

TenneT Holding B.V.

# Green Finance Report 2022





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# Key figures 2022



**8.3 million**  
Equivalent number of households able  
to switch to 100% renewable energy



**10.7 million tonnes**  
Potential avoidance of CO<sub>2</sub> emissions  
per year



**924 GWh**  
Grid losses



**0.01%**  
SF<sub>6</sub> leakage rate



**54**  
Environmental  
incidents



**EUR 50.3 billion**  
Total Budget



**EUR 20.5 billion**  
Total amount spent  
as of 31 December 2022



**EUR 2.5 billion**  
Green project portfolio  
CAPEX in 2022



**131 hours**  
Average  
interruption  
time



**Over 170**  
Number of  
stakeholder dialogues



**3.8**  
Lost Time Injury  
Frequency rate



**100%**  
Percentage  
of suppliers  
committed  
to Supplier  
Code of Conduct

# At a glance 2022

## 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.



## 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.

## 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.



## 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.

## 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.



## 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.



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

The year 2022 had been an eventful year. For many in the areas we serve, whether businesses or households, the need to transition to a greener energy future has become more evident, especially due to the war in Ukraine. This has impacted the energy markets, leading to an energy crisis in the areas we serve and it also showed the dependency on conventional energy sources.

That is why Europe is aiming to become a greener and more sustainable continent. Its ambition is to become the first climate neutral continent by 2050. The Dutch government has also adopted this goal, and the German government is even aiming to reach it as early as 2045. As a European TSO, we play an important role in achieving these ambitions. This fits well with our own purpose to connect everyone with a brighter energy future and our ambitions to drive the energy transition and lead as a green grid operator. This means playing an important role in shaping the future energy landscape, by connecting more renewable energy sources to our grid and working together with other stakeholders to develop new concepts, such as with the further development of green hydrogen. Next to this, it means also being aware of avoiding negative impacts we might have on the planet, by including nature-inclusive

concepts in the design of our assets, such as our offshore platforms for instance or finding alternatives for SF<sub>6</sub> that can help reduce our own carbon footprint.

The important role we play was reconfirmed this year at the Energy summit in Esbjerg, where countries developed new goals for the development of offshore energy sources. By 2030, 65 GW of offshore wind is required to meet the goals set by the governments in the areas we serve. 40 GW of this is to be realised by TenneT, a responsibility we feel and are energised to deliver upon. Many of the projects adding up to this 40 GW are already started up and some are completed even. Approximately 10 GW of this target for 2030 has already been realised and is operational. For instance, we reached major milestones on our offshore projects Hollandse Kust Zuid alpha and beta, that were

installed at sea in 2022 and also the sail out of the jacket of DolWin6. We strongly believe that the North Sea will become the Powerhouse for a sustainable Northwest European energy system and we welcome regulation, policies and new market design that fully facilitates this development.

Regarding our onshore projects, we are working hard to ensure that renewable electricity is able to be transmitted from where it is generated to where it is consumed. The progress made on our Wahle-Mecklar project is a good example of this. We are proud of the role our projects play in the energy transition and how it will allow society to move to a greener energy future. That is why we included these projects in our Green Finance Portfolio.

To realise these projects, many of our colleagues and others employed at one of our contractors are working hard to ensure we are able to deliver. In realising these projects, we want all of them to come home safe every day and aim for zero harm in the workplace. These activities are unfortunately not without risk, as we were saddened by the loss of an employee that was working on one of the Green Finance projects. A fatality occurred in July, when an employee of a contractor was fatally injured during the unloading of parts of a temporary powerline portal at a construction warehouse in the Emden/ Ost - Conneforde grid expansion project. This loss deeply saddens us and we deeply sympathise with the bereaved family and are more determined than ever to put even more emphasis on safety rules and zero harm practices, to ensure the safest possible working environment.

With respect to our Green Financing instruments, also in 2022 we were in the fortunate position to attract financing for our Green Financing project portfolio, which enables us to drive the energy transition. This year, we successfully issued a EUR 3.85 billion green bond in May 2022 (split in four tranches of EUR 1,250 million (term: 4.5 years, coupon 1.625%), EUR 1,000 million (term: 7.5 years, coupon 2.125%), EUR 750 million (term: 11 years, coupon 2.375%) and EUR 850 million (term: 20 years, coupon 2.750%) and a EUR 3 billion quadruple tranche bond in October 2022. This transaction was split in four tranches of EUR 650 million (term: 6 years, coupon 3.875%), EUR 500 million (term: 9.5 years, coupon 4.250%), EUR 1,000 million (term: 12 years, coupon 4.500%) and EUR 850 million (term: 20 years, coupon 4.750%).

With these green bonds, we have issued more than EUR 20 billion (> EUR 19 billion outstanding) of Green Debt in the last 7 years and we are the largest EUR corporate Green Debt issuer globally. We are humbled and pleased to see the large interest from the capital markets for our green financing products.

#### **TenneT Holding Executive Board**

# About TenneT

## Profile

As a Transmission System Operator (TSO), TenneT designs, builds, maintains and operates the electricity grid in the Netherlands and a large part of Germany and facilitates the European energy market.

Our role as a TSO is to secure the supply of electricity to the nearly 43 million end-users in our service areas, covering the Netherlands and a large part of Germany. To do so, we create the infrastructure necessary for a reliable, sustainable and affordable energy system. Our primary tasks, following from the Dutch and German energy laws, are to provide power transmission services, system services and facilitating the energy market. Find out more about what we do via our [website](#).

At TenneT, we are committed to driving the energy transition. The energy system of the future is increasingly based on renewable energy sources that are typically more weather-dependent. The current energy system is undergoing substantial changes in the way it is designed, built and operated. TenneT intends to play a pioneering role in the energy transition and has for many years already demonstrated our active contribution to the transition towards a reliable, affordable and sustainable energy

system. Together with stakeholders, we are working on the challenges of the energy transition: 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.

### Our strategy, purpose and promises

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. Furthermore, to deliver a future-proof grid on time and in line with the national climate targets, we are developing a Target Grid which serves as a roadmap for the future energy system. Find out more about Target Grid in our Integrated Annual Report 2022 (IAR2022).

## Strategic goals

**Secure  
supply today  
and tomorrow**



**Drive  
the energy  
transition**



**Energise  
our people  
and organisation**



**Safeguard  
our financial  
health**



### 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.

Realise at least 5 significant energy system innovations. **Deliver robust design Target Grid 2045** including accepted North Sea grid design.

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

Raise adequate amount of equity to assure our strong credit ratings of at least A3/A-. Achieve regulatory returns. **Reduce the OPEX deficit**.



# Our green finance projects

The Green Finance Project Portfolio currently consists of 42 projects. The proceeds of the green bonds are used to finance, refinance and/or invest in projects required for the energy transition.

Green Finance Projects are projects that meet the criteria, as defined in the [Green Financing Framework](#). The Green Finance projects all relate to connection services: the transmission of offshore generated electricity to the onshore grid or the (re)construction or reinforcement of the onshore grid to enhance the transmission capacity that is required for the energy transition.

In March 2022, we added 19 projects to the [Green Finance Project Portfolio](#), including 11 German onshore projects, 2 German offshore projects, 4 Dutch offshore projects and 2 Dutch onshore projects, with a SPO from ISS. In total the Green Finance Portfolio now consists of 42 projects. During 2022, the responsibility for the project BalWin1 transferred to Amprion and this project is therefore no longer in the Green Finance Project Portfolio. That is why it is not included in the total number of projects. However, performance information related to the social and environmental impact of BalWin1 is included in this report for the period it was under our responsibility.

Our German offshore projects relate to AC connections from wind power plants transformed into DC on the converter platform. Converting to DC helps to reduce the amount of electricity lost in transmitting electricity over long distances (grid losses). At the onshore converter station/feed-in point, the electricity is then transformed back into AC to be fed into the grid. A large part of the projects included in the Green Project Portfolio are related

to high voltage DC transmission cables connecting offshore wind power clusters in the German Bight with the German electricity grid. For the Dutch offshore projects included in our Green Project Portfolio, the distances are shorter and where possible, we make use of AC connections to bring the wind generated electricity onshore. When completed, TenneT's investments backed by green financing will have the capacity to transmit over 19.5 GW of green electricity from offshore wind farms to the Dutch and German grid and will have increased the transmission capacity onshore with approximately 62.5 GW to enhance the transmission capacity that is required to transmit the increasing share of renewable energy. More information on our projects can be found in appendix 1 and on our website.

The onshore projects included in our Green Project Portfolio also support our strategic ambition to drive the energy transition. These projects are important as they help to build an onshore electricity grid that is prepared for the future energy system. For example, several of our onshore projects in Germany enable the transmission of renewable energy generated in the northern part of Germany to other parts of Germany where the demand for electricity is high. These projects are important to realise ambitious climate and energy targets, such as the European Commission's goal to reduce the EU's carbon footprint by 55% by 2030 or the offshore energy targets agreed upon during the Esbjerg Summit in 2022.

## The Sustainable Development Goals and TenneT

The Sustainable Development Goals (SDGs) were determined by the United Nations 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 cooperation 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.



Current climate predictions indicate that governments and organisations need to increase their efforts to help mitigate the effects of climate change to meet the 1.5 degrees scenario from the Paris climate 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 energy system. That is why we have identified SDG 13 'Climate Action' as the main societal objective we contribute to. At the same time, also our choices and business conduct impact the planet. This is why we measure our greenhouse gas emissions related to grid losses, SF<sub>6</sub> leakages and energy consumption of the projects included in the Green Finance Project portfolio, where information is available. Next to this, we also report the amount of avoided emissions, resulting from the transmission of renewable electricity instead of fossil-fuel based electricity.



Another goal we contribute to most given our activities is SDG 9. Our role is particularly linked to target 9.1, where we focus on how the availability of our infrastructure supports and enables society. This is measured by the impact indicator to which extent we are able to generate value by having our grid available and diminishes when we are unsuccessful in securing supply of electricity. More information on how we achieve this from an overall TenneT level, can be found in IAR2022. The contribution the projects included in the Green Finance Portfolio have, can be found in the section 'Our Performance', where we disclose the negative contribution by electricity we have not been able to transmit and the positive contribution by the electricity we were able to transmit.



With our core activities, we feel that SDG 7 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, in IAR2022 more information can be found on the impact we make in this area for TenneT as a whole. Regarding target 7.2 we measure the capacity for renewable electricity on our transmission grid. The projects in the Green Finance Portfolio contribute to this impact as they enable the end-users in our service area to receive increasingly more green electricity and contribute to a greener grid mix. In 'Our Performance' the equivalent number of households (in millions) has been disclosed.



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 workforce (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, will have a positive climate effect as it is associated with lower emissions in the extraction phase. This is why we track several KPIs related to the targets supporting these goals, but the effect on these other SDGs are less significant than the ones mentioned above. Our main SDGs relate to our core tasks, the others we see our responsibility to act upon. Information on how the projects in the Green Finance Portfolio contribute to the other SDGs is included in the section 'Our Performance', such as the safety information, the positive nature measures and waste information.

## Our performance

In this chapter we provide performance information regarding the projects that are included in our Green Project Portfolio. We have included our performance from a financial, environmental, social and operational perspective, with data per project for the reporting year 2022.

### Results related to our projects

On an annual basis, we report on the performance of the projects included in our Green Project Portfolio. This is based on the selected key performance indicators as included in our Green Financing Framework. This includes information with respect to the use of proceeds,

performance information regarding the supply of electricity, safety and environmental information such as impact indicators (i.e. the potential avoidance of carbon emissions). Results are included in the table below and additional disclosures have been provided in the 'Notes to the Green Project Portfolio performance table'.

Green portfolio performance table Eligible project category: Renewable energy	Total	Note
<b>Advancement of proceeds (in EUR billion)</b>		
Total budget	50.3	A
Total amount spent as of 31 December 2022	20.5	A
Green Project Portfolio CAPEX in 2022	2.5	A
<b>Environmental impact indicators</b>		
Equivalent number of households able to switch to 100% renewable energy (in million)	8.3	B
Potential avoidance of CO <sub>2</sub> emissions per year (million tonnes)	10.7	C
<b>Operational and social indicators</b>		
Average interruption time (in hours)	131	D
Lost Time Injury Frequency rate	3.80	D
Percentage of suppliers committed to Supplier Code of Conduct	100%	D
<b>Planet indicators</b>		
Grid losses (in GWh)	924	E
SF <sub>6</sub> leakage rate (in %)	0.01	E
Number of environmental incidents (including oil leakages)	54	E

### Developments related to the Green Project Portfolio in 2022

The energy crisis, resulting from the war in Ukraine, made tendering for key strategic projects significantly more challenging in 2022. This was not only because of rising costs of energy and other resources, but also due to supply chain disruptions and the need to find alternative sources of critical materials, such as steel procured from Russia and Belarus. Despite these challenges, we were able to make good progress on our key projects: this year we have reached new milestones in our projects, also related to those included in our Green Project Portfolio.

An example of this is related to the delivery of the first sections of the Wahle-Mecklar line, where the first part of 105 km was delivered in 2022. Also for the Emden-Conneforde project, we delivered a new 61 km-long

high-capacity 380 kV powerline. This new connection can transmit three-and-a-half times more electricity as the previous one. It will primarily transmit and distribute wind power from the North Sea to regions onshore where it is consumed.

Furthermore, we are also aiming on embedding sustainable practices to a greater extent into the realisation of the projects, also those included in our offshore portfolio. An example of this relates to the Hollandse Kust Zuid (alpha) project, where we conducted a monitoring campaign of the use of eco-crossings together with Waardenburg Ecology. The eco-crossings replace the layer that is usually made of granite with calcareous rocks, which provides a safe breeding space for fish. The impact of eco-crossings on the development of habitats will now be studied for three consecutive years.

In 2022, we also witnessed safety incidents on projects related to the Green Finance Portfolio. We were deeply saddened by the fatal incident that occurred on the project site of the Emden/Ost - Conneforde project. On this site, an employee of a contractor was fatally injured during the unloading of parts of a temporary powerline portal at a construction warehouse. We regret that, despite our efforts on safety management, we could not prevent this incident from occurring. As a result we temporarily stopped all material handling activities involving materials that exceed 50 kg weight limit after this incident. Work at a specific site was resumed after all employees on site involved in such material handling activities, including contractors and subcontractors, did an additional mandatory safety briefing on the safe execution of these activities.

Furthermore, from an operational perspective, TenneT had some cable failures with the projects Wahle-Mecklar and Emden / Ost - Conneforde. With respect to our offshore projects, we experienced some interruptions, however these interruptions of the offshore grid connection systems in scope of the Green Finance Project Portfolio were within the targeted availability of these systems.

The European Commission adopted a series of legislative packages in 2021 with the goal to achieve the European Green Deal objectives. The EU Taxonomy is an example of this, with the aim to establish a European classification system to provide business and investors insights in the degree to which extent the activities of organisations within the EU contribute to the EU Green Deal objectives, and subsequently also aims to prevent 'greenwashing' of companies and their activities. In 2022, TenneT has followed up on the next steps regarding the EU Taxonomy legislation after its initial analysis on eligibility in 2021. Based on these procedures, we have concluded that our activities substantially contribute to the objectives related to the EU Green Deal. Our assessments indicate that 97% of our overall turnover, 100% of our CAPEX and 98% of our OPEX meet the alignment criteria of the EU Taxonomy. This also includes projects included in the Green Project Portfolio. More information on the outcome of the EU Taxonomy assessment has been included in our [Integrated Annual Report 2022](#).

# Notes to the Green Project Portfolio performance table

## A. Advancement of proceeds and projects

Eligible green project portfolio	EUR	Allocation of green funding	EUR
Net funding requirement	19.6	Outstanding Green bonds/debt	19.4
<b>Total eligible green project portfolio</b>	<b>19.6</b>	<b>Total net proceeds outstanding green bonds/debt</b>	<b>19.4</b>

As of 31 December 2022, the total amount budgeted by TenneT with respect to the 42 projects in the Green Project Portfolio amounted to approximately EUR 50.3 billion. The total amount spent amounted to EUR 20.5 billion, of which EUR 0.9 billion was financed by third parties (in the form of both debt and equity). As a result, the net funding requirement was around EUR 19.6 billion, of which approximately EUR 19.4 billion was financed through the net proceeds from Green Financing Instruments. The allocation of net proceeds to the projects included in the project portfolio is 100%. The annual capex spend of the total portfolio is EUR 2.5 billion

## B. Impact on households

With our Green Finance projects, we can connect more and more renewable energy to the grid by installing the cables and lines needed to transmit the produced electricity. This contributes to a greener grid mix in the Netherlands and Germany and enables more households to receive green electricity. We measure this impact by “the equivalent number of households able to switch to 100% renewable energy” and use the amount of green electricity transmitted on our lines and cables as the basis for this KPI. In 2022, 25,689 GWh of renewable energy was transmitted on our offshore grid and part of our onshore grid. This is equivalent to around 8.3 million households, which is about 17% of all the households in the areas we serve in the Netherlands and Germany. This calculation is based on the most recent data available of the average electricity consumption of a Dutch / German household, which for the Netherlands is from 2021 and for German households this relates to the year 2020. The total number of households both relate to 2022 data.

## C. Avoided emissions

As aforementioned, one of our largest impacts is connecting renewable energy sources to the electricity grid thereby avoiding emissions from fossil-based energy sources. Our projects help to avoid carbon emissions: the potential avoidance of CO<sub>2</sub> emissions in 2022 amounted to 10.7 million tonnes. To calculate the amount of CO<sub>2</sub>

avoided by any Green Financing Instrument in 2022, please consult Appendix 2 which includes an explanation of the calculations.

## D. Operational and social performance information

### Societal performance information

Currently most of our onshore projects included in the scope of the Green Project Portfolio are not operational yet, except for the Mittelachse, Emden / Ost - Conneforde, Dörpen West - Niederrhein and Hamburg Nord - Dollern projects. Therefore some of the performance information included in this figure relates to our offshore projects, with exception of the safety performance. In realising our projects. For more information on the scope of each KPI, please refer to our [Reporting Guidance Document](#).

We engage with our stakeholders, such as local communities and governments and work together with our suppliers to ensure that we also make progress. Not only within our own organisation, but also in our supply chain. Engaging with local communities and governments in 2022 was partially online but from Q2 onwards also possible to do in person as the lockdown measures were scaled down in the areas we serve. All in all, we were able to conduct more than 170 stakeholder dialogues in 2022 related to projects in the Green Portfolio. Examples include events where we aimed to work together with stakeholders and inform and discuss with them the progress of certain projects for instance. Furthermore, we also continued to request our suppliers to meet the standards we have set with respect to responsible conduct in realising our projects. In 2022, 100% of our suppliers have committed themselves to our supplier code of conduct with respect to the projects included in our Green Project Portfolio.

For the projects that are operational, we were able to transmit green electricity from renewable energy sources such as offshore and onshore wind parks to our grid. This relates to 20 projects, which transmitted a total of 25,689 GWh of electricity in 2022. Thanks to the HVDC technology we use in our German projects, grid losses are relatively low.

## Safety

To ensure we are able to drive the energy transition and secure supply today and tomorrow, we build and maintain our grid with the help of many colleagues and others working at our contractors. We were pleased that we are able to underline the importance of a safe working culture, for instance with the milestone of 5 million hours worked on our construction yard in Singapore, where construction works for DolWin5 are performed.

Unfortunately, we were unable to prevent that we had a fatal safety incident in 2022 related to one of the projects included in the Green Finance Project Portfolio. We have been working on further strengthening our procedures, governance and culture with respect to safety. We strive to continuously update this, also as an effect of the safety incidents that occurred this year. We investigated the root causes of how these could occur and implemented improvements where possible. As aforementioned, the fatal incident related to our project Emden/Ost - Conneforde was a key event in this area which has saddened us deeply. An example of how we further strengthened our safety procedures is the update of our Life Saving Rules in Q4 of 2022. All employees and contractors were requested to take notice and learn the updated guidance on this. Safety needs our energy and we will continue to focus on ensuring that everyone working at TenneT, also on projects included in the Green Finance Portfolio, can return home safely.

In 2022, the projects experienced more Lost Workday Cases (LWCs) compared to 2021 as we reported 36 LWCs, which has resulted in a safety performance of 3.8, which is higher than the LTIF reported in 2021 (2.0). This is partially due to more projects that are included in the Green Project Portfolio, however also without this effect we recorded a higher combined LTIF for these projects. We are working on further strengthening our safety environment within TenneT and at our contractors. This will help us in our aim to have a better safety performance next year compared to this year for the projects included in the Green Project Portfolio.

## E. Environmental performance information

While building and operating our assets, we potentially create a negative impact on the environment. This relates to waste (of which we currently estimate that approximately 10-25% is non-recyclable), environmental incidents (54 in 2022, of which 33 relate to oil leakages) and carbon emissions while operating our assets related from either grid losses (384,826 tonnes CO<sub>2</sub> equivalents), energy consumption (57,644 tonnes CO<sub>2</sub> equivalents) and SF<sub>6</sub> leakages (114 tonnes of CO<sub>2</sub> equivalents).

In the past year, we were able to make progress related to the positive nature measures that we incorporated in realising our projects. An example of this is the installation of a bat cave and planting of trees on the project Stade-Landesbergen. Next to this, we also worked on the renaturation of large areas of salt marches for the offshore grid connection project BorWin5. This is a part of legislative nature measures, where we are required to compensate for potential environmental impact we have when building our assets.

## Appendices

### Appendix 1: Additional project information

Project	Connection start	Connection end	Transmission power	Cable length total (submarine, onshore)	Expected construction date	Expected operation date	Added in green project portfolio
Pirach - Pleinting	Pirach	Pleinting	3.6 GW	80 km	2026	2030	March 2022
Oberbachern - Ottenhofen	Oberbachern	Ottenhofen	4.0 GW	47 km	2023	2031	March 2022
Ganderkesee - St.Hülfe	Ganderkesee	Hülfe	3.6 GW	60,84 km	2017	2023	March 2022
Hamburg/Nord - Dollern	Hamburg/Nord	Dollern	3.6 GW	43 km	2017	2019	March 2022
Stade - Landesbergen	Stade	Landesbergen	4.0 GW	167 km	2016	2026	March 2022
Ostküstenleitung	Abschnitt Segeberg	Siems	3.6 GW	126,5 km	2022	2027	March 2022
Conneforde - Cloppenburg - Merzen	Conneforde	Merzen	3.6 GW	97,6 km	2022	2026	March 2022
Wahle - Mecklar	Wahle	Mecklar	3.6 GW	225,2 km	2015	2026	March 2022
Altheim - St. Peter	Altheim	St. Peter	3.6 GW	86 km	2019	2026	March 2022
Emden/Ost - Conneforde	Emden/Ost	Conneforde	2.8 GW	59,2 km	2017	2022	March 2022
Willemshaven - Conneforde	Willemshaven	Conneforde	3.6 GW	29,7 km	2016	2020	March 2022
Zuid West - Oost	Rilland	Tilburg	2.6 GW	163 km	2024	2030	March 2022
Zuid West - West	Borssele	Rilland	2.6 GW	43 km	2016	2023	March 2022
BorWin6	Plattform BorWin kappa	Büttel	980 MW	233 km	2022	2027	March 2022
BalWin1*	Between N- 9.1 and N-9.2 (North Sea)	Unterweser	2 GW	258 km	2023	2029	March 2022
Hollandse Kust West alpha	Windenergiegebied Hollandse Kust (west alpha)	Wijk aan Zee	700 MW	70 km	2020	2024	March 2022
Hollandse Kust West beta	Windenergiegebied Hollandse Kust (west beta)	Wijk aan Zee	700 MW	68 km	2022	2026	March 2022
IJmuiden Ver alpha	Windgebied 1	Borssele	2 GW	179 km	2023	2028	March 2022
IJmuiden Ver beta	Windgebied 1	Maasvlakte	2 GW	158 km	2023	2029	March 2022
Alfa Ventus	AlfaVentus platform	Hagermarsch, Germany	62 MW	66km (60km; 6km)	2006	2009	March 2020
Borssele alpha	Borssele alpha	Borssele, Netherlands	700 MW	60 km (59 km; 1 km)	2017	2019	March 2018
Borssele beta	Borssele beta	Borssele, Netherlands	700 MW	66 km (65 km; 1 km)	2017	2020	March 2018
BorWin1**	BorWin alpha	Diele, Germany	400 MW	200 km (125 km; 75 km)	2008	2010	June 2017
BorWin2	BorWin beta	Diele, Germany	800 MW	200 km (125 km; 75 km)	2010	2015	March 2017
BorWin3	BorWin gamma	Emden Ost, Germany	900 MW	160 km (130 km; 30 km)	2015	2019	May 2016
DolWin5	DolWin epsilon	Emden-Ost, Germany	900 MW	130 km (100km; 30km)	2021 (cable), 2024 (platform)	2024	March 2021
Borwin5	BorWin epsilon	Garrel-Ost, Germany	900MW	230 km (110km; 120 km)	2022	2025	March 2021

\* During 2022, the responsibility for the project BalWin1 transferred to Amprion and therefore this project is no longer in the Green Finance Project Portfolio. Performance information related to the social and environmental impact of BalWin1 is included in this report for the period it was under our responsibility

\*\* The construction of BorWin1 started before TenneT acquired the project as part of Transpower assets, formerly part of E.ON (currently TenneT Germany).

Project	Connection start	Connection end	Transmission power	Cable length total (submarine, onshore)	Expected construction date	Expected operation date	Added in green project portfolio
Dolwin1	DolWin alpha	Dörpen West, Germany	800 MW	165 km (75 km; 90 km)	2011	2015	May 2015
DolWin2	DolWin beta	Dörpen West, Germany	916 MW	135 km (45 km; 90 km)	2012	2016	May 2015
DolWin3	DolWin gamma	Dörpen West, Germany	900 MW	160 km (80 km; 80 km)	2014	2018	May 2015
DolWin6	DolWin kappa	Emden/Ost	900 MW	86 km (45 km; 41 km)	2019	2023	March 2019
Dörpen/West - Niederrhein	Dörpen West substation	Stadt Meppen, Germany	3100 MW	31km (onshore)	2017	2022	April 2020
HelWin1	HelWin alpha	Büttel, Germany	576 MW	130 km (85 km; 45 km)	2011	2015	June 2017
HelWin2	HelWin beta	Büttel, Germany	690 MW	130 km (85 km; 45 km)	2011	2015	March 2018
Hollandse Kust Noord	HKN platform	Beverwijk, Netherlands	700 MW	45km (35km; 10km)	2020	2023	April 2020
Hollandse Kust Zuid alpha	HKZ alpha	Maasvlakte2	700 MW	45 km (42 km; 3 km)	2019	2021	March 2019
Hollandse Kust Zuid beta	HKZ beta	Maasvlakte2	700 MW	37 km (34 km; 3 km)	2020	2022	March 2019
Mittelachse	Part 1: Audorf Part 2: Audorf Part 3: Flensburg (Handewitt) (Total: From Hamburg- Nord to Kassö (Denmark))	Part 1: Hamburg Nord Part 2: Flensburg (Handewitt) Part 3: Kassö (Denmark)	3000 MW	Part 1: 70 km (onshore) Part 2: 70 km (onshore) Part 3: 10 km (onshore)	Part 1: 2015 Part 2: 2018 Part 3: 2019	Part 1: 2017 Part 2: 2020 Part 3: 2020	March 2021
Nordergründe	Norder- gründe platform	Inhausen, Germany	111 MW	32km (28km; 4km)	2013	2017	April 2020
SuedLink	Schleswig-Holstein: part 1: Brunsbüttel and part 2 Wilster	Part 1: Großgartach in Baden-Württemberg and Part 2: Berg Rheinfeld -West in Bayern	4000MW (2x2000 MW)	700 km (onshore) – TenneT part is 245 km (including Elbe tunnel)	2023	2028	March 2021
SuedOstLink	Part 1: Wolmirstedt in Sachsen- Anhalt; Part 2 Klein Rogahn in Mecklenburg-Vorpommern	Part 1: ISAR bei Landshut in Bayern; Part 2: ISAR bei Landshut in Bayern	4000MW (2x2000MW)	270 km (onshore) from frontier Thüringen/Bayern to ISAR bei Landshut	2022	Part 1:2025 Part 2: 2030	March 2021
SylWin1	SylWin alpha	Büttel, Germany	864 MW	205 km (160 km; 45 km)	2012	2015	September 2016
Westküstenleitung	Brunsbüttel substation	Danish border, Germany	3500 MW-	138 (onshore)	2015	2023	April 2020

## Appendix 2: Potential avoided CO<sub>2</sub> emissions per bond issue

Avoided CO<sub>2</sub> emissions are key to reaching the ambitious targets of the Paris Agreement and the goals of the EU Green Deal. Transporting renewable energy from sea to land clearly contributes to achieving the Paris targets. We highlight avoided CO<sub>2</sub> emissions based on the average grid mix of the Netherlands and of Germany, linked to our investors' investment. Although our approach is a theoretical one, we believe this indicates the order of magnitude of our Green Project Portfolio.

The calculation is performed in the following way:

- The amount of transported electricity is converted to avoided carbon emissions by the average carbon intensity of the German grid (420 g/kWh) or Dutch grid (396 g/kWh) of 2022 for each project.
- For each issue, we calculate which part of the total size of the issue belongs to which project.
- The allocation to each project is divided by the total budget for each project and that is multiplied by the avoided carbon emissions of the specific project.
- For each issue, the projects that were part of the Green Project Portfolio at that time are taken into account. Adding up the avoided carbon emissions of each project gives the total avoided CO<sub>2</sub> emissions per issue. The avoided CO<sub>2</sub> emissions per bond issue were calculated for 2022. Depending on the size of the investment, the CO<sub>2</sub> emissions per investment can be calculated by:

*Avoided CO<sub>2</sub> emissions related to investment x:*

$$= \frac{\text{investment size (million)}}{\text{size issue y}} \times \text{avoided CO}_2 \text{ emissions issue y}$$

Date of issue	Type of financing	Size (in million EUR)	Avoided CO <sub>2</sub> emissions (in tonnes) in 2022
June 2015	Green Bond	500	394,667
May 2016	Green Schuldschein	100	78,933
May 2016	Green Schuldschein	55	43,413
May 2016	Green Schuldschein	50	39,467
May 2016	Green Schuldschein	138	108,928
May 2016	Green Schuldschein	80	63,147
June 2016	Green Bond	500	397,760
June 2016	Green Bond	500	397,760
October 2016	Green Bond	500	468,615
April 2017 / August 2018	Green Hybrid	1,100	1,103,116
June 2017	Green Bond	500	532,907
June 2017	Green Bond	500	533,126
June 2018	Green Bond	750	937,757
June 2018	Green Bond	500	625,172
January 2019	Green US Private Placement	500	625,172
May 2019	Green bond	1,250	1,179,984
July 2020	Green Hybrid	1,000	835,540
November 2020	Green Bond	750	611,485
November 2020	Green Bond	600	311,961
May 2021	Green Bond	650	121,596
May 2021	Green Bond	500	99,139
May 2021	Green Bond	650	127,362
November 2021	Green Bond	1,000	140,008
May 2022	Green Bond	1,250	46,161
May 2022	Green Bond	1,000	26,140
May 2022	Green Bond	750	5,171
May 2022	Green Bond	850	7,622
October 2022	Green Bond	650	6,931
October 2022	Green Bond	500	6,975
October 2022	Green Bond	1,000	15,491
October 2022	Green Bond	850	6,931
		<b>19,523</b>	<b>9,898,437</b>

# Assurance report of the independent auditor with respect to the 2022 Sustainability Information of TenneT Holding B.V.

To: the Shareholder and Supervisory Board of TenneT Holding B.V.

## Our conclusion

We have reviewed the Sustainability Information in the 2022 Green Finance Report of TenneT Holding B.V. ("**TenneT**") based in Arnhem (the "**Sustainability Information**"). A review is aimed at obtaining a limited level of assurance.

Based on the procedures performed and evidence obtained, nothing has come to our attention that causes us to believe that the Sustainability Information of TenneT does not present, in all material respects, a reliable and adequate view of:

- the policy and business operations with regard to corporate social responsibility, as included in the 'Reporting principles' within the 'About this report' section of the 2022 Green Finance Report; and
- the thereto related events and achievements for the year 2022 as included in the sections 'Key figures 2022', 'Our performance' and 'Appendix 2' as disclosed in the 2022 Green Finance Report, in accordance with the reporting criteria as included in the section 'Reporting Principles'.

The Sustainability Information comprises a description of the sustainable performance (if operational) information of the Alfa Ventus, BalWin1\*, Borssele Alpha, Borssele Beta, BorWin1, BorWin2, BorWin3, DolWin1, DolWin2, DolWin3, DolWin6, Dorpen/West – Niederrhein, HelWin1, HelWin2, HKN, HKZ Alpha, HKZ Beta, Mittelachse, Nordergrunde, SylWin1, DolWin5, BorWin5, SuedLink, SuedOstLink, Westenkustenleitung, Pirach - Pleinting, Oberbachern - Ottenhofen, Ganderkesee-St.Hülfe, Hamburg/Nord-Dollern, Stade-Landesbergen, Ostküstenleitung, Conneforden-Cloppenburg-Merzen, Wahle - Mecklar, Altheim - St. Peter, Emden/Ost - Conneforde, Willemshaven - Conneforde, Zuid West - Oost, Zuid West - West, BorWin6, Hollandse Kust West Alpha, Hollandse Kust West Beta, IJmuiden Ver Alpha and IJmuiden Ver Beta projects for the year ended 31 December 2022, as consolidated in the chapters 'Key Figures 2022', 'Our performance' and 'Appendix 2' in the 2022 Green Finance Report.

\*During 2022, the responsibility for the project BalWin1 transferred to Amprion performance information related to the social and environmental impact of BalWin1 is included in this report for the period it was under TenneT's responsibility.

## Basis for our conclusion

We have conducted our review in accordance with Dutch law, including Dutch Standard 3000A 'Assurance engagements other than audits or reviews of historical financial information (attestation engagements)'. This engagement is aimed to obtain limited assurance. Our responsibilities in this regard are further described in the '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). Furthermore we have complied with the 'Verordening gedrags- en beroepsregels accountants' (VGBA, Dutch Code of Ethics).

We believe that the 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 disclosed in the chapter 'Reporting Principles' of the 2022 Green Finance Report.

The Sustainability Information needs to be read and understood together with the reporting criteria. TenneT is solely responsible for selecting and applying these reporting criteria, taking into account applicable law and regulations related to reporting.

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 TenneT.

### Limitations to the scope of our review

The Sustainability Information includes prospective information such as ambitions, strategy, plans, expectations and estimates. 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 of TenneT is responsible for the preparation of the Sustainability Information in accordance with the applicable criteria. 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 summarized in the chapter 'About this report' of the 2022 Green Finance Report.

Management is also responsible for such internal control as it determines is necessary to enable the preparation, measurement or evaluation of the Sustainability Information that is free from material misstatement, whether due to fraud or errors.

The Supervisory Board is responsible for overseeing TenneT's reporting process.

### Our responsibilities for the review of the Sustainability Information

Our responsibility is to plan and perform our review in a manner that allows us to obtain sufficient and appropriate evidence to provide a basis for our conclusion.

The procedures performed in this context differ in nature and timing and are less extent as compared to reasonable assurance engagements. The level of assurance obtained in a limited assurance engagement is therefore substantially lower than the assurance that would have been obtained had a reasonable assurance engagement been performed.

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 applicable legal and regulatory requirements.

We have exercised professional judgement and have maintained professional scepticism throughout the review, in accordance with the Dutch Standard 3000A, ethical requirements and independence requirements.

Our review included amongst others:

- Performing an analysis and obtaining insight into relevant environmental and social themes and issues, and the characteristics of TenneT.
- Evaluating the appropriateness of the reporting policy and its consistent application, including the evaluation of the results of the stakeholders' dialogue and the reasonableness of management's estimates.
- Evaluating the design of the reporting systems and processes related to the Sustainability Information.
- Reviewing internal and external documentation to determine whether the information as included in the KPIs, including the presentation and assertions made in the Sustainability Information, is adequately supported.
- Interviewing relevant staff responsible for providing the information in the Sustainability Information, carrying out internal control procedures on the data and consolidating the data in the Sustainability Information.
- An analytical review of the data and trends submitted for consolidation at corporate level.

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

This Green Finance Report tracks the progress of our projects funded by Green Financing Instruments, mainly our green bonds, including our green Schuldschein, green USPP and green hybrids. The proceeds from our green financing initiatives are being used for investments in grid connections used for the transmission of renewable electricity from offshore wind farms to the onshore electricity grid and onshore projects that help increase the transmission capacity required for the energy transition.

The proceeds of our green debt issues are specifically dedicated to a portfolio currently consisting of 42 projects: Alfa Ventus, Borssele Alpha, Borssele Beta, BorWin1, BorWin2, BorWin3, DolWin1, DolWin2, DolWin3, DolWin6, Dorpen/West – Niederrhein, HelWin1, HelWin2, HKN, HKZ Alpha, HKZ Beta, Mittelachse, Nordergrunde, SylWin1, DolWin5, BorWin5, SuedLink, SuedOstLink, Westenkustenleitung, Pirach - Pleinting, Oberbachern - Ottenhofen, Ganderkesee-St.Hülfe, Hamburg/Nord-Dollern, Stade-Landesbergen, Ostküstenleitung, Conneforde-Cloppenburg-Merzen, Wahle - Mecklar, Altheim - St. Peter, Emden/Ost - Conneforde, Willemshaven - Conneforde, Zuid West - Oost, Zuid West - West, BorWin6, Hollandse Kust West Alpha, Hollandse Kust West Beta, IJmuiden Ver Alpha and IJmuiden Ver Beta. The latter 18 projects were included in 2022.

We have disclosed qualitative information and quantitative data of these projects related to the reporting year starting on 1 January 2022 and ending on 31 December 2022. Please note that BalWin1 was also included in 2022, however due to the fact that this project was reassigned during the year 2022 to Amprion, it is no longer included in the portfolio at year end 2022. We included the performance information of this project up to reassignment to Amprion.

This 2022 Green Finance Report was published on 14 March 2023 and the 2021 Green Finance Report was published on 15 March 2022.

We have designed a Green Financing Framework, based on the Green Bond Principles as issued by the ICMA, to ensure our green bond-funded projects meet the proper criteria. We have asked ISS-oekom, a leading rating agency in the field of sustainability, to perform a second party opinion to assess our framework. In this assessment, ISS-oekom verifies whether we meet the Green Bond Principles for our green bond-funded portfolio and its sustainability quality and performance. Reporting on the use of our proceeds and performance information of our projects is a part of the Green Bond Principles and therefore we publish our Green Finance Report on an annual basis. ISS-oekom issued positive independent opinions on the sustainable quality of the projects related to our green debt.

### Reporting principles

The definitions and principles used with respect to this report are disclosed in the 'Reporting guidance document 2022' related to our Integrated Annual Report 2022 and Green Finance Report 2022, which is based on our Green Financing Framework. Both documents are made available [on our website](#).

# Colophon

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