

TenneT Holding B.V.

# Integrated Annual Report 2022



towards a sustainable future

# Key figures 2022

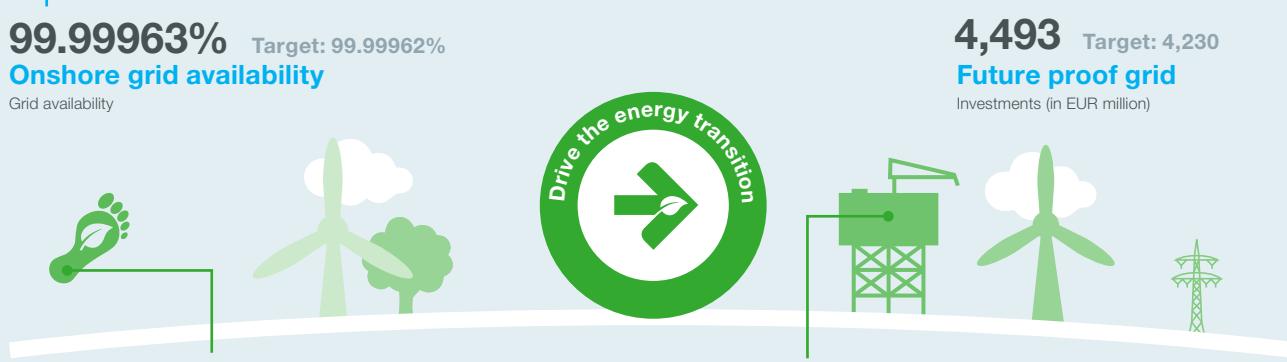
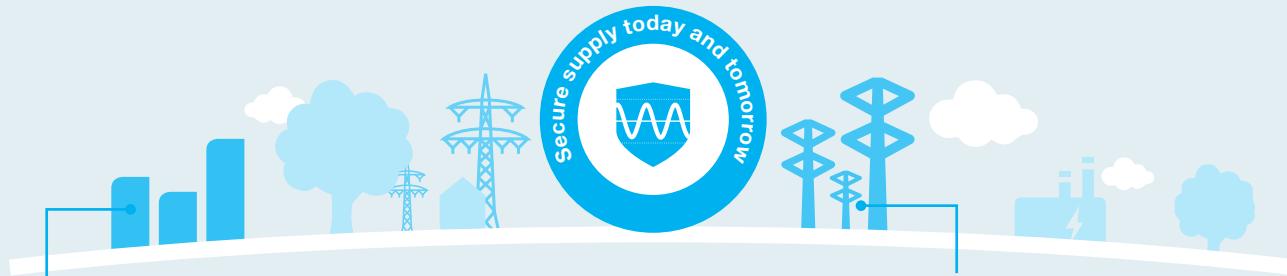


**80%\***  
**Internal Engagement Index**

## Overarching indicators

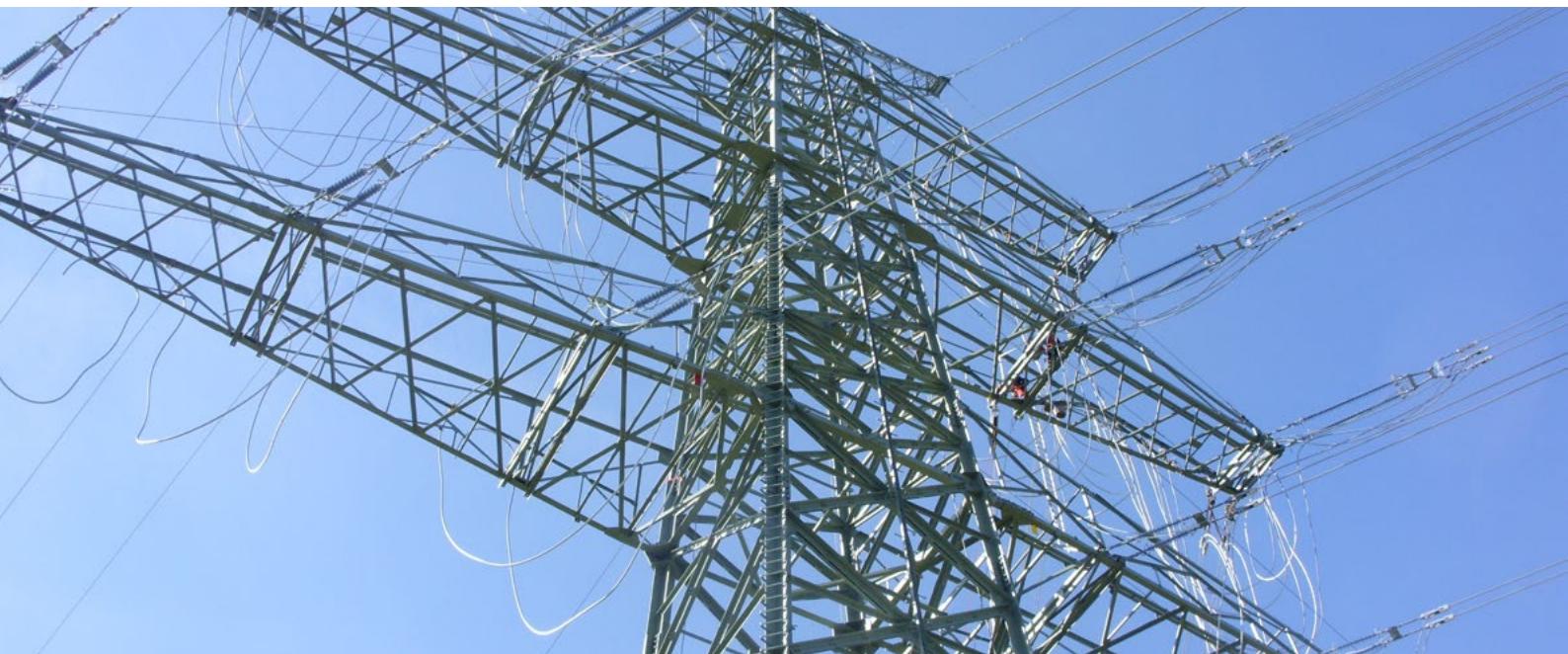


**7.8**  
**Reputation survey**



\* The latest employee survey was performed in 2021, as it is our policy to perform this every other year. The 2021 survey was an additional survey.

\*\* Reference is made to the chapter 'Safeguard sustainable financial performance and investor ratings'.



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\* These sections reflect the director's report as mentioned by Part 9 of Book 2 of the Dutch Civil Code.

\*\* These sections reflect the Other Information as required by Part 9 of Book 2 of the Dutch Civil Code.

# At a glance 2022

## Broad cooperation to tackle congestion

In several regions in the Netherlands, the limits of maximum grid capacity were reached due to the acceleration of the energy transition as a result of global energy developments. TenneT is preparing congestion management to create additional capacity. In addition, a National Taskforce Grid Congestion delivered an action programme.



## Connections of 1,400 MW ready to use

In the Netherlands, TenneT's high-voltage offshore grid connections for the offshore wind farms Hollandse Kust (south) Alpha and Beta, are ready for use.



## Flevoland outage

A short circuit incident in a high-voltage substation in Flevoland had a major impact on the surrounding area. This led to a power outage and a lot of inconvenience in the region, including the months-long failure of a train connection.



## Grid expansion Wahle - Mecklar

In September Lower Saxony's Energy Minister Olaf Lies (SPD) and TenneT officially commissioned the first two of four sections of our largest 380 kV grid expansion Wahle - Mecklar in Lamspringe.

## North Sea powerhouse

In May's Esbjerg Declaration, Germany, the Netherlands, Denmark and Belgium agreed to jointly install at least 65 GW of offshore wind power by 2030. TenneT will realise almost two-thirds of this.

## Capital injection by the Dutch State

The Dutch State has provided EUR 1.2 billion in 2022 to cover the capital requirements of the Dutch part of TenneT.

## Innovative tender

For the development of the 2GW Program, TenneT plans to enter into a cooperation agreement with key market partners for a period of up to eight years and has launched a tender for this purpose.

## 900 MW platform installed in the German North Sea

After just three years of construction in the Spanish port of Cadiz, the DolWin6 platform was transported to its final destination and installed. This platform is scheduled to be commissioned in 2023.



## Growing workforce

The number of people starting to work at TenneT again grew substantially this year. Over approximately 2,000 new colleagues started at TenneT and our workforce now totals to 7,397.

## EUR 6.85 billion Green Bonds

TenneT successfully issued EUR 6.85 billion Green Bonds. With this offering, TenneT further strengthens its status as the largest corporate EUR Green Debt issuer globally.

## King visits offshore developments

At the end of August, King Willem-Alexander paid a working visit to various locations in the North Sea where the future of the energy system is being worked on.



Executive Board (fltr): Tim Meyerjürgens, Chief Operating Officer - Manon van Beek, Chief Executive Officer, Arina Freitag, Chief Financial Officer - Maarten Abbenhuis, Chief Operating Officer

# Letter from the Board

## Pathways to responsible growth

Our Integrated Annual Report 2022 comes on the eve of a new and challenging era for TenneT now that TenneT and its shareholder, the Dutch state, are engaged in discussions with the German government to explore the possibility of a full sale of TenneT's German activities on acceptable terms. Such a transaction would enable the creation of two strong national players who would continue to cooperate in driving the energy transition on land and leading offshore transmission. TenneT's focus in the discussions will be on ensuring security of supply and safeguarding the interests of its employees, customers, suppliers, financiers and other stakeholders.

As this IAR reflects the year 2022 it reports on the activities of one integrated TenneT.

Over the past year, both the short and long-term challenges facing the energy system forced us to perform like a sprinter and marathon runner at the same time. More than ever, we are responsible for enabling a carbon-free energy system several decades from now, while in the short term our grids need to maintain security of supply on a highly volatile energy market. In 2022, together with other European TSOs and governments, we kept the electricity supply secure

during the energy crisis. Our high voltage grids showed a 99.9996% availability. This made them indispensable for society and they remained a strong foundation for our economy.

Alongside our solid grid availability, TenneT in 2022 remained committed to the design, maintenance and operation of the high-voltage grids. For example, we introduced a new generation of grid connection systems, the so-called 2GW offshore programme, which sets a new standard in the industry and will allow the entire offshore

chain for wind energy to benefit from more than double the capacity of existing grid connection systems in an environmentally friendly manner. We realised two new offshore grid connection systems for wind energy with a total capacity of 1,400 MW, Hollandse Kust Zuid alpha and beta. And we completed the topside installation of DolWin6 (900 MW) and Hollandse Kust Noord (700 MW). These latter two projects are planned to go in service in 2023. On land, TenneT delivered 320 kilometres of new high-voltage power lines and 6 new high voltage substations. Furthermore, we strongly scaled up our maintenance activities by, among other things, replacing and modernising dozens of high-voltage substations. We are also pleased that, together with the 38 European TSOs, we were able to support the Ukrainian electricity system by synchronising both the Ukrainian and Moldovan high-voltage grids with the European system. Due to the still volatile situation in energy markets, this year's annual analyses in Germany and the Netherlands to assess the readiness to secure electricity supply for the winter period were performed with extra intensity. On behalf of the German Federal Ministry for Economic Affairs and Climate Action, TenneT - together with the three other German TSOs – conducted a special analysis on the security of supply of the power grids, the so-called 'stress test'. The TSOs put forward a number of proposals aimed at ensuring security of electricity supply. These proposals were adopted and implemented by the German government. In the Netherlands the analysis showed a reassuring picture in terms of security of electricity supply.

### Safety needs our energy

Despite our endeavours to always ensure highest standards of safety, we were deeply saddened in 2022 by the fatalities of a TenneT colleague and an employee of one of our contractors, while they were working on construction projects in Germany. We sympathise deeply with the bereaved families and are more determined than ever to put even more emphasis on life saving rules and zero harm practices, to ensure the safest possible working environment. We started Safety Tops, dialogues with the top management of all our (sub)contractors to look together at how to ensure safety on all our projects and for all our people and partners. Zero Harm, in addition to all processes and measures, is a mindset that must be daily lived by top management all the way to the people in the field and back again.

### Shaping the climate-neutral grid together

Our growth path comes with great responsibilities and tough choices. The war in Ukraine has made it clear that business and communities need to become more independent from fossil fuels and to accelerate the energy transition. As demand shifts away from fossil fuels, electrification in the transport, building and industrial sectors could cut greenhouse gas emissions in the EU significantly by 2050. TenneT takes its responsibility to support this transition and has developed the so-called Target Grid 2045 to steer the future infrastructure expansion by anticipating sensing political developments and needs.

The Target Grid 2045 provides a realistic vision of the high-voltage grid on land and offshore, with power corridors connecting countries around us. Based on a back-casting approach, it allows early alignment among all stakeholders on goals and is based on relevant national infrastructure plans. With the goal of providing a fully sustainable energy system, we aim to deliver a future-proof, reliable and cost-efficient grid, ready on time.

### Offshore wind energy leads the green way

The Target Grid 2045 is underlined by challenging targets for offshore wind development. For TenneT, it will be crucial to succeed in connecting 40 GW of offshore wind in the Netherlands and Germany by 2030. This is from a total of 65 GW committed to the Esbjerg Declaration, the first intergovernmental agreement between Belgium, Denmark, Germany and the Netherlands envisaging up to 150 GW of offshore wind to be built until 2050.

These objectives not only require political determination, but also important energy system innovations. We have developed a world-first with our proprietary 2GW direct current (DC) standard for offshore connection systems, allowing larger wind farms to be connected to the grid with fewer platforms and cables. Also, our 2GW offshore converter platforms are 'hub-ready'. This means that they can be connected to a future DC grid. To truly make the North Sea a green powerhouse for Europe, TenneT is exploring options for energy hubs at sea. These will not only connect wind farms to onshore grids, but also serve as connections between North Sea countries. In time, these North Sea power hubs will also enable large-scale conversion of wind energy to green hydrogen.

## Challenges on the path ahead

Over the last year the Netherlands has seen a boom in business grid connection requests, adding to a total capacity of 40 GW. This is more than three times the capacity needed for electricity consumption of the whole of the Netherlands on a normal day. However, our grid capacity cannot be expanded at the same pace to meet sudden demand at this scale. We therefore paused issuing new connection requests for companies in some parts of the Netherlands. To accommodate different stakeholder interests, we initiated a national consultation process looking for more flexibility in the electricity demand of industry to facilitate new requests from customers. Under the auspices of the Minister of Economic Affairs and Climate, the National Grid Congestion Action Program was launched to create more space on the electricity grid in every possible manner.

As the electrification of industry advances, we call for more clarity on the transition plans of industrial end-users, allowing the switch to electricity to be better orchestrated in a non-discriminatory manner. In doing so, we advocate a smart location policy, in which industry requiring large-scale electricity consumption should preferably locate as close as possible to renewable generation, for example where offshore wind energy is connected to land. This avoids unnecessary additional infrastructure that would be necessary to provide electricity to energy-intensive consumers such as electrolysis plants, just like making use of the so-called emergency lane in our grids to connect additional solar and wind farms.

In an effort to shorten lengthy permit procedures, the Dutch and German governments have recognised that current permitting practices delay the energy transition. However, in the Netherlands we also expect the ban on nitrogen emissions to negatively impact the progress of our projects. In Germany, we welcome efforts to relieve delays such as simplification of legislation which would allow us to start construction of projects earlier.

As many companies and institutions, we are facing a tight labour market, particularly for highly skilled technical staff. The energy transition must move faster, so we need all hands on deck and bring. We need all talent to the table: men and women, from the countries in which we operate as well as culturally rich, highly educated and practically skilled international people. Therefore, diversity is not a KPI for us but the essence of our business. We like to work together with other companies, the government and knowledge institutes to find, motivate, bind and grow all talents for a job in the energy transition. To address this, TenneT is

partnering with universities and secondary vocational education institutions to bring in talented people and to partly train them internally. We also focus on specific target groups such as IT professionals with tailor-made campaigns.

## European co-operation gets us closer to our goals faster

As the energy transition can only succeed if tackled at European level, it is important for TenneT to engage in intensive international co-operation. This will ensure the functioning of integrated electricity markets which are key for a resilient electricity supply, especially during the winter. In the North Sea, we are a strong partner to realise its potential as a renewable power hub for Europe. To this end, we are developing an international agreement on technical standards and conditions, with laws and regulations and a well-functioning market model. As a leading cross-border grid operator, TenneT is closely involved in this joint effort, and will further expand its role as a reliable and independent advisor to governments.

Through intensified co-operation with our suppliers TenneT is helping to create an environment where market players can invest more securely, employ people with greater certainty and secure available resources in supply chains. We did this in 2022 by developing two large-scale EU tenders for long-term framework contracts for the development of the 2GW offshore connection systems. Such agreements create more certainty in the market for the required scale-up, giving the offshore industry the investment security it needs.

## Financial health is essential to complete our journey

Our investments amounted to as much as EUR 4.5 billion in 2022. And investments will rise in the next ten years. As political ambitions evolve, we aim to deliver at least EUR 8 billion annually in projects. This is fully in line with the national energy policies of Germany and the Netherlands and largely attributable to the energy transition. In 2022 TenneT issued two Green Bonds totalling EUR 6.85 billion. With these offerings, TenneT strengthened its status as the largest corporate EUR green debt issuer globally, with currently approximately EUR 19.5 billion of green debt outstanding across different formats (senior, hybrid, USPP and Schuldscheine) issued in the last 7 years. It also shows the company's favourable access to capital markets. To safeguard our financial health, we strive for a good balance between debt and equity allowing us to finance our projects as reliably and efficiently as possible. The Dutch state has given its commitment to shoulder the equity requirement for the Dutch part of our investment

portfolio, currently estimated at EUR 10 billion. For our German investment portfolio, the equity requirement is approximately EUR 15 billion.

We look forward to further exploration and negotiation with the German state in cooperation with the Dutch state while moving ‘full steam ahead’ given the challenges and opportunities resulting from the energy transition. We, the Executive Board of TenneT, are personally committed to the European energy transition and to deliver on our promises. We also commit to lead this process and stay on board to create two national champions together with all our people and together with both governments to achieve the climate goals 2030 and beyond.

### A wholehearted thank you!

We are incredibly grateful to our colleagues and partners, for their commitment to accelerate the energy transition in the Netherlands and Germany and for all the extra effort to help our colleagues in and the people of Ukraine. We thank all our colleagues wholeheartedly for their tireless efforts, resilience and commitment during a challenging and rather unthinkably impactful year 2022.

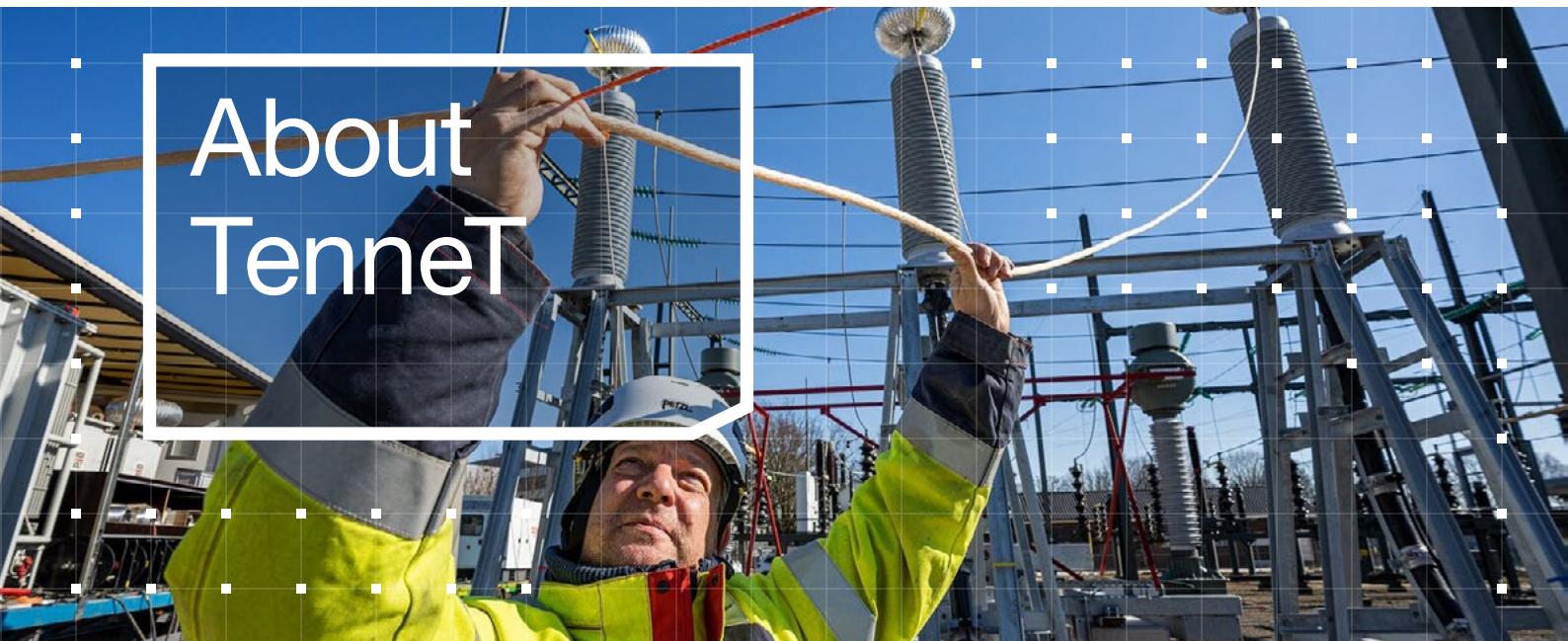
Looking ahead, we all trust to work together closely and with a shared focus towards the goal of a sustainable, reliable and affordable energy system for all. We are fully aware this will take perseverance. And by working together with all our stakeholders, we will build this new, meshed grid on land and offshore fit for the future. With a steady beat of endurance and determination we are changing the very heart of European energy. We are on it!

On behalf of TenneT's Executive Board,  
**Manon van Beek** (CEO)

**Thank you!**



# About TenneT



## Profile

With over 25,000 kilometres of high-voltage connections both onshore and offshore, our role as Transmission System Operator is to ensure a secure supply of electricity to nearly 43 million end-users, in the Netherlands and a large part of Germany, and to create the infrastructure to be able to secure supply today and tomorrow.

### Our core tasks

Our primary tasks are to provide power transmission services, system services and facilitation of the energy market. These tasks follow from our appointment as grid operator under the Dutch and German energy laws, the 'Elektriciteitswet' (E-wet) and the German 'Energiewirtschaftsgesetz' (EnWG).

### Transmitting electricity

Power transmission services mean that our role is to transmit electricity via our electricity grid. This is the backbone of the electricity supply system. We transmit electricity from where it is generated by other parties, either on land or at sea or imported from other markets. Electricity is transmitted to our customers via our high voltage grid, being 110 kV and higher in the Netherlands and 220 kV and higher in a large part of Germany. As electricity is often generated far away from where it is used, we need to transmit it over large distances without incurring major losses on the way. To achieve this, we transmit electricity at very high voltages.

### System services

System services refers to our role in carefully managing the balance between the supply and demand of electricity and to keep the frequency at a constant level (50 hertz).

To do this, we have control centres in the Netherlands and in Germany, where supply and demand are monitored and controlled 24 hours a day, seven days a week.

### Market facilitation

In addition, we ensure that European electricity markets are set up in an efficient manner so we are able to create a (single) market where consumers can rely on security of supply at an affordable price. To this end, we build and operate for instance interconnections (such as NorNed, NordLink, BritNed and the COBRAcable), to create possibilities to import and export electricity. We also work together with other European TSOs and electricity markets to guarantee the reliability of the supply of electricity and to balance supply and demand across borders and markets.

### Driving the energy transition

The future energy system will become increasingly dependent on renewable sources. But renewables are, by nature, intermittent – the sun does not always shine and the wind does not always blow. This calls for a change in the system, for example through new developments such as storage and demand side response are also new developments. TenneT is working on these challenges together with its stakeholders. We build grids that integrate new energy sources and unlock flexibility, both onshore and

offshore. Furthermore, we develop concepts in our system to safeguard the balance between supply and demand in the future.

Want to know more about our company and the energy system? Enjoy our online interactive story



## Our role in Europe

By 2050, Europe aims to become the first climate neutral continent. TenneT's service areas in the Netherlands and Germany, alongside European governments are key to making this ambition a reality. In the transition to a climate neutral continent, the energy transition is an important element to make sure that society has a sustainable supply of energy. Governments in the areas we serve have formulated ambitions to support Europe's climate targets, with the German government aiming for climate neutrality in 2045 and the Dutch government in 2050.

As a key player in the energy sector, TenneT aims to help shape this future energy landscape. As a cross border TSO, we strive to share our insights to integrate and switch to more renewable energy sources to power society, whilst aiming to ensure that we are able to keep the lights on at all times. We do this by working together with stakeholders in developing new concepts and sharing these with the governments in the areas we serve. In doing so, we help meet Europe's ambition to become the first climate neutral continent and contribute to the Paris Agreement and the national agreements which support it.

In order to meet Europe's 2050 ambition, offshore wind has an important role. This year, the leaders of the European Commission, Denmark, Belgium, the Netherlands and Germany pledged to expand the combined North Sea offshore-wind capacity of the four countries to 65 GW by 2030. Of this, TenneT will be responsible for connecting around 40 GW to the onshore grid. Next to this, we are making sure that renewable energy can be integrated into the grid properly, for example by investments into the backbone of our electricity grid.

TenneT is one of Europe's largest investors in national and cross-border electricity transmission capacity on land and at sea, bringing together the Northwest European energy markets and efficiently unlocking large-scale renewable electricity sources. We collaborate with a wide range of partners in the energy market to develop and apply new, smart technologies and contribute to integration of the energy transition in the future.

To be able to deliver a greener future energy system, we are working on system integration, such as the further development of green hydrogen. Here, the combined knowledge and technologies of the electricity and gas industry come together to find an integrated solution for the energy transition.

## Key developments in the environment we operate in

The urgency and complexity of tackling climate change means that TenneT operates within a challenging context that is continuously developing. With respect to various time frames, we see the following developments that affect us.

### Scarcity of resources

A key development and challenge we foresee as we drive the energy transition is the availability of key resources such as raw materials, manufactured components and people. In the short term, scarcity of resources can occur due to challenges in the supply chain, for example due to the recent pandemic or the war in Ukraine. In the longer term, an increased demand related to the energy transition could lead to a shortage of critical materials, most notably aluminium, copper and steel, as well as manufactured products, such as components for HVDC (high-voltage direct current) systems. There are even some expectations that at the end of this decade, the supply of scarce resources is not able to meet demand. That is why we are working at TenneT to further integrate principles of circularity into our work practices. More information on this is included in our chapter '[Create value to transition to a climate neutral economy](#)'.

However, it is not just materials that are becoming scarcer: we see the same trend with respect to human capital. Difficulties in the labour market are visible in many more sectors in the recent years. A shortage of technical staff has been visible for a longer time and could have an impact on TenneT, especially considering an ageing population. How we address this, can be found in the '[Create a safe and inspiring workplace](#)' chapter.

### Higher costs of materials and energy

The economies in the areas we serve and the markets where we procure our goods and services have been affected by rising costs of resources. These rising costs of goods and services have a significant effect on the cost of our investment projects. The price of energy in the EU reached record levels in 2022. This rise, linked to the increase of wholesale energy prices globally, started back in 2021 in the wake of the COVID-19 pandemic and growing international demand. On the wholesale electricity market, there was a reduction in available power supplies compared



to 2021 which, combined with higher gas prices, has caused an increase in the electricity price. Besides the war in Ukraine, a dryer summer in 2022 also had an impact on the system costs we incurred to balance the grid and secure electricity supply.

#### Climate change and the energy transition

One of the most urgent and complex societal challenges of our times is climate change, of which we have seen the effects more drastically in the last decennium. The UN Climate Change Conference, COP27, emphasised once again the urgent need for mitigating climate change. This will affect the energy sector, including TenneT, in every aspect and we consider its (potential) impacts with the decisions we take. Due to changing weather and climate patterns, such as storms, floods and droughts, our transmission system needs to be more resilient to a variety of different external circumstances. At the same time, to mitigate the most adverse impacts of climate change, governments are stepping up their climate ambitions to build a net-zero economy by 2050. To accommodate this, we are redesigning the current energy system and how we operate it, planning ahead and building a future-proof energy system. Through our knowledge and experience of the energy system, TenneT serves as a thought leader in the energy transition and drives it forward.

#### Energy crisis

The war in Ukraine and the resulting energy crisis has impacted the world and the energy sector in particular. It stressed the importance of reducing geopolitical dependency on a single energy source, and highlighted the need for a diverse, sustainable and affordable energy supply in the long term. TenneT worked hard to ensure that security of supply was not affected by energy shortages in 2022, for example by scenario planning and co-operating with national governments and other TSOs. The energy crisis also affected TenneT through rising energy prices. Higher energy prices have an effect on the costs of ancillary services such as redispatch (as we compensate producers of electricity for curtailed generation or infeed) and grid losses. Moreover, the energy crisis has led to a price surge for resources and goods in general and was one of the root causes for rising inflation.





# Our purpose, strategy and value creation

## Our strategy

To be able to deliver on our purpose - to connect everyone with a brighter energy future - we are guided by the TenneT strategy. This is focused on ensuring we are able to secure supply of electricity today and tomorrow by preparing our grid for a future and climate-neutral energy system, which we call our Target Grid. Our strategy helps us realise the

access to clean and affordable energy for society, thereby contributing to the Sustainable Development Goals (in particular SDG 7, 9 and 13).

Our strategy steers to deliver on our purpose and create value for society. Also, in our decisions, we consider the three elements of ‘the balancing act’, as we aim to weigh in

## Strategic goals

### Secure supply today and tomorrow



By maintaining the grid to meet reliability targets and operating it effectively. We will design solutions to balance electricity supply and demand in the future, while meeting societal objectives and realising our infrastructure projects as promised.

### Strategic goals 2025

Deliver **at least** EUR 8 billion per year in projects **while securing our supply chain**.

Secure healthy asset base **with sufficient transmission and connection capacity**.

Maintain 99.99% reliability.

### Drive the energy transition



As a green grid operator and thought leader, developing innovative solutions and playing a key role in the energy data world.

### Strategic goals 2025

Realise at least 5 significant energy system innovations.

**Deliver robust design Target Grid 2045** including accepted North Sea grid design.

### Energise our people and organisation



With an inclusive and safe environment where people enjoy coming to work. We will evolve our leadership model to empower, inspire and create growth opportunities, so everyone can perform at their best and work as one team.

### Strategic goals 2025

Provide a great and safe place to work for up to 10,000 employees and (sub) contractors **striving for Zero Harm**.



### Safeguard our financial health

By ensuring a regulatory framework to support our strategy and by delivering a return in line with what our capital providers expect, as well as by raising the necessary external financing.

### Strategic goals 2025

Raise adequate amount of equity to assure our strong credit ratings of at least A3/A-.

Achieve regulatory returns.

**Reduce the OPEX deficit.**

on the effect on reliability, sustainability and affordability in this respect. Through our four strategic pillars, we distinguish our four main ambition areas and we have set specific targets for our first important milestone (2025) on the road towards a net-zero energy system. Secure supply today and tomorrow and Drive the energy transition explain how we turn our core tasks into strategic actions. Energise our people and organisation is critical as our employees are our most important asset and help us deliver on our tasks every day. Finally, Safeguard our financial health is important not only to guarantee financing for our extensive investment portfolio, but also in our responsibility to consider the affordability of our decisions.

## Our principles and balancing act

**Our purpose**  
To connect everyone with  
a brighter energy future

**Our promise**  
Lighting the way ahead together

## Our principles



Connection



Ownership



Courage

The TenneT principles provide guidance to how we aim to create societal value:

- **Ownership.** We are accountable for our words, actions and decisions.
- **Connection.** The energy transition is a challenge that requires new ideas, new technologies and new behaviours that build on the strong foundations we have laid. It also requires co-operation on all different levels as we do not have all the answers ourselves. This is why we work actively with other parties.
- **Courage.** We are honest, open and clear about what we think. We dare to make bold decisions, take ambitious initiatives and are willing to learn from our mistakes.

## Balancing our decisions

At TenneT we are responsible for balancing the electricity grid: to keep the grid frequency of exactly 50 hertz at all times, electricity demand and consumption need to be in balance. This requires the constant and delicate planning and balancing of the transmission needs. However, we are also guided by another balancing act. To design and build the future electricity system, we do not only consider reliability (security of supply) but also the sustainability and affordability of this system. We believe that all these three elements are necessary when planning for a future energy system that meets societal needs. As we have to carefully balance these three elements in all the decisions we take, we refer to this as 'the balancing act'.

An example of the balancing act is when we are planning and designing new projects to expand or reinforce the electricity grid to ensure a secure supply of electricity not only now, but also in the future. We make use of raw materials such as copper and mineral oil, as these are critical to the well-functioning of our assets and as such, the reliability of our grid. As these are also naturally scarce resources that come with a negative environmental impact, we aim to increase circular use of these products. We aim to make more sustainable choices by looking for alternatives, such as aluminium instead of copper. The qualities of resources differ, which does not make it clear cut to switch materials. And at the same time, we also take into account the costs associated with these choices, whereas a choice that benefits reliability or sustainability might also come with a cost. We strive to find the right balance between all three elements.

## Our path towards 2050

By 2050 the European Union aims to become a climate-neutral continent and by 2030 the EU already demands 55% lower emissions. These ambitions have been translated to national policies as realising an energy system that fits this ambition is an important factor. Together with partners within and outside the energy sector, including other TSOs, regional DSOs and national governments, TenneT is committed to deliver a future-proof energy system. These milestone dates may seem far away, but for TenneT 2030 is already tomorrow. This is one of the reasons why we are developing our approach regarding a Target Grid. With this, we want to connect to plans for national grid development and provide input to accelerate them. Our goal is to build a future-proof, reliable, energy- and cost-efficient power grid in time, to meet political climate targets.



Our approach is to prepare ourselves up to 2025, by when we will be at a capacity to meet peak delivery. By 2030, we will ensure that the Target Grid is prepared, which will result in having a reliable electricity grid backbone in place that can support the increasing electrification by industry and end-users. Projects are built to be future-proof, which means that we account for extra capacity ahead of time. Up to 2045, we will build the Target Grid and make sure that all sectors of the energy system are coupled, with the North Sea established as the new powerhouse of Europe. By this date, we aim to have realised an integrated onshore and offshore grid that is carbon free.

How will we make Target Grid 2045 happen?

- Back casting as a license to plan: We begin with a 2045 fossil-free scenario and plan backwards. This additional dimension of working can help us make our investments future proof and even go a step further, for example by preparing future infrastructure way ahead of time.
- Build future-proof: When building new infrastructure, we build in a way that is future-proof. If the Target Grid shows that in the future more power is for a station or line, we prepare for that.
- Plan for more, build what is needed: By preparing for a high electricity scenario, we are ready for scenarios with less electrification by building only what is needed: no money is wasted.
- Stakeholder engagement: Working even more closely with contractors and suppliers to build the network of the future is key. We must involve stakeholders in developing robust scenarios and involve in the implementation. The Target Grid cannot be realised without collaboration: to reach each milestone, everyone has a role to play.

## How we create value

TenneT plays an important role within the electricity supply chain and helps enable the lives of people working and living in the areas we serve. The way we create value is represented visually on the next pages, using the concept of value creation as described by the International Integrated Reporting Council (IIRC), which together with the Sustainability Accounting Standards Board (SASB) formed the Value Reporting Foundation. By means of the six capitals defined by this framework (financial, manufactured, intellectual, human, social & relationship and natural) we describe our input, output, outcome and impact. This model is the basis of our Integrated Annual Report. Our inputs, through which we create impact for society, are influenced by our strategy, our purpose and our principles. All of these are described in this chapter. Moreover, while conducting our core activities as a TSO our decisions are always influenced by the balancing act of reliability, affordability and sustainability. More information on the specific inputs, our related outputs, outcomes and impacts are disclosed in the sections 'Our performance in 2022' in each of the respective chapters. The way we aim to create long-term value is defined alongside the six outputs from our value creation model. Here we aim to:

## Deliver a high security of supply

Our core task is to secure the supply of electricity, today and tomorrow. And with this, we support the daily lives and activities of people and businesses in the areas we serve. In today's fast changing and more volatile energy system, securing supply is increasingly challenging. TenneT aims to create value to society through its decades of experience in operating our grid, together with a vision of how the future grid and electricity markets should be designed.

## Ensure critical infrastructure for society

Electricity plays a vital role in the lives of our stakeholders and society as a whole. TenneT builds and maintains the high-voltage onshore and offshore grid that is needed for this secure supply of electricity. With the materials and products we use to build and maintain our grid, such as our cables, substations, pylons and interconnectors, we realise the critical infrastructure that supports today's electricity needs as well as enabling the energy system of the future.

## Create a safe and inspiring workplace

We consider our employees to be our most important asset as they enable us to deliver on our strategic ambitions and create value for society. To this end, we aim to offer a safe, sustainable and inclusive place to work for all employees. Our programmes and actions focus on creating an inclusive and energising environment where people can thrive.

## Create value to transition to a climate neutral economy

As a company at the centre of the energy sector, we want to drive the energy transition and contribute to achieving the climate targets of the Netherlands, Germany and the European Union. We do this by contributing to a sustainable energy system, where we are able to connect everyone in our service area to green electricity. Simultaneously, we strive to reduce the environmental impact of our operations. This is related to our carbon emissions, our impact on the natural environment and the materials we need to build, operate and maintain our grid.

## Safeguard sustainable financial performance and investor ratings

In order to create long-term value, we are focused on maintaining our financial health. Our main sources of financing are our regulatory revenue and externally raised capital, which increasingly stems from green financing. To safeguard our financial health, we aim to optimise our financing costs and deliver a return on capital that meets the expectations of our capital providers. In addition it is essential to maintain strong credit and ESG ratings.

## Solve societal challenges with stakeholders and through partnerships

We are convinced that collaboration with stakeholders and strong partnerships with suppliers, customers and other parties are essential to building the future energy system and securing supply today and tomorrow. By combining experience and knowledge from different organisations within and outside the energy sector, we achieve our strategic objectives.

More information can be found in the section ‘Sustainable Development Goals and TenneT’ and in the chapters ‘Deliver a high security of supply’, ‘Create value to transition to a climate neutral economy’ and ‘Safeguard sustainable financial performance and investor ratings’.

## How we create and measure societal impact

The combination of these outputs also enables us to create outcomes and make societal impact. Our aim is to reduce our negative and increase our positive outputs, outcomes and impact, such as reducing our own carbon footprint and help to increase avoided emissions by connecting more and more renewable energy sources to our grid. With the role and scale we have as a company, we are aware that we are able to create these societal impacts, both negative and positive. We believe that these impacts are not the result of one output or capital and therefore choose to connect them to all and to the sustainable development goals we contribute the most to. We feel that these are our most material societal impacts to report on.

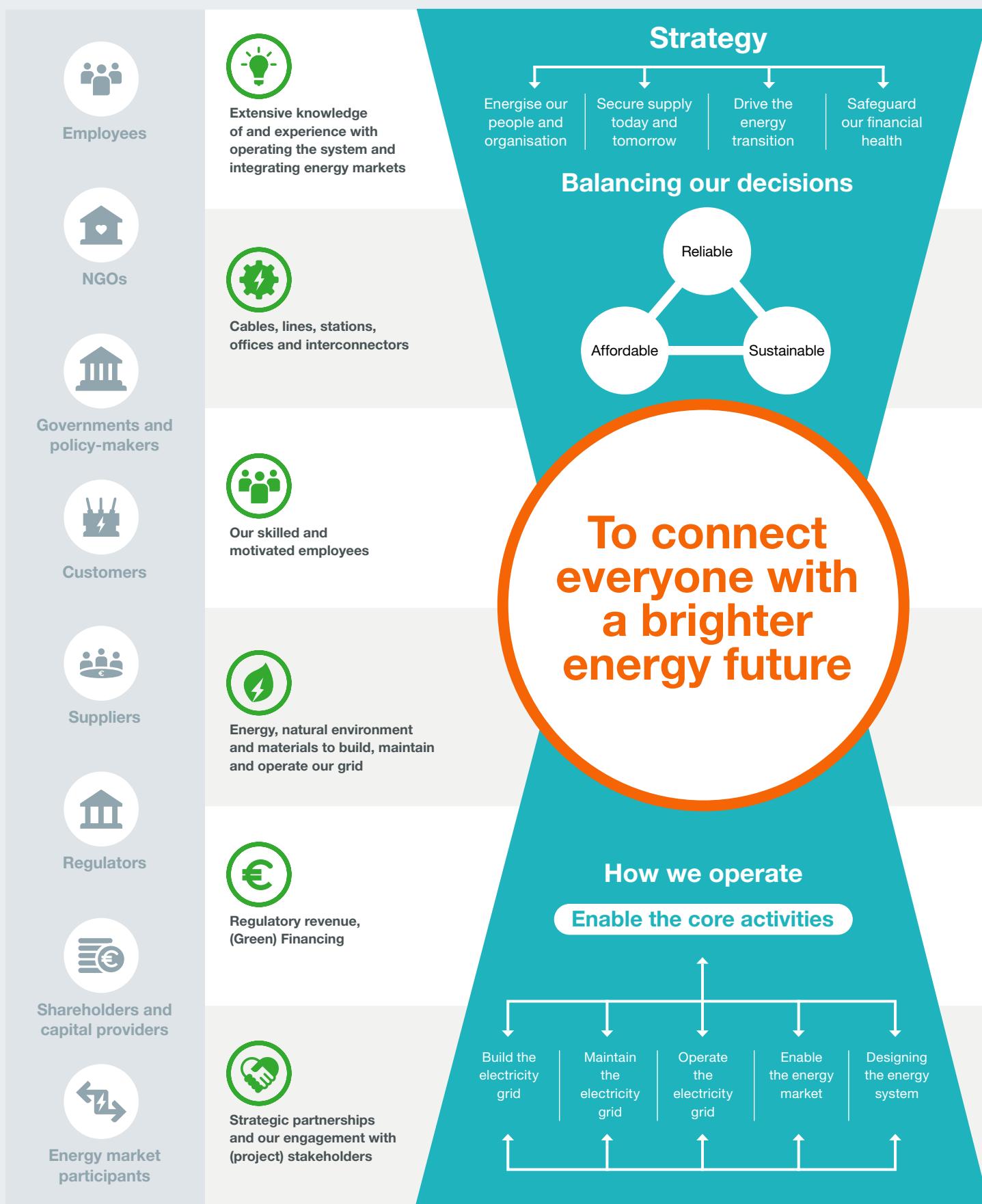
Disclosing an organisation’s impact(s) is a relatively new area of reporting. Measuring these impacts is therefore a journey and we continue to refine our methodology on this along the road. These insights help us to see to which extent we are meeting some of our strategic goals and even enables us to see to which extent we are able to fulfill our purpose as reporting on the equivalent number of households that in theory would have been able to receive 100% green electricity provides us with information to which extent we are able to connect everyone with a brighter energy future.

Our aim is to disclose the outcomes and impacts which we create on a societal level as a European TSO. This provides insights from a broader perspective on how the people living in the areas we serve experience the positive or negative impact we create and have on them. By focussing on these impacts we believe that we provide more meaningful insights for stakeholders rather than to focus on translating a variety of our company level outputs to outcomes and impacts.

## Stakeholders

## Input

## How we create value



## Output



### Deliver a high security of supply, see page 32

- For our onshore grid, we were able to secure supply of electricity 99.99963% of the time. Our offshore grid was available 94.08% of the time.
- In 2022, we experienced 11 interruptions onshore that overall led to less than 2 minutes of downtime.
- We continued to contribute to an integrated European energy market through knowledge and experience, as well as with the 17 interconnectors that are operational.



### Ensure critical infrastructure for society, see page 40

- This year, we invested EUR 4.5 billion in the expansion and reinforcement of our electricity grid.
- With 25,009 km of grid and over 27,600 pylons, we contributed to the critical infrastructure necessary for society's electricity needs.



### Create a safe and inspiring workplace, see page 49

- Despite our efforts to secure the safety of our people, we could not prevent safety incidents from occurring and recorded a Total Recordable Incident Rate (TRIR) of 4.4. These included two fatal incidents in 2022.
- Our absentee rate was 3.7 in the Netherlands and 4.1 in Germany.
- To empower our employees, we spent EUR. 2,114 per employee on training and development in 2022.



### Create value to transition to a climate neutral economy, see page 56

- As of 2022, we have installed 9.9 GW of transmission capacity to transmit renewable electricity from offshore power sources to the onshore grid. We also made progress with onshore projects that help transmit renewable electricity that is generated in remote areas to where it is consumed, for example the Wahle-Mecklar connection.
- Emissions from our own operations are reflected in our (gross) carbon footprint, which was 2,547,312 tonnes CO<sub>2</sub> in 2022. With a (net) carbon footprint of 1,659,344 tonnes CO<sub>2</sub>, we have greened 35%.
- In 2022, we unfortunately also had a negative impact on nature with 101 environmental incidents and 2,866 litres of oil leaked from cables.



### Safeguard sustainable financial performance and investor ratings, see page 65

- In 2022, we recorded an adjusted underlying EBIT of EUR 1,162 million and a ROIC of 4.9%. The adjusted FFO/Net debt was 9.7%.
- We maintained strong credit ratings: A- S&P and A3 Moody's. Also our ESG evaluation remained strong: in the S&P ESG evaluation, we scored an 86 out of 100 and our 'Preparedness' was classified as 'strong'.



### Solve societal challenges with stakeholders and through partnerships, see page 74

- This year, we continued to work together with our stakeholders and in partnerships for example with information days on our project sites and the 2GW Program.
- We updated our reputation survey to assess how TenneT is viewed by the outside world, which has resulted in a score of 7.8.

## Outcome & Impact

7 AFFORDABLE AND CLEAN ENERGY



Our societal financial impact on an average household in our service area

9 INDUSTRY INNOVATION AND INFRASTRUCTURE



Societal impact due to availability of our grid

13 CLIMATE ACTION



Avoided CO<sub>2</sub> emissions

5 GENDER EQUALITY



8 DECENT WORK AND ECONOMIC GROWTH



12 RESPONSIBLE CONSUMPTION AND PRODUCTION



14 LIFE BELOW WATER



15 LIFE ON LAND



## How our strategy creates value

Our Integrated Annual Report 2022 has been set up alongside the outputs of our value creation model. The image below shows how this is connected to our four strategic pillars and where more information about each topic can be found.

## Connectivity table

Capital	Strategic pillar	Chapter	Topics in materiality matrix	Key KPI's	Performance 2022	2021	Targets	SDG
	<b>Overarching</b>  	Page 2	<ul style="list-style-type: none"> <li>Stakeholder engagement</li> <li>Compliance</li> </ul>	<ul style="list-style-type: none"> <li>Internal engagement index</li> <li>Reputation survey</li> </ul>	<b>80*</b> <b>7.8</b>	82* -	-	
	 <b>Secure supply today and tomorrow</b>	Page 32 Page 21	<ul style="list-style-type: none"> <li>Secure supply today and tomorrow</li> <li>Responsible supply chain practices</li> <li>(Cyber) security</li> <li>Connectivity of our grid</li> </ul>	<ul style="list-style-type: none"> <li>Grid availability</li> <li>Investments</li> </ul>	<b>99.99963%</b> <b>4.5 bln</b>	99.99999% 4.0 bln	99.99962% 4.2 bln	<b>7 AFFORDABLE AND CLEAN ENERGY</b> <b>9 INDUSTRY INNOVATION AND INFRASTRUCTURE</b>
	 <b>Drive the energy transition</b>	Page 40 Page 56 Page 74	<ul style="list-style-type: none"> <li>TenneT's own environmental impact</li> <li>Stakeholder engagement</li> <li>Strategic partnerships</li> <li>Driving the energy transition</li> </ul>	<ul style="list-style-type: none"> <li>CO<sub>2</sub> footprint greened</li> <li>Offshore grid connection capacity</li> </ul>	<b>35%</b> <b>9.9 GW</b>	69% 8.5 GW	- 40 GW by 2030	<b>13 CLIMATE ACTION</b> <b>12 RESPONSIBLE CONSUMPTION AND PRODUCTION</b> <b>15 LIFE ON LAND</b> <b>9 INDUSTRY INNOVATION AND INFRASTRUCTURE</b> <b>14 LIFE BELOW WATER</b>
	 <b>Energise our people and organisation</b>	Page 49	<ul style="list-style-type: none"> <li>Creating a sustainable workplace</li> <li>Safety</li> </ul>	<ul style="list-style-type: none"> <li>Absentee rate</li> <li>% female inflow</li> <li>Total Recordable Incident Rate</li> </ul>	<b>NL 3.7</b> <b>GE 4.1</b> <b>33%</b> <b>4.4</b>	NL 3.1 GE 2.6 31% 5.8	30% 4.5	<b>5 GENDER EQUALITY</b> <b>8 DECENT WORK AND ECONOMIC GROWTH</b>
	 <b>Safeguard our financial health</b>	Page 65	<ul style="list-style-type: none"> <li>Financial health</li> </ul>	<ul style="list-style-type: none"> <li>Adjusted underlying EBIT</li> <li>ROIC</li> <li>Adjusted FFO/Net debt</li> </ul>	<b>1,162 mio</b> <b>4.9%</b> <b>9.7%</b>	801 mio 4.2% 10.5%	835 mio 3.9% 8.5%	<b>7 AFFORDABLE AND CLEAN ENERGY</b>

\* The employee engagement survey was performed in 2021 and the previous survey was conducted in 2020.

## Our supply chain

Our main task is to secure supply of electricity to nearly 43 million people in the areas we serve. To realise this, we transmit electricity via our high-voltage grid. To do this effectively today and tomorrow, we need to build, maintain and operate our grid. These dimensions have their own challenges and opportunities.

Electricity is either imported from other areas of the European grid or generated from conventional or renewable sources which are connected to our grid. This can be conventional power sources such as a coal-fired plant, or renewables such as from solar or wind and gas, which has been recognised for its role as a transition fuel in decarbonisation. In order to support the transition towards a decarbonised energy system, careful planning is required to integrate more renewable energy sources into our grid and to be able to secure supply of electricity at all times. When electricity is transmitted to our grid, we ensure that this is transmitted to our customers, being either large industries, the Distribution System Operators (DSOs) or being exported to other areas of the European grid. The hard work of many of our colleagues ensures this is possible. Our people do this by ensuring that we operate the grid well, by balancing supply and demand of electricity, facilitating the markets and with that ensure we are able to operate the grid in the best and most efficient way.

But also, we need to build and maintain a high quality, reliable, sustainable, and resilient grid that can support the energy system of the future. This requires the development of new technologies and causes an increase in demand for proven technology and skilled resources, next to raw materials, such as steel, copper and aluminium, which are manufactured or mined by third parties and used in our projects to build and maintain our assets. These assets are crucial to operate our grid. The use of these raw materials has a high environmental impact, with respect to the extraction and processing of these materials. Another high impact regarding these raw materials, like copper, relates to the fact that these resources, whose availability is critical to the energy transition, are becoming much more scarce. We want to be a green and responsible grid operator, taking measures to reduce our negative impacts and even creating positive impacts, wherever possible.

This means that in designing new parts of our grid, we need to consider different variables that support a greener and more sustainable energy landscape. This relates to scenarios which are more beneficial to our planet, such as enhanced circularity, biodiversity and working together with our partners to promote sustainable choices in the production and realisation of our assets. At the same time, we want to ensure that we help them do this in a way that meets our view on sustainable business conduct, such as in the area of human rights, including a safe working environment. This also applies when construction or maintenance works are executed. When our assets reach the end of their lifecycle, we aim to reuse and recycle all materials or components where possible.

### Working together with our partners in the supply chain

The developments described earlier in this chapter underpin the importance of working together with partners in our supply chain to overcome these challenges together and to realise the ambitious investment portfolio TenneT has. This way, both TenneT and its contractors are able to grow jointly and meet the challenges of today and tomorrow.

A strong relationship with our contractors is therefore of utmost importance, as they bring valuable expertise and capacity to help drive the energy transition. That is why at TenneT we are working for several years now with an integrated approach on Supply Chain Management. This programme helps us to mitigate the risks of increasing scarcity of materials and services, the price increases of raw materials and the unpredictability of global logistics. The goal of this programme is to build partnerships with our most important suppliers based on trust, transparency, and mutual respect. Understanding each other's interests, wanting to learn from each other, to improve operations and to jointly work on improvement projects, all on the basis of equality. This should result in increasing the reliability of our supply chains, efficient co-operation and a good safety performance.

Examples of this include our so-called EU 303 related to substations in the Netherlands and EU 300 contracts regarding technical and spatial services, of which the latter was awarded in September 2022. Important part of these EU 30X contracts is that our suppliers gain better insights into forecasts regarding future projects. Furthermore, we will work with global partners on a long-term framework contract for our innovate 2GW offshore program to ensure that our acceleration in the energy transition is being met through renewable offshore wind integration.

#### **Working together in our supply chain on sustainability (including human rights)**

As we rely on our suppliers to provide essential services, components and materials for our work, such as pylons, transformers, HVDC technology and power lines, we strive to ensure that none of them are, directly or indirectly, involved in conduct that does not meet our policies and quality standards. This can relate to product specifications and sustainability related topics, such as environmental performance or human rights, including a safe working environment. We make use of contractors and suppliers to realise our projects to build and maintain the grid. We purchase our components on world-wide markets and acknowledge that in other parts of the world different social and environmental standards may apply. Construction of our assets is being executed by local, national and international contractors.

In 2022, we took next steps with respect to human rights in our supply chain. We have gained more insights on our supplier landscape and have an updated risk assessment with salient human rights identified. With the globalisation of our supplier base, we find it essential to take responsibility and create impact through our human rights approach. This is why we have been working on our new [Human Rights policy](#), which was introduced in 2022. We have integrated core principles of the UN Global Compact, of which we are a signatory member, the UN Guiding principles on Business and Human Rights and the OECD guidelines in our new policy. This policy will act as a working document and will continue to be updated based on our experiences. We also included these principles in the update of our Supplier Code of Conduct. This is a mandatory step for all suppliers that want to work with us. We have put more emphasis on elements related to sustainability, including human rights, in this updated document.

Part of our approach in supply chain is to visit suppliers and ask them detailed questions, also regarding sustainability related topics. We believe that the responsibility of care for people and the planet is not limited to our own organisational boundaries. We also have a responsibility to ensure that this is also applied in the services and goods provided to us. If improvements are necessary, we try to work together with our contractors and suppliers by discussing together how these improvements can be made. In 2022, we performed 50 supplier visits (2021: 24). It is our policy to not accept suppliers who fail to meet our standards. In 2022, 43 suppliers met our standards (2021: 20), or were given the opportunity to take corrective actions. 4 suppliers were not approved (2021:3) and 3 suppliers are awaiting the result of this visit. We aim to further enhance mechanisms such as our supplier visits to gain more insights into how we can work together on a common approach regarding sustainable business conduct in our supply chain. By working together with them, we aim to identify areas of improvement and work together so these items are followed up. The results and implementation of these areas of improvement are monitored by revisiting the supplier after follow up.

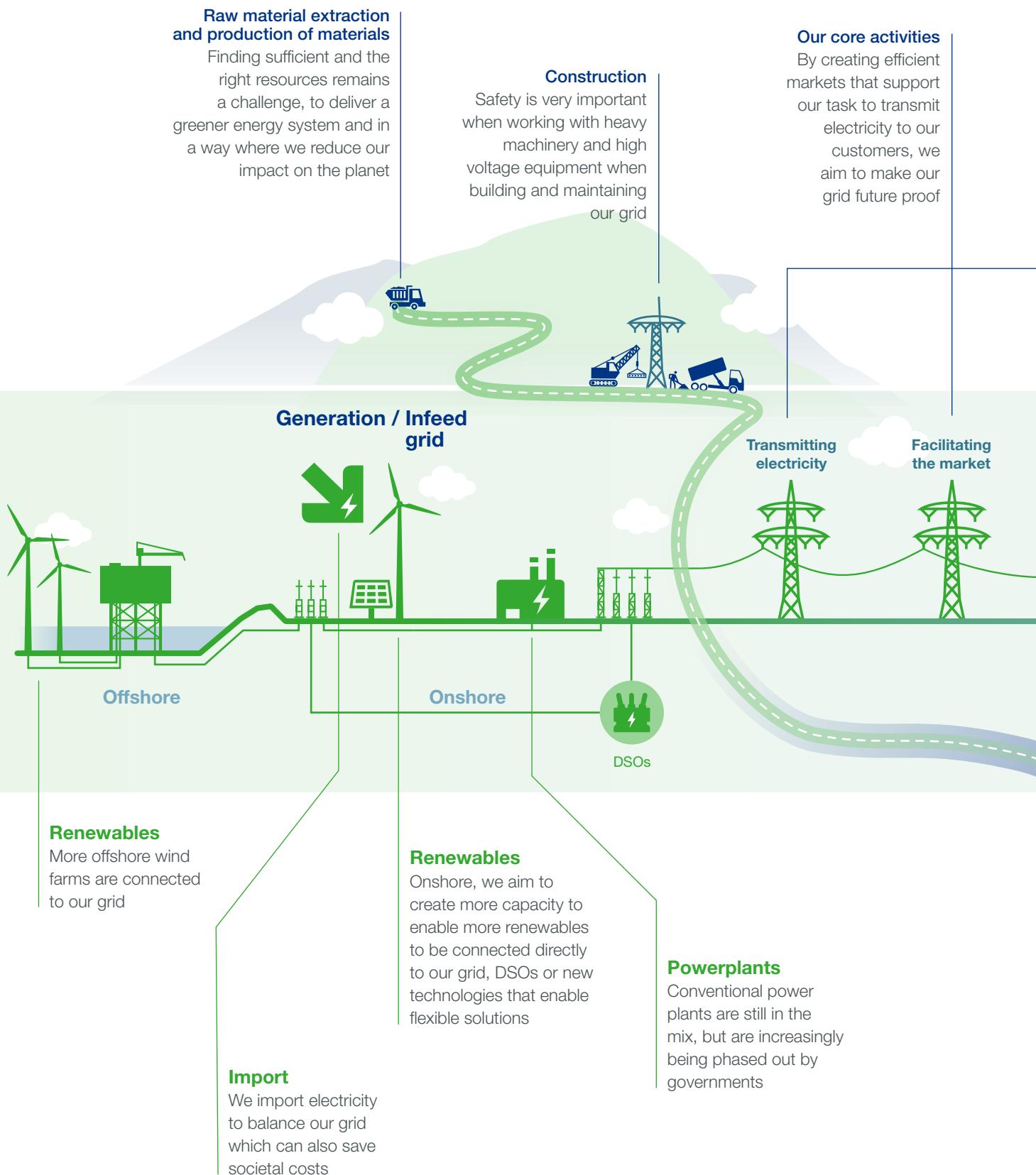
To help identify these areas of improvement, there are additional instruments, such as our Speak Up hotline, where also people working at TenneT and outside of TenneT are able to raise matters that relate to this topic. These are monitored by our Compliance and Integrity team. More information on this has been included in the '[Corporate Governance](#)' chapter.

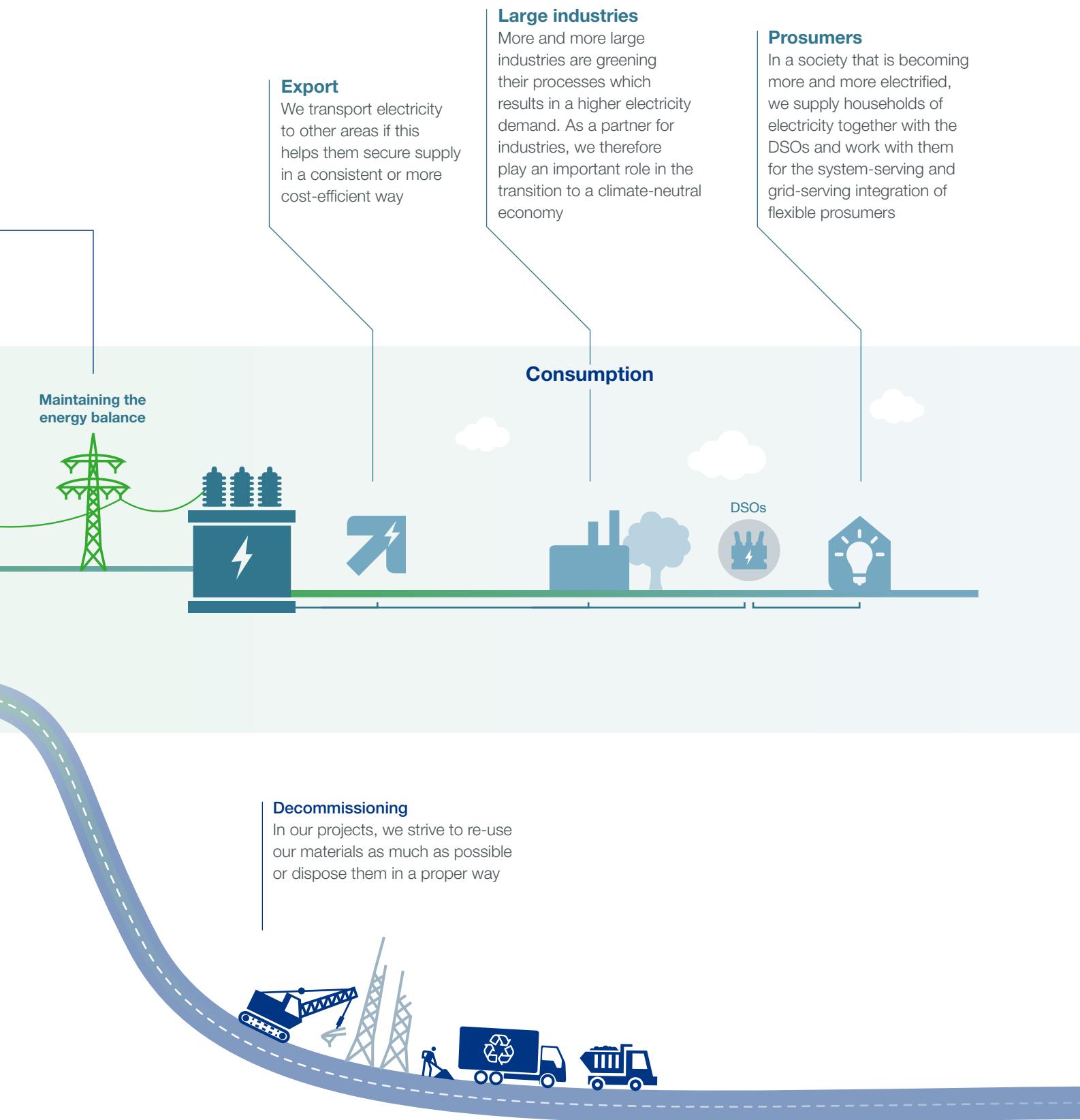
### **Working together with our suppliers to reduce our environmental impact**

In 2022, we have made progress in working with our suppliers to tackle more sustainability challenges together. This has been added to the aforementioned integrated approach and jointly work on reducing emissions throughout our supply chains. More information on this has been included in the '[Create value to transition to a climate neutral economy](#)', where we describe our progress on the indirect scope 3 emissions in our supply chain.



## TenneT in the supply chain





## Our stakeholders

To deliver on our promise and ambitions, we believe that it is essential to work together with stakeholders and through partnerships. Through our activities as a TSO, we are already continuously interacting with the world around us. Our activities could not take place without the often intensive co-operation with other key players within- and outside the energy sector. We aim to build and maintain good relationships with our stakeholders and co-operate with them in partnerships to deliver on our strategic objectives.

In 2021, we reassessed our stakeholder landscape and identified the most important stakeholder groups, based on their influence on us- and our influence on them. We also engaged with these stakeholder groups to get their views on the Sustainable Development Goals (SDGs) that relate most to us as an organisation and the topics related to the impacts we as TenneT have on the world around us. Who we identified as our key stakeholder groups are represented in the visual below.

To monitor the way our stakeholders perceive us, we perform a reputation survey. Every two years, we conduct a survey to assess how well we are performing in the perception of our key stakeholders. This survey was performed among key stakeholders. The most recent survey was completed in 2022 and resulted in a score of 7.8. which was classified as 'strong' and is higher than the average of the companies included in this survey (7.4).

Engaging with our stakeholders is crucial in achieving our strategic goals and serving our role in society. We value the engagement with local communities in our service areas and specifically in the areas where our assets are (to be) located. During stakeholder dialogues (such as workshops, online talks or events) we actively engage with local

stakeholders and address any concern they might have regarding our projects. Moreover, we aim to engage with communities in our service area regardless of pending or planned projects to inform them about the societal role of TenneT. By informing local stakeholders about our role to secure electricity supply and driving the energy transition, we can emphasise the importance of the work we do.

This will help us in our work to construct and maintain the critical infrastructure required to drive the energy transition. It remains crucial to engage with local communities, but also with NGOs and politicians at the earliest stage of a project to address their concerns and gain their understanding. As we expand our network, we must do so responsibly, by building a dialogue and gaining acceptance with local communities.

As a result, our work involves a delicate balance: what is desired on a national level is not always welcomed by local communities. To meet this challenge, we aim to do this in a responsible, engaged and connected way. We act responsibly in how we fulfil our role in society, engaged in how we build acceptance for our actions and connected in our dialogue with stakeholders. When we start a new project, we engage with the stakeholders affected, listen to their concerns and needs, and provide information about the project to evaluate and discuss. Although we take the opinions of stakeholders seriously, receiving new opinions after we have already followed a due process to include opinions in an earlier stage might cause additional delays.

We benefit from clear outcomes of our stakeholder engagement which enable us to plan and move ahead with certainty. The planning and licencing phases of our projects take up by far the most time in the realisation of our assets and with that, can slow the progress we need to drive the energy transition and achieve climate goals.

## Podcast with stakeholders

In 2022, we also actively engaged in conversations with stakeholders in our own podcast. In it, we discussed topics around energy transition.

You can listen back via [tennet.eu/podcast](https://tennet.eu/podcast) (Dutch) or [tennet-energiedialog.eu](https://tennet-energiedialog.eu) (German).



## Our stakeholders

Stakeholder group	Examples	Method of engagement
Governments and policy-makers	<ul style="list-style-type: none"><li>National and regional parliaments (ministries, parliaments)</li><li>Local authorities</li><li>European Union</li></ul>	Meetings
Employees	<ul style="list-style-type: none"><li>Employees</li><li>Employee representatives</li><li>Labour unions</li></ul>	Close involvement; employee engagement; periodic meetings with employee representatives
Customers	<ul style="list-style-type: none"><li>DSOs</li><li>Large industries</li></ul>	Informative; close involvement in various areas and contractual agreements
Shareholders and capital providers	<ul style="list-style-type: none"><li>Dutch Ministry of Finance</li><li>Investors</li><li>Project shareholders</li><li>Relationship banks</li></ul>	Close involvement
Suppliers	<ul style="list-style-type: none"><li>Contractors</li><li>Suppliers</li><li>External Service Providers</li></ul>	Market consultations; pre-qualifications; negotiations; meetings
Regulators	<ul style="list-style-type: none"><li>ACER</li><li>BNetzA</li><li>ACM</li></ul>	Informative and close involvement
NGOs	<ul style="list-style-type: none"><li>Think tanks</li><li>Industry association</li><li>Other NGOs</li></ul>	Informative, cooperative, consulting and involvement on project level
Energy market participants	<ul style="list-style-type: none"><li>Energy producers</li><li>Other TSOs and DSOs</li><li>Market parties</li></ul>	Close involvement

## Listening to our stakeholders

At TenneT, we consider a good relationship and dialogue with our stakeholders to be essential. Especially an issue like energy transition cannot be tackled alone and requires close cooperation. In our reputation survey, we explicitly ask stakeholders every two years how they view us, also to learn from them and to improve ourselves. Stakeholder statements sometimes ask for this as well. Here are a few statements stakeholders made about TenneT in 2022.



**"We are dismayed by TenneT's message, as we have high ambitions for renewable energy, the sustainability of business and economic growth. This notice limits the opportunities for new companies to establish themselves and makes expansion opportunities for established companies almost impossible."**

- Deputy after TenneT made public that parts of the grid are congested -

### **Our response:**

In 2022, TenneT had to announce in a number of provinces in the Netherlands that the maximum capacity of the grid there had been reached. This was a hard message for entrepreneurs in the provinces in particular. Several deputies were dissatisfied with the sudden announcement and the lack of perspective. TenneT learned from the approach last year. There is now also more structural cooperation on the file and governments, grid operators and companies are working together more.

→ **More information in our chapter  
'Deliver a high security of supply'**



**"There is no need for dinosaur pipelines if the energy transition is implemented decentrally and locally. In the end, this serves not only security of supply, but also a citizen-friendly, environmentally friendly and economically sensible energy supply and creates added value in the region. That's why we don't need SuedLink as an electricity superhighway either."**

- Representative of German "Bürgerinitiative" -

**Our response:**

When building new infrastructure, we deal with many stakeholders in the area where new infrastructure is to be built. This often raises questions about whether the link is necessary and why it should be built here. We understand these questions. We carefully prepare the expansion of infrastructure. TenneT spends a lot of time and attention in the usefulness and necessity of new connections and also the spatial integration, which we aim to do in dialogue with the surrounding area.

→ **More information in our chapter  
'Ensure critical infrastructure for society'.**



**"TenneT is insufficiently prepared for the future. One of the challenges is the shortage of technical staff, which is where TenneT can do more (alliances with MBO/HBO courses) "**

- Stakeholder in our Reputation Survey -

**Our response:**

The energy transition requires a major rebuilding of our system. This will require many people to help build high-voltage substations and new cables in the coming years. It is a challenge for the whole sector to find people who can contribute to this. TenneT is focusing on increasing the number of employees and on partnerships with educational institutions. We are also working with partners in the sector to make engineering more attractive.

→ **More information in our chapter  
'Solve societal challenges with  
stakeholders & through partnerships'.**

## The UN Sustainable Development Goals and TenneT

The Sustainable Development Goals (SDGs) were determined by the United Nations (UN) as global goals that Member States should translate into national policy. The aim of the SDGs is to create a sustainable future for all people. The co-operation between governments and other important partners, such as businesses and NGOs, are key to achieving these important goals. TenneT is committed to the SDGs and in 2021 we re-assessed which SDGs are most applicable to us. We reached out to our key stakeholder groups and discussed their views on this.

The outcome of this assessment has led to three SDGs that we believe we have the most impact on: the global challenges related to SDG 13 and SDG 7 and SDG 9 due to the core tasks we have as a company. To measure our contribution and impact, we have determined so-called 'impact indicators', to assess how this affects society in the areas we serve.



Current predictions indicate that governments and organisations need to step up to help mitigate the effects of climate change to meet the 1.5 degrees scenario from the Paris Agreement. As a cross-border TSO and a key player in the energy transition, we can help mitigate the effects of climate change by contributing to a climate-neutral future energy system. That is why we have identified SDG 13 'Climate Action' as the main societal objective we contribute to. On the other hand, also our choices and business conduct impact the planet. This is why we measure our greenhouse gas emissions against Science Based Targets Initiative approved targets. We also report the amount of avoided emissions, which due to our activities, have been avoided on an annual basis. This is how we measure our positive and negative contribution regarding SDG target 13.2.

Target	KPI	Contribution 2022
13.2	Total greenhouse gas emissions (gross)	2,547,812 tonnes
7.2	Total avoided emissions	17.2 mio tonnes



With our core activities, we feel that SDG7 is one of the SDGs we can contribute the most to. The underlying metrics related to this SDG is target 7.1 and 7.2. For target 7.1, we have developed an impact indicator to report on the societal financial impact we have on the electricity bill of a household. For target 7.2 we measure the number of gigawatts of renewable energy that we are able to connect to our grid. For now, we start with the amount of offshore wind we have been able to connect compared to the ambitions of the governments in our service area and the onshore electricity that is directly connected to our grid. Over time, we introduce other parts that we enable by realising new infrastructure onshore.

Target	KPI	Contribution 2022
7.1	Societal financial impact on households in our serving area	GE: 4.8% NL: 9.1%
7.2	Equivalent number of households that in theory would have been able to receive 100% green electricity	14.1 million

**9 INDUSTRY, INNOVATION  
AND INFRASTRUCTURE**

Another goal we believe we contribute most to given our activities is SDG 9. Our role is particularly linked to target 9.1, where we focus on the availability of our infrastructure and how it supports and enables society. This is measured by the impact indicator showing the value we generate having our grid available and how this diminishes when we are unsuccessful in securing supply of electricity.

**Target****KPI****Contribution 2022****9.1**

Societal value of the availability of our grid

> GDP of the Netherlands

**5 GENDER EQUALITY****12 RESPONSIBLE CONSUMPTION  
AND PRODUCTION****15 LIFE ON LAND****8 DECENT WORK AND  
ECONOMIC GROWTH****14 LIFE BELOW WATER**

In the execution of our activities, we also have an impact on other SDGs. We contribute to SDG 5 and SDG 8 when we look at policies relating to our people (including our contractors) and SDG 12, SDG 14 and SDG 15 with respect to the choices we make that affect our planet. SDG 12 for instance, relates to our circularity ambitions, which also has an effect on climate change. Reducing the use of virgin materials, such as copper, has a positive climate effect, as it avoids emissions in the extraction phase. That is why we track several KPIs related to the targets supporting these goals, but the effect on other SDGs are less significant than the ones related to the SDGs above. Our main SDGs relate to our core tasks, the others we see our responsibility to act upon.

**Target****KPI****Contribution 2022****5.5**

% of females in board positions

55.6%

**8.8**

Total Recordable Injury Rate

4.4

**12.2**

Reduction of non recyclable waste and copper use

estimated: 14% and 38%

**14.2/  
15.4**

Net zero impact on nature

TBD

# Our performance in 2022

We describe our performance in 2022 in the following six chapters, each describing one of the six outputs/outcomes as mentioned in our value creation model.



## Deliver a high security of supply

As the transmission system operator (TSO) for the Netherlands, and a significant part of Germany, TenneT owns and operates over 25,000 kilometres of high-voltage lines and cables. Our clear and critical task is to deliver electricity to nearly 43 million domestic and business users, safely and reliably, 24 hours a day and 365 days a year. This is what we call security of supply.

To do this, we design, build, maintain and operate a high-voltage grid stretching across land and sea. This carries electricity from where it is produced – including an increasing proportion of offshore wind energy – to where it is consumed. We carry it over ground via overhead lines, underground, under the sea and across borders, over our high-voltage grid. With a service level as high as 99.99963%, the availability of our onshore grid is among the highest in the world.

Ensuring that people and businesses in the areas we serve have a secure supply of electricity, meets an important need in society. And as the transition to renewable energy sources and the goal of a sustainable energy future depend on the development of a new energy system, we directly contribute to the realisation of Europe's ambition to be the world's first climate-neutral continent by 2050.

As TenneT, we face an ongoing balancing act in our work: securing the supply of electricity today and tomorrow, driving the energy transition and doing so at an acceptable cost for society. This balance requires co-operation on many levels to tackle all the challenges we face.

As Europe accelerates its clean energy targets, our responsibilities are growing, and the time we have to meet them is shrinking. By 2030 the current ambitions are to

have an energy system capable of supporting a 55% drop in EU carbon emissions, with net zero to be achieved in our German market by 2045.

To achieve this, our energy system is undergoing a development in which the grids - the backbone of the energy system - are being used in a completely different way. Our energy network was once built to meet the demand for energy on a mainly national scale. Now it is changing into a multifunctional hub of electricity supply, demand, storage and an international connector for European cross-border energy trade. To build a system capable of meeting these challenges and supporting Europe's climate targets, we are focused on a grid development strategy to deliver a Target Grid in 2045 (see '[About TenneT – Our Strategy](#)').

The challenges of achieving this goal became even more complex in 2022, with the outbreak of the war in Ukraine. The humanitarian, geopolitical and energy crisis caused by the war has a substantial impact on TenneT's activities, with rapid increases in energy and raw material prices, gas shortages and disrupted supply chains all creating difficult conditions across our sector (see '[Secure supply today](#)' on the next page). A particular impact of the market volatility is seen in our procurement of balancing and ancillary services, including balancing reserves and redispatch, which we use

to balance demand and supply and to ensure the security and quality of electricity supply. Fast-rising gas and electricity prices led to a rapid increase in the costs of these ancillary services during 2022, reaching their highest-ever level. (see '[Safeguard sustainable financial performance and investor ratings](#)').

However, these developments have strengthened the urgency among European governments to reduce energy dependency, with a shared desire to boost energy security and independence. A renewables-based energy system in Europe is the key to achieving this, but, at the same time, all players in the system – TSOs, national governments, regulators and end-users – need to co-operate to reach this goal.

## Our performance in 2022

Onshore grid availability	Performance	Target	Status	Trend
	<b>99.99963%</b> 2021: 99.99999% 2020: 99.99995%	99.99962%		Our grid availability onshore had a slight decrease this year, due to interruptions in the 110/150 and 220/380 kV grid in the Netherlands. Despite these interruptions, we did meet our target.
Offshore grid availability	Performance	Target	Status	Trend
	<b>94.08%</b> 2021: 94.09% 2020: 94.03%	95.07%		The offshore grid availability was comparable to last year. Due several interruptions, such as with the NorNed cable, we unfortunately weren't able to meet the target.

### Secure supply today

TenneT's most important task as a TSO is to secure the supply of electricity, now and in the future. This requires managing factors such as the changing mix of energy sources – including renewables alongside traditional sources – the integration of new technology and a growing demand for electricity from end-users. Our people, such as in our control centres and in the field, work hard to ensure that we are able to secure this supply of electricity, 24 hours a day.

Their efforts helped us to achieve, once again, a high-level availability of 99.99963% for our onshore grid and for our offshore grid 94.08% of the time. We report our onshore and offshore grid availability separately, as they are technically different. Our offshore connections have less built-in redundancy than our onshore grid. Unfortunately, there were also instances where we faced outages and we needed to respond. The duration of these interruptions however did not have a significant impact on our overall grid availability. An example of this is an incident that occurred between Lelystad and Dronten in the Netherlands. On 2 September a short circuit lasting approximately 4 minutes, caused an outage in Flevoland. This short circuit severely overloaded the assets, resulting in damage to the overhead lines, some of the assets in Lelystad and Dronten-Olsterpad

and the railway infrastructure of ProRail. TenneT is drawing lessons from the events. For instance, efforts are being made to raise even more awareness around switching on installations that may or may not be live. Extra attention is also needed for such switching operations and procedures for this are being tightened.

For our offshore grid, this was also the case with our interconnectors NorNed and COBRA. Our NorNed interconnector was out of service for a few months, initially caused by a cable failure on the Dutch side of the connection. During the cable repair and the root cause analysis severe quality deficiencies at the cable have been revealed, what was leading to further assessments of the cable prior to a possible reenergisation. As a result of the investigation, the 1.5 km onshore cable part has to be replaced because of reaching the end of lifetime. All measures have been taken to substitute this cable part as soon as possible, expected in Q2 2024. Additionally, we have taken several measures in order to reenergise NorNed whilst making sure to stress the onshore cable part as little as possible. Our interconnector COBRA failed in November 2022. The failure was located on the Danish Island Fano. The failure was repaired in 28 days, as a result of good teamwork between EnergiNet, Prysmian and TenneT.



In 2022, several external factors intensified the challenge of maintaining security of supply. In particular, the war in Ukraine caused upheaval in the energy markets. A prime example of co-operation was seen during 2022 when ENTSO-E synchronised the power systems of Ukraine and Moldova with the continental European network. This emergency work, soon after the commencement of the war in Ukraine, was completed in a matter of just over two weeks in March 2022. Previously Ukraine was connected to the Russian power system, therefore it was essential to bring it into the European system as soon as possible. TenneT is proud to have been involved in this synchronisation.

The shortage of gas resulting from the war in Ukraine forced several countries to turn to alternative power supplies to secure their load. For example, the Dutch government decided to temporarily re-direct some generation demand to coal-fired plants, so that it could focus on stocking up gas supplies for the winter. The same applied for Germany, where the German government initiated a programme to bring conventional power plants from their current reserve status back to the energy market. Also the last three remaining nuclear power plants in Germany that had been planned to be phased out in Q4 2022, were ordered to remain operational until mid April 2023.

European TSOs also faced other energy market challenges in 2022 that affected security of supply. A sharp reduction in the availability of nuclear generation capacity in France – due to widespread repairs - and the low water levels in hydro power plants at many of the European countries – subsequently lowered the capability for energy exports. In addition to this, the dry summer of 2022 led to lower water levels in many rivers – including the Rhine in Germany – which hampered the transportation of coal. These and other pressures on the energy market in 2022 are causing TenneT and other TSOs to evaluate and coordinate at a European level the security of their supply. Every year TenneT performs such an analysis to determine potential effects and measures, both in the Netherlands and in Germany. Based on this analysis, there were no additional measures deemed necessary in the Netherlands. In Germany, the German ministry of Economic Affairs and Climate Action requested the German TSOs to conduct an in-depth additional analysis to assess the electricity supply situation from a generation and transmission adequacy perspective and to determine system needs for winter 2022/2023. Several scenarios and solutions were presented to the German government. The recommendations required timely government action to secure supply of electricity in the winter of 2022/2023, which has resulted in several actions, such as better utilisation of the grid by dynamic line rating, usage of high-temperature conductors and load flow steering assets, as well as the aforementioned actions regarding nuclear and coal-fired plants in Germany.

## Congestion situation in the Netherlands

Rapid developments in the energy market due to high gas prices, the war in Ukraine and the ensuing energy uncertainty have led to a number of new congestion areas on the electricity grid in the Netherlands in 2022. In June, a temporary stop on new grid connections for businesses was announced in the provinces of Noord-Brabant and Limburg. The number of connection requests from new solar parks, companies wanting to electrify and the growing number of heat pumps and charging stations grew faster than the grid can be expanded.

Immediately after the announcement, the Minister of Climate and Energy set up a task force with all stakeholders such as governments, interest groups and grid operators to find solutions to grid scarcity and also develop a national action programme.

This national action programme was published in December. It includes measures to speed up grid expansions, flexible contract forms, better programming and also to make ‘smarter’ use of the existing grid by focusing on flexibility.

In Noord-Brabant and Limburg, TenneT created extra capacity by focusing on congestion management measures, similar to traffic congestion avoidance. This involves paying users a fee to relieve the grid at busy times. The possibility of applying this to other areas in 2023 is also being investigated. Network congestion will remain a part of the transition in the coming years. Through co-operation between government, grid operators and industry, we can take the right steps towards a climate-neutral energy supply.

Beyond creating uncertainty in the energy landscape, the war in Ukraine has also further accelerated demand for electricity. To avoid escalating gas bills, many households are switching to electricity for heating and business users are moving over to electrification for industrial processes earlier than planned. This includes energy-intensive industries, such as steel, aluminium, copper and chemistry. Following this surge in electrification, we saw an increasing number of requests from customers to connect to our grid in 2022 (see our section on ‘Congestion situation in the Netherlands’).

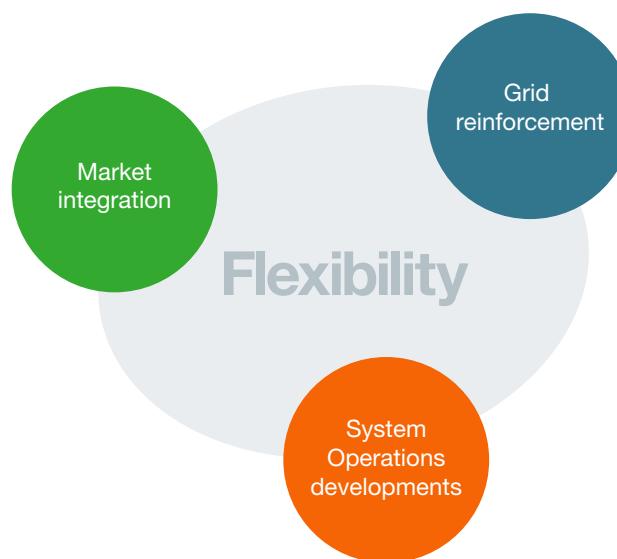
Despite these challenges, the current geopolitical situation and energy market volatility in Europe represent a unique opportunity to accelerate the energy transition and build societal and political understanding and support for TenneT’s work. With European governments being more proactive and ambitious in reducing their dependence on gas imports, and increasing the pace of electrification, there is renewed unity and urgency behind energy security and the energy transition.

In 2022, we faced additional challenges in our grid due to growing congestion. An example of when this could occur is when for instance in Germany a high feed-in of renewable energy sources in the North – such as on very windy days – needs to be transmitted to the load centres in the South, and cannot be fully accommodated due to the limited available transmission capacity of the high-voltage grid without causing overloads. This endangers our security of supply as electricity cannot be transmitted across overloaded powerlines. Therefore redispatch actions are applied to bring the system back to secure and adequate limits.

### Securing supply tomorrow

For TenneT, planning and building a future-proof energy system that provides security of supply tomorrow is made more challenging because of the fast-changing nature of the energy system. The volatile and intermittent nature of wind and solar power, and the long distances between where power is generated and where it is consumed create entirely new technological, engineering and market challenges for TSOs. Innovation will be critical to meet these challenges, not only related to more effective and efficient use of our assets, but also to boost our system operations and improve market design. To achieve this, there are three focus areas that will be essential for securing supply in the future: grid reinforcement, market integration and system operations developments.

## Our three focus areas



### Grid reinforcement

Grid reinforcement is not only essential to reduce the pressure on our grid today, but also to prepare it for the increasing demands and dynamics of the future energy system. This is also a way to prevent congestion, next to the congestion management measures we have taken to relieve pressure on the grid at the busiest times. In several areas of our grid we are increasing capacity.

The fast-growth of generation capacity in the North Sea requires an increase in transmission capacity in the offshore and part of the onshore grids. On top of this, the rapid shift to electrification in society is further increasing the need for reinforcement and additional capacity. The electricity grid was built over a century ago, with parts of our onshore grid also realised in the 1960s and 1970s. With the distance between the generation and consumption of electricity becoming greater in the past decades, our grid needs to be updated to cope with this demand and urgently requires modernisation and reinforcement. Substantial work is underway in the Netherlands and Germany to deliver these reinforcements and ensure our grid has the capacity and flexibility to cope with changing energy needs. The construction of the new HVDC corridors in Germany – SuedLink and SuedOstLink – as well as the upgrading of five 380 kV overhead lines in the Netherlands, are just some examples of our extensive reinforcement work. For more details on our grid reinforcement projects see '[Ensure a critical infrastructure](#)' chapter.

## Market integration

Market integration is at the centre of the European Union's ambition to create a single European electricity market. Working closely with other TSOs, TenneT is taking a prominent role in this development.

An interconnected European electricity market has physical and commercial aspects. TenneT is actively involved in both, for example by building cross-border interconnectors that allow neighbouring countries to seamlessly exchange energy, and also by facilitating the commercial electricity market between European countries.

As for the physical connection of European grids across borders, TenneT has now built 17 interconnectors, connecting our grid with the grids from other TSOs. For full details of our cross-border connections see the grid map on our website. A major landmark in market facilitation was reached in 2022. Together with 14 other TSOs, we introduced a new mechanism to further integrate the European electricity market, making it more efficient and robust. The new Day-Ahead Flow-Based Market Coupling Mechanism enables the European power grid to transmit more electricity across borders at a lower overall cost.

With the introduction of flow-based capacity calculation, the network capacity is typically calculated taking the whole regional grid into account, as well as the economic value of the energy exchanges. Now, electricity delivery across borders within the CORE region (Austria, Belgium, Croatia, the Czech Republic, France, Germany, Hungary, Luxemburg, the Netherlands, Poland, Romania, Slovakia and Slovenia) is optimised by allocating capacity to the flows with the highest economical value. This means in general a larger value of electricity can be exchanged between zones.

Furthermore, TenneT also collaborates with other TSOs and market parties to boost security of supply through market integration initiatives. For example, TenneT is one of many European TSOs involved in the Platform for the International Coordination of Automated Frequency Restoration and Stable System Operation (PICASSO) and the Manually Activated Reserves Initiative (MARI) – two projects that facilitate the European-wide exchange of balancing energy. The PICASSO platform went live in June 2022, with MARI following in September 2022. All four German TSOs connected to the platform in October 2022.

## System Operations developments

As well as building new assets and facilitating the electricity markets, we must also invest in new concepts for operating the grid, operating a more dynamic system and making a more efficient and optimised use of our system through new digital solutions. As our grid becomes more dependent on renewable energy sources, our Energy System Planning (ESP) team is exploring multiple solutions to ease congestion, improve reliability and manage power flows across the grid. By improving the predictability and stability of the grid, we can reduce the need to use conventional power sources to keep the grid in balance, which will therefore help to reduce increasingly high redispatch costs. Two techniques we are using for these purposes include phase-shifting transformers and mechanically switched capacitor with damping network (MSCDN) technology. Phase-shifting transformers allow us to influence power flows in the grid, by reducing or increasing the transferred power. This control improves our ability to balance the volatility of renewable energy sources, such as wind and solar. TenneT installed the first four units of this technology in the southern substation of Wuergau and will install four more in Krempermarsch, in the northern part of Germany. In coming years, the German TSOs, including TenneT, are expected to reinforce the grid with 36 phase-shifting transformers. MS CDN is a grid stabilisation technology that allows us to absorb voltage fluctuations in a substation and thereby stabilise the operation of the transmission grid.

Another important development to make our systems resilient for years to come is our Control Room of the Future (CROF) programme, which relates to, among others, the update of our current operational system. The CROF has the ambition to develop methodologies, processes and tools in order to guarantee excellence at system operations, including among others improved forecasts, dynamic security assessment, inertia monitoring, and topology optimisation. More information on this can be found in the '[Solve societal challenges with stakeholders and through partnerships](#)' chapter.

## Flexibility in demand and supply of electricity

Flexibility will be crucial to cope with the unpredictability and volatility of renewable energy sources, while reducing the need for grid expansion. Flexibility is how TSOs refer to using on-demand energy sources to keep the grid secure and in balance. Traditionally, TSOs used fossil-fueled power plants to guarantee an adequate system and to maintain a balance between electricity supply and demand. However, with more renewable energy sources being fed into the grid, supply and demand becomes more volatile impacting

system balance and power flows within the grid. In addition, clean energy targets increasingly restrict TSOs' opportunity to use conventional power as a source of flexibility.

As a solution, TenneT, along with other TSOs, is looking for new sources of flexibility. Storing electricity in energy carriers, like battery energy systems and hydrogen, is an important area of focus, as they provide low-carbon on-demand flexibility. The challenge is to achieve this at the scale needed for a fully decarbonised energy system and how to integrate widely distributed sources of stored electricity into the grid. The location of flexible energy sources will also become increasingly critical – for example placing large electrolyzers near the coast where offshore wind is landed to shore. Innovation and partnerships are critical in TenneT's flexibility strategy. (For more detail on innovations in Flexibility see the '[Solve societal challenges with stakeholders and through partnerships](#)' chapter).

TenneT has been driving various initiatives in co-operation with other grid operators and market partners to make distributed flexibility available for the grid through the optimisation of data exchange processes between market parties and promotion of the use of distributed flexibility options.

For example, TenneT has started several pilot projects to include smaller flexibility options into congestion management processes. In Germany, from 2022 onwards, plants and storage devices above 100 kW will be available for redispatch (today the limit is above 10 MW). In the Netherlands TenneT is strongly engaged in the GOPACS (grid operator platform for congestion solutions) initiative together with the Dutch DSO's.

By 2035, Germany expects to have technology-specific flexibilities of almost 80 GW from distributed flexibility options, such as electric vehicles, heat pumps and home storage. TenneT is also one of the TSOs behind Equigy, a pan-European project to efficiently integrate distributed flexibilities into the grid. More examples, such as the GAIA-X project we participate in, can be found in the '[Solve societal challenges with stakeholders and through partnerships](#)' chapter.

### System resilience

As the transmission grid is the backbone of economic and social activity, it is regarded as critical infrastructure and as such requires maximum protection from both physical threats (such as extreme weather events) and digital threats, such as terrorist or cyber-threats. For TenneT, this protection is not only essential for national security, but also to maintain the 99.99963% grid availability that end-users expect from us.

## Societal value of the availability of our grid

Transmitting electricity to large industries and via DSOs to millions of households powers and empowers society. This is our main task and also our main societal impact as a company. Designing, building, maintaining and operating a grid that is available all the time is the most important impact TenneT can have for society, to ensure that the people living in the areas we serve are able to live their lives and organisations can do their work. Achieving this impact requires each part of the energy supply chain to work together, therefore this achievement is not just the result of our own actions, but this societal impact we make together with others in the supply chain, such as electricity generation companies, other TSOs and distribution system operators.

However, an electricity grid that is available to supply electricity to its customers for 99.99963% of the time creates value. Our assessment, based on academic research, shows that the estimated societal value created by the availability of our Dutch grid surpasses the gross domestic product (GDP) of the Netherlands, which was over EUR 850 billion in 2021. This is because the supply of electricity does not only create economic value, but also direct and indirect benefits, such as being able to enjoy leisure time. For more information on this assessment and our methodology, please refer to the Additional CSR data document on our website. We will continue to further develop societal impact indicators during the next years and invite others to help us with this.

Cyber threats are encountered almost daily by European grid operators, demonstrating the need for constant vigilance. Growing geo-political tensions in the world, most notably with Russia, further intensify the need for protection of our critical infrastructure and IT networks.

As our grid operation becomes increasingly digitalised and data-dependent, we are aware that the risks of cyber threats grow with more points in our system to target. With every new large project we conduct to expand and modernise the grid in the Netherlands and Germany, we pay close attention to mitigating security risks, overseen by our growing team of experts. Thanks to our prevention measures, TenneT has successfully deflected numerous cyber-threats in recent years.

As the guardians of critical infrastructure, we co-operate fully with the authorities on cyber protection and fulfil all legal requirements. In Germany, TenneT is certified according to the BNetzA security catalogue, based on the ISO 27001 security standard. We also voluntarily apply this standard in the Netherlands to harmonise cyber security at the highest possible standard. The efficiency and effectiveness of our cyber-protection procedures are demonstrated annually to an external certification body. We frequently perform penetration tests, with support of external consultants, to check the resilience of our IT infrastructure.

In addition to cyber-threats, we also need to protect our assets against physical threats, such as the theft of valuable raw materials, such as copper, which is targeted due to its high market price, or threats related to climate related events. And, as we are building high-value assets near the busy shipping area of the Dutch and German North Sea, we need to protect against accidental collisions and damage.

TenneT closely monitors the physical security related to our infrastructure, both on- and offshore. To determine and assess the actual threat levels, we are closely working together with relevant stakeholders, such as governmental institutions and other companies in critical infrastructure. Next to measures that e.g. governments can take in the areas we serve, TenneT takes a spectrum of measures based on our assessments to reduce the risks and vulnerabilities.

This can be caused for instance by extreme weather events, which we see more frequently due to the effects of climate change. A good example of how we cope with these growing threats to our physical infrastructure, is the event related to Hollandse Kust (beta), where a vessel collided with the jacket of this offshore grid connection system.

In January 2022, a cargo ship lost anchorage during a storm and drifted into a collision with the jacket foundation of this offshore substation. In designing our assets, we strive to take the effects of extreme weather events related to the area these are built into account. The necessity of this is underpinned by the recent extreme weather events.

### **What could prevent us from realising our goals?**

As our electricity supply relies more and more on weather-dependent sources, we face more challenges on how we operate our grid in its current form and also how to plan for its expansion. As one of our challenges for the coming years, TenneT has to address the risk of congestion when it is not possible to connect new customers to the in-feed of renewable energy. When there is congestion, we need to provide alternative sources of power, which raises the financial question of rising redispatch costs that, in the end, society has to pay for.

For TenneT connecting and co-operating with partners (either political or the market) who have the knowledge and expertise or the technology needed to secure supply today and tomorrow becomes more and more important. For instance by exchanging experiences with European TSOs via ENTSO-E, to retain political support for long term planning of our assets, but also to attract the right partners who can support us in our climate ambition or new markets such as hydrogen or battery storage.

New technologies help us mitigate risks related to security of supply, particularly controllability capabilities and digitalisation has a potential to make optimal use of our grid. For example, data analytics can help us gain insights on how we can use weather predictions, assess real-time electricity demand, survey our assets and also help us keep the grid secure and in balance by connecting to an increasing number of producers and consumers. However, although technology will play a crucial role in realising the energy transition, there are currently no decisive breakthroughs that will simultaneously guarantee security of supply, affordability for society and competitiveness of industry prices.

The last couple of years showed us that climate change can pose significant challenges to security of supply. The droughts that led to hydropower shortages, and the growing frequency and risk of floods, storms and fires, threaten the stability of the electricity market. And as our system is increasingly getting more dependent on renewables, extreme weather can challenge security of supply in other ways. Making better use of available weather predictions could help us anticipate when extreme conditions could occur.

# Deliver a high security of supply

## Hans Schermeyer

Product Owner Energy Services at Viessmann

As heat pumps and distributed energy become a bigger part of our energy system, they will bring additional demands on the grid. But smart control of these appliances can help to solve these demands, as well as providing new ways to help balance the grid.

“Everyday at work I try hard to put our users' needs at the very core of our activity through solving purposeful challenges for society. Like having heat pumps run when the sun is shining. And have them not run when the grid needs a lower demand. Providing grid services on residential level with the Viessmann heat pumps of our users was definitely one of the highlights of 2022. Kudos to our TenneT colleagues which helped to make the ViFlex project happen by releasing the “Flexmodus” to our users!”



## Ensure critical infrastructure for society

TenneT is one of Europe's largest investors in national and cross-border transport capacity on land and at sea. As such, our infrastructure will be key to Europe's ambition to be a climate-neutral continent by 2050 as we deliver a grid predominantly supplied by renewable energy sources, in line with the Paris Agreement and national climate targets. As well as planning for the future, we need our current and often ageing asset base to be maintained and in good working order, keeping the lights on and meeting fast-rising demands for electricity.

In 2022, our grid and the wider energy market experienced the consequences of the war in Ukraine, with higher energy prices, inflation, resource scarcity and supply chain disruption. Maintaining the pace of our investments in new critical infrastructure, while also maintaining our existing assets, was particularly demanding in this unpredictable context. At the same time, these geopolitical developments mean an acceleration of green energy targets and a raising of political ambition to achieve energy independence through renewables. As a result, 2022 saw governments become more proactive in orchestrating the energy transition and national industrial policy.

For example, in May 2022, the Esbjerg Declaration highlighted the role of North Sea offshore wind in strengthening the EU's energy security. The leaders of the European Commission, Denmark, Belgium, the Netherlands and Germany pledged to expand the combined North Sea offshore-wind capacity of the four countries to 65 GW by 2030 and 150 GW by 2050. Almost two-thirds of this - 40 GW - is accounted for by TenneT, with approximately 20 GW each in the German and Dutch North Sea. TenneT will deliver new connections to implement these ambitions within the next 10 years.

To accelerate offshore development, the Dutch government updated the Offshore Development Framework in June 2022, while the German government published a new draft site development plan in July. Both plans significantly increase offshore wind ambitions and require more projects to be delivered around the 2030 timeframe. As a result, TenneT has been asked to deliver fourteen 2 GW HVDC offshore grid-connection systems between 2028 and 2031 in both countries.

To accommodate these offshore developments, we also need to expand and strengthen our onshore infrastructure. In 2022, we added approximately 500 km of additional connections, both overhead and underground. In addition, we were proud of the reinforcement and maintenance work we performed to boost transmission capacity and our innovation efforts so we can drive higher utilisation of our existing assets.

Ultimately, the combination of energy market uncertainty, the urgency of energy security and the accelerated shift from fossil fuels to renewable electricity make our investments in critical infrastructure more crucial than ever.

### Our performance in 2022

Future proof grid	Performance			Target	Status	Trend
Investments in EUR million	4,493	4,493	3,969	3,412	■ 4,230	 In 2022, we achieved our target for grid investment, while staying on track for critical infrastructure projects.

The war in Ukraine and resulting energy crisis made tendering for key strategic projects significantly more challenging, not only because of rising costs but also due to supply chain disruption and the need to find alternative

sources of critical materials, such as steel procured from Russia and Belarus. Many of our suppliers also faced their own supply chain difficulties, creating knock-on effects through the system.

Despite these challenges, our focus in 2022 and in coming years is all about increasing our outputs. In 2022, we invested EUR 4.5 billion in the grid, a 13% increase compared to EUR 4.0 billion in 2021. With energy security in the spotlight, we focused on both short-term and long-term solutions to deliver on our critical task: ensuring the continuous availability of electricity for nearly 43 million end-users across the Netherlands and Germany.

### Onshore

The share of electricity in the energy mix is expected to grow from 20% today to 40-60% in 2050. To make sure we can facilitate this demand, and connect the growing infeed of renewables, we need to expand, strengthen and modernise our onshore grid. To alleviate the current pressure on our existing grid, we plan to invest substantially in the Dutch and German onshore grid in the next decade.

### Long-distance DC ‘green corridors’

A key factor in alleviating pressure on the onshore grid is the development of long-distance high-voltage green-energy ‘superhighways’ – running from the North Sea coast where wind energy is carried onshore to the areas where the energy is most needed, such as in the south and west of Germany. TenneT is co-operating with TransnetBW and 50Hertz respectively for the development of two major north-south corridors in Germany – SuedLink and SuedOstLink. When operational, these high-capacity DC connections will be among the most important in Germany for achieving climate neutrality and energy security. SuedLink is a 700 km connection linking Brunsbüttel (in Schleswig-Holstein) to Bergheinfeld -West (in Bayern), while SuedOstLink is a more than 500 km connection linking Wolmirstedt (in Saxony-Anhalt) to Landshut (in Bavaria). Both corridors have a capacity of 4 GW and will run completely underground. They are expected to be operational in 2028. In addition, there is a plan to bridge the two connections with a third DC corridor, the NordOstLink. This would connect the North Sea coast at Schleswig-Holstein to the Schwerin area in Mecklenburg-Western Pomerania, further contributing to the reliable transmission of offshore wind energy to the onshore grid.

Both SuedLink and SuedOstLink have started the final approval procedure and are preparing for the construction phase. For SuedLink, this requires the construction of a four-metre-diameter and around five-kilometre-long tunnel under the Elbe River, with substantial engineering works. In 2022, the contracts for the last two converter stations in Wilster and Bergheinfeld/West were awarded.

For SuedOstLink, production, delivery and assembly of the second underground cabling system is due to take place in 2024/2025. As with SuedLink, much of the cabling has already been ordered and is in stock ready for installation. In 2021, two converter stations were already awarded. In both projects, strong long-term partnerships with fellow TSOs TransnetBW and 50Hertz, as well as with key contractors and suppliers are key in boosting progress and momentum.

### ‘Beter Benutten’

Making more use of our existing assets is a key part of our onshore grid reinforcement work, helping our grid meet higher transmission demands next to building new lines. This work helps strike the balance between affordability, security of supply and sustainability. An example of this work in action is our new Better Use of Existing 380 kV programme (‘Beter Benutten’) in the Netherlands.

The programme consists of several individual 380 kV overhead line reinforcement projects. The first project (between Lelystad and Ens) was commissioned in 2020, the second one in 2022 (between Diemen and Lelystad). The next projects are planned to be commissioned over the next few years and consist of the sections between Krimpen and Geertruidenberg (execution 2022-2023), between Ens and Zwolle (execution 2023), Rilland and Zandvliet (execution 2023) and Eindhoven and Maasbracht (execution 2024-2026).

### More highlights in 2022 showcasing how we extended or strengthened our onshore grid

- In **Emden-Conneforde**, TenneT delivered a new 61 km-long high-capacity 380 kV power line. This new connection can transmit three-and-a-half times as much electricity as the previous one. It will primarily transmit and distribute wind power from the North Sea.
- The **Westküstenleitung** (West Coast line) in Schleswig-Holstein between Brunsbüttel and the border with Denmark has a total length of around 140 km. Five substations are also being delivered as part of this project. In November 2022, the fourth section of the 380 kV line was commissioned. With the final and fifth section, the entire project is planned to be completed towards the end of 2023.
- With an increasing amount of renewable energy being fed into the grid in Schleswig-Holstein, it is necessary to expand the existing grid structure. The planned **Wahle-Mecklar** line will connect the transformer substation in Wahle near Braunschweig in Lower Saxony with Mecklar, near the Ludwigsau transformer substation in Hesse. The 230 km connection includes a 380 kV overhead line with three underground cabling sections as well as five substations. In 2022, sections A and B with a length of

## Future solutions for DC overlay grid

Steering fast-growing volumes of wind power more efficiently to where it is consumed is being explored through the future development of a high-voltage meshed DC overlay grid, connecting offshore and onshore and across borders.

The advantage of DC is that large capacities of electricity can be transmitted – 2 GW per cable system – over longer distances with lower grid losses. Currently, DC connections are only point-to-point, so if there is a failure the whole line is down. With a meshed network of DC connections, with circuit-breakers, we can steer the DC load even in the event of a failure. Additionally, it avoids the need for converting electricity to AC and back to DC at critical nodes in the grid and helps to increase grid utilisation of our assets.

This is a large-scale, long-term project. Achieving it involves ground-breaking innovations, such as the development of DC circuit-breakers that do not currently exist at scale, and standardised interconnected DC convertors.

Part of this plan will be the construction of innovative multi-terminal DC hubs. In 2022, TenneT signed an agreement with fellow German TSO 50Hertz to realise a pilot multi-terminal DC hub in the area of Heide (Schleswig-Holstein) and has also co-operated with Amprion on the Rastede hub. We are confident that DC hub solutions are more efficient than point-to-point DC connections, because they require fewer converters. This saves on cost and reduces the environmental impact. However, to realise this ambition we need a multi-vendor market for DC connectors, not only for cost efficiency, but also so the convertors can be interconnected and communicated in a meshed grid.

TenneT is using learnings from our onshore hub projects to move forward with offshore DC hub development. For example, TenneT has co-developed a concept of combined offshore-energy systems. The idea is to connect wind farms to different countries and at the same time set up a direct electrical interconnection between these countries at lower cost. With its partners, TenneT is working towards a first internationally connected offshore wind-power hub in the North Sea.

105 km were successfully commissioned, one substation was finished and construction activities in the last two sections C and D continued. The aim is to complete this project during 2024.

- The **Ostbayerring** aims to increase transmission capacity of the current connections and prepare the grid for a growing infeed of renewables. It includes the construction of a 185 km transmission corridor connecting Redwitz to Schwandorf in the south-east of Germany. Construction works have started in 2022.
- On the 52 km **Diemen-Lelystad-Ens** connection, we have replaced and reinforced existing lines and pylons to increase the transmission capacity. The project is a pilot to explore reduced lead times. While the first section was already commissioned in 2020, in March 2022 the technical upgrade of the second section was completed which means that the connection is now technically suitable for transmitting more electricity. We are also expanding transmission capacity on the **Geertruidenberg-Krimpen** connection.

- On the 150 kV connection between **Tilburg** and **Best**, TenneT is reinforcing the grid and replacing overhead lines with underground cables using the horizontal drilling method. In a pilot in 2022, horizontal drilling was applied over a distance of almost 2000 meters. This method minimises negative impacts on society and environment.

### Maintenance

As TenneT's onshore grid comes under more pressure, with increased loads and fast-growing demand for new connections, it is not only important to extend our network but also to maximise the use of our existing assets. In this respect, it is essential to maintain our grid so that all our existing assets are available for use, have a maximum lifecycle and perform their intended function. In doing so, we not only boost security of supply but also improve affordability for society. Maintenance accounts for approximately 40% of our investments as a TSO, for both Germany and the Netherlands.

With some assets in our network dating back to the 1960s and 1970s, part of our maintenance work is concerned with the replacement of obsolete assets with new equipment. To ease this process, we aim to standardise and modularise our equipment as much as possible, making it easier and more efficient to fit and maintain assets that share common design and components. The modules can also be tested and configured in a controlled environment before installation. We are following this ‘plug and play’ approach with our Bay Replacement programme, for example, currently in pilot phase before going to full scale roll-out, replacing more than 140 end-of-life substations.

And with many new assets being added to the grid, our maintenance team has to cover a growing network. With a scarcity of technical personnel to boost our maintenance team’s capacity, we aim to mitigate this through increased efficiency, working smarter with new technology and routines. For example, with our Delivery Booster initiative, in which our colleagues in the field suggest ideas for improved efficiency and streamlined maintenance processes. Delivery Booster has become a successful way to drive efficiency from the ground up, freeing up additional time and resources so we can perform more work.

We are also boosting our training capacity to get new maintenance colleagues into the field faster. For example in the Cre@Te program, where we focus on hiring, training and retaining ‘critical resources’, meaning our specialist colleagues in technical functions. In the last two years, we have been able to hire more than 90 FTE through this program. In a dedicated indoor training centre, new colleagues were trained on the knowledge and skills needed for these functions while operating in a safe environment without high voltage. We will continue to focus on the growth of these critical employees, making sure they are better trained and also demanding less from the current employees in the field.

Finally, we have introduced a new approach to Integrated Planning, allowing us to centralise all the demands on our field resources to help us plan and prioritise the tasks ahead. Making clear choices on the most and less urgent tasks is an important part of allocating our resources most efficiently.

## Offshore

In the European Green Deal, the European Union (EU) has set itself the ambition of realising around 300 GW of offshore generation capacity in Europe by 2050, supporting its aim to become the first climate-neutral continent. As TenneT already operates more than half the offshore wind

connections in the EU and is one of the world leaders in connecting offshore wind farms to the onshore grid, we are ready for the challenge of connecting around 40 GW of offshore wind energy to the Dutch and German grid by 2030.

The North Sea plays an important role in these ambitions as it has the potential to be Europe’s clean-energy ‘power house’ of the future. Realising these ambitions in a sustainable and environmentally friendly manner will require international co-operation among European governments, fellow TSOs, NGOs and other stakeholders. Wind farms will need to be interconnected across countries, supported by distribution hubs and high-performance grid infrastructure. This vision will be key to boosting energy security in Europe, enabling a transition away from fossil fuels.

### Doubling connection capacity with the 2GW Program

The innovative 2GW Program is a key element in TenneT’s offshore strategy and plays a crucial role in delivering the offshore wind capacity needed for Europe’s energy goals. The programme combines a new technological, administrative, and contractual standard with a unique and holistic transnational approach. Carried out in a forward-looking market design it provides a blueprint for future offshore grid connections, enabling higher wind capacity to be connected faster and at a lower cost. After a strong raise in offshore wind energy targets both in Germany and the Netherlands, the 2GW Program will now deliver at least 14 offshore grid connection systems by 2031.

The programme’s innovative 525 kV HVDC cross-linked polyethylene (XLPE) cable system is a technological quantum leap. Meanwhile, the new platform design and a 2 GW HVDC transmission system set a new industry-wide standard for offshore grid connection systems. If TenneT were to continue using our previous cables, such as the 700 MW AC cable in the Netherlands or the 900 MW DC cable in Germany, it would need to build 40-50 new connections to reach the 2031 target for offshore wind. For 28 GW of green energy, TenneT now only needs 14 grid connections – less than half the number of what would be needed if using previous systems. This will strongly reduce the workload and save time, money, and resources in the process.

To support acceleration in offshore grid development and ensure capacity in the supplier market, TenneT invited to tender for two major framework agreements with key market partners for a period of up to eight years. Following this approach, TenneT released two large-scale EU tenders for offshore – one for at least 15 grid connection systems, including offshore and onshore stations as well as the

corresponding HVDC systems in June and one for more than ten cable systems in September. Both tenders are expected to be awarded in Q1/Q2 2023.

This approach brings together the right actors at the right time. It will stimulate the market as a whole. It will pool know-how, create synergies, and increase and secure essential market capacities for Europe. In doing so, TenneT has developed a concrete action plan to further accelerate offshore grid development in the North Sea and beyond.

#### More highlights in 2022 to develop our offshore grid:

- In June, we received grid readiness certificates for both **Hollandse Kust (Zuid)** grid connections, with a 1,400 MW transmission high-voltage connection for the offshore wind farms Hollandse Kust (Zuid) I and II.
- In September, TenneT completed the rollout of the **Hollandse Kust (Noord)** topside transformer platform, for installation 18.5 km off the coast of the Netherlands. The platform will be followed by two more – each with 700 MW capacity – to bring green electricity from the Hollandse Kust (Noord) wind farm onto the onshore grid. The wind farm is expected to be operational in 2023.
- In the third quarter of 2022, the jacket of **Hollandse Kust (West Alpha)** was installed. This is an offshore

transformer-grid connection system, some 50 km off the coast of Egmond.

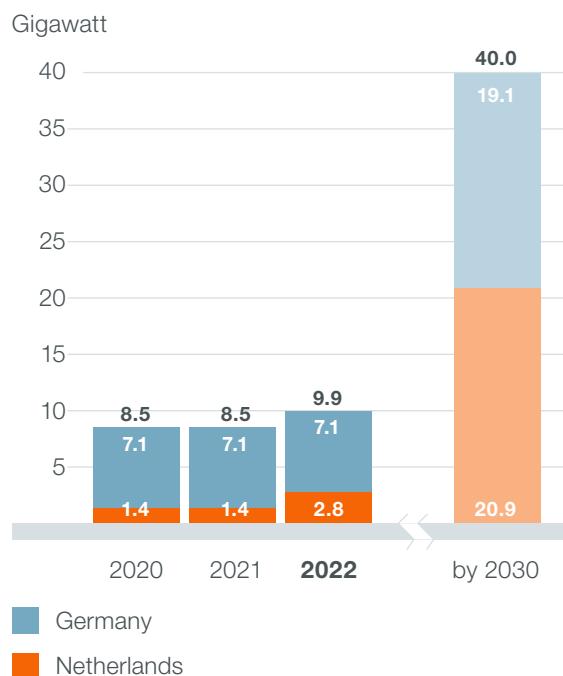
- In August, TenneT marked a major milestone in bringing more green wind power from the German North Sea, with the sail-out of the offshore platform DolWin Kappa. After three years of construction, the platform was transported from Spain and installed in the German North Sea, where it will be part of the **DolWin6** grid-connection system. The 900 MW connection will supply more than one million households with green wind power from the German North Sea.
- **DolWin5:** given that construction of the platform at the Singapore shipyard is currently behind schedule, due to previous restrictions related to the COVID-19, several acceleration measures were agreed with the contractor in 2022.
- **BorWin5:** the construction of the platform, land station and land-cable route was started. Energisation is planned to take place in 2025.
- **Borwin6:** TenneT awarded contracts for the construction and installation of the converter stations at sea and land, as well as for cable production and laying. Energisation is planned to take place in 2027.

## Offshore targets 2022-2030

The European Union has an ambitious strategy for offshore wind energy. This is reflected in the targets at the national level: for 2030, Germany has a target of 30 GW of offshore wind capacity, while the Netherlands is aiming for 21 GW around 2030. TenneT will provide an important contribution to these targets with the offshore grid connection for 40 GW: approximately 20 GW in the German part of the North Sea and 20 GW in the Dutch part\*. This means a strong growth of TenneT's offshore connection capacity by 2030, compared to 2022. TenneT has developed a new 2GW standard to enable this acceleration. The 2GW Program has a strong focus on harmonisation and standardisation. It provides a blueprint for future offshore grid connection systems and enables faster deployment while also reducing the number of grid connections. The standardization allows framework contracts with the supply chain for multiple connections to ensure maximum planning security.

\* 1GW of older offshore wind farms in the Netherlands use a private connection to the onshore grid.

## Installed offshore capacity by TenneT



## What could prevent us from realising our goals?

To get to where we need to be, a range of decisions must be made: from standards on manufacturing, leaner permitting procedures, integrated energy system planning (for example hydrogen) to closer co-operation with large customers, and other TSOs and DSOs. This requires appropriate European and national legislation and regulations, and an investment framework that enables us to meet the needs and objectives of society, the economy and politics.

For the coming years TenneT faces a very high critical risk impacting project delivery in the Netherlands. The Council of State in the Netherlands repealed the 'construction exemption'; the exemption for nitrogen deposition caused by construction activities. Because of this decision, TenneT is required to calculate for each construction and operation phase how it affects the nitrogen emissions. This has an immediate effect and ultimately affects TenneT's projects, either in delivery or preparation delays. On short term, it is expected that around 25 projects could be delayed by 1 to 2 years. On the longer term, around 100 projects could be delayed by 6 to 12 months. Due to the Council of State decision, TenneT could face the critical risk of standstill of the Dutch portfolio if no adequate and structural solution is found.

If the projects are not delivered according to our schedule, there will be a domino effect of delays in other sectors such as industry and residential construction. This is because these sectors need grid connections to complete their construction and sustainability projects. This puts us in a vicious circle: to reduce nitrogen, for instance, sectors need to become more sustainable. This requires the electricity grid to be extended, but those projects experience major delays because they do not get the necessary permits because of the nitrogen impasse. On the short term, TenneT is seeking acceptance of environmental assessments by competent authorities, to proceed as soon as possible with the required permits. For the longer run, we need the support of the respective governments to ensure that grid operators can take this role as a catalyst for sustainable development and prioritise when allocating nitrogen deposition. In addition, apart from the solutions above that the government can implement, TenneT itself is also taking action to avoid delays. For instance, TenneT is committed to measures to minimise nitrogen emissions during the construction phase by using emission-free construction equipment.

A continuing risk is the slow licensing and permitting procedure directly delaying our planning and building progress. Limited space is available to build and expand our grid in the natural landscape. In the current political and regulatory climate, most of the time spent on a critical infrastructure project is on planning and licensing. It often takes eight years to achieve the necessary permitting for a project that takes two years to construct. If we can only move at this speed, the projects needed to achieve the targets of 2030, even 2040, are already running against a tight deadline. Hence the importance of reducing the permitting time. As a result, new laws have been introduced by the Dutch and German governments to effectively reduce the permitting time.

The effect of extreme weather conditions is mitigated during the design, construction and maintenance of our assets, for example in the choice of location and materials used. Furthermore, TenneT insures all substations and buildings during construction and operation against risks from natural catastrophes.

As with the scarcity of talent, we also face more competition in the next decade in hiring the right skills and competences, sourcing the essential products, materials and suppliers we need to fulfil our projects. Precise management and demand planning across our supply chain, as well as close relationships with key suppliers, will be increasingly critical for delivering our projects on time.

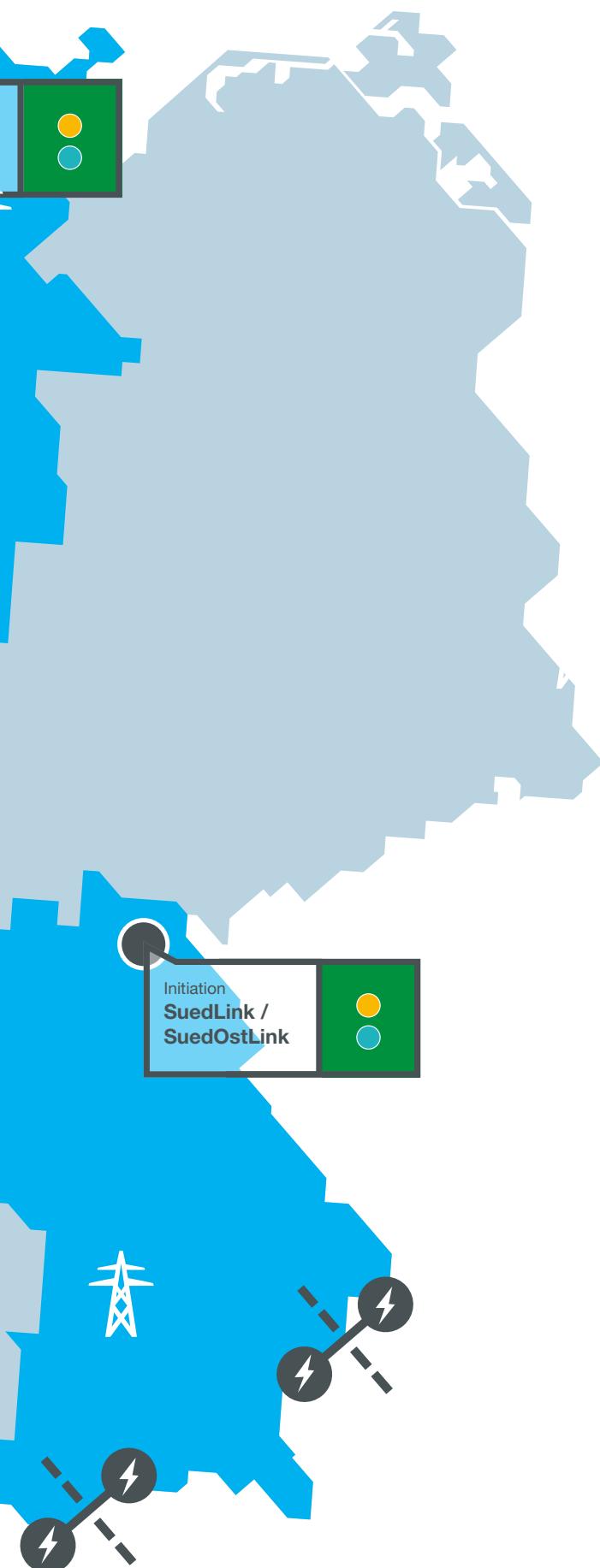
Our progress depends on a close co-operation between governments, other TSOs, DSOs, large customers, and key suppliers. Only jointly can we develop innovative ways to provide reliable, clean and affordable electricity for a sustainable future, through initiatives such as the North Sea power hub for North-West Europe.

# Gridmap 2022



## Investment approval process





## Technical data

TenneT's critical infrastructure consists of the assets needed to fulfill our main tasks. It helps us to transmit electricity to approximately 43 million end-users in the areas we serve, connecting and integrating electricity markets and to facilitate the transition to a greener and brighter energy future.

### Interconnectors

**17**

2021: 17  
2020: 16

### Substations

**478**

2021: 475  
2020: 468

### Completed offshore connections

**16**

2021: 14  
2020: 14

### Circuit length (kilometers)

**25,009**

2021: 24,518  
2020: 23,866

### Pylons (approximately)

**27,600**

2021: 27,500  
2020: 27,000

# Ensure critical infrastructure for society

## Anne-Marie Spierings

Gedeputeerde Energie, Circulaire economie  
en Milieu van Noord-Brabant

to



In the Netherlands, we faced an increase of grid congestions last year. In North Brabant and Limburg, new companies could temporarily not be connected. This had a major impact on the region.

"The absorption stop for wholesale customers in June 2022 came as a big shock. Of course, we knew there were big challenges for the electricity grid to keep up with the energy transition. We were already running into this with large wind farms and the Moerdijk port and the industrial area. But that the full stop that was declared for two entire provinces was something we did not see coming. TenneT, Enexis, the state and the provinces of Limburg and Noord-Brabant then - under the leadership of Ben Voorhorst - developed a good approach. Sometimes, apparently, it takes a crisis to solve bottlenecks quickly. Above all, let us continue this energetic and constructive cooperation in the coming years."





## Create a safe and inspiring workplace

Every day at TenneT, we are working hard to deliver on our purpose – to connect everyone with a brighter energy future. It is a purpose that drives each of our employees and contributes to create an inspiring and motivating workplace. As a company that powers society, we rely on the power of our growing workforce to help us fulfil our societal task to provide a secure supply of electricity, while achieving the challenges of the energy transition.

We consider TenneT's employees to be our most valuable asset. Our physical assets on land and at sea are critical infrastructure and they are the result of the combined efforts, teamwork, and commitment of people across our organisation – and others working with us – to achieve our strategic goals. At TenneT, our workforce comprises primarily of our own employees, the colleagues that work for us, which has grown from around 600 when TenneT was founded in 1998 to 5,930 employees in 2022. In addition, we have many other valued colleagues that are externally contracted that help us deliver on our ambitions and ensure that we are able to fulfil our promise. In 2022 this amounted to 1,467 colleagues, compared to 1,452 last year. Their combined efforts ensure that we are able to keep the lights on every day and support us in our ambition to drive the energy transition. With the increasing ambitions from the governments in the areas we serve, we need to grow even more to meet them.

In 2025, we anticipate we will need to be operating at peak capacity to be able to achieve the European Union's climate targets – a 55% reduction in carbon emissions by 2030. To be prepared for this, we are working hard to enable accommodating up to 10,000 employees and subcontractors in a great and safe place to work and while striving for zero harm. To underpin, this is not a target in itself, but it is the size of the workforce we want to be able to accommodate if necessary for meeting our 2025 strategic goals.

However, many other players in the energy market are gearing up in the same timeframe, and competition for talent – especially in technical roles – is intense. We are competing in a small, candidate-driven market. As such, we have to be smart in our recruiting, and ensure the strategy covers being an employer of choice as that is where people like to work and stay for a long time. With people at the heart of TenneT, and by following a path of responsible growth, we are putting ourselves in the best position to meet the challenges ahead. This is why our strategic pillar 'energise our people and organisation' is so important.

And we want to be a company where our employees grow and feel confident to speak up and be themselves. As part of this, we see the advantages of building a diverse and inclusive culture, with talents that reflect the communities we serve. Through diversity, inclusion, and a safe working culture, we aim to create more innovative solutions to drive the energy transition.

We are aware that accelerating the scale and pace of our work means that additional challenges might occur with respect to safety – for our own employees and those of our contractors. That is why we need to grow and realise the future energy system in a responsible way. We are determined to create a safe environment for our people to work, where each person returns home safely at the end of the day. We are saddened that we were unable to on 2 occasions in 2022.

## Our performance in 2022

	Performance	Target	Status	Trend
<b>Safe workforce</b> TRIR (including contractors)	<b>4.4</b>  2022: 4.4 2021: 5.8 2020: 4.1 <sup>1</sup>	<b>4.5</b>		As we regrettably had two fatal incidents one employee and one contractor, we believe our safety performance is not on par. Even though we showed steady improvement on our TRIR over the year and met our target, we are working hard to ensure a safe place to work for all.
<b>Healthy workforce<sup>2</sup></b> Absentee rate Netherlands / Germany	<b>NL 3.7 GE 4.1</b> 2021: NL 3.1, GE 2.6 2020: NL 2.7 <sup>3</sup> , GE 2.5			This year's absentee rate was unfortunately higher than past years. We noted that this is comparable to the performance of peers and lower than the nationwide rate in both the Netherlands and Germany.
<b>Diverse workforce</b> Diversity (% female inflow of total inflow)	<b>33%</b> 2021: 31% 2020: 33%	<b>30%</b> in 2023		Due to our efforts to attract more female talent, we recorded a slightly higher percentage than last year and met our target. This contributes to our journey to create a more diverse workforce.

1 The 2020 TRIR is presented based on the previous definition. When applying the updated definition the 2020 TRIR is 5.4.

2 Please note that we present the absentee rate between both countries separately as they are not fully comparable. For more information refer to our [Reporting Guidance](#) document.

3 The 2020 absentee rate for the Netherlands is presented based on the previous definition. When applying the updated definition the 2020 absentee rate is 2.7.

In 2022 our workforce grew to 7,397 compared to 6,620 in 2021. Our workforce is becoming more diverse, with 70 different nationalities compared to 63 last year, and we also see developments in other areas of being an inclusive and diverse workforce as a result of our efforts in this field. This includes, but is not limited to, areas such as gender diversity, as we see the female inflow as a percentage of total inflow increasing from 31% last year to 33% this year.

As regards safety, our efforts in 2022 resulted in a Total Recordable Injury Rate (TRIR) of 4.4, compared to a 5.8 rate in 2021. We are deeply saddened that despite all our efforts, we have been unable to prevent the fatal incidents that occurred this year. We deeply regret the loss of a young employee in May at the TenneT storage warehouse for the project Ostbayernring near Wernberg-Köblitz in the district of Schwandorf. Another fatality occurred in July, where an employee of a contractor was seriously injured during the unloading of parts of a temporary powerline portal at a construction warehouse in the Emden/ Ost - Conneforde grid expansion project.

We also track our absentee rate on a quarterly basis, as a measure to track the health of our workforce. In Germany, we recorded an absentee rate of 4.1 (2021: 2.6) and in the Netherlands this was 3.7 (3.1 in 2021).

At the beginning of this year, many COVID-19 measures from the governments in the areas we serve were still in effect. Authorities in Germany and the Netherlands scaled these measures down in the course of 2022, however the effects of the pandemic still impacted the health of our people. In 2022, colleagues still caught COVID-19. Some unfortunately also suffer from Long-COVID and many other infections increased when people met again. At the same time, the pressure on our workforce due to absent colleagues potentially also affected our people, such as their mental health and higher workload as examples of this. This underpins the importance of our support program Always Energy, and discussions around leadership and how we work at TenneT.

## Safety

Ensuring a safe working environment for the people working for and with us, is a key prerequisite in our work, every day. It is the foundation for everything we do for our workforce as none of this matters if they do not return home safely. We are keenly aware of the risks associated with our activities. Safety has multiple aspects, in the physical sense as well as from a psychological sense. From a physical sense, working at height with high-voltage assets and with heavy lifting equipment and materials, onshore as well as offshore, is a key risk. Our aim regarding safety at TenneT is simple: we want all people working for TenneT to come home safe every day and aim for zero harm in the workplace.

The pursuit of zero harm is reflected in many areas, with our own employees, with our contractors, in our operations in the field and in our offices. It is something everyone at TenneT has a responsibility for.

As our organisation grows, so does our exposure to risk. As we expand our grid at multiple disconnected sites, we have to mitigate the risks of large construction sites and consider the safety standards of multiple subcontractors and their teams. Scarcity of human resources further adds to the safety complexity, with fewer highly experienced workers available, and safety training and standards harder to oversee and control across our expansive supply chain.

These added complexities underpin the importance of why safety is of the highest priority to us.

As such, we focus on building stricter and simpler processes and principles for behaviours at TenneT to support our safety ambition of zero harm. We have updated our Life-Saving Rules (LSRs) and put more emphasis on the application of the 'Fair Approach'. The Fair Approach means that anyone who sees someone breaking a LSR reaches out to the person who broke the rule. The aim is to find out why he/she broke the LSR in order to learn from it and define organisational measures to prevent similar breaches in future. Furthermore, we have been working on strengthening our safety strategy and safety performance with the introduction of a new Safety Roadmap 2025. The Roadmap shows how we aim to embed safety further into our ways of working, into our leadership performance management, and in how we work with our supply chain partners.

An example of the safety actions included in the new roadmap include our Safety Leadership Programme, with the motto 'Safety needs our Energy', to enhance a proactive safety culture within TenneT. This provides a behavioural guidance on how to develop a positive and stimulating environment in which all our employees and partners can work safely. This is supported with a programme to make it an integral part of our leadership, behaviour and processes. Our company's leaders were trained on this in a two-day training.

## Future-proof our organisation by recruiting the best talent

As TenneT prepares to accommodate up to 10,000 internal and external employees by 2025, recruitment is a strategically key success factor for our business.

TenneT has started to use a more competency based approach, meaning hiring people for their individual talent interests and skills rather than solely for their experience. This is a prerequisite for TenneT's recruiting and development. The candidate availability in a tight market requires us to develop our recruitment approach and move away from traditional working practices.

To further identify and interest talents in TenneT we intend to engage with them early in their career and ideally stay in touch through our talent pools. To this end, education, and partnerships with academic institutions play an important role in our recruitment efforts (see '[Solve societal challenges with stakeholders and through partnerships](#)'). Examples of this includes internships, the apprenticeships we have in Germany and also introducing them to our work in their studies such as with the Power Minor which we have been working together with the universities of applied sciences of The Hague, Amsterdam and of Arnhem and Nijmegen.

Attracting talent is just one part of the equation. Ensuring people feel energised and are motivated to be part of our company is equally important. A good balance between on-the-job training and developmental opportunities are needed to grow individual talent, as well as creating a workplace where people feel energised, like to work, are inspired and are connected to us as a company. That is why we provide our colleagues the opportunity to invest in themselves. An example of this is our TenneT Academy, which supports our colleagues find and select courses to help them in their careers.

### **Bring out the best in our people in an inclusive and safe environment**

To ensure our workforce feels energised and that they are able to contribute every day, we aim to create a work environment that is safe and inclusive. We have described our views and policies on safety in a physical sense, but creating a workplace where our workforce feels safe in a non-physical manner is another important aspect of safety, such as social safety and mental health. This means not only paying attention to physical safety, where the biggest impacts are at our project sites, but also in our offices. For everyone at TenneT, we want to create a safe working environment, also in a broader sense. Feeling accepted and encouraged to speak up is an important part of the success of TenneT. So step by step we are working on building an inclusive and safe environment. It is of great importance for the success of TenneT that people feel they can speak freely without fear of negative consequences and build a culture of openness and mutual respect with no discrimination.

#### **Inclusion & Diversity**

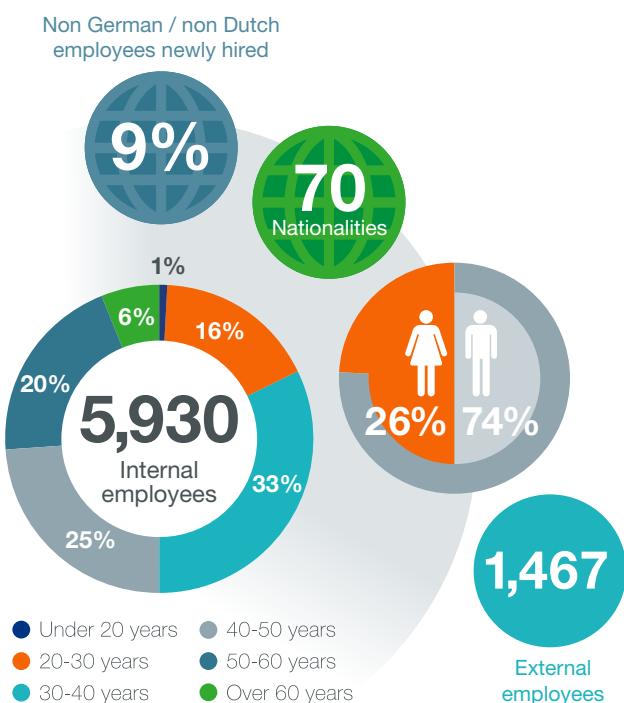
At TenneT we appreciate difference, it is a prerequisite for solving the energy transition. So no matter where you are from or who you are we want you to feel welcome and accepted at TenneT. This is particularly visible in our International Trainee group, just to mention one example. This traineeship welcomes participants from both the Netherlands and Germany, as well as other countries, with different educational backgrounds and through assignments in several units within the company they start their careers at TenneT.

Therefore we are embedding I&D in every step of our employee journey. It requires long time efforts as unconscious and conscious biases are normal and need attention to take good decisions in recruiting, promoting and developing our employees. This is a constant learning process, where our employees are the most important input givers.

We are seeing the results of our efforts with an increasingly international employee base. In 2022, we have 70 different nationalities represented among our diverse employee population and 9.1% of our new hires were not of either Dutch or German nationality. This is a great success as tax laws currently do not foster this. We have to hire our international employees on either a Dutch or a German contract to make it work.

As part of our work to promote inclusion and diversity at TenneT in 2022, we held Disability Days in Germany in October at Lehrte and Bayreuth. In October we celebrated National Coming Out Day 2022 through our social media channels, showing our support for the LGBTQIA+ community. We are also promoting inclusion and diversity by working together with other organisations, such as the Refugee Talent Hub. More on this can be found in the '[Solve societal challenges with stakeholders and through partnerships](#)' chapter.

### **Diversity at TenneT**



#### **Gender equity**

We strive for equal pay for equal work. This is why in 2021, TenneT began its first investigation into a gender salary gap. The first results of this assessment indicate that a gender salary gap might exist in both the Netherlands and in Germany. Data limitations and historical factors create

challenges for us to exactly determine all factors that have led to this situation, but we are taking measures to address, close and prevent gender pay gaps where they occur. This will be a continued focus, particularly as creating a level playing field for comparisons is almost impossible. When hiring, it is a focus area and particular attention is given for part time and paternity gaps as they are the source for different development of salaries.

We have followed up on a 2021 survey leading to several initiatives to strengthen a women-friendly workplace at all times. We implemented a reporting system to monitor equal application of rewards, benefits and career opportunities. We have invested to secure female safety gear (Personal Safety Equipment) and we have embedded an improved reporting channel for unequal treatment including sexism and harassment.

In addition, we are working to encourage more young women to pursue careers at TenneT. For example, we held an open day for school students called Girls Day in April 2022, in which over 6,000 young women participated.

### Organise for our people to perform at their best and to work as one company

Since 2018, our organisation has been on our Transforming TenneT journey, designed to re-calibrate our business for growth. Today, given the scale of the challenges in the energy transition and accelerated climate ambitions, we are strengthening our working practices such as increased focus on performance management. We have set clear transformation priorities to drive our performance and help us further accelerate.

To meet our end goals, we are making choices as we are not able to address all challenges at once. To move faster and simplify, we are also adopting smarter ways of working and how we can organise ourselves, such as collaborating more with other stakeholders, i.e. with partners in our supply chain. The new long-term framework agreements with suppliers in the offshore 2GW Program are an example of this approach (see '[Solve societal challenges with stakeholders and through partnerships](#)'). This is how we are able to organise ourselves for growth within a running business.

To increase our delivery speed, we also enhanced our internal new ways of working with respect to performance management, which has been rolled out across the company. The aim is to provide a standardised approach for performance management that can scale with our growth.

Regular discussion with employees around results, and addressing obstacles in their path, stimulates the development of our employees individually and collectively.

### What could prevent us from reaching our goals?

As our organisation grows, so does our exposure to certain risks. We are under increasing pressure to deliver a fast-expanding portfolio of projects across a wide variety of onshore and offshore locations. This creates pressure on adhering to legal obligations, our Code of Conduct, as well as pressure to attract the right competences and talent on time. In addition, this also relates to adhering to health and safety rules, where it is essential that TenneT addresses the increased risk for safety incidents, or major accidents, if more deliverables are required in our fast-expanding portfolio in the same timeframe and with the same staffing. This creates pressure on adhering to legal obligations, our Code of Conduct, health and safety rules.

This involves both our own employees and our contractors. A situation of intentionally or unintentionally balancing safety requirements versus on-time project delivery is not an acceptable risk. To address this, we need to adapt our safety practices to the work we do and embed a top-to-bottom safety culture that is consistent across all our units and through our supply chain. Hence education is to train all stakeholders, without distinction between internal employees and contractors, about the importance and adherence to all safety regulations whether working at a construction site or at the office. Due to the unfortunate safety incidents in 2022, it has become ever more important for us to ensure that all contractors and subcontractors adhere to our high standard safety rules, without exception. As a result, we increasingly build safety requirements into our tenders, thereby cementing it into the beginning of our relationships with suppliers and making it a pre-condition of doing business with TenneT.

Hiring and retaining new talent for the coming years is essential if TenneT is to deliver on its promises to support 2030 climate targets. A foreseen and growing risk is the unavailability of the right talent for the coming three years. Many other organisations in the value chain are gearing up for the same climate targets, and competition for talent – especially in technical roles – is intense. This leads to the widespread limited availability of specialist skills and an overheated job-market. Since applicants no longer only consider primary benefits but give more weight to internal succession and chances of progressing in their careers, TenneT needs to continuously stress its image as an attractive employer. This is essential not only for new hires, but also to retain current employees.

One way to address the increasing hiring risk is to have a competency-based approach, hiring people based more on their individual talents, interests and skills as opposed to a requirement for specific experiences. In this way, we can proactively identify talents we want to work with and then match them to roles, as opposed to reactively waiting for vacancies that we then need to fill. However, we need to ensure we have simplified and standardised processes that can be scaled efficiently across the organisation without over-burdening our people and inhibiting our ability to deliver against our challenging targets.

As regards improving safety practices among our contractors, we take a two-pronged approach. On one hand, we increasingly build safety requirements into our tenders, thereby embedding safety into the beginning of our relationships with contractors and making it a condition of doing business with TenneT. On the other hand, we work together with contractors to ensure that they have a firm understanding and application of our safety standards, by holding safety-focused meetings with our contractors' leaders and also participating in site visits, where we jointly observe work in action and collaborate on practical safety improvements. In addition, we work with our contractors to have them certified on safety via the Safety Culture Ladder (SCL), a Dutch standard for assessing safety culture within organisations. SCL indicates the maturity of a company in the field of safety awareness, attitude and behaviour. As part of the SCL programme, the aim is for all companies working for TenneT that carry out high- and medium-risk contracts to be SCL-certified. We are proud to state that per year-end 2022 almost 92% of our order volume relates to contractors that were certified or were in the process of getting certified. We also continued to measure our own safety culture using the SCL. As part of the continuous improvement process, certification to level 4 (out of 5) of the SCL is included in TenneT's new Safety Strategy. The first parts of TenneT are now certified on level 4 such as Large Projects Netherlands - Area North. Several other units have started initiatives to become certified in 2023.

Furthermore, we have updated our LSRs in 2022. The previous LSRs have been evaluated by our SHE (Safety, Health and Environment) teams and their scope broadened, like the LSR on safe hoisting. We sharpened them to further strengthen our day-to-day safety practices. We aimed to make them even clearer and adding two additional LSRs to include safe driving and another on 'line of fire' (staying clear from the movement of a hazardous object or the release of hazardous energy, such as hot air or fire). A violation of the LSRs provides us with an opportunity to learn. We therefore expect a discussion to follow up on each incident of non-compliance and we ensure that the incident and the circumstances are reported in our incident reporting system. Reporting also enables us to map out the proposed action and monitor progress. If further non-compliance occurs, disciplinary action is taken.

# Create a safe and inspiring workplace



## Mahla Mirzaee Kakhki

International trainee TenneT, started in 2022

The energy transition involves a large amount of work. TenneT will grow significantly in the coming years. Finding colleagues is a tough challenge, taking place far beyond the Netherlands and Germany.

"I am originally from Mashhad in Iran and came to Germany nearly four years ago with my family, my lovely six-year-old son and my husband.

With a background in physics – my PhD from Bayreuth University is in the physics of soft matter – I was keen on working for a company which not only has environmental concerns but also matches my background, which TenneT was the great option for my goal. As a physicist one knows a bit about most fields, which could be really useful at TenneT, where some background in electrical engineering is helpful. There is a lot of respect for different cultures in the company, which is really important. Choosing to live in Germany was a really huge step for me. I was taking my PhD and looking after my son, and meanwhile I was learning German!

In this point of my life, I am very happy that I joined TenneT, as it is a safe place where people value and respect each other. Right now, I am a trainee in the Large Projects Germany team. I am learning how to write technical project concepts, for substations for instance. I am quite busy day-to-day, so time management can be challenging. As a trainee you do not just focus on daily tasks, you also take part in trainee events, attend workshops, and help organising a few events. In addition, you are of course building your own network and involved in non-stop learning."



## Create value to transition to a climate-neutral economy

As a European TSO, TenneT creates value for society by driving the energy transition and delivering a future-proof electricity grid. By playing our part, we contribute to the EU's ambitions to be a climate-neutral continent by 2050. We contribute to this through our assets, knowledge and innovations to build a reliable and affordable future-proof grid that supports society's net zero ambitions.

As we expand and reinforce our grid to facilitate the energy transition, we are conscious that we also have a negative impact on the natural world around us. Procuring and producing the materials needed to build our assets on land and at sea has an impact on nature, greenhouse gas emissions, pollution and resource scarcity. And as the energy transition is a global challenge involving a wide array of other parties from the energy sector and associated supply chain, our sector's demand on resources and impact on nature is growing all the time.

Therefore, as well as contributing to societal objectives by driving the energy transition, TenneT can create additional value by leading as a green and responsible grid operator.

Through our nature, climate and circularity ambitions, we aim to shape what we believe is necessary for a responsible growth path. With these ambitions, we can take ownership for our impact and show leadership.

We report our progress in each of these key areas, with targets set for 2025 regarding climate neutrality, net zero impact on nature, and circularity. In addition to measuring our performance against these targets, we report on our progress in contributing to a climate-neutral economy by disclosing the equivalent number of households that can, in theory, receive 100% renewable electricity as a result of our renewable energy-grid investments. This is one of our key metrics to measure our societal impact (refer to 'Societal impact we enable by driving the energy transition' below).

### Our performance in 2022

Climate	Performance	Target	Status	Trend
	CO <sub>2</sub> footprint of our grid losses, substations, offices and mobility (net emission in tonnes of CO <sub>2</sub> )	Climate neutral in 2025 <sup>1</sup>		Though our net carbon footprint has increased due to our grid losses, we are focusing on strategies for reduction of our indirect emissions through our supply chain and SF <sub>6</sub> alternatives.
Circularity	Performance	Target	Status	Trend
	<ul style="list-style-type: none"> <li>Reduction of virgin copper use</li> <li>Reduction of non-recyclable waste</li> </ul>	25% reduction in 2025 <sup>2,3</sup>		In 2022, we worked on further improving our insights in our material inflows and outflows. We laid the foundation for full data transparency and started incentivising suppliers on increasing recycling rates.
Nature	Performance	Target	Status	Trend
	<ul style="list-style-type: none"> <li>(Net) impact on nature</li> <li>Environmental incidents</li> </ul>	Zero impact on nature in 2025		Our nature inclusive design measures are stepping up in scalability such as fish hotels and sinus mowing and we incorporated a replacement strategy for our most leakage prone circuits.

<sup>1</sup> To be fully climate neutral (SF<sub>6</sub> emissions, grid losses, energy use offices, stations and mobility of our employees) in 2025.

<sup>2</sup> In 2025 25% less impact of virgin copper use.

<sup>3</sup> In 2025 25% less impact of non-recyclable waste.

## Climate

We contribute to the transition to a climate-neutral society by connecting more renewables to the grid. And as a responsible grid operator, we also strive to make a green transition in our own operations by reducing our carbon footprint. In line with Science Based Targets that align with the goals of the Paris Agreement, we have set ambitious emission-reduction goals for 2030, aiming to cut our direct emissions in scope 1 and 2 by 95% and our indirect emissions (scope 3) from purchased goods and services and capital goods in our supply chain by 30%. These targets are an extension of our 2025 climate-reduction targets. The majority of scope 1 and 2 emissions are from grid losses – the electricity lost during transmission across our network – and from emissions from the insulating gas SF<sub>6</sub>, energy use from our offices, at our stations, and the mobility of our employees. Scope 3 emissions are more challenging to measure, as they are the indirect emissions that arise in our supply chain, as a result of what we purchase and contract.

### Scope 1 (Direct own emissions)

#### SF<sub>6</sub> gas

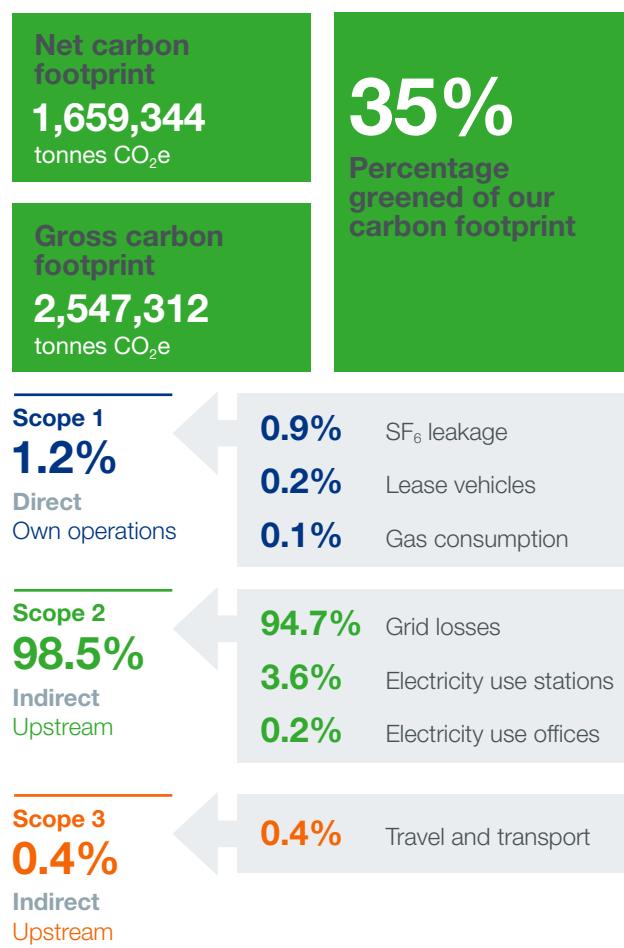
For our transmission services, TenneT needs specialist insulating and fire-extinguishing protection for high-voltage stations and distribution systems. Sulphur hexafluoride (SF<sub>6</sub>) is widely used by TSOs as a highly effective insulator and extinguisher in switching installations. But it is also a greenhouse gas, with one unit equivalent to over 23,500 units of CO<sub>2</sub>. If the gas leaks, during installation, maintenance, or due to faulty equipment, it is extremely damaging for the environment. While SF<sub>6</sub> leakages currently only account for around 1% of our carbon footprint, we still aim to mitigate its impact as much as possible. We are working to find sustainable alternatives to SF<sub>6</sub> that provide similar safety properties without harmful emissions. We aim for two-thirds of our assets to be SF<sub>6</sub>-free in 2030.

During 2022 we made significant progress in this regard, with new pilots to explore SF<sub>6</sub>-free installations in the Netherlands and Germany. In the Netherlands, for a grid expansion project at the high-voltage substation Maasbracht 380 kV, for example, we challenged suppliers to propose SF<sub>6</sub>-free solutions for gas-insulated lines and gas-insulated switchgear. We used an internal carbon price of EUR 100 /tonne CO<sub>2</sub> in the project tender to stimulate alternative solutions for SF<sub>6</sub>.

To reach our SF<sub>6</sub> reduction goal, it is important to perform early testing of SF<sub>6</sub>-free equipment. In 2022, we awarded the first contract for a fully SF<sub>6</sub>-free 420 kV gas-insulated switchgear (GIS) for the TenneT grid in Erzhausen.

The contract for this project was signed at the end of 2022. This is the first time we have taken this step, which we expect will stimulate the market to find commercial and technically effective alternatives to SF<sub>6</sub>. We notice that the potential to collaborate with suppliers on such solutions (also see 'Solve societal challenges with stakeholders and through partnerships') is easier for 220 kV and 380 kV assets as this allows suppliers to develop scalable solutions for the wider European and international market. For smaller installations of 150 kV, it is harder to find suppliers to engage in solutions focused only on one market. Nevertheless, we are holding dedicated supplier sessions to explain our strategy and why we are determined to steer away from using insulating gas with such high global warming potential.

## Carbon footprint



### Mobility

The mobility of our employees, whether travelling to and from the office or out in the field, is part of our CO<sub>2</sub> emissions and is an area we are addressing with carbon-reducing policies. For example, we aim for a fully electric lease car fleet by 2025, replacing the current use of hybrids.

## Societal impact we enable by driving the energy transition

The largest impact that TenneT has in terms of climate action is to enable the switch from a fossil fuel-driven economy to a climate-neutral economy by connecting renewable energy sources and transmitting the produced electricity. We define our key impact metric in this area as the equivalent number of households that in theory would have been able to receive 100% green electricity. It is important to realise that the majority of the electricity consumption comes from industry. We estimate that by the end of 2022 we have enabled the theoretical equivalent of more than 14 million households to receive green electricity.

These climate figures are not just achieved by our own operations, but also by our partners in the value chain, such as electricity generation companies and distribution system operators (DSOs). By working together, we avoided 17.2 million tons of CO<sub>2</sub> equivalents in 2022. More information on these impact metrics (such as the methodology) is included in our additional CSR data document.

In 2022, we also developed a TenneT Mobility Vision, including a partnership with the German rail operator Deutsche Bahn that encourages employees to travel by train for carbon-neutral journeys. As part of this drive towards more carbon-neutral travel, TenneT has implemented a bike-leasing scheme for our employees in the Netherlands and Germany.

### Gas consumption

Gas usage for heating our offices and stations is also part of our scope 1 emissions. To reduce the impact of gas consumption on our carbon footprint, we purchase green gas for all offices and stations in the Netherlands and in Germany.

### Scope 2 (indirect upstream)

#### Grid losses

Around 95% of TenneT's CO<sub>2</sub> footprint is due to grid losses – the loss of electricity that inevitably occurs during power transmission across our network. The grid losses are measured as the difference between the electricity fed into the grid and the electricity delivered. Grid losses depend, among other things, on the current, voltage and the distance that electricity is transmitted. Unfortunately, as we expand our network to support the energy transition our grid losses might grow proportionally higher.

Although we cannot prevent grid losses from occurring, we aim to reduce their climate impact. To this end, we green our grid losses by using guarantees of origin (GoO's) from renewable sources. In previous years, we have been able to green for 100% of grid losses in the Netherlands and 55% of grid losses in Germany. We are currently limited by

German regulation in purchasing guarantees of origin, which is why we procure GoO's corresponding to our equivalent German grid losses on group level.

In 2022, the energy crisis and resulting energy price volatility also had an impact on the prices of the GoO's. If we were to stick to greening 55% of our grid losses in Germany, costs could have increased by tenfold in 2022 compared to 2021. As the German legislation does not support procurement nor reimbursement of GoO's, we decided to green the German grid losses until a monetary limit. Although we have increased our spend in GoO's, this cannot keep pace with the increasing price of GoO's. As a result, we greened 9% of German grid losses. Though this leads to an increase in our net carbon footprint, we have to balance our climate goals with our financial health. We are in continuous dialogue with our regulator, the legislator and the other TSOs to find a way to reduce the carbon footprint of TSO and DSO grid losses in Germany.

#### Electricity use in stations and offices

Similar to gas usage, the electricity use in our offices and substations has an impact on our carbon footprint which we mitigate by purchasing green electricity. For our substations, we strive to decrease the carbon footprint by using solar panels, insulation measures and LED lighting where possible. We have installed solar panels on our land stations at Hollandse Kust Noord and will use the generated electricity for our own consumption.

### Scope 3 (Indirect, supply chain)

In 2021, we committed to the Science-Based Targets initiative and revised our climate targets, aligning them to the 2015 Paris Agreement. This includes an ambitious target to reduce our scope 3 emissions from purchased goods and services and capital goods by 30% in 2030.

Achieving this target requires extensive engagement and a collective outlook among our suppliers on how we can collaborate to reduce emissions from the products and services we buy. Gathering enough quality data relating to our supply chain is key to making progress. To this end, during 2022, we executed an analysis on our future demand for the next decade and identified asset categories that contribute to a significant portion of our scope 3 emissions. By identifying our demand of different assets over the next 8 to 10 years and assessing the scope 3 emissions related with every type of asset, we aim to identify those procurement categories that are the most carbon intensive and have the highest potential for emission reduction. Based on this analysis we can set the right focus in integrating sustainability into the sourcing strategies of all our procurement categories.

With transformers, overhead lines and cables we identified pilot procurement categories to start with. With those assets we are already integrating sustainability in the sourcing strategies as well as in supplier relations and our tenders. Understanding emission hotspots and highest emission reduction potential per asset through Life Cycle Assessments (LCA) plays an integral part in this integration. This not only already creates first impact on scope 3 emission reduction, but also helps us gain valuable experience for the remaining procurement categories in our portfolio.

We are increasingly taking a holistic view on sustainability in our supply chain. Next to LCAs, we use tools such as the Environmental Cost Indicator (ECI) to incentivise our suppliers to reduce the environmental impact of the products and services we buy from them. By giving the environmental saving a monetary value through the ECI, we can gather more data on our environmental impacts. This approach also means suppliers are encouraged to provide more transparency on their product lifecycle emissions in our tendering process.

### TenneT's sustainable Revolving Credit Facility: linking climate performance to finance

To make progress against our climate ambitions even more visible, we have linked our financing costs to our climate performance. Secure access to finance is essential to ensure that we maintain the pace of our investment portfolio. An example of this is our EUR 3.6 billion sustainable Revolving Credit Facility (RCF), which is linked to sustainability performance indicators and targets. In practice this means that, depending on the realisation of our climate-related KPIs, a discount is applied to the interest margin of the RCF. This is related to the green percentage of energy use of our stations (100% in 2022 vs 100% in 2021) and our offices (100% in 2022 vs 100% in 2021). It is also linked to the net carbon impact of mobility per employee against the total number of employees (1.4 in 2022 compared to 1.2 in 2021) and the net carbon footprint of leaked SF<sub>6</sub> gas divided by theoretical CO<sub>2</sub> impact of banked SF<sub>6</sub> (0.15% in 2022 compared to 0.22% in 2021). To reduce our CO<sub>2</sub> footprint, we compensated for a part of our leaked SF<sub>6</sub> through carbon offsets for generating renewable energy in Turkey.

### Nature

As our assets are located on land and at sea, we have an inevitable impact on nature. We do our best to limit our negative impact, especially in vulnerable nature areas, and where possible to have a positive impact by using environmentally friendly and innovative techniques. Our goal is to reduce our net impact on nature to zero.

Our policies (such as our code of conduct) set out how we should carry out our maintenance and construction work, in accordance with nature conservation laws. As part of this, we carefully track the number of environmental incidents – such as leakages of SF<sub>6</sub> gas, oil leakages from our assets, and other occurrences that have a negative impact on nature. In 2022, we recorded 2,866 litres (of which 364 litres related to 2021) of oil leaked from our cables, in comparison to 1,798 litres of oil in 2021. Unlike our newer onshore and offshore assets, cables from older parts of the onshore grid, especially in the Netherlands, are more prone to leak oil. An example of this relates to the connection Waalhaven - Oudeland, where a significant part of our 2022 leakages relate to. We regret these instances were oil was leaked and always monitor our assets closely to learn from the root causes and take appropriate measures to prevent leakage or mitigate the impact of the leakage. In addition to the oil leakages, we record incidents where we have a negative impact on the environment, soil, air or water. In 2022 we recorded 101 environmental incidents in 2022, in comparison to 81 incidents in 2021.

## Nature measures

### Around our offshore platforms and cables

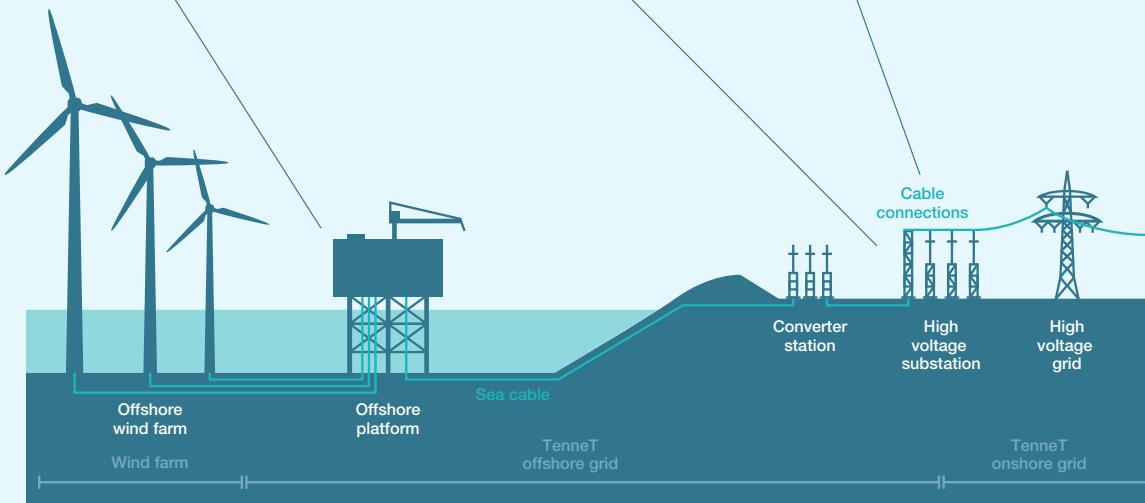
- Nature inclusive design, such as fish hotels (1)
- Research into eco-friendly cable crossings (2)

### Around our high-voltage substations

- Sinus mowing
- Reducing the use of pesticides
- From Gravel to Green (3) and creating Green corridors
- Bee- and insect hotels (4)
- Green roofs on our substations

### Around our lines- and cable connections

- Measures to avoid bird collisions, such as 'varkenskrullen'
- Coastal breeding zone protocol
- Nest boxes on pylons (5)
- Ringing birds for research (6)
- Vegetation management, such as flowerlines



In 2022, we looked into improving our measurements of net zero impact on nature. Along with students from the Wageningen University & Research, a roadmap with Key Performance Indicators for positive nature measures was developed. This will help us improve our performance measurement with regards to positive nature measures.

We also include details on nature commitments in our investment plans. For each proposed investment, a 'Commitment to Nature' paragraph details a description of the anticipated impact on nature, and measures to mitigate. In 2022, 100% of our G2 documents included a 'Commitment to Nature' paragraph.

In our commitment to have zero impact on nature, we aim to create a positive impact where possible. The visual above includes some of the nature measures that were implemented in 2022.

A comprehensive overview of our nature measures can be found on our Green Map



## Highlights on our high voltage stations

In recent years, we have placed more emphasis on improving biodiversity at the sites of our high-voltage substations. In 2022, we continued to do this through our own initiatives and in collaboration with external partners, including but not limited to:

- In Zevenhuizen, we worked on creating additional ecological value through a nature-inclusive design. This includes installing bird boxes and bee hotels to improve biodiversity and using herb-rich grassland where possible.
- After successful pilots in 2020 and 2021, we increased our use of sinus mowing at substations, to improve insect habitats. Using grass at substations supports 40% more insects than sedum or gravel. A pilot study using robotic mowing is underway at Meeden station and the lessons learned from this will be used to evaluate scalability to other stations.
- During the replacement and extension of a substation in Isar, TenneT built new habitation areas for the fence lizard.

## Highlights on our cable and line connections

In 2022 we stepped up our work to promote biodiversity measures around our pylons, such as planting flowers and trees and protecting bird life. Our negative impacts in this area relate mainly to bird collisions with our high-voltage lines. To minimise this impact, we determine high-risk spots and implement bird-barrier measures. We also implement positive nature measures by including nature-inclusive design or applying our 'Commitment to Nature' in each project.

- With the Step Stone Pylon Programme, we are investigating how sowing certain herbaceous mixtures can boost biodiversity around high-voltage pylons, making them 'step stones' in the landscape for insects and birds.
- For the Stade-Landesbergen connection in Germany, we are planting new trees next to the Stade substation, hanging bat caves in trees along the route, and measures to protect the habitats of skylarks.

## Highlights offshore

In our work to extend our offshore grid, we aim to follow a strategy of 'nature inclusive design'. This includes conducting ecological monitoring to identify where we can have a positive impact, such as installing fish hotels around our platforms and preventing damage to maritime life from electromagnetic fields.

- In July 2022, we conducted a first monitoring campaign of the use of eco-friendly cable crossings at Hollandse Kust (Zuid) Alpha with Waardenburg Ecology. These replace the layer that is usually made of granite with calcareous rocks, which provides a safe breeding space for fish. The development of habitats around these eco-crossings will be studied for three successive years.
- Also in July 2022, we conducted a pilot with Dutch Sail and Wageningen Marine Research, where sailing crews collect video images and water samples for analysis.
- In late 2022 we monitored fish hotels installed at Hollandse Kust (Noord) and installed artificial reefs, reef balls and Arc Marine Reef Cubes.
- At Borssele Alpha, we conduct electromagnetic field monitoring, using a continuous monitoring station to gain insights into the effects of electromagnetic fields on the marine environment. Magnetic fields, caused by electricity cables under the seabed, can be detected by marine organisms, such as fish, and affect their behaviour. By assessing the effect of our cables, we can take appropriate measures to reduce negative impact.

## Circularity

To realise our projects and drive the energy transition it is necessary to use raw materials and components that are naturally scarce, in short supply or difficult or even impossible to recycle. These challenges become more severe as competition for resources intensifies across the global energy sector. The scale of work required across the energy transition is immense, but resources are limited. This is not only due to the natural scarcity of critical materials such as copper, but also due to the logistical supply-chain challenges experienced in 2022, following the war in Ukraine and COVID-19 lockdowns in China. This impacted the availability and price volatility of key commodities, such as copper, steel and aluminium.

As we expand our grid with material-intensive assets such as cables, transformers, substations, steel pylons and overhead lines, the competition for raw materials intensifies. As such, all players in the energy industry need to think of how they can achieve their energy transition goals, by using fewer materials as possible, increasing circularity, and minimising waste.

Demand for limited resources is particularly important to consider when it comes to the extraction of naturally scarce raw materials that are critical to our assets – such as mineral oil, used in transformers, and copper. Global demand for virgin copper is not easily met by supply. There are some alternatives to copper in electricity cabling – such as aluminium – but we have to carefully balance the consequences of doing so. Aluminium may not be a scarce natural resource, but its production has a heavy environmental impact and its use in cables results in higher grid losses.

To reduce the environmental impact of our materials, we are adapting our tenders to include stricter circularity requirements, for example by asking suppliers to provide evidence of the percentage of their materials that are recyclable and recycled with ‘raw material passports’. Requirements such as this are being increasingly applied through our supply chain, either as requirements within tenders, or as incentives in our procurement.

On the basis of our raw material passports, we are working on improving our insight into our impact on virgin copper. In 2022, we further improved our insights by conducting base-case life cycle assessments on those assets where we make most use of copper (cables, transformers and shunt reactors), and have gained a better picture of our overall copper usage. While the assessment is still largely based on estimations and our insights into the recycling rates of our purchased assets are still limited to a restricted number of raw material passports, our analysis indicates that in 2022 around 38% of our purchased copper was recycled. We believe that when the full analysis is completed, it will indicate that the percentage of recycled copper will range from 25-40% of our total copper purchases.

A major milestone in our journey to reduce our impact on virgin copper has been made in 2022 by implementing the Environmental Cost Indicator (ECI) in our tenders for new corporate framework agreements for purchasing AC Cables, Power Transformers and Shunt Reactors. This will not only give us exact insights in the amount and sourcing of copper in these assets and their environmental impact, but also directly incentivise our suppliers to increase recycling rates in their products.

To understand the long-term impact of raw material scarcity on our business and how we can mitigate its effects, we are currently developing a strategic perspective on raw material scarcity. In particular, we are looking at the strategic imperatives of attracting and securing supplies of scarce raw materials and reducing our dependency on them

through enhanced circularity. The result will be a new policy that we can use to evaluate our current status and provide the business with concrete guidance.

For waste, we are also working on improving our insights into the amount and types of waste we produce. This year's analysis includes insights for our offices, onshore and offshore operations, and onshore projects. We were able to improve our insights into Dutch projects by improving the data flow from the project contractors. While the analysis includes actual waste reports and waste data, a major part is still based on assumptions and extrapolations. The results of this year's assessment show that around 14% of our waste is non-recyclable. We believe that, when we have completed the full analysis, this aligns with our understanding that 10-25% of our waste is non-recyclable.

The analysis also shows that we are continuously facing challenges in the flow of our waste data. For this reason, in 2022 we have laid the foundation for a complete makeover of our corporate waste reporting processes. In view of the expanding requirements imposed by the Corporate Sustainability Reporting Directive (CSRD), we have started to further improve our internal waste reporting processes throughout the different parts of the organisation and to define clear definitions, requirements and processes for waste reporting. In our German onshore operations and projects we are also investigating possibilities to further digitalise waste management and reporting, which could ultimately serve as a blueprint for expansion to the rest of the organization. We expect that these improvements will bring waste reporting and management to a new level, which will ultimately enable us to steer on the reduction of non-recyclable waste in a much more effective and targeted way.

### What could prevent us from reaching our goals?

We have set ambitious targets to reduce our impact on climate, nature and resource circularity, with firm targets set for 2025 and 2030. While TenneT has to deliver on its core task of building, maintaining and operating the power grid, the materials needed to build our assets on land and at sea have an impact on nature, carbon emissions, and resource scarcity.

As our activities and operations grow in the coming years, it is expected that our impact on carbon emissions will grow simultaneously. While we try to reduce our footprint, it remains a challenge to balance our growth with a lower footprint.

This is particularly challenging for our scope 3 emissions, where we rely on collaboration with our supply chain partners to reduce our carbon footprint. This continues to be a dilemma, as the shortage of supply chain partners means they can choose which projects are most suitable for them. Hence TenneT's carbon reduction ambition could potentially limit contracting the supply chain partners on time. To reach our 2030 targets, we need to think ahead and make choices now that help us reach these targets.

Grid losses are a major contributor to our carbon emissions – accounting for 95%. Unfortunately, the nature of power transmission makes grid losses inevitable. By using more aluminium instead of copper as a conductor in our power lines, we can reduce our usage of scarce resources. However, this has the effect of higher grid losses as aluminium is a less effective conductor.

Furthermore, as our network grows onshore and offshore and by using more long-distance high-voltage connections, grid losses could grow proportionally higher. With the right technology for the future grid development, we will strive to reduce our carbon emissions.

As regards SF<sub>6</sub> leakages, currently accounting for 1% of our climate footprint, we are working hard to reduce our use of this insulating gas. Therefore we continue to work with our partners in both Germany and the Netherlands to find and implement sustainable solutions.

Resource circularity will become increasingly important in the years ahead. The scarcity of virgin copper and the reduced usage of oil puts pressure on alternative resources. To this end, we are changing our tender procedure to include stricter circularity requirements, for example by asking suppliers to provide evidence of the percentage of their materials that are recyclable and recycled with 'raw material passports'. We are also intensifying our use of LCAs, which allow us to calculate the lifetime environmental impact of products used in each project.

Considering our direct impact on nature and wildlife, we try to reduce bird collisions with our high-voltage lines by working with the right partners to identify high-risk bird spots and to implement preventive and animal-friendly bird barrier measures.

# Create value to transition to a climate neutral economy

**Antonella Battaglini**  
CEO Renewables Grid Initiative

In the transition to a sustainable energy system, the grid is being fully reinforced and expanded. This also demands a lot from the environment and we have to handle this carefully. TenneT is fully committed to nature and the environment, both onshore and offshore.



"Europe faces multiple crises: an unprecedented energy crisis, intensifying climate change impacts and a drastic reduction of biodiversity, among others. Grid infrastructure is essential in the fight against climate change, energy dependencies and high energy prices. But, when electricity grids are planned and deployed in a nature-inclusive way they can contribute to biodiversity as well, and TenneT is setting a great example in this respect. The commitment to be nature net positive is a major step. Agreeing on international standards to monitor and report progresses are important next steps. Testing new practices, evaluating them and constantly increasing standards in biodiversity restoration is the way forward."

## Safeguard sustainable financial performance and investor ratings

The next years will require large scale investments in our grid as a result of the expansion of renewables in Germany, the Netherlands and Europe. This is the backbone for the energy transition. As one of the biggest investors in the energy transition in Europe, we are deeply committed to make an important contribution to this fundamental transformation of society and economy. This is also reflected in our financial strategy.

At the start of 2022, TenneT already faced a challenging investment agenda, with an ambitious project portfolio to drive the energy transition. Following the outbreak of the war in Ukraine in February, political and societal demands for energy security have intensified, resulting in calls for the energy transition to be accelerated even further.

In the short-term, the combined impact of disruption in the supply chains in the aftermath of the recent pandemic and the war in Ukraine led to higher prices of goods and services. For example increased raw material and energy prices, raised the costs of our investment portfolio and increased the costs for ancillary services which affects our working capital. Unpredictability in the financial markets, with volatile and fast-rising interest rates, further impacts our financing costs and planning for funding.

Despite the market conditions, the long-term external expectations placed on TenneT are higher than ever. Our annual investments are set to increase to deliver at least EUR 8 billion a year in projects while securing our supply chain, as both the EU and the Dutch and German governments step up their climate ambitions. Of our investments approximately 40% is allocated for projects in the Netherlands and 60% in Germany. Approximately 50% of our investments refers to onshore projects and 50% to offshore projects. These investments are necessary to reduce Europe's reliance on energy imports and boost energy security across the region to prepare for a climate-neutral energy system. TenneT's investments in reinforcing, expanding and modernising the grid are not just about affordability in the here and now. They are about long-term affordability and security of supply for society.

The strength of our long-term role in the energy transition, and our solid financial position, was evidenced during 2022 by our ability to attract the necessary financing from external parties. We always carefully weigh our decisions against three criteria: affordability, sustainability, and reliability. From a societal perspective, affordability is an increasingly important factor as the costs of the energy transition grow. As our activities are regulated and most of our investments result in societal costs, we need to be cautious and prudent that we invest wisely and grow responsibly.

To safeguard our financial health, we need to maintain our strong credit ratings and keep a healthy balance between equity and debt. We are committed to our A3/A- credit rating, as it provides us strong through-the-cycle access to the capital markets and allows us to borrow at the lowest possible costs which benefits the end-consumers we ultimately serve.

## Our performance in 2022

	Performance	Target	Status	Trend
<b>Healthy financial operations</b> Adjusted underlying EBIT group <sup>1)</sup> (EUR million)	<b>1,162</b> <p>1,162    801    796 2022    2021    2020</p>	<b>835</b>		Adjusted underlying EBIT group is higher than target and 2021, mainly due to higher interest rates that increase our cost of capital reimbursement and an increase of the non-regulated results.
<b>Satisfied capital providers</b> ROIC group (%)	<b>4.9%</b> <p>4.9    4.2    5.1 2022    2021    2020</p>	<b>4.0%</b>		The ROIC group is above target and 2021, mainly due to higher EBIT.
<b>Safeguarded capital structure<sup>2)</sup></b> Adjusted FFO/ Net debt group	<b>9.7%</b> <p>9.7    10.5    11.3 2022    2021    2020</p>	<b>8.5%</b>		FFO to net debt decreased compared to 2021 but is still above target. The net debt position increased due to the pre-financing of the ancillary services costs.

<sup>1</sup> Reference is made to next page.

<sup>2</sup> Reference is made to Note 17 of the financial statements.

### Impact of Ukraine war

The Ukraine war has had a notable impact on TenneT's activities, accelerating rises in energy prices, as well as driving strong awareness of the importance of security of supply. To this end, TenneT is seeing companies accelerating their investments in electricity demand and governments becoming more proactive and ambitious in bringing about the energy transition. Both the Ukraine war and the COVID-19 pandemic had a major impact on the prices of the raw materials TenneT uses in its assets. This includes steel, aluminium and copper. High market price-levels of energy have also led to a significant increase in ancillary services costs.

### Ancillary services costs

The ancillary services costs increased from EUR 3,465 million in 2021 to EUR 6,439 million in 2022. Ancillary services are costs TenneT must incur to compensate for grid losses, to maintain the energy balance in the grid, and to pay for alternative routes for the electricity when grid sections are congested or unavailable due to grid expansions. The increase of the ancillary services costs is mainly caused by a price effect and partly caused by volume effects. The electricity prices reached record levels in 2022, which impacted the costs of (balancing) capacity

and energy products. The necessary planned outages in combination with the increasing infeed of renewables cause additional transmission restrictions and grid losses. Transmission restrictions are further impacted by changes in the availability of generating units as a result of the Ukraine war.

Since the higher costs of the ancillary services costs will be reimbursed through future tariffs, underlying revenues increased accordingly and as such there is no impact on our underlying EBIT. As the ancillary services costs are reimbursed in future tariffs, TenneT will receive the cash flows at a later stage and as such TenneT is pre-financing these higher ancillary services costs.

### Underlying revenues and EBIT

Underlying revenue increased by EUR 4,171 million to EUR 9,840 million. The increase in the underlying revenues can mainly be explained by:

- The higher costs for ancillary services in 2022 resulting in higher underlying revenues, since those higher costs will be reimbursed through future tariffs;

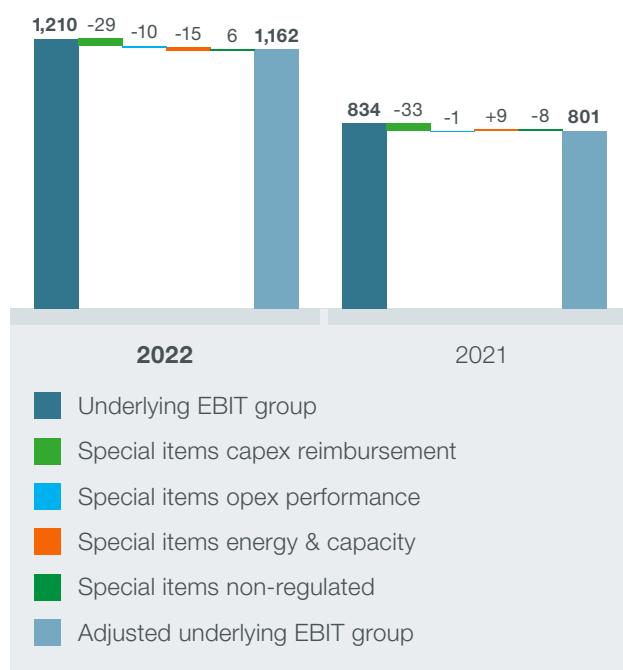
- Increased revenues due to ongoing and increasing investments, resulting in a growing regulatory asset base and higher onshore and offshore revenues which are based upon these asset base values;
- Increased regulatory returns due to increased interest rates.

The underlying operating result (EBIT) increased by EUR 376 million to EUR 1,210 million. The increase of our EBIT is partly caused by higher revenues as a result of increased regulatory returns due to increased interest rates. The increase of interest rates will be reflected in increased future finance expenses which are not part of EBIT. Higher auction receipts resulted in an increased result of our non-regulated joint venture BritNed, compared to 2021 amounting to EUR 66 million. As per segment, for the TSO Netherlands EBIT amounted to EUR 312 million (2021: EUR 225 million) and for the TSO Germany to EUR 791 million (2021: EUR 561 million) during this period. For our non-regulated businesses EBIT amounted in 2022 to EUR 107 million (2021: EUR 48 million).

The adjusted underlying EBIT increased from EUR 801 million in 2021 to EUR 1,162 million in 2022.

## Underlying EBIT group\*

EUR million



\* Refer to note 2 of the financial statements.

## IFRS results

Underlying financial information is based IFRS plus the principle of recognising regulatory assets and liabilities for all of our regulated activities. This implies that amounts resulting from past events and which are allowed to be received or are required to be returned through future tariffs are recorded as an asset or liability, respectively. TenneT's Executive Board believes that the presentation of underlying financial information provides additional relevant insight in the actual financial position, financial performance, and as such economic reality. By comparison, the consolidated financial statements are prepared based on the International Financial Reporting Standards as adopted by the European Union (hereafter: IFRS). Based on prevailing opinion on IFRS it is not allowed to recognise amounts to be received or are required to be returned through future tariffs.

As such our IFRS result reflects only to date our high costs during 2022, mainly due to the earlier described ancillary services costs, but does not account for future reimbursements we will receive through correspondingly higher tariffs from grid customers. As a result, TenneT reports an IFRS EBIT loss for 2022 amounting to EUR 976 million (2021: loss EUR 275 million).

## Investments and raising the necessary funding

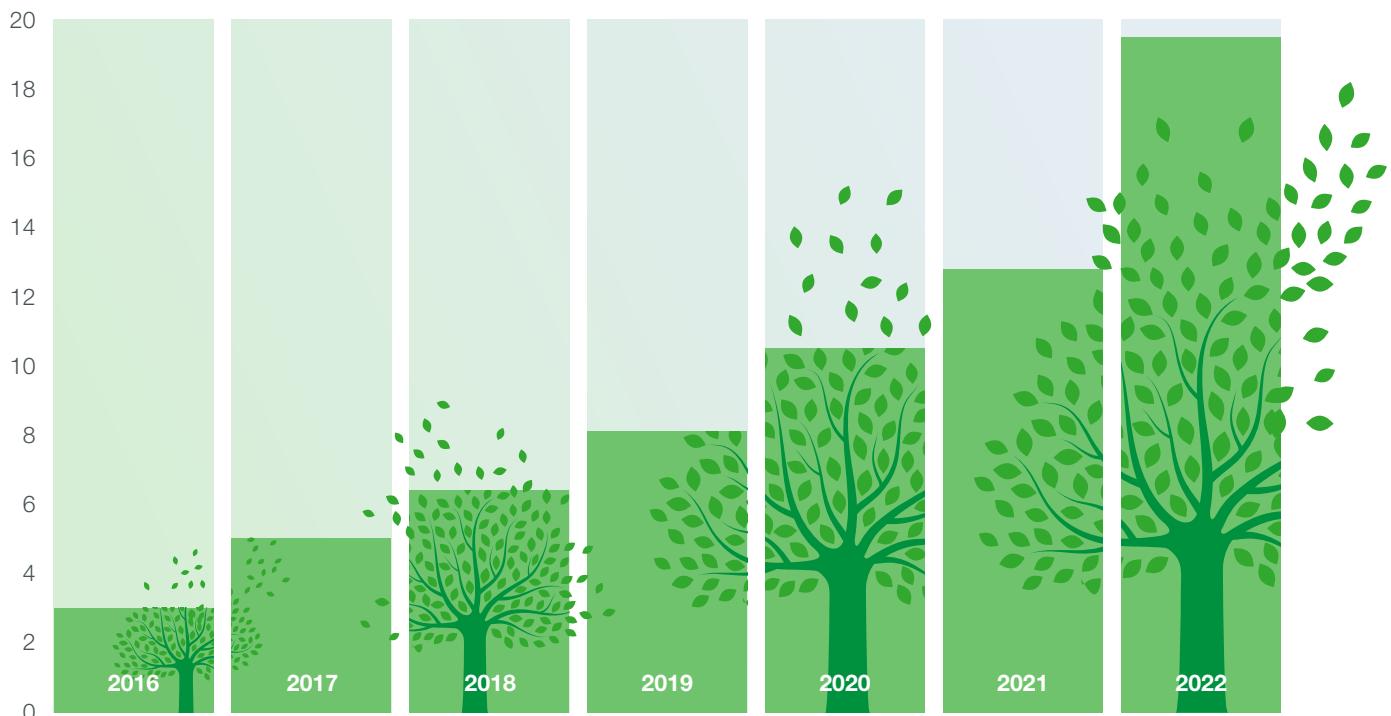
TenneT is one of the largest investors in the energy transition in Germany and the Netherlands. A significant part of our investments are directly linked to the energy transition. The investment programme can be divided into approximately 40% for the Netherlands, 60% for Germany and the allocation between onshore and offshore is approximately 50%/50%.

During 2022, within a complex and unpredictable external environment, TenneT continued its strong efforts to drive the energy transition, investing EUR 4.5 billion in the grid (2021: EUR 4.0 billion) and once again maintaining a high grid availability of 99.99963%. TenneT expects to deliver at least EUR 8 billion annually on projects in the coming years in the onshore and offshore grids in the Netherlands and Germany in accordance with the national energy policies of both countries.

Broad and sustainable access to financing is a pre-requisite for realising these investment goals and making the energy transition happen. And 2022 has made clear that transitioning to clean energy – and fast – is also necessary for political and economic security.

## Outstanding green debt

in EUR billion



We need to ensure that these investments are financed with the right mix of equity and debt. TenneT must incur expenses before returning revenues and profits. To realise investments such as ours and build a grid that is future-proof, we need to have funds readily available – at the right cost. Part of those funds come from equity and the majority from borrowings, mostly green bonds as well as other debt. Even with the high investment and financing need in mind, our strong credit ratings were reconfirmed in 2022.

While inflation and interest rates are rising, we are still well positioned to raise the necessary financing in the debt capital markets. Our Green Bonds, issued in May (EUR 3.85 billion) and October (EUR 3.0 billion) were amongst the largest EUR corporate bond transactions in 2022. Apart from our strong credit ratings, we benefit from the fact that our Green Bonds are exactly that: green. They stand to pass the sustainability checks and balances an investor might test them against. And, of course, we will continue our efforts to report transparently on our sustainable performance in order to maintain broad and sustainable access to financing – green or otherwise. More details about our Green Bonds can be found in our Green Finance report.

In order to maintain our A-/A3 credit ratings and to realise our investment portfolio, TenneT's internal policy is to maintain a long-term average funds from operations (hereafter: FFO) /Net debt ratio (based on adjusted 'underlying' financial information) of at least 8.5%, which meets the requirements for an A-/A3 credit rating as formulated by Standard & Poor's (hereafter: S&P) and Moody's. The aim to keep the long term average adjusted FFO/Net Debt ratio above 8.5%, while funding the investment plans requires additional equity in the foreseeable future. The exact amount and timing of the equity need depends on new energy transition policies of governments driving the investment agenda, changes in the regulatory framework and on the inflationary impact on the cost of our investment projects.

To support our strong credit rating and fund the investments in the Netherlands, the Dutch state included EUR 5.11 billion of equity in the state budget till 2025. Of this budget, EUR 1.2 billion was received in 2022. The amounts for 2023, 2024 and 2025 of respectively EUR 1.8 billion, EUR 0.6 billion and EUR 1.5 billion as included in the budget are conditional and subject to final reviews. The Dutch state has allocated the capital contribution to the Dutch investments.

TenneT and its shareholder, the Dutch state, are engaged in discussions with the German government to explore the possibility of a full sale of TenneT's German activities on acceptable terms.

Our financial strategy is focused on maintaining our credit rating at a minimum of A-/A3 and generating returns on investment in accordance with our risk profile. In 2022, our A- credit rating from S&P and our A3 rating from Moody's were reaffirmed again. Also, our ESG evaluations were reaffirmed by external rating agencies. For example, S&P again classified us as 'strong' with a score of 86/100 and Sustainalytics indicated that TenneT is at low risk of experiencing material financial impacts from ESG factors.

The adjusted FFO/Net debt ratio decreased from 10.5% per 31 December 2021 to 9.7% per 31 December 2022. The decrease is mainly caused by the regulatory framework

which requires TenneT to pre-finance the ancillary services costs directly which will flow back to TenneT in the future years through the tariffs. Per 31 December 2022 TenneT has approximately pre-financed EUR 2.5 billion for which debt has incurred resulting in decreased FFO due to higher interest expenses, whereas net debt increased. The adjusted FFO/Net debt ratio adjusted for the pre-financing of the ancillary services costs that will be settled in future tariffs is: 11.0% per 31 December 2022 (2021: 10.8%).

### **Contribute to achieve a reliable and predictable regulatory framework which supports our financial strategy**

Propelled by the war in Ukraine and the desire to gain independence from Russian natural gas, our investments in a carbon-free, secure, and reliable electricity grid are gathering pace. This requires constant vigilance and sustained investment.

## **Our societal financial impact on households in our serving area**

As we are serving society as a state-owned company, safeguarding our financial health is of paramount importance. Our revenue consists of the regulated income we receive for costs we incur to fulfil our task of securing supply today and tomorrow. Designing, building, maintaining, and operating a future-proof grid comes at a cost which households and companies contribute to via the payment of grid fees. We have calculated our societal financial impact on households in our service area. We have assessed our impact on the electricity invoice (retail of electricity; taxes, charges and levies; grid fees) of an average household in the Netherlands and in Germany. In Germany, our share is around 4.8% (2021: 5.6%). The impact with respect to the electricity bill on households in the Netherlands is more difficult to determine. This is due to the energy price compensation measures of the Dutch government in 2022. When we disregard the compensation measures (direct and through lowered taxes/levies), it is estimated that the share is approximately 9.1% (2021: 9.0%). When we do take the compensation measures into account, the part of the electricity bill exceeds 100%, as compensation measures fully negate taxation, retail costs and DSO grid fees for the average household (note that the effects will differ per individual household).

TenneT sees that their part of the electricity bill (the numerator) has increased in the Netherlands, however, as the wholesale price of electricity also increased, this did not lead to a significant increase to our share relatively. On the German side, TenneT noticed that its part of the electricity bill slightly decreased compared to 2021 and the total electricity bill increased also due to the increase of the wholesale price of electricity.

The share of TenneT both in the Netherlands and in Germany might increase over the coming years, as the costs for the energy transition may rise, amid increasingly ambitious climate goals. TenneT noticed that governments are taking measures to reduce the impact of substantially increased energy prices for households and the effects of the investments required to build and maintain the grid to be able to secure supply today and tomorrow. An example of keeping the tariffs stable, is the measure by the German government to lower the effect of the required investments by ways of a federal grant. Of course the effect this has on the overall electricity bill of a household in our serving area will depend on the development of the wholesale price in the future.

## The application of the EU Taxonomy at TenneT

The EU Taxonomy is a classification system, which helps to determine which economic activities related to a certain organisation can be considered to be environmentally sustainable. The aim is to provide clarity and a level-playing field on the contribution companies have in meeting Europe's environmental goals in relation to the EU Green Deal. Last year, organisations like TenneT were requested to disclose the degree to which the economic activities of organisations are eligible to the EU Taxonomy. In 2021, we had performed this assessment and determined that our economic activities are eligible. This is because our primary tasks are to provide electricity transmission services and system services and to facilitate the energy market. Those economic activities are linked to NACE code D35.12 and are concluded to substantially contribute to climate change mitigation, since TenneT is transmitting and distributing renewable energy in line with Directive (EU) 2018/2001, including necessary reinforcement or extension of the grid. In line with technical screening criterium 4.9 'Transmission and distribution of electricity' on climate mitigation.

Most of our activities (the regulated business of the TSOs in the Netherlands and Germany) are eligible, since our grid is part of the interconnected European system. Our non-regulated activities were considered ineligible and have therefore been excluded.

### The next steps taken in 2022

Determining the eligibility regarding the EU Taxonomy is merely one part of the equation. The next steps are to show so-called 'alignment to the EU Taxonomy'. This means that, next to the assessment performed to determine eligibility, we also needed to assess whether we meet the 'Do No Significant Harm' (DNSH) criteria set forth in the technical screening criterium 4.9 as mentioned above. This relates to the environmental goals related to 'climate change adaptation', 'transition to a circular economy', 'pollution prevention and control' and 'protection and restoration of biodiversity and ecosystems'. The environmental goal of 'water and marine resources' is considered not applicable according to the guidance in criterium 4.9.

In addition, organisations need to state that they meet minimum safeguards. These relate to the topics of human rights, corruption, taxation and fair competition. We reviewed the criteria related to the 'Minimum Safeguards' to determine whether we believe we meet these requirements. By performing procedures, such as interviews with subject matter specialists within our company and review of documentation, we believe that we are able to meet both the DNSH criteria as well as the minimum safeguards and that our economic activity still aligns with the environmental goal of climate change mitigation. Also, we needed to verify which part of our eligible activities are also considered to be 'aligned' with the EU Taxonomy. This to determine which part of our overall revenue, operating expenses (OPEX) and capital expenditures (CAPEX) are considered to be Taxonomy aligned. We therefore performed an assessment to determined which part of our infrastructure relates to a direct connection between our substation or network and a power production plant that is more greenhouse gas intensive than 100 gCO<sub>2</sub>e/kWh measured on a life cycle basis. We have excluded these from our final calculation to determine the reporting metrics related to this regulation.

### Reporting metrics with respect to the EU Taxonomy

Based on this conclusion, we then calculated the amounts of investments, revenues and operating expenditures that are associated with this economic activity, which is in alignment with the EU Taxonomy and determined which percentage this constitutes compared to all economic activities. This results in the following percentages:

Total group aligned turnover: 98%

Total group aligned CAPEX: 100%

Total group aligned OPEX: 99%

More detailed information on this can be found in the table. Details regarding the calculation and the accounting policy related to these metrics, please refer to the additional information included in the section 'EU Taxonomy disclosure'.

As the TSO's responsibility, we need to deliver onshore and offshore grid expansion and renewals – on time and within budget. To drive the energy transition, a range of decisions must be made from standards on manufacturing devices, leaner permitting procedures, integrated system planning (including hydrogen) to close(r) co-operation with large customers, consumers, other TSOs and DSOs. This requires European and national legislation and regulations to keep pace with developments, as well as an investment framework that enables us to meet the needs and objectives of businesses, households, the economy, and politics. Our investments and operations need to be supported by a regulatory framework with a long-term focus and a high degree of reliability and predictability. While regulatory periods are typically only established for a period of three to five years, the underlying methodologies in principle provide a stable long-term regulatory framework in both the Netherlands and Germany. The nature of our business and the scale of the energy challenge require us to think decades ahead to determine how and where to invest. We need to be able to rely on a regulatory framework which can do the same and allows us to recover our long-term investment costs and our operational costs.

Together with Strategy& TenneT performed a study regarding improving the TSO regulation in the context of the European Green Deal. Regarding operational expenditure (OPEX) non-recovery we conclude that as operational costs are expected to rise structurally, the current revenue regulation frameworks, based on historical costs, leads to under-remuneration of operational costs. As such we propose forward-looking estimates for capitalised expenditure (CAPEX), OPEX and ancillary services costs. Revenue regulation should incentivise TSOs to implement cost efficient solutions in situations where OPEX- or CAPEX-based solutions are substitutes and as such a total expenses (TOTEX) approach is preferred. Moreover we conclude that incentives to stimulate and boost more innovation such as digitisation and flexibility are needed as the current framework does not create sufficient momentum.

To this end, the regulatory framework in the Netherlands was changed by the new estimation method for OPEX and CAPEX. A shortfall in estimation that is based on historical data is mitigated by ex-post settlement of all investments with a fixed assets useful life of more than 10 years, as growth is expected based on the planned investment of the Investment Plan. The regulation furthermore provides for the timely recovery of investments of national importance ('Rijks Coördinatie Regeling' investments) by means of direct compensation in the year the costs occurred (T-0).

The operational costs estimates are based on a historical average of three years. Operational expenses for onshore are adjusted by 1% of the change in acquisition value of the projects to reflect growth and decline in operational costs as a result of changes in the asset base.

The regulation makes use of non-robust efficiency measures as a result of a flawed international TSO benchmark. TenneT clearly demonstrated the limitations and showed that the benchmark result cannot be applied. Following discussions, ACM amended the efficiency score from the initial result of 71.5% to 89.1%. TenneT challenged this decision in court, as the additionally outcome is still too low in our view.

TenneT also filed an appeal on the changed regulation for the operational costs (not ancillary services) of the system operator and the project specific efficiency assessment of Borssele. The results of the court case are expected in Summer 2023.

Together with all Dutch grid operators TenneT also filed appeal against the determination of the WACC.

In Germany, the regulatory framework for investments (on- and offshore) also changed within the last years. A deterioration was avoided due to grandfathering rules and transitional regimes. TenneT considers that regulatory changes should never devalue already-taken investments as this undermines investors' confidence in the regulatory framework. After the harmonisation of DSO and TSO investment frameworks and the Court of Justice of the European Union decision against Germany, TenneT holds the view that BNetzA should keep established and proven principles of a reliable and transparent regulatory framework, while exercising freedom of judgement to allow for more innovative and future-orientated solutions to society.

In Q2 2022 ACM issued a statement with its intention to assess a financing solution for the impact of the current shortfall in remuneration for the costs of ancillary services due to the current market conditions. ACM has meanwhile communicated its intention to include an advance (between 25%-40%) of the expected difference between the budgeted and actual costs of ancillary services for the year 2023 in the tariff proposal for 2024. ACM has indicated that the final chosen percentage within the indicated range will depend on the stability of the expected tariff developments. ACM has the intention to include an advance in the tariffs of 2025 and 2026 as well, if the market conditions provide reason to do so.

In 2022, we achieved a significant regulatory milestone in Germany, when the government agreed to compensate for the higher grid fees that TenneT and other TSOs said they must charge in 2023 to reflect escalating wholesale power prices and ancillary services costs, such as redispatch. With grid fees accounting for around 4.2% of domestic energy bills and around 1.0% for industrial customers, the government's compensation of around EUR 13 billion means the TSOs cost increases are expected to be absorbed. As a result, our grid fees in Germany for 2023 will remain on the level of 2022.

### What could prevent us from realising our goals?

TenneT's revenues depend mainly on the regulatory frameworks in the Netherlands and Germany and are important to finance our grid investment needs and operational costs. Any adverse changes of the regulatory framework or economic developments not catered for in the regulatory framework could impact TenneT's overall financial performance. To address this risk, a reliable, appropriate and future-proof regulatory framework is needed and supported by a study with Strategy& as earlier mentioned.

The costs for ancillary services, such as for congestion management, balancing power and other system services, are rising significantly because of the Ukraine war which had a significant impact on the cost calculations of TSOs. These would have resulted in increased network charges. In Germany, the increase would have been of around 250%, of which 95% would have been due to the rising costs of system services. In order to cushion these considerable burdens for end-consumers and industry, TenneT, together with the other TSOs, advocated for proposals to stabilise

the increase of German network tariffs by making use of a federal grant. As a result of the political negotiations with on the so-called 'third relief package' TSOs were successful in keeping transmission grid fees stable. The necessary budget of nearly EUR 13 billion is expected to be served from the proceeds from the skimming of windfall revenues of electricity generators and Germany's Economic Stability Fund (WSF). For 2023 electricity prices have dropped substantially and we expect this to have a dampening impact on the redispatch costs. In addition, an increase of our grid volume induces a further financial impact on our ancillary services. Ancillary services costs affect TenneT in multiple ways. Firstly, it puts pressure on our working capital needs and although compensated in a few years from now, the tariffs negatively impact today's IFRS result. Secondly, our ancillary services costs are rising above the planned budgets such that the tariff revenue received today is insufficient and leads to additional financing needs.

To deliver our future projects on time, additional equity is required. While TenneT is still in a strong and healthy financial position, there is a risk that our current credit rating of A- (S&P) or A3 (Moody's) could not be maintained. This risk could occur in the scenario of increasing investment volumes while not being able to raise sufficient additional equity on time. While it would be possible -although not easy- to attract future debt by issuing green bonds, as TenneT has successfully done in the past, this could negatively affect the FFO/Net debt ratio and further induce negative pressure on our credit rating. Therefore, attracting equity on time to finance our operations and to maintain a healthy balance between debt and equity becomes and remains important.

### Electricity Revenue Cap in Germany

The Electricity Revenue Cap Act ('Strompreisbremsegesetz, StromPBG') was passed by the German legislator on 20 December 2022 and went into force on 24 December in the same year. It aims to protect domestic end-consumers in 2023 from strongly increased electricity prices resulting from the turmoil on the energy markets in Europe following the Ukraine war. Energy suppliers will process the price caps in their individual invoices with end-consumers. The aggregated financial impact of this will be paid out starting in the first quarter of 2023 by the TSOs to the energy suppliers on the basis of aggregated volume data. The TSOs are compensated for these payments

by direct transfers from the government and by funds received from electricity generators. To enable the process, detailed rules for the calculation of excess revenues from generators as well as for the settlement and pay out to end-consumers are determined in the law. Furthermore, the German regulator BNetzA has an oversight role in the process. Payments from TSOs to end-consumers via the energy suppliers started in February 2023 with retroactive effect as per January. First governmental transfer payments to bridge-finance occurred in February 2023. The first inflow of excess revenues from generators is expected for mid of August 2023. TSOs do not expect any liquidity or profitability risks from the regime which they perform as trustees of society and on a pass-through basis.

## Sigrid Kaag

Minister of Finance of the Netherlands



In the energy system of the future, there is an important role for offshore-generated wind power. As manager of the offshore electricity grid, TenneT performs the important task of connecting this green power to the national electricity grid.

"The government's objective is to generate around 21 gigawatts of electricity via offshore wind around 2030. I am impressed by the innovative solutions TenneT is developing to carry out this task as quickly, reliably and at the lowest possible social cost. The production and transmission of this green power is essential for the future of the Netherlands. Firstly, of course, to combat climate change, but also to become more independent in our energy supply. We need to become independent of Russian gas as soon as possible and our own energy generation is crucial for this."





## Solve societal challenges with stakeholders and through partnerships

The energy transition is one of the biggest technological and societal challenges of our times. Shifting from fossil-based power to mainly renewable power by the EU's target of 2050 means that Europe's energy system will undergo fundamental changes in the coming decades. The task of achieving these goals is too great for any one player to act alone. It requires smart solutions and a tremendous collective effort from multiple stakeholders.

As a leading European TSO, TenneT plays a key role in realising Europe's clean energy targets. With our knowledge, expertise and vision, we can provide valuable insights into the future energy landscape. But to accomplish this, we need to work together with a wide range of partners to find innovative solutions, work more efficiently and at the lowest achievable costs. That is why we collaborate intensively with partners within and outside the sector, including with academic institutions, government agencies, technology providers, suppliers and other players in the energy market.

TenneT seeks to actively participate in the dialogue and co-operation with our stakeholders to address the complexities of the energy transition. For example, in the Netherlands we have a close co-operation with all DSOs in the association Netbeheer Nederland. In addition, we work together with other European TSOs as a member of the European Network of Transmission System Operators (ENTSO-E), and with industry partners through co-operation with industry associations such as Bundesverband der Deutschen Industrie (BDI), Energie Nederland and Vereniging voor Energie, Milieu and Water (VEMW). Furthermore, we are a member of the Nederlandse Vereniging voor Duurzame Energie (NVDE) and participate in think tanks such as Agora Energiewende on topics related to the energy transition. These partnerships are essential not only to deliver on our own strategic goals, but also to achieve the societal objectives of building an affordable, reliable and sustainable energy system.

Traditionally, our electricity model was based on a simpler model where a small number of power generation plants would serve a large number of customers, with electricity transmitted over relatively short distances. Today, electricity can be generated in any place, from home roof-mounted solar panels to onshore wind turbines and large wind farms far out in the North Sea. With widely distributed sources of power, small and large, and the volatility of the weather, a renewables-based electricity system has to be designed in

a completely new way. This brings huge challenges for the usage and expansion of the electricity network and the dynamic stability of the power system.

Strategic partnerships and innovation are not only essential to unlocking new technological solutions that drive the energy transition; they are also critical to TenneT's strategic objectives to secure supply today and tomorrow, energise our people and workforce and safeguard our financial health.

As new technologies transform the way electricity is generated, carried, stored, traded and consumed, innovation is also important for market design. The latter includes the entry of small and larger parties that will play an important role in maintaining the balance on the high-voltage grids and/or providing the necessary flexibility in a system largely based on weather-dependent energy sources.

### Our performance in 2022

In the challenging times experienced in the energy sector during 2022, innovation and partnerships remain at the top of the agenda for TenneT. Considering the push by national governments to achieve greater energy security and the recent acceleration in Europe's ambitions for offshore energy, we believe that innovation and partnerships are key in designing the future energy system. This is why our innovation efforts are focused on the technology and solutions needed to develop a high-capacity and integrated offshore and onshore future grid.

Part of the innovation process at TenneT takes place bottom-up, with ideas generated by employees as well as external stakeholders, for example through crowdsourcing. Crowdsourcing is the process of connecting large groups of people based on their knowledge, expertise, commitment or profession. Top-down, the innovation process is driven by TenneT's mission and strategic priorities.

Our partnerships with the academic world, research centres, DSOs and TSOs, and our involvement in various

associations such as CIGRE or ENTSO-E also play an important role in our innovation process. During 2022, TenneT was actively involved in over 90 innovative projects.

### Partnerships to secure supply, today and tomorrow

In 2022, energy security in Europe became an urgent issue. As such, renewed focus was placed on accelerating the shift to a future-proof energy system and developing cross-border connections and market solutions for boosting security of electricity supply in Northwest Europe. At the same time, the rapid increase in offshore wind and solar generation, as well as electrification by industry and consumers, has put pressure on our onshore grid and raised the need for technological solutions and partnerships to increase the capacity and utilisation of our system (see '[Deliver a high security of supply](#)' chapter). Although we are building new assets to increase grid capacity every year, we cannot relieve all bottlenecks within the grid, leading to more congestion.

In 2022, several innovation projects focused on securing supply today and tomorrow by advancing the technologies required for a high-capacity and integrated offshore and onshore grid. Through these partnerships, we aim to tackle some of the main challenges that we foresee in securing supply, today and tomorrow.

### Innovating DC technology

The future electricity grid will increasingly depend on high-voltage DC (HVDC) technology, as it allows TSOs to transmit far higher volumes of DC power to the onshore grid over much longer distances. It also results in lower grid losses, more cost-efficiency and a lower environmental impact. However, developing an interconnected and interoperable DC grid requires significant innovation in DC technology, requiring the collaboration of multiple partners alongside TenneT.

For example, it will require DC circuit-breakers and interoperable multi-vendor DC convertors. To develop these new technologies and other solutions, TenneT participates in **READY4DC**, a large and diverse community of experts, including technology suppliers, which will assess the major technical and legal aspects of building an interoperable multi-terminal, multi-vendor DC grid in Europe.

Another key challenge of innovating DC technology is interoperability, as multiple converter stations from a variety of technology providers (multivendor) will need to be integrated. To explore this topic, TenneT is involved in a partnership project called **InterOPERA**. Focused on

enabling interoperability of multi-vendor HVDC grids, the project proposes a coordinated approach between a diverse, high-level group of industries at the forefront of renewable energy development and grid management. With four HVDC vendors, eight other TSOs, two wind turbine vendors and three wind park developers, the project brings industrial knowledge and practical abilities together to make future HVDC systems mutually compatible and interoperable by design.

TenneT is also working with partners to ensure the development of HVDC technology in future grids is as reliable as possible. This will help ensure HVDC can contribute to security of supply in a renewables-based energy system and help to accelerate the energy transition. These aims are the focus of **HVDC-Wise**, a multidisciplinary project engaging 14 partners from 11 countries including five academic institutions, four TSOs and five industrial bodies. It will assess future HVDC-based grid architecture concepts and their ability to fulfil TSOs' resilience and reliability needs. The project will identify and assess new technologies for HVDC-based grid architecture and how they could be deployed in widespread AC/DC transmission grids.

Finally, the development of DC grid solutions requires the efficient integration of the onshore- and offshore grid. With fellow TSOs and technology suppliers, we are working together on the development of **Multi-terminal DC hubs** to support extremely large amounts of renewable energy sources being fed into the grid and distributed to end-users without causing congestion in the network. More on this can be found in the chapter '[Ensure critical infrastructure for society](#)'.

### Increasing grid utilisation

One of the most important ways to secure supply today, is to improve the resilience of our grid and maximise the use of our existing assets: by improving grid utilisation, we can do more with what we already have. This reduces the need to constantly expand our grid, and thereby benefits society by allowing us to drive the energy transition faster, with improved affordability and security of supply.

This was the core aim of the InnoSys 2030 research project, which was successfully completed in December 2021. A total of 17 partners including transmission and distribution system operators, control system manufacturers and research institutes, investigated how grid utilisation can be increased over a three-year project, with new concepts, simulations, demonstrations and field experiments. The consortium developed a roadmap that provides an implementation path for the new concepts, such as load

flow optimisation and ‘curative’ remedial measures, until 2030 and beyond. Part of these follow-up actions are being taken up in a new project introduced in 2022 called

## PROGRESS.

### Optimising grid control

Similar to the InnoSys 2030 project, the **Control Room of the Future (CROF)** aims to prepare system operations for the future, from methodology, process and tools perspectives. For instance, it looks at increasing grid utilisation and automation, by making TenneT’s grid control centres future-proof so they can handle the challenges of our increasingly data-driven grid. The CROF programme also supports our operators as they adapt to the new systems and workloads associated with our changing grid, including training and skills. A roadmap for the CROF R&D programme has been set, including software development, grid data, grid security assessment, system dynamics, decision support, communication interfaces and operator training. The roadmap for technology and methodology includes several topics that are to be developed until 2031.

### Digitalisation and data exchange

Designing a resilient and efficient energy system of the future will depend on a reliable and secure architecture for exchanging data across borders, between different energy players and with consumers. It will also need to be robust, to cope with increasing decentralisation and complexity, and enable interoperability between energy systems. To work towards this goal TenneT is among partners participating in the international **GAIA-X** project.

Representatives from business, science and politics collaborate to create a proposal for the next generation of data infrastructure, including the realisation of sovereign data exchange in a European cloud. Having received funding in 2021, the project is scheduled for three years and, once completed, aims to set a new standard in energy data exchange.

### Partnerships to drive the energy transition

To meet the challenges of the energy transition, we need to work in partnership with a wide range of players to unlock the technological solutions that will enable a climate neutral energy system for Europe. Driven by political climate ambitions and geopolitical uncertainty in Europe, the political and social momentum behind the energy transition has never been higher, requiring all stakeholders to work together to accelerate the realisation of climate targets.

### Designing the future grid

At TenneT, our wide-ranging work to build the grid of the future in time to meet Europe’s climate goals is organised

under our Target Grid 2045, which includes a roadmap for growing our infrastructure, using a wide range of smart solutions and innovative technology. In addition to planning the infrastructure required for a future-proof energy system, TenneT is also conducting studies to plan the market design instruments needed. This is the aim of project **MARGRET** (Market and Grid Alignment and an Efficient Energy Transition). After more than a year of research and collaboration across departments and with external stakeholders, the project team aimed to set the vision for a robust energy market design that can enable the energy transition. For example, it stressed the importance of unbiased price signals and grid tariffs, as well as accounting for physical constraints in energy prices. In total, the project produced eight viewpoints that will now serve as a guide for new initiatives related to energy market design.

Achieving the energy transition also depends on the development of a fully integrated and cross-border connected offshore grid. TenneT is already advanced with the connection of offshore wind farms to the onshore grid, but in the future it sees the need for the large scale roll-out and integration of offshore wind in the North Sea through the development of interconnected power hubs. In the long-running **North Sea Wind Power Hub (NSWPH)** project, TenneT Netherlands, TenneT Germany, Energinet and Gasunie propose a fundamentally new approach to long-term offshore grid planning, combining wind power in-feed and interconnection to surrounding North Sea countries. A research and engagement programme has been in execution which currently forms the basis for several initiatives to prepare for the first ‘hub-and-spoke’ projects, meaning that offshore wind farms will connect to one or several hub islands. Based on the NSWPH expertise, the Dutch government announced in 2019 that the roll-out ambitions of offshore wind from 2031 onwards will follow this hub based approach. Accordingly, the first hub projects in the North Sea are now under exploration, as well as the collaboration between the North Sea countries to jointly develop the first hub and spokes projects.

### Flexibility and energy system coupling

In the future energy system, a wide variety of complementary energy sources will need to be integrated into the grid. For example, electrolyzers will use wind and solar-generated energy to create green hydrogen that can be used to store electricity or as fuel for heating and transport. Batteries will also be used as a flexible source of energy, in static battery parks or in mobile devices such as electric vehicles. The coupling of these energy infrastructures will be key to the success of a renewable energy-based power system.

To plan for this, TenneT teamed up with Dutch DSOs and the gas grid operator Gasunie to conduct studies on the optimal energy infrastructure required in Germany and the Netherlands in 2050. The scenarios in **Infrastructure Outlook 2050 / II3050** show that all energy infrastructures will have to expand considerably, and that there will be a great need for new forms of flexibility, such as hydrogen storage and batteries. The studies also conclude that governmental direction is needed regarding the size and location of flexibility assets – such as electrolyzers – in the energy network. Electrolyzers have the potential to contribute significant electrical loads. For example, the Dutch government is planning to build electrolyzers with a capacity of 3 to 4 GW by 2030, while Germany is planning 5 GW by 2030.

Furthermore, together with fellow European TSOs, TenneT is developing a Crowd Balancing Platform called **Equigy**. This cross-border blockchain platform enables participants to actively offer smaller flexibility devices, such as car or home batteries, on the electricity balancing markets. As traditional consumers of electricity can now also become a provider of flexibility services, Equigy opens up the market to more participants and aims to increase decentralised flexibility by doing so.

### Accelerating our projects through partnerships with suppliers

To make the energy transition happen in the relatively short time of European climate targets, we need to work closely with our contractors, building long-term relationships that give them confidence to invest and share our growth. Given the volatile supplier market and supply chain disruption that increased in 2022, it is even more critical for TenneT to create long-lasting relationships with its key contractors. This philosophy was piloted in 2021 with the **EU-303 framework** contract, initially used in onshore substation building and maintenance contracts in the Netherlands with nine of our international supply chain partners. Following the success of this model, further EU-30x and other framework contracts were developed in the course of 2022, most notably with the new framework agreements introduced for tenders for our pioneering **2GW Program** (see 'Ensure Critical Infrastructure for Society'), with a focus on sustainability.

### Partnerships to energise our people and organisation

As TenneT aims to accommodate a workforce of up to 10,000 people by 2025, we need to step up our efforts to hire new talents and retain our current workforce. Therefore, we need to create an energising, inclusive, diverse and sustainable workplace, where people from all types of backgrounds can thrive. This requires innovative approaches and new partnerships with stakeholders within and outside the energy sector.

#### Academic partnerships

To foster connections and recruit new talent – especially scarce technical talent – it is essential for TenneT to forge close partnerships with the academic world and research centres, such as **FAU Erlangen-Nürnberg**, **TU Ilmenau** and **TU Delft**. With the **University of Bayreuth**, TenneT has signed a letter of intent aimed to foster knowledge exchange and joint research projects, as well as training and marketing of an energy cluster in Bayreuth. In the Netherlands together with the vocational education institute **ROC van Twente** TenneT is offering a new module specifically designed to prepare technicians for the energy transition. Vocational technical training programmes like this are essential for building the talent resources we need to drive the energy transition at speed and scale in the Netherlands and Germany.

#### Attracting diverse talent

For many years, TenneT has worked closely with the **Refugee Talent Hub** in the Netherlands and **TENT Partnership** in Germany to provide opportunities for refugees through apprenticeships and vocational training. Both schemes link refugees and employers with paid employment as the goal. We are keen to offer opportunities for learning and potential employment with refugees, which also helps to drive the diversity of talent we have within TenneT. In 2022 we organised open days with Refugee Talent Hub to allow refugee talents to learn more about the company and to meet members of staff. In 2022 we were proud to offer 10 newcomers a work experience position. Of the newcomers that started before 2022, seven have found permanent employment at TenneT.

#### Collaborative innovation

To engage and connect diverse talent and drive ideas forward internally, we have set up a collaborative innovation network called the **Acceleration Room**. It was established to improve our internal transparency and company-wide communication regarding TenneT's innovation activities.

It also helps us to accelerate ideas at an early stage by connecting different units of the organisation to share insights and latest developments on our wide-ranging innovation work.

### Partnerships to safeguard our financial health

To ensure we are able to meet the expectations of our capital providers and also contribute to an affordable energy system, we aim to make the right choices to help achieve this. This means working together with stakeholders that can provide us the option to finance future projects, doing so with better conditions that help us deliver on our strategic ambitions.

### Dialogues with our regulators

To secure our financial health, TenneT aims to contribute to a reliable and predictable regulatory framework that supports our (financial) strategy. Therefore, we engage in dialogues with our regulators to discuss our strategy and the role of regulation in this. In 2022, we organised Board to Board meetings with Dutch and German regulators, and also held meetings with our national regulators and ACER to explain our strategic topics. In addition to this, we were in intensive exchange with all relevant stakeholders regarding the development of the grid fees for 2023 and specifically discussed the reimbursement of significantly higher costs for ancillary services. Finally, we held several meetings to prepare the fourth regulatory period in Germany (2024-2028) and continued the appeal process against the current regulatory period in the Netherlands (2022-2026).

### Our co-operation with co-investors

To finance the expansion of offshore grid connections, TenneT co-operates with external co-investors such as KfW-IPEX, Copenhagen Infrastructure Partners (CIP) and Chubu Electric Power. Via separate legal entities the co-investors contribute equity and receive financial participation rights in return. Their contribution helps to ensure adequate financial ratios. Furthermore, their participation strengthens TenneT's interest in a reliable and stable regulatory framework as co-investors interests have been communicated to policymakers and regulators.

### Partner banks

To secure a solid financing and ensure that we can drive the energy transition in an affordable way, we maintain strong relationships with our shareholder, the Dutch state, and with the banks that participate in TenneT's Revolving Credit Facility (RCF) – ABN AMRO, BNG, BNP Paribas, Commerzbank, Deutsche Bank, HSBC, ING, NatWest, Rabobank, Santander, UniCredit and SMBC. The majority of these relationship banks also participated in TenneT's previous RCF, showing the strength of our long-term relationships. Through these partnerships, we are able to secure our financing.

In 2022, we issued EUR 6.85 billion of Green Bonds with the support of our banking partners and have become the largest EUR corporate green debt issuer globally. The financial importance of this model is strengthened by the growing number of investors seeking to invest in companies that contribute to the EU's Green Deal ambitions, such as companies with activities that align with the EU Taxonomy. More information on how TenneT assessed how our activities are eligible with the EU Taxonomy can be found in the chapter '[Safeguard sustainable financial performance and investor ratings](#)'.

### What could prevent us from realising our goals?

In 2022, the turbulence in the energy markets and energy crisis – caused by Russia's invasion of Ukraine – increased the urgency to accelerate the energy transition by the Dutch and German governments. This was demonstrated by the recent Esbjerg Declaration of May 2022. As two-thirds of the capacity in this ambitious offshore plan (40 GW) is accounted for by TenneT, the scale of the challenge is clear.

To accomplish the innovation portfolio, it is essential to establish a wide range of skilled partners and develop innovative solutions together, for instance with the European Network of Transmission System Operators (ENTSO-E), academic institutions, government agencies and technology providers. We need to continue developing attractive and mutually beneficial business solutions – such as our long-term framework agreements for our 2GW Program – to ensure we bring our best partners with us to achieve our goals. Therefore, it remains important to focus on the right processes and improve where necessary so that we can attract the right partnerships at the right time.



Supervisory Board (fltr): Stijn van Els, Ab van der Touw, Laetitia Griffith, Edna Schöne, Essimari Kairisto.

Ultimately, TenneT relies on strong partnerships with a wide range of stakeholders enabling us to achieve the 2025 and 2030 targets. Getting there will involve collaboration, negotiation and the balancing of common and individual goals, but the destination of a clean energy future is shared by all.

Find out more about Innovations at TenneT



## Albino Marques

**Coordinator for the Continental Europe Region  
of ENTSO-E's Operation Committee**



Following an urgent request by Ukrenergo and Moldova for emergency synchronisation, the TSOs of Continental Europe agreed to start on 16 March 2022 the trial synchronisation of the Continental European Power System with the power systems of Ukraine and Moldova.

"Co-operation is the heart of ENTSO-E, the European Network of Transmission System Operators for Electricity. The interconnection of the transmission grids happened on 16 March 2022 - 17 days after request and more than 1 year before planned. This acceleration of the synchronisation project, ongoing since 2017, has been possible thanks to the previous studies carried out and the adoption of risks mitigation measures. Continental Europe TSOs are now supporting the stability of the Ukrainian-Moldovan power system and at the same time making available interconnection capacity to allow export or import of energy as needed by Ukraine and Moldova. The extraordinary will of co-operation and help of all TSOs (also for humanitarian reasons) was key for the success of the work of the Task Force that was put in place the day after Russian invasion. This was an outstanding example of what cooperation between TSOs can achieve."



# Solve societal challenges with stakeholders and through partnerships

# Statements of the Executive Board

The Executive Board is responsible for designing and operating TenneT's risk management and internal control system, and for reviewing its effectiveness.

## Statement of responsibility

The Executive Board is responsible for designing and operating TenneT's risk management and internal control system, and for reviewing its effectiveness.

The risk management and internal control system consists of the following elements:

- The enterprise risk management system aimed to identify, analyse, define mitigating measures and monitor the development of risks relevant to TenneT;
- The internal control framework aimed to manage and control critical processes, including control self-assessments to document the effectiveness of control processes;
- Business plans and quarterly reports with information on financial and non-financial objectives and their achievement;
- Internal audits of key processes and follow-up on audit findings with relevant management;
- Actions based on recommendations made in the external auditor's management letter;
- An upwardly cascading internal Letter of Representation (LOR) process, resulting in a company-wide LOR signed by the Executive Board;
- A compliance management system that enables TenneT to demonstrate its compliance with relevant laws- and regulations, industry codes and standards, as well as its commitment to good corporate governance, best practices, ethics and stakeholder expectations among others risk of internal fraud, bribery or corruption.

The Executive Board periodically reviews and analyses the strategic, operational, financial and compliance risks to which TenneT is exposed. It also regularly assesses the design and effectiveness of the risk management and internal control system. The results of these assessments are shared with the Audit, Risk & Compliance Committee, acting as a committee of Supervisory Board, the Supervisory Board itself and the external auditor.

The risk management and internal control system does not provide absolute assurance that all corporate objectives will be fully achieved, nor does it give full assurance that material errors, losses, fraud or violations of laws and regulations will not occur in the operational processes and/or the financial reporting.

Taking the above into account, the Executive Board is of the opinion that TenneT's risk management and internal control system provides reasonable assurance that TenneT's financial reporting does not contain any errors of material significance and that the risk management and internal control system has operated effectively in the year under review.

## In control statement

We confirm that, to the best of our knowledge, the financial statements for the period 1 January to 31 December 2022 have been prepared in accordance with IFRS as adopted by the EU, and with Part 9 of Book 2 of the Dutch Civil Code; that the disclosures in the financial statements are a true and fair view of TenneT's assets, liabilities, financial position and results as a whole; and that the disclosures in the Integrated Annual Report give a true and fair review of TenneT's financial performance, results and position, together with a description of the most significant risks and uncertainties the company faces. Furthermore, we confirm that to the best of our knowledge, the Group has adequate resources to remain in operation during the next 12 months and consequently the financial statements have been prepared on a going concern basis.

Arnhem, 8 March 2023

M.J.J. van Beek  
T.C. Meyerjürgens  
M.C. Abbenhuis  
A.C.H. Freitag

## The Executive Board



**M.J.J. (Manon)  
van Beek**

**Chair Executive Board /  
Chief Executive Officer**

**52, Dutch (f)**

**Initial appointment:**

1 September 2018

**Expiry second term:**

31 August 2026



**T.C. (Tim) Meyerjürgens**

**Member Executive Board /  
Chief Operating Officer**

**47, German (m)**

**Initial appointment:**

1 March 2019

**Expiry first term:**

29 February 2024



**M.C. (Maarten) Abbenhuis**

**Member Executive Board /  
Chief Operating Officer**

**49, Dutch (m)**

**Initial appointment:**

1 January 2021

**Expiry first term:**

31 December 2024



**A.C.H. (Arina) Freitag**

**Member Executive Board /  
Chief Financial Officer**

**52, German (f)**

**Initial appointment:**

1 January 2022

**Expiry first term:**

31 December 2025

**Other positions qualitate qua:**

- Chair Aufsichtsrat TenneT TSO GmbH
- Member Board TenneT Verwaltungs GmbH

**Other positions:**

- Chair Board Giving Back Foundation

- Chair Board Refugee Talent Hub Foundation
- General Member Board of German-Dutch Chamber of Commerce DNHK
- Council of the Thinktank Agora Energiewende
- Chair Supervisory Board Kanker.nl Foundation (until September 2022)

**Other positions qualitate qua:**

- Member Board TenneT TSO B.V.
- Member Board TenneT TSO GmbH
- Member Board TenneT Verwaltungs GmbH
- Member Board TenneT Offshore GmbH

**Other positions:**

- Member Executive Board WAB (Wind Energy Association Bremerhaven)
- Member Advisory Board Offshore Wind Energy MBA

- Member Board of Trustees German Offshore Wind Energy Foundation
- Member Advisory Board Federal Association of Wind Farms Offshore
- Member Board of Directors FGH (Forschungsgemeinschaft für Elektrische Anlagen und Stromwirtschaft e. V.)
- Member Board of Trustees FGE (Forschungsgesellschaft Energie e. V.)
- Member of the German National Committee of CIGRE
- Chair Supervisory Board of GreenneT

**Other positions qualitate qua:**

- Member Board TenneT TSO B.V.
- Member Board TenneT TSO GmbH

- Supervisory Board member of Royal Swinkels Family Brewers N.V.

**Other positions:**

- Member Board Netbeheer Nederland
- Member Cooperation Board TSCNET Services GmbH
- Member Advisory Board TenneT for GOPACS Foundation

**Other positions qualitate qua:**

- Member Board TenneT TSO B.V.
- Member Board TenneT TSO GmbH
- Member of the Board of TenneT Offshore GmbH

**Other positions:**

- Member Supervisory Board of GreenneT
- Member Board Flexcess GmbH



Supervisory Board (fltr): Edna Schöne, Essimari Kairisto, Ab van der Touw, Stijn van Els, Laetitia Griffith

# Supervisory Board report

The year 2022 has been unprecedented, with geopolitical developments that also impacted TenneT in various ways. These were closely monitored and discussed by the Supervisory Board ('SB'). In addition to the core topics of safety and security of supply, the SB paid attention to the increasing political and ambitions from industrial parties related to the energy transition, managing potential limitations in the supply chain, the duration of planning and licensing procedures and the scarcity of talent in the labour market. The SB exercised both its roles, supervising the way the TenneT is managed by the Executive Board ('EB') and acting as an adviser to the EB.

## 1. Safety

TenneT's SB deeply regrets two fatalities in 2022. On 9 May 2022, in the warehouse Wernberg-Köblitz (Project Ostbayernring) a TenneT employee suffered fatal injuries when a load fell off a loader. On 13 July 2022, in the contractor construction warehouse in Emden (Project Emden Ost-Conneforde), an employee from a contractor suffered fatal injuries when a steel element fell from a truck. The SB noted the investigations were completed in full co-operation with all the authorities and improvement measures were taken, which will be audited in Q1 2023.

Safety is top of mind for the SB. SB meetings always start with an update on Safety, Security of Supply and Compliance. Safety incidents and measures to be taken are pre-discussed in more depth in every Strategic Investment Committee ('SIC') meeting before being discussed in the SB meetings.

In the first half of 2022, DNV executed at the EB's request a thorough and company-wide safety review. This review led to various improvement measures that have been adopted: i) the implementation of an occupational health & safety system, ii) the clarification of roles & responsibilities, iii) the sharpening of the organisational structure and iv) the improvement of risk management.



In addition, TenneT's Life Saving Rules campaign has been rolled out across the organisation and all contractors and sub-contractors, in conjunction with the so-called Fair Approach. The Fair Approach consistently investigates why Life Saving Rules are violated and in cases where it was done willfully, consequences will follow.

The SB is content that from 2023, quarterly Safety reports will be on the SIC, on the basis of which an in-depth dialogue can be held, not only on the figures, but also on trends and actions to be taken.

Furthermore, three Safety Summits with top leaders from TenneT's contractors and sub-contractors are in progress: Offshore, Onshore DE and Onshore NL. The last of these has taken place in 2023. The first two have proved useful and were appreciated by the participants.

Apart from the fatal incidents, other safety trends in TenneT are improving for both leading and lagging indicators. However, safety is not on the zero harm level where the SB and the company want it to be. Therefore, safety will remain a top priority for the SB, the EB and the entire company.

## 2. Security of Supply and Driving the Energy Transition

Ensuring Security of Supply today and tomorrow is and remains a crucial topic for TenneT and the SB. The increasing investment portfolio to be realised for the energy transition due to political ambitions on the one hand, and the increased demand from industry for electrification on the other, has had the SB's constant attention. Potentially limiting factors for the amount and duration of the projects to be carried out (e.g. limitations in the supply chain due to geopolitical developments, scarcity in talent for TenneT and its stakeholders and delays in licensing procedures) have been discussed extensively, as well as mitigating measures to be taken. This topic will remain high on the agenda of the coming years.

Another aspect of Security of Supply that has been discussed in detail is the cyber and physical security of TenneT's assets and collaboration with relevant authorities. The SB will continue to monitor these matters closely.

## 3. People at the heart of TenneT

In various meetings different topics regarding the well-being of TenneT employees have been discussed, such as safety (including psychological safety to speak up when needed), workload and recruiting/ onboarding as well as talent development. The SB regularly spoke with TenneT directors, senior leaders and experts, as well as with the works

council and confidants. Further to regular meetings of the two SB members with an 'enhanced recommendation right for the works council' (see paragraph 8. 'Remuneration and Appointment Committee'), the SB met with the works council and had a plenary dialogue on energy market and political developments. The SB values these contacts with the works council because in these touch points the topics that are important to the employees of TenneT emerge.

## 4. Safeguarding financial health

The SB greatly appreciates how, in unprecedented and volatile times, the EB has been able to maintain healthy liquidity and attract timely and additional green debt financing.

The financing for TenneT's projects was, and is, a pivotal topic that the SB discussed with the EB in 2022. In particular, the SB has been in close dialogue with the EB on the rising equity need for the coming decade and the different funding options and strategic scenarios in the current political context. The SB fully supports TenneT's intention to engage in discussions with the German government and to explore the possibility of a full sale of its German activities on acceptable terms.

On 24 February 2023, the Council of Ministers decided that the Dutch cabinet wants to explore a full sale of TenneT's German activities to the German state as the preferred scenario to meet TenneT Germany's own equity need. The SB will continue to maintain close contact with both the EB and the shareholder on this future-defining topic in 2023.

Furthermore, the SB discussed TenneT's financing plan and credit rating. Next to that, rising costs of materials, equipment, energy and personnel were on the agenda regularly in relation to the regulatory regime on the one hand, and the increased grid tariffs on the other. The SB also liaised with the EB several times on the upcoming ESG reporting obligations.

## 5. Executive Board

The SB welcomed Arina Freitag as CFO, from 1 January 2022 and was pleased that the shareholder reappointed Manon van Beek as CEO for a second four-year term, after nomination by the SB. The SB expressed its thanks for her continuously excellent work in driving the energy transition on a European level (for example at the Esbjerg summit), for positioning TenneT as a customer and employer of choice and for her very thorough stakeholder management.

The SB is very much looking forward to monitoring and cooperating with the EB on driving the energy transition and is delighted to see how the EB operates as a true team who complement and challenge each other well.

Due to the increasing investment portfolio and the challenges that raises, in terms of stakeholder management and the responsible growth agenda within TenneT, the SB liaised with the EB on the current composition of the EB and the team of directors reporting to the EB. It was concluded in a constructive dialogue that the current top structure and governance is fit for the near future and the improvements in Audit, Risk and Compliance, IT, Digital and Safety and Security are fully supported. This topic will be revisited periodically.

The SB has had good and occasionally critical dialogues with the EB which were reciprocated constructively. The co-operation has been excellent and the SB is looking forward to its continuation.

## 6. Supervisory Board; composition

The SB was pleased that the shareholder reappointed the chair of the SB, Ab van der Touw, for a second four-year term. The SB appreciated his wise chairmanship, leading to fruitful dialogues, and his broad and international expertise. Under the leadership of Mr. Van der Touw, the Supervisory Board has grown to be a truly European, diverse and well-matched team with complimentary knowledge and experience and opportunity for constructive countervailing power where necessary.

The SB itself consists of five people – three women and two men. The SB members represent various European nationalities. All SB members have ample experience in both executive and supervisory board roles in the Netherlands, Germany and other European countries, thus reflecting TenneT's truly European character.

The SB deliberated on its own composition and size too. In view of TenneT's growing investment portfolio and the changing environment that TenneT operates in and, consequently, the SB's tasks, the SB has decided to add a sixth SB member, as was the case in the recent past. The profile for this new SB member is an international/European profile with knowledge and experience in the field of security.

In parallel, the search for the successor of Ms L. Griffith was started, for which role experience in law and regulation and knowledge of politics is desirable. In line with the so-called 'enhanced recommendation right' the Dutch Works Council

is involved in both searches. The shareholder has given feedback on both function - and candidate profiles and the plan is to strengthen the SB with these two members by mid-2023.

The composition of the SB complies with the Dutch Electricity Act, which stipulates that the majority of its members have no direct or indirect links to legal entities (or shareholders thereof) engaged in the production, purchase or supply of electricity or gas. While it was noted that Ms E. Kairisto is also a member of the supervisory board of Fortum Oyj and that Mr S. van Els is a member of the supervisory board of EVOS B.V. and CEO of HyCC B.V. (the Hydrogen Chemistry Company), the SB concluded that these roles currently do not contradict this stipulation.

For more information on individual members of the SB, as well as on the appointment and reappointment schedule, please visit TenneT's website.

## 7. SB meetings

The SB met eleven times in 2022 – twice in person at 'offsite' meetings with a site visit. One offsite meeting in Q2 took place at the high voltage station in Diemen that is currently being refurbished and which is an important node in TenneT's high-voltage grid. The other meeting in Q3 took place in the Port of Rotterdam/ Maasvlakte. Both were very insightful: the high voltage station in Diemen because of the various contractors and stakeholders involved. In the Port of Rotterdam the energy transition was almost tangible: some of TenneT's offshore wind farm connections are connected in the area, which also has a great industry demand for electrification.

Agendas for SB meetings are always set in dialogue with the chair of the SB, considering whether certain topics may lead to a potential conflict of interest for any of the SB members. If that may be the case, the respective SB member is informed prior to the meeting, documentation is not shared with the respective SB member, and he/she is asked to step out of the meeting for the duration of that topic. The meetings start with the topics of safety, security of supply and compliance, the latter to ensure that there are no topics on the agenda that may prevent any SB member from participation in dialogues and decision-making and to share relevant experiences about compliance, if any.

Topics prepared in the committee meetings that the SB discussed in more depth were, amongst others:

- political ambitions and a feasible investment agenda;
- stakeholder management and communication, including expectation management and an open stakeholder

SB attendance 2022	Supervisory Board	Audit, Risk and Compliance Committee	Remuneration and Appointments Committee	Strategic Investments Committee
A.F. van der Touw (chair)	11/11	5/5	8/9	-
L.J. Griffith	10/11	-	9/9	-
E. Kairisto	10/11	5/5	-	6/6
A.C.C. van Els	11/11	-	9/9	6/6
E.M Schöne	11/11	5/5	-	6/6
Total attendance	96.4%	100.0%	96.3%	100.0%

dialogue in the areas where TenneT is building new transmission infrastructure;

- congestion;
- optimisation of internal procedures of various kinds (e.g. investment thresholds, certain internal controls);
- the most optimal form for TenneT's insurance;
- cost developments in projects, grid tariffs, etc. in relation to the Dutch and German regulatory regimes;
- TenneT's performance in the field of Environmental, Social and Governance ('ESG').

All of TenneT's reporting, both internal, such as the quarterly reports, and external reports (Integrated Annual Report and Half Year Results Report) as well as the reporting by the external auditor were also prepared in the ARCC and discussed by the SB in this way.

The topic of finding an equity financing solution for the coming years for TenneT's investment portfolio both in the Netherlands and Germany was on every SB agenda.

In addition, the shareholder's new policy on state participations and its impact on TenneT was discussed:

- Strategy: a more active role for the shareholder in the consultation process;
- Foreign activities: the shareholder will regard these critically on whether they contribute directly or indirectly to the public interest and whether they are a core activity or closely related to a core activity;
- Investments: realising the energy transition requires a broader view and influences the weighting of risks against a large public interest;
- Appointments of EB and SB members: for EB members the appointment terms will now also be two times four years, as they were for SB members with a possible extension of two times two years in well-motivated cases;
- Furthermore, more attention must be paid to diversity in the broad sense (not only gender);

- Financial position: KPI targets will be set for expected return, capital position and operational performance appropriate for the nature of the state participation. There will be more attention for special circumstances, such as the energy transition;
- Corporate Social Responsibility: the increased attention for this topic and potential implications for TenneT have also been discussed.

Furthermore, the chairs of the SB and Audit Risk and Compliance Committee (ARCC) met with the Ministry of Finance in the yearly pre-General Shareholder's Meeting to discuss topics related to the Integrated Annual Report. The chairs of the SB and Remuneration and Appointments Committee (RAC) also met with the shareholder in the yearly 'autumn' meeting, to evaluate, among other things, the functioning and co-operation between the EB, SB and shareholder. The composition of the EB and SB, and the rotation schedule, were also on the agenda. The SB used the insights from these meetings to execute its supervisory – and advisory roles.

The SB met with several TenneT employees during the visit to the Diemen high voltage station. At the Annual Shareholder's meeting, held in the Electrical Sustainable Power Lab (which is a co-operation between Delft University and TenneT), the shareholder and the SB had various dialogues with academics on the energy transition. And on the 19 May, in a visit to the Hollandse Kust Zuid offshore wind farms, SB members engaged with various stakeholders in the energy transition, such as the Ministry of Economic Affairs and Climate, wind farm owners, contracting partners from TenneT and NGO's.

## 8. Remuneration and Appointments Committee

The RAC met nine times in 2022, most of the times virtually except for the yearly performance dialogues with EB members, that were held in person. One RAC meeting was incorporated in a SB meeting (therefore, all SB members were present).



The RAC paid special attention, among others, to the following subjects in preparation of the SB dialogues and decisions to be taken: Management Team Review with a focus on adequate internal Director/ EB potential and diversity; results of the employee engagement survey and action plan; ratio internal/ external employees and outsourcing.

Furthermore, the RAC has been busy preparing the external search for two new supervisory directors from mid-2023. At the time of publication of the Integrated Annual Report, this search is still ongoing. The RAC also spent time reviewing and approving a number of ancillary activities of EB and SB members. The two RAC members with an enhanced recommendation right by the works council met regularly with the works council, where safety and workload were important recurring themes. In November, the full SB met with the works council for a plenary dialogue on the energy market developments.

The RAC consists of Ms L. Griffith (chair RAC; member with an enhanced OR-recommendation right), Mr A. van der Touw and Mr S. van Els (member with an enhanced OR-recommendation right). All RAC meetings were attended by Director People and the CEO.

## 9. Strategic Investment Committee

The SIC met six times in 2022. Two SIC meetings were incorporated in a SB meeting (implying that all SB members were present). Focus points of the SIC, in preparation of the SB dialogues and decisions to be taken, included: safety, security of supply, investment proposals and reports, standardisation, innovation and national security. The SIC especially welcomed TenneT's new standardised 2 GW programme for the Dutch and German offshore grid connection systems, which enables TenneT to remain a customer of choice for a limited number of suppliers, make use of synergy effects and to operate and maintain the offshore platforms in a more efficient way. In 2022, the SIC recommended as much as 39 investment proposals with a total value of EUR 36.7 billion to the SB, which approved these. Also discussed several times in the SIC was the Asset Chain Initiative, which aims to drastically simplify the entire chain of project approvals while giving more attention to portfolio dialogues, e.g. at industry cluster level. This initiative requires close coordination with the shareholder and will be further pursued in 2023. Each year, one of the SIC meetings is attended by the external auditor for a better understanding of the strategic direction and the choices made and a good view on the thoroughness of the discussions leading to an effective control by the SIC.

The SIC consists of Mr S. van Els (chair SIC), Ms. E. Schöne and Ms. E. Kairisto. All SIC meetings were attended by both COOs.

## 10. Audit-, Risk and Compliance Committee

The ARCC met five times in 2022; two meetings were incorporated in a SB meeting (implying that all SB members attended). In preparation of the SB dialogues and decisions to be taken, the ARCC's main attention points were (among others) the Integrated Annual Report and the Half-Year Report, as well as the quarterly Financing Reports and Integrated Audit, Risk and Control and Compliance and Integrity Reports, the update of the Internal Audit Charter, the Internal Audit Plan 2023, TenneT's Ten Year Investment Forecast and Equity need, the Integrated Planning and Performance 2023-2025, the Financing Plan, TenneT's credit rating, ESG reporting, legal procedures and IT security. All reports by the external auditor were also discussed in depth. Internal and external audit findings were a continuous point of attention and the ARCC noted that with better procedures in place these are expected to be resolved quicker or planned with more realistic deadlines. With effect from August 2022, TenneT has appointed a Director of Audit, Risk and Compliance, the ARCC was involved in this appointment and appreciates the strengthening of leadership and more integrated view of these areas.

The ARCC consists of Ms. E. Kairisto (chair ARCC), Mr. A. van der Touw and Ms. E. Schöne. All ARCC meetings were attended by the CFO, the CEO, the Head Internal Audit and the external auditor.

## 11. Management Letter external auditor

TenneT's external auditor, Deloitte, stated in its management letter that it has not, considering other (mitigating) controls, determined any of the control deficiencies to be significant, neither individually nor in the aggregate.

Deloitte is of the opinion that within TenneT clear, logical and repetitive signals from management – such as internal training programmes, meetings, formal and informal conversations with employees, newsletters and work instructions – promote a corporate culture that appreciates and rewards integrity and ethical conduct. The overall view of the state of the internal control environment is that TenneT has a well-established internal control environment in the financial risk area and is working to strengthen in other areas.



As in any large and changing organisation, there are also improvement areas and recommendations. The 2022 interim procedures have not resulted in new observations around internal control. For several findings raised in prior years, TenneT has made improvements in its processes leading to a reduction of the risks associated with the respective observations; for other findings it was noted that TenneT aims to have attention for all IT deficiencies raised in order to have these remediated more speedily by structurally addressing these going forward.

The ARCC and SB will keep monitoring the improvement areas and recommendations identified by Deloitte.

## 12. Strategy

Due to the war in the Ukraine and its impact on energy markets, the energy transition and energy security, the SB has had several dialogues on the execution of TenneT's strategy, which was sharpened to meet the amended societal and political demands. It was noted that TenneT's strategy will be re-evaluated in 2024 with shareholder consultation, for which the first steps will be taken in 2023. The SB will remain actively involved in TenneT's strategy calibrations and in the re-evaluation.

## 13. Permanent Education Sessions

Permanent Education sessions were held on the following topics: TenneT investments in view of the increased Dutch and German climate ambitions and political landscape; high voltage installations and safety; the impact of the war in Ukraine on both the EU electricity system and on TenneT and how TenneT ensures it is prepared for any contingency; as well as an update on ESG reporting. Furthermore, the SB members were invited to participate in TenneT's Annual Energy Market Update and the TenneT summit event in Brussels with an online dialogue with the European Commission's executive vice-president European Green Deal, Frans Timmermans.

## 14. Integrated reporting and audit

In 2022, the SB discussed the financial statements for the financial year 2021. This dialogue was prepared by the ARCC, and the respective meeting was preceded by the regular meeting between the ARCC and external auditor without EB members nor the Company Secretary being present to ensure a free dialogue. The SB reviewed the 2021 Integrated Annual Report, the Half-Year Report as well as the internal quarterly reports. Furthermore, it discussed the independent auditor's reports, results from internal risk and control assessments, the 2023 budget and the Integrated Performance Plan 2023-2025.

For the IAR 2022, the materiality analysis was validated by both the EB and the SB according to the Global Reporting Initiative Standards (GRI). In concurrence with the IAR 2021, the following four topics are considered the most material impacts for TenneT:

- Safety;
- Securing supply today and tomorrow;
- Driving the energy transition;
- Financial Health.

## 15. Financial statements

In 2022, the SB examined the Integrated Annual Report 2021, the financial statements 2021, the Green Finance Report 2021, the independent auditor's report, the assurance report of the independent auditor related to non-financial information, the interim report/management letter and the audit results report issued by TenneT's external auditor. The ARCC prepared and advised on these documents. As a result, the SB endorsed the documents and recommended that the General Meeting of Shareholders adopt the financial statements. The SB recommended that the General Meeting of Shareholders discharge the EB members from liability for its management of the company and release the SB from liability for its supervision over the year 2021, both of which took place.

## 16. Inclusion and diversity

Based on TenneT's ambition, the company strives for an inclusive and diverse workforce that contributes to a range of skills, knowledge and experience, and to new approaches and ideas for a more efficient way of working. Diversity has been discussed in the RAC and SB in relation to the management team review for all Directors and the leaders reporting to the Directors. Diversity is also an important element in the search criteria for the two SB members that started in 2022.

The RAC noted that although the target for female hires (30%) was met in 2022, the target for international inflow (10%) has unfortunately not been fully met. The activities on providing a (temporary) workplace for refugee talent are highly valued. The RAC also appreciates the way TenneT once again managed to attract and onboard more than 1,190 new employees in 2022.

The RAC and SB will keep monitoring diverse hiring as well as encouraging and living an inclusive culture.

## 17. Self-evaluation

In 2022, the SB conducted its self-evaluation under the guidance of an external board room consultant. The main points of attention were:

- TenneT's growth challenge: the building projects and related investments are in control, but what does it mean for future maintenance, operations, governance, IT and HR. The SB resolved to discuss certainties, probabilities, and especially uncertainties and dilemmas regarding TenneT's exponential growth, monitoring these both on a project/programme level and 'zooming out' for the bigger picture.
- The aim to spend more time on relationships with external stakeholders (including the shareholder) and internal stakeholders (including Dutch and German works councils) as well as on long term value creation: capitalise the assets, what can TenneT do with data and capabilities, what is happening in areas of innovation.

These topics will be on the SB- and committee agendas for 2023.

Key positive notes were:

- That the SB operates in an effective manner. The SB functions well; expertise and profiles are complementary and diverse, and team spirit and commitment are strong.
- There is also great appreciation for the chair, who brings broad expertise and experience and sets the right tone for open and fruitful dialogue, and for the functioning of the three SB committees.

## Thanks

The SB appreciates the excellent results over the year 2022, which could not have been reached without the hard work and noticeable drive and joy of everyone working for TenneT. The SB thanks the employees of TenneT for this commitment. Furthermore, the SB would like to thank the Executive Board as well as the company secretary, Ancella Anssems, for her advice and constant support during 2022.

## Capabilities matrix Supervisory Board

Competencies	A.F. van der Touw (chair)	L.J. Griffith (vice-chair)	E.M. Kairisto	A.C.C. van Els	E. Schöne
General management	■	■	■	■	■
Financial management	●	●	■	●	●
Capital market/ investor relations	●	●	■	●	●
Technology	■	◆	◆	■	◆
IT	●	●	●	■	●
Risk management	■	■	■	■	■
Project management (large infrastructure projects)	■	●	■	■	■
Human resources	■	■	■	■	■
Marketing/Public Affairs/ Brand image	■	■	●	■	■
Regulation	●	●	●	●	■
Public sector/State owned companies	■	●	●	●	■
Political/managerial experience and network the Netherlands	■	■	◆	●	◆
Political/managerial experience and network Germany	■	◆	■	■	■
International background/experience	■	●	■	■	●
Legal	●	■	●	●	■
Experience in energy-, industrial and/or financial sector	■	■	■	■	■
Knowledge of Dutch Corporate Governance Code	■	■	●	●	●
Corporate Social Responsibility/ Environmental, Social and Governance	■	■	■	■	■

■ = High   ● = Medium   ◆ = Low



# Remuneration policy

TenneT's remuneration policy primarily aims to offer remuneration at a level that will attract and retain qualified and capable statutory directors (including those who come from within the organisation), being Executive Board members (hereafter: EB). This also applies to Supervisory Board members (hereafter: SB). The remuneration policy meets the best-practice provisions on remuneration as defined in the Dutch Corporate Governance Code. Since all of the shares in TenneT are held by the Dutch State, TenneT's remuneration policy falls within the scope of the 2022 State Participations Policy ('Nota Deelnemingenbeleid Rijksoverheid 2022', published 1 July 2022).

TenneT's revised remuneration policy has been approved by the Shareholder and is effective as of January 2020. It is also in line with the 2022 State Participations Policy. The most important elements of the current remuneration policy are described below.

## Employment market reference group

Remuneration for the statutory directors of TenneT has been set using a benchmark, a comparison with organisations competing in the same business and employment markets as TenneT. These organisations include:

- International transmission system operators (TSOs);
- Operators of infrastructure;
- Installation/engineering companies;
- Building companies;
- Financial institutions.

The outcome of this benchmark showed a substantially higher remuneration level than TenneT's current level of remuneration, which has been set by the Shareholder in line with the remuneration policy as of January 2020 and includes 'equal pay', regardless of gender or nationality.

The Supervisory Board reviews the remuneration policy for statutory directors once every four years. The Supervisory Board may resolve to do this as well in case of important policy changes, changes in Shareholder structure or ownership and changes in the labour market. Such changes will be aligned with and submitted to the Shareholder for approval.

## Remuneration norm

The moment the Supervisory Board appoints a new statutory director it applies the remuneration policy as approved by the Shareholder. For 2022, this limit of the fixed remuneration, excluding pension and other allowances, was set at EUR 423,132 for TenneT's Chief Executive Officer (CEO). The fixed remuneration of the other EB members (CFO and both COO's) has been capped at

90% of the remuneration of the CEO. The Supervisory Board applies the principle of equal pay to the remuneration policy for the statutory directors.

If, in the opinion of the Supervisory Board, the maximum remuneration as required by the Shareholder leads to unacceptable risks to the organisation because no suitable candidates can be found to fulfil the role of statutory director, the Supervisory Board shall consult the Shareholder.

The Supervisory Board decides on the annual increase in salary. If the remuneration of a statutory director has reached its maximum, further increases will be limited to the structural increments as agreed upon in the collective labour agreement which is applicable to all Dutch TenneT employees. Ms. Freitag and Mr. Meyerjürgens, whilst being based in Germany both have a Dutch labour agreement with TenneT.

## Service agreement and compensation for early termination

In principle, with effect from 2017, employment contracts – with the exception of internal appointments – are concluded for a fixed term of four years. In the event that the employment contract is terminated prior to the expiry date, TenneT pays a maximum of one year's salary as a termination compensation, unless the statutory director resigns voluntarily or the termination is the result of his or her actions. As an exception to our policy, agreed with the Shareholder, Ms. Freitag will also receive this termination compensation if she will not be employed for a second term at the initiative of TenneT.

## Pensions

The retirement age of statutory directors is based on the statutory pension age for Dutch contracts for statutory directors based in the Netherlands. The retirement age of statutory directors based in Germany is based on the statutory pension age as applicable in Germany. Statutory directors participate in the regular pension scheme of the country in which they are covered for social insurance.

The Netherlands based statutory directors participate in a pension arrangement as defined in the collective labour agreement and as applicable for all employees in the Netherlands. The employer and employee contribution for the statutory directors follow the same rules as applicable to all other employees. Dutch pension regulations define the pensionable salary up to the fiscal maximum of EUR 114,866 (gross pension, 2022).

The statutory directors based in the Netherlands receive the same compensation as TenneT employees with an income above the fiscal maximum pension salary. The compensation is based on the fiscally allowed age-dependent premium percentages up to fiscal maximum pension salary.

German based statutory directors participate in the regular pension scheme ('Beitragsplan') or any other pension scheme that such statutory director may have already been entitled to.

In Germany TenneT currently has two pension schemes. For employees starting after 1 April 2008 Pension scheme 2008 is applicable. Mr. Meyerjürgens joined TenneT's TSO GmbH predecessor E.ON Netz GmbH on 1 March 2003. At that time a company pension based on the pension scheme 2001 was provided to him. Mr. Meyerjürgens kept participating in his pension scheme. For Ms. Freitag the Pension scheme 2008 is applicable. Further reverence is made to note 23 of the consolidated financial statements.

## Other allowances and secondary benefits

The total remuneration package for statutory directors includes an allowance for necessary out-of-pocket expenses, the use of a lease car (of a type comparable to those provided to statutory directors of similar organisations) including possible private use, accident and directors' and officers' liability insurance, and thirty days paid leave per annum. Sign-on bonuses and recruitment incentive payments are not applicable for statutory directors.

Secondary benefits also include a nominal contribution towards health insurance premiums and the choice of other flexible individualised benefits, such as converting holiday allowance into extra leave hours. Most of these benefits are applicable to all TenneT employees, working under the Dutch collective labour agreement. The company does not extend any loans, loan guarantees or advances against future earnings to any statutory director.

## Taxes

TenneT and the Dutch Tax Authorities reached a tax settlement on the allocation of wage and income taxes to the Netherlands and Germany. Part of this tax settlement led to double taxation for Ms. Van Beek, accepted as part of the agreement. TenneT shall fully indemnify, hold harmless and compensate statutory directors against all claims, demands, actions, suits, damages, liabilities, losses, settlements, judgments, costs and expenses (including but not limited to reasonable attorney's fees and costs), which arise out of or relate to any act or omission of TenneT in relation to the double taxation claim. As a result statutory directors will not have a disadvantage of the international allocation of their remuneration, nor will there be a gain advantage from the advancing arrangement with TenneT, since it will be settled afterwards.

Next to that a Mutual Agreement Procedure is requested on behalf of Ms. Van Beek, Mr. Jager (as former statutory director) and Mr. Voorhorst (as former statutory director) between the competent Dutch and German authorities based on Article 25 of the bilateral tax treaty concluded between the Netherlands and Germany (2012) for the tax years 2018 and 2019.

## (Re-)Appointment of EB and SB members

TenneT naturally adheres to the (re)appointment process of both EB and SB members. Both EB as well as SB members are appointed for a term of four years and can be re-appointed for a second term of four years. In well-motivated cases, EB and SB members may subsequently be reappointed twice for a term of two years. So the total maximum period for both EB and SB members is 12 years.

## Board remuneration

This section specifies the current remuneration for statutory directors as well as members of the Supervisory Board.

During 2022, the Executive Board of TenneT was composed of the following statutory directors:

	<b>Position</b>	Date of first appointment	End of 1 <sup>st</sup> term	End of 2 <sup>nd</sup>
M.J.J. van Beek	CEO	1 September 2018	31 August 2022	31 August 2026
A.C.H. Freitag	CFO	1 January 2022	31 December 2025	
M.C. Abbenhuis	COO	1 January 2021	31 December 2024	
T.C. Meyerjürgens	COO	1 March 2020	29 February 2024	

Ms. Van Beek and Ms. Freitag are employed by the company for the duration of a fixed-term. Mr. Abbenhuis and Mr. Meyerjürgens both have open-ended underlying employment contracts.

### Remuneration of the statutory directors

#### Total remuneration

2022 (in EUR thousand)	<b>Fixed remunera- tion</b>	Gross Pension	Net pension	<b>Total pension</b>	Other allowance <sup>1)</sup>	<b>Total remunera- tion</b>
<b>Current board members</b>						
M.J.J. van Beek	423	35	46	81	19	523
A.C.H. Freitag	367	90	-	90	49	506
M.C. Abbenhuis	381	31	29	60	25	466
T.C. Meyerjürgens	380	178	-	178	38	596
<b>Total remuneration current board members</b>	<b>1,551</b>	<b>334</b>	<b>75</b>	<b>409</b>	<b>131</b>	<b>2,091</b>
<b>Former board members</b>						
O. Jager <sup>2)</sup>	-	-	-	-	15	15
<b>Total</b>	<b>1,551</b>	<b>334</b>	<b>75</b>	<b>409</b>	<b>146</b>	<b>2,106</b>

<sup>1)</sup> The column 'Other allowance' includes certain perquisites provided to statutory directors in 2022, such as life-cycle allowance, an employer contribution to the Dutch statutory health insurance and an one-off payment as part of the CLA agreement. The costs shown in this column are excluding the annual employer contributions to the Dutch and German social security. For Manon van Beek and Maarten Abbenhuis the 2022 employer social contributions amounted to EUR 9K. For Arina Freitag the 2022 employer social security contributions amounted to EUR 10K and for Tim Meyerjürgens to EUR 9K.

<sup>2)</sup> Consists of education costs.

2021 (in EUR thousand)	<b>Fixed remunera- tion</b>	Gross Pension	Net pension	<b>Total pension</b>	Termination benefit	Other allowance	<b>Total remunera- tion</b>
M.J.J. van Beek	415	34	50	84	-	14	513
O. Jager <sup>1)</sup>	372	32	53	85	513	52	1,022
M.C. Abbenhuis	332	31	32	63	-	19	414
T.C. Meyerjürgens	372	213	-	213	-	26	611
<b>Total</b>	<b>1,491</b>	<b>310</b>	<b>135</b>	<b>445</b>	<b>513</b>	<b>111</b>	<b>2,560</b>

<sup>1)</sup> The amount of EUR 513 thousand consists of EUR 402 thousand severance payment and EUR 111 thousand of salary payments for the period of handover and strategic advice.

## Fixed remuneration

In accordance with the indexation for employees as determined by the Collective Labour Agreement for TenneT, the salaries of all statutory directors have been increased by 3.1% as of May 2022 and a 1.2% one-off payment has been paid. The Supervisory Board sets and evaluates performance targets for each statutory director on an annual basis.

## Pension cost

The pensions of all Dutch statutory directors are administered by the ABP Pension Fund. The pension accrual is based on an average pay system up to the fiscal maximum (gross pension). With respect to the fixed remuneration exceeding the fiscal maximum, the Dutch statutory directors may participate in a net pension system.

As explained above, the pension of the German statutory directors is based on actuarial calculations in line with IAS19. The amount is equal to the yearly service costs.

## Other allowances and secondary benefits

All statutory directors have a company car available to them. The value of the private use is part of the Other allowances as shown in the table. The company does not reimburse its statutory directors for any personal income tax consequence resulting from the private use of leased cars.

For Dutch statutory directors the secondary benefits as shown in the remuneration table, include a contribution to health insurance and a budget for flexible terms of employment. Each statutory director received an allowance for necessary out-of-pocket expenses, of EUR 2,196 a year.

This allowance is not included in the remuneration table as it is a compensation of expenses incurred and hence not considered a remuneration component.

The total remuneration paid to the statutory directors is reconciled to and further disclosed in [note 4 of the consolidated financial statements](#).

## Remuneration ratio

The remuneration ratio CEO to employees is measured by comparing the total remuneration, including fixed salary, variable remuneration and pension benefits of the CEO with the median of all other employees. The remuneration ratio CEO to senior management is measured by comparing the CEO's annual total compensation with the median annual total compensation of the Senior Leadership Team (SLT). The SLT consists of 21 Directors, all direct reports to the EB. The remuneration ratio of the highest paid employee to employees is measured by comparing the annual total compensation, with the median of all other employees. As of this reporting year the highest paid employee to median of all other employees is a new ratio calculation. That and the fact that the calculation base changed makes up for the fact that the remuneration ratio differ to what was reported in the IAR of 2021 and 2020. The cost components have been reassessed and next to that the following changes were made. Employees with a parttime employment contract are not recalculated to one fulltime equivalent. The same is applied to employees joining TenneT during the course of the year, their remuneration is not recalculated to twelve months.

	2022	2021	2020
Remuneration ratio CEO to median of employees	5.9	5.8	6.2
Remuneration ratio highest paid employee to median of employees <sup>1)</sup>	6.8	7.0	7.0
Remuneration ratio to median of SLT	1.5	1.9	2.1

<sup>1)</sup> Mr. Meyerjürgens is the highest paid individual, due to pension entitlements.

## Remuneration of the Supervisory Board

The remuneration policy for the Supervisory Board defines the remuneration for the different roles and committees of the Supervisory Board. During 2022 each Supervisory Board member was serving on one or two of a total of three committees.

	Supervisory Board	Audit, Risk and Compliance Committee	Remuneration and Appointments Committee	Strategic Investments Committee
A.F. van der Touw	Chair	Member	Member	
L.J. Griffith <sup>1)</sup>	Vice-chair		Chair	
E. Kairisto	Member	Chair		Member
A.C.C. van Els	Member		Member	Chair
E. Schöne	Member	Member		Member

<sup>1)</sup> Mrs. Griffith is also member of the Aufsichtsrat of TenneT TSO GmbH

The Shareholder agreed to an annual indexation of the Supervisory Board remuneration following TenneT's Collective Labour Agreement, from 1 January 2015 onwards. As a result, Supervisory Board member

The roles and responsibilities of members of the Supervisory Board were as follows:

remuneration increased by 3.1% as of May 2022 and a 1.2% one-off payment has been paid. Following this increase, Supervisory Board member remuneration was as follows:

(EUR)			
Chair		32,530	per annum
Vice-chair		26,164	per annum
Member		23,349	per annum
Audit, Risk and Compliance Committee		7,778	per annum
Remuneration and Appointment Committee		6,162	per annum
Strategic Investment Committee		6,162	per annum

The total remuneration received by the Supervisory Board in their capacity as TenneT Holding B.V. Supervisory Board members during 2022 was as follows:

(in EUR thousand)	2022			2021		
	Fixed remuneration	Committee fee	Total	Fixed remuneration	Committee fee	Total
A.F. van der Touw	33	14	47	32	14	46
L.J. Griffith	26	6	32	25	6	31
E. Kairisto	23	14	37	23	13	36
A.C.C. van Els	23	13	36	23	12	35
E.M Schöne	23	14	37	23	13	36
<b>Total</b>	<b>128</b>	<b>61</b>	<b>189</b>	<b>126</b>	<b>58</b>	<b>184</b>



# The Supervisory Board



**A.F. (Ab)  
van der Touw**

**Chair Supervisory Board /  
Member Audit, Risk & Compliance  
Committee / Member Remuneration &  
Appointments Committee**

**67, Dutch (m)**

**Initial appointment:**  
1 June 2019

**Expiry second term:**  
31 May 2026



**L.J. (Laetitia)  
Griffith**

**Vice-Chair Supervisory Board /  
Chair Remuneration & Appointment  
Committee**

**57, Dutch (f)**

**Initial appointment:**  
1 July 2015

**Expiry second term:**  
30 June 2023



**E.M. (Edna)  
Schöne**

**Member Supervisory Board /  
Member Strategic Investments  
Committee / Member Audit, Risk &  
Compliance Committee**

**51, German (f)**

**Initial appointment:**  
1 May 2019

**Expiry first term:**  
30 April 2023



**E. (Essimari)  
Kairisto**

**Member Supervisory Board /  
Chair Audit, Risk & Compliance  
Committee / Member Strategic  
Investments Committee**

**56, German and Finnish (f)**

**Initial appointment:**  
1 May 2019

**Expiry first term:**  
30 April 2023



**A.C.C. (Stijn)  
van Els**

**Member Supervisory Board /  
Chair Strategic Investments  
Committee / Member Remuneration  
& Appointments Committee**

**58, Dutch (m)**

**Initial appointment:**  
1 May 2019

**Expiry first term:**  
30 April 2023

**Principal position:**

- Former CEO Siemens Nederland (until 1 April 2018)

**Other positions:**

- Member Board Deutsch-Niederländische Handelskammer
- Chair Supervisory Board Universiteit Leiden
- Chair Board Fonds Slachtofferhulp
- Chair Supervisory Board NIBA
- Member Board GAK Foundation

- (External) member Ondernemingskamer Gerechtshof 's Gravenhage

- Chair Advisory Council Ministry of Defence
- Chair Advisory Council Ministry of Infrastructure
- Chair Supervisory Board, Platform Talent voor Techniek
- Chair Supervisory Board Van Leeuwen Buizen Groep B.V.
- Chair Advisory Committee Nederlands Indië Monument

**Principal position:**

- Former State Councillor in the Advisory Division of the Dutch Council of State

- Member of the Supervisory Board of ABN AMRO
- Chair Board Stichting Nederlands Vioolconcours
- Chair of the Supervisory Board of Save the Children the Netherlands

- Member of the Electoral Council
- Chair Supervisory Board Metropole Orkests
- Member of the Supervisory Board of the Kadaster
- Member of the Foundation Assurance KLM

**Other positions:**

- Member of the Aufsichtsrat TenneT TSO GmbH
- Chair Supervisory Board Nederlands Filmfonds
- Member of the Supervisory Board of Gassan Diamonds B.V.

- Member of the Executive Committee International Chamber of Commerce Germany
- Member of the Unternehmensbeirat KfW IpeX
- Member of the Board LAVFE- Foundation

**Principal position:**

- Member Executive Board Euler Hermes AG

**Other positions:**

- Member of the Board 'Lateinamerikaverein'
- Member of the Executive Committee 'Ostaußschuss der deutschen Wirtschaft'

**Principal position:**

- Former CFO Hochtief Solutions AG

**Other positions:**

- Member Supervisory Board Fortum Oyj
- Member Supervisory Board Applus+ SA
- Member Supervisory Board Freudenberg SE
- Chair 'Deutsch-Finnische-Gesellschaft e.V.'
- Member Supervisory Board Iveco Group N.V.

**Principal position:**

- Former CEO Shell Germany
- CEO of HyCC B.V. (the Hydrogen Chemistry Company)

- Member Advisory Council Dutch Ministry of Infrastructure

**Other positions:**

- Chair Supervisory Board IDA Foundation
- Chair Supervisory Board EVOS B.V.

# Corporate governance



# Corporate governance

As a transmission system operator, TenneT plays an important role in society. We believe in having a solid governance structure, effective oversight and a transparent accountability to all stakeholders. To that end, we comply with the Dutch Corporate Governance Code (hereafter: the Code), insofar as it is applicable.

## Corporate governance structure

TenneT's corporate governance structure comprises the Executive Board, the Supervisory Board and the General Meeting of Shareholders. Additionally, our internal Audit, Risk & Internal Control and Compliance & Integrity unit and external auditor play an important role in this structure.

### Executive Board

The Executive Board of TenneT Holding B.V. has four statutory directors. The Executive Board members have joint authority to represent the company. Each board member also holds limited individual power of attorney. Three members of the Executive Board of TenneT Holding B.V. are managing directors of TenneT TSO B.V., three members of the Executive Board are managing directors of TenneT TSO GmbH and one of these three members is managing director of TenneT Offshore GmbH.

The Executive Board is responsible for the management of the company, which includes regulated and non-regulated activities.

### Supervisory Board

The Supervisory Board of TenneT Holding B.V. supervises the policies, management and the general affairs. It carries out its duties in the interests of the company and its stakeholders, and also takes into account relevant aspects of corporate social responsibility. Supervisory Board decision-making is supported by the Strategic Investment Committee, the Audit, Risk and Compliance Committee and the Remuneration and Appointments Committee. TenneT has a two-tier board structure, as specified in the Electricity Act.

All information about the Supervisory Board (such as its rules and rotation schedule) is available on our [corporate website](#).

### General Meeting of Shareholders

All shares in TenneT's capital are held by the Dutch state, which is represented by the Ministry of Finance. Under the Electricity Act, only the Dutch state may hold voting interests in the company. A General Meeting of Shareholders is held within six months after the end of each financial year.

The General Meeting of Shareholders discharged the Executive Board and Supervisory Board members from liability from their respective activities in the year 2022. Other shareholder meetings are held as and when deemed necessary by the Executive Board, Supervisory Board or the Shareholder.

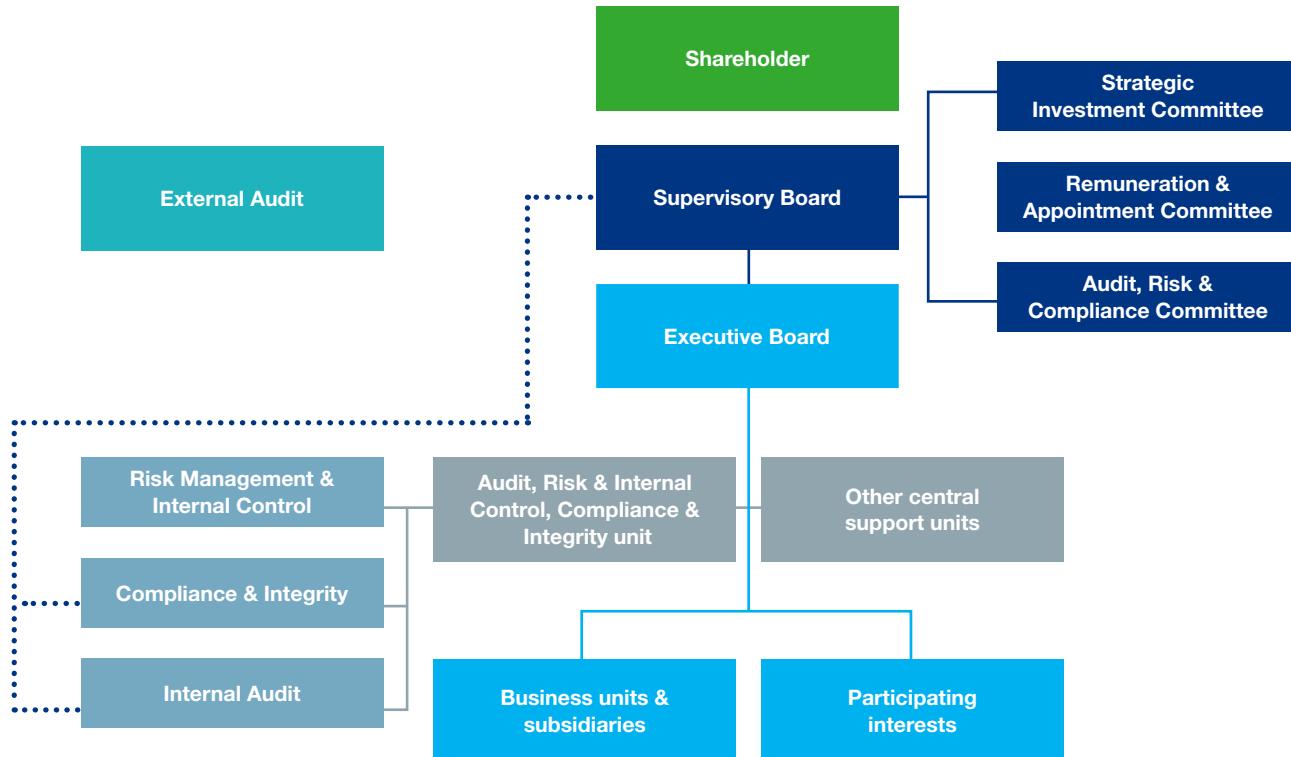
## Audit, Risk & Internal Control and Compliance & Integrity

As of 1 August 2022, the Audit, Risk & Internal Control and Compliance & Integrity (ARC) unit was established bringing together the teams of Internal Audit, Risk & Internal Control and Compliance & Integrity. The integration provides benefits in terms of a single point of contact and opportunity for more alignment and synergy. The resulting limitations to the independence of the Internal Audit team are managed through the outsourcing of periodic audits on the Risk & Internal Control and Compliance & Integrity teams to a third party. The ARC unit provides an integrated report on a quarterly basis towards the Executive Board and the Audit, Risk & Compliance Committee, who advises the Supervisory Board.

The ARC unit is led by the Director ARC, who reports hierarchically to the CFO. The management of Risk & Internal Control and management of Compliance & Integrity report to the Director ARC, who also manages Internal Audit. Both the Director ARC and the Head Compliance & Integrity have a second ‘dotted reporting line’ to the CEO.

In line with the good governance practice of the three lines model by the Institute of Internal Auditors, the management of the organisation is responsible for directing and leading activities to achieve the objectives of the organization. It establishes and maintains appropriate structures and processes for the management of activities, including governance, risk management and internal control. The teams Risk & Internal Control and Compliance & Integrity train, advise and support the organisation in their field of expertise. The team of Risk & Internal Control facilitates the company-level management systems for risks and internal controls. The Compliance & Integrity team facilitates the company-level management systems for prevention, detection and responding to risks related to Compliance & Integrity, including data privacy. Compliance & Integrity has representatives in both the Netherlands and Germany.

## Corporate governance structure



The team of Internal Audit provides independent assurance and advice services regarding the adequacy of governance, risk management and control arrangements across the company. Internal Audit drafts an audit plan involving the Executive Board, the Audit, Risk & Compliance Committee and the external auditor. The audit plan is submitted to the Executive Board, and then to the Supervisory Board, for approval. The functioning of Internal Audit is assessed by the Executive Board and supervised by the Supervisory Board, advised by the Audit, Risk & Compliance Committee.

### External auditor

The General Meeting of Shareholders has the power to appoint external auditors to audit the financial statements prepared by the Executive Board. These auditors report to the Supervisory Board and the Executive Board, and their findings are presented in an independent auditor's report, an assurance report, a management letter and an audit review results report. The General Meeting of Shareholders appointed Deloitte Accountants B.V. as TenneT's external auditor as per 1 January 2020. The Executive Board, Supervisory Board, shareholder and Deloitte have agreed to prolong the contract of Deloitte for another two year period in accordance with the prolongation options in the contract. The prolongation is for the financial reporting periods 2024 and 2025.

The functioning of the external auditor is supervised by the Supervisory Board, advised by the Audit, Risk & Compliance Committee, considering observations of the Executive Board.

The external auditor attends all meetings of the Audit, Risk & Compliance Committee. It also attends Supervisory Board meetings when the independent auditor's report on the financial statements is discussed and the financial statements are approved. Furthermore, in 2022 the external auditor attended one meeting of the Strategic Investments Committee for information purposes.

### Deviations from the Dutch Corporate Governance Code

Certain principles and best-practice provisions in the Code do not apply to TenneT. The reasons why and to what extent TenneT decided not to or could not adopt these particular principles and best-practice provisions are explained below:

#### Chapter 2:

2.1.3, 3.1.3: Not applicable: no Executive Committee has been established at TenneT.

2.3.8: Not applicable: no delegated Supervisory Board member is employed by TenneT.

2.3.2: If the Supervisory Board has more than four members, the Code stipulates that the board shall appoint from among its members an Audit Committee, a Remuneration Committee, and a Selection and Appointments Committee. The TenneT Supervisory Board has combined the tasks of the latter two committees into a Remuneration and Appointments Committee.

2.7.5 - 2.8.3, 3.3.2, 3.3.3: Not applicable: these provisions do not apply to TenneT because it only has one shareholder, being the Dutch state.

#### Chapter 4:

Regarding paragraph 4.1 TenneT complies with the Code. Paragraphs 4.2 – 4.4 are not applicable to TenneT because it only has one shareholder, namely the Dutch state.

#### Chapter 5:

Given TenneT's two-tier board structure, this chapter is not applicable.

# Compliance and Integrity

A culture of Compliance and Integrity is essential for TenneT's sustainable success. Therefore, we strive to prevent and - at an early stage - identify and respond to compliance and integrity risks that could jeopardise the implementation of the company's strategy and objectives and lead to economic and/or legal consequences, as well as reputational damage.

Especially in view of the high annual investment volume, we consider the compliance risk increasing. In 2022 the Compliance and Integrity Team (ARC-COI) became part of the new ARC Unit (Audit, Risk & Compliance Unit). The Director of the ARC Unit reports to the CFO.

Our Code of Conduct (updated in 2022) with our Guiding Principles 'Ownership', 'Connection', and 'Courage', and a number of compliance directives guide our employees to conduct business ethically and to comply with the applicable laws and regulations. All employees are requested to follow elearnings on Code of Conduct topics and all new employees participate in compliance trainings as part of their onboarding program.

## Data privacy

In the course of its business activities, TenneT regularly processes personal data. We use standardised processes to assess risks and protect the rights of data subjects. Compliance with external laws and regulations, as well as internal rules is ensured by the responsible specialist departments, which receive advice from the data protection team. Moreover, in each unit a Privacy Champion is the main point of contact for privacy matters. This liaison between the Privacy Champions and the Privacy team furthers two-way communication and to-the-point privacy advice by the Privacy team.

TenneT regularly reviews its processes for processing personal data and trains its employees to meet data protection requirements. External service providers are requested to sign data protection agreements.

Also within the new ARC Unit the independent function of the data protection officers is guaranteed.

## Advice & reporting

ARC-COI advises the business on various compliance, integrity and data protection aspects and regularly reports to the TenneT Executive Board and the Audit, Risk and Compliance Committee of the Supervisory Board regarding such topics.

Various channels exist through which (potential) Code of Conduct violations, including compliance and data protection issues, can be reported. Moreover, a Speak up portal, which is operated by an external party, allows for (potential) Code of Conduct violations to be reported (anonymously).

Identified compliance risks are dealt with by the Compliance and Integrity Committee in its quarterly meetings. In 2022, no compliance incidents with a material impact were identified for TenneT. Material impact is defined in our risk matrix as a breach that has a significant adverse effect on TenneT's reputation and/or financial position.

# Corporate risk management and Internal control

Professional corporate risk management with integrated internal control processes are key throughout the organisation and result into effective risk-based decisions.

## Corporate risk management and internal control framework

Risk Management continuously identifies risks, assesses severity of risks, prioritises risks, implements risk responses and maintains a portfolio view. It reports the identified uncertainties, opportunities or control issues proactively on a quarterly basis towards the Executive Board, Supervisory Board and Senior Leaders. The principles of corporate risk management and internal control should be taken into account in all activities performed at and for TenneT.

Corporate risk management facilitates top-down and bottom-up dialogues, workshops, detailed analyses and general trainings on risk awareness at all levels within TenneT. The resulting outcome provides management insights to take risk-based decisions that support the achievement of objectives set at all organisational levels.

As corporate risk management the focus and key objectives are to:

- Identify events, assess the risk, formulate risk responses, inform and communicate, implement control activities and continuous monitoring;

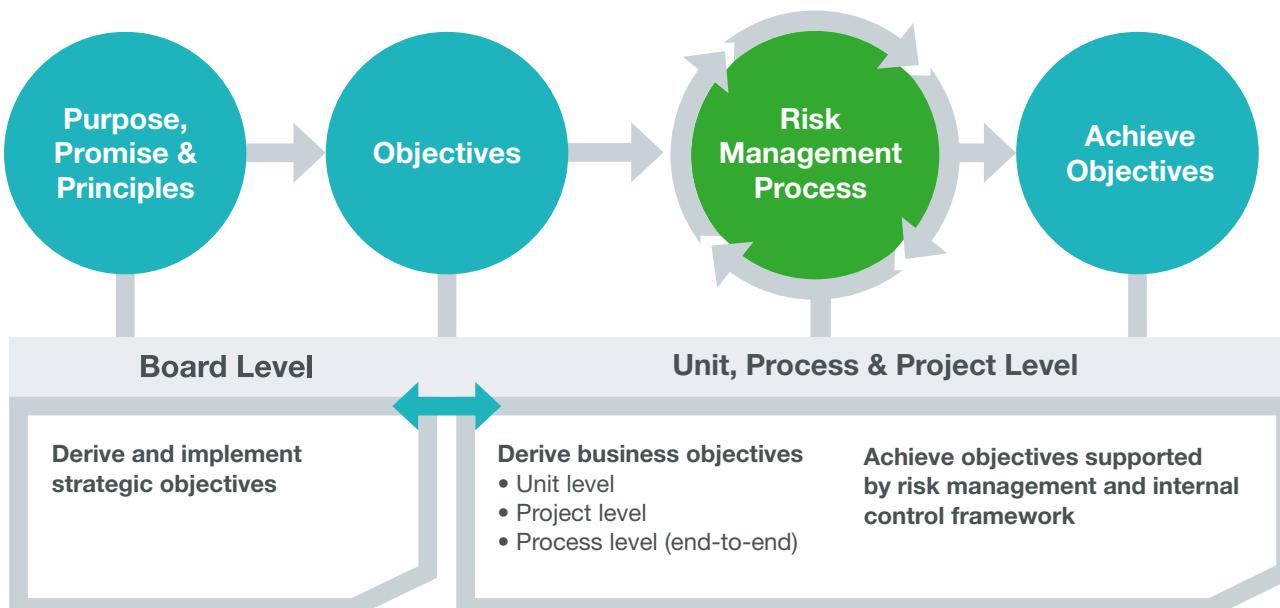
- Establish and maintain a uniform risk management framework;
- Provide the required tools, framework and guidelines for risk based decision making;
- Transparent and uniform reporting based on the ISO and COSO framework.

As TenneT the corporate risk framework is structured into:

- Strategic Risk Management (SRM);
- Operational Risk Management (ORM);
- Project Risk Management (PRM);
- Risk and Portfolio management;
- Internal Control and Process Risk Management.

TenneT's corporate risk management and internal control frameworks are based on ISO 31000 and COSO standards and are compliant with the requirements of applicable laws and regulations such as the Dutch Corporate Governance Code, the German Control and Transparency in Business Act and the German Accounting Law Reform Act.

## Unit, Process & Project Level



## Risk appetite

The amount of risk TenneT is willing to seek or accept in pursuit of its long-term objectives.

The Risk Appetite Statement 2022 sets the guidance and willingness for the activities conducted by TenneT in pursuit of its strategic objectives. The Executive Board together with the Senior Leadership Team reviews the Risk Appetite Statement annually to ensure that TenneT maintains a balance between risk and reward, relative to potential opportunities. In terms of the amount of risk that TenneT is willing to seek or accept, a differentiation is made between low risk appetite to high risk appetite.

### High Risk Appetite

Areas in which TenneT has a preference for disciplined risk-taking because we have determined that the potential upside benefits outweigh the potential disadvantages.

### Medium Risk Appetite

Areas in which TenneT must constantly strike a balance between potential upside benefits and potential downside aspects of a given decision.

### Low Risk Appetite

Areas in which TenneT avoids risks, or acts to minimise or eliminate the likelihood that the risk will occur, because we have determined that the potential downside aspects are intolerable. These are areas in which we typically seek to maintain a very strong control environment.

In the sections below we depict the results which places each risk area on a risk-appetite scale that ranges from 'low' to 'medium' to 'high':

## Risk appetite

Risk area	Description	Rationale
<b>High Risk Appetite</b>		
Secure Supply Tomorrow	Planning and building a future-proof energy system today that provides security of supply tomorrow (e.g. Target Grid, 2GW Program, Sued(Ost)Link, hydrogen solution) while supporting a reduction in CO <sub>2</sub> and SF <sub>6</sub> emissions.	We want to stimulate the market by entering into innovative partnerships and will apply cutting-edge technology to develop adequate responses to some of the most vexing challenges of the energy transition, as well as the Climate Agreement. We accept that some approaches could fail to fulfil on their promise. 
Natural Disasters	Asset protection beyond what is financially insured against natural disasters such as flooding, cyclones, wildfire, extreme heat and earthquakes.	We continue to assess the impact of natural disasters on our grid, and accept that unforeseen events impacting our grid, today or in 30 years from now, can arise that we have not forecasted or catered for. 

Risk area	Description	Rationale
<b>Medium Risk Appetite</b>		
<b>Asset Security</b>	Ensuring the protection of our assets against physical threats, such as attacks on sub-sea cables, onshore connections, substations, pylons or theft of valuable materials (e.g. copper).	We continually assess best practices to control the risk of protecting our assets from theft and intruders while recognising that a 100% protection is not possible. Not all measures might always be as effective as anticipated and not all expected costs justify the level of protection needed. 
<b>Biodiversity</b>	Protect the landscape and promote biodiversity around our substations, onshore connections and offshore projects.	We will continue to improve our projects to limit impact on nature and to improve the quality of animal life who were affected by construction or are affected by operating our assets. We recognise that sometimes decisions need to be made, in favour of building the grid, that negatively affect biodiversity. 
<b>Procurement &amp; Logistics</b>	To have all required materials, supplies and services available on time and in asked quality.	We will make reasonable efforts to invest in supplier relationships and to secure critical supplies and services on time and in agreed quality for large projects while balancing supply chain constraints due to overall tight market conditions. 
<b>Staffing</b>	To enable accommodating up to 10,000 employees (internal and contractors) before 2026 to achieve our future projects.	We will continually assess best practices in the industry for attracting, retaining and developing talent, including seeking flexibilities for hiring and compensating staff, while recognising that growing too rapidly could inhibit the organisations agility and responsiveness. 
<b>Reputation and Media</b>	To maintain public, political and stakeholder trust in order to achieve TenneT's objectives and responsibilities.	We will balance traditional and social media to promote and amplify the goals and results of Tennet. However, we must recognise the inherent risk of communications taken out of context intendedly or unintendedly or not adhering to the same voice and message towards our external partners. 
<b>Safeguard our Financial Health</b>	To maintain our credit ratings and have a sustainable balance between equity and debt.	We use a variety of processes and controls to continuously monitor and manage project capital expenditures, reporting, and the delivery of ancillary services, recognising that raising more debt is a quick way to finance our large projects, but it can negatively impact our credit ratings. We address OPEX growth before it leads to inefficiencies. 
<b>Low Risk Appetite</b>		
<b>Operational Safety</b>	Operational or constructional hazards resulting into one or multiple injuries or fatalities.	We endeavour to prevent unsafe situations that could endanger others, including our employees, contractors or the local community. We act on the basis of the highest safety standards in our sector. 
<b>Ethics, Compliance &amp; Human Rights</b>	Working with business partners who do not share the same ethics and compliance principles or are situated in countries with lower human right standards.	We adopt a cautious stance for compliance by promoting and enforcing compliance with all laws, procedures and internal standards. At times we assume a degree of calculated risk of working with (sub)contractors in countries with lower human right standards that are essential to support our large projects. 
<b>Secure Supply Today</b>	To ensure that demand and supply of electricity – from renewable and traditional sources - are balanced.	We continue to ensure the security of supply of electricity transport, and connection of new customers, always taking into account the limited availability of interconnected electricity in Europe, congestion management or the planning complexity of dispatching. 
<b>IT Technology</b>	Events or circumstances that could potentially improve or compromise the processing, stability, capacity, performance or resilience.	We will act to minimise any weaknesses that could disrupt business operations, affect productivity, heighten the risk of fraud or threaten the security of information. We will work to avoid unplanned downtime that could result in lost productivity or costs to recover data. 
<b>Cyber Security</b>	Resilience against cyber threats or malware infestations affecting (partial) loss of control or power outages.	We have adopted a cautious approach to cyber risk. We reduce risk as much as possible by proactively and continuously mitigating malware and other intrusions, preventing unauthorised disclosure of sensitive data, and mitigating vulnerabilities in our security protocols, while recognising that attacks occur daily. 

## Key risks and opportunities

To provide a single structured risk overview of all the risks and opportunities identified by TenneT, three risk tables have been introduced. A strategic risk table based on the four strategic pillars another on regulatory risks and lastly climate-related risks. Please note that the risks mentioned in these tables are also presented earlier in the section ‘Our Performance’.

Strategic pillar	Risks	Mitigating measures
 <b>Secure supply today and tomorrow</b>	<ul style="list-style-type: none"> <li>The nitrogen emission ruling by the Council of State in the Netherlands could significantly delay in short term 25 projects (planning and operating) by 1 to 2 years and midterm affecting 100 projects with a delay between 6 to 12 months. The on average 10 year licensing and permitting process required to get approval to start construction, reduces TenneT's ability to act in a timely manner on our investment plans and promises.</li> <li>Not able to connect customers to our grid on time due to unavailability of sustainable grid capacity.</li> <li>Major suppliers are unable to deliver critical supplies (services and materials) to schedule (or at all) as they experience financial difficulties, insolvency or capacity constraints.</li> <li>Our older assets require more maintenance work and present a growing logistical challenge and cost.</li> <li>The inflow of renewable energy requires congestion management to stabilise the grid resulting in higher cost for society due to the redispatch costs.</li> <li>Breach of security, attack or malware infestation potentially intensified due to the armed conflict on European soil.</li> <li>Managing a growing portfolio of large projects – due to growth of onshore and offshore projects</li> <li>The potential usage of new technologies in our assets could cause unforeseen malfunctions and could require more focus on maintenance.</li> </ul>	<ul style="list-style-type: none"> <li>Align with stakeholders and local communities first about their area investment plans and legislation such that TenneT can plan long-term investments accordingly.</li> <li>Action plan how to approach the increasing problem of customer connection demand in relation to grid capacity.</li> <li>Investment in more efficient grid use e.g. increasing transport capacity via dynamic line rating under windy conditions.</li> <li>Contract more redispatch capacity in neighboring countries.</li> <li>Periodical training system operations how to balance the grid under unlikely but high impact scenarios.</li> <li>Accelerate certification of new suppliers (e.g. in India); risk diversification of supplier specific country risk and dependency.</li> <li>Simplifying organisational and decision-making processes to increase efficiency and flexibility in our maintenance programme.</li> <li>Continuation of effective monitoring and action-taking against physical or cyber security attacks, together with our strategic partners.</li> <li>Usage of more project standardisations e.g. 2GW program.</li> </ul>
<b>Opportunities</b>		<ul style="list-style-type: none"> <li>Growing political support to reduce permitting time enabling TenneT to build the required grid on time</li> <li>New technologies are becoming available to help TenneT to manage political expectations and to deliver on its climate targets such as SF<sub>6</sub> gas, carbon emission and oil leakage.</li> <li>Circularity of resources becomes more viable to reduce our footprint on for instance the usage of virgin copper.</li> </ul>

Strategic pillar	Risks	Mitigating measures
 <b>Drive the energy transition</b>	<ul style="list-style-type: none"> <li>Our strategic plans are complicated due to an increase of the national and European political ambition to become independent of Russian gas and early delivery on 2030 climate targets.</li> <li>Limited space is available to build and expand our grid.</li> <li>A lack of societal acceptance of the energy transition could lead to an inability of realising our ambitions.</li> <li>Economic developments and high energy costs in Europe could influence the acceptance of costs associated with the energy transition.</li> </ul>	<ul style="list-style-type: none"> <li>We are actively working with our contractors to make progress towards climate, circularity and nature ambitions.</li> <li>We aim to use an Environmental Cost Indicator (ECI) for evaluation purposes, based on the methodology of a Life Cycle Assessment (LCA).</li> </ul>
 <b>Energise our people and organisation</b>	<h3>Risks</h3> <ul style="list-style-type: none"> <li>Not adhering to preventative or risk mitigating health and safety processes resulting in multiple severe incidents or fatalities.</li> <li>TenneT faces ongoing difficulties to hire required resources for current / future operations due to tight labor conditions as well as internal turnover of staff and contractor personnel.</li> <li>We face a delicate balance, between growing responsibly and sustainably in a way that allows us to stay agile and productive.</li> </ul>	<h3>Mitigating measures</h3> <ul style="list-style-type: none"> <li>Training is intensified to commit all stakeholders, making no difference between internal and contractors, to adhere to all safety regulations whether working at a construction site or at the office.</li> <li>Safety inclusion in tendering and supplier performance management.</li> <li>Implement various initiatives such as bias-trainings, publication of vacancies in other languages or starting international learning programs.</li> </ul>
 <b>Safeguard our financial health</b>	<h3>Risks</h3> <ul style="list-style-type: none"> <li>Lower regulatory rates of return on capital could diminish TenneT's attractiveness for investors.</li> <li>Dependency on the regulatory framework, political commitments and society's growing concern about the cost of energy increase the pressure on TenneT's reimbursements.</li> <li>Increasing OPEX electricity costs to balance the grid creates pressure on our reported financial result.</li> <li>Exposure to credit risks or writeoffs if one or more of our partners get into financial trouble due to the expected economic recession in 2023.</li> </ul>	<h3>Mitigating measures</h3> <ul style="list-style-type: none"> <li>The revenue cap is partially mitigated by an additional income stream on top of the revenue cap for specific investments.</li> <li>Application of active cost control and to strive for an efficient operation of our business as far as reasonably possible in order to avoid adverse effects from efficiency assessments of our regulators.</li> <li>Performance of regular credit checks of significant partners, if needed additional due diligence.</li> <li>Stress testing of hypothetical worst case scenarios and to address any potential high risk following from the analysis.</li> </ul>
	<h3>Opportunities</h3> <ul style="list-style-type: none"> <li>Boosting our execution power through finding better ways of working together in a performance-oriented culture.</li> </ul>	

## Regulatory risks

	Regulatory risk	Risk-mitigating actions
<b>General</b> 	<ul style="list-style-type: none"> <li>Inability to meet increasing efficiency targets over time as imposed by incentive regulation, especially taking into account a strongly growing company and the need for significant investments in grid expansion, maintenance, operation as well as innovation.</li> <li>TenneT is unable to achieve a reasonable return on its invested capital as well as the full remuneration of operational costs as the regulated return continues to decline due to the low interest environment, the disallowance or only partial recognition of certain operational costs and stricter regulatory incentives.</li> </ul>	<ul style="list-style-type: none"> <li>TenneT performs regular reviews of its processes and organisational structure, introduced lean management, carries out continuous improvement activities and automates its IT-related processes. TenneT also prepares make-or-buy decisions in its investment process to optimise value for money to society and conducts strategic dialogues with regulators (ACM, BNetzA, ACER), policymakers and industry partners/suppliers to co-shape its future regulatory framework.</li> <li>TenneT's strategy is to seek mutually acceptable results with regulatory stakeholders. However, if needed to protect pivotal strategic positions on solid legal grounds, legal action may be taken.</li> </ul>
<b>Europe</b> 	<ul style="list-style-type: none"> <li>The 'Clean Energy Package' (CEP) entered into force. It requires amongst others that TSOs provide 70% of the total cross-border transmission capacity to the market, an amount difficult to achieve without extensive and costly redispatch activities.</li> </ul> <p>The German government introduced an action plan to gradually achieve this target by 31.12.2025. Delays in fulfilment of this plan by TenneT could lead to material financial penalties.</p> <p>Similarly, the Dutch Ministry of Economic Affairs has issued an action plan to gradually achieve the 70% target by 1.1.2026, which also contains derogations for TenneT.</p> <ul style="list-style-type: none"> <li>Extreme power prices and increased redispatch volumes result in a significant increase of grid fees.</li> </ul>	<ul style="list-style-type: none"> <li>In Germany TenneT keeps the capacity requirements along the 'trajectory' as defined in the national 'action plan'. This means stepping up to full 70% using instruments such as coordinated redispatch and countertrade.</li> <li>In the Netherlands, TenneT monitors compliance against the action plan, in particular also as to the conditions of the derogation. TenneT reports on issues to the ACM and the Ministry of Economic Affairs, if any.</li> <li>In Germany a subsidy was implemented to alleviate the impact of high grid fees for TSO clients. In the Netherlands a price cap is implemented on the energy bill (via suppliers). The price cap also covers the higher costs for grid operators as a result of the high costs for ancillary services.</li> </ul>
<b>The Netherlands</b> 	<ul style="list-style-type: none"> <li>In accordance with ACMs method decision for the period 2022-2026 the risk free rate is ex post settled. This ex post settlement shields TenneT from the current interest rate increase in the market as TenneT's revenues are adjusted to reflect the current conditions on the financial markets. TenneT is however still exposed to weakening cash flows when the interest rates decline. Consequently TenneT advocated that the methodology contains a floor for the risk-free rate.</li> <li>According to the decision by the ACM, TenneT's cost efficiency level will decline from 97.9% in 2021 to 89.1% in 2025, impacting the next regulatory period with decreasing revenue.</li> </ul>	<ul style="list-style-type: none"> <li>TenneT is appealing against the efficiency determination by the ACM and supports the appeal of Netbeheer Nederland regarding the determination on the WACC.</li> </ul>
<b>Germany</b> 	<ul style="list-style-type: none"> <li>The BNetzA decreased the rate of return on equity for the next regulatory period from 6.91% to 5.07% before corporate tax. This will have a significantly negative impact on TenneT's cash flow and revenue as of 2024.</li> </ul> <p>The European Court of Justice decided that the German legal design of the regulatory framework must be changed in order to give the BNetzA more independence from political influences. It is yet unclear how far the degree of independence will reach with regard to parliamentary and legal checks and balances and how it will be implemented in a reliable and future-proof way in the regulatory framework. Furthermore, the independence of the regulator from national legislators may also affect the relationship of the ACM to the Ministry of Economic Affairs (EZK) in the Netherlands, as was announced in a press release by the ACM.</p>	<ul style="list-style-type: none"> <li>TenneT together with other grid operators challenges the methodology used by the BNetzA on the return on equity determination and is appealing against this determination.</li> <li>TenneT established an internal working group including colleagues from its regulatory, legal and political departments to accompany the political process.</li> <li>TenneT engages, amongst others, in the German Association of Energy and Water Industry (BDEW) to support profound analysis and advocacy work within the network industry.</li> <li>TenneT engages in public and expert discussions and positions itself as a competent partner and trustful advisor to the regulators and policymakers.</li> </ul>

## Climate related risks and opportunities

The Taskforce for Climate-Related Financial Disclosures provides recommendations for companies to improve and increase the reporting of climate related financial information. We have followed up on its recommendations, including in our risk assessment process, and have

identified the following climate related risks and opportunities for TenneT, which we clustered below. Please note that there might be some overlap with risks also being mentioned earlier in the report, but this is to provide one structured overview in this section.

### Climate related risks

Risks		How might this affect TenneT?	Risk mitigating actions
• Transition risks	• Policy and legal risks	<ul style="list-style-type: none"> <li>Policy and legal risks are related to our regulatory framework. Choices we make that can help society and us as a company to transition to a climate-neutral economy are subject to discussion with our regulator. Our regulatory framework is updated once every 5 years and this might pose a risk that if ambitions from governments in the areas we serve move faster than the spirit of the regulatory framework, this might be a constraining factor to drive the energy transition.</li> </ul>	<ul style="list-style-type: none"> <li>We mitigate this by lobbying on national and European level, run pilot projects and present business cases and focus on those topics that promise the highest benefit for society, which are integration of power and hydrogen as well as flexibility and grid utilisation together with partners.</li> </ul>
• Technology risk		<ul style="list-style-type: none"> <li>A risk of stranded assets might occur in case a new technology is developed if for instance the new technology is unable to communicate with the old technology. Or if the technology used by TenneT is not able to connect or communicate with the technology used by other TSOs.</li> </ul>	<ul style="list-style-type: none"> <li>Mitigating actions include challenging the necessity of each investment and embrace other solutions, if those promise more societal value and actively work and invest in new technology as part of our strategy. Next to this, our approach regarding innovation aims to focus on the most important areas and implementing new technology as fast as possible, which reduces this risk.</li> </ul>
• Market risk		<ul style="list-style-type: none"> <li>Our market risks relate to dealing with the higher infeed of renewable energy sources and impacting the way we balance our grid and market prices. Renewable energy sources are more volatile and cannot easily be increased in case of a higher demand. Differences in market prices can lead to too high requests for energy at one location, e.g. Southern-Germany, where not all energy can be transmitted to the users. In such situations additional measures are required to balance the grid, such as redispatch.</li> </ul>	<ul style="list-style-type: none"> <li>TenneT plans and builds DC-grid connections in Germany and interconnectors within Europe and we investigate the grid integration of green hydrogen and power grids as well as improving the quality of data to predict power production and consumption.</li> </ul>
• Reputation risk		<ul style="list-style-type: none"> <li>A reputation risk could occur when we are unable to deliver on our strategic goal to drive the energy transition. Connected to this are the increasing ambitions of the governments in the areas we serve to meet these requirements. When realising our assets, we also have a reputational risk if there is a growing resistance from local communities and governments, if we do not engage with our stakeholders properly ('not in my backyard'). Furthermore the overall cost of the energy transition is also a risk from a reputational perspective (affordability).</li> </ul>	<ul style="list-style-type: none"> <li>To mitigate this risk we aim to communicate in an open and transparent fashion. Next to this, we invite stakeholders in the planning and approval process of projects to voice their opinion which we consider in, for instance, the final route of a certain project. We also aim to balance affordability, sustainability and security of supply in all our investment decisions. Further mitigation takes place through the usage of professional planning, project management and costs forecasting.</li> </ul>
• Physical risks	• Acute	<ul style="list-style-type: none"> <li>Acute risks are related to for instance extreme weather conditions that could impact our assets and supply chain.</li> </ul>	<ul style="list-style-type: none"> <li>Acute weather conditions are mitigated during the design, construction and maintenance of our assets, such as the choice of location and the choice of materials. Regarding our supply chain, monitoring of suppliers and diversification are mitigating factors.</li> </ul>
	• Chronic	<ul style="list-style-type: none"> <li>Chronic physical risks can relate to rising sea and ground water levels for instance, where our assets might be at a risk due to this.</li> </ul>	<ul style="list-style-type: none"> <li>We monitor developments to gain more experience and insights related to the scenarios and effects. Examples include projects related to assets such as our Krimpen aan de IJssel substation and one of our pylons, which we both have elevated. TenneT insures all substations and buildings during construction and operation against risks from natural catastrophes. Pylons and overhead-lines are not insured.</li> </ul>

## Climate related opportunities

Opportunities	How might this affect TenneT?
<b>• Resource efficiency</b> 	<p>• Increased decentralised power production and storage including self-balancing micro grids as well as electrolyzers if they are correctly located can relieve high-voltage grids. Furthermore, DC-interconnectors enhance the transmission of power of very long distances and connect renewable power production and demands in different countries.</p> <p>• Solutions related to flexibility help us to make smarter use of our grid. This might have a positive effect as this could lead to less grid expansion and therefore help us reduce the amounts of resources required to secure supply today and tomorrow.</p>
<b>• Energy source</b> 	<p>• TenneT is a leading investor in the energy transition and so we have been able to gain a vast amount of experience connecting renewable energy sources, such as offshore wind, to our grid. This experience helps us to further drive the energy transition together with partners and fulfil the future investment portfolio.</p>
<b>• Products and Services</b> 	<p>• Our project portfolio has significantly changed in order to meet national and European climate goals. Key projects are connecting offshore wind energy to our grid or to ensure that our onshore grid is prepared for a new energy future. The gathering and analysis of energy data may lead to new products and services provided by TSOs, such as Equigy.</p>
<b>• Markets</b> 	<p>• Strategies and objectives of financial institutes and banks provide opportunities for TenneT to attract sustainable financing at favourable terms and conditions by issuing green finance products to finance and refinance our investments in green infrastructure projects.</p>
<b>• Resilience</b> 	<p>• Trends in the society, like the electrification of mobility, result in higher demand on a stable grid and power supply. To ensure resilience, integration of power and gas grids is a vital alternative. Digitalisation using technologies like automation, robotics and block-chain will help to optimise grid utilisation while safeguarding a reliable supply of electricity.</p>



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# Consolidated financial statements

## Consolidated statement of financial position

For the year ended 31 December (EUR million)

Assets	Notes	2022	2021
<b>Non-current assets</b>			
Tangible fixed assets	8	26,823	23,811
Right-of-use assets	9	748	433
Intangible assets	10	306	254
Investments in joint ventures	12	630	638
Investments in associates	12	36	34
Deferred tax assets	6	711	162
Other financial assets	13	44	37
<b>Total non-current assets</b>		<b>29,298</b>	<b>25,369</b>
<b>Current assets</b>			
Inventories	14	132	83
Account- and other receivables	15	2,348	2,401
Income tax receivable	6	158	143
Cash and cash equivalents	16	6,547	3,204
<b>Total current assets</b>		<b>9,185</b>	<b>5,831</b>
Assets of disposal group classified as held for sale	11	26	-
<b>Total assets</b>		<b>38,509</b>	<b>31,200</b>

## Consolidated statement of financial position

For the year ended 31 December (EUR million)

	Notes	2022	2021
<b>Equity and liabilities</b>			
<b>Equity</b>			
Equity attributable to ordinary shares	18	5,133	4,844
Hybrid securities	18	2,125	2,125
<b>Equity attributable to owners of the company</b>		<b>7,258</b>	<b>6,969</b>
Non-controlling interests	19	455	455
<b>Total equity</b>		<b>7,713</b>	<b>7,424</b>
<b>Non-current liabilities</b>			
Borrowings	20	19,006	12,366
Contract liabilities	21	531	428
Deferred tax liability	6	12	7
Provisions	22	1,235	1,417
Lease liabilities	9	574	235
Net employee defined benefit liabilities	23	174	351
Other financial liabilities	24	185	183
Other liabilities		31	25
<b>Total non-current liabilities</b>		<b>21,748</b>	<b>15,012</b>
<b>Current liabilities</b>			
Borrowings	20	709	1,339
Contract liabilities	21	17	2
Income tax payable	6	26	6
Provisions	22	77	45
Other financial liabilities	24	550	281
Bank overdrafts	16	-	64
Lease liabilities	9	155	169
Account- and other payables	25	7,489	6,858
<b>Total current liabilities</b>		<b>9,023</b>	<b>8,764</b>
Liabilities of disposal group classified as held for sale	11	25	-
<b>Total equity and liabilities</b>		<b>38,509</b>	<b>31,200</b>

## Consolidated statement of income

For the year ended 31 December (EUR million)

	Notes	2022	2021
<b>Revenue</b>	3	<b>8,299</b>	<b>5,524</b>
Grid expenses	4	-7,517	-4,102
Personnel expenses	4	-285	-287
Depreciation and amortisation of assets	8,9,10	-1,233	-1,165
Other operating expenses	4	-322	-303
Other (gains)/losses		-38	-4
<b>Total operating expenses</b>		<b>-9,395</b>	<b>-5,861</b>
Share in profit of joint ventures and associates	12	120	62
<b>Operating result</b>		<b>-976</b>	<b>-275</b>
Finance income	5	43	2
Finance expenses	5	-300	-202
<b>Finance result</b>		<b>-257</b>	<b>-200</b>
<b>Result before income tax</b>		<b>-1,233</b>	<b>-475</b>
Income tax expense	6	354	135
<b>Result for the year</b>		<b>-879</b>	<b>-340</b>
<b>Result attributable to:</b>			
Equity holders of ordinary shares	18	-967	-401
Hybrid securities	18	57	57
<b>Owners of the company</b>		<b>-910</b>	<b>-344</b>
Non-controlling interests	19	31	4
<b>Result for the year</b>		<b>-879</b>	<b>-340</b>

## Earnings per share attributable to the equity holders of ordinary shares

For the year ended 31 December (EUR per share)

	Note	2022	2021
Basic and diluted earnings per share	7	-4,835	-2,005

## Consolidated statement of comprehensive income

For the year ended 31 December (EUR million)

		Retained earnings	Unappropriated result	Equity attributable to ordinary shares	Hybrid securities	Equity attributable to owners of the company	Non-controlling interest	Total equity
	Notes	18	18		18		19	
<b>2021</b>								
<i>Items not to be reclassified to profit or loss in subsequent years:</i>								
Re-measurement of defined benefit pensions	23	79	-	79	-	79	-	79
Taxation	6	-23	-	-23	-	-23	-	-23
<b>Total other comprehensive income 2021</b>		<b>56</b>	<b>-</b>	<b>56</b>	<b>-</b>	<b>56</b>	<b>-</b>	<b>56</b>
Result for the year		-	-401	-401	57	-344	4	-340
<b>Total comprehensive income 2021</b>		<b>56</b>	<b>-401</b>	<b>-345</b>	<b>57</b>	<b>-288</b>	<b>4</b>	<b>-284</b>
<b>2022</b>								
<i>Items not to be reclassified to profit or loss in subsequent years:</i>								
Re-measurement of defined benefit pensions	23	217	-	217	-	217	-	217
Taxation	6	-64	-	-64	-	-64	-	-64
<b>Total other comprehensive income 2022</b>		<b>153</b>	<b>-</b>	<b>153</b>	<b>-</b>	<b>153</b>	<b>-</b>	<b>153</b>
Result for the year		-	-967	-967	57	-910	31	-879
<b>Total comprehensive income 2022</b>		<b>153</b>	<b>-967</b>	<b>-814</b>	<b>57</b>	<b>-757</b>	<b>31</b>	<b>-726</b>

## Consolidated statement of changes in equity

For the year ended 31 December (EUR million)

		Attributable to equity holders of the company								
		Paid-up and called-up capital	Share premium reserve	Retained earnings	Unappro- priated result	Equity attribut- able to ordinary shares	Hybrid securities	Equity attribut- able to owners of the company	Non- control- ling interest	Total equity
	Notes	18	18	18	18	18	18		19	
<b>At 1 January 2021</b>		<b>100</b>	<b>1,790</b>	<b>2,686</b>	<b>748</b>	<b>5,324</b>	<b>2,125</b>	<b>7,449</b>	<b>487</b>	<b>7,936</b>
Result for the year		-	-	-	-401	-401	57	-344	4	-340
Total other comprehensive income		-	-	56	-	56	-	56	-	56
<b>Total comprehensive income</b>		<b>-</b>	<b>-</b>	<b>56</b>	<b>-401</b>	<b>-345</b>	<b>57</b>	<b>-288</b>	<b>4</b>	<b>-284</b>
Dividends paid	18	-	-	-	-149	-149	-	-149	-34	-183
Capital repayment	18	-	-	-	-	-	-	-	-2	-2
Distribution on hybrid securities	18	-	-	-	-	-	-57	-57	-	-57
Tax on distribution on hybrid securities	18	-	-	14	-	14	-	14	-	14
Appropriation remaining prior year result		-	-	599	-599	-	-	-	-	-
<b>At 31 December 2021</b>		<b>100</b>	<b>1,790</b>	<b>3,355</b>	<b>-401</b>	<b>4,844</b>	<b>2,125</b>	<b>6,969</b>	<b>455</b>	<b>7,424</b>
<b>At 1 January 2022</b>		<b>100</b>	<b>1,790</b>	<b>3,355</b>	<b>-401</b>	<b>4,844</b>	<b>2,125</b>	<b>6,969</b>	<b>455</b>	<b>7,424</b>
Result for the year		-	-	-	-967	-967	57	-910	31	-879
Total other comprehensive income		-	-	153	-	153	-	153	-	153
<b>Total comprehensive income</b>		<b>-</b>	<b>-</b>	<b>153</b>	<b>-967</b>	<b>-814</b>	<b>57</b>	<b>-757</b>	<b>31</b>	<b>-726</b>
Dividends paid	18	-	-	-	-141	-141	-	-141	-20	-161
Capital contribution	18	-	1,230	-	-	1,230	-	1,230	-	1,230
Capital repayment	18	-	-	-	-	-	-	-	-11	-11
Distribution on hybrid securities	18	-	-	-	-	-	-57	-57	-	-57
Tax on distribution on hybrid securities	18	-	-	14	-	14	-	14	-	14
Appropriation remaining prior year result		-	-	-542	542	-	-	-	-	-
<b>At 31 December 2022</b>		<b>100</b>	<b>3,020</b>	<b>2,980</b>	<b>-967</b>	<b>5,133</b>	<b>2,125</b>	<b>7,258</b>	<b>455</b>	<b>7,713</b>

## Consolidated statement of cash flows

For the year ended 31 December (EUR million)

	Notes	2022	2021
<b>Operational activities</b>			
<b>Operating result</b>		<b>-976</b>	<b>-275</b>
<b>Non-cash adjustments to reconcile result to net cash flows:</b>			
Depreciation, amortisation and impairment of assets	8,9,10	1,233	1,165
Result on disposal of assets		38	-
Share in result of joint ventures and associates	12	-120	-61
Dividends received from joint ventures and associates	12	92	56
Movements in provisions and other (financial) liabilities and assets		104	-59
		<b>1,347</b>	<b>1,101</b>
<b>Working capital adjustments excluding EEG working capital:</b>			
(Increase)/decrease in account- and other receivables	15	-1,026	-90
(Increase)/decrease in inventories		-49	-18
Increase/(decrease) in account- and other payables	25	-33	540
Increase/(decrease) in contract liabilities	21	103	52
Increase/(decrease) in current financial liabilities	24	269	196
<b>Cash generated from operation</b>		<b>-736</b>	<b>680</b>
Income tax paid (net)		-231	-246
<b>Net cash flows from operating activities excluding EEG working capital</b>		<b>-596</b>	<b>1,260</b>
<b>EEG working capital adjustments:</b>			
(Increase)/decrease in EEG receivables	15	592	1,956
(Increase)/decrease EEG deposits > 3 months	15	472	-472
Increase/(decrease) in EEG payables	25	728	2,961
		<b>1,792</b>	<b>4,445</b>
<b>Net cash flows from operating activities</b>		<b>1,196</b>	<b>5,705</b>
<b>Investing activities</b>			
Purchase of tangible and intangible fixed assets	8,10, 25	-4,424	-3,711
Proceeds from sale of tangible and intangible fixed assets		5	11
Capital repayment from joint ventures	12	32	29
Interest received	5	45	3
Capital contribution to joint ventures and associates	12	-3	-
<b>Net cash flows used in investing activities</b>		<b>-4,345</b>	<b>-3,668</b>
<b>Financing activities</b>			
<b>Net financing</b>			
Proceeds from borrowings	20	7,338	3,481
Repayment of borrowings	20	-1,339	-2,243
		<b>5,999</b>	<b>1,238</b>

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## Consolidated statement of cash flows

For the year ended 31 December (EUR million)

	Notes	2022	2021
<b>Other financing activities</b>			
Payment of lease liabilities	9	-221	-156
Interest paid		-202	-174
Capital contribution by shareholder	18	1,230	-
Dividends paid to ordinary shareholders of the company	18	-141	-149
Distribution on hybrid securities	18	-57	-57
Repayment of financial liability	24	-20	-40
Dividends paid and capital repayments to non-controlling interests	19	-32	-36
		<b>557</b>	<b>-612</b>
<b>Net cash flows from financing activities</b>			
<b>Net change in cash and cash equivalents</b>			
Cash and cash equivalents at 31 December	16	6,547	3,140
Cash and cash equivalents at 1 January	16	3,140	477
		<b>3,407</b>	<b>2,663</b>

## Notes to the consolidated financial statements

We are continuously improving our financial reporting to make it more relevant and understandable to our stakeholders. These financial statements focus on the key (financial) topics for 2022. Like last year, the notes to the consolidated financial statements are disclosed following more or less the sequence of items in the consolidated statement of financial position and consolidated statement of income. Accounting policies are indicated with while key assumptions and estimates are identified by using in front of the header.

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## 1 Basis for reporting

### Basis for preparation

The accounting policies describe our approach to recognise and measure transactions and balance sheet items in our financial statements. Accounting policies, including new European Union (EU) endorsed accounting standards, amendments and interpretations, relating to the consolidated financial statements as a whole are described below. This section also provides general guidance regarding assumptions, estimates and judgements used in the preparation of the financial statements. A more detailed description of accounting policies and significant estimates related to specific reported amounts is presented in the respective notes. Only accounting policies that are deemed material are presented in these financial statements. We consider an item material if, in our view, it is likely to have an impact on the economic decisions of primary users of these financial statements.

#### General

TenneT Holding B.V. and its subsidiaries are a leading electricity transmission system operator with activities in the Netherlands and a large part of Germany. In the Netherlands, our activities are conducted by TenneT TSO B.V. and its subsidiaries. In Germany, our activities are performed by TenneT GmbH & Co. KG and its subsidiaries.

The Dutch State owns the entire issued share capital of TenneT Holding B.V. Furthermore, TenneT Holding B.V. has issued hybrid securities which are deeply subordinated and are accounted for as part of equity attributable to equity holders of the Company. The registered office of TenneT Holding B.V. is located at Utrechtseweg 310, Arnhem, the Netherlands, with its statutory seat in Arnhem and a registration with the Dutch Commercial Register under number 09083317.

These consolidated financial statements of TenneT Holding B.V. and its subsidiaries (hereafter referred to as 'TenneT', 'the Company' or 'the Group') for the year ended 31 December 2022 were prepared by our Executive Board and authorised for issuance in accordance with a resolution of the Supervisory Board on 8 March 2023. The financial statements will be submitted for adoption at the General Meeting of Shareholders. These consolidated financial statements have been audited by Deloitte Accountants B.V.

#### Basis for preparation

These consolidated financial statements are prepared in accordance with International Financial Reporting Standards as adopted by the European Union (IFRS) and Part 9 of Book 2 of the Dutch Civil Code. The company financial statements for TenneT Holding B.V. are prepared in accordance with the provisions of Part 9 of Book 2 of the Dutch Civil Code.

The consolidated financial statements are prepared on a going concern basis. The going concern basis presumes that the Group has adequate resources to remain in operation and that the Executive Board intends it to do so, for at least one year from the date of the end of the reporting period.

The consolidated financial statements are prepared on a historical cost basis, unless described otherwise in the accounting policy of a balance sheet position. They are presented in euros and all values are rounded to the nearest million (EUR 000,000), except when otherwise indicated.

#### Changes in EU-endorsed published IFRS standards and interpretations effective in 2022

##### Significant new and amended standards adopted by the Group

TenneT has not early adopted any standard, interpretation or amendment that has been issued but is not yet effective.

##### IFRS standards issued but not yet effective and adopted by the Group

It is anticipated that any issued changes to IFRS standards that are not yet effective and adopted by TenneT will not have a significant impact.

## Basis for consolidation

The consolidated financial statements incorporate the financial statements of TenneT Holding B.V. and its subsidiaries as at 31 December 2022. A list of the legal entities included in the consolidation is included in note 31. Subsidiaries are consolidated from the date of acquisition, constituting the date on which control is obtained and continue to be consolidated until the date when such control ceases. The financial statements of subsidiaries are prepared for the same reporting period as the parent company, using consistent accounting policies. All intercompany balances, transactions, unrealised gains and losses resulting from intercompany transactions and dividends are eliminated in full in consolidation.

A change in the ownership interest of a subsidiary, without a loss of control, is accounted for as an equity transaction. If we cease to have control over a subsidiary, we derecognise the subsidiary's assets (including goodwill), liabilities and any non-controlling interest in the former subsidiary at the date control is lost (including the cumulative translation differences). Furthermore, the fair value of the consideration received, the fair value of any investment retained and any surplus or deficit in statement of income are recognised. Acquisitions are accounted for using the acquisition method, where the purchase price is allocated to the identifiable assets acquired and liabilities assumed on a fair value basis and the remainder is recognised as goodwill.

## Significant accounting judgements, estimates and assumptions

The preparation of financial statements requires us to make estimates and assumptions that affect the reported amounts of assets and liabilities, disclosures of contingent assets and liabilities and the reported amounts of revenue and expenses during the reporting period. Such estimates are assessed continuously on the basis of previous results and experience, consultations with experts, trends, prognoses and other methods which we deem appropriate in each individual case. Actual results could differ from these estimates. Significant items containing estimates and assumptions are as follows:

Item	Note	Estimate/assumptions
Tangible fixed assets	8	Estimate of remaining useful life, identification of cash-generating units for fixed asset impairment testing
Right-of-use assets and liabilities	9	Estimates of discount rate and expected extension or accelerated termination date
Intangible fixed assets	10	Estimate of recoverable amount and remaining useful life
Impairment review of goodwill	10	Estimate of cash flow projections and pre-tax discount rate
Grid expense payable	25	Amongst others estimate of electricity usage and energy prices
Impairment of current assets	15	Estimate of expected credit losses
Provision for environmental management and decommissioning	22	Estimate of removal costs, removal dates, discount rate and price increases in the period leading up to removal
Tariff related provisions	22	Estimate of electricity usage and number of parties
Other provisions	22	Mainly relate to estimate of probability, realisation date and curtailed feed-in volumes and prices
Net employee benefit obligations	23	Financial, actuarial and demographic assumptions

## Functional currency

These consolidated financial statements are presented in euros, which is also the parent company's and all subsidiaries' functional currency.

## Adjustment in prior year's figures

After publication of the TenneT Integrated Annual Report 2021, we identified a misstatement in the consolidated statement of cash flows; the increase/(decrease) in account- and other payables was reported as -/- EUR 319 million and should have been EUR 540 million, the purchase of tangible and intangible fixed assets was reported as -/- EUR 2,852 million and should have been -/- EUR 3,711 million. We have adjusted the misstatement.

After publication of the TenneT Integrated Annual Report 2021, we identified a misstatement in the consolidated statement of financial position that the non-controlling interest regarding one of our consolidated entities (TOD3) should be classified as non-current other financial liability instead of total equity. We have adjusted the error retrospectively, for an overview of the impacted accounts reference is made to the table below. Reference is also made to sections 19 and 24. The adjustments are the following:

	1/1/2021  <b>(EUR million)</b>		1/1/2021  <b>Published</b>	Adjustment	12/31/2021  <b>Adjusted</b>		12/31/2021  <b>Adjusted</b>
<b>Balance sheet impact</b>							
Non-controlling interest	689	-	486	486	638	-183	455
<b>Total equity</b>	<b>8,138</b>	<b>-203</b>	<b>7,935</b>		<b>7,607</b>	<b>-183</b>	<b>7,424</b>
<b>Impact on Profit and Loss statement</b>							
Interest expenses					-182	-20	-202
Result for the year			N/A		-320	-20	-340

For better presentation purposes, some items in previous year's figures were adjusted. There was neither an impact on the consolidated statement of income nor on total equity.

## 2 Segment information

This section sets out the financial performance for the year in accordance with the way in which we manage our business (operating segments). We measure and assess our performance based on underlying financial information, which is explained further below.

We generate substantially all of our revenue from our regulated operating segments in the Netherlands and Germany. Therefore, close collaboration with our respective regulators to obtain regulations and agreements that provide reasonable compensation for the risks we face, is key to us. Our involvement in certain limited non-regulated activities is closely related and ancillary to our core tasks.

### Segment analysis

Our operating segments consist of:

- TSO Netherlands
- TSO Germany
- Non-regulated activities

For management information purposes, the performance of our regulated activities in the Netherlands and in Germany is considered separately into two geographical segments. This segmentation, based on separately applicable regulatory frameworks, is the key determinant for financial management of the business and for decision-making on budgets, allocation of resources and financing.

Financing activities (including finance income and expenses) are managed on a Group basis and amounts related thereto are not allocated to the segments. Transfer prices between the Netherlands and Germany are set at arm's length in a manner similar to transactions with third parties. These intercompany transactions are eliminated in consolidation.

Our Executive Board is the chief operating decision-making body of the company (as defined by IFRS 8 'Operating segments'). Periodically, it monitors the performance of the respective operating segments for the purpose of performance management and decision making about resource allocation. The segment performance is based on underlying financial information, where EBIT, investments and return on capital are key metrics. The definition of EBIT equals operating result. Performance of non-regulated activities is evaluated based on EBIT and return on capital of these activities.

Underlying financial information is based on the principle of recognising regulatory assets and liabilities for all of our regulated activities. This implies that amounts resulting from past events and which are allowed to be received or are required to be returned through future tariffs are recorded as an asset or liability, respectively. TenneT's Executive Board believes that the presentation of underlying financial information provides additional relevant insight in the actual business, financial performance, and as such economic reality.

#### Accounting policies applied for underlying financial information

Underlying financial information matches regulatory revenues and expenses in a corresponding reporting period and defers certain income items until used for investments or tariff reductions.



Matching is achieved through recognition of regulatory deferral accounts. The key requirement for such recognition is that an existing regulatory framework must be in place that permits the future reimbursement or requires the future settlement of regulated assets or liabilities, respectively. Consequently, a regulated asset is recognised in underlying financial information in respect of permitted reimbursements of current year expenses in future year's tariffs. Vice versa, a regulated liability is recognised in underlying financial information in respect of required settlements (i.e. repayments) of current year revenues through future tariffs. Furthermore, until 2015 certain investments in the Netherlands were financed via auction receipts resulting from auctioning available electricity transmission capacity on cross-border interconnections.

We have no individual clients which are invoiced more than 10% of our total group revenue.

(EUR million)	2022			2021		
	Investments	Assets	Liabilities	Investments	Assets	Liabilities
TSO Netherlands	1,527	12,328	7,697	1,552	9,651	6,384
TSO Germany	2,961	27,115	21,574	2,408	22,325	17,126
Non-regulated activities	5	1,779	220	9	437	206
<b>Total segments</b>	<b>4,493</b>	<b>41,222</b>	<b>29,491</b>	<b>3,969</b>	<b>32,413</b>	<b>23,716</b>
Eliminations and adjustments	-	-256	1,980	-	-452	601
<b>Consolidated underlying information</b>	<b>4,493</b>	<b>40,966</b>	<b>31,471</b>	<b>3,969</b>	<b>31,961</b>	<b>24,317</b>

(EUR million)	2022		2021	
	Assets	Liabilities	Assets	Liabilities
TSO Netherlands	10,828	7,260	9,106	6,013
TSO Germany	26,157	21,339	22,109	16,957
Non-regulated activities	1,779	216	437	206
<b>Total segments</b>	<b>38,764</b>	<b>28,815</b>	<b>31,652</b>	<b>23,176</b>
Eliminations and adjustments	-255	1,981	-452	601
<b>Consolidated IFRS information</b>	<b>38,509</b>	<b>30,796</b>	<b>31,200</b>	<b>23,777</b>

Below the reconciliation between underlying total net assets and liabilities and IFRS total net assets and liabilities is disclosed:

(EUR million)	2022	2021
<b>Consolidated underlying information</b>		
Assets	40,966	31,961
Liabilities	-31,471	-24,317
<b>Total net assets and liabilities</b>	<b>9,495</b>	<b>7,644</b>
Regulatory receivables and payables	-2,278	-73
Valuation differences tangible fixed assets	-218	-239
Tax impact	714	91
<b>Total underlying impact</b>	<b>-1,782</b>	<b>-221</b>
<b>Consolidated IFRS information</b>		
<b>Consolidated IFRS information</b>		
Assets	38,509	31,200
Liabilities	-30,796	-23,777
<b>Total net assets and liabilities</b>	<b>7,713</b>	<b>7,423</b>

Investment amounts recognised under IFRS equal underlying investments.

For an analysis of underlying results please refer to the ‘Safeguard sustainable financial performance and investor ratings’ section of the Integrated Annual Report.

#### Regulatory deferral accounts: reconciliation to IFRS figures

The difference between underlying financial information - as presented in the segment information and board report - and IFRS reported figures is related to the recognition of regulated assets and liabilities, auction receipts and the measurement of tangible fixed assets. In the IFRS financial statements, revenue from contracts with customers is recognised when control of the goods or services is transferred to the customer at an amount that reflects the consideration to which the Group expects to be entitled in exchange for those goods or services. In the underlying financial information revenues are recognised according the permissible tariff decision adopted by the regulator. By doing so, volume and post calculation differences are directly matched to the related costs and therefore provide additional relevant insight to manage TenneT's business.

These differences also result in different deferred tax balances in underlying financial information compared to IFRS reported figures. No other differences between underlying financial information and IFRS exist.

Underlying financial information can be reconciled to reported IFRS figures as follows:

(EUR million)	2022					
	TSO NL	TSO Germany	Non-regulated	Total segments	Eliminations	Total
Connection and transmission services	2,459	4,333	-	6,792	-	6,792
Maintenance of the energy balance	301	872	-	1,173	-	1,173
Operation of energy exchanges	2	-	-	2	-	2
Offshore (balancing)	286	1,387	-	1,673	-	1,673
Other	36	105	47	188	12	200
Inter-segment	33	76	4	113	-113	-
<b>Total underlying revenue</b>	<b>3,117</b>	<b>6,773</b>	<b>51</b>	<b>9,941</b>	<b>-101</b>	<b>9,840</b>
Grid expenses	-2,190	-4,715	-1	-6,906	53	-6,853
Other operating expenses	-617	-1,278	-49	-1,944	45	-1,899
Share in profit of joint ventures and associates	2	11	109	122	-	122
<b>Underlying operating result</b>	<b>312</b>	<b>791</b>	<b>110</b>	<b>1,213</b>	<b>-3</b>	<b>1,210</b>
Revenue adjustment to IFRS	-1,220	-323	2	-1,541	-	-1,541
Cost adjustment to IFRS	10	-652	3	-639	-4	-643
Share in profit of joint ventures and associates adjustment to IFRS	-1	-1	-	-2	-	-2
<b>IFRS operating result</b>	<b>-899</b>	<b>-185</b>	<b>115</b>	<b>-969</b>	<b>-7</b>	<b>-976</b>
Finance result						-257
<b>Result before income tax</b>						<b>-1,233</b>
Income tax expense						354
<b>Result for the year</b>						<b>-879</b>

(EUR million)	2021					
	TSO NL	TSO Germany	Non-regulated	Total segments	Eliminations	Total
Connection and transmission services	1,504	3,008	-	4,512	-	4,512
Maintenance of the energy balance	91	283	-	374	-	374
Operation of energy exchanges	4	-	-	4	-	4
Offshore (balancing)	187	1,142	-	1,329	-	1,329
Other	31	72	26	129	19	148
Inter-segment	28	48	1	77	-77	-
<b>Total underlying revenue</b>	<b>1,845</b>	<b>4,553</b>	<b>27</b>	<b>6,425</b>	<b>-58</b>	<b>6,367</b>
Grid expenses	-1,075	-2,772	-2	-3,849	32	-3,817
Other operating expenses	-546	-1,232	-37	-1,815	37	-1,778
Share in profit of joint ventures and associates	1	12	49	62	-	62
<b>Underlying operating result</b>	<b>225</b>	<b>561</b>	<b>37</b>	<b>823</b>	<b>11</b>	<b>834</b>
Revenue adjustment to IFRS	-503	-340	-	-843	-	-843
Cost adjustment to IFRS	7	-273	4	-262	-4	-266
<b>IFRS operating result</b>	<b>-271</b>	<b>-52</b>	<b>41</b>	<b>-282</b>	<b>7</b>	<b>-275</b>
Finance result						-200
<b>Result before income tax</b>						<b>-475</b>
Income tax expense						135
<b>Result for the year</b>						<b>-340</b>

	Reconciliation IFRS to underlying figures					
	2022			2021		
(EUR million)	IFRS figures	Underlying items	Underlying figures	IFRS figures	Underlying items	Underlying figures
Connection and transmission services	4,425	2,567	6,792	3,220	1,292	4,512
Maintenance of the energy balance	1,347	-174	1,173	460	-86	374
Operation of energy exchanges	902	-900	2	392	-388	4
Offshore (balancing)	1,629	44	1,673	1,303	26	1,329
Other	196	4	200	149	1	148
<b>Total revenue</b>	<b>8,299</b>	<b>1,541</b>	<b>9,840</b>	<b>5,524</b>	<b>843</b>	<b>6,367</b>
Grid expenses	-7,517	664	-6,853	-4,102	285	-3,817
Personnel expenses	-285	-	-285	-287	-	-287
Depreciation and amortisation of assets	-1,233	-21	-1,254	-1,165	-20	-1,185
Other operating expenses	-322	-	-322	-303	1	-302
Other (gains)/losses	-38	-	-38	-4	-	-4
<b>Total operating expenses</b>	<b>-9,395</b>	<b>643</b>	<b>-8,752</b>	<b>-5,861</b>	<b>266</b>	<b>-5,595</b>
Share in profit of joint ventures and associates	120	2	122	62	-	62
<b>Operating result</b>	<b>-976</b>	<b>2,186</b>	<b>1,210</b>	<b>-275</b>	<b>1,109</b>	<b>834</b>
Finance income	43	-34	9	2	18	20
Finance expenses	-300	13	-287	-202	-11	-213
<b>Finance result</b>	<b>-257</b>	<b>-21</b>	<b>-278</b>	<b>-200</b>	<b>7</b>	<b>-193</b>
<b>Result before income tax</b>	<b>-1,233</b>	<b>2,165</b>	<b>932</b>	<b>-475</b>	<b>1,116</b>	<b>-641</b>
Income tax expense	354	-615	-261	135	-303	-168
<b>Result for the year</b>	<b>-879</b>	<b>1,550</b>	<b>671</b>	<b>-340</b>	<b>813</b>	<b>473</b>
<b>Result attributable to:</b>						
Equity holders of ordinary shares	-967	1,557	590	-401	805	404
Hybrid securities	57	-	57	57	-	57
<b>Owners of the company</b>	<b>-910</b>	<b>1,557</b>	<b>647</b>	<b>-344</b>	<b>805</b>	<b>461</b>
Non-controlling interests	31	-7	24	4	8	12
<b>Result for the year</b>	<b>-879</b>	<b>1,550</b>	<b>671</b>	<b>-340</b>	<b>813</b>	<b>473</b>
<b>Basic and diluted earnings per share</b>	<b>-4,835</b>		<b>2,950</b>	<b>-2,005</b>		<b>2,020</b>
<b>Underlying items</b>						
To be settled in tariffs		2,603			1,317	
Auction receipts		-900			-387	
Investment contributions		11			-1	
Maintenance of the energy balance		-173			-85	
<b>Revenue</b>		<b>1,541</b>			<b>844</b>	

The increase in the underlying revenues can mainly be explained by:

- The higher costs for redispatch, grid losses, reserve power plants and control power in 2022 result in higher underlying revenues, since those higher costs will be reimbursed through future tariffs;
- Increased revenues due to ongoing and increasing investments, resulting in a growing regulatory asset base and higher onshore and offshore revenues which are based upon these asset base values;
- Increased regulatory returns due to an increase in interest rates.

Our IFRS result takes account of our high costs during 2022, mainly due to the grid expenses, but does not account for future reimbursements we will receive through correspondingly higher future tariffs. This causes for that reason the significant lower EBIT based on IFRS (loss amounting to EUR 976 million) compared to the underlying financial information (profit amounting to EUR 1,210 million).

The material differences between underlying financial information and IFRS are hereafter further disclosed:

#### To be settled in tariffs

Revenue surpluses and deficits resulting from variances related to actual costs or transmission volumes (ex post) and estimates used to set tariffs (ex ante) are incorporated in the tariffs of subsequent years in both Germany and the Netherlands. In underlying financial information, these surpluses and deficits are recorded as assets and liabilities, respectively, under ‘to be settled in tariffs’. The expenses related to these items have to be settled in future tariffs in the coming years.

The underlying item ‘to be settled in tariffs’ is related to the revenue stream ‘connection and transmission services’ and concerns an increase amounting to EUR 2,603 million (2021: decrease of EUR 1,317 million).

#### Auction receipts & investment contributions

Auction receipts result from auctioning the available electricity transmission capacity on cross-border interconnections. These receipts are not at TenneT's free disposal. In accordance with Regulation (EU) 2019/943, auction receipts shall be used to fulfill the following priority objectives:

- a. guaranteeing the actual availability of the allocated capacity including firmness compensation; or
- b. maintaining or increasing cross-zonal capacities through optimisation of the usage of existing interconnectors by means of coordinated remedial actions, where applicable, or covering costs resulting from network investments that are relevant to reduce interconnector congestion.

In Germany, auction proceeds are recognised as interest-free capital on investments and are released over 20 years.

The reversal amounts are applied in the revenue cap of the TenneT TSO GmbH with t-2 offset. Thus, the reversal amount offsets the depreciation of the investments. The difference between IFRS and underlying revenue in Germany in 2022 is EUR 907 million.

When these priority objectives have been adequately fulfilled, auction receipts may be used as income to be taken into account by the regulatory authorities when approving the methodology for calculating network tariffs or fixing network tariffs, or both. In the Netherlands, TenneT agreed with its regulator (Autoriteit Consument en Markt) that investments in interconnectors are no longer financed through the auction receipts as of 2016. The current outstanding balance of auction receipts will be used in accordance with the aforementioned objectives. On 22 November 2022, the competence agreement of 2015 between TenneT and the ACM was dissolved. Investments in previous years financed by using auction receipts are classified as investment contributions and are reported under ‘liabilities’. A periodic amount equal to the depreciation charges, plus a portion of the operating expenses, is released to the statement of income, following the release scheme as described above.

The underlying item auction receipts is part of revenue stream ‘operations of energy exchanges’ for a decrease amounting to EUR 900 million (2021: decrease EUR 387 million). The underlying item investment contribution is part of revenue stream ‘other’ for an amount of EUR 11 million increase (2021: EUR 1 million increase).

#### Maintenance of the energy balance

As system manager of the high-voltage grid in the Netherlands, TenneT receives funds for performing certain statutory duties, such as the maintenance of the energy balance. The proceeds from these activities (i.e., imbalance settlements) may only be used after approval by the ACM. Imbalance settlements collected during the year are to be offset in transmission tariffs in the subsequent year. Consequently, these amounts are recorded as a liability and released in the subsequent year in the underlying financial information.

As the balancing group coordinator, TenneT TSO GmbH ('TTG') is responsible for balancing the balancing groups in terms of energy. We balance surplus or shortfall balancing groups by means of control energy and bill the balancing group managers for the resulting costs. For this billing of balance imbalances, the so-called 'Uniform balancing energy price across control zones' (reBAP) is used. As a result, TTG receives higher payments from the balancing group managers than TTG pays to the power plant operators. The resulting additional revenues from the balancing energy billing system are to be deducted from the grid charges. Analogously, revenue shortages will increase future grid fees.

The underlying item maintenance of the energy balance is part of revenue 'stream maintenance' of the energy balance for an amount of EUR 173 million decrease (2021: EUR 85 million decrease).

### Depreciation and amortisation of assets

Differences in depreciation and amortisation of assets occur due to the difference in accounting treatment of the regulatory deferral accounts and the related cash flows in order to determine the economic useful life and recoverable amount of the assets resulting from acquisitions and used for impairment analysis.

## 3 Revenue

(EUR million)	2022					
	TSO NL	TSO Germany	Non-regulated	Total segments	Eliminations	Total
Connection and transmission services	897	3,328	-	4,225	-	4,225
Maintenance of the energy balance	456	891	-	1,347	-	1,347
Operation of energy exchanges	242	660	-	902	-	902
Offshore (balancing)	242	1,387	-	1,629	-	1,629
Other	27	108	49	184	12	196
Inter-segment	33	76	4	113	-113	-
<b>Total IFRS revenue</b>	<b>1,897</b>	<b>6,450</b>	<b>53</b>	<b>8,400</b>	<b>-101</b>	<b>8,299</b>

(EUR million)	2021					
	TSO NL	TSO Germany	Non-regulated	Total segments	Eliminations	Total
Connection and transmission services	801	2,419	-	3,220	-	3,220
Maintenance of the energy balance	166	294	-	460	-	460
Operation of energy exchanges	164	228	-	392	-	392
Offshore (balancing)	161	1,142	-	1,303	-	1,303
Other	22	82	26	130	19	149
Inter-segment	28	48	1	77	-77	-
<b>Total IFRS revenue</b>	<b>1,342</b>	<b>4,213</b>	<b>27</b>	<b>5,582</b>	<b>-58</b>	<b>5,524</b>

### Connection and transmission services

Revenue from connection and transmission services is regulated by the ACM in the Netherlands and by the BNetzA in Germany and includes revenue from services provided to DSOs and industrial clients (such as resolution of transmission restrictions, congestion management and reactive power management).

Revenue increased mainly due to ongoing investments and a growing asset base. Furthermore, in Germany the 2022 tariffs include already the increased energy prices of 2021 that we have to pay for ancillary services.



## Maintenance of the energy balance

TenneT is responsible to ensure that electricity supply and demand is in balance at all times (i.e. the alternating current frequency in the power grid must be at 50 Hz continuously). If this balance is significantly disrupted, it may result in a power outage or even a black-out, depending on the length and severity of the imbalance. To ensure this balance, TenneT contracts and deploys (among others) reserve and emergency capacity to compensate unexpected fluctuations in supply and demand. The cash in- and outflows associated with maintaining this energy balance (e.g. imbalance settlements) fluctuate considerably and are settled through regulated tariffs in both the Netherlands and Germany in subsequent years.

Revenue increased mainly due to higher energy prices, which resulted in a higher price for the imbalance settlement.

## Operation of energy exchanges

This amount includes revenues resulting from the auctioning of cross-border (electricity transmission ‘interconnection’) capacity.

Revenue increased mainly due to higher energy prices.

## Offshore (balancing)

Increase in revenues is explained by the increase in the asset base, its related costs and an increase in the energy prices.

Revenue from offshore (balancing) is regulated.

## ① Accounting policy

Revenue primarily represents the sales value derived from the connection and transmission of electricity together with the sales value derived from the provision of other services to customers during the year. Revenue from contracts with customers is recognised when control of the goods or services is transferred to the customer at an amount that reflects the consideration to which the Group expects to be entitled in exchange for those goods or services.

Revenues arise from contracts with a single performance obligation. The assessment of unbilled connection and transmission services supplied to customers between the date of the last meter reading and year-end is subject to significant judgement. This assessment is primarily based on expected consumption and weather patterns.

If revenue received or receivable exceeds the maximum annual amount as determined by the national regulators, ACM or BNetzA respectively, a downward adjustment will be made to future tariffs to reflect this over-recovery. Under IFRS, no liability is recognised since this adjustment relates to the provision of future services. Similarly, no asset is recognised under IFRS when a regulator permits increases to be made to future tariffs in respect of under-recovery.

Offshore (balancing) revenues in the Netherlands are accounted for in accordance with the recognition and measurement principles of IAS 20. These revenues are not recognised until there is reasonable assurance that the Group satisfies the conditions attached to receiving this income.

## 4 Operating expenses

### Grid expenses

(EUR million)	2022	2021
System services	3,928	2,266
Connection and transmission services	1,334	829
Maintenance of the energy balance	1,176	374
Other	1	-4
<b>Total ancillary services</b>	<b>6,439</b>	<b>3,465</b>
Maintaining and operating transmission grids	1,078	637
<b>Total</b>	<b>7,517</b>	<b>4,102</b>

Due to the current market situation caused by the war in Ukraine energy expenses increased rapidly and are very volatile. This leads to increasing system services due to higher costs related to feed-in management, transmission restrictions, grid losses and redispatch costs. The increase is caused both by higher energy prices due to market situation and more transmission restrictions. Increase of cost of maintaining and operating transmissions grids mainly related to higher insurance costs. The higher grid expenses and project costs will be reimbursed through future tariffs, which will result in considerable higher grid tariffs in future years. Please refer to Note 2 for further details about differences between IFRS and Underlying financial information.

### Personnel expenses

(EUR million)	2022	2021
Salaries	461	390
Social security contributions	66	57
Pension charges defined benefit plans	23	24
Pension charges other plans	34	32
Other personnel expenses	22	39
Capitalised costs for (in)tangible fixed assets	-321	-255
<b>Total</b>	<b>285</b>	<b>287</b>

Average internal workforce in FTEs	5,303	4,586
Average internal workforce in FTEs employed in the Netherlands	2,196	1,975
Average internal workforce in FTEs employed in the Germany	3,107	2,611

## Key management remuneration

Members of the Executive Board and Supervisory Board are regarded as key management.

Aggregate remuneration of members of the Supervisory Board and Executive Board is as follows:

Supervisory Board (EUR thousand)	Fixed remuneration	Committee fee	Total
2022	128	61	189
2021	126	58	184

Executive Board (EUR thousand)	Fixed remuneration	Pension cost	Termination benefit	Total
2022	1,682	409	-	2,091
2021	1,602	445	513	2,560

The entire Executive Board consists of statutory directors. Pension remuneration equals (i) the contributions payable to the defined contribution plan for service rendered in the period or (ii), for defined benefit plans, the current service cost and, when applicable, past service cost. We refer to the Supervisory Board Report for a more detailed disclosure on remuneration.

## Other operating expenses

(EUR million)	2022	2021
Accommodation and office expenses	109	99
Consultancy expenses	54	48
Hiring of temporary personnel	50	49
Travel and living expenses	25	13
Other expenses	84	94
<b>Total</b>	<b>322</b>	<b>303</b>

## Auditors' remuneration

The fees listed in the table below relate to the services provided to the Company and its consolidated Group entity by Deloitte Accountants B.V., the Netherlands, the external auditor as referred to in section 1(1) of the Dutch Accounting Firm Oversight Act (Dutch acronym: Wta), as well as by other Dutch and non-Dutch Deloitte individual partnerships and legal entities, including their tax services and advisory groups.

(EUR thousand)	2022	2021
<b>Audit of the financial statements</b>		
Deloitte Accountants B.V.	938	826
Deloitte GmbH Wirtschaftsprüfungsgesellschaft	718	700
<b>Total audit of the financial statements</b>	<b>1,656</b>	<b>1,526</b>
<b>Other assurance services</b>		
Deloitte Accountants B.V.	390	374
Deloitte GmbH Wirtschaftsprüfungsgesellschaft	278	164
<b>Total other assurance services</b>	<b>668</b>	<b>538</b>
<b>Total audit fees</b>	<b>2,324</b>	<b>2,064</b>

The financial audit fees include the aggregate fees in 2022 and 2021 for professional services rendered for the audit of TenneT's Integrated Annual Report and annual statutory financial statements of subsidiaries or services that are normally provided by the auditor in connection with these audits.

The other assurance fees include the aggregate fees invoiced for assurance and services for other audit services, which generally only the company's independent auditor can reasonably provide, such as comfort letters, regulatory statements and audits of grant statements.

#### Accounting policy

TenneT has energy purchase contracts for the forward purchase of energy or gas that are used to satisfy physical delivery requirements to customers or for the energy that the group uses itself. Substantially all our costs of purchasing electricity for supply to customers are recoverable at an amount equal to cost. The timing of recovery of these costs can vary between financial periods leading to an under- or over-recovery within any particular year that can lead to large fluctuations in the IFRS income statement. We follow approved policies to manage price and supply risks for our commodity activities.

TenneT's energy procurement risk management policy and delegations of authority govern its commodity trading activities for energy transactions. The purpose of this policy is to ensure we transact within pre-defined risk parameters and only in the physical and financial markets where we or our customers have a physical market requirement. In addition, state regulators require TenneT to manage commodity risk and cost volatility prudently through diversified pricing strategies. In both the Netherlands and Germany, we are required to file a plan outlining our energy procurement strategy to be approved by the respective regulator. In certain cases, we might receive guidance with regard to specific hedging limits.

Energy purchase contracts for the forward purchase of electricity that are used to satisfy physical delivery requirements to customers, or for energy that TenneT uses itself, meet the expected purchase or usage requirements of IFRS 9. They are, therefore, not recognised in the financial statements until they are realised. In note 28 of the consolidated financial statements commitments under such contracts have been disclosed as 'Grid related commitments'.

Operating expenses are expenses incurred during regular day-to-day business, such as system services, connection and transmission services, personnel expenses, depreciation and accommodation and travel costs. Operating expenses are recorded in the statement of income in the period they are incurred.

## 5 Finance income and expenses

### Finance income

This mainly relates to an amount of EUR 38 million that was recognised regarding a settled court case.

### Finance expenses

(EUR million)	2022	2021
Interest on borrowings and credit facilities	245	175
Capitalised interest on assets under construction	-12	-13
Interest on provisions	25	1
Interest on defined benefit pension plans	5	3
Interest on lease liability	4	2
Interest on other financial liability	22	20
Other finance expenses	11	14
<b>Total</b>	<b>300</b>	<b>202</b>

Finance expenses mainly increased due to new issued bonds in 2022. These bonds had higher interest rates as bonds issued before 2022. Furthermore the increase is related to bonds issued in 2021 that are now recognised for the full year. Interest on provisions increased due to the increased provisions and increased discount rates.

### Accounting policy

Finance expenses comprise mainly interest expenses, such as interest and fees on borrowings and credit facilities, interest on provisions, interest on defined benefit plans and interest on lease liabilities. Finance expenses are recorded in the statement of income using the effective interest rate method.

## 6 Corporate income tax

TenneT strives to comply with all applicable tax legislation in a socially responsible manner, maintaining among the highest levels of transparency, quality and integrity. Management responsibility and oversight of our tax strategy lies with our 'Chief Financial Officer' (CFO), our Director Financial Governance & Services and our Head of Tax who monitor our tax activities and report to the Executive Board and the Audit, Risk and Compliance Committee.

Our tax strategy is fully consistent with our corporate strategy. Building a transparent relationship with tax authorities based on mutual trust is an integral part of this strategy. We have built and are continuously improving our tax internal control framework system to be 'in control' and mitigate tax risks and to allow the company to demonstrate to all its stakeholders, including the tax authorities, that the company complies with all applicable laws and regulations.

Corporate income tax is payable in the Netherlands and Germany. In the Netherlands, we have entered into a so called 'horizontal monitoring agreement' with the Dutch tax authorities. TenneT is currently working with the Dutch tax authorities to further extend this agreement. Based on transparency and mutual trust, this agreement is meant to ensure that tax positions are fully disclosed and agreed on in advance, as a result of which generally no tax audits are performed by the Dutch tax authorities. All corporate income tax returns in the Netherlands have been filed up to and including 2020. Corporate income tax paid in the Netherlands in 2022 amounted to EUR 59 million.

In Germany, corporate income and trade tax returns for all German entities have been filed up to and including fiscal year 2021. In 2022, we paid EUR 172 million of corporate income tax in Germany.

Key components of corporate income tax expense are:

Consolidated income statement (EUR million)	2022	2021
Current income tax charge	254	152
Deferred tax:	-608	-287
<b>Income tax expense reported in the statement of income</b>	<b>-354</b>	<b>-135</b>

Consolidated statement of comprehensive income (EUR million)	2022	2021
Effect of re-measurement of defined benefit pensions	-64	-23
<b>Income tax charged directly to other comprehensive income</b>	<b>-64</b>	<b>-23</b>

Corporate income tax on results has been applied at the rates prevailing in the respective countries. In the Netherlands, a statutory corporate income tax rate of 25.8% was applied, while in Germany, on average, a marginal statutory corporate income tax rate of 29.84% was applied (including trade tax levied by municipalities or 'Gewerbesteuer'). Reconciliation between corporate income tax expense and the accounting result multiplied by a statutory corporate income tax rate of 25.8% is as follows:

(EUR million)	2022	2021
<b>Result before corporate income tax</b>	<b>-1,233</b>	<b>-455</b>
Statutory corporate income tax rate in the Netherlands of 25.8% (2021: 25%)	-318	-113
Effect of higher corporate income tax rate in Germany	-17	-8
Effect of future tax rate change in the Netherlands	-	-4
Adjustment in respect to current and deferred tax of previous years	1	-
Non-deductible costs	11	2
Non-taxable income	-29	-9
Tax paid by third parties	-2	-3
<b>At the effective corporate income tax rate of 29% (2021: 30%)</b>	<b>-354</b>	<b>-135</b>

The main reason for the higher effective tax rate of 29% compared to the Dutch statutory tax rate of 25.8% is the effect of the higher tax rate in Germany. Since the accounting result before tax is in a loss position, the items non-taxable income and tax paid by third parties, increase the effective tax rate, which in a positive result position normally decreases the effective tax rate.

Deferred taxes relate to the following:

(EUR million)	Statement of financial position		Statement of income	
	2022	2021	2022	2021
Auction receipts	-41	-60	-19	-79
Investment contributions	-69	-71	-2	2
Tariffs to be settled	327	85	-242	-200
Depreciation for tax purposes	-108	-150	-42	-6
Provisions	262	367	42	-48
Result allocation to hybrid securities	-6	-6	-	-
Receivable/payable	343	-	-343	34
Other	-9	-10	-2	10
<b>Net deferred tax assets/(liabilities)</b>	<b>699</b>	<b>155</b>		
<b>Deferred tax expense/(income)</b>			<b>-608</b>	<b>-287</b>

Deferred taxes are presented in the statement of financial position as follows:

(EUR million)	2022	2021
Deferred tax assets	711	162
Deferred tax liabilities	-12	-7
<b>Deferred tax, net</b>	<b>699</b>	<b>155</b>

Movements in deferred tax positions are set out below.

(EUR million)	2022	2021
<b>At 1 January</b>	<b>155</b>	<b>-109</b>
Tax expense during the period recognised in statement of income	608	287
Transfer to current tax payable	14	14
Adjustment tax expense relating to rate change	-	4
Other movement	-	-4
Tax income during the period recognised in equity	-14	-14
Tax income during the period recognised in other comprehensive income	-64	-23
<b>At 31 December</b>	<b>699</b>	<b>155</b>

### ① Accounting policy

The corporate income tax charge for the period is recognised in the statement of income, equity or the statement of comprehensive income, in accordance with the relevant accounting treatment of the related transaction. The corporate income tax charge comprises both current and deferred tax.

Current income tax assets and liabilities are measured at the amount expected to be recovered from, or paid to, the tax authorities. The tax rates and tax laws used to calculate these amounts are those enacted or substantively enacted at the reporting date in those countries where we operate and where we generate taxable income.

Deferred tax is recognised using the liability method with respect to temporary differences between the tax bases of assets and liabilities and their respective carrying amounts for financial reporting purposes at the reporting date. Deferred tax assets and liabilities are measured at the tax rates that are expected to apply in the year when the asset is realised or the liability is settled, based on tax rates (and tax laws) that have been enacted or substantively enacted at the reporting date in the relevant jurisdictions.

Deferred tax is generally recognised in respect of all temporary differences, the carry-forward of unused tax credits and any unused tax losses. Deferred tax assets (also in association with investments in subsidiaries, associates and interests in joint arrangements) are recognised to the extent that it is probable that taxable result will be available against which the deductible temporary differences and the carry-forward of unused tax credits and unused tax losses can be utilised. This assessment is performed annually. Deferred tax is not recognised for the temporary differences arising from the initial recognition of goodwill or an asset or liability in a transaction that is not a business combination and, at the time of the transaction, affects neither the accounting profit nor taxable profit or loss.

Unrecognised deferred tax assets are reassessed at each reporting date and are recognised to the extent that it has become probable that future taxable profits will allow the deferred tax asset to be recovered. There are no unrecognised carry-forward losses per 31 December 2022 (2021: nil).

Deferred tax assets and liabilities are recognised on a gross basis in the statement of financial position unless:

- the entity has a legally enforceable right to set off current tax assets against current tax liabilities and
- the deferred tax assets and the deferred tax liabilities relate to income taxes levied by the same taxation authority on either:
  - the same taxable entity, or
  - different taxable entities which intend either to settle current tax liabilities and assets on a net basis, or to realise the assets and settle the liabilities simultaneously, in each future period in which significant amounts of deferred tax liabilities or assets are expected to be settled or recovered.

## 7 Earnings per share

Earnings per share were calculated by dividing results for the year attributable to ordinary shareholder of the Group, after adjustment for the distribution on hybrid securities, by the weighted average number of ordinary shares outstanding during the year. The following table reflects the income and share data used for the basic and diluted earnings per share calculations.

(EUR million)	2022	2021
Result for the year attributable to the ordinary shareholder of the company	-910	-344
Allocation to hybrid securities	-57	-57
<b>Result for the year attributable to equity holders of the company adjusted for the allocation to hybrid securities</b>	<b>-967</b>	<b>-401</b>
Weighted average number of ordinary shares in issue (in thousands)	200	200

### Accounting policy

Calculation of earnings per share is based on the result for the year attributable to TenneT's sole shareholder and the weighted average number of shares outstanding during the year.

## 8 Tangible fixed assets

(EUR million)	High-voltage substations	High-voltage connections	Other assets	Assets under construction	Total
<b>Cost</b>					
<b>At 1 January 2021</b>	<b>11,132</b>	<b>9,588</b>	<b>1,062</b>	<b>4,933</b>	<b>26,715</b>
Additions	131	258	70	3,439	3,898
Transfers	358	382	24	-764	-
Changes in estimations	119	-78	-	-	41
Disposals	-8	-5	-5	-8	-26
<b>At 31 December 2021</b>	<b>11,732</b>	<b>10,145</b>	<b>1,151</b>	<b>7,600</b>	<b>30,628</b>
Additions	252	331	6	3,825	4,402
Transfers	996	1,071	163	-2,230	-
Changes in estimations	-170	-120	-	-22	-312
Transfer to held-for-sale	-	-	-12	-	-12
Impairment	-	-	-	-9	-9
Disposals	-92	-11	-5	-11	-119
<b>At 31 December 2022</b>	<b>12,718</b>	<b>11,416</b>	<b>1,291</b>	<b>9,153</b>	<b>34,578</b>
<b>Depreciation and impairment</b>					
<b>At 1 January 2021</b>	<b>2,964</b>	<b>2,502</b>	<b>390</b>	<b>-</b>	<b>5,856</b>
Depreciation for the year	530	378	61	-	969
Disposals	-5	-2	-1	-	-8
<b>At 31 December 2021</b>	<b>3,489</b>	<b>2,878</b>	<b>450</b>	<b>-</b>	<b>6,817</b>
Depreciation for the year	555	407	60	-	1,022
Transfer to held-for-sale	-	-	-	-	-
Disposals	-73	-9	-2	-	-84
<b>At 31 December 2022</b>	<b>3,971</b>	<b>3,276</b>	<b>508</b>	<b>-</b>	<b>7,755</b>
<b>Net book value:</b>					
At 1 January 2021	8,168	7,086	672	4,933	20,859
At 31 December 2021	8,243	7,267	701	7,600	23,811
At 31 December 2022	8,747	8,140	783	9,153	26,823

High-voltage substations include onshore and offshore transformer and converter stations. High-voltage connections consist of overhead and underground connections. Unlike lands for substations, lands surrounding high-voltage pylons and cables are generally not owned by TenneT. Other tangible fixed assets consist of office buildings, office ICT equipment and other company assets.

In 2022 the discount rate used for the decommissioning provision was between 2.086% and 2.942% (2021: 0.165% and 0.318%) for offshore wind farms (OWF) connections (see note 22). The discount rate was adjusted in 2022 to reflect current market assessments of the time value of money and the risks specific to this liability. The main part of the decommissioning provision was recognised as part of the carrying value of the related asset. Besides the change of the discount rate, also changes in inflation, changes in underlying assumptions and updated price levels are included in the change of estimates.

The amount of borrowing costs capitalised during 2022 is disclosed in note 5. The effective interest rate used to determine the amount of borrowing costs capitalised was 1.34% (2021: 2.0%).

Annual impairment trigger analyses on tangible assets, and where applicable testing for impairment, is done at the individual asset level, or smallest identifiable group of assets that generates cash inflows that are largely independent of the cash inflows from other assets or groups of assets (cash generating units (CGUs)). For our three operating segments this consists of:

- TSO Netherlands (One large CGU consisting of regulated on- and offshore assets, and the NorNed cable, considered for impairment (triggers), on individual level);
- TSO Germany (One large CGU consisting of regulated on- and offshore assets);
- Non-regulated companies (Several small CGUs as well as individual assets).

The non-regulated companies also include the Joint Venture investment in the BritNed cable, tested, for impairment (triggers), on individual level.

### Accounting policy

Tangible fixed assets are valued at cost, net of accumulated depreciation and accumulated impairment losses, if any. Such costs include the cost of replacing part of the asset and borrowing costs for long-term construction projects if the recognition criteria are met. When significant parts of the asset are required to be replaced at intervals, such parts are recognised as individual assets with specific useful lives and depreciated accordingly. Likewise, when major maintenance is performed, its cost is recognised in the carrying amount of the asset as a replacement, if the recognition criteria are met. All other repair and maintenance costs are recognised in the statement of income as incurred. The present value of the expected cost for the decommissioning of an asset after its use is included in the cost of the respective asset, if the recognition criteria for a provision are met. Depreciation is calculated on a straight line basis.

An asset is derecognised on disposal or when no future economic benefits are expected from its use. Any gain or loss arising on derecognition of the asset (calculated as the difference between the net disposal proceeds and the carrying amount of the asset) is included in the statement of income when the asset is derecognised.

General and specific borrowing costs directly attributable to the acquisition, construction or production of the tangible fixed assets, are added to the cost, until such time that the assets are substantially ready for their intended use or sale. No borrowing costs are capitalised if and to the extent such borrowing costs are directly compensated in the year of construction.

### Key estimates and assumptions

To calculate depreciation amounts, the following useful lives of various asset categories were assumed:

Estimated useful lives tangible fixed assets	Years
<b>Substations</b>	
Switches and offshore converter stations	20-35
Offshore platforms	20
Security and control equipment	10-20
Power transformers	20-35
Capacitor banks	20-35
Telecommunications equipment	10-20
<b>Connections</b>	
Pylons/lines	35-40
Cables (subsea and underground)	20-40
<b>Other</b>	
Office buildings	40-50
Office IT equipment	3-5
Process automation facilities	5
Other company assets	5-10

Residual values, useful lives and methods of depreciation of assets are reviewed at each financial year-end and adjusted prospectively, if appropriate.

## 9 Right-of-use assets and lease liabilities

### Right-of-use assets

(EUR million)	Land & buildings	Power plants	NordLink cable	Other right-of-use assets	Total
<b>Cost</b>					
<b>At 1 January 2021</b>	<b>93</b>	<b>90</b>	<b>242</b>	<b>80</b>	<b>505</b>
Additions	37	51	-	10	98
Disposal	-1	-	-	-1	-2
Remeasurement	2	-	-2	-	-
Depreciation	-14	-60	-81	-13	-168
<b>At 31 December 2021</b>	<b>117</b>	<b>81</b>	<b>159</b>	<b>76</b>	<b>433</b>
Additions	32	-	-	6	38
Disposal	-	-	-	-8	-8
Remeasurement	13	98	355	3	469
Transfer to held-for-sale	-	-	-	-3	-3
Depreciation	-21	-70	-73	-17	-181
<b>At 31 December 2022</b>	<b>141</b>	<b>109</b>	<b>441</b>	<b>57</b>	<b>748</b>

### Leased Land & Buildings

Land is mainly leased to set up pylons for electricity transmission lines and for constructed substations. These contracts run for a period of 18-142 years. Buildings are leased mainly as office space and for storage space. These contracts run for a period of 1-23 years.

Lease contracts for buildings are negotiated individually and include a range of different terms and conditions, including extension options.

Lease payments are in substance fixed, only a minority of the lease contracts contain clauses with reference to the CPI index.

### Leased power plants

TenneT is committed to the use of grid reserve power plants representing lease commitments according to IFRS 16. The commitments have a maturity of 1-3 years and can be prolonged depending on the decision of regulatory authorities.

Lease payments were in substance fixed and TenneT had no power plant leases which contained variable lease payments. Lease contracts did not include any clauses with reference to an index or contractual rate.

### Leased NordLink cable

TenneT leases the NordLink submarine cable from NOKA to transport electricity between Germany and Norway. The lease contract is extended which resulted in a remeasurement and has a remaining maturity of 6 years, and no extension option according to IFRS 16 is included in the lease contract. Lease payments are in substance fixed.

### Leased others

Telecom lease contracts (including fibreglass cables) run for a period between 1 and 30 years. For qualifying employees TenneT leased cars with a lease term between 1 and 7 years. TenneT does not purchase or guarantee the value of leased telecom assets or cars.

TenneT had several contracts with termination / extension options. In determining the lease term all relevant facts and circumstances that create a significant economic incentive to exercise those options are taken into consideration.

TenneT had no material 'sub lease' contracts in 2022 and 2021 and therefore no material income from subleasing right-of-use assets. TenneT has not entered into any sale and leaseback contracts. No lease contracts with residual value guarantees are entered into. No lease contracts have been concluded that contain restrictions or covenants.

Lease payments were in substance fixed, only some of the lease contracts had pre-determined lease payment changes.

### Short-term leases and leases of low value

TenneT leased certain other assets with terms up to 1 year. TenneT considers these assets to be of low-value or short-term in nature and therefore no right of use assets and lease liabilities were recognised for these leases. The aggregate total of short-term lease expenses for more than one month and low value assets lease expenses amounted to EUR 2 million (2021: EUR 2 million).

### Lease liability

(EUR million)	2022			2021		
	Current	Non-current	Total	Current	Non-current	Total
Lease liability Land & buildings	20	121	141	17	101	118
Lease liability power plants	53	62	115	72	9	81
Lease liability NordLink	66	349	415	66	64	130
Lease liability other leases	16	42	58	14	61	75
<b>Total</b>	<b>155</b>	<b>574</b>	<b>729</b>	<b>169</b>	<b>235</b>	<b>404</b>

(EUR million)	Lease liability Land & buildings	Lease liability power plants	Lease liability NordLink	Lease liability other leases	Total
<b>At 1 January 2021</b>	<b>92</b>	<b>90</b>	<b>199</b>	<b>81</b>	<b>462</b>
Addition	36	51	-	8	95
Interest	1	-	-	1	2
Remeasurement	3	-	-2	-	1
Repayments	-14	-60	-67	-15	-156
<b>At 31 December 2021</b>	<b>118</b>	<b>81</b>	<b>130</b>	<b>75</b>	<b>404</b>
Addition	28	-	-	6	34
Interest	1	-	3	1	5
Disposal	-	-	-	-8	-8
Remeasurement	12	98	355	5	470
Transfer to held-for-sale:	-	-	-	-3	-3
Repayments	-18	-64	-73	-18	-173
<b>At 31 December 2022</b>	<b>141</b>	<b>115</b>	<b>415</b>	<b>58</b>	<b>729</b>

The total cash outflow (including low value items and short-term leases) in 2022 was EUR 223 million (2021: EUR 158 million). Future cash outflows of leases not yet commenced but to which TenneT is committed mainly relate to leased power plants and amount to EUR 86 million yearly from 2023 till 2032.

The undiscounted maturity analysis of lease liabilities is disclosed in note 26.

(EUR million)	2022	2021
Depreciation expense of right-of-use assets	-181	-168
Short-term lease expenses	-2	-2
Interest expense on lease liabilities	-5	-2
<b>Total amount recognised in profit and loss</b>	<b>-188</b>	<b>-172</b>

Below the discounted maturity of the lease liability:

(EUR million)	2022	2021
<1 month	13	16
1 to 3 months	22	27
3 to 12 months	146	151
1 to 5 years	404	136
More than 5 years	144	74
<b>Total discounted maturity</b>	<b>729</b>	<b>404</b>

### ① Accounting policy

At inception of a contract, TenneT assesses whether a contract conveys the right to control the use of an identified asset for a period in exchange for consideration, in which case it is classified as a lease.

TenneT recognises a right-of-use asset and a lease liability at the lease commencement date. The asset is initially measured at cost, which comprises the initial amount of the lease liability adjusted for any lease payments made at or before the commencement date, plus any initial direct costs incurred and an estimate of costs to restore the underlying asset, less any lease incentives received.

The lease asset is subsequently depreciated using the straight-line method from the commencement date to the earlier of the end of the useful life of the right-of-use asset or the end of the lease term, considered to be indicated by the lease term. The lease asset is periodically adjusted for certain remeasurements of the lease liability and impairment losses (if any).

The lease liability is initially measured at the present value of outstanding lease payments, discounted using the interest rate implicit in the lease or, if that rate cannot be readily determined, TenneT's incremental borrowing rate. If available, the interest rate implicit in the lease is used for discounting (e.g. car leases). Otherwise the incremental borrowing rate is used and shown in the table below.

	2022	2021
Under 5 year	0.0%-0.5%	0.0%
5-10 years	0.1%-1.6%	0.0%
10-15 years	0.4%-2.2%	0.2%
15-25 years	0.7%-2.5%	0.6%
Above 25 years	1.1%-2.8%	0.9%

After initial recognition, the lease liability is measured at the present value of the remaining lease payments using the effective interest method and is remeasured when there is a change in future lease payments arising from a change in an index or rate or if TenneT changes its assessment of whether it will exercise a purchase, extension or termination option. A corresponding adjustment is made to the carrying amount of the right-of-use asset with any excess over the carrying amount of the asset being recognised as profit or loss.

### **Short-term leases and leases of low value**

TenneT has elected not to recognise right-of-use assets and lease liabilities for short-term leases (leases with a term of 12 months or less) and leases of low-value assets. TenneT recognises the lease payments associated with these leases as an expense on a straight-line basis over the lease term or another systematic basis, if that basis is more representative of the pattern of the lessee's benefit. Furthermore, TenneT has elected not to recognise the lease of intangible assets.

## **10 Intangible assets**

(EUR million)	Goodwill	Software	Customer contracts	Other intangible assets	Intangible assets under construction	Total
<b>Cost</b>						
<b>At 1 January 2021</b>	<b>35</b>	<b>308</b>	<b>64</b>	<b>49</b>	<b>73</b>	<b>529</b>
Additions	-	21	-	-2	52	71
Transfers	-1	53	-	-	-52	-
<b>At 31 December 2021</b>	<b>34</b>	<b>382</b>	<b>64</b>	<b>47</b>	<b>73</b>	<b>600</b>
Additions	-	3	-	-	88	91
Transfers	-	46	-	-	-46	-
<b>At 31 December 2022</b>	<b>34</b>	<b>431</b>	<b>64</b>	<b>47</b>	<b>115</b>	<b>691</b>
<b>Amortisation and impairment</b>						
<b>At 1 January 2021</b>	<b>-</b>	<b>244</b>	<b>58</b>	<b>15</b>	<b>-</b>	<b>317</b>
Amortisation for the year	-	23	4	2	-	29
<b>At 31 December 2021</b>	<b>-</b>	<b>267</b>	<b>62</b>	<b>17</b>	<b>-</b>	<b>346</b>
Amortisation for the year	-	35	2	2	-	39
<b>At 31 December 2022</b>	<b>-</b>	<b>302</b>	<b>64</b>	<b>19</b>	<b>-</b>	<b>385</b>
<b>Net book value:</b>						
At 1 January 2021	35	64	6	34	73	212
At 31 December 2021	34	115	2	30	73	254
At 31 December 2022	34	129	-	28	115	306

As at 31 December 2022 and 2021, goodwill was allocated to the cash generating units (CGUs) in the following operating segments: TSO Netherlands (EUR 3 million), TSO Germany (EUR 24 million) and non-regulated activities (EUR 7 million). Please refer to note 11 for details on change of goodwill.

During 2022 EUR 46 million (2021: EUR 39 million) of software was internally developed.

## Accounting policy

Intangible assets are measured at acquisition cost on initial recognition. The cost of intangible assets acquired in a business combination is recognised at fair value at the date of acquisition. Following initial recognition, intangible assets are carried at cost less any accumulated amortisation and accumulated impairment losses. Except for capitalised development costs, internally generated intangible assets are not capitalised and expenses are reflected in the statement of income in the period in which they incur.

Goodwill is initially measured at cost and represents the excess (i) of the consideration transferred over (ii) TenneT's interest in the value of the net identifiable assets, liabilities and contingent liabilities of the acquiree and the amount of the non-controlling interest in the acquiree. After initial recognition, goodwill is measured at cost less accumulated impairment losses.

At each reporting date, we assess whether there is an indication that an asset may be impaired. If any indication exists, or when annual impairment testing for an asset is required, the asset's recoverable amount is estimated. The recoverable amount is the higher of an asset's or CGU's fair value less costs of disposal and its value in use. If the carrying amount of an asset or CGU exceeds its recoverable amount, the asset is considered impaired and is written down to its recoverable amount.

## Key estimates and assumptions

Estimated useful lives intangible assets	Years
Goodwill	Indefinite
Software	3-12
Customer contracts	10-14
Purchased rights to use land	25-45
Other	5-15

Intangible assets, with the exception of goodwill, are assumed to have a fixed useful life within the ranges outlined above and are amortised over this useful life. The useful life is re-assessed each reporting period. Intangible assets are amortised on a straight line basis, as this best reflects the use of the asset.

Goodwill is assumed to have an indefinite useful life and is therefore not amortised, but is tested for impairment annually or more frequently, if events or changes in circumstances indicate a triggering event, either individually or at CGU level.

### Impairment testing of goodwill

For the purpose of annual impairment testing, goodwill acquired in a business combination is allocated to each of the CGUs. For our three operating segments this consists of:

- TSO Netherlands (One large Cash Generating Unit consisting of regulated on- and offshore assets)
- TSO Germany (One large Cash Generating Unit consisting of regulated on- and offshore assets)
- Non-regulated companies (Several small Cash Generating Units)

In assessing value in use, the estimated future cash flows are discounted to their present value using a pre-tax discount rate that reflects our assessment of current market conditions in respect of the time value of money and the risks specific to the asset. In determining fair value less costs of disposal, an appropriate valuation model is used, if no recent market transactions can be identified.

The impairment calculation is based on detailed projections, which are prepared separately for each of the CGUs to which the individual assets are allocated. The projections take into account current regulatory parameters, considering expected future regulatory developments. Management believes that the resulting cash flows can be determined reliably and that they give an appropriate reflection of the CGU's cash flow generating potential.

The recoverable amount of the German CGU was determined based on a value in use calculation using cash flow projections from our three year business plan. The pre-tax discount rate applied to cash flow projections was 6.7% (2021: 3.9%). The cash flows beyond the three-year period until 2044 were estimated on the basis of projected regulatory allowed returns and invested capital. The terminal value was determined estimating the regulatory asset base as of December 2044. We concluded that the recoverable amount as at 31 December 2022 was significantly in excess of the carrying value and as such no impairment loss needed to be recognised.

## 11 Business combinations

### Mergers and acquisitions

As of 31 December 2022 CertiQ B.V. merged with Vertogas B.V. into VertiCer B.V. Vertogas B.V. is the issued body for green gas certificates and was fully owned by Gasunie N.V. After this merger, both Gasunie and TenneT hold 50% of the shares in VertiCer B.V.

### Assets and liabilities classified as held for sale

Assets and liabilities classified as held for sale entirely relate to Novec GmbH. The Group currently holds a 100% interest in Novec GmbH. TenneT and management are exploring strategic partnerships which is committed to result in a sale of Novec GmbH.

Novec GmbH is included in the 'non-regulated companies' segment (note 2) and is not considered as a major business line of the Group.

The fair value less costs to sell exceeds the carrying amount of Novec GmbH and the Group expects to realise the sale of Novec GmbH in the course of 2023.

### Accounting policy

Business combinations are accounted for using the acquisition method. The cost of an acquisition is measured as the aggregate of assets and liabilities measured at their acquisition-date fair value (with a limited number of specified exceptions) including the amount of any non-controlling interest in the acquiree. For each business combination, we decide whether to measure the non-controlling interest in the acquiree at fair value or at the proportionate share of the acquiree's identifiable net assets. Acquisition-related costs are expensed as incurred in connection with an acquisition and included in other operating expenses (see note 4).

Non-current assets held for sale are defined as non-current assets (other than financial instruments or property investments) immediately available for sale and highly likely to be sold within a year. Non-current assets held for sale have been stated at the lower of (i) the asset's carrying value and, (ii) fair value less costs of disposal.

## 12 Investments in joint ventures and associates

### Joint ventures

TenneT has, directly or indirectly, 50% equity stakes in BritNed Development Ltd. ('BritNed'), DC Nordseekabel GmbH & Co. KG ('NOKA'), DC Nordseekabel Beteiligungs GmbH, Reddyn B.V. and Tensz B.V. We have a 20% equity stake in Equigy B.V. and a 25% indirect equity stake in Open Tower Company (OTC). For the investments in Equigy B.V. and OTC, joint control is exercised, despite unequal equity stakes. Therefore both investments are classified as joint ventures as of 2021. In December 2021 Flexcess GmbH was established as joint venture together with TransnetBW. Both shareholders have a 50% equity stake. Flexcess GmbH has a 20% participation in Equigy B.V. effective as of 1 January 2022. As of 31 December 2022 TenneT has a 50% participation in VertiCer B.V.

These investments are classified as joint ventures, for which only the investments in BritNed (legal seat: Arnhem, the Netherlands), OTC (legal seat: Vianen, the Netherlands) and NOKA (legal seat: Bayreuth, Germany) are each considered as an investment of material value. Other joint ventures are considered immaterial and are therefore not further disclosed. TenneT's share in result (which is equal to other and total comprehensive income) of these immaterial joint ventures amounted to EUR 1 million in 2022 (2021: EUR 1 million).

As of 31 December 2022 VertiCer B.V. is a new joint venture and considered to be a non-material joint venture. Further reference is made to note 11.

The table below contains summarised financial information with respect to material joint ventures and a reconciliation with their carrying amounts.

Statement of financial position (EUR million)	2022			2021		
	BritNed	NOKA	OTC	BritNed	NOKA	OTC
Non-current assets	458	783	80	468	840	82
Cash and cash equivalents	140	55	22	56	44	19
Other current assets	23	10	2	38	12	24
Non-current liabilities	-47	-33	-134	-47	-51	-161
Current liabilities	-119	-15	-5	-85	-6	-6
<b>Equity</b>	<b>455</b>	<b>800</b>	<b>-35</b>	<b>430</b>	<b>839</b>	<b>-42</b>
Ownership TenneT	50%	50%	25%	50%	50%	25%
<b>Carrying amount of the investment</b>	<b>228</b>	<b>400</b>	<b>-</b>	<b>215</b>	<b>420</b>	<b>-</b>

Statement of income (EUR million)	2022			2021		
	BritNed	NOKA	OTC	BritNed	NOKA	OTC
Revenue	304	83	30	163	75	26
Depreciation and amortisation	-18	-40	-7	-19	-41	-7
Other costs	-22	-8	-9	-57	-8	-7
<b>Operating result</b>	<b>264</b>	<b>35</b>	<b>14</b>	<b>87</b>	<b>26</b>	<b>12</b>
Finance income and expenses	-3	-1	-4	-2	-1	-5
Income tax expense	-59	-4	-2	-15	-2	-2
<b>Result for the year*</b>	<b>202</b>	<b>30</b>	<b>8</b>	<b>70</b>	<b>23</b>	<b>5</b>
Ownership TenneT	50%	50%	25%	50%	50%	25%
<b>Group's share in result</b>	<b>101</b>	<b>15</b>	<b>2</b>	<b>35</b>	<b>12</b>	<b>1</b>

\* Result for the year is equal to other and total comprehensive income.

### BritNed

BritNed is a joint venture with National Grid International Ltd (National Grid), the British TSO. It owns and operates a 1,000 MW ‘Direct Current’ (DC) interconnector between the United Kingdom and the Netherlands. Operating costs and trading revenue are shared equally between TenneT and National Grid BritNed had contingent liabilities of EUR 1 million (2021: EUR 2 million) mainly related to comfort letters issued. In 2022 EUR 88 million dividend was received from BritNed (2021: EUR 40 million).

TenneT Holding B.V. has, together with the other shareholder National Grid Holding One plc, provided a parent company guarantee on the liabilities of BritNed.

### NOKA

NordLink is an interconnector between Norway and Germany jointly owned by Statnett SF, TenneT and KfW IPEX-Bank GmbH (KfW) to establish an interconnector between Norway and Germany under the project name ‘NordLink’. Ownership of the interconnector is equally split, with TenneT and KfW owning the southern part through NOKA, a jointly owned company and Statnett owning the northern part. In 2021 the main activity of NOKA was operating the southern part of the interconnector. Operating costs and trading revenue are shared equally between NOKA and Statnett.

At 31 December, NOKA had contingent liabilities of EUR 3 million (2021: EUR 3 million) mainly related to purchase obligations. During 2022 TenneT has withdrawn EUR 32 million from NOKA's capital (2021: EUR 42 million).

### OTC

OTC is a holding company and holds majority interests in four separate asset companies: Colonne B.V., Mobile Radio Networks Vehicle B.V. (MRNV), OTC Networks B.V. and OTC II B.V. These companies mainly own infrastructure assets specifically designed for terrestrial communications. OTC had no contingent liabilities as at 31 December 2022 (2021: nil). No dividend from OTC was received in 2022 (2021: nil).

### Other

None of our joint ventures are permitted to distribute profits without the consent from all shareholders or partners. We received nil from other interests in joint ventures (2021: nil).

Other interests in joint ventures amounted EUR 2 million at 31 December 2022 (2021: EUR 3 million).

### Associates

At 31 December 2022 our substantial investments in associates consisted of a 34% interest in Holding des Gestionnaires de Réseaux de Transport d'Electircité S.A.S. (HGRT). In addition, the Group holds four immaterial investments in Energie Data Services Nederland B.V. (EDSN), European Market Coupling Company GmbH (EMCC), WL Winet B.V., Beheer Afsprakenstelsel B.V. (BAS) and TSCNET Services GmbH (TSC). The Group's share in result (which is equal to other and total comprehensive income) of these immaterial associates amounted to nil in 2022 (2021: nil).

Summarised financial information in respect of material associates and reconciliation with their respective carrying amounts, of the investment in the consolidated financial statements is as follows:

	2022	2021
	<b>HGRT</b>	<b>HGRT</b>
Statement of financial position (EUR million)		
Non-current assets	97	91
Current assets	1	1
Non-current liabilities	-	-
Current liabilities	-7	-
<b>Equity</b>	<b>91</b>	<b>92</b>
Ownership TenneT	34%	34%
<b>Carrying amount of the investment</b>	<b>31</b>	<b>31</b>

	2022	2021
	<b>HGRT</b>	<b>HGRT</b>
Statement of income (EUR million)		
Revenue	-	-
Depreciation and amortisation	-	-
Other costs	-	-
<b>Operating result</b>	<b>-</b>	<b>-</b>
Finance income and expenses	13	11
Income tax expense	-	-
<b>Result for the year*</b>	<b>13</b>	<b>11</b>
Ownership TenneT	34%	34%
<b>Group's share in result</b>	<b>4</b>	<b>4</b>

\* Result for the year is equal to total and other comprehensive income.

## HGRT

The legal seat of HGRT is in Paris, France. HGRT holds a 49% stake in EPEX. EPEX is the exchange for the power spot markets for the 'North West Europe' (NWE) region and the United Kingdom. At 31 December 2022, HGRT had no contingent liabilities outstanding (2021: nil). In 2022 EUR 4 million dividend was received (2021: EUR 3 million).

## Other

Our interest in other associates amounted EUR 5 million at 31 December 2022 (2021: EUR 3 million). From other associates we received nil dividend in 2022 (2021: nil).

### Accounting policy

A joint venture is an arrangement whereby the parties in the arrangement have joint control over the net assets of the joint arrangement.

Joint control is the contractually agreed sharing of control of an arrangement, which exists only when decisions about the relevant activities require unanimous consent of the parties sharing control. An associate is an entity in which we have significant influence, but no control. Significant influence is the power to participate in the financial and operating policy decisions of the investor.

Investments in joint ventures and associates are accounted for using the equity method. Under the equity method, the investment in the joint venture or associate is initially recognised at cost. The carrying amount of the investment is adjusted to recognise changes in the Group's share of net assets of the investment since the acquisition date. Goodwill relating to the associate is included in the carrying amount of the investment and is neither amortised nor individually tested for impairment.

The statement of income reflects our share in the results of operations of investments. Any change in other comprehensive income of these investments is presented as part of the other comprehensive income. In addition, when there is a change recognised directly in the equity of the investment, our share of any change is recognised in the statement of changes in equity. Unrealised gains and losses resulting from transactions between us and any investment are eliminated to the extent of the interest in such investment. When an associate or joint venture distributes dividend to us in excess of our carrying amount, a liability is recognised if TenneT:

- is obliged to refund the dividend;
- has incurred a legal or constructive obligation; or
- made payments on behalf of the associate.

In the absence of such obligations, the excess in net result for the period is recognised. When the associate or joint venture subsequently generates results, this is only recognised if and to the extent they exceed the excess cash distributions recognised in net results plus any previously unrecognised losses.

After application of the equity method, we determine whether it is necessary to recognise an impairment loss on our investment in the joint venture or associate. At each reporting date, we determine whether there is objective evidence that the investment is impaired. If such evidence exists, the amount of impairment is calculated as the excess of the carrying value of the investment over its recoverable amount and recognised in the statement of income.

Upon loss of significant influence over the joint venture/associate, any retained investment is valued at fair value. Any difference between the carrying amount of the investment upon loss of significant influence and the fair value of the retained investment and proceeds from disposal is recognised in the statement of income.

## 13 Other financial assets

(EUR million)	2022	2021
Receivables from related parties	-	5
Fees for credit facilities available	3	4
Minority participating interests	15	14
Other	26	14
<b>Total</b>	<b>44</b>	<b>37</b>

The receivables from related parties mainly consisted of loans granted to MRVN, a minority participating interest of Novec B.V., and was redeemed in 2022 (2021: EUR 5 million).

Minorities participating interests includes investments in Westley Fund 3 and 4, located in Menlo Park, California, USA, with fair value of EUR 10 million (2021: EUR 11 million) and in Set Ventures 2 and 3, located in Amsterdam, for a total fair value of EUR 5 million (2021: EUR 3 million). We contributed EUR 3 million in capital for these minorities (2021: EUR 2 million). We have recognised nil (2021: EUR 8 million) fair value gain. Furthermore due to disinvestments by Westley Fund 3 we accounted a result of EUR 2 million.

The position other mainly relates to pension assets. Please refer to Note 23 Net employee defined benefit liabilities for further details.

### ① Accounting policy

Please refer to note 28, accounting policies for financial instruments.

## 14 Inventory

Inventory primarily composed of oil and coals stocks which is used for measures taken at power plants that are standing by for TenneT. The allowance for inventory is EUR 8 million (2021: EUR 6 million). The fair value of inventory was not materially different from the carrying value.

### ① Accounting policies

Inventory is stated at the lower of cost and net realisable value. Cost comprises direct purchase costs and associated costs incurred in bringing inventories to their present condition and location. The net realisable value is the estimated selling price in the ordinary course of business less the estimated costs of completion and the estimated costs necessary to make a sale.

## 15 Account- and other receivables

(EUR million)	2022	2021
Amounts to be invoiced to EEG trade debtors	184	790
EEG trade receivables	35	21
EEG short-term bank deposits > 3 months	-	472
Trade receivables	501	401
Amounts to be invoiced	1,051	434
VAT receivables	300	159
Other	277	124
<b>Total</b>	<b>2,348</b>	<b>2,401</b>

### **EEG trade receivables and amounts to be invoiced to EEG trade debtors**

In accordance with the Renewable Energy Sources Act (EEG) TenneT TSO GmbH is required to purchase electricity from producers of renewable energy at fixed feed-in tariffs. Subsequently such renewable energy is sold on power exchanges at spot prices.

EEG revenues and expenses are legally required to be administrated separately and are legally designated to be equal, except for certain potential bonus amounts payable to TenneT for marketing the energy on power exchanges. The EEG levy also includes an additional liquidity buffer to avoid a net financing need for the TSOs. TenneT acts as an agent with respect to these EEG services.

EEG trade debtors and receivables consisted of the accrual of unbilled EEG levy mainly for the month December, the outstanding invoices for the EEG levy, the accrual for horizontal balancing amounts (i.e. unsettled charges to the other German TSOs) and energy trading revenues. EEG trade receivables were not at our free disposal. Please refer to note 25 for the EEG accounts payable.

Please refer to note 16 for EEG deposits.

#### **Trade receivables**

As at 31 December, the ageing of trade receivables was as follows:

(EUR million)	Total	Past due			
		Not past due	0-30 days	31-60 days	More than 60 days
<b>2022</b>	<b>501</b>	<b>453</b>	<b>27</b>	<b>13</b>	<b>8</b>
2021	401	371	30	-	-

Changes in the allowance for expected credit losses were as follows:

(EUR million)	2022	2021
<b>At 1 January</b>	<b>40</b>	<b>16</b>
Charge for the year	7	22
Utilisation	-19	-
Unused amounts reversed	-	2
<b>At 31 December</b>	<b>28</b>	<b>40</b>

As at 31 December 2022, receivables with an initial value of EUR 5 million (2021: EUR 21 million) were fully provided for.

#### **Amounts to be invoiced**

The majority of the amounts to be invoiced related to unbilled grid fees and rechargeable offshore costs in Germany. The increase is mainly related to increased redispatch costs that will be charged to clients.

#### **① Accounting policy**

Please refer to note 28, accounting policies for financial instruments.

## 16 Cash, cash equivalents and bank overdrafts

Cash and cash equivalents consisted of the following items.

(EUR million)	2022			2021		
	At free disposal	Not at free disposal	Total	At free disposal	Not at free disposal	Total
Collateral securities	-	550	550	-	281	281
EEG funds	-	1,414	1,414	-	771	771
EEG deposits < 3 months	-	3,300	3,300	-	2,150	2,150
Deposits	300	-	300	-	-	-
Cash at bank	982	1	983	2	-	2
<b>Cash and cash equivalents</b>	<b>1,282</b>	<b>5,265</b>	<b>6,547</b>	<b>2</b>	<b>3,202</b>	<b>3,204</b>
Bank overdrafts	-	-	-	-64	-	-64
<b>Total cash and cash equivalents used in cash flow statement</b>	<b>1,282</b>	<b>5,265</b>	<b>6,547</b>	<b>-62</b>	<b>3,202</b>	<b>3,140</b>

Funds related to EEG activities have been legally separated as required by BNetzA. EEG Funds are not at the TenneT's free disposal. For further reference regarding EEG we refer to note 15. Cash at banks carry interest at floating rates based on daily bank deposit rates which may at times be negative.

The Group presents its cash flows in the consolidated statement of cash flows using the indirect method. The Group has elected to classify interest received as cash flows from investing activities and interest paid (including interest on lease liabilities) as cash flows from financing activities.

### ① Accounting policy

In the consolidated statement of cash flows, cash and cash equivalents include cash at bank, deposits held at call with banks, other short-term highly liquid investments with remaining maturities of three months or less and are presented net of outstanding bank overdrafts. Securities are deposits on collaterals that serve as financial security for auction and energy exchange transactions. A matching obligation is recognised towards the party that deposited the funds as collateral. Securities are stated at fair value upon receipt and subsequently at amortised cost.

## 17 Capital management

The primary objective of TenneT's capital structure is to ensure a sustainable financial position to absorb adverse changes in the regulatory environment and to enable us to execute our extensive investment programme which is essential for the success of the energy transition in the Netherlands and Germany. The majority of the funding for our investment programme is sourced from the debt capital markets, commercial banks and international financial institutions (e.g. the European Investment Bank).

To maintain broad access to financial markets at favourable conditions, we have defined capital management objectives, policies and processes which include:

1. to maintain a senior unsecured long-term credit rating of at least A3/A-;
2. to maintain a long-term average Funds From Operations (FFO) to Net debt based on 'underlying' financial information of at least 8.5% (with individual years of at least 8.0%);
3. to diversify the maturities of long-term funding instruments to limit refinancing risk;
4. to maintain liquidity through cash and undrawn committed credit lines covering at least our net cash requirement on a rolling 12-month forward-looking basis.

### 1. Maintain a senior unsecured credit rating of at least A3/A-

As of 31 December 2022 TenneT Holding B.V. had the following senior unsecured long-term credit ratings from Standard & Poor's and Moody's Investor Service, which comply with our financial policy.



Unsecured credit rating at 31 December 2021 and 31 December 2022	Long-term rating	Short-term rating
Standard & Poor's	A– (stable outlook)	A-2
Moody's Investor Service	A3 (stable outlook)	P-2

## 2. Maintain a long-term average FFO/Net debt ratio based on underlying financial information of at least 8.5%

To maintain a solid financial position, we intend to maintain a long-term average FFO/Net debt ratio of at least 8.5% based on underlying financial information (see note 2), which meets the minimum requirements for an A-/A3 long-term unsecured credit rating as formulated by the credit rating agencies Standard & Poor's and Moody's Investor Service. Individual years have a FFO/Net debt of at least 8.0%.

A reconciliation of the Adjusted FFO and net debt is provided in the following table. Please refer to the chapter 'Secure a sustainable financial performance and investor rating' for detailed information about the Adjusted FFO.

Based on underlying information (EUR million)	2022	2021
Net result for the year	671	473
+ amortisation, depreciation and impairments	1,254	1,185
+ other gains (non-cash)	38	4
+ result on disposal of assets (non-cash)	-	-
<b>Total FFO</b>	<b>1,963</b>	<b>1,662</b>
Capitalised interest on assets under construction	-12	-13
Interest on other financial liability	22	20
Interest on provisions	25	1
50% Hybrid interest	-28	-28
<b>Adjusted FFO</b>	<b>1,970</b>	<b>1,642</b>
<b>Net debt</b>		
+ Long-term borrowings	19,006	12,366
+ Short-term borrowings	709	1,339
+ Bank overdrafts	-	64
- Cash and cash equivalents at free disposal	-1,282	-2
Lease liabilities	729	404
Net employee defined benefit liabilities	174	351
50% Hybrid loan	1,062	1,062
<b>Net debt</b>	<b>20,398</b>	<b>15,584</b>
<b>Adjusted FFO/net debt</b>	<b>9.7%</b>	<b>10.5%</b>
<b>Adjusted net debt</b>		
Net debt	20,398	15,584
Regulatory receivables and payables	-2,278	-73
<b>Adjusted net debt</b>	<b>18,120</b>	<b>15,511</b>
<b>Adjusted FFO/Adjusted net debt</b>	<b>10.9%</b>	<b>10.6%</b>

EUR 2,278 million of our loans is used to prefinance the increased ancillary services, without these prefinancing our FFO/Net debt ratio would be 10.9% (2021: 10.6%) instead of 9.7% (2021: 10.5%). Further reference is made to note 2 'Segment information'.

### 3. Diversify maturities of long-term funding instruments to limit refinancing risk

To minimise refinancing risk, we diversify the maturity profile of our senior debt. As of 31 December 2022, our interest bearing debt (excluding bank overdrafts) had the following annual redemption profile:

**Annual redemption of debt** (EUR million)

Year	Maturities								
2023	709	2028	1,282	2033	1,298	2038	40	2043	14
2024	448	2029	1,742	2034	1,843	2039	784	2044	14
2025	568	2030	782	2035	1,048	2040	784	2045	7
2026	1,973	2031	1,015	2036	628	2041	684		
2027	1,225	2032	1,182	2037	48	2042	1,724		

### 4. Maintaining liquidity through cash and undrawn committed credit lines covering at least our net cash requirement on a rolling 12-month forward-looking basis

We monitor the liquidity of the Group on a rolling 12-month forward-looking basis. This means that the sum of (i) cash and cash equivalents, (ii) undrawn committed credit facilities and (iii) 12-month expected net cash flow from operating activities should be sufficient to meet the expected aggregate of scheduled debt repayments, investments in fixed assets and dividend payments over the subsequent 12 months. The 12-month liquidity requirement was met on 31 December 2022 and 31 December 2021.

## 18 Equity

### Paid-up and called-up capital

The Company's authorised share capital amounted to EUR 500 million (2021: EUR 500 million), divided into one million shares of EUR 500 each. Of these shares, two hundred thousand shares have been issued and paid-up.

### Share premium reserve

The share premium reserve consists of the capital contributions, made by the shareholder of ordinary shares, the Dutch State represented by the Ministry of Finance. In the Dutch State budget 'miljoenennota' of September 2022, the Dutch State has reserved an amount up to EUR 5.11 billion for additional equity contributions for the period 2022-2025. A first tranche of EUR 1,230 million was received in 2022 and the capital contribution has been recognised in the share premium reserve.

### Retained earnings

Part of the retained earnings has been presented as legal reserve. For more details see note 41.

### Hybrid securities

Hybrid securities are deeply subordinated securities and are, with the exception of common equity, the most junior instruments in the capital structure of the Company. The hybrid securities are undated and do not default on non-payment of coupons (unless such payment was mandatory following a resolution or payment of a dividend to common shareholders, i.e. as so called 'dividend pusher').

The holders of the hybrid securities have limited ability to influence the outcome of a bankruptcy proceeding or a restructuring outside bankruptcy. Consequently, the hybrid security holders cannot oblige TenneT to pay distributions or redeem the securities in part or in full. Payment of distributions on and redemption of the securities is at our sole discretion. As a result, the hybrid securities are classified as part of the equity attributable to the company's owners.

On 31 December 2022, TenneT had EUR 2.1 billion of green hybrid securities outstanding divided in two tranches. The first tranche consisted of EUR 1.1 billion green hybrid securities that bear an optional, cumulative coupon of 2.995%, payable at TenneT's discretion annually on 1 June of each year. As at 31 December 2022, the unpaid cumulative dividend for this tranche amounted to EUR 18 million (2021: EUR 18 million), relating to the period 1 June until 31 December and payable on 1 June 2023. The second tranche consisted of EUR 1 billion green hybrid securities that bear an optional, cumulative coupon of 2.374%, payable at TenneT's discretion annually on 22 October of each year. As at 31 December 2022, the unpaid cumulative dividend for this tranche amounted to EUR 7 million (2021: EUR 7 million).

### Dividend distribution

In 2022 a common full-year dividend of EUR 141 million (EUR 705 per share) to our ordinary shareholder was distributed (2021: EUR 149 million). In agreement with the State of the Netherlands TenneT has established a dividend policy with a pay-out of 35% of the underlying profit for the year, after payments of distributions to hybrid securities holders and minority equity investors. We made aggregate distributions to the holders of hybrid securities of EUR 57 million during 2022 (2021: EUR 57 million). The appropriation of the 2022 result is at the free disposal of the General Meeting of Shareholders.

### 19 Non-controlling interests

The proportion of economic interests held by non-controlling interests in the Group's subsidiaries is as follows:

% Non-Controlling Interests	Country	2022	2021
TenneT Offshore 2. Beteiligungsgesellschaft mbH ('TO2')	Germany	69%	69%
TenneT Offshore 8. Beteiligungsgesellschaft mbH ('TO8')	Germany	63%	63%
ETPA Holding B.V. ('ETPA')	Netherlands	0%	50%

The Group has the power to control TO2 and, TO8 and holds 51% of the voting rights in these entities. TenneT also held 50.002% of the voting rights of and had the power to control ETPA until 27 June 2022, TenneT has sold its shares and has no voting rights anymore in ETPA. Movements in the non-controlling interest, to the extent material, are summarised below.

Movement schedule Non-Controlling interests (EUR million)	TO2	TO8	Total
<b>At 1 January 2021</b>	<b>258</b>	<b>229</b>	<b>487</b>
Result attributable to non-controlling interests	10	-6	4
Dividends paid	-16	-18	-34
Capital repayment	-1	-1	-2
<b>At 31 December 2021</b>	<b>251</b>	<b>204</b>	<b>455</b>
Result attributable to non-controlling interests	16	15	31
Dividends paid	-12	-8	-20
Capital repayment	-13	2	-11
<b>At 31 December 2022</b>	<b>242</b>	<b>213</b>	<b>455</b>

The non-controlling interest in TO2 and TO8 are held by Copenhagen Infrastructure Partners (CIP), which owns respectively 69% and 63% of the voting rights.

Financial information of these subsidiaries, to the extent material, is summarised below on a consolidated basis before intercompany eliminations and in conformity with our accounting principles.

	2022	
	TO2	TO8
Statement of financial position (EUR million)		
Non-current assets	812	1,218
Current assets	168	234
Non-current liabilities	-555	-906
Current liabilities	-77	-205
<b>Equity</b>	<b>348</b>	<b>341</b>
Attributable to owners of the parent	106	128
Attributable to non-controlling interests	242	213

	2021	
	TO2	TO8
Statement of financial position (EUR million)		
Non-current assets	911	1,337
Current assets	161	217
Non-current liabilities	-621	-1,000
Current liabilities	-89	-225
<b>Equity</b>	<b>362</b>	<b>329</b>
Attributable to owners of the parent	111	125
Attributable to non-controlling interests	251	204

	2022	
	TO2	TO8
Statement of income (EUR million)		
Revenue	208	250
Depreciation and amortisation	-80	-102
Other expenses	-86	-95
<b>Operating result</b>	<b>42</b>	<b>53</b>
Finance income and expenses	-11	-18
Income tax expense	-10	-10
<b>Result for the year</b>	<b>21</b>	<b>25</b>
Other comprehensive income	-	-
<b>Total comprehensive income</b>	<b>21</b>	<b>25</b>
Attributable to non-controlling interests	16	15

	2021	
	TO2	TO8
Statement of income (EUR million)		
Revenue	164	164
Depreciation and amortisation	-82	-104
Other expenses	-52	-58
<b>Operating result</b>	<b>30</b>	<b>2</b>
Finance income and expenses	-8	-15
Income tax expense	-7	3
<b>Result for the year</b>	<b>15</b>	<b>-10</b>
Other comprehensive income	-	-
<b>Total comprehensive income</b>	<b>15</b>	<b>-10</b>
Attributable to non-controlling interests	10	-6

	2022	
	TO2	TO8
(EUR million)		
Net cash flows from operating activities	68	75
Net cash flows used in investing activities	-12	-16
Net cash flows from financing activities	-56	-59
<b>Change in cash and cash equivalents</b>	<b>-</b>	<b>-</b>

	2021	
	TO2	TO8
(EUR million)		
Net cash flows from operating activities	75	64
Net cash flows used in investing activities	-12	-11
Net cash flows from financing activities	-63	-53
<b>Change in cash and cash equivalents</b>	<b>-</b>	<b>-</b>

## 20 Borrowings

(EUR million)	Effective interest rate	Maturity	Redemption schedule	2022	2021
4.625% bond 2011 EUR 500 million	4.70%	Feb-23	At maturity	-	500
0.75% green bond 2017 EUR 500 million	0.87%	Jun-25	At maturity	499	498
1.000% green bond 2016 EUR 500 million	1.05%	Jun-26	At maturity	499	499
1.75% green bond 2015 EUR 500 million	1.84%	Jun-27	At maturity	498	498
1.375% green bond 2018 EUR 500 million	1.50%	Jun-28	At maturity	497	496
1.375% green bond 2017 EUR 500 million	1.42%	Jun-29	At maturity	499	499
0.875% green bond 2019 EUR 500 million	0.99%	Jun-30	At maturity	496	496
4.75% bond 2010 EUR 200 million	4.99%	Jun-30	At maturity	197	197
1.250% green bond 2016 EUR 500 million	1.36%	Oct-33	At maturity	495	494
2.0% green bond 2018 EUR 750 million	2.05%	Jun-34	At maturity	746	746
1.875% green bond 2016 EUR 500 million	2.00%	Jun-36	At maturity	493	493
1.500% green bond 2019 EUR 750 million	1.60%	Jun-39	At maturity	740	740
0.125% green bond 2020 EUR 600 million	0.21%	Nov-32	At maturity	595	595
0.500% green bond 2020 EUR 750 million	0.54%	Nov-40	At maturity	744	744
0.125% green bond 2021 EUR 650 million	0.17%	Jun-27	At maturity	648	648
0.500% green bond 2021 EUR 500 million	0.61%	Jun-31	At maturity	496	495
0.875% green bond 2021 EUR 1,000 million	0.93%	Nov-35	At maturity	994	993
1.125% green bond 2021 EUR 650 million	1.17%	Jun-41	At maturity	646	645
1.625% green bond 2022 EUR 1,250 million	1.12%	Sep-26	At maturity	1,243	-
2.125% green bond 2022 EUR 1,000 million	1.40%	Nov-29	At maturity	993	-
2.375% green bond 2022 EUR 750 million	1.57%	May-33	At maturity	742	-
2.750% green bond 2022 EUR 850 million	1.82%	May-42	At maturity	834	-
3.875% green bond 2022 EUR 650 million	0.70%	Oct-28	At maturity	648	-
4.250% green bond 2022 EUR 500 million	0.77%	Apr-31	At maturity	497	-
4.500% green bond 2022 EUR 1,000 million	0.82%	Oct-34	At maturity	993	-
4.750% green bond 2022 EUR 850 million	0.86%	Oct-44	At maturity	842	-
<b>Non-current interest-bearing bonds</b>				<b>16,574</b>	<b>10,276</b>
2.74% loan 2012 EUR 150 million	2.74%	Sep-23	At maturity	-	150
4.44% loan 2010 EUR 140 million	4.44%	2016-2023	Linear	-	11
0.72% loan 2015 EUR 500 million	0.72%	2018-2032	Linear	310	345
0.77% loan 2015 EUR 150 million	0.77%	2018-2037	Linear	105	112
0.813% loan 2016 EUR 125 million	0.81%	2019-2038	Linear	94	100
0.05% loan 2020 EUR 100 million	0.05%	Sep-26	At maturity	100	100
0.436% loan 2020 EUR 350 million	0.44%	2025-2042	Linear	350	350
0.436% loan 2022 EUR 250 million	0.44%	2025-2043	Linear	250	-
Floating rate Loan 2022-2024 EUR 300 million	0.47%	2022-2024	At maturity	300	-
<b>Non-current interest-bearing loans</b>				<b>1,509</b>	<b>1,168</b>
0.989% green Schuldsschein 2016 EUR 100 million	1.01%	May-24	At maturity	100	100
1.310% green Schuldsschein 2016 EUR 55 million	1.32%	May-26	At maturity	55	55
1.500% green Schuldsschein 2016 EUR 50 million	1.51%	May-28	At maturity	50	50
1.750% green Schuldsschein 2016 EUR 43 million	1.76%	May-31	At maturity	43	43
1.750% green Schuldsschein 2016 EUR 95 million	1.76%	May-31	At maturity	95	95
2.000% green Schuldsschein 2016 EUR 80 million	2.01%	May-36	At maturity	80	80
<b>Non-current interest-bearing Schuldsschein</b>				<b>423</b>	<b>423</b>
1.61% USPP 2019 EUR 160 million	1.63%	Jan-29	At maturity	160	160
1.83% USPP 2019 EUR 295 million	1.85%	Jan-31	At maturity	295	294
2.01% USPP 2019 EUR 45 million	2.02%	Jan-34	At maturity	45	45
<b>Total non-current interest-bearing USPP</b>				<b>500</b>	<b>499</b>
<b>Total non-current interest-bearing borrowings</b>				<b>19,006</b>	<b>12,366</b>

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(EUR million)	Effective interest rate	Maturity	Redemption schedule	2022	2021
4.50% bond 2010 EUR 500 million	4.60%	Feb-22	At maturity	-	500
4.625% bond 2011 EUR 500 million	4.70%	Feb-23	At maturity	500	-
<b>Current interest-bearing bonds</b>				<b>500</b>	<b>500</b>
0.646% green Schuldsschein 2016 EUR 77 million	0.67%	May-22	At maturity	-	77
<b>Current interest-bearing Schuldsschein</b>				<b>-</b>	<b>77</b>
4.71% loan 2010 EUR 40 million	4.71%	Nov-23	Linear	-	3
4.44% loan 2010 EUR 140 million	4.44%	Nov-23	Linear	11	11
2.74% loan 2012 EUR 150 million	2.74%	Sep-23	At maturity	150	-
0.72% loan 2015 EUR 500 million	0.72%	Sep-23	Linear	34	34
0.77% loan 2015 EUR 150 million	0.77%	Apr-23	Linear	8	8
0.813% loan 2016 EUR 125 million	0.81%	Oct-23	Linear	6	6
Variable interest loan 2021 EUR 700 million	Variable	Jan-22	At maturity	-	700
<b>Current interest-bearing loans</b>				<b>209</b>	<b>762</b>
<b>Total current interest-bearing borrowings</b>				<b>709</b>	<b>1,339</b>
<b>Total borrowings</b>				<b>19,715</b>	<b>13,705</b>

Changes in borrowings arising from financing activities are as follows:

(EUR million)	(Non)-current interest-bearing bonds	(Non)-current interest-bearing loans	Non-current interest-bearing Schuldsschein	Current interest-bearing EEG related loans	Non-current interest-bearing USPP	Total
<b>At 1 January 2021</b>	<b>8,487</b>	<b>1,445</b>	<b>500</b>	<b>1,528</b>	<b>500</b>	<b>12,460</b>
Cash inflow from new borrowings	2,781	700	-	-	-	3,481
Cash outflow from redemptions	-500	-215	-	-1,528	-	-2,243
Amortisation (non-cash)	8	-	-	-	-1	7
<b>At 31 December 2021</b>	<b>10,776</b>	<b>1,930</b>	<b>500</b>	<b>-</b>	<b>499</b>	<b>13,705</b>
Cash inflow from new borrowings	6,787	550	-	-	-	7,337
Cash outflow from redemptions	-500	-762	-77	-	-	-1,339
Amortisation (non-cash)	11	-	-	-	1	12
<b>At 31 December 2022</b>	<b>17,074</b>	<b>1,718</b>	<b>423</b>	<b>-</b>	<b>500</b>	<b>19,715</b>

TenneT has Revolving Credit Facilities (RCFs) of EUR 3.6 billion as of 31 December 2022. EUR 3.3 billion is available till November 2026 and EUR 0.3 billion till the original maturity date of November 2024. Furthermore, TenneT has also available EUR 0.7 billion of undrawn long-term loan commitments from the EIB at 31 December 2022.

In addition, TenneT has EUR 1.75 billion of committed bilateral RCF's (EUR 1.45 billion undrawn), uncommitted bank facilities of EUR 0.65 billion at its disposal (EUR 0.65 billion undrawn) at 31 December 2022 and committed bank facilities of EUR 0.3 billion at its disposal.

The amount of borrowing costs (including fair value adjustment) capitalised was EUR 126 million (2021: EUR 75 million).

For more information about the fair value see note 27.

**① Accounting policy**

Refer to note 28, accounting policies for financial instruments.

**21 Contract liabilities**

(EUR million)	Investment contributions	Other	Total
<b>At 1 January 2021</b>	<b>376</b>	<b>2</b>	<b>378</b>
Addition	75	-	75
Amortisation	-21	-2	-23
<b>At 31 December 2021</b>	<b>430</b>	<b>-</b>	<b>430</b>
Addition	131	-	131
Amortisation	-13	-	-13
<b>At 31 December 2022</b>	<b>548</b>	<b>-</b>	<b>548</b>

(EUR million)	2022			2021		
	Investment contributions	Other contract liabilities	Total	Investment contributions	Other contract liabilities	Total
< 1 year	17	-	17	2	-	2
1-5 years	54	-	54	12	-	12
> 5 years	477	-	477	416	-	416
<b>Total</b>	<b>548</b>	<b>-</b>	<b>548</b>	<b>430</b>	<b>-</b>	<b>430</b>

Additions in contract liabilities mainly relate to new connections from clients that want to connect to our grid.

**① Accounting policy**

Contract liabilities are recognised when payments are made, or the payments are due (whichever is earlier) before a related performance obligation is satisfied. Contract liabilities are recognised in accordance with the related contract. At initial recognition, contributions received from third parties are measured at transaction price, presented as contract liabilities ('investment contributions') and are subsequently recognised as revenue over the related asset's useful life.

**22 Provisions**

(EUR million)	2022			2021		
	Current	Non-current	Total	Current	Non-current	Total
Environmental and decommissioning	7	1,193	1,200	14	1,364	1,378
Tariff related	11	9	20	16	14	30
Other	59	33	92	15	39	54
<b>Total</b>	<b>77</b>	<b>1,235</b>	<b>1,312</b>	<b>45</b>	<b>1,417</b>	<b>1,462</b>

(EUR million)	Environmental management and decommissioning	Tariff related	Other	Total
<b>At 1 January 2021</b>	<b>1,159</b>	<b>122</b>	<b>67</b>	<b>1,348</b>
Addition	162	1	11	174
Utilisation	-9	-92	-18	-119
Changes in estimations	78	-	-1	77
Unused amounts reversed	-13	-1	-5	-19
Imputed interest	1	-	-	1
<b>At 31 December 2021</b>	<b>1,378</b>	<b>30</b>	<b>54</b>	<b>1,462</b>
Addition	140	-	55	195
Utilisation	-4	-3	-5	-12
Changes in estimations	-338	-	-9	-347
Unused amounts reversed	-	-7	-4	-11
Imputed interest	24	-	1	25
<b>At 31 December 2022</b>	<b>1,200</b>	<b>20</b>	<b>92</b>	<b>1,312</b>

### Provisions for environmental management and decommissioning

Provisions for environmental management and decommissioning serve to cover future obligations in relation to high-voltage connections, underground cables and offshore platforms, including decommissioning costs. Asset retirement obligations are included for the legal and constructive obligations in relation to all our interconnectors and offshore assets. In 2022 EUR 140 million was added (2021: EUR 162 million) for future decommissioning costs for projects constructed during 2022. Changes in estimates related to the provision for decommissioning amounted to a release of EUR 338 million (2021: increase of EUR 78 million), mainly due to changes in the discount rate used and inflation rate, further due to changes in underlying assumptions and applicable price levels. Both amounts were not recognised through the statement of income. There was no material decommissioning of substations in 2022. In line with current regulation and permits, the first decommissioning of an offshore grid connection is expected to start in 2029.

### Tariff related provisions

Tariff-related provisions relate to uncertain regulatory compensations of nil (2021: nil) and to provisions for system service fees in the Netherlands. We charge electricity consumers a fee for system services performed. Following a change in law, the court in the Netherlands concluded that only parties with a direct connection to a grid maintained by a TSO are required to pay system service fees for the period prior to 31 December 2014. Consequently, we are required to refund amounts paid by certain parties to us without a direct grid connection. These refunds can be recouped by us through future tariffs. In 2022, nil (2021: nil) of the provided amount matured and was released through the statement of income.

### Other provisions

The majority of other provisions relates to the risk of compensation payments associated with delays and interruptions of offshore grid connections in Germany and claims.

The connection of offshore wind farms presents additional technical and organisational challenges. A number of factors, including a lack of supplier resources required for the construction of offshore grid connection systems, as well as weather conditions and the application of new technologies, hindered the timely realisation and/or interrupted the operational phase of offshore grid connection systems.

The majority of the claims are related to construction contracts and planning damage where the estimated additional payments are capitalised.

On 2 September 2022 a short circuit occurred on the newly built substation Dronten and led to a chain of events that caused damage to various parties. For the estimated costs we have recognised a current provision which is recognised through the statement of income.

Furthermore this provision is related to long-term service bonuses.

### Accounting policy

Provisions are recognised when there is (i) a legal or constructive obligation as a result of past events, (ii) it is probable that an outflow of resources embodying economic benefits will be required to settle the obligation and (iii) when the amount can be reliably estimated. Provisions are measured at the present value of estimated cash flows to settle obligations, based on expected price levels. Cash flows are discounted at a pre-tax rate that reflects the risks specific to the liability. The unwinding of interest components associated with provisions is recognised in the statement of income as a finance cost.

Estimated future costs are reviewed annually and adjusted as appropriate. Changes in estimated future costs and discount rates for decommissioning costs are recognised as changes in estimations and recorded in tangible fixed assets. All other provisions changes in estimated future costs and discount rates are recognised in the statement of income.

### Key estimates and assumptions

The estimated decommissioning provision involves 1) decommissioning costs and 2) assessing the expected remaining useful life of relevant assets. The main uncertainties related to the decommissioning costs are the removal method (currently assuming reverse installation), the uncertainties around equipment and vessel availability, and market rates at expected time of decommissioning. As at 31 December 2022, limited benchmark information was available. Decommissioning costs are provided for at the present value of expected costs to settle the obligation. The useful life of the offshore grid connections is estimated at 20 till 30 years. For interconnectors the useful life is estimated at 40 years. This provision assumed a discount rate between 2.737% and 2.942% was applied for other provisions (2021: between 0.165% and 0.318%) and an inflation rate between 2.594% and 2.624% (2021: 2.0%). A change in the discount rate of 1 percent point would have a maximum impact of EUR 145 million on the asset value and liability value.

A discount rate of 2.7% was applied for other provisions (2021: 1.5%). A change in discount rate of 1 percent point would have a maximum impact of EUR 3 million on the related book value.

The estimated amount of risks associated with delays and interruptions concerning the Group's offshore activities in Germany is based on the number of offshore grid connections and the compensation payable to the operators of offshore grid connections.

We are of the opinion that the recorded provisions reflect the best estimate of the probable outflow of resources. However, uncertainty about the assumptions and estimates could result in outcomes that require a material adjustment to the carrying amount of these provisions in future periods.

Due to the business TenneT operates in and TenneT's legal structure, TenneT faces several contingent liabilities. In general, the following items are recognised as contingent liabilities at TenneT:

- Possible impact of the Dutch and German regulatory frameworks on the TenneT's business financial conditions and net income;
- Operational risks and risks related to material projects;
- Impact of environmental issues;
- Risks relating to the legal structure of TenneT;
- Risks relating to the financing of TenneT;
- Factors which are material for the purpose of assessing market risks.

Uncertainties relating to contingent liabilities make a reliable estimation of the financial impact impossible. For further contingent liabilities we refer to note 29.

## 23 Net employee defined benefit liabilities

### Pension plans Germany

We have defined benefit plans for the majority of our German personnel. Said personnel are mainly employed based on the collective labour agreement of 'Tarifgruppe Energie' and thus enjoy benefits in the form of old-age, disability and surviving dependents' pensions. The large majority of the benefit obligations are based on pension schemes that define annual pension claims based on respective employees' pensionable income of a particular year. Furthermore, each employee is allowed to defer a certain amount of his compensation to raise his pension claim within defined bounds.

The Group contributes to two post-employment defined benefit plans in Germany, pursuant to a works council agreement called 'Betriebliche Alterssicherung' (hereafter referred to as 'pension scheme 2001') and a works council agreement called 'Beitragssplan' (hereafter referred to as 'pension scheme 2008'), as well as to a small number of individual pension commitments. The pension obligations related to these plans are partly covered by assets held in two Contractual Trust Arrangements (CTA) administrated by 'Helaba Pension Trust e.V.' (Helaba). According to German law, TenneT remains ultimately liable for fulfilling these pension obligations.

#### Pension scheme 2001

This scheme covers employees who started their employment with TenneT Germany on or before 31 December 2007 (or later, if the individual employment contract was agreed on or before 1 April 2008). The scheme became effective on 1 January 2001 and absorbed older plans at the time. As part of the transition in 2001 to the new plan, employees were guaranteed a vested pension claim based on the old plan for their years of service prior to the transition date. The plan offers benefits in the form of old-age, disability and surviving dependents' pensions and is composed of an employer-funded basic level based on the respective employee's yearly pensionable income, an employer-funded top-up level based on the respective company's performance and an employee-funded supplementary level which allows employees to increase their pension entitlement through deferred compensation. Yearly fixed pension claims are calculated with a fixed internal interest rate that sum up to the total earned pension benefits of the respective employee.

#### Pension scheme 2008

This scheme covers employees who started their employment with TenneT Germany after 31 December 2007 (unless the individual employment contract was agreed before 1 April 2008, in which case the pension scheme 2001 applies). This scheme offers benefits in the form of old-age, disability and surviving dependents' pensions.

Pension cost is composed on the employer-funded basic level based on the respective employee's yearly pensionable income, an employer funded top-up level based on the respective company's performance and an employee-funded supplementary level which allows employees to increase their pension entitlement through deferred compensation. If the employee contribution to the supplementary level reaches a certain level, the company pays an additional contribution of one-third of the respective basic level contribution.

Annually, for each year a contribution to the pension claims is increased with an interest rate that is recalculated based on the weighted average current yield of German Federal Government Bonds (Bundesanleihen), with an effective floor of 3.0% and with different maturities (10, 20 and 30 years) reflecting the average duration of the plan. The annual pension claim contributions for all years of service sum up to the total earned pension benefits of the respective employee.

Differences between the plans are limited and refer mainly to the way internal interest rates and the pensionable income are determined. Therefore, the disclosure in the notes below comprises the combined plans.

Components of the net benefit expense recognised in the statement of income were as follows:

(EUR million)	2022	2021
Current service costs (note 4)	23	24
Net interest costs (note 5)	5	3
<b>Net benefit expense</b>	<b>28</b>	<b>27</b>

The funded status of the plans and the amounts recognised in the statement of financial position as at 31 December were as follows:

(EUR million)	2022	2021
Defined benefit obligation	265	466
Fair value of plan assets	-103	-113
<b>Funded status</b>	<b>162</b>	<b>353</b>
Benefit asset included in other financial assets	14	-
<b>Defined benefit liabilities</b>	<b>176</b>	<b>353</b>
thereof long-term	174	351
thereof short-term	2	2

The defined benefit liabilities as at 31 December 2022 were as follows. The short-term part of the benefit liability is presented as part of note 22 provisions.

(EUR million)	2022	2021
Defined benefit liability long-term	174	351
Defined benefit liability short-term	2	2
<b>Total defined benefit liabilities</b>	<b>176</b>	<b>353</b>

Changes in the present value of the long-term defined benefit obligation ('DBO') over the year were as follows:

(EUR million)	2022	2021
<b>Defined benefit obligation at 1 January</b>	<b>466</b>	<b>514</b>
Current service costs	23	24
Interest costs	6	4
Contributions by plan participants	3	3
Benefits paid	-5	-5
Re-measurements on obligation	-228	-74
<b>Defined benefit obligation at 31 December</b>	<b>265</b>	<b>466</b>

Re-measurements on obligation are mainly due to the change of the discount rate from 1.3% to 3.9%.

Changes in the fair value of plan assets as at 31 December of the year were as follows.

(EUR million)	2022	2021
<b>Fair value of plan assets at 1 January</b>	<b>113</b>	<b>107</b>
Actual return on plan assets	-9	6
Contributions by employer	4	4
Benefits paid	-5	-4
<b>Fair value of plan assets at 31 December</b>	<b>103</b>	<b>113</b>

Major categories of plan assets as a percentage of the fair value of the total plan assets were as follows.

	2022	2021
<b>Quoted in active markets:</b>		
Equity instruments	33%	36%
Debt securities	45%	47%
Other	4%	4%
<b>Unquoted investments:</b>		
Debt securities	0%	0%
Real estate	14%	12%
Cash	3%	0%
Other	1%	1%

Re-measurements, including actuarial gains and losses arising from experience adjustments and changes in actuarial assumptions, recognised in the statement of comprehensive income were as follows:

(EUR million)	2022	2021
<b>Accumulated balance at 1 January</b>	<b>203</b>	<b>282</b>
Re-measurements during the year	-217	-79
<b>Accumulated balance at 31 December</b>	<b>-14</b>	<b>203</b>

Re-measurements of the year originate from; the following items:

(EUR million)	2022	2021
Re-measurements from actuarial gains(-)/losses in DBO	-228	-74
Exceeding return on plan assets (over net interest incl. in net liability)	11	-5
<b>Accumulated balance at 31 December</b>	<b>-217</b>	<b>-79</b>
<i>Thereof:</i>		
actuarial gains(-)/losses from experience	1	-
actuarial gains(-)/losses from changes in actuarial assumptions	-229	-74



## Accounting policy

For defined benefit plans, pension costs are determined using the projected unit credit method. Re-measurements, comprising of actuarial gains and losses, the effect of the asset ceiling (excluding net interest) and the return on plan assets (excluding net interest), are recognised in other comprehensive income in the period in which they occur. Re-measurements are not reclassified to the statement of income in subsequent periods.

Service costs comprising current service costs and, if applicable, past-service costs, gains and losses on curtailments and non-routine settlements are recognised as personnel expenses in the consolidated statement of income. Interest is calculated by applying the discount rate to the net defined benefit liability or asset and is recognised as part of the finance result in the statement of income.

Prepaid pension costs relating to defined benefit plans are capitalised only if they lead to refunds to the employer or to reductions in future contributions to the plan by the employer.

## Key estimates and assumptions

Pension obligations and pension entitlements that are known on the reporting date are valued using economic trend assumptions including, among others, salary growth rates and pension increase rates, that are intended to reflect realistic expectations, as well as variables specific to reporting dates such as discount rates. The principal assumptions used in determining the pension obligation were as follows:

	2022	2021
Discount rate	3.90%	1.30%
Inflation rate	2.00%	2.00%
Future salary increases	2.50%	2.50%
Future pension increases	2.30%	1.75%

Assumptions regarding future mortality experience are set based on actuarial advice in accordance with published statistics and actuarial experience. An increase in each of the main assumptions would have had the following effects.

(EUR million)	2022	2021
0.25% change of discount rate	-11	-26
0.5% change of salary increase rate	1	2
0.5% change of pension increase rate	1	2
Change of 1 year in life expectancy	6	17

The sensitivities indicated are computed based on the same methods and assumptions used to determine the present value of the defined benefit obligations and are based on variations in a single variable only. Note that the sensitivity analyses may not be representative of an actual change in the defined benefit obligation, as it is unlikely that changes in assumptions would occur in isolation.

Due to the development of plan assets and the change in (statutory) discount rates, we expect to have no obligation to contribute to plan assets in 2023. We expect the following, undiscounted, benefit payments from the plan.

(EUR million)	2022	2021
Within the next 12 months	7	6
Within 1-5 years	31	28
Within 5-10 years	52	47
More than 10 years	482	452
<b>Total</b>	<b>572</b>	<b>533</b>

### Pension plan the Netherlands

For the majority of our Dutch personnel we have a multi-employer scheme offered by ABP Pension Fund (ABP) in the Netherlands. The pension contribution rate for 2022 was 21.53% of the pensionable salary. In 2023 we expect to contribute EUR 33 million, based on 2022 number of employees, to the ABP scheme. Compared to the total participants in the ABP pension fund, our share in ABP is limited. We are not liable for any deficits in the multi-employer plan.

ABP has indicated that it is unable to provide the kind of company-specific information required by IFRS for defined-benefit pension schemes. Consequently, this scheme is treated as if it were a defined contribution scheme.

Since the financial situation of the ABP pension plan at 31 December 2015 was inadequate from a regulatory perspective, ABP filed a recovery plan, which was approved by De Nederlandsche Bank (DNB) during the course of 2016. In accordance with this recovery plan, ABP evaluates how recovery is progressing at the start of each year. Progress is measured by means of the policy funding ratio at the end of the preceding year. The policy funding ratio is the 12-month moving average of the nominal funding ratio. ABP's policy funding ratio as at 31 December 2022 was 118.6% (2021: 102.8%) which is above the critical regulatory coverage rate level under which pensions would have to be reduced.

#### ① Accounting policy

Payments to defined contribution plans are charged as an expense in the period to which they relate.

### 24 Other financial liabilities

Long-term other financial liabilities relate to shares held by Copenhagen Infrastructures in TOD3 for 67%. The movement of this liability is disclosed below.

(EUR million)	2022	2021
<b>At 1 January</b>	<b>183</b>	<b>203</b>
Profit share current year	22	20
Capital repaid	-20	-40
<b>At 31 December</b>	<b>185</b>	<b>183</b>

Short-term other financial liabilities relates to the collateral securities as disclosed in note 16.

#### ① Accounting policy

Please refer to note 28, accounting policies for financial instruments.

## 25 Account- and other payables

(EUR million)	2022	2021
EEG accounts payable	4,934	4,206
Accounts payable	368	455
Payables in connection with tangible fixed asset purchases	332	423
Grid expenses payable	1,452	1,410
Interest payable	142	105
Social securities and other taxes payable	22	27
Payables to related parties	-	8
Other payables	239	224
<b>Total</b>	<b>7,489</b>	<b>6,858</b>

### EEG accounts payable

Refer to note 15.

### Payables in connection with tangible fixed assets purchases

Payables in connection with tangible fixed assets purchases related to unbilled services and deliveries for onshore and offshore investment projects.

### Interest payable

Interest payable increased due to increased borrowings. These new loans have higher interest rates, which also has impact to the increase of interest payable.

### Grid expenses payable

The grid expenses payable consisted mainly of accrued expenses for (i) feed-in management and (ii) redispatch measures. Grid expenses payable mainly increased due to increased prices for grid expenses due to the war in Ukraine.

### Key estimates and assumptions

Accrued expenses for measures taken to restore the imbalance of the electricity grid, relate to balancing services provided by various electricity generating parties. At year-end, we record an accrual for all balancing costs. The accrual is based on actual volumes or, if not available, forecast volumes derived from models. Several assumptions are made in these models such as weather conditions, requested volumes and capacity power plant. Prices are based on underlying contracts and/or historical data.

### Other payables

Other payables mainly comprised compensation payments to offshore wind farm operators (OWFs), personnel-related liabilities and accruals for which invoices had not yet been received.

### Key estimates and assumptions

Compensation payments to OWFs are based on amounts of electricity which could not be fed into the grid. The pass-through accrual is based on a comparison of the costs incurred and the revenue generated by the offshore grid surcharge.

## 26 Financial risk management

Our business activities are exposed to a number of financial risks such as interest rate risk, credit risk, liquidity risk and refinancing risk, which are described in detail in this note. Our financial risk management strategy primarily focuses on protecting liquidity, equity capital and net result in order to safeguard our ability to continue active operations while providing an adequate return to our shareholders. Our approach to managing financial risks, including a number of specific disclosures (such as a maturity analysis of contractual undiscounted financial obligations) required by accounting standards, are set out in this note. For details about regulatory risks we refer to the 'Corporate Governance' section of our Executive Board report.

Risk management related to financing activities is done by our Treasury department under policies included in the Treasury Statute approved by our Executive Board. The Treasury department's objective is to facilitate the realisation of our financial and strategic objectives from a funding and financial risk perspective. The Treasury Statute includes principles covering specific areas such as interest rate risk, liquidity risk, the use of derivatives and the investment of excess liquidity. The use of all ordinary course financial instruments is permitted, provided these are used solely to cover open positions of the Company. Any speculative use of financial instruments is explicitly not authorised.

### Interest rate risk

TenneT is exposed to interest rate risk on its debt portfolio. To limit this risk, our policy is to base the majority of our loan portfolio on fixed interest rates. As of 31 December 2022, the long-term loan portfolio was for more than 98% based on fixed interest rates. An increase or decrease in interest rates of 2 percentage points would result in an increase or decrease of EUR 6 million in our interest cost (2021: EUR 15 million).

Furthermore, there is a risk that interest payable on borrowings exceeds the interest compensation received by TenneT under the prevailing regulatory systems in the Netherlands and Germany, respectively. In 2022, a new regulatory period started in the Netherlands. In Germany, actual interest costs are compensated up to a level customary to the market. The BNetzA determines marketability on the basis of reference interest rates published by the Deutsche Bundesbank. Currently we expect that actual costs of debt for TenneT are below the predefined maximum reference rates, in which case ACM has decided to ex post settle the interest rate for interest rates actually measured in the applicable year of the regulatory period.

### Credit risk

TenneT is exposed to the risk of loss resulting from counterparties' defaulting on their commitments including failure to pay or make a delivery on a contract. Our exposure to credit risk from operating activities and treasury activities is inherent to our business activities.

### Operational credit risk

In respect of our operating activities, TenneT has a credit policy in place, which takes into account the risk profiles of our counterparties. We also have policies in place to monitor the financial viability of counterparties.

In both the Netherlands and Germany, TenneT is responsible for maintaining the balance between supply and demand of energy. The associated costs are covered by income from parties with balance responsibility, which are charged for any imbalances attributable to them. Any surplus is deducted from subsequent tariffs for system services. For certain situations, securities in the form of bank guarantees and collaterals are held as protection against the default risk of parties with balance responsibility. With respect to investment projects, we require counterparties to deliver bank guarantees or collaterals as a protection against defaults.

The management of energy exchanges, the execution of the Renewable Energy Act in Germany and the maintenance of the energy balance between supply and demand requires transfer of significant cash amounts. Our policies are aimed at minimising the risks associated with the clearing transactions in connection with these cash flows.

Credit risk on trade and other receivables is limited, because most of our trade and other debtors have a low risk of default. Consequently, TenneT requires no material collateral as security and no insurance for credit risk. The maximum exposure to credit risk at the reporting date is the carrying value of each class of financial assets disclosed in note 13 and 15. The movement of the allowance for expected credit losses of trade receivables is included in note 15.

The provision rates for expected credit losses are based on groupings of various customer segments with similar loss patterns (such as customer type and arrears in payments). Any expected credit losses for financial guarantee contracts and commitment letters (if any) are also provided for. The calculation reflects the probability-weighted outcome, the time value of money and reasonable and supportable information that is available at the reporting date about past events, current conditions and forecasts of future economic conditions. Generally, trade receivables and other financial assets are written-off if there is no reasonable expectation of recovering the contractual cash flows. The Group considers a financial asset in default when contractual payments are 90 days past due. However, in certain cases, TenneT may also consider a financial asset to be in default when internal or external information indicates that the Group is unlikely to receive the outstanding contractual amounts in full before taking into account any credit enhancements held by the Group.

#### **Financial credit risk**

In 2022, financial credit risk arose mainly from TenneT's transactions and positions with several financial institutions. As at 31 December 2022, the maximum credit risk amounted to nil (2021: nil).

In accordance with our treasury policies, counterparty credit exposure is monitored frequently against the counterparty credit limits. We have concentration limits in place when funds are placed on deposit or when financial derivatives are entered into. At 31 December 2022 we had EUR 301 million at our free disposal for these deposits. These deposits had a maturity of less than 3 months (2021: nil), see note 15.

At 31 December 2022 we had EUR 3,300 million deposits with third parties for EEG cash amounts (2021: EUR 2,622 million) and no financial derivatives outstanding. As of 31 December 2022 these deposits had a maturity of more than 3 months (2021: EUR 472 million), please refer to note 15 and note 16.

Management does not expect any significant losses from non-performance by treasury counterparties.

#### **Liquidity risk**

Liquidity risk is defined as the risk that the Group cannot meet its short-term financial obligations. Liquidity is monitored every quarter on a rolling 12-month forward-looking basis. Our 12-month liquidity objective was met on 31 December 2022 and 31 December 2021.

The following maturity schedule presents our financial obligations on a contractual, non-discounted basis.

(EUR million)	Notes	<1 month	1 to 3 months	3 to 12 months	1 to 5 years	More than 5 years	Total
<b>At 31 December 2022</b>							
Lease liabilities	9	13	22	115	427	162	739
Borrowings	20	5	527	543	5,566	17,213	23,854
<b>Total</b>		<b>18</b>	<b>549</b>	<b>658</b>	<b>5,993</b>	<b>17,375</b>	<b>24,593</b>
<b>At 31 December 2021</b>							
Lease liabilities	9	12	21	100	251	69	453
Borrowings	20	704	548	268	2,701	11,408	15,629
<b>Total</b>		<b>716</b>	<b>569</b>	<b>368</b>	<b>2,952</b>	<b>11,477</b>	<b>16,082</b>

(EUR million)	Notes	< 12 months	1 to 5 years	More than 5 years	Total
<b>At 31 December 2022</b>					
Account- and other payables	25	7,353	-	-	7,353
Other financial liabilities	20	550	-	185	735
<b>Total</b>		<b>7,903</b>	<b>-</b>	<b>185</b>	<b>8,088</b>
<b>At 31 December 2021</b>					
Account- and other payables	25	6,750	4	-	6,754
Other financial liabilities	20	95	-	183	278
<b>Total</b>		<b>6,845</b>	<b>4</b>	<b>183</b>	<b>7,032</b>

TenneT's borrowings have a diversified maturity profile, which reduces refinancing risks (see also note 20).

In order to reduce liquidity risk, TenneT has EUR 3.6 billion committed revolving credit facilities (RCFs) at its disposal for general corporate purposes. At 31 December 2022, this facility was undrawn. Furthermore, we had EUR 700 million of undrawn long-term loan commitments from the EIB available at 31 December 2022, and EUR 1.75 billion committed bilateral RCFs (nil drawn at 31 December 2022). Next to that we had EUR 650 million of uncommitted bank facilities (nil million drawn at 31 December 2022).

The EEG has a significant impact on TenneT's working capital position and to prevent negative EEG bank account balances and additional short-term bridge financing, a liquidity buffer can be included in the EEG. In accordance with legislation (EnFG), shortfalls are reimbursed through government contributions at the latest in the following year.

The size of our credit facilities is such that we expect that all substantial adverse financial developments and events can reasonably be expected to be accommodated and that continuation of day-to-day operations is ensured for at least 12 months. The terms and conditions of our credit facilities include negative pledge and pari passu clauses. No security interest over any of the Group's assets has been provided. All credit facilities have floating-rate interest conditions.

TenneT also has access to diversified funding sources through its medium-term note (EMTN) programme and our commercial paper (CP) programme. Both programmes significantly reduce our dependency on bank financing.

TenneT expects to meet its financial obligations for 2023 with (i) cash and cash equivalents, (ii) funds from operations, (iii) unused credit facilities, (iv) capital market transactions and (v) equity contributions from our shareholder. We expect to meet our financial obligations for the subsequent years through various capital market transactions and equity contributions and intend to manage future refinancing risks by spreading the tenors of new financing arrangements.

### Equity risk

There is a risk of a lack of access to equity on a sustainable basis. This risk reflects the inability to raise additional equity in a timely fashion in case of unexpectedly large increases in our investment portfolio or negative regulatory developments. Actions taken in order to mitigate this risk are: (i) an active financing strategy to create and maintain an optimal capital structure as well as to diversify funding sources and manage financial risks, (ii) a proactive approach of potential investors and active discussion with our shareholder to contribute additional equity (which effected in EUR 5.11 billion for the period 2022-2025, see note 18) and (iii) lobbying activities to ensure that regulatory frameworks remain adequate to safeguard regulators income and returns to investors.

### Commodity price risk

Energy purchase contracts for the forward purchase of electricity that are used to satisfy physical delivery requirements to customers, or for energy that the Group uses itself, meet the expected purchase or usage requirements of IFRS 9. They are, therefore, not recognised in the financial statements until they are realised. Disclosure of commitments under such contracts is made in note 28.

Energy purchase contracts are considered to comprise two components, being a forward purchase of power at spot prices, and a forward purchase of environmental certificates at a variable price (being the contract price less the spot power price). With respect to our current contracts, neither of these components meets the requirement to be accounted for as a derivative. As currently no liquid market for environmental certificates exists, this component meets the expected purchase or usage exemption of IFRS 9. We expect to enter into an increasing number of these contracts, in order to meet our compliance requirements in the short to medium term. It is possible that in future, if and when liquid markets develop, and to the extent that we are in receipt of environmental certificates in excess of our required levels, this exemption may cease to apply, and we may be required to account for forward purchase commitments for environmental certificates as derivatives at fair value through profit and loss.

### 27 Fair values

The table below provides an overview of the carrying value and fair value of financial instruments, including IFRS treatment and the level in the valuation hierarchy. Instruments are measured at fair value.

(EUR million)	Notes	Carrying amount		Fair value		Hierarchy		
		2022	2021	2022	2021			
<b>Financial assets</b>								
<i>Other financial assets:</i>								
- Minority participating interests	13	15	14	15	14	Level 3		
<b>Total</b>		<b>15</b>	<b>14</b>	<b>15</b>	<b>14</b>			
<b>Financial liabilities</b>								
<i>Borrowings:</i>								
- Borrowings – bonds	20	17,074	10,776	14,615	11,221	Level 1		
- Borrowings – other	20	2,641	2,929	2,221	3,029	Level 2		
<b>Total</b>		<b>19,715</b>	<b>13,705</b>	<b>16,836</b>	<b>14,250</b>			

As at 31 December 2022, no instruments carried at fair value were held (2021: nil). Furthermore, we concluded that the fair value of the loans and receivables, cash and cash equivalents, account- and other payables and other financial liabilities approximate their carrying amounts at year end 2022, due to the short-term maturities of these instruments.

The following hierarchy by valuation technique was used to calculate the fair value of assets and liabilities:

- Level 1: Measurement based on quoted prices (unadjusted) in active markets for identical assets or liabilities.
- Level 2: Measurement based on inputs other than quoted prices included in Level 1 that are observable for the asset or liability, either directly (that is, as prices) or indirectly (that is, derived from prices).
- Level 3: Measurement based on inputs for the asset or liability that are not based on observable market data (that is, unobservable inputs).

The fair value of the level 2 borrowings was based on discounted cash flows. A change in the assumptions used to calculate the fair value should not result in a significantly different outcome. There were no transfers between the fair value hierarchy levels during 2022 or 2021.

## 28 ① Accounting policies for financial instruments

### Financial assets

All financial assets are recognised initially at fair value, net of directly attributable transaction cost.

After initial recognition financial assets are measured at amortised cost, fair value through other comprehensive income (OCI) and fair value through profit or loss. All of TenneT's financial assets are classified as amortised cost, because the following two conditions are met:

- The financial assets are held within a business model with the objective to hold financial assets in order to collect contractual cash flows, and
- The contractual terms of the financial asset give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding.

Financial assets at amortised cost are subsequently measured using the effective interest (EIR) method and are subject to impairment.

The Group recognises an allowance for expected credit losses (ECLs) for financial assets. ECLs are based on the difference between the contractual cash flows due in accordance with the contract and the cash flows that the Group expects to receive, discounted at an approximation of the original effective interest rate. For trade receivables and contract assets, the Group applies a simplified approach in calculating ECLs. Therefore, the Group does not track changes in credit risk, but instead recognises a loss allowance based on lifetime ECLs at each reporting date.

### Financial liabilities

All financial liabilities are recognised initially at fair value and, in case of loans, borrowings and payables, net of directly attributable transaction costs. The Group's financial liabilities include trade and other payables, loans and borrowings including bank overdrafts.

After initial recognition at fair value, interest-bearing loans and borrowings are subsequently measured at amortised cost using the EIR method. Gains and losses are recognised in the statement of income when the liabilities are derecognised as well as through the EIR amortisation process. Amortised cost is calculated by taking into account any discount or premium on acquisition and fees or costs that are an integral part of the EIR. The EIR amortisation is included as finance expense in the statement of income.

## 29 Contingencies and commitments

Off-balance sheet rights and related obligations consist of the following categories:

(EUR million)	2022	2021
<b>Investment related off-balance items</b>		
<i>Off-balance sheet rights</i>		
Bank guarantees received and other items	1,907	1,440
Comfort letters received	1,620	1,314
<b>Total</b>	<b>3,527</b>	<b>2,754</b>
<i>Off-balance commitments</i>		
Capital commitments	9,923	7,468
Comfort letters issued	797	783
<b>Total</b>	<b>10,720</b>	<b>8,251</b>
<b>Other off-balance items</b>		
<i>Other off-balance obligations</i>		
Grid-related commitments	914	640
Other off-balance sheet commitments	74	55
<b>Total</b>	<b>988</b>	<b>695</b>

The expected cash flows in respect of capital commitments equal the amounts in the above table. For comfort letters issued, no cash flows are expected.

### Bank guarantees received and other items

The majority is related to bank guarantees received included guarantees for investment projects. Furthermore, on 2 September 2022 a short circuit occurred on the newly built substation Dronten and led to a chain of events that caused damage to various parties. For the estimated costs we have recognised a current provision. The damages have been reported to the insurance companies and are estimated to be covered.

### Comfort letters received

The majority of comfort letters received was from parties involved in the construction of German onshore and offshore projects.

### Capital commitments

Capital commitments are commitments entered into with regard to the purchase of tangible fixed assets. Approximately EUR 4.4 billion of capital commitments were payable within 12 months, as at 31 December 2022 (2021: EUR 4.0 billion).

### Comfort letters issued

The comfort letters issued mainly related to offshore projects in Germany.

### Grid related commitments

Grid-related commitments included unused auction receipts, received in the Netherlands amounting to EUR 86 million (2021: EUR 136 million).

## Other

Other off-balance sheet commitments mainly consisted of:

- Compensation claimed by several parties for the delay or non-availability of the offshore grid connection. The related legal proceedings are still pending. If and to the extent the claims are (partly) justified and the payments resulting therefrom could not be passed through to the end customers, the binding rulings may have a negative impact on the financial position;
- Capital commitments to minority participating interests;
- TenneT TSO B.V. is currently involved in a claim procedure because of alleged wrongful termination of construction contracts and in a counter claim procedure against this counter party regarding financial settlement & damages due to the alleged non-fulfilment of the construction contracts.

For these items, it is not practically possible to determine the financial effect and possible timing of cash outflows and cash inflows.

Various other off-balance sheet commitments and contingencies as well as other off-balance sheet rights existed as of 31 December 2022 but were immaterial from a disclosure perspective. The majority of these claims related to (i) construction contracts and planning damage where additional payments would be capitalised, or (ii) claims relating to compensation for delays and interruptions where any compensation would be pass-through for TenneT or (iii) claims relating to refunds of transmission services, which would be compensated in future tariffs. In the unlikely event that these claims would prevail in court, this could have a material impact on the Company's financial situation.

## Electricity Revenue Cap Act

The Electricity Revenue Cap Act ('Strompreisbremsegesetz, StromPBG') was passed by the German legislator on 20 December 2022 and went into force on 24 December in the same year. It aims to protect domestic end-consumers in 2023 from strongly increased electricity prices resulting from the turmoil on the energy markets in Europe following the Ukraine war. Energy suppliers will process the price caps in their individual invoices with end-consumers. The aggregated financial impact of this will be paid out starting in the first quarter of 2023 by the TSOs to the energy suppliers on the basis of aggregated volume data. The TSOs are compensated for these payments by direct transfers from the government and by funds received from electricity generators. To enable the process, detailed rules for the calculation of excess revenues from generators as well as for the settlement and pay out to end-consumers are determined in the law. Furthermore, the German regulator BNetzA has an oversight role in the process. Payments from TSOs to end-consumers via the energy suppliers started in February 2023 with retroactive effect as per January. First governmental transfer payments to bridge finance occurred in February 2023. The first inflow of excess revenues from generators is expected for mid of August 2023. TSOs do not expect any liquidity or profitability risks from the regime which they perform as trustees of society and on a pass-through basis.

As per 31 December 2022 no reliable estimate could be made of the to be received overprofit of December 2022 and as such the receivable and corresponding liability are both not recognised in the financial statements. There is no impact on the results and equity per 31 December 2022.

## Environmental obligations

The Group is exposed to risks regarding environmental obligations arising from past activities. For example, a number of sites have to be decontaminated and restored to their original condition before being handed back at the end of the contractual period. Under current legislation, environmental plans and any other measures to be adopted have to be agreed with local, regional and national authorities as appropriate. As soon as such plans are approved or other legal obligations arise, a provision is formed based on the most reliable estimate possible of future expenses. TenneT is of the opinion that the currently recognised provisions are adequate, based on information currently available.

## 30 Related parties

Note 31 provides an overview of legal entities included in the consolidated financial statements.

TenneT has entered into transactions with the following related parties:

- The shareholder, State of the Netherlands: TenneT Holding B.V. is controlled by the Dutch State, which owns 100% of the Company's ordinary shares (refer to note 18);
- Joint ventures NOKA, OTC, BritNed and VertiCer (refer to note 12);
- Associate HGRT (refer to note 12);
- Members of the Executive Board and Supervisory Board of TenneT Holding B.V. (refer to note 4).

## 31 Consolidated subsidiaries

The following legal entities were included in the consolidation of TenneT Holding B.V.:

Subsidiary	Legal seat	Country	Voting interest		Economic interest		
			2022	2021	2022	2021	
<b>Direct subsidiaries</b>							
ETPA Holding B.V.	Amsterdam	Netherlands	0%	50%	0%	50%	****
NLink International B.V.	Arnhem	Netherlands	100%	100%	100%	100%	*
NOVEC B.V.	The Hague	Netherlands	100%	100%	100%	100%	
Relined B.V.	Utrecht	Netherlands	100%	100%	100%	100%	
TenneT Duitsland Coöperatief U.A.	Arnhem	Netherlands	100%	100%	100%	100%	*
TenneT Green B.V.	Arnhem	Netherlands	100%	100%	100%	100%	*
TenneT Orange B.V.	Arnhem	Netherlands	100%	100%	100%	100%	
TenneT TSO B.V.	Arnhem	Netherlands	100%	100%	100%	100%	
TenneT TSO Duitsland B.V.	Arnhem	Netherlands	100%	100%	100%	100%	*
<b>Indirect subsidiaries</b>							
B.V. Transportnet Zuid-Holland	Voorburg	Netherlands	100%	100%	100%	100%	*
CertiQ B.V.	Arnhem	Netherlands	0%	100%	0%	100%	*****
Duvekot Rentmeesters B.V.	Bathmen	Netherlands	100%	100%	100%	100%	
ETPA B.V.	Amsterdam	Netherlands	0%	50%	0%	50%	
Nadine Netwerk B.V.	Arnhem	Netherlands	100%	100%	100%	100%	*
Omroepmasten B.V.	Vianen	Netherlands	100%	100%	100%	100%	
Saranne B.V.	Arnhem	Netherlands	100%	100%	100%	100%	*
Stichting Beheer Doelgelden Landelijk Hoogspanningsnet	Arnhem	Netherlands	N/A	N/A	N/A	N/A	
TransTenneT B.V.	Arnhem	Netherlands	100%	100%	100%	100%	*
DC Netz DolWin4 GmbH	Bayreuth	Germany	100%	100%	100%	100%	
DC Netz HelWin1 GmbH	Bayreuth	Germany	100%	100%	100%	100%	
DC Netz SylWin2 GmbH	Bayreuth	Germany	100%	100%	100%	100%	
Globalways GmbH	Stuttgart	Germany	100%	100%	100%	100%	
NOVEC GmbH	Emsbüren	Germany	100%	100%	100%	100%	
Relined GmbH	Emsbüren	Germany	100%	100%	100%	100%	
Greennet Stiftung	Bayreuth	Germany	N/A	N/A	N/A	N/A	
TenneT GmbH & Co. KG	Bayreuth	Germany	100%	100%	100%	100%	**
TenneT Offshore 1. Beteiligungsgesellschaft mbH	Bayreuth	Germany	51%	51%	31%	31%	
TenneT Offshore 2. Beteiligungsgesellschaft mbH	Bayreuth	Germany	51%	51%	31%	31%	
TenneT Offshore 8. Beteiligungsgesellschaft mbH	Bayreuth	Germany	51%	51%	37%	37%	

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Subsidiary	Legal seat	Country	Voting interest		Economic interest		
			2022	2021	2022	2021	
TenneT Offshore 9. Beteiligungsgesellschaft mbH	Bayreuth	Germany	51%	51%	37%	37%	
TenneT Offshore Dolwin3 Beteiligungs GmbH & Co. KG	Bayreuth	Germany	51%	51%	30%	30%	**
TenneT Offshore Dolwin3 GmbH & Co. KG	Bayreuth	Germany	51%	51%	30%	30%	
TenneT Offshore Dolwin3 Verwaltungs GmbH	Bayreuth	Germany	51%	51%	33%	33%	
TenneT Offshore GmbH	Bayreuth	Germany	100%	100%	100%	100%	
TenneT TSO GmbH	Bayreuth	Germany	100%	100%	100%	100%	
TenneT Verwaltungs GmbH	Bayreuth	Germany	100%	100%	100%	100%	
WL Winet GmbH (in liquidation)	Emsbüren	Germany	0%	100%	0%	100%	***

\* For these companies TenneT has issued a declaration of liability as referred to in Part 9 of Book 2 of the Dutch Civil Code, article 403.

\*\* This company, which has been consolidated in these financial statements, has opted for the exemption of Section 264b of the German Commercial Code.

\*\*\* WL Winet GmbH exists since 2016 but never showed a positive result. Although sales were increasing, management didn't expect an improvement of the result due to the lack of finding qualified personnel. Therefore, it was decided to liquidate WL Winet GmbH. The liquidation commenced on 1 March 2019. Effective 18 March 2022, WL Winet GmbH has been liquidated.

\*\*\*\* On 27 June 2022 the Group sold all its shares of ETPA Holding B.V. with a limited result.

\*\*\*\*\* Per 31 December 2022 CertiQ B.V. merged with Vertogas B.V. into VertiCer B.V. which is a joint venture per the same date, reference is made to note 11.

As TenneT is able to exercise direct control over its management and financial and operational policies, Stichting Beheer Doelgelden Landelijk Hoogspanningsnet, a foundation which temporarily manages funds arising from the maintenance of the energy balance and auctioning of cross-border capacity by TenneT TSO B.V., is included in the consolidation.

As TenneT is able to exercise direct control over its management and financial and operational policies, Greennet Stiftung, the foundation that compensate negative impact due to construction work of TenneT in our German grid is included in the consolidation.

### 32 Events after the reporting period

On 10 February 2023, TenneT announced that it intends to engage in discussions with the German government, to explore the possibility of a full sale of TenneT's German activities on acceptable terms. On 24 February 2023 the Dutch government decided to further investigate a full sale as the preferred option. TenneT acknowledges that its sole shareholder the Dutch government has not yet taken any final decision, and TenneT will take the next steps in close collaboration with the government.

# Company financial statements

## Company statement of financial position

For the year ended 31 December (EUR million)

Assets	Notes	2022	2021
<b>Non-current assets</b>			
Investments in subsidiaries	37	8,491	8,216
Investments in joint ventures and associates	38	31	31
Other financial assets	39	17,412	12,861
<b>Total non-current assets</b>		<b>25,934</b>	<b>21,108</b>
<b>Current assets</b>			
Other financial assets	39	323	274
Account- and other receivables	40	1	12
Cash and cash equivalents		1,275	-
<b>Total current assets</b>		<b>1,599</b>	<b>286</b>
<b>Total assets</b>		<b>27,533</b>	<b>21,394</b>

Equity and liabilities	Notes	2022	2021
<b>Equity</b>			
Paid up and called-up capital		100	100
Share premium		3,020	1,790
Legal reserves		181	161
Retained earnings		2,799	3,193
Unappropriated result		-967	-401
<b>Equity attributable to ordinary shares</b>		<b>5,133</b>	<b>4,843</b>
Hybrid securities		2,125	2,125
<b>Equity attributable to owners of the company</b>	41	<b>7,258</b>	<b>6,968</b>
<b>Non-current liabilities</b>			
Borrowings	42	19,006	12,366
Deferred tax liability		7	8
<b>Total non-current liabilities</b>		<b>19,013</b>	<b>12,374</b>
<b>Current liabilities</b>			
Borrowings	42	709	1,339
Bank overdraft		-	64
Account- and other payables	43	553	649
<b>Total current liabilities</b>		<b>1,262</b>	<b>2,052</b>
<b>Total equity and liabilities</b>		<b>27,533</b>	<b>21,394</b>

## Company statement of income

For the year ended 31 December (EUR million)

	Notes	2022	2021
<b>Revenue</b>		-	<b>1</b>
Other operating expenses		-10	-8
Other gains/(losses)		-	-
<b>Total operating expenses</b>		<b>-10</b>	<b>-8</b>
Share in profit of joint ventures and associates		5	14
<b>Operating result</b>		<b>-5</b>	<b>7</b>
Finance income	34	281	194
Finance expenses	35	-259	-186
<b>Finance result</b>		<b>22</b>	<b>8</b>
<b>Result before income tax</b>		<b>17</b>	<b>15</b>
Income tax expense		-12	-14
Result from subsidiaries	37	-915	-345
<b>Result for the year</b>		<b>-910</b>	<b>-344</b>

# Notes to the company financial statements

These notes contain information about the company financial statements of TenneT Holding B.V. Details related to TenneT Holding B.V.'s financial results and position are provided, as well as a description of the specific accounting policies applied when compiling these company financial statements.

## 33 Company accounting policies

The company financial statements for TenneT Holding B.V. have been prepared in accordance with the provisions of Part 9 of Book 2 of the Dutch Civil Code. The same principles governing valuation and the determination of results (including the principles governing the classification of financial instruments as equity or liability) have been applied when compiling the company financial statements and the consolidated financial statements, as permitted by Article 2:362, clause 8 of the Dutch Civil Code.

Expected credit loss (ECL) provisions for receivables from subsidiaries have been eliminated as intercompany positions. Changes in these ECL provisions may impact the carrying amounts of the financial assets in the company statement of the financial position due to a possible provision. This may result in a difference between the company's equity and the consolidated equity. No ECL provision was deemed necessary.

## 34 Finance income

Finance income was mainly related to the interest received on intercompany loans and other in-house financing activities (see note 39). The intercompany agreements have terms equivalent to those that prevail in arm's length transactions.

## 35 Finance expenses

Finance expenses mainly related to interest on borrowings and credit facilities (2022: EUR 245 million; 2021: EUR 175 million). This increase is related to increased interest rates and increased borrowings.

## 36 Personnel expenses

TenneT Holding B.V. did not employ any personnel during 2022 or 2021, and as a result did not incur any personnel expenses in those periods. Members of the Executive Board and Supervisory Board of the Company received their remuneration, as disclosed in note 4 of the consolidated financial statements, from other entities within the Group.

## 37 Investments in subsidiaries

Changes in investments in subsidiaries can be broken down as follows:

(EUR million)	2022	2021
<b>At 1 January</b>	<b>8,216</b>	<b>8,651</b>
Share in result	-915	-345
Deconsolidation	1	-
Capital contribution	1,230	-
Capital repayment	-144	-36
Dividends received	-50	-110
Re-measurement of defined benefit pension	153	56
<b>At 31 December</b>	<b>8,491</b>	<b>8,216</b>

Investments in subsidiaries relate to the legal entities included in the consolidation as disclosed in note 31 of the consolidated financial statements.

## Accounting policies

Investments in subsidiaries are measured at net asset value. The net asset value of a participating interest is determined by valuing assets, provisions and liabilities and calculating the result using the accounting principles applied to the consolidated financial statements.

When TenneT's share of losses in an investment equals or exceeds its interest on investment (including separately presented goodwill or any other unsecured non-current receivables, as part of the net investment) it does not recognise any further losses, unless it has incurred legal or constructive obligations or made payments on behalf of this investment. In such case, TenneT will recognise a provision.

## 38 Investments in joint ventures and associates

Investments in joint ventures and associates related to HGRT. In 2022, TenneT's share in HGRT's result amounted to EUR 4 million (2021: EUR 4 million) and EUR 4 million (2021: EUR 3 million) dividends were received. Further reference is made to note 12 of the consolidated financial statements.

## 39 Other financial assets

(EUR million)	2022	2021
Receivables from subsidiaries	17,394	12,843
Minority participating interests	15	14
Other financial assets	3	4
<b>Total</b>	<b>17,412</b>	<b>12,861</b>

In relation to the minority participating interests reference is made to note 13 of the consolidated financial statements.

Receivables from subsidiaries mainly related to intercompany loans and cash management activities of TenneT Holding B.V. The agreed interest rate for the intercompany loans is our cost of fund rate +0.125%. These receivables were unsecured. The movement schedule is as follows:

(EUR million)	2022	2021
<b>At 1 January</b>	<b>12,861</b>	<b>9,828</b>
Additions	5,482	3,190
Capital contribution to minority participating interests	3	-
Rampayments	-834	-57
Transfer to current	-100	-108
Fair value adjustment equity investments	-	8
<b>At 31 December</b>	<b>17,412</b>	<b>12,861</b>

TenneT Holding B.V. had EUR 325 million (2021: EUR 271 million) of current other financial assets which were related to receivables from subsidiaries. Certain subsidiaries have guaranteed the payment to, certain creditors of TenneT Holding B.V. up to an aggregate amount of EUR 400 million (2021: EUR 400 million).

## 40 Account- and other receivables

Account- and other receivables mainly related to corporate income tax receivable.

## 41 Equity

(EUR million)	Reserve Participating interests	Reserve for internally generated assets	Revaluation reserve	Total legal reserve
<b>At 1 January 2021</b>	<b>94</b>	<b>55</b>	<b>22</b>	<b>171</b>
Result NOKA and HGRT	15	-	-	15
Dividend NOKA and HGRT	-45	-	-	-45
Internally generated intangible assets	-	52	-	52
Amortisation on internally generated intangible assets	-	-19	-	-19
Depreciation revaluation tangible fixed assets	-	-	-11	-11
<b>At 31 December 2021</b>	<b>64</b>	<b>88</b>	<b>11</b>	<b>163</b>
Result NOKA, HGRT, VertiCer and associates	30	-	-	30
Dividend NOKA and HGRT	-25	-	-	-25
Internally generated intangible assets	-	46	-	46
Amortisation on internally generated intangible assets	-	-23	-	-23
Depreciation revaluation tangible fixed assets	-	-	-10	-10
<b>At 31 December 2022</b>	<b>69</b>	<b>111</b>	<b>1</b>	<b>181</b>

The statement of changes in equity and disclosures to that statement are included in the consolidated financial statements. For details on the hybrid securities see note 18.

The revaluation reserve covers the IFRS 1 revaluation of tangible fixed assets in 2004. The reserve for participating interests relates to HGRT, NOKA, Verticer and associates, for which TenneT does not control payment of dividends. The reserve for internally generated assets relates to software created by internal employees. In the consolidated financial statements, the revaluation reserve, the reserve for internally generated assets and the reserve for participating interests were included in retained earnings.

The legal reserves are not freely distributable.

### Appropriation of result for the year ended 31 December 2022

The Integrated Annual Report 2021 was approved in the General Meeting held on 11 March 2022. The General Meeting determined the appropriation of result in accordance with the proposal being made to that end.

The appropriation of the 2022 result is at the free disposal of the General Meeting of Shareholders and has not been recorded in the financial statements.

## 42 Borrowings

Details on borrowings are included in the consolidated financial statements, see note 20.

## 43 Account- and other payables

(EUR million)	2022	2021
Payables to subsidiaries	406	544
Interest payable	142	105
Other payables	5	-
<b>Total</b>	<b>553</b>	<b>649</b>



## 44 Events after the reporting period

See note 32 of the consolidated financial statements.

Arnhem, 8 March 2023

### Executive Board TenneT Holding B.V.

M.J.J. van Beek (Chair)

T.C. Meyerjürgens

M.C. Abbenhuis

A.C.H. Freitag

### Supervisory Board TenneT Holding B.V.

A.F. van der Touw (Chair)

A.C.C. van Els

L.J. Griffith

E. Kairisto

E.M. Schöne

TenneT Holding B.V.

Utrechtseweg 310

6812 AR Arnhem

The Netherlands

Postbus 718

6800 AS Arnhem

The Netherlands

Chamber of Commerce register 09083317

# Other information

## Profit appropriation

Profit appropriation is governed by Section 38.3 of the Articles of Association, which states the following "To the extent that the profit is not used to make up prior losses in accordance with the provision of paragraph 2, it shall be at the free disposal of the general meeting. In the calculation of the profit amount to be distributed on every share, only the amount of the compulsory payments on the nominal amount of the shares shall be taken into consideration. In the event of a tied vote on a proposal to distribute or reserve profits, the profits to which the proposal relates shall be reserved".

# Independent auditor's report

To: the Shareholder and the Supervisory Board of TenneT Holding B.V. ("TenneT" or the "Company")

## Report on the audit of the financial statements 2022 included in the integrated annual report

### Our opinion

We have audited the financial statements 2022 of TenneT, based in Arnhem, the Netherlands (the "Financial Statements"). The Financial Statements comprise the consolidated financial statements and the company financial statements.

In our opinion:

- the accompanying consolidated financial statements give a true and fair view of the financial position of TenneT as at 31 December 2022, and of its result and its cash flows for 2022 in accordance with International Financial Reporting Standards as adopted by the European Union ("IFRS") and with Part 9 of Book 2 of the Dutch Civil Code; and
- the accompanying company financial statements give a true and fair view of the financial position of TenneT as at 31 December 2022, and of its result for 2022 in accordance with Part 9 of Book 2 of the Dutch Civil Code.

The consolidated financial statements comprise:

1. the consolidated statement of financial position as at 31 December 2022;
2. the following statements for 2022: the consolidated statement of income, the consolidated statements of comprehensive income, changes in equity and cash flows; and
3. the notes comprising a summary of the accounting policies and other explanatory information.

The company financial statements comprise:

1. the company statement of financial position as at 31 December 2022;
2. the company statement of income for 2022;
3. the notes comprising 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. Our responsibilities under those standards are further described in the 'Our responsibilities for the audit of the Financial Statements' section of our report.

We are independent of TenneT in accordance with the EU Regulation on specific requirements regarding statutory audit of public-interest entities, the 'Wet toezicht accountantsorganisaties' (Audit firms supervision act), the 'Verordening inzake de onafhankelijkheid van accountants bij assurance-opdrachten' (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' (Dutch Code of Ethics).

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

### Information in support of our opinion

We designed our audit procedures in the context of our audit of the Financial Statements as a whole and in forming our opinion thereon. The following information in support of our opinion was addressed in this context, and we do not provide a separate opinion or conclusion on these matters.

### Materiality

Based on our professional judgement we determined the materiality for the Financial Statements as a whole at EUR 60 million (2021: EUR 55 million). The materiality is based on 7% of the average underlying operating profit for the years 2022, 2021 and 2020. We have also taken into account misstatements and/or possible misstatements that in our opinion are material for the users of the Financial Statements for qualitative reasons.

Component audits are performed using the materiality levels determined by the judgement of the group engagement team, considering materiality for the consolidated financial statements as a whole and the reporting structure of the group. For the largest reporting entities, the audits are performed using the following component materiality levels:

- TenneT TSO GmbH & Co. KG ("**TSO DE**"): of EUR 40.8 million (2021: EUR 37 million);
- TenneT TSO B.V. ("**TSO NL**"): EUR 26.4 million (2021: EUR 24 million); and
- TenneT Holding B.V.: EUR 24 million (2021: EUR 22 million).

For the other reporting entities, the component materiality levels did not exceed EUR 12 million (2021: EUR 11 million).

We agreed with the Supervisory Board that misstatements in excess of EUR 3 million (2021: EUR 2.75 million), which are identified during the audit, would be reported to them, as well as smaller misstatements that in our view must be reported on qualitative grounds.

### Scope of the group audit

TenneT is at the head of a group of entities. The financial information of this group is included in the consolidated financial statements of TenneT.

Because we are ultimately responsible for the opinion, we are 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 reporting entities. Decisive were the size and/or the risk profile of the reporting entities or operations. On this basis, we selected reporting entities for which an audit had to be carried out on the complete set of financial information or specific items.

In establishing the overall group audit strategy and plan, we determined the type of work that needed to be performed at the components by the group engagement team and the component auditors.

Where the work was performed by component auditors, we determined the level of involvement we needed to have in the audit work at those components to be able to conclude whether sufficient appropriate audit evidence was obtained as a basis for our opinion on the Financial Statements as a whole. For each component we determined whether we required an audit of their complete financial information or whether other procedures would be sufficient.

Our group audit mainly focused on the significant group entities TenneT Holding B.V., TSO DE and TSO NL, because combined they make up more than 90% of the group's revenue, underlying operating profit and assets. We included additional reporting entities in the scope of our group audit to have additional audit coverage on the group's consolidated financial statements, and performed other procedures with respect to residual risk in components and account balances that have not been included in audit scope.

The group consolidation, Financial Statements disclosures and certain centrally coordinated accounting topics were audited by the group engagement team. These topics included among others treasury and corporate income tax. Team members with specialized knowledge were involved in the areas of tax, accounting, valuation, pension and information technology.

We have obtained the following audit coverage of the group with our audit procedures:

Audit coverage	
Revenue	99%
Underlying operating profit	98%
Assets	99%

We have:

- Performed audit procedures ourselves at group entities;
- Used the work of other auditors when auditing; and
- Performed review procedures or specific audit procedures at other group entities.

By performing the procedures mentioned above at group entities, together with additional procedures at group level, we have been able to obtain sufficient and appropriate audit evidence about the group's financial information to provide an opinion on the consolidated financial statements.

### Audit approach fraud risks

#### Description

An auditor conducting an audit in accordance with Dutch Standards on Auditing is responsible for obtaining reasonable assurance that the Financial Statements taken as a whole are free from material misstatement, whether caused by fraud or error. Owing to the inherent limitations of an audit, there is an unavoidable risk that some material misstatements of the Financial Statements may not be detected. 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.

We have exercised professional judgement and have maintained professional scepticism throughout our audit in identifying and assessing the risks of material misstatement of the Financial Statements due to fraud, 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.

#### Our response

We performed the following procedures:

- In identifying potential risks of material misstatement due to fraud, we obtained an understanding of TenneT and its environment, including its internal controls. We evaluated TenneT's fraud risk assessment and made inquiries with management, those charged with governance and others within TenneT, including but not limited to the units (i) Internal Audit, (ii) Compliance & Integrity and (iii) Financial Governance Services. We evaluated several fraud risks factors to consider whether those factors indicated a risk of material misstatement due to fraud.
- Following these procedures, and the presumed risks under the prevailing auditing standards, we considered the fraud risks in relation to management override of controls, including evaluating whether there was evidence of bias by the Supervisory Board, the Executive Board and other members of management, which may represent a risk of material misstatement due to fraud. As part of the fraud risk of management override of controls, we identified a significant risk due to fraud related to classification of operational expenditure as capitalized expenditure given the differences in related regulatory accounting and thus future revenues.
- We made inquiries of management, those charged with governance and others within TenneT regarding the risk of material misstatements in the Financial Statements due to fraud, their process for identifying and responding to the risk of fraud, the internal communication regarding their views on business practices and ethical behaviour and whether they have knowledge of any actual, suspected or alleged fraud affecting the Company.
- We held discussions amongst team members and component auditors to identify fraud risk factors and considered whether other information obtained from our risk assessment procedures indicated risks of material misstatement due to fraud. Fraud risk factors identified include among others:
  - fraud, bribery and corruption;
  - compliance with respect to trade regulations/sanctions;
  - compliance with respect to environmental requirements; and
  - compliance with procurement policies.
- We evaluated whether unusual or unexpected relationships have been identified in performing analytical procedures, that may indicate risks of material misstatement due to fraud.
- We involved forensic specialists, focused on our fraud and non-compliance risk assessment, inquiries with management, the evaluation of the internal control environment and in determining the audit response.



- We determined overall responses to address the assessed risks of material misstatement due to fraud at the financial statement level or at the assertion level by:
  - assigning and supervising personnel with the adequate knowledge, skills and ability; evaluating whether the selection and application of accounting policies by the group, particularly those related to subjective measurements and complex transactions, may be indicative of fraudulent financial reporting;
  - incorporating an element of unpredictability in the selection of the nature, timing and extent of our audit procedures. Among others, these include the selection of fixed asset project tested, expense sampling selection criteria and (physical) asset inspection;
  - testing the appropriateness of journal entries recorded in the general ledger and other adjustments made in the preparation of the Financial Statements;
  - evaluating whether the judgments and decisions made by management in making the accounting estimates included in the Financial Statements indicate a possible bias that may represent a risk of material misstatement due to fraud. Significant accounting judgements, estimates and assumptions that might have a major impact on the Financial Statements are disclosed in note 1 of the consolidated Financial Statements. Useful life of assets, grid expense payables and the provision for decommissioning were focus areas in our audit as the related account balances are subject to significant management judgment. Reference is made to the section "Our key audit matters"; and
  - performing a retrospective review of management judgments and assumptions related to significant accounting estimates such as cost assumptions on the decommissioning provisions and in-feed management accruals reflected in prior year Financial Statements. We considered available information and made enquiries of relevant executives, directors and the Supervisory Board.

Based on our procedures performed we have no matters to report.

This did not lead to indications for fraud potentially resulting in material misstatements.

#### Audit approach compliance with laws and regulations

##### Description

We are responsible for obtaining reasonable assurance that the Financial Statements, taken as a whole, are free from material misstatement, whether due to fraud or error taking into account the applicable legal and regulatory framework. However, we are not responsible for preventing non-compliance and cannot be expected to detect non-compliance with all laws and regulations.

Owing to the inherent limitations of an audit, there is an unavoidable risk that some material misstatements in the Financial Statements may not be detected, even though the audit is properly planned and performed in accordance with the auditing standards. In the context of laws and regulations, the potential effects of inherent limitations on the auditor's ability to detect material misstatements are greater for such reasons as the following:

- There are many laws and regulations, relating principally to the operating aspects of an entity, that typically do not affect the Financial Statements and are not captured by the entity's information systems relevant to financial reporting.
- Non-compliance may involve conduct designed to conceal it, such as collusion, forgery, deliberate failure to record transactions, management override of controls or intentional misrepresentations being made to the auditor.
- Whether an act constitutes non-compliance is ultimately a matter to be determined by a court or other appropriate adjudicative body.

Ordinarily, the less directly non-compliance is linked to the events and transactions reflected in the Financial Statements, the less likely the auditor is to become aware of it or to identify the non-compliance.

## Our response

We performed the following procedures:

- As part of obtaining an understanding of TenneT and its environment we obtained a general understanding of the legal and regulatory framework applicable to TenneT and the industry in which it operates and how TenneT is complying with that framework.
- We assessed the laws and regulations relevant to the Company through discussion with management, those charged with governance and others within TenneT, including but not limited to the units (i) Internal Audit, Risk & Internal Control and Compliance & Integrity, (ii) Legal Affairs, (iii) Regulatory Affairs and (iv) Financial Governance Services. We have read related minutes and reports. We involved our forensic specialists in our evaluation.
- We obtained sufficient appropriate audit evidence regarding provisions of those laws and regulations generally recognized to have a direct effect on the determination of material amounts and disclosures in the Financial Statements such as (corporate) tax and pension laws and financial reporting regulations, the requirements under IFRS and Part 9 of Book 2 of the Dutch Civil Code.
- Apart from these, TenneT is subject to other laws and regulations where the consequences of non-compliance could have a material effect on amounts and/or disclosures in the Financial Statements, for instance, through imposing fines or litigation. Given the nature of TenneT's business and the complexity of energy laws and regulations in the Netherlands and Germany, as well as environmental laws, there is a risk of non-compliance with the requirements of such laws and regulations. In addition, we considered relevant laws and regulations applicable to listed companies.
- Our procedures are more limited with respect to other laws and regulations that do not have a direct effect on the determination of the amounts and disclosures in the Financial Statements. These laws and regulations compliance may be fundamental to the operating aspects of the business, to TenneT's ability to continue its business, or to avoid material penalties (e.g., compliance with the terms energy laws in the Netherlands and Germany or compliance with environmental regulations) and therefore non-compliance with such laws and regulations may have a material effect on the Financial Statements. Our responsibility is limited to undertaking specified audit procedures to help identify non-compliance with those laws and regulations that may have a material effect on the Financial Statements.
- Our procedures are limited to (i) inquiry of the Executive Board, the Supervisory Board and others within TenneT as to whether the Company is in compliance with such laws and regulations and (ii) inspecting correspondence, if any, with the relevant licensing or regulatory authorities to help identify non-compliance with those laws and regulations that may have a material effect on the Financial Statements. We remained alert to indications of (suspected) non-compliance throughout the audit.
- We obtained written representations that all known instances of (suspected) fraud or non-compliance with laws and regulations have been disclosed to us.

Based on our procedures, we have no matters to report.

## Audit approach going concern

### Description

We are responsible for obtaining reasonable assurance that the Company is able to continue as a going concern. Management is responsible to assess the Company's ability to continue as a going concern and disclosing in the Financial Statements any events or circumstances that may cast significant doubt on the Company's ability to continue as a going concern.

As described in note 1, the Executive Board believes that no events or conditions give rise to doubt about the ability of the Company to continue in operation in the next reporting period.

## Our response

We performed the following procedures:

- We evaluated management's assessment of the going concern assumption and related disclosure note 1 of the Financial Statements.
- We challenged management's cash flow forecasts and primary assumptions, also in the light of our understanding obtained with regards to management's outlook as reported in the Director's Report.
- We audited the Company's capital management objectives, including its long-term credit rating and liquidity on a rolling 12-month forward looking basis as disclosed in note 17.
- We audited the Company's repayment obligations as disclosed in note 26.

## Our key audit matters

Key audit matters are those matters that, in our professional judgement, were of most significance in our audit of the Financial Statements. We have communicated the key audit matters to the Supervisory Board. The key audit matters are not a comprehensive reflection of all matters discussed. The key audit matters are consistent with prior year.

These matters were addressed in the context of our audit of the Financial Statements as a whole and in forming our opinion thereon, and we do not provide a separate opinion on these matters.

### Tangible fixed assets

#### Description

Securing supply and facilitating the integration of sustainable energy sources into the high-voltage grid require substantial investments and flexible access to (equity) funding. TenneT expects to increase its annual investment volume to at least EUR 8 billion in on- and offshore grid connections.

We have included this as a key audit matter because of:

- the financial significance of the tangible fixed assets and related capital expenditures;
- the risks associated with large investment projects, complexity in procurement, construction and timely completion;
- the professional judgment required in determining the impact of the energy transition on (i) (funding) the capital investment planning, and (ii) the existing asset portfolio, including the assessment of remaining useful lives of assets; and
- the professional judgement required in (i) assessing whether there is any indication that an asset may be impaired and (ii) if there is any such indication, estimating the recoverable amount of that asset (i.e., measuring any impairment).

#### Our response

We performed the following procedures:

- We tested the internal control environment related to tangible fixed assets through testing of operating effectiveness of relevant controls, including controls related to (i) investment approval, (ii) the financial closing of assets under construction, and (iii) the periodic determination of the useful lives of tangible fixed assets.
- We tested the design and implementation of relevant controls related to TenneT's liquidity forecast underpinning its ability to finance investments.
- We obtained and discussed internal management reports about progress of the key assets under construction and performed tests of details on the additions to and other movements in tangible fixed assets.
- We evaluated management's estimation of the useful lives of tangible fixed assets based on economic, regulatory and technical data.
- We evaluated management's assessment that no indications were identified that any assets may be impaired as at 31 December 2022.

#### Our observations

Our procedures did not identify material observations and we considered management's key assumptions, to be within the reasonable range of our own expectations.

### Provision for decommissioning of (offshore) assets

#### Description

Decommissioning of offshore assets will be an important topic over the next 30+ years for TenneT as a large part of its assets come to the end of their useful life. Furthermore, moving towards a renewable future involves significant investments in offshore assets, requiring recognition of new provisions. The corresponding provisions are based on estimates of costs, timing of decommissioning, discount rates and inflation.

We have included this as a key audit matter because of:

- the significance of the provision and additions for the year triggered by the start of construction of new (offshore) assets; and



- the uncertainty involved in measuring the provision and sensitivity to changes in key assumptions, including the cost base, the inflation rate and the discount rate.

### Our response

We have obtained management's position papers on the cost assumptions and alignment of the methodology across the Netherlands and Germany. Our audit procedures included testing of design and implementation of relevant controls around the periodical assessment of these assumptions and the evaluation of the financial model used to calculate the provision.

Our substantive audit procedures further include an assessment of the reasonability of the key assumptions through comparison with observable market data and procedures to address the completeness of the provision.

Furthermore, we evaluated the appropriateness of the disclosure of the accounting policy and estimation uncertainty of these provisions.

### Our observations

Our procedures did not identify material observations and we considered management's key assumptions, to be within the reasonable range of our own expectations.

#### Accrual for in-feed management expenses

##### Description

Due to a larger share of renewable energy production in Germany, supply of energy may sometimes exceed demand. In such instances, TenneT initiates redispatch measures to maintain the energy balance on its grids at 50 Hertz. If there is no redispatch possibility on the transmission grid, TenneT will direct distribution system operators to curtail producers of (renewable) electricity to secure system stability. These producers are then entitled to reimbursement for their lost in-feed.

We have included this as a key audit matter because the accrual for in-feed management is significant and subject to estimation uncertainty in assessing variable renewable energy production, where TenneT is dependent on information from other market participants.

Moreover, final settlement of in-feed management measures may take up to six years to resolve due to regulatory terms.

### Our response

We obtained an understanding of the external factors and market processes that drive the estimation uncertainty, including an evaluation on the correlation between average wind developments and in-feed management expenses for 2022 and the previous periods.

We have tested the internal control environment related to the in-feed management expenses by testing design and implementation of relevant controls. This includes an assessment of the methodology applied by TenneT to estimate the accrual at reporting date.

We performed the following combination of substantive testing procedures:

- we tested quantity (GWh) and pricing data of the accrual estimation with underlying contract and counterparty quantity data;
- we performed back-testing of historical estimates, primarily aimed to test quantity estimations (GWh) with the use of observable market data, as well as the pricing estimations of the transactions based on contracts; and
- we evaluated underlying drivers of historical estimate updates to the current period estimates.

### Our observations

Our procedures did not identify material observations and we considered management's key assumptions (quantity and price) to be within the reasonable range of our expectations.



## Report on the other information included in the Integrated Annual Report

The Integrated Annual Report contains other information, in addition to the Financial Statements and our auditor's report thereon.

1. Director's Report, consisting of:
  - a. About TenneT;
  - b. Our Performance in 2022;
  - c. Corporate Governance; and
  - d. EU Taxonomy disclosures.
2. Supervisory Board Report.
3. Other Information as required by Part 9 of Book 2 of the Dutch Civil Code.
4. Other information included in the Integrated Annual Report.

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

1. is consistent with the Financial Statements and does not contain material misstatements; and
2. contains all the information regarding the director's report and the other information as required by Part 9 of Book 2 of the Dutch Civil Code.

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 Part 9 of Book 2 of the Dutch Civil Code and the Dutch Standard on Auditing 720. The scope of the procedures performed is substantially less than the scope of those performed in our audit of the Financial Statements.

Management is responsible for the preparation of the other information, including the Director's Report in accordance with Part 9 of Book 2 of the Dutch Civil Code, and the other information as required by Part 9 of Book 2 of the Dutch Civil Code.

## Report on other legal and regulatory requirements and ESEF

### Engagement

We were engaged by the annual meeting of shareholders as auditor of TenneT on 18 December 2019, as of the audit for the year 2020 and have operated as statutory auditor ever since that financial year.

### No prohibited non-audit services

We have not provided prohibited non-audit services as referred to in Article 5(1) of the EU Regulation on specific requirements regarding statutory audit of public-interest entities.

### European Single Electronic Format ("ESEF")

TenneT has prepared its annual report in ESEF. The requirements for this are set out in the Commission Delegated Regulation (EU) 2019/815 with regard to regulatory technical standards on the specification of a single electronic reporting format (the "RTS on ESEF").

In our opinion, the annual report, prepared in XHTML format, including the (partly) marked-up consolidated financial statements, as included in the reporting package by TenneT complies in all material respects with the RTS on ESEF.

Management is responsible for preparing the annual report including the Financial Statements in accordance with the RTS on ESEF, whereby management combines the various components into a single reporting package.

Our responsibility is to obtain reasonable assurance for our opinion whether the annual report in this reporting package complies with the RTS on ESEF.

We performed our examination in accordance with Dutch law, including Dutch Standard 3950N “Assurance-opdrachten inzake het voldoen aan de criteria voor het opstellen van een digitaal verantwoordingsdocument” (assurance engagements relating to compliance with criteria for digital reporting).

Our examination included amongst others:

- Obtaining an understanding of the Company's financial reporting process, including the preparation of the reporting package.
- Identifying and assessing the risks that the annual report does not comply in all material respects with the RTS on ESEF and designing and performing further assurance procedures responsive to those risks to provide a basis for our opinion, including:
  - obtaining the reporting package and performing validations to determine whether the reporting package containing the Inline XBRL instance and the XBRL extension taxonomy files has been prepared in accordance with the technical specifications as included in the RTS on ESEF; and
  - examining the information related to the consolidated financial statements in the reporting package to determine whether all required mark-ups have been applied and whether these are in accordance with the RTS on ESEF.

## Description of responsibilities regarding the Financial Statements

### Responsibilities of management and the Supervisory Board for the Financial Statements

Management is responsible for the preparation and fair presentation of the Financial Statements in accordance with IFRS and Part 9 of Book 2 of the Dutch Civil Code. Furthermore, management is responsible for such internal control as management determines is necessary to enable the preparation of the Financial Statements that are free from material misstatement, whether due to fraud or error.

As part of the preparation of the Financial Statements, management is responsible for assessing the Company's ability to continue as a going concern. Based on the financial reporting frameworks mentioned, management should prepare the Financial Statements using the going concern basis of accounting unless management either intends to liquidate the company or to cease operations, or has no realistic alternative but to do so.

### Our responsibilities for the audit of the Financial Statements

Our objective is to plan and perform the audit assignment 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 exercised professional judgement and have maintained professional skepticism throughout the audit, in accordance with Dutch Standards on Auditing, ethical requirements 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 Company's internal control.
- Evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.

- Concluding on the appropriateness of management'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 the Company'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 the Company 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.

We communicated 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 identified during our audit. In this respect we also submitted an additional report to the Audit, Risk and Compliance Committee in accordance with Article 11 of the EU Regulation on specific requirements regarding statutory audit of public-interest entities. The information included in this additional report is consistent with our audit opinion in this auditor's report.

#### **Our responsibilities for the audit of the financial statements**

Our objective is to plan and perform the audit assignment 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 exercised professional judgement and have maintained professional scepticism throughout the audit, in accordance with Dutch Standards on Auditing, ethical requirements and independence requirements. Our audit included e.g.:

- 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 Company's internal control.
- Evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- Concluding on the appropriateness of management'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 the Company'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 the Company 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.

We communicated 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 identified during our audit. In this respect we also submitted an additional report to the Audit, Risk and Compliance Committee in accordance with Article 11 of the EU Regulation on specific requirements regarding statutory audit of public-interest entities. The information included in this additional report is consistent with our audit opinion in this auditor's report.

We provided the Supervisory Board with a statement that we have complied with relevant ethical requirements regarding independence, and to communicate with them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, related safeguards.

From the matters communicated with the Supervisory Board, we determine the key audit matters: those matters that were of most significance in the audit of the Financial Statements. We describe these matters in our auditor's report unless law or regulation precludes public disclosure about the matter or when, in extremely rare circumstances, not communicating the matter is in the public interest.

Rotterdam, 8 March 2023

Deloitte Accountants B.V.

Signed on the original J.A. de Bruin

# Limited assurance report of the independent auditor with respect to the 2022 Sustainability Information of TenneT Holding B.V.

To: the Shareholder and the Supervisory Board of TenneT Holding B.V.

## Our conclusion

We have reviewed the sustainability information included in the Integrated Annual Report for the year 2022 (“**IAR**”), of TenneT Holding B.V. (“**TenneT**”) based in Arnhem (the “**Sustainability Information**”). Our procedures did not cover the information set out in the section “Box out: The application of the EU Taxonomy at TenneT” on page 70. A review is aimed at obtaining a limited level of assurance.

Based on our review nothing has come to our attention that causes us to believe that the Sustainability Information does not present, in all material respects, a reliable and adequate view of:

- the policy and business operations with regard to Sustainability; and
- the thereto related events and achievements for the year 2022

in accordance with the reporting criteria as included in the “Reporting criteria” section of our report.

The Sustainability Information consists of the performance information in the chapters “2022 at a glance”, “Letter from the Board”, “About TenneT”, “Our Performance in 2022” (excluding the sections “Safeguard sustainable financial performance and investor ratings” and “Statements of the Executive Board”) and the section “About this report” in the IAR.

## Basis for our conclusion

We have performed our review of the Sustainability Information in accordance with Dutch law, including Dutch Standard 3810N “Assurance-opdrachten inzake maatschappelijke verslagen” (Assurance engagements relating to sustainability reports) which is a specified Dutch Standard that is based on the International Standard on Assurance Engagements (ISAE) 3000 “Assurance engagements other than audits or reviews of historical financial information”. This assurance engagement is aimed at obtaining limited assurance. Our responsibilities under this standard are further described in the section “Our responsibilities for the review of the Sustainability Information” section of our report.

We are independent of TenneT 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. 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).

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

## Reporting criteria

The reporting criteria used for the preparation of the Sustainability Information are the Sustainability Reporting Standards of the Global Reporting Initiative (“**GRI**”) and the applied supplemental reporting criteria as disclosed in the chapter “About the report” of the IAR.

The Sustainability Information is prepared with reference to the GRI Standards. The GRI Standards used are listed in the GRI Content Index as disclosed on page 199 of the IAR.

The absence of an established practice on which to draw, to evaluate and measure non-financial information allows for different, but acceptable, measurement techniques and can affect comparability between entities and over time.

Consequently, the Sustainability Information needs to be read and understood together with the reporting criteria used.

## Materiality

Based on our professional judgement we determined materiality levels for each relevant part of the sustainability information and for the sustainability information as a whole. When evaluating our materiality levels, we have taken into account quantitative and qualitative considerations as well as the relevance of information for both stakeholders and the company.

## Limitations to the scope of our review

The Sustainability Information includes prospective information such as ambitions, strategy, plans, expectations, estimates and risk assessments. As discussed in the section "Climate related risks and opportunities" on page 110 of the IAR, the Sustainability Information includes information based on climate-related scenarios that is subject to inherent uncertainty because of incomplete scientific and economic knowledge about the likelihood, timing or effect of possible future climate-related impacts. Inherent to prospective information, the actual future results are uncertain. We do not provide any assurance on the assumptions and achievability of prospective information in the Sustainability Information.

The references to external sources or websites in the Sustainability Information are not part of the Sustainability Information as reviewed by us. We therefore do not provide assurance on this information. Our conclusion is not modified in respect to these matters.

## Responsibilities of management and the Supervisory Board for the Sustainability Information

Management is responsible for the preparation of reliable and adequate Sustainability Information in accordance with the reporting criteria as included in the 'Reporting criteria' section, including the identification of stakeholders and the definition of material matters. Management is also responsible for selecting and applying the reporting criteria and for determining that these reporting criteria are suitable for the legitimate information needs of stakeholders, taking into account applicable law and regulations related to reporting. The choices made by management regarding the scope of the Sustainability Information and the reporting policy are summarised in the chapter 'Our strategy and value creation' of the IAR.

Furthermore, management is responsible for such internal control as it determines is necessary to enable the preparation of the Sustainability Information that is free from material misstatement, whether due to fraud or error.

The Supervisory Board is responsible for overseeing the reporting process of TenneT.

## Our responsibilities for the review of the Sustainability Information

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

Procedures performed to obtain a limited level of assurance are aimed to determine the plausibility of information and vary in nature and timing from, and are less in extent, than for a reasonable assurance engagement. The level of assurance obtained in review is therefore substantially less than the assurance obtained in an audit.

We apply the "Nadere voorschriften kwaliteitssystemen" (NVKS, regulations for quality management systems) and accordingly maintain a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and other relevant legal and regulatory requirements.

We have exercised professional judgement and have maintained professional skepticism throughout the review, in accordance with the Dutch Standard 3810N, ethical requirements and independence requirements.

Our review included among others:

- Performing an analysis of the external environment and obtaining an understanding of relevant social themes and issues, and the characteristics of TenneT.
- Evaluating the appropriateness of the reporting criteria used, their consistent application and related disclosures in the Sustainability Information. This includes the evaluation of the results of the stakeholders' dialogue and the reasonableness of estimates made by management.
- Obtaining through inquiries a general understanding of control environment, processes and information systems relevant to the preparation of the Sustainability Information, but not to obtain assurance evidence about their implementation or their operating effectiveness.
- Identifying areas of the Sustainability Information with a higher risk of misleading or unbalanced information or material misstatements, whether due to fraud or error. Designing and performing further assurance procedures aimed at determining the plausibility of the Sustainability Information responsive to this risk analysis. These procedures consisted amongst others of:
  - interviewing management, KPI owners and/or other relevant staff at corporate and business level responsible for the sustainability strategy, policy and results;
  - interviewing relevant staff responsible for providing the information for, carrying out internal control procedures on, and consolidating the data in the Sustainability Information;
  - determining the nature and extent of the review procedures for KPI's. For this, the nature, extent and/or risk profile of the KPI's are decisive. Based thereon we selected the KPI owners or other relevant staff whom we have interviewed.
  - obtaining assurance information that the Sustainability Information reconciles with underlying records of TenneT;
  - reviewing, on a limited test basis, relevant internal and external documentation; and
  - performing an analytical review of the data and trends.
- Evaluating the consistency of the Sustainability Information with the information in the IAR which is not included in the scope of our review.
- Evaluating the presentation, structure and content of the Sustainability Information.
- Considering whether the Sustainability Information as a whole, including the disclosures, reflects the purpose of the reporting criteria used.

We communicated with management and the Supervisory Board regarding, among other matters, the planned scope, timing and outcome of the review and significant findings that we identified during our review.

Rotterdam, 8 March 2023

Deloitte Accountants B.V.

Signed on the original J.A. de Bruin

# About this report

## Scope of this report

The scope of this report is TenneT Holding B.V. and the subsidiaries in which it has a controlling interest (generally speaking a voting interest of over 50%). For example, our 50% stake in BritNed and BritNed's activities are not included in our results. This integrated report covers the full year 2022, i.e. 1 January 2022 to 31 December 2022. TenneT's Integrated Annual Report 2022 was published on 14 March 2023 and is available [online](#).

In 2022, there were no significant acquisitions or divestments impacting our non-financial reporting. In addition, our subsidiary CertiQ B.V. merged with Vertogas B.V., a subsidiary of Gasunie N.V., into VertiCer B.V. and this had no significant impact on our non-financial reporting. A complete overview of all the consolidated entities in this Integrated Annual Report is disclosed in [note 31 of the consolidated financial statements](#). Our reporting policy in the event of acquisitions or divestments is disclosed in notes 1, 11 and 12 of the consolidated financial statements. For non-financial performance we report acquisitions and divestments from the day of purchase or when an entity is sold respectively. We recognise that in the event of acquisitions, reporting improvements may be required which may result in data being estimated.

## Reporting principles

Our non-financial qualitative and quantitative information is prepared with reference to the Global Reporting Initiative (GRI) Universal Standards. In absence of sector guidance, we also adhere to the sector guidelines for our industry (G4 sector disclosures - electric utilities). For more information, please refer to the reporting guidance document on our [corporate website](#).

The GRI context index, as included on our [corporate website](#), shows which GRI aspects are material to TenneT and refers to those sections in the report describing this aspect. In addition, and in accordance with the policy on state-owned companies (*Nota Deelnemingenbeleid Rijksoverheid 2022*), TenneT complies with the Dutch Corporate Governance Code, as laid down in the Corporate Governance section of this report. As required per this policy, TenneT also signed the Diversity Charter in 2021 and embraces the principles of the Tax Governance Code.

We have used the Integrated Reporting (IR) framework, as defined by the International Integrating Reporting Council (IIRC) as a basis for this integrated report. This allows us to be transparent about our impact as an organisation. The financial information in this report was prepared in accordance with IFRS, as adopted by the EU, and complies with Part 9 of Book 2 of the Dutch Civil Code.

Furthermore, our Integrated Annual Report complies with the EU Non-Financial Reporting Directive (NFRD), which was translated to Dutch legislation and has been mandatory for annual reports since 2017. In 2022, the successor of this legislation was published: the Corporate Sustainability Reporting Directive (CSRD). Preparations to comply to this new EU legislation started in 2021, ahead of the final wording of the legislation and delivery of the reporting standards connected to them, the European Sustainability Reporting Standards (ESRS). As a company already needing to comply to the NFRD, TenneT needs to report in accordance with the CSRD as of reporting year 2024.

This report is also part of our progress and how we implement the 10 principles of the United Nations Global Compact (UNGC). We have endorsed these principles since 2015, not just to underline our own commitment, but also to drive CSR performance in the value chain. The UNGC principles are the basis of our TenneT Supplier Code of Conduct and mandatory for all suppliers. New suppliers who do not meet our standards during supplier visits, are disqualified from our tender procedures. The way communication on the progress related to the UNGC has changed in 2022 and as of 2023 this will be shared via the [UNGC website](#).

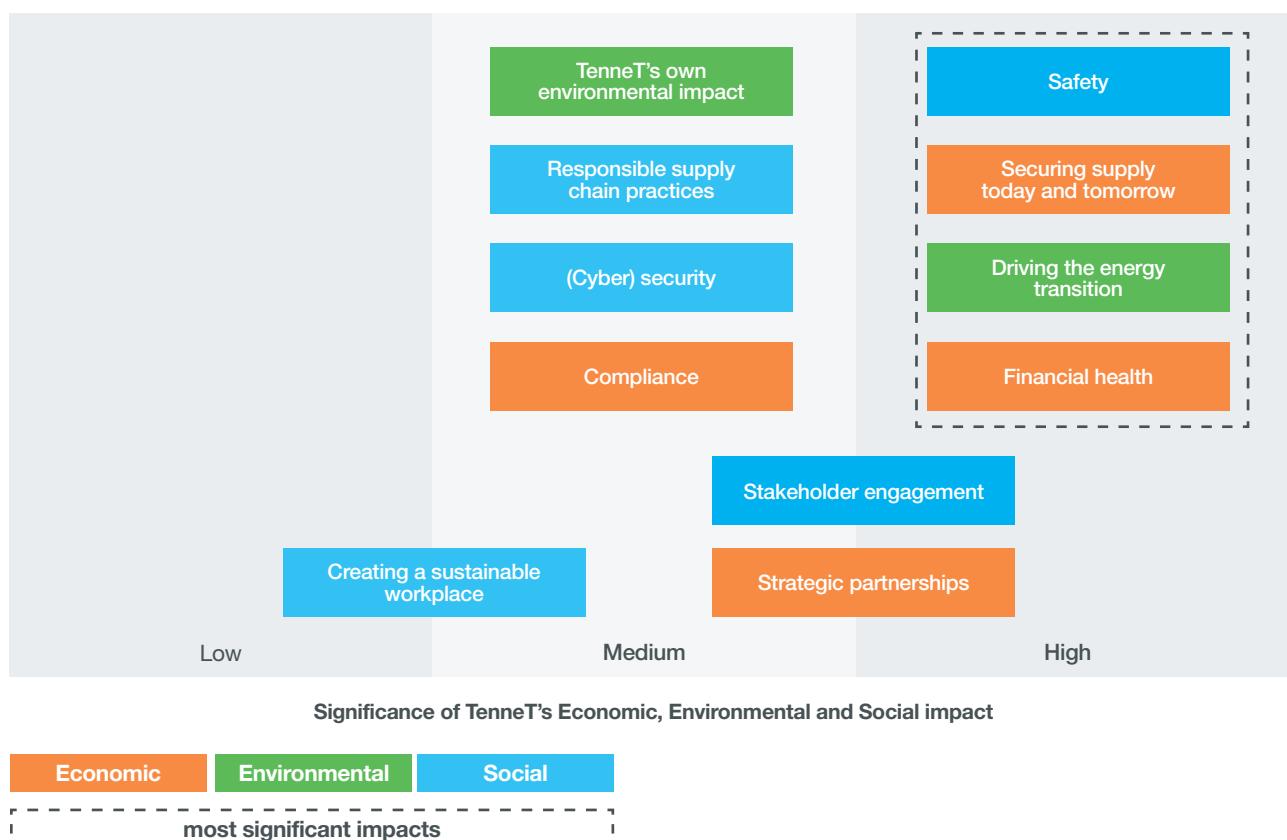
In 2015, the United Nations launched the Sustainable Development Goals (SDGs). These goals are accepted worldwide as driving sustainability. The section in our Integrated Annual Report '[The UN Sustainable Development Goals and TenneT](#)' describes our impact and the contribution we make to the SDGs that are most relevant to our business.

## Stakeholders and materiality

In accordance with the applied reporting principles, this integrated report covers topics considered material to our organisation. TenneT uses the materiality principle to determine which subjects/impacts to include in the report related to which activities (also with respect to our supply chain) to take into account. Our corporate website ([www.tennet.eu](http://www.tennet.eu)) includes additional information which was not considered material for integrated reporting purposes. How we defined the material topics and the results of this assessment can be found in the materiality section below. The fact that we report on selected topics does not mean we do not manage aspects that are not considered material to our business. Our activities and CSR policy are broader and are not limited to the outcome of the materiality analysis. For more detailed information, go to the [CSR section of our website](#).

In 2022, we updated our materiality analysis. Our policy is to perform this analysis every two to three years and review the analysis every year to identify gaps in intermediate years. This year, we applied the updated materiality assessment guidance provided by GRI in their Universal Standards (2021), described in GRI 3. Here, the analysis of the significance of TenneT's economic, social and environmental impact was performed and determined through an internal analysis. We included the views of our (external) stakeholders from earlier surveys and interactions in this analysis. This determined whether our impact per topic is either high, medium or low. The outcome of this analysis was reviewed and validated by our highest governance body, being both the Executive Board and the Supervisory Board. The outcome of this was that the following four impacts are considered to be our key material topics: safety, securing supply today and tomorrow, driving the energy transition and financial health. The materiality process is thoroughly embedded in the TenneT organisation. After validation, the materiality analysis was completed and resulted in the following overview.

## Materiality



As aforementioned, the European Commission adopted a proposal for the CSRD, which will replace the NFRD. With respect to materiality, the concept of double materiality is mentioned in both the NFRD as well as the CSRD, meaning that companies have to report about how sustainability issues affect their business and about their own impact on people and the environment. TenneT's impact on these dimensions is disclosed in Integrated Annual Report 2022 in several ways. This is a part of the materiality analysis where the significance of TenneT's impact is assessed per relevant topic. Key impacts are also disclosed quantitatively and qualitatively in the relevant chapters. With regards to our impact on people, this is disclosed in 'Our stakeholders' and the chapter 'Safe and inspiring workplace'. Our impact on the environment is disclosed in the chapter 'Create value to transition to a climate-neutral economy'.

The impact of sustainability topics on TenneT is described in the way we incorporate the Taskforce for Climate related Financial Disclosures (TCFD) recommendations in Integrated Annual Report 2022. The impact of climate change on our activities and the associated risks and opportunities are disclosed on pages 107-111. We also disclose how developments related to people and the environment could impact us as a company, for example in 'Key Developments' and the 'What could prevent us from reaching our goals?' in each chapter. This relates to the effects of climate change, scarcity of goods and services, changing demographics, also related to our people and future employees, might impact us, as for instance changing demographics and scarcity of (technical) talent provides challenges.

### Scope and boundaries

The table on the next pages provides a clear overview of the material topics, their impact, our contribution and the boundaries. A detailed disclosure of our management approach on each material topic can be found in the CSR section of our website.

Material topic	Safety	Security of supply	Drive the energy transition	Financial health
• Chapter	• Create a safe and inspiring workplace	• Deliver a high security of supply	• Deliver a high security of supply, Ensure critical infrastructure for society, Create value to transition to a climate neutral economy, Solve societal challenges with stakeholders and through partnerships.	• Safeguard sustainable financial performance and investor ratings
• Why material?	• Our employees are our most important and valuable asset, which is why the safety of everyone involved in our activities (employees and contractors) is a top priority.	• Our main task is to ensure security of electricity supply to approximately 43 million people across the Netherlands and Germany.	• With our knowledge, experience and vision with respect to the future energy landscape, we believe that we can serve society by helping to drive the energy transition in an effective and efficient manner.	• Safeguarding sustainable financial performance and investor ratings will enable us to drive the energy transition against lower societal costs. We need to invest in onshore and offshore grid infrastructure to realise the energy transition over the next ten years and achieve the energy goals set by the Dutch and German government.
• What is the impact?	• We need to make sure our employees can perform their work safely, as every safety incident is one too many.	• Electricity is the backbone of the economy of the countries we operate in.	• National governments in the area we serve have committed themselves to national and international climate agreements. We are an important stakeholder to help realise this.	• It is important to carefully make the right investment decisions and to manage them properly to be sure we are doing the right things at acceptable costs.
• What is our role?	• We are responsible for integrating safety into our daily practices as a TSO.	• We are responsible for maintaining a balance between supply and demand; we operate and manage the high-voltage grid.	• To connect everyone with a brighter energy future, we need to lead as a green grid operator, be a thought leader in the energy transition, develop innovative instruments to unlock flexibility and establish a pivotal role in the energy data world to facilitate innovation.	• We are responsible for realising the investment programme and living up to our stakeholders' expectations.



Material topic	Safety	Security of supply	Drive the energy transition	Financial health
<ul style="list-style-type: none"> <li>• What are the boundaries?</li> </ul>	<ul style="list-style-type: none"> <li>• We are responsible for making sure all our employees, both internal and external, can return safely to their homes at the end of the day. The scope of our safety reporting relates to both our own employees as safety incidents from employees working for our contractors related to our projects.</li> </ul>	<ul style="list-style-type: none"> <li>• We are responsible for transmission services. Production is the responsibility of producers, distribution lies with DSOs.</li> </ul>	<ul style="list-style-type: none"> <li>• Our boundaries related to this topic align with the scope of this report.</li> </ul>	<ul style="list-style-type: none"> <li>• We are responsible for realising our investment portfolio. The investment programme is based on the task we are given by the Dutch and German governments.</li> </ul>
<ul style="list-style-type: none"> <li>• Key Performance Indicators (KPIs)</li> </ul>	<ul style="list-style-type: none"> <li>• TRIR</li> </ul>	<ul style="list-style-type: none"> <li>• Security of supply: uptime in %</li> </ul>	<ul style="list-style-type: none"> <li>• Amount of GW of offshore capacity realised</li> </ul>	<ul style="list-style-type: none"> <li>• Adjusted underlying EBIT group FFO/Net debt ROIC</li> </ul>
<ul style="list-style-type: none"> <li>• Targets/ambitions</li> </ul>	<ul style="list-style-type: none"> <li>• 4.5 (in 2022)</li> </ul>	<ul style="list-style-type: none"> <li>• 99.99962% grid availability onshore 95.07% grid availability offshore</li> </ul>	<ul style="list-style-type: none"> <li>• TenneT aims to connect nearly 40 GW of offshore wind energy by 2030.</li> </ul>	<ul style="list-style-type: none"> <li>• In 2022, our investment target was EUR 4.2 billion</li> <li>• To finance our investments, our target is to deliver at least EUR 8 billion per year in projects while securing our supply chain.</li> </ul>
<ul style="list-style-type: none"> <li>• Unit(s) responsible within organisation</li> </ul>	<ul style="list-style-type: none"> <li>• Safety (SSC)</li> </ul>	<ul style="list-style-type: none"> <li>• Asset Management (AMT) Large Projects departments (LPG), (LPN), (LPD), (LPO) System Operations (SOP), Grid Field Operations, (GFO)</li> </ul>	<ul style="list-style-type: none"> <li>• Large Projects departments (LPG), (LPN), (LPD), (LPO) Digital &amp; Process Excellence (DPE) Asset Management (AMT), Grid Field Operations (GFO)</li> </ul>	<ul style="list-style-type: none"> <li>• Strategic Investment Committee, Supervisory Board, Business Guidance Corporate (BGD)</li> </ul>

For most of our figures, our reporting focus is on our own operations, although we do take some aspects of the value chain into account in our carbon footprint and safety (TRIR). We recognise that reporting outside our gate (so-called ‘value chain reporting’) provides a better overview of our impact. We will strive to expand the boundaries of our reporting where possible in the next years.

## EU Non-Financial Reporting Directive

Our Integrated Annual Report complies with the EU Non-Financial Reporting Directive with respect to non-financial and diversity information. The table below provides a clear overview of where the different aspects of this directive are reported.

	A description of the policies pursued, including due diligence.	The outcome of those policies.	Principle risks in own operations and within value chain.	How risks are managed.	Non-financial key performance indicators.
Topic					
• Relevant social and personnel matters (e.g. HR, safety etc.)	<ul style="list-style-type: none"> <li>• Create a safe and inspiring workplace</li> <li>• Create value to transition to a climate-neutral economy</li> <li>• Solve societal challenges with stakeholders and through partnerships</li> </ul>	<ul style="list-style-type: none"> <li>• Create a safe and inspiring workplace</li> <li>• Create value to transition to a climate-neutral economy</li> <li>• Solve societal challenges with stakeholders and through partnerships</li> </ul>	<ul style="list-style-type: none"> <li>• Create a safe and inspiring workplace</li> <li>• Create value to transition to a climate-neutral economy</li> <li>• Solve societal challenges with stakeholders and through partnerships</li> </ul>	<ul style="list-style-type: none"> <li>• Create a safe and inspiring workplace</li> <li>• Create value to transition to a climate-neutral economy</li> <li>• Solve societal challenges with stakeholders and through partnerships</li> </ul>	<ul style="list-style-type: none"> <li>• Create a safe and inspiring workplace</li> <li>• Create value to transition to a climate-neutral economy</li> <li>• Solve societal challenges with stakeholders and through partnerships</li> </ul>
• Relevant Environmental matters (e.g. climate-related impacts)	<ul style="list-style-type: none"> <li>• Create value to transition to a climate-neutral economy</li> </ul>	<ul style="list-style-type: none"> <li>• Create value to transition to a climate-neutral economy</li> </ul>	<ul style="list-style-type: none"> <li>• Create value to transition to a climate-neutral economy</li> </ul>	<ul style="list-style-type: none"> <li>• Create value to transition to a climate-neutral economy</li> </ul>	<ul style="list-style-type: none"> <li>• Create value to transition to a climate-neutral economy</li> <li>• Climate related risks</li> </ul>
• Relevant matters with respect for human rights (e.g. labour protection)	<ul style="list-style-type: none"> <li>• About TenneT - Our supply chain</li> </ul>	<ul style="list-style-type: none"> <li>• About TenneT - Our supply chain</li> </ul>	<ul style="list-style-type: none"> <li>• About TenneT - Our supply chain</li> <li>• Create value to transition to a climate-neutral economy</li> </ul>	<ul style="list-style-type: none"> <li>• About TenneT - Our supply chain</li> <li>• Create value to transition to a climate-neutral economy</li> </ul>	<ul style="list-style-type: none"> <li>• About TenneT - Our supply chain</li> </ul>
• Relevant matters with respect to anti-corruption and bribery	<ul style="list-style-type: none"> <li>• Corporate Governance</li> </ul>				

	A description of the policies pursued.	Diversity targets	Description of how the policy is implemented	Results of the diversity policy
Topic				
• Insight into the diversity (Executive Board and the Supervisory Board)	<ul style="list-style-type: none"> <li>• Create a safe and inspiring workplace</li> <li>Supervisory Board report, 16. Inclusion and diversity</li> </ul>	<ul style="list-style-type: none"> <li>• Create a safe and inspiring workplace</li> <li>Supervisory Board report, 16. Inclusion and diversity</li> </ul>	<ul style="list-style-type: none"> <li>• Create a safe and inspiring workplace</li> <li>Supervisory Board report, 16. Inclusion and diversity</li> </ul>	<ul style="list-style-type: none"> <li>• Create a safe and inspiring workplace</li> <li>Supervisory Board report, 16. Inclusion and diversity</li> </ul>

## Data collection process

The reported data is obtained from financial and non-financial data management systems in our own operations, such as IFS and SAP for financial and HR data, Mecom for our electricity transport data, and Zenya for our incident reporting, i.e. safety data. The key non-financial qualitative and quantitative data is included in the regular planning and control cycles and reported internally at least once a quarter by the Business Guidance department which performs a check on the quality and reliability of the data. TenneT's Executive Board and senior management contribute to the context of the report and the quantitative data.



The definitions and calculations used are disclosed in the abbreviations and definitions section of this Integrated Annual Report and in the CSR section of our corporate website. The definitions and calculations used were re-assessed based on such things as process improvements, further alignment within the group and the materiality analysis. As a result, certain originally reported comparative figures were re-classified to conform to the current year's presentation.

The data for this report was measured, and where no data was available, it was estimated. An example of this is the energy use at some of our smaller offices. Due to the nature and maturity level of non-financial data, we acknowledge that it is a journey to fully align this with the level of financial systems and processes. Therefore, improvements can be made over time with the aim to provide our stakeholders better and more relevant information. That is why 100% completeness and accuracy of our data cannot be guaranteed as processes may be subject to a higher degree of manual data collection.

### External assurance

The financial statements included in this report are subject to an independent external audit and TenneT's non-financial reporting is subject to a limited assurance review. These were both conducted by our external auditor, Deloitte Accountants B.V.. Reliable data is essential in our dialogue with stakeholders, so we decided to have our non-financial data reviewed by an external assurance provider. We have requested Deloitte to review the Integrated Annual Report sections 'At a Glance', 'Letter from the Board', 'About TenneT' and 'Our Performance in 2022' (excluding 'Safeguard sustainable financial performance and investor ratings' and 'Statements of the Executive Board') with reference to the GRI Standards and audit the financial statements in accordance with IFRS as adopted by the EU and Part 9 of Book 2 of the Dutch Civil Code.

### Governance of CSR

For TenneT, CSR covers a broad range of subjects, all aimed at creating a sustainable future for our internal and external stakeholders. CSR is embedded in our current strategy. We have set clear priorities, targets and key performance indicators in this. For some areas we are currently developing new or updating key performance indicators. On an overall level, our Executive Board is responsible for our strategy and company target setting, which includes the areas with respect to CSR. Our Strategy and Partnerships department, is mandated by the Executive Board to make decisions based on the CSR areas in our overall strategy and to execute studies for future ambitions with respect to CSR. In case new decisions and directions, this will be approved by the relevant decision committee within our organisation depending on the topic (Future Design, Asset, Integrated Work Planning or Systems & Market committee). In addition, business units are responsible for the topics that relate to their unit and sustainable development. The senior leaders are requested to manage and steer on their respective responsibility areas.

These units report the progress with respect to our strategy, our financial and non-financial performance (including our CSR policy and actions) on a quarterly basis and this is reviewed by our Executive Board and Supervisory Board in that frequency to evaluate whether we are on track and or if actions are deemed necessary to improve. Our Supervisory Board consists of members all with knowledge of various elements of sustainable development. For more information, refer to page 90 of the Supervisory Board report where the capabilities matrix is included.

### Other information

TenneT Holding B.V. and its subsidiaries are a leading electricity transmission system operator with activities in the Netherlands and a large part of Germany. In the Netherlands, our activities are conducted by TenneT TSO B.V. and its subsidiaries. In Germany, our activities are performed by TenneT GmbH & Co. KG and its subsidiaries.

The Dutch State owns the entire issued share capital of TenneT Holding B.V. Furthermore, TenneT Holding B.V. has issued hybrid securities which are deeply subordinated and are accounted for as part of equity attributable to equity holders of the Company. The registered office of TenneT Holding B.V. is located at Utrechtseweg 310, Arnhem, the Netherlands, with its statutory seat in Arnhem and a registration with the Dutch Commercial Register under number 09083317.

# SWOT Analysis

In the section 'Our performance in 2022' of our report, we elaborated on TenneT's performance, strategic risks and the outlook for 2023. Our SWOT provides an insight into our company's opportunities and strengths, as well as threats and weaknesses, providing context to our stakeholders.

## SWOT Analysis

Strengths		Weaknesses	
High level of security of supply		Increasing number of large projects	
Technical Innovations		Organizational culture (ineffective (sub) processes)	
Proven track record in leading European market integration in North-West Europe		Project capacity to deliver on maintenance and customer connections	
First cross-border TSO in Europe and a favorable corporate reputation amongst stakeholders		Big data capabilities	
Stable credit rating		Maintenance pressure aging Assets	
First mover attitude in shaping the grid of the future			
<b>S</b>		<b>W</b>	
Opportunities	O	Threats	
Standardisation of assets, e.g. 2GW program		Supply chain disruptions and scarcities	
Attractive employer		Branding & Public Awareness	
Strong growth in electrification of society		Volatile European grid	
System integration / sector coupling (a.o. hydrogen)		Scarcity of qualified technical competences	
		Cyber and physical security threat (on- and offshore)	
		Extensive spacial planning time	

## EU Taxonomy disclosures

### Turnover

	Code(s)	Absolute turnover (in EUR million)	Proportion of turnover (%)	Substantial contribution criteria						DNSH criteria ('Does Not Significantly Harm')						Minimum safeguards	Taxonomy-aligned proportion of turnover, year N	Taxonomy-aligned proportion of turnover, year N-1	Enabling/transitional
				Climate change mitigation (%)	Climate change adaptation (%)	Water and marine resources (%)	Circular economy (%)	Pollution	Biodiversity and ecosystems	Climate change adaptation	Water and marine resources	Circular economy	Pollution	Biodiversity and ecosystems					
Economic activities																			
<b>A. TAXONOMY-ELIGIBLE ACTIVITIES</b>	9,789	99.5%	99.5%	N/A	N/A	N/A	N/A	N/A	N/A	Y	N/A	Y	Y	Y	Y	99.5%	N/A		
<b>A.1. Environmentally sustainable activities (Taxonomy-aligned)</b>	9,612	97.7%	97.7%	N/A	N/A	N/A	N/A	N/A	N/A	Y	N/A	Y	Y	Y	Y	97.7%	N/A		
Transmission of electricity in the Netherlands	35.12	3,056	31.1%	31.1%	N/A	N/A	N/A	N/A	N/A	Y	N/A	Y	Y	Y	Y	31.1%	N/A		
Transmission of electricity in Germany	35.12	6,556	66.6%	66.6%	N/A	N/A	N/A	N/A	N/A	Y	N/A	Y	Y	Y	Y	66.6%	N/A		
<b>A.2 Taxonomy-Eligible but not environmentally sustainable activities (not Taxonomy-aligned activities)</b>	177	1.8%	1.8%	N/A	N/A	N/A	N/A	N/A	N/A	Y	N/A	Y	Y	Y	Y	1.8%	N/A		
Transmission of electricity in the Netherlands last mile to fossil power plant	35.12	32	0.3%	0.3%	N/A	N/A	N/A	N/A	N/A	Y	N/A	Y	Y	Y	Y	0.3%	N/A		
Transmission of electricity in Germany last mile to fossil power plant	35.12	145	1.5%	1.5%	N/A	N/A	N/A	N/A	N/A	Y	N/A	Y	Y	Y	Y	1.5%	N/A		
<b>B. Taxonomy non-eligible activities</b>	51	0.5%	0.5%	N/A	N/A	N/A	N/A	N/A	N/A	Y	N/A	Y	Y	Y	Y	0.5%	N/A		
Turnover of Taxonomy-non-eligible activities (B)	51	0.5%	0.5%	N/A	N/A	N/A	N/A	N/A	N/A	Y	N/A	Y	Y	Y	Y	0.5%	N/A		
<b>Total (A+B)</b>	<b>9,840</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>Y</b>	<b>N/A</b>	<b>Y</b>	<b>Y</b>	<b>Y</b>	<b>Y</b>	<b>100%</b>	<b>N/A</b>		

## Capex

	Code(s)	Absolute Capex (in EUR million)	Proportion of Capex (%)	Substantial contribution criteria						DNSH criteria ('Does Not Significantly Harm')						Minimum safeguards	Taxonomy-aligned proportion of Capex, year N	Taxonomy-aligned proportion of Capex, year N-1	Enabling/transitional
				Climate change mitigation (%)	Climate change adaptation (%)	Water and marine resources (%)	Circular economy (%)	Pollution	Biodiversity and ecosystems	Climate change adaptation	Water and marine resources	Circular economy	Pollution	Biodiversity and ecosystems					
Economic activities																			
<b>A. TAXONOMY-ELIGIBLE ACTIVITIES</b>		4,522	99.8%	99.8%	N/A	N/A	N/A	N/A	N/A	Y	N/A	Y	Y	Y	Y	99.8%	N/A		
<b>A.1. Environmentally sustainable activities (Taxonomy-aligned)</b>		4,522	99.8%	99.8%	N/A	N/A	N/A	N/A	N/A	Y	N/A	Y	Y	Y	Y	99.8%	N/A		
Transmission of electricity in the Netherlands	35.12	1,532	33.8%	33.8%	N/A	N/A	N/A	N/A	N/A	Y	N/A	Y	Y	Y	Y	33.8%	N/A		
Transmission of electricity in Germany	35.12	2,990	66.0%	66.0%	N/A	N/A	N/A	N/A	N/A	Y	N/A	Y	Y	Y	Y	66.0%	N/A		
<b>A.2 Taxonomy-Eligible but not environmentally sustainable activities (not Taxonomy-aligned activities)</b>		-	0%	0%	N/A	N/A	N/A	N/A	N/A	Y	N/A	Y	Y	Y	Y	0%	N/A		
Transmission of electricity in the Netherlands last mile to fossil power plant	35.12	-	0%	0%	N/A	N/A	N/A	N/A	N/A	Y	N/A	Y	Y	Y	Y	0%	N/A		
Transmission of electricity in Germany last mile to fossil power plant	35.12	-	0%	0%	N/A	N/A	N/A	N/A	N/A	Y	N/A	Y	Y	Y	Y	0%	N/A		
<b>B. Taxonomy non-eligible activities</b>		9	0.2%	0.2%	N/A	N/A	N/A	N/A	N/A	Y	N/A	Y	Y	Y	Y	0.2%	N/A		
Capex of Taxonomy-non-eligible activities (B)		9	0.2%	0.2%	N/A	N/A	N/A	N/A	N/A	Y	N/A	Y	Y	Y	Y	0.2%	N/A		
<b>Total (A+B)</b>		<b>4,531</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>Y</b>	<b>N/A</b>	<b>Y</b>	<b>Y</b>	<b>Y</b>	<b>Y</b>	<b>100%</b>	<b>N/A</b>		

## Opex

	Code(s)	Absolute Opex (in EUR million)	Proportion of Opex (%)	Substantial contribution criteria						DNSH criteria ('Does Not Significantly Harm')						Enabling/transitional	
				Climate change mitigation (%)	Climate change adaptation (%)	Water and marine resources (%)	Circular economy (%)	Pollution	Biodiversity and ecosystems	Climate change adaptation	Water and marine resources	Circular economy	Pollution	Biodiversity and ecosystems	Minimum safeguards	Taxonomy-aligned proportion of Opex, year N	Taxonomy-aligned proportion of Opex, year N-1
Economic activities																	
<b>A. TAXONOMY-ELIGIBLE ACTIVITIES</b>		6,852	100%	100%	N/A	N/A	N/A	N/A	N/A	Y	N/A	Y	Y	Y	Y	100%	N/A
<b>A.1. Environmentally sustainable activities (Taxonomy-aligned)</b>		6,815	99.4%	99.4%	N/A	N/A	N/A	N/A	N/A	Y	N/A	Y	Y	Y	Y	99.4%	N/A
Transmission of electricity in the Netherlands	35.12	2,161	31.5%	31.5%	N/A	N/A	N/A	N/A	N/A	Y	N/A	Y	Y	Y	Y	31.5%	N/A
Transmission of electricity in Germany	35.12	4,654	67.9%	67.9%	N/A	N/A	N/A	N/A	N/A	Y	N/A	Y	Y	Y	Y	67.9%	N/A
<b>A.2 Taxonomy-Eligible but not environmentally sustainable activities (not Taxonomy-aligned activities)</b>		37	0.6%	0.6%	N/A	N/A	N/A	N/A	N/A	Y	N/A	Y	Y	Y	Y	0.6%	N/A
Transmission of electricity in the Netherlands last mile to fossil power plant	35.12	12	0.2%	0.2%	N/A	N/A	N/A	N/A	N/A	Y	N/A	Y	Y	Y	Y	0.2%	N/A
Transmission of electricity in Germany last mile to fossil power plant	35.12	25	0.4%	0.4%	N/A	N/A	N/A	N/A	N/A	Y	N/A	Y	Y	Y	Y	0.4%	N/A
<b>B. Taxonomy non-eligible activities</b>		1	0%	0%	N/A	N/A	N/A	N/A	N/A	Y	N/A	Y	Y	Y	Y	0%	N/A
Opex of Taxonomy-non-eligible activities (B)		1	0%	0%	N/A	N/A	N/A	N/A	N/A	Y	N/A	Y	Y	Y	Y	0%	N/A
<b>Total (A+B)</b>		<b>6,853</b>	<b>100%</b>	<b>100%</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>Y</b>	<b>N/A</b>	<b>Y</b>	<b>Y</b>	<b>Y</b>	<b>Y</b>	<b>100%</b>	<b>N/A</b>

## Introduction

The EU Taxonomy constitutes one of the cornerstones for both the European Green Deal as well as the EU Action Plan on Sustainable Finance. It aims to facilitate the flow of capital towards more sustainable investments in the EU. However, to do so, a clear definition of what constitutes as “sustainable” is needed. And this is what the EU Taxonomy is aimed at – providing clear guidance on when an activity can be deemed sustainable. Further reference is made to page 70 of this report.

## Reporting requirements

TenneT, subject to the Non-Financial Reporting Directive (NFRD) via Part 9 of Book 2 of the Dutch Civil Code, is required to apply the EU Taxonomy Regulation in its corporate reporting as of reporting year 2021.

As of this year, and in accordance with these requirements, TenneT reported on its eligible contribution to the European Union’s environmental objectives of climate change mitigation (CCM) according to the guidelines laid down in the EU Taxonomy.

We reported the share of turnover, capital expenditure (Capex) and operating expenditure (Opex) that we have deemed ‘Taxonomy-eligible’ - irrespective of whether these activities met any or all the technical screening criteria stated in the Taxonomy.

For reporting year 2022, as per the current requirements, TenneT has also assessed whether its activities are taxonomy ‘eligible’ and ‘aligned’. This builds on the 2021 ‘EU Taxonomy eligibility’ by requiring the activities to meet additional criteria for:

- Substantial contribution to climate change mitigation;
- Do no significant harm (DNSH) to any other environmental objectives for those activities; and
- Minimum safeguards at the organisational level.

To this end, we have analysed whether we meet these criteria (refer to page 70). Furthermore, we have comprehensively analysed and screened our eligible economic activities and the turnover they generate, as well as our Capex and Opex, and determined the share that qualifies as Taxonomy-aligned.

## Basis for preparation

As indicated in Annex I to the Commission Delegated Regulation, article 1.2, the basis of how the KPIs are prepared, is included in our Integrated Annual Report 2022. This relates to the accounting policy (1.2.1), where is explained how these KPIs were determined and how the allocation has been performed. As nearly all of our activities are related to EU Taxonomy 4.9 ‘Transmission and distribution of electricity’, allocation to different economic activities is not applicable. This is because our primary tasks are to provide electricity transmission services and system services and to facilitate the energy market. Those economic activities are linked to NACE code D35.12 and are concluded to substantially contribute to climate change mitigation, since TenneT is transmitting and distributing renewable energy in line with Directive (EU) 2018/2001, including necessary reinforcement or extension of the grid. In line with technical screening criterium 4.9 ‘Transmission and distribution of electricity’ on climate mitigation, as per Commission Delegated Regulation (EU) 2021/2139 of 4 June 2021 Annex I. The regulated activities are as such EU Taxonomy eligible activities (in the table known as activity A) and the non-regulated activities are EU Taxonomy non-eligible activities (in the table known as activity B).

Both turnover and operational expenditures are based on underlying financial information as disclosed in note 2 ‘Segment information’ of the consolidated financial statements and as used in the director’s report. Capital expenditures are also based on underlying financial information, but there are no differences with investments based on IFRS.

There were no changes to the application of calculations compared to the previous reporting period, nor material changes to the implementation of the Capex plans. Please further note that the nature of the Taxonomy eligible and Taxonomy aligned economic activities have been described on page 70 of this report and how compliance was assessed in related to the technical screening criteria (article 1.2.2). We consider Annex 1, articles 1.2.2.1c, 1.2.2.2., 1.2.2.3 and 1.2.3 to be not applicable to our situation, with the exception of the key information about our Capex plans related to our Taxonomy eligible

and aligned activities. Please note that we deem the risk of double counting not applicable our our eligible economic activities only relates to one activity (the aforementioned NACE code D35.12). More information on our investments, can be found in the chapter 'Ensure critical infrastructure for society' of the director's report. These investments contribute to a future green energy system, related to the EU's environmental goal of climate change mitigation. Significant research and development and innovation activities are mentioned in the 'Our performance in 2022' section of this report.

Our additional disclosures are therefore related to how these KPIs were determined and how the allocation has been performed.

#### **Scope of sustainability reporting**

For sustainability reporting purposes, TenneT consolidates data in line with the scope of our report as set out on page 199 'About this report'. The EU Taxonomy includes reporting of entities that are consolidated in the Group's consolidated financial statements, in line with the requirements of IFRS 10 'Consolidated financial statements'. As such the EU Taxonomy reporting scope is limited to our subsidiaries. Joint ventures and associates are not included for EU Taxonomy purposes as no turnover, Opex and Capex are recognised in the consolidated financial statements, because of accounting under the equity method for these types of investments.

#### **Operational expenditures**

Based on the frequently asked questions from October 2022 (Commission Notice on the interpretation of the Disclosures Delegated Act from October 2022) and December 2022 (Second Draft Commission Notice on interpretation and implementation EU Taxonomy Climate Delegated Act from December 2022), the Opex category is closely related to maintenance and repair and can include the following costs for: maintenance material, cost of employee repairing a machine, cost of employee cleaning a factory, IT dedicated to maintenance. In view of the above, TenneT has included grid related expenses in calculating the Opex. This methodology has not been updated compared to our Integrated Annual Report 2021.

#### **Accounting policy**

##### **EU Taxonomy Turnover (page 207)**

###### **Turnover for taxonomy-eligible activities (A. Taxonomy - eligible activities)**

All regulated revenues are eligible to the EU Taxonomy turnover.

###### **Determination of numerator for taxonomy – aligned turnover**

All regulated revenues are aligned to EU Taxonomy, except the other revenues stream and the total share of the direct connections between our substation or grid and the network and a power production plant that is more greenhouse gas intensive than 100 gCO<sub>2</sub>e/kWh measured on a life cycle basis. This turnover is excluded from the final calculation to determine the reporting metrics related to this regulation and this turnover is disclosed under A.2. Taxonomy-eligible but not environmentally sustainable activities.

###### **Determination of denominator for taxonomy-aligned turnover**

Total turnover as included in note 2 'Segmenting information'.

##### **EU Taxonomy Capex (page 208)**

###### **Capex for taxonomy-eligible activities (A. Taxonomy - eligible activities)**

All regulated investments are eligible to the EU Taxonomy Capex.

###### **Determination of numerator for taxonomy - aligned activities**

All investments are related to new connections to green electricity producers or other parts of the grid that are needed to transmit green electricity. The amount is based on the regulated investments and additions to the right-of-use assets, reference is made to the table below.

###### **Determination of denominator for taxonomy - aligned activities**

Total of the investments and the right-of-use assets additions, reference is made to the next table.

## Reconciliation to financial statements

(EUR million)	TSO NL	TSO Germany	Regulated	Non- regulated	Total
Investments (note 2)	1,527	2,961	4,488	5	4,493
Right-of-use assets (note 9)	5	29	34	4	38
<b>Total EU Taxonomy Capex</b>	<b>1,532</b>	<b>2,990</b>	<b>4,522</b>	<b>9</b>	<b>4,531</b>

Since we do not have any investments related to fossil power plants we have no Capex disclosed under A.2. Taxonomy-eligible but not environmentally sustainable activities.

### EU Taxonomy Opex (page 209)

#### Opex for taxonomy-eligible activities (A. Taxonomy - eligible activities)

All regulated grid expenses are eligible to the EU Taxonomy Opex.

#### Determination of numerator for taxonomy - aligned activities Opex

All regulated grid expenses are aligned to EU Taxonomy, except the total share of the direct connections between our substation or grid and the network and a power production plant that is more greenhouse gas intensive than 100 gCO<sub>2</sub>e/kWh measured on a life cycle basis. These Opex are excluded from the final calculation to determine the reporting metrics related to this regulation and are disclosed as Opex under A.2. Taxonomy-eligible but not environmentally sustainable activities.

#### Determination of denominator for taxonomy - aligned activities Opex

All grid expenses as included in note 2 'Segmenting information'.

# Company addresses

## Head office

TenneT Holding B.V. and TenneT TSO B.V.  
Mariëndaal Centre of Excellence  
Utrechtseweg 310  
6812 AR Arnhem  
The Netherlands  
Phone +31 (0)26 373 11 11

Postbus 718  
6600 AS Arnhem  
The Netherlands

communicatie@tennet.eu  
www.tennet.eu

## Regional offices

### The Netherlands

**TenneT region West**  
Tielweg 28  
2803 PK Gouda  
The Netherlands

### TenneT region North

De Stroom 2  
7901 TE Hoogeveen  
The Netherlands

### TenneT region South

Copernicusstraat 9  
6003 DE Weert  
The Netherlands

### Germany

**Head office Germany**  
TenneT TSO GmbH  
Berneckerstraße 70  
95448 Bayreuth  
Germany  
Phone + 49 (0) 921 50740-0

### TenneT Lehrte

Eisenbahnlängsweg 2a  
31275 Lehrte  
Germany

### TenneT Berlin

Representative Office  
Friedrichstraße 150  
10117 Berlin  
Germany

### Belgium

**TenneT Brussels**  
TenneT Holding B.V.  
European Office  
Rue des Deux Eglises 29  
1000 Brussels  
Belgium

## Key figures: five-year summary

(based on underlying figures)

	2022	2021	2020	2019	2018
Secure supply today and tomorrow					
Investments (in)tangible fixed assets	4,493	3,969	3,412	3,012	2,212
Grid availability (onshore)	99.99963%	99.99999%	99.99995%	99.99982%	99.99884%
Interruptions (onshore)	11	17	4	14	17
Interconnectors	17	17	15	15	14
Drive the energy transition					
Percentage greened of our carbon footprint	35%	69%	62%	27%	22%
Energise our people and organisation					
TRIR	4.4	5.8	4.1	4.8	3.7
Absentee rate NL	3.7	3.1	2.7	3.4	3.0
Absentee rate GE	4.1	2.6	2.5	2.8	3.0
Diversity % female inflow to total inflow	33%	31%	33%	31%	28%
Internal headcount	5,930	5,168	4,321	3,768	3,409
Safeguard our financial health					
Net debt	20,398	15,584	14,004	10,815	8,712
Underlying EBIT group	1,210	834	910	768	853
Underlying result for the year	671	493	516	401	450
Adjusted ROIC	4.9%	4.2%	5.1%	5.1%	6.2%
Adjusted FFO/Net debt	9.7%	10.5%	11.3%	12.9%	14.1%
Adjusted FFO/Adjusted net debt	10.9%	10.6%	10.7%	12.6%	12.2%
IFRS EBIT group	-976	-275	1,356	1,077	880
IFRS result	-879	-320	837	630	518



# Glossary

Power units	Energy units	Weight units
<ul style="list-style-type: none"><li>• Power is energy per unit of time</li><li>• Power output is measured in watts (W)</li><li>• 1 kW (kilowatt) = 1,000 W</li><li>• 1 MW (megawatt) = 1,000 kW</li><li>• 1 GW (gigawatt) = 1,000,000 kW</li></ul>	<ul style="list-style-type: none"><li>• Energy is power multiplied by time</li><li>• 1 kWh (kilowatt hour) = 1 kW in one hour</li><li>• 1 MWh (megawatt hour) = 1,000 kWh</li><li>• 1 GWh (gigawatt hour) = 1,000,000 kWh</li><li>• 1 TWh (terawatt hour) = 1,000,000,000 kWh</li></ul>	<ul style="list-style-type: none"><li>• ktonnes (kilotonnes) = 1,000 tonnes</li><li>• Mt or Mtonnes (megatonnes) = 1,000,000 tonnes</li></ul>

## ABP – Algemeen Burgerlijk Pensioenfonds

ABP is the civil service pension fund for government, education and energy employees in the Netherlands.

## AC – Alternating current

In alternating current (AC), the flow of electricity periodically reverses direction. By contrast direct current (DC), electricity only flows in one direction. AC is used to transport electricity over relatively shorter distances and DC longer ones.

## ACER – Agency for the Cooperation of Energy Regulators

The European network organisation for energy regulators. It has a key role in the integration of European electricity and gas markets, providing a framework for co-operation at EU level and regulatory certainty.

## ACM – Autoriteit Consument & Markt

Dutch national regulatory authority.

## Adjusted FFO – Adjusted funds from operations

Profit for the year plus depreciation, amortisation and impairments minus gain/loss on the disposal of assets minus capitalised interest on assets under construction, plus interest on provisions, minus 50% of Hybrid interest.

## Adjusted FFO/net debt

Adjusted funds from operations divided by net debt.

## Blockchain

The digital process of verifying and documenting the performance of distributed flexible devices. Blockchain is suited to connecting multiple parties and large numbers of distributed computed nodes and enabling them to undertake joint action in a scalable, transparent and trusted network.

## BNetzA – Bundesnetzagentur für Elektrizität, Gas, Telekommunikation, Post und Eisenbahnen

German national regulatory authority.

## BritNed

The 260 km-long high-voltage direct current BritNed cable has a capacity of 1,000 MW and connects the Dutch and British electricity grids.

## Capex – Capital expenditure

Capital expenditure (capex) is the amount spent on acquiring or improving long-term assets. Its benefits are enjoyed over a long period time, not only in the current year. Capex is of a non-recurring nature and results in the acquisition of permanent assets.

## Carbon footprint

The total amount of greenhouse gases produced to directly and indirectly support human activities, usually expressed in equivalent tons of carbon dioxide (CO<sub>2</sub>).

## CGU – Cash-generating unit

A cash-generating unit is the smallest group of assets that independently generates cash flow and whose cash flow is largely independent of the cash flows generated by other assets.

## CIP – Copenhagen Infrastructure Partners

Copenhagen Infrastructure Partners is a fund management company that is joined between four senior partners and PensionDenmark.

## CO<sub>2</sub> – Carbon dioxide

Carbon dioxide is a greenhouse gas formed by the burning of carbon-based fuels. Its concentration in the atmosphere is rapidly increasing, leading to global warming.



## COBRACable

A 275 km-long high-voltage direct current cable that is under construction to connect the Dutch and Danish electricity grids. It will have a capacity of 700 MW.

## COSO – Committee of Sponsoring Organisations of the Treadway Commission

COSO has established the common internal control model against which companies and organisations assess their control systems.

## CP programme – Commercial paper programme

A commercial paper is a flexible short-term debt instrument that is issued directly to the market with different maturities and is offered continuously.

## CPI index

A consumer price index measures changes in the price level of a weighted average market basket of consumer goods and services purchased by households.

## CSR – Corporate social responsibility

Corporate social responsibility relates to the socially responsible business practices of a company, balancing people, planet and profit.

## CSRD – Corporate Sustainability Reporting Directive

The objective of the proposed CSRD is to improve sustainability reporting and ensure it is brought into a company's management report to better leverage the potential of the European single market and to contribute to the transition to a fully sustainable and inclusive economic and financial system in line with the European Green Deal and the UN Sustainable Development Goals (SDGs).

## Cross-border TSO

A cross-border TSO is a TSO that operates in more than one country.

## CTA - Contractual Trust Arrangements

A contractual trust arrangement is essentially a form of company pension fund where the fund's assets have been transferred to a legal entity separate from the company.

## DBO - Defined Benefit Obligation

A defined benefit obligation pension plan is a type of pension plan in which an employer/sponsor promises a specified pension payment, lump-sum or combination thereof on retirement that is predetermined by a formula

based on the employee's earnings history, tenure of service and age, rather than depending directly on individual investment returns.

## DC – Direct current

In direct current (DC), the flow of electricity is only in one direction. In alternating current (AC), the electricity flows periodically reverses direction. DC is used to transport electricity over relatively longer distances and AC over shorter ones.

## DSO – Distribution system operator

A regional electricity distribution company, that is connected with end users and is responsible for providing (1) power distribution services, by constructing and maintaining a robust high-voltage grid, and (2) facilitating a smooth functioning, liquid and stable electricity market.

## E-wet – Elektriciteitswet 1998

The Dutch electricity law.

## EBIT – Earnings before interest and tax

Earnings for the period before income tax expense and interest payments are deducted.

## EBITDA – Earnings before interest, tax, depreciation and amortisation

Earnings for the period before income tax expense, interest payments depreciation and amortisation are deducted.

## EC – European Commission

The European Commission is the executive of the European Union and promotes its general interest.

## ECL - Expected Credit Loss

Expected Credit Loss is the probability-weighted estimate of credit losses (i.e., the present value of all cash shortfalls) over the expected life of a Financial Instrument.

## EEG – Erneuerbare-Energien-Gesetz

German Renewable Energy Act, designed to govern the preferred supply of electricity from renewable sources into the grid with guaranteed, fixed minimum producer prices. It is intended to serve and protect the climate and is one of several statutory provisions aimed at reducing Germany's dependence on fossil fuels such as oil, natural gas or coal, and nuclear power.

## EIB – European Investment Bank

The European Investment Bank is one of the key financial institutions of the EU. It is the only bank owned by and representing the interests of the EU member states, providing financing for sustainable investment projects that contribute to furthering EU policy objectives.

## EIR - Effective Interest Rate

The effective interest rate is the interest rate on a loan or financial product restated from the nominal interest rate and expressed as the equivalent interest rate if compound interest was payable annually in arrears.

## EMTN – Euro medium-term note

A flexible medium-term debt instrument that is issued directly to the market with different maturities and is offered continuously rather than all at once like a bond issue.

## Energinet

Energinet is the Danish TSO that TenneT is partnering with to build the COBRAcable between the Netherlands and Denmark. Energinet.dk is also participating in the development of the North Sea Wind Power Hub.

## EnWG – Energiewirtschaftsgesetz

The German electricity law.

## ENTSO-E – European Network of Transmission System Operators for Electricity

ENTSO-E is the organisation of transmission system operators at a European level, representing 39 TSOs from 35 countries. Its mission is to promote important aspects of energy policy, especially integrating renewable energy and the completion of an internal energy market.

## Equigy B.V.

Together with TenneT (Germany and the Netherlands), Transpower (Germany), Swissgrid (Switzerland) and Terna (Italy), four of the largest European transmission system operators are now jointly developing a cross-border blockchain platform - Equigy. This will enable millions of European households and owners of e.g. electric vehicles to actively offer the flexible capacity of their cars and house batteries on the energy markets to stabilise the electricity system and thus earn money from the energy transition.

## ESG ratings

ESG ratings assess environmental, social and governance information of TenneT.

## EU – European Union

The European Union (EU) is a political-economic union of 28 member states located in Europe.

## Flexumers

Energy consumers simultaneously acting as producers

## FTE – Full-time equivalent

Full-time equivalent is a unit that measures work by converting workload hours into the number of people required to complete that task.

## Gasunie – N.V. Nederlandse Gasunie

Gasunie is a European gas infrastructure company that transports natural gas and green gas in the Netherlands and the northern part of Germany. Gasunie is participating in the development of the North Sea Wind Power Hub.

## GIS – Gas insulated switchgear

A switchgear insulated via SF<sub>6</sub> gas or other gasses.

## Green (hybrid) bonds

The proceeds of the green bonds are used to finance, refinance and/or invest in projects relating to the transmission of renewable electricity from offshore wind power plants into the onshore electricity grid using direct current technology or alternating current technology.

Green hybrid bonds are perpetual bonds without an end-date.

## GRI – Global Reporting Initiative

The Global Reporting Initiative is a non-profit organisation that promotes sustainability and produces global standards for sustainability reporting.

## Helaba – Helaba Pension Trust e.V.

Helaba Pension Trust e.V. is a subsidiary of German bank Landesbank Hessen-Thüringen and holds a part of the assets of the German pension plan.

## HGRT – Holding des Gestionnaires de Réseaux de Transport d'Électricité S.A.S.

Holding des Gestionnaires de Réseaux de Transport d'Électricité S.A.S. is a holding company of EPEX SPOT power exchange.

## HR – Human resources

Our HR department aims to make a distinctive contribution to TenneT's position as a leading TSO by attracting, recruiting and retaining qualified staff, as well as by creating a healthy and stimulating working environment.



## HVDC – High-voltage direct current

A high-voltage, direct current system can transmit bulk electricity over longer distances than an alternating current system and with lower grid losses. As such, HVDC is used for linking offshore wind farms to the onshore grid and for our Interconnectors NorNed to Norway, BritNed to the UK and COBRAcable to Denmark and NordLink to Norway.

## IAS - International Accounting Standards

International Accounting Standards (IAS) are older accounting standards issued by the International Accounting Standards Board (IASB), an independent international standard-setting body based in London. The IAS were replaced in 2001 by International Financial Reporting Standards (IFRS).

## ICF – Internal control framework

Framework for the set of internal controls, to provide reasonable assurance on the reliability of our internal and external reporting.

## IFRIC - International Financial Reporting

### Interpretations Committee

IFRIC Interpretations are developed by the IFRS Interpretations Committee (previously the International Financial Reporting Interpretations Committee, IFRIC) and are issued after approval by the International Accounting Standards Board (IASB).

## IFRS – International Financial Reporting Standards

The internationally prescribed and recognised reporting guidelines.

## IIRC – International Integrated Reporting Council

The International Integrated Reporting Council (IIRC) is a global coalition of regulators, investors, companies, standard setters, the accounting profession, academia and NGOs. The coalition promotes communication about value creation as the next step in the evolution of corporate reporting. Together with the Sustainability Accounting Standards Board (SASB) the IIRC formed the Value Reporting Foundation.

## ISS ESG

ISS ESG is a sustainability rating agency and external assessor for benchmarking CSR reports.

## KfW – Kreditanstalt für Wiederaufbau

KfW is the Reconstruction Credit Institute development bank owned by the German government.

## KWK-G – Kraft-Wärme-Kopplungs-Gesetz

The German Combined Heat and Power Act.

## LEAN

The core idea of LEAN is to maximise customer value while minimising waste. Simply, LEAN means creating more value for customers with fewer resources. The principles of LEAN were developed by the Japanese car manufactory Toyota.

## LoR – Letter of Representation

A Letter of Representation is signed by the management of the Group and/or performance unit to attest to the accuracy of the financial statements.

## Moody's

Moody's Investors Service provides credit ratings, research, and risk analysis.

## Net debt

Gross debt minus cash and cash equivalents at free disposal plus lease liabilities plus net employee defined benefit obligation plus 50% of hybrid securities.

## Netbeheer Nederland

Netbeheer Nederland is the association in the energy sector representing the interests of national and regional electricity and gas network operators in the Netherlands.

## NGO – Non-governmental organisation

A non-governmental organisation is a voluntary citizens' group that is neither a government initiative nor a conventional for-profit business.

## NOKA – DC Nordseekabel GmbH & Co. KG

NOKA is jointly owned by TenneT and German development bank KfW. It is responsible for financing and building the German part of the NordLink cable.

## NorNed

NorNed is a 580-kilometre long high-voltage direct current submarine power cable between Feda in Norway and the seaport of Eemshaven in the Netherlands, which interconnects both countries electrical grids.

## NordLink

TenneT is jointly developing the NordLink interconnector with its project partners, the Norwegian TSO Statnett and German development bank KfW. With an overall transmission capacity of 1,400 MW, the subsea cable will run between Tønsberg in the South of Norway and Wilster in Northern Germany.

## NSWPH – North Sea Wind Power Hub

The consortium of the North Sea Wind Power Hub programme has joined forces to realise climate goals. The consortium's work is based on research, stakeholder interaction and experience from earlier projects. Partners in the consortium are Energinet, Gasunie and TenneT.

## OCI - Other comprehensive income

Other comprehensive income comprises items of income and expense (including reclassification adjustments) that are not recognised in profit or loss as required or permitted by other IFRSs.

## OECD – Organisation for Economic Co-operation and Development

The Organisation for Economic Co-operation and Development is an intergovernmental economic organisation with 36 member countries, founded in 1961 to stimulate economic progress and world trade.

## Opex – Operational expenditure

Operating expenditure (opex) is the expense that a company incurs as a result of its normal business operations.

## Opex deficit

The difference between our operational expenditure and the reimbursement for these costs.

## OWF – Offshore wind farm operators

Offshore wind farms are constructed in bodies of water to generate electricity from wind.

## PBA - Project Budget Approval

The process of formally identifying and approving the project budget, prior to the start of the project.

## RCF – Revolving credit facility

A line of credit where TenneT pays a commitment fee and can then use the funds as and when needed.

## RES – Renewable Energy Sources

All sources of renewable energy including sunlight, wind, tides, waves, biomass and geothermal heat.

## ROIC – Return on invested capital

Underlying EBIT Group expressed as a percentage of the average underlying invested equity plus loans and bank overdrafts minus cash at free disposal during the year.

## S&P – Standard & Poors

Standard & Poors provides credit ratings, research, and risk analysis.

## SASB – Sustainability Accounting Standards Board

The Sustainability Accounting Standards Board is a non-profit organisation that sets financial reporting standards. SASB was founded in 2011 to develop and disseminate sustainability accounting standards. Together with the IIRC, the SASB formed the Value Reporting Foundation.

## SBTi – The Science Based Targets initiative

The SBTi is a partnership between CDP, the United Nations Global Compact, World Resources Institute (WRI) and the World Wide Fund for Nature (WWF). The SBTi call to action is one of the We Mean Business Coalition commitments.

## SCL – Safety Culture Ladder

TenneT uses the Safety Culture Ladder (SCL) as a tool to increase safety awareness and enhance safety culture, not only within our own organisation but also for our contractors. The Safety Culture Ladder is a requirement in the selection phase of a tender as described in the 'Safety by Contractor Management' programme.

## SDG – United Nations Sustainable Development Goals

The Sustainable Development Goals (SDGs) are a universal call to action to end poverty, protect the planet and improve the lives and prospects of everyone, everywhere. The 17 aspirational 'global goals' with 169 targets between them were adopted by all UN Member States in 2015, as part of the 2030 Agenda for Sustainable Development which set out a 15-year plan to achieve the Goals.

## SF<sub>6</sub> – Sulphur hexafluoride

An inorganic, colourless, odourless and non-flammable greenhouse gas that is used in the electricity industry to insulate high-voltage circuit breakers, switchgear and other electrical equipment.

## SHE – Safety, Health & Environment

SHE is the set of activities relating to safety, health & environment.

## SIC – Standard Interpretation Committee

SIC Interpretations were previously issued by the Standard Interpretations Committee (SIC), and were subsequently endorsed by the International Accounting Standards Board (IASB). The IFRS Interpretations Committee has reissued Interpretations in this series if it considers it necessary.

## SLA – Service level agreement

A service-level agreement is an agreement between two or more parties, where one is the customer and the others are service providers.

## SuedLink

A DC connection to transport electricity generated in the north of Germany to the South.

## SuedOstLink

A DC connection to transport electricity generated in north of Germany to the South-East.

## Sustainalytics

Sustainalytics is a sustainability ratings agency and external assessor for benchmarking CSR reports.

## TRIR – Total recordable incident rate

The total recordable incident rate is the number of total recordable incidents per million hours worked. Recordable incidents are fatalities, lost work day cases, restricted work day cases and medical treatment cases.

## TSCNET

TSCNET Services is one of Europe's Regional Security Coordinators (RSCs). The company based in Munich, renders integrated services for power transmission system operators (TSOs) and their control centres to maintain the operational security of our electricity system – 24 hours a day, seven days a week.

## TSO – Transmission system operator

A transmission system operator transports electricity at national or regional level from producers to distributors. A TSO is responsible for providing (1) power transmission services, by constructing and maintaining a robust high-voltage grid, (2) system services, by maintaining the balance between supply and demand of electricity 24/7 and (3) facilitating a smooth functioning, liquid and stable electricity market.

## UN – United Nations

An international organisation formed to promote international peace, security, and co-operation under the terms of the charter signed by 51 founding countries in San Francisco in 1945.

## UNGCG – United Nations Global Compact

A call from the UN to companies to align strategies and operations with universal principles on human rights, labour, environment and anti-corruption, and take actions that advance societal goals.

## VKE – Versorgungskasse Energie VWaG

Versorgungskasse Energie VWaG is pension fund for energy mutuals and a subsidiary of E.ON SE. It holds a part of the assets of the German pension plan.

## WACC – Weighted average cost of capital

The WACC is the rate that a company is expected to pay on average to all its capital providers to finance its assets.

## Workforce

All internal and external people who works for TenneT and where TenneT is responsible for their safety relating to our work.



## Colophon

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We look forward to receiving your feedback on this report.

Please send an email.

## Disclaimer

'We', 'TenneT', 'TenneT Holding', 'the Group', 'the company' or similar expressions are used in this report as a synonym for TenneT Holding B.V. and its subsidiaries.

Parts of this report contain forward-looking information. These parts may include unqualified statements on future operating results, government measures, the impact of other regulatory measures on the activities of TenneT as a whole, TenneT's shares and those of its subsidiaries and joint-ventures in existing and new markets, industrial and macro-economic trends and TenneT's performance in these. Such statements are preceded or followed by or contain words such as 'believes', 'expects', 'anticipates' or similar expressions. These forward-looking statements are based on current assumptions concerning future activities and are subject to known and unknown factors, and other uncertainties, many of which are beyond TenneT's control, so that future actual results may differ significantly from these statements.

All financial information in this Integrated Annual Report is reported in millions of euro, unless stated otherwise. As a result, small rounding differences may occur.

TenneT is a leading European grid operator. We are committed to providing a secure and reliable supply of electricity 24 hours a day, 365 days a year, while helping to drive the energy transition in our pursuit of a brighter energy future – more sustainable, reliable and affordable than ever before. In our role as the first cross-border Transmission System Operator (TSO) we design, build, maintain and operate 25,009 km of high-voltage electricity grid in the Netherlands and large parts of Germany, and facilitate the European energy market through our 17 interconnectors to neighbouring countries. We are one of the largest investors in national and international onshore and offshore electricity grids, with a turnover of EUR 9.8 billion and a total asset value of EUR 41 billion. Every day 7,397 people working at TenneT take ownership, show courage and make and maintain connections to ensure that the supply and demand of electricity is balanced for almost 43 million people.

**Together, we are lighting the way ahead**

TenneT Holding B.V.

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