves are formed as part of the appropriation of the profit. As part of the appropriation of the profit, special reserves may be formed or existing special reserves may be updated. The updates may be additions or withdrawals. For example, a special reserve may be formed for future expenditures or expenses as part of the appropriation of the profit.

Any formation of special reserves must take place on the basis of specific policy and specific financing plans. In addition, withdrawals may be made for purposes for which the special reserves were originally recognised, such as for expenditures made in the reporting year. Expenditures that qualify as costs which exclusively relate to the relevant reporting year are charged to the income statement for the relevant year. Expenditures that qualify as investments in knowledge development are capitalised on the balance sheet.

The amortisation costs related to this investment are subsequently systematically charged to the income statement. As part of the appropriation of the profit for the year, an amount equal to the aforementioned amortisation costs or expenditures that qualify as costs in the financial year must be withdrawn from the special reserves.



Limited assurance report of the independent auditor on selected indicators

To: the Executive Board of Nederlandse Organisatie voor Toegepast-natuurwetenschappelijk onderzoek

Our conclusion

We have performed a limited assurance engagement on selected indicators in the accompanying annual report for the year 2024 of Nederlandse Organisatie voor Toegepast-natuurwetenschappelijk onderzoek (hereinafter: TNO) at Delft.

Based on our procedures performed and the assurance information obtained, nothing has come to our attention that causes us to believe that the selected indicators are not prepared, in all material respects, in accordance with the applicable criteria as included in the section 'Criteria'.

The selected indicators consist of:

- Carbon footprint (scope 1 and 2 as included on page 53)
- Number of FTE Workforce (as included on page 6)
- Absenteeism rate (as included on page 41)
- Absenteeism reporting frequency (as included on page 41)
- Number of Patent families (as included on page 6)
- Number of Premier depots (as included on page 6)
- Number of Professors and professors of applied science (as included on page 6)
- Number of Publications and proceedings (as included on page 41)
- Employee engagement (as included on page 41)
- Gender ratio (all of TNO) (as included on page 41)
- EcoVadis score (as included on page 6)

Basis for our conclusion

We have performed our limited assurance engagement on the selected indicators in accordance with Dutch law, including Dutch Standard 3000A 'Assurance-opdrachten anders dan opdrachten tot controle of beoordeling van historische financiële informatie (attest-opdrachten)' (Assurance engagements other than audits or reviews of historical financial information (attestation engagements)). Our responsibilities in this regard are

further described in the section 'Our responsibilities for the assurance engagement on the selected indicators' of our report.

We are independent of TNO in accordance with the "Verordening inzake de onafhankelijkheid van accountants bij assurance-opdrachten" (ViO, Code of Ethics for Professional Accountants, a regulation with respect to independence). This includes that we do not perform any activities that could result in a conflict of interest with our independent assurance engagement. Furthermore, we have complied with the "Verordening gedrags- en beroepsregels accountants" (VGBA, Dutch Code of Ethics for Professional Accountants).

We believe that the assurance evidence we have obtained is sufficient and appropriate to provide a basis for our conclusion.

Criteria

The criteria applied for the preparation of the selected indicators are the criteria developed by TNO and are disclosed on page 123 of the 2024 annual report.

The comparability of selected indicators between entities and over time may be affected by the absence of a uniform practice on which to draw, to evaluate and measure this information. This allows for the application of different, but acceptable, measurement techniques.

Consequently, the selected indicators need to be read and understood together with the criteria applied.

Corresponding information not assured

The selected indicators for the period 2019 up to 2022 have not been part of an assurance engagement. Consequently, the corresponding selected indicators and thereto related disclosures for the period 2019 up to 2022 are not assured.

Our conclusion is not modified in respect of this matter.

Limitations to the scope of our assurance engagement

Our assurance engagement is restricted to the selected indicators. We have not performed assurance procedures on any other information as included in the annual report in light of this engagement.

The references to external sources or websites are not part of our assurance engagement on the selected indicators. We therefore do not provide assurance on this information.

Our conclusion is not modified in respect of these matters.

Responsibilities of the Executive Board and the Supervisory Board for the selected indicators

The Executive Board is responsible for the preparation of the selected indicators in accordance with the criteria as included in the section “Criteria”. The Executive Board is also responsible for selecting and applying the criteria and for determining that these criteria are suitable for the legitimate information needs of the intended users, considering applicable law and regulations related to reporting. The choices made by the Executive Board regarding the scope of the selected indicators and the reporting policy are summarized on page 123 of the 2024 annual report.

Furthermore, the Executive Board is responsible for such internal control as it determines is necessary to enable the preparation of the selected indicators that are free from material misstatement, whether due to fraud or error.

The Supervisory Board is responsible for overseeing the reporting process of the selected indicators of TNO.

Our responsibilities for the assurance engagement on the selected indicators

Our responsibility is to plan and perform the assurance engagement in a manner that allows us to obtain sufficient and appropriate assurance evidence for our conclusion.

Our assurance engagement is aimed to obtain a limited level of assurance to determine the plausibility of the selected indicators. The procedures vary in nature and timing from, and are less in extent, than for a reasonable assurance engagement. The level of assurance obtained in a limited assurance engagement is therefore substantially less than the assurance that is obtained when a reasonable assurance engagement is performed.

We apply the applicable quality management requirements pursuant to the Nadere voorschriften kwaliteitsmanagement (NVKM, regulations for quality management) and the International Standard on Quality Management (ISQM) 1, and accordingly maintain a comprehensive system of quality management including documented policies and procedures regarding compliance with ethical requirements, professional standards and other relevant legal and regulatory requirements.

Our assurance engagement included amongst others:

- Performing an analysis of the external environment and obtaining an understanding of the sector, insight into relevant sustainability themes and issues and the characteristics of the company as far as relevant to the selected indicators;
- Evaluating the appropriateness of the criteria applied, their consistent application and related disclosures on the selected indicators. This includes the evaluation of the reasonableness of estimates made by the Executive Board;
- Obtaining through inquiries a general understanding of the internal control environment, the reporting processes, the information systems and the entity’s risk assessment process relevant to the preparation of the selected indicators, without obtaining assurance information about the implementation or testing the operating effectiveness of controls;
- Identifying areas of the selected indicators where misleading or unbalanced information or a material misstatement, whether due to fraud or error, is likely to arise. Designing and performing further assurance procedures aimed at determining the plausibility of the selected indicators responsive to this risk analysis. These procedures consisted amongst others of:



- Making inquiries of the Executive Board and/or relevant staff responsible for the sustainability strategy, policy and results relating to the selected indicators;
- Interviewing relevant staff responsible for providing the information for, carrying out controls on, and consolidating the data in the selected indicators;
- Obtaining assurance evidence that the selected indicators reconcile with underlying records of TNO;
- Reviewing, on a limited sample basis, relevant internal and external documentation
- Considering the data and trends;
- Reading the information in the 2024 annual report that is not included in the scope of our assurance engagement to identify material inconsistencies, if any, with the selected indicators;
- Considering whether the selected indicators are presented and disclosed free from material misstatement in accordance with the criteria applied.

Rotterdam, 13 March 2025

EY Accountants B.V.

Signed by R.T.H. Wortelboer

Independent auditor's report

To: the management board and supervisory board of Nederlandse Organisatie voor Toegepast-Natuurwetenschappelijk Onderzoek TNO

Report on the audit of the financial statements 2024 included in the annual report

Our opinion

We have audited the financial statements 2024 of Nederlandse Organisatie voor Toegepast-Natuurwetenschappelijk Onderzoek TNO (hereinafter: 'TNO'), based in Delft, The Netherlands.

In our opinion, the accompanying financial statements included in this annual report give a true and fair view of the financial position of TNO as at 31 December 2024, and of its result for the year 2024 in accordance with the "Richtlijnen Financiële Verslaggeving TNO" from the Ministry of Education, Culture and Science, the additional letter dated 21 April 2004 with reference OWB/FO/2004/8195 and the relevant regulations in the "Wet normering topinkomens (WNT)".

The financial statements comprise:

- The consolidated and company balance sheet as at 31 December 2024
- The consolidated and company statement of income and expense for the year 2024
- The notes comprising of a summary of the accounting policies and other explanatory information

Basis for our opinion

We conducted our audit in accordance with Dutch law, including the Dutch Standards on Auditing and the "Accountantsprotocol TNO 2020". Our responsibilities based on these are further described in the "Our responsibilities for the audit of the financial statements" section of our report.

We are independent of TNO in accordance with the "Verordening inzake de onafhankelijkheid van accountants bij assurance-opdrachten" (ViO, Code of Ethics for Professional Accountants, a regulation with respect to independence) and other relevant independence regulations in the Netherlands. Furthermore we have complied with the "Verordening gedrags- en beroepsregels accountants" (VGBA, Dutch Code of Ethics).

We believe the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.



Compliance with anti-cumulation provision of WNT is unaudited

In accordance with the "Controleprotocol WNT 2024" (WNT Auditing Protocol 2024), we did not audit the compliance with the anti-cumulation provision in Section 1.6a of the WNT and Section 5(1) (n and o) of the "Uitvoeringsregeling WNT" (WNT Implementation Regulation). Therefore, we did not audit whether or not a remuneration maximum was exceeded by a senior management official as a result of possible employment as senior management official at other institutions that are subject to the WNT, nor did we audit whether the required disclosure is accurate and complete in this respect.

Report on other information included in the annual report

In addition to the financial statements and our auditor's report thereon, the annual report contains other information that consists of:

- The management board report for 2024 (TNO Annual report 2024);
- Other information.

Based on the following procedures performed, we conclude that the other information:

- Is consistent with the financial statements and does not contain material misstatements;
- Contains the information as required by the 'Richtlijnen Financiële Verslaggeving TNO' from the Ministry of Education, Culture and Science.

We have read the other information. Based on our knowledge and understanding obtained through our audit of the financial statements or otherwise, we have considered whether the other information contains material misstatements. By performing these procedures, we comply with the requirements of the Dutch Standard 720 and the 'Accountantsprotocol TNO'. The scope of the procedures performed is substantially less than the scope of those performed in our audit of the financial statements.

The management board is responsible for the preparation of the other information, including the management board report and the other information as required by the "Richtlijnen Financiële Verslaggeving TNO" from the Ministry of Education, Culture and Science.

Description of responsibilities for the financial statements

Responsibilities of the management board and the supervisory board for the financial statements

The management board is responsible for the preparation and fair presentation of the financial statements in accordance with the “Richtlijnen Financiële Verslaggeving TNO” from the Ministry of Education, Culture and Science, the additional letter dated 21 April 2004 with reference OWB/FO/2004/8195 and the relevant regulations in the “Wet normering topinkomens (WNT)”. In this respect, the management board is also responsible for such internal control as the management board determines is necessary to enable the preparation of the financial statements and compliance with relevant laws and regulations, without material misstatements, whether due to fraud or error.

As part of the preparation of the financial statements, the management board is responsible for assessing TNO’s ability to continue as a going concern. Based on the financial reporting framework mentioned, the management board should prepare the financial statements using the going concern basis of accounting unless the management board either intends to liquidate TNO or to cease operations, or has no realistic alternative but to do so. The management board should disclose events and circumstances that may cast significant doubt on TNO’s ability to continue as a going concern in the financial statements.

The supervisory board is responsible for overseeing the financial reporting process of TNO.

Our responsibilities for the audit of the financial statements

Our responsibility is to plan and perform the audit engagement in a manner that allows us to obtain sufficient and appropriate audit evidence for our opinion.

Our audit has been performed with a high, but not absolute, level of assurance, which means we may not detect all material errors and fraud during our audit.

Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements. The materiality affects the nature, timing and extent of our audit procedures and the evaluation of the effect of identified misstatements on our opinion.

We have maintained professional skepticism throughout the audit and have exercised professional judgment where relevant, in accordance with Dutch Standards on Auditing, the “Richtlijnen Financiële Verslaggeving TNO” from the Ministry of Education, Culture and Science, the “Accountantsprotocol TNO 2020”, the “Controleprotocol WNT 2024” and independence requirements.

Our audit included among others:

- Identifying and assessing the risks of material misstatement of the financial statements, whether due to fraud or error, designing and performing audit procedures responsive to those risks, and obtaining audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtaining an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the internal control of the education institution’s internal control.
- Evaluating the appropriateness of accounting policies used, the financial criteria applied for legitimacy and the reasonableness of accounting estimates and related disclosures made by the management board.
- Concluding on the appropriateness of the management board’s use of the going concern basis of accounting, and based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on TNO’s ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor’s report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor’s report. However, future events or conditions may cause an institution to cease to continue as a going concern.
- Evaluating the overall presentation, structure and content of the financial statements, including the disclosures.
- Evaluating whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation and whether the income and expenditure recognized in the financial statements as well as movements in the balance sheet have in all material respects been legitimately generated.



Because we are ultimately responsible for the opinion, we are also responsible for directing, supervising and performing the group audit. In this respect we have determined the nature and extent of the audit procedures to be carried out for group entities. Decisive were the size and/or the risk profile of the group entities or operations. On this basis, we selected group entities for which an audit or review had to be carried out on the complete set of financial information or specific items.

We communicate with the supervisory board regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant findings in internal control that we identify during our audit.

Amsterdam, 13 March 2025

EY Accountants B.V.

S.D.J. Overbeek-Goeseije





GRI table

Statement of use: TNO has not reported the quoted information in this GRI table for the period 1 January 2024 through 31 December 2024 in reference to or in line with GRI standards. However, this table has been prepared in the spirit of the GRI's guidelines.

GRI 1 used: Foundation 2021

| GRI Standard | Disclosure | Location |
|---------------------------------|--|--|
| GRI 2: General Disclosures 2021 | 2-1 Organisational details | About this report Strategy – Stakeholders Publication details |
| | 2-2 Entities included in the organisation's sustainability reporting | About this report |
| | 2-3 Reporting period, frequency and contact point | About this report Publication details |
| | 2-5 External assurance | Assurance report |
| | 2-6 Activities, value chain and other business relationships | Stakeholders Value creation Strategy – Mission and vision Strategy – Core tasks Strategy – Valorisation Strategy – Start-ups, scale-ups and SMEs Strategy – Strategic programmes |
| | 2-7 Employees | TNO key figures Key figures Home for talent |
| | 2-9 Governance structure and composition | People and organisation People and organisation – Organisational structure Report of the Supervisory Board Report of the Council for Defence Research Composition of the EB, SB, CDR and Strategic Advisory Boards |
| | 2-22 Statement on sustainable development strategy | Foreword Value creation Strategy – Mission and vision Strategy – Stakeholders Sustainable and responsible business operations |
| | 2-23 Policy commitments | Sustainable and responsible business operations |

| GRI Standard | Disclosure | Location |
|---|---|--|
| | 2-26 Mechanisms for seeking advice and raising concerns | Sustainable and responsible business operations – Governance |
| | 2-29 Approach to stakeholder engagement | Strategy – Stakeholders Composition of the EB, SB, CDR and Strategic Advisory Boards |
| GRI 3: Material Topics 2021 | 3-1 Process to determine material topics | Sustainable and responsible business operations |
| | 3-2 List of material topics | Sustainable and responsible business operations |
| GRI 301: Energy 2016 | 302-1 Energy consumption within the organisation | Sustainable and responsible business operations – Environment |
| | 302-3 Energy intensity | Sustainable and responsible business operations – Environment |
| | 302-4 Reduction of energy consumption | Sustainable and responsible business operations – Environment |
| | 305-1 Direct (Scope 1) GHG emissions | Sustainable and responsible business operations – Environment |
| | 305-2 Energy indirect (Scope 2) GHG emissions | Sustainable and responsible business operations – Environment |
| | 305-3 Other indirect (Scope 3) GHG emissions | Sustainable and responsible business operations – Environment |
| | 305-4 GHG emissions intensity | Sustainable and responsible business operations – Environment |
| | 305-5 Reduction of GHG emissions | Sustainable and responsible business operations – Environment |
| GRI 401: Employment 2016 | 401-1 New employee hires and employee turnover | Business operations – Home for talent Business operations – Key figures Home for talent |
| GRI 405: Diversity and Equal Opportunity 2016 | 405-1 Diversity of governance bodies and employees | Business operations – Home for talent Business operations – Key figures Home for talent |

List of definitions

A number of KPIs have been reviewed by our auditor EY. EY's conclusion on these KPIs is included under "Report on other information included in the annual report". TNO only reports the non-financial KPIs of the TNO organisation and not of its participating interests. TNO believes that this approach provides a fair and balanced picture. The definitions used for these KPIs are given below.

Carbon footprint (Scope 1-2)

The definition we use conforms to the Greenhouse Gas Protocol. A more detailed justification of our calculation method can be found here.

Scope 1: direct emissions from own operations (including direct lab emissions, vehicle fuel and building gas use).

Scope 2: indirect emissions from own operations (including energy consumption, such as heat and electricity).

EcoVadis score

EcoVadis' rating consisting of the average on the four themes (environment, labour and human rights, ethics and sustainable procurement). For details of the assessment methodology applied by EcoVadis, please refer to its website.

FTE workforce

The equivalent number of TNO employees and hires with full-time employment contracts (40 hours) at the end of December.

Absenteeism rate and reporting frequency

Absenteeism rate: the total number of sick leave days of TNO employees (corrected for FTE percentage and disability rate) as a percentage of the total number of calendar days (corrected for FTE percentage) of the total number of TNO employees.

Reporting frequency: the number of unique sickness reports (one report per 28-day sickness period) divided by the number of calendar days (adjusted for FTE percentage) of the number of TNO employees.

Employee engagement

The average score from 1 to 10 on the question from the Employee Engagement Survey (EES): "If you were to express your employee satisfaction rating as a single score, what would that score be?" calculated on the basis of the input provided by TNO employees and hires who participated in the EES. The study was conducted in 2023.

Gender ratio

The number of female and male TNO employees in relation to the total number of TNO employees at the end of December.

Patent families and Premier depot

Patent family: a collection of patent applications and/or granted patents filed in different countries for the same invention as of the end of December.

Premier depot: the number of first patent applications filed for an invention in the relevant year.

Professors and lecturers

Number of TNO employees with professorships and/or lectureships as of the end of December.

Publications and proceedings

Number of peer-reviewed publications in scientific journals and number of proceedings as of the end of December. Later delivered publications from previous years that were not previously reported are counted in the year of delivery. A proceeding is a published report of a scientific conference, congress, symposium or other (similar) meeting.



Publication details

If you want to know more about TNO, if you have questions about this report or have suggestions, please contact us on info@tno.nl.

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Editing and text

TNO, Marketing & Communications

Design and realisation

CF Report, Amsterdam

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