



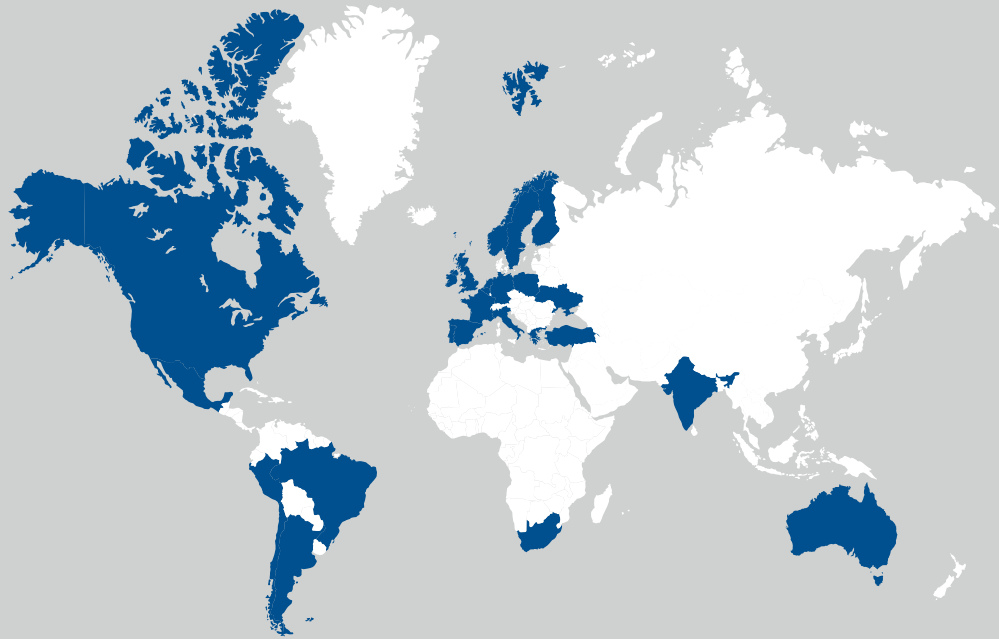
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# Use Wind Intelligently Live Sustainability

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SUSTAINABILITY REPORT 2019





**GLOBAL PRESENCE**

The Nordex Group's key markets – read more on **PAGE 8**

## We Are Nordex

➤ GRI 102-2

For 35 years the development, production, installation, and servicing of onshore wind turbines have been the core competency and passion of the Nordex Group and our approximately 6,900 employees worldwide. With the Delta4000 series we provide high-yield, cost-efficient wind turbines that enable many years of profitable electricity generation from wind energy in all geographical and climatic conditions.

By the end of 2019 we had installed generating capacity totaling over 28 GW in more than 40 countries overall. Our production network comprises plants in Brazil, Germany, India, and Spain. In the reporting year new plants in Mexico, and as part of a cooperation, in Argentina, came onstream.

Nordex is not only focused on sustainable economic growth but also actively accepts its responsibility in combating climate change. Our sustainability slogan 'Use wind intelligently – live sustainability' is the fundamental principle underpinning our actions. In this Sustainability Report we offer a detailed account of our economic, environmental and societal engagement.

**3,284.6**

**SALES REVENUES 2019**  
in EUR million, 2018: EUR 2,459.1 million

**3,090**

**INSTALLED CAPACITY 2019**  
in MW, 2018: 2,522 MW

**6,880**

**EMPLOYEES 2019** at the reporting date,  
2018: 5,676 employees

**26,429**

**SALES-RELATED ENERGY CONSUMPTION 2019**  
in kWh/EUR million, 2018: 28,221 kWh/EUR million

**5,968**

**SALES-RELATED WASTE VOLUME 2019**  
in kg/EUR million, 2018: 4,271 kg/EUR million

# USE WIND INTELLIGENTLY LIVE SUSTAINABILITY

Nordex's highly efficient wind power systems are already making a major contribution to climate-friendly energy generation today. We will continue this sustainable approach through our new Sustainability Strategy 2019 to 2021.

## CONTENTS

### ORIENTATION FOR FAST READERS



**Reference** to section in the report or to other Nordex publications



**Link** to external internet sources

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# FOREWORD BY THE MANAGEMENT BOARD

➤ GRI 102-14

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**JOSÉ LUIS BLANCO**  
Chief Executive Officer (CEO)

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Preserving the environment for future generations is a task for all society. At Nordex we continue to play a pioneering role.

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## Dear Readers,

Almost 35 years ago we started to build turbines to generate electricity from wind energy in an environmentally and climate-friendly way. Just over eighteen months ago, a single Swedish female student went on strike and started a global movement that has made it clear once and for all that there is no alternative to the energy transition.

The United Nations have anchored reliable and affordable access to sustainable energy for all humankind in one of its Sustainable Development Goals (SDGs). In the Paris Climate Agreement the individual states committed to counteracting climate change, while numerous companies are setting themselves specific targets to achieve climate neutrality in their business operations.

A transformation of the energy industry is fundamental in achieving the abovementioned objectives, as a major proportion of global

emissions originate from this sector. However, to achieve these climate goals the required transformation will need to go well beyond the energy industry and also reshape the transport, construction, agriculture, and manufacturing sectors. Harnessing renewable energies plays a major role in this.

To generate just one kilowatt-hour (kWh) of electricity, burning brown coal (lignite) emits approximately 1,054 grams of CO<sub>2</sub>-equivalent emissions (CO<sub>2</sub>e), hard coal around 873 g, and natural gas 433 g. A human being exhales around 42 g of CO<sub>2</sub>e per hour. By contrast, our Delta4000 wind turbines emit only 6.5 g CO<sub>2</sub>e per kWh of electricity they generate. This is the result of the environmental scorecard of the entire lifecycle of our latest turbine, the Delta4000, that we carried out for the first time in the 2019 reporting year.



### INFORMATION

You will find detailed information on the process we applied to working out our new Sustainability Strategy from **PAGE 12**



**CHRISTOPH BURKHARD**  
Chief Financial Officer (CFO)

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Today, the economic and technical prerequisites for the energy transition are in place. What is now required is the political will to make this transition a reality.

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**PATXI LANDA**  
Chief Sales Officer (CSO)

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The Life-Cycle Analysis of our latest turbines shows that only 6.5 g CO<sub>2</sub>e are emitted per kilowatt-hour of electricity generated. A human being exhales around 42 g of CO<sub>2</sub> per hour.

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This analysis makes it clear that highly efficient wind turbines are vitally important in the global effort to lower emissions. At Nordex we have worked continually and successfully for many years now to progressively reduce the cost of energy (COE). Regarding the global average COE across the whole power generation sector, wind energy is now more cost-efficient than fossil fuels. Today, the economic and technical prerequisites for the energy transition are in place. What is now required is the political will to create the necessary framework conditions and make this transition a reality.

As a manufacturer of the very latest wind turbines that enable highly efficient, environmentally friendly electricity generation under all climatic conditions, sustainability is at the heart of our business model. We are not satisfied with that, however. Our objective is to become a sustainable company in all areas of our business.

To achieve this, based on the results of a comprehensive stakeholder survey, in 2018 we launched our Sustainability Strategy 2019 to 2021, entitled: 'Use wind intelligently – live sustainability.' The Prime status awarded our Company in the ISS ESG sustainability ratings, positive developments such as further

reductions in the Lost Time Injury Frequency rate and in COE, as well as initiatives to minimize the environmental impact of our business all show that we are on the right track. In this Sustainability Report we offer you a detailed overview of the progress we have made towards our goals.

The Nordex Group continues its journey towards becoming a sustainable company in all areas. To ensure we keep moving ahead we are in constant dialog with our employees, customers, suppliers, investors, local communities, and further stakeholder groups.

We thank our stakeholders for this valuable exchange, for their interest, their confidence in our technology, and their collaboration with us in developing sustainable solutions. Preserving the environment for future generations is a task for all society. With your support, at Nordex we want to continue to play a pioneering role in this.

**Sincerely yours,  
the Management Board**

**Hamburg, March 2020**

**JOSÉ LUIS BLANCO**  
Chief Executive Officer (CEO)

**CHRISTOPH BURKHARD**  
Chief Financial Officer (CFO)

**PATXI LANDA**  
Chief Sales Officer (CSO)



**INFORMATION**

For detailed information on how we achieved the targets of the Sustainability Strategy 2019 to 2021 see **PAGE 12f.**



# ABOUT THIS REPORT

➤ GRI 102-45, 102-46, 102-49, 102-50, 102-52, 102-54

## CONTENT AND STRUCTURE

In our Sustainability Report we provide detailed information on our economic, environmental, and societal performance. As well as describing current developments, activities, and key figures in the area of sustainability, we detail the progress we made in the first year of our current Sustainability Strategy 2019 to 2021. This Report also details the process and results of a lifecycle analysis (LCA) carried out in the reporting period on a wind farm using the new Nordex Delta4000 turbine. Further information is provided in the chapter on Sustainability Management.

The contents of the Sustainability Report focus on the topics identified through the materiality analysis, which were summarized into five central fields of action. The structure of this report is aligned with these fields of action and reflects the material economic, environmental, and social sustainability topic areas for Nordex.

Together with the Nordex Group Consolidated Annual Report 2019 that is published simultaneously, the Sustainability Report 2019 provides a comprehensive picture of the Company's current situation, detailing the relevant financial and non-financial key figures.

The Sustainability Report 2019 was produced in accordance with the Core option of the Global Reporting Initiative's (GRI) Guidelines.

In line with this approach, the non-financial report is also based on the GRI Standards. This applies in particular to the materiality analysis and management approaches.

## GENDER-INDEPENDENT REPORTING

In the interests of optimal readability the texts in this Sustainability Report are intended as fully gender-independent and as far as possible avoid masculine or feminine references. Where such references are unavoidable, under no circumstances do they imply any form of value judgment.

## REPORTING PERIOD AND SCOPE

This Sustainability Report relates to the 2019 financial year, i.e. the reporting period from 01 January to 31 December 2019. This is the fourth time Nordex has published its sustainability activities in this form, and the Company will continue to update and publish its sustainability-related report content and data annually.

The disclosures made in this Sustainability Report generally apply to all Group companies as recorded in the Nordex Group's Consolidated Annual Financial Statements. Further information on the reporting scope of our consumption data is provided in the chapter on Environmental Management & Resource Efficiency.

## REMARKS ON THE SEPARATE NON-FINANCIAL REPORT

The separate Non-financial Report of the Nordex Group (hereafter: "Non-financial Report"), published in compliance with the statutory requirements of the law strengthening companies' non-financial reporting in their Management and Group Management Reports (the CSR Directive Implementation Act, CSR-RUG in German), is integrated in this Sustainability Report. Statements relating to the Non-financial Report are unequivocally indicated by a line beside the respective passage.



**INFORMATION**  
on the strategy  
development  
process as well  
as the strategic  
contents and  
goals on  
**PAGE 12ff**



An overview of the statements made as part of the Non-financial Report as required by §§ 315b and 315c in conjunction with 289c to 289e HGB (German Commercial Code), as well as corresponding links to the respective sections in the current Group Sustainability Report, are provided in the table at the bottom of this page.

**External audit of the Non-financial Report**

The contents of this Group Sustainability Report were examined and approved in accordance with § 171 Para. 1 Stock Corporation Act by the Nordex Supervisory Board. The Non-financial Group Report integrated in this Sustainability Report was additionally audited by PricewaterhouseCoopers (PwC) in accordance with ISAE 3000 (Revised) in a limited assurance engagement. The auditor’s Independent Practitioner’s Report is provided on pages 87-88.

**Risks subject to disclosure under the CSR Directive Implementation Act (CSR-RUG)**

Reporting under the requirements of CSR-RUG on risks with significance for our business performance, business position, and financial result is an integral part of risk reporting in the Nordex Group

Management Report, as stipulated by DRS 20. In accordance with the double materiality principle, these risks were analyzed for highly probable, serious impacts on the aspects established by CSR-RUG (environmental, social and employee matters, corruption and bribery, and human rights). In our opinion, in view of the countermeasures there were no material net risks to the Company’s business performance, business position, or financial result with a very high probability of a major negative impact on the Company’s integrity regarding the abovementioned aspects.

**Cross-references**

Cross-references to statements beyond the scope of the Group Management Report and/or the Consolidated Financial Statement represent further information and are not an integral part of the Non-financial Report.

**Interrelations with the figures stated in the Consolidated Financial Statements**

No interrelations with the figures stated in the Consolidated Financial Statements were identified that require statutory reporting.



**INFORMATION**  
on risk management is provided in the Nordex Annual Report 2019 on **PAGE 49ff.**

**Non-financial Report Index**

<b>Statements required under the CSR Directive Implementation Act (CSR-RUG)</b>	<b>Corresponding report sections</b>	<b>Page</b>
Description of the business model	‘About the Nordex Group’ as well as the Group Management Report	p. 8
Product responsibility	‘Product Responsibility’	p. 31ff.
Environmental matters	‘Environmental Management and Resource Efficiency’ as well as ‘Responsibility along the Supply Chain’	p. 67ff., 61ff.
Employee matters	‘Employee Responsibility’	p. 41ff.
Social matters	As a result of the materiality analysis this aspect was not considered material.	cf. p. 18-19, 79
Upholding of human rights	‘Management and Corporate Compliance’, as well as ‘Responsibility along the Supply Chain’	p. 28, 64
Prevention of corruption and bribery	Management and Corporate Compliance	p. 26f.

Statements required are provided in the respective chapters and are indicated by a line.



# ABOUT THE NORDEX GROUP

➤ GRI 102-2, 102-3, 102-4, 102-5, 102-6, 102-7, 102-8, 201/103

The Nordex Group develops, produces, sells, and installs onshore multi-megawatt wind turbines for use in strong, moderate, and low wind locations worldwide. In addition, we offer a complete spectrum of services over the entire operating life of the wind turbines. Since Nordex was founded in 1985, as a wind power pioneer our Company has consistently driven the development of the sector with highly efficient products.

the end of 2019 the Nordex Group's Service organization supported around 7,800 wind turbines worldwide with a combined nominal generating capacity of 19.6 GW.

We focus on the development, production, and installation of complete wind turbine systems, including control software and key components. In particular we assemble turbine nacelles and hubs at our own facilities. We develop the rotor blades in-house, and a significant number of the required blades are manufactured at our own production plants. The remainder are manufactured by contractors according to Nordex specifications. We procure components such as gearboxes, generators, and inverters from external suppliers, the majority of which are long-term partners.

Towers are produced as steel and steel-concrete hybrid constructions by various suppliers. More-

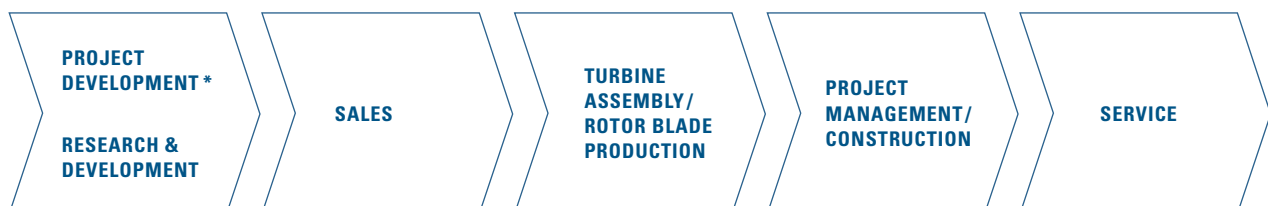


## INFORMATION

For further information on Nordex wind turbines see **PAGE 29ff.**

The five wind turbine types in the current Delta4000 series provide variable solutions for all wind conditions and cover wind power output requirements from 4.0 MW into the 5 MW class. These highly efficient wind turbines with rotor blades spanning up to 163 meters have already been ordered for wind farms in Europe, North and South America, and Australia. The Nordex Group has already installed combined generating capacity of over 28 GW across a total of 40 countries. At

## THE VALUE-ADDING STRUCTURE OF THE NORDEX GROUP AT A GLANCE



\* Activities in selected markets.



Rotor blade production in Rostock, Germany.

over, the Nordex Group also uses its own concrete tower technology that enables the production of precast concrete towers close to project sites. These production sites are operated partly by Nordex itself and partly by contractors.

We serve our customers in all focus markets through our own Sales organization. The Nordex Group offers installation of the supplied wind turbines and subsequent servicing over the turbines' whole operating life. Our close customer support is provided as part of usually long-term, comprehensive maintenance contracts. Services such as the supply of spare parts and customer training are also offered separately. In selected markets, especially France, the Nordex Group is also a wind-farm project developer and therefore also has experience in the upstream value chain.

The publicly listed holding Nordex SE has its registered office in Rostock, Germany. The majority of Nordex SE shares (63.59%) are in free float and the publicly listed Spanish company Acciona S.A. is the largest investor. Since the acquisition by Nordex in 2016 of Acciona

Windpower, Acciona S.A. has been a strategic anchor investor. Acciona S.A. currently holds a stake of 36.41% in Nordex SE.

Our Company's main administration office is located in Hamburg, Germany, where our corporate functions are located along with sections of our Development, Global Sourcing, Project Management, and Service Departments, as well as Sales Germany. The German facilities for nacelle assembly and rotor blade manufacture are in Rostock. Other production sites are located in Brazil, India, Mexico, and Spain. Additionally, since 2019 we have collaborated with a local company in the assembly of nacelles for Argentina. In the reporting period, the Group operated Sales and Service offices in around 30 countries, mainly in Europe, North and South America, as well as in other selected markets such as India, Pakistan, South Africa, and Australia.

Nordex customers are primarily wind-farm developers and operators. These include large and medium-sized, often internationally active energy utilities and independent power producers (IPP)



on the one hand, but also further customer groups such as medium-sized project developers, municipal utilities, and public wind farms, or energy cooperatives on the other. In addition, customers include an increasing number of industrial energy producers and financial investors such as

insurance companies and pension funds. These groups invest in the construction and/or acquisition of wind farms in order to cover their electricity requirements (industry, commerce) or to generate an economic return on their installations (financial investors).



#### INFORMATION

The key financial figures are provided in detail in the current Nordex Group Annual Report. The key figures provided in the following fulfill International Financial Reporting Standards (IFRS) requirements for the full period 2017–2019.

The 2017–2019 Annual Reports were audited by the auditing company PwC.

#### FINANCIAL DATA OF THE NORDEX GROUP

in EUR million	2019	2018	2017
Sales	3,284.6	2,459.1	3,077.8
Total revenues	3,871.4	2,364.2	3,127.4
Earnings before interest and taxes (EBIT)	-19.6	-54.2	43.4
Free cashflow	-126.0	44.0	-54.7
Investments	172.5	112.9	144.3
Consolidated net profit/loss	-72.6	-83.9	0.3
Cost of materials	3,096.0	1,710.2	2,294.9
Personnel expenses	-360.7	325.9	359.2

Figures are based on the Group's consolidated income statement in the relevant Nordex Group Annual Report.

➔ GRI 201-1

#### ECONOMIC PERFORMANCE OF THE NORDEX GROUP

in EUR million	2019	2018	2017
Direct economic value generated	3,286.3	2,460.0	3,078.4
Economic value distributed			
of which operating costs	3,482.8	2,092.6	2,724.8
of which employee wages and benefits	360.7	325.9	359.2
Payments to providers of capital	68.2	43.2	33.7
Payments to the government	47.3	31.5	38.1
Community investments	n/a	n/a	n/a
Economic value retained	-672.7	-33.1	-77.5

Figures are based on the Group's consolidated income statement in the relevant Nordex Group Annual Report.

➔ GRI 201-1



The key financial figures are provided in detail in the current Nordex Group Annual Report: [www.nordex-online.com](http://www.nordex-online.com)

In financial year 2019 the Nordex Group generated sales of EUR 3,284.6 million. The Projects segment accounted for around 88% of sales, with the Service segment generating approximately 12%. Consolidated profit after tax was EUR -72.6 million in the reporting year. As at the reporting date of 31 December 2019 the Company employed 6,880 staff worldwide. In 2019 the total installed generating capacity of the Nordex Group was 3.1 GW,

with 938 wind turbines in 21 countries. The largest single markets by installed capacity were the USA, Mexico, Brazil, France, and Argentina.

As at the financial reporting date of 31 December 2019 the Group's total assets stood at EUR 4,002.7 million, of which EUR 745.4 million, or 18.6%, represented equity. Longer-term borrowing mainly comprises a promissory note loan



and a corporate bond. As a company with sustainable business practices, Nordex achieved certification of these financing instruments as 'green bonds' in accordance with the criteria of the Climate Bonds Initiative's Climate Bonds Standard Board. Furthermore, the Company received third-party financing in the form of an investment loan from the European Investment Bank (EIB) as well as a flexible consortium credit line.

## CORPORATE GOVERNANCE

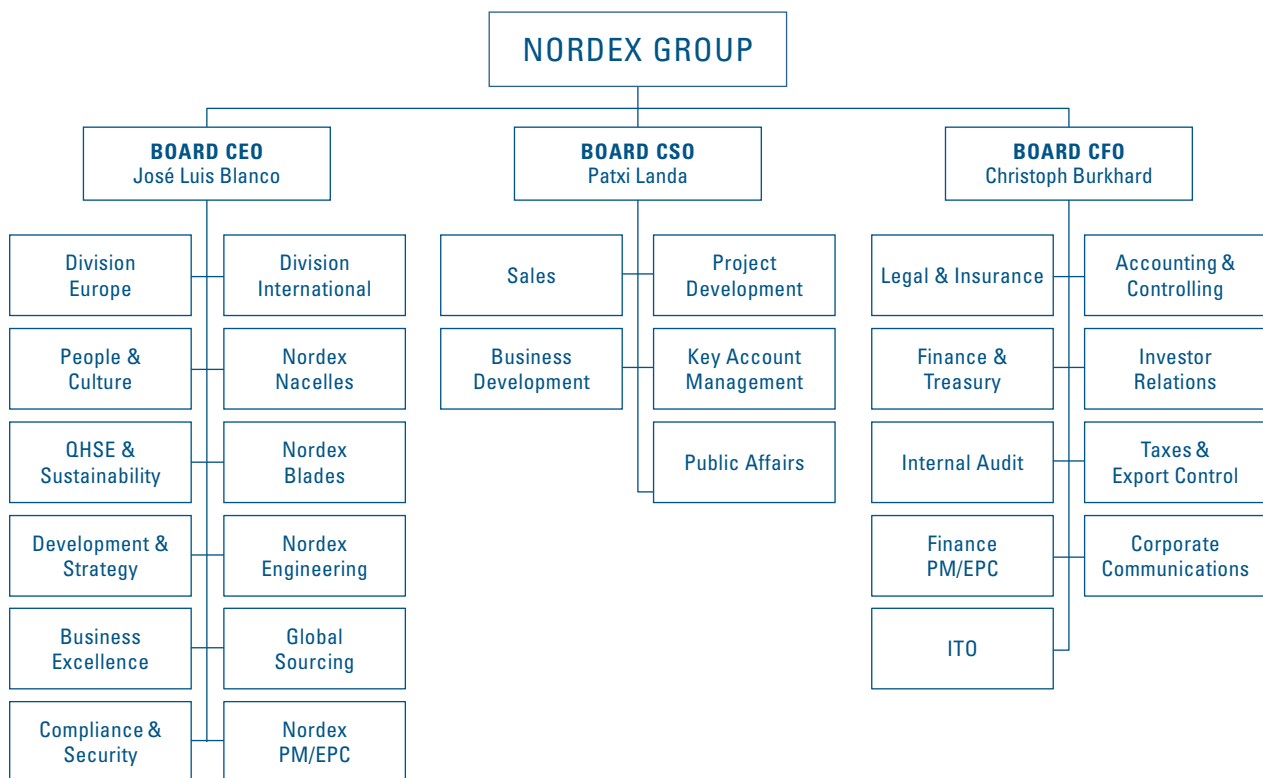
➤ GRI 102-18

Within a dual management system consisting of Management and Supervisory Boards, the Nordex SE Management Board manages the group of companies at its sole discretion, with the aim of achieving sustained increases in enterprise value and attaining the established long-term Company

targets. Furthermore it coordinates and controls all significant activities and conducts the Company's business in accordance with statutory provisions.

In compliance with its statutory obligations, the Supervisory Board advises and monitors the Management Board in matters relating to the Company's governance. It is also directly involved in all decisions of fundamental importance to the Company. The Management Board maintains ongoing contact with the Supervisory Board, briefing it comprehensively on the current status and performance of the Nordex Group as well as on all material business transactions. In financial year 2019 the Supervisory Board formed three committees: Besides the Executive Committee, which acts as the Personnel and Nomination Committee, these were the Audit Committee, and the Strategy and Technology Committee.

## ORGANIZATIONAL STRUCTURE OF THE NORDEX GROUP





# SUSTAINABILITY MANAGEMENT

The Global Sustainability Management Department (also referred to as Sustainability Management) is responsible for the strategic development of the Company with regard to sustainability topics. The Department is in constant contact with all areas of the Company to coordinate sustainability measures in a target-oriented way and meet our stakeholders' growing information requirements. Sustainability Management is assigned to the central Quality, Health, Safety & Environment (QHSE) organizational unit, which reports directly to the Executive Board. Its responsibilities include the management and communication of internal and external processes, coordinating different departments, and engaging in dialog with various stakeholder groups. The Group-wide controlling of environmental indicators as well as sustainability reporting are also anchored here. The objective of Sustainability Management is to implement the Nordex Sustainability Strategy efficiently.

In addition to the annual Sustainability Report published for all stakeholders, Global Sustainability reports key environmental indicators and the implementation status of measures to the Exec-

utive Board and senior management on a quarterly basis. In particular we use the comparison of similar production sites to identify potential for improvement, exchange best practices and processes, and implement efficient measures at other sites.

The requirements and informational needs of our stakeholders, especially customers and investors, regarding sustainability topics are constantly increasing. Among other things, the environmental impacts that arise over the entire lifecycle of wind turbines are of particular interest. We include the performance of a Life-Cycle Analysis (LCA) as a central aspect of our Sustainability Strategy: In the reporting year we carried out this analysis on a wind farm equipped with our current Delta4000 turbine. With the help of this calculation and additional investigations we identified those areas with the highest environmental impact (hotspots); building on this we will initiate measures in the coming years to further minimize the negative impact of wind turbines.

In addition to internal measures, the Nordex Group is also actively involved in the cross-industry Sustainability Working Group coordinated by Wind-Europe, the European wind association, with the goal of exchanging experience and progressing together.

One of the world's leading rating agencies for sustainable investments, ISS ESG, awarded the Nordex Group a 'B' rating in the reporting period. This means the Group retains the 'Prime Status' awarded to companies that outperform the industry average with regard to environmental and social aspects.





## Life-Cycle Analysis of the Delta4000 turbine

In the reporting year we carried out an environmental scorecard analysis on the entire lifecycle of our latest Delta4000 turbine for the first time. In this assessment we analyzed the environmental impacts over the full turbine lifecycle according to the ISO 14040 and 14044 Standards. The conformity of this study to the ISO Standards was externally audited and verified by DEKRA.

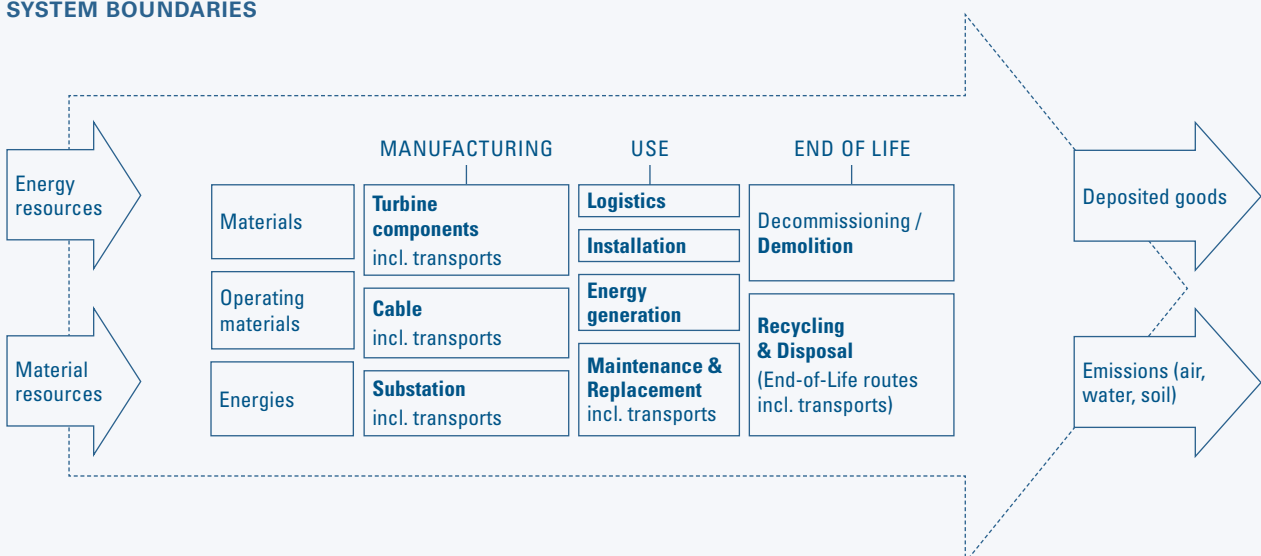


Nordex Delta4000 wind turbine.

We analyzed an example wind farm comprising 47 turbines at a low-wind site in Sweden over a period of 25 years. The environmental impacts were captured and assessed, from the use of materials and energy resources, through the production of various components, transportation methods, installation and the turbine operating phase, to dismantling and recycling. We defined the local

grid connection as the local system boundary. As a result the analysis comprises the installed wind turbines and respective tower foundations as well as the infrastructure and site cabling through to the direct connection to the public power grid.

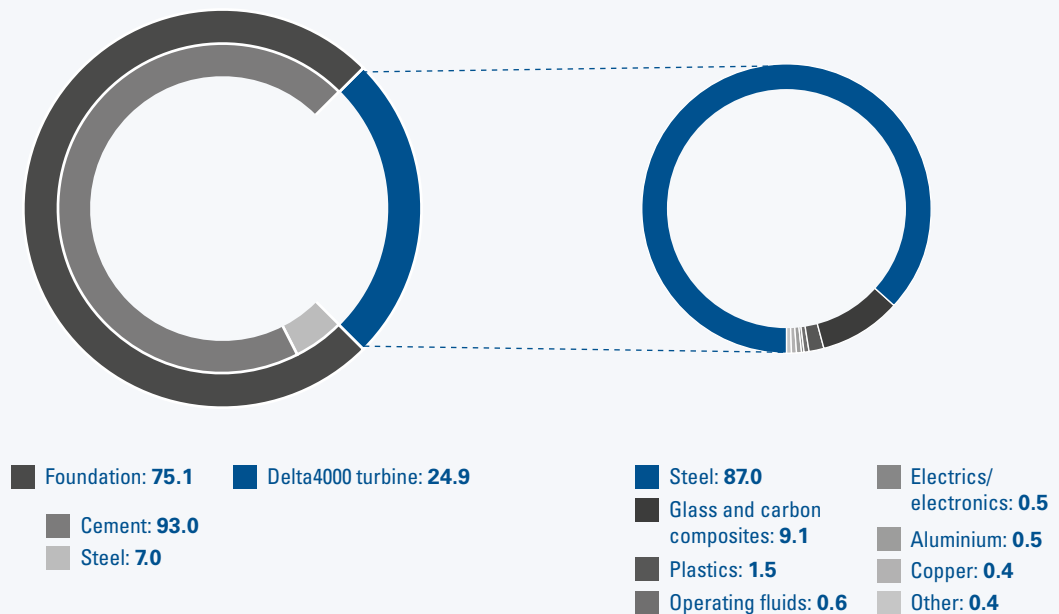
### SYSTEM BOUNDARIES





The total mass of a Delta4000 wind turbine specified to N149/4.0-4.5 with a tower height of 105 m is approximately 2,156 tonnes. 1,620 t or roughly three-quarters of this is in the tower foundation, with 536 t in the turbine itself. The graphic below details the foundation materials' and the turbine's share of total mass.

**MATERIAL MIX OF FOUNDATION AND DELTA4000 TURBINE IN %**



The size of the tower foundation depends on different influencing factors such as the type of soil and the height of the water table. At 87% steel is the dominant material in the material mix of the Delta4000 turbine with a 105 m tower, without the foundation. At 49 t, glass-fiber and carbon-fiber reinforced composites are the second-largest materials group.

The results of the analysis showed that the wind farm's environmental scorecard is balanced as early as 7.7 months. The energy amortization period key indicator shows the entire primary energy used over the wind turbine's entire lifecycle in relation to the electrical energy it generates in a year. A further key indicator is the climate impact measured in greenhouse gas emissions per kilowatt-hour generated.





This shows the quantity of greenhouse gases emitted over a wind turbine's entire lifecycle in relation to its energy yield. At the wind farm we analyzed, this value was 6.5 g CO<sub>2</sub>e/kWh.

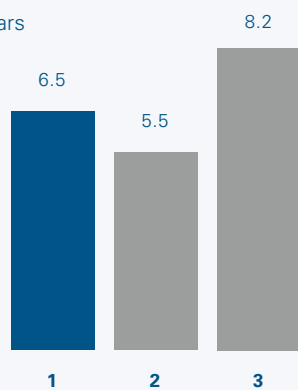
When compared with the greenhouse gas emissions of fossil fuels per kilowatt-hour of electricity generated it becomes clear that high-efficiency wind turbines have a vital role to play in the global emissions reduction effort.



Nordex Delta4000 wind turbine.

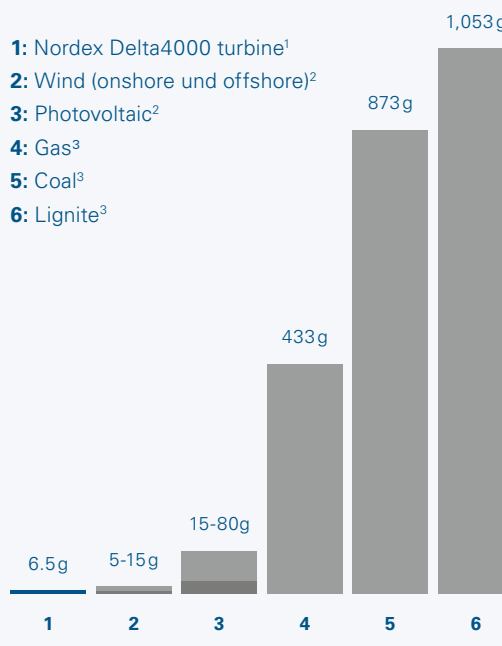
### SENSITIVITY ANALYSIS TURBINE LIFETIME IN G CO<sub>2</sub>E/KWH

- 1: Basic scenario, 25 years
- 2: Scenario 1, 30 years
- 3: Scenario 2, 20 years



### CO<sub>2</sub>E EMISSIONS RELATED TO THE GENERATION OF ONE KILOWATT-HOUR

- 1: Nordex Delta4000 turbine<sup>1</sup>
- 2: Wind (onshore und offshore)<sup>2</sup>
- 3: Photovoltaic<sup>2</sup>
- 4: Gas<sup>3</sup>
- 5: Coal<sup>3</sup>
- 6: Lignite<sup>3</sup>



<sup>1</sup> Nordex (2020): LCA of a Nordex Windfarm with Delta4000 Turbines, <https://www.nordex-online.com/en/company/sustainability/>.

<sup>2</sup> German Federal Environment Agency (2019): Update, environmental scorecard of wind turbines and photovoltaic systems in Germany' (GFA Workshop: Current developments in energy statistics and emissions scorecard analysis for renewable energies, Dessau, Nov. 2019).

<sup>3</sup> German Federal Environment Agency (2019): Emissions scorecard of renewable energies. Joint agreement on emissions avoided in 2018.' [https://www.umweltbundesamt.de/sites/default/files/medien/1410/publikationen/2019-11-07\\_cc-37-2019\\_emissionsbilanz-erneuerbarer-energien\\_2018.pdf](https://www.umweltbundesamt.de/sites/default/files/medien/1410/publikationen/2019-11-07_cc-37-2019_emissionsbilanz-erneuerbarer-energien_2018.pdf).



[www.nordex-online.com/en/company/sustainability/](https://www.nordex-online.com/en/company/sustainability/)

For detailed information see LCA report: <https://www.nordex-online.com/en/company/sustainability/>

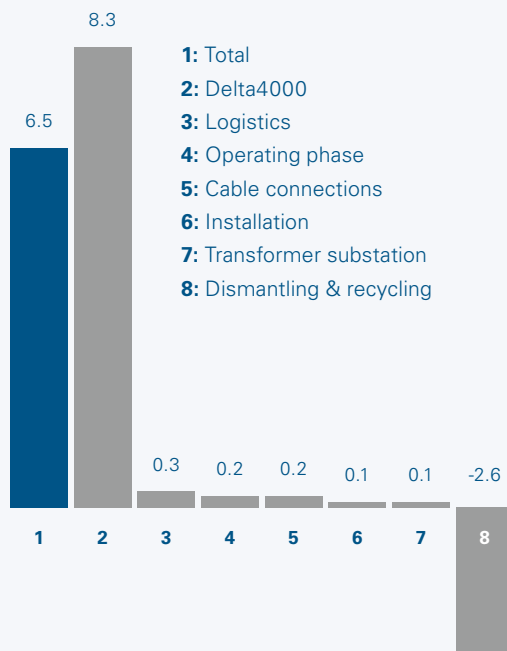
The climate impact by component and life phase of the wind farm is shown in the graphic below.

As the annual energy production and duration of the operating phase, among other factors, have a major influence on the environmental scorecard result, we analyzed differing scenarios and sensitivities. We investigated the effect of a deviation of 20% in the operating period on the greenhouse gas emissions per kilowatt-hour of electricity gen-

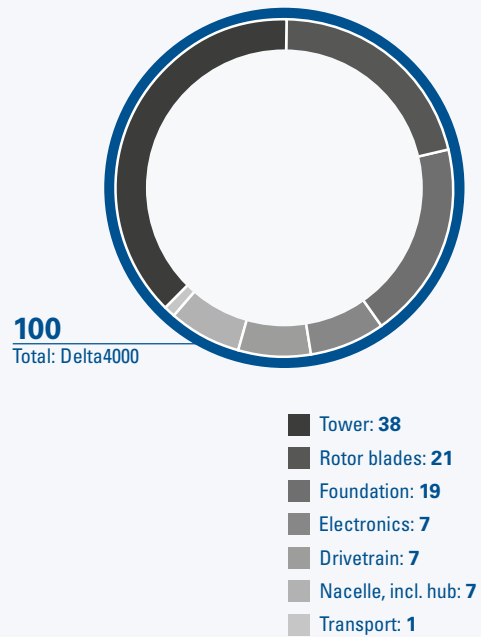
erated by the turbine. Given the assumed basic lifetime of 25 years, extending this to 30 years resulted in a 17% reduction of environmental impacts to 5.5 g CO<sub>2</sub>e/kWh. Reducing the lifetime to 20 years resulted in a 25% increase to 8.2 g CO<sub>2</sub>e/kWh.

Please see the audited and published report for further details on the analysis and results.

**CLIMATE IMPACTS OF THE WIND FARM IN G CO<sub>2</sub>E/KWH**



**COMPONENT SHARES IN CLIMATE IMPACTS OF A DELTA4000 TURBINE IN %**





Construction of a Nordex wind turbine in Turkey.



## Sustainability Strategy 2019 to 2021

➤ GRI 102-40, 102-47

### APPROACH

In 2018 we prepared the current Sustainability Strategy 2019 to 2021 in order to strategically develop the sustainability topic area within the Group. It forms the framework for responsible action in all areas of the Company.

In order to identify the material issues for the Nordex Group as well as sustainability-related trends and developments, and to obtain an assessment of the externally perceived relationship between performance and potential, we conducted an extensive materiality review in 2018 as part of a systematic process. As part of a stakeholder survey, the opinions of our interest groups were collected via an online survey and telephone interviews. On the basis of these results and further desktop analyses, we drafted a prioritization proposal for the topics listed below. This pro-

posal was discussed, adapted, and confirmed in top-management workshops. The working group we formed for this purpose comprised representatives from a broad spectrum of Company areas. All highly relevant topics are part of the current Sustainability Strategy and underpinned by specific objectives.

The 2019 review confirmed that the material issues for the Nordex Group in the context of sustainability have not changed since last year.

### IMPACT AND RISK ANALYSIS

The effects of the Nordex Group's business activities on the economy, the environment, and society were examined in terms of their extent, probability, and whether they could be influenced. As an internationally active company, Nordex is exposed to various risks in the course of its business activities. For this reason, the Company has implemented a comprehensive risk management system aimed at identifying potential negative deviations (risks) at an early stage. This enables us to take appropriate countermeasures to avert

### MOST IMPORTANT STAKEHOLDERS



➤ GRI 102-40



imminent damage to Nordex and avoid any threat to its continued existence. Further information on the objectives, organization, and effectiveness of the Nordex Group's risk management system can be found on page 49ff. of the 2019 Annual Report. Details on risks and opportunities for each field of action can be found in the individual chapters of this Sustainability Report. The analysis is based partly on the results of the online and telephone surveys of external stakeholders and Nordex Management, which we conducted in 2018, and partly on updated assessments by the specialist departments.

## ➤ Achievement of targets: Sustainability Strategy 2019 to 2021

In the first year of our self-defined targets, the Nordex Group has made very positive progress. Over the next two years we will continue to work on implementing our strategy.

### TOPIC PRIORITIZATION

Topic	Overall assessment of relevance	Key topic in Sustainability Strategy 2019 to 2021
Environmental behavior of the Group	high	Divided into the topics waste, hazardous substances, energy and greenhouse gas emissions
Environmental footprint of wind power systems	high	Environmental lifecycle assessment
Health and safety	high	Occupational safety
Corporate culture	high	Leadership culture
Values and standards in the supply chain	high	Standards in cooperation
Cost of energy	high	Cost of energy
Customer satisfaction	high	Customer satisfaction
Impacts of wind turbines on biodiversity	medium	
Company values and standards	medium	
Employee development	medium	
Employee diversity	medium	
Energy supply security	low	
Social engagement	low	

➤ GRI 102-47



# Our Sustainability Strategy

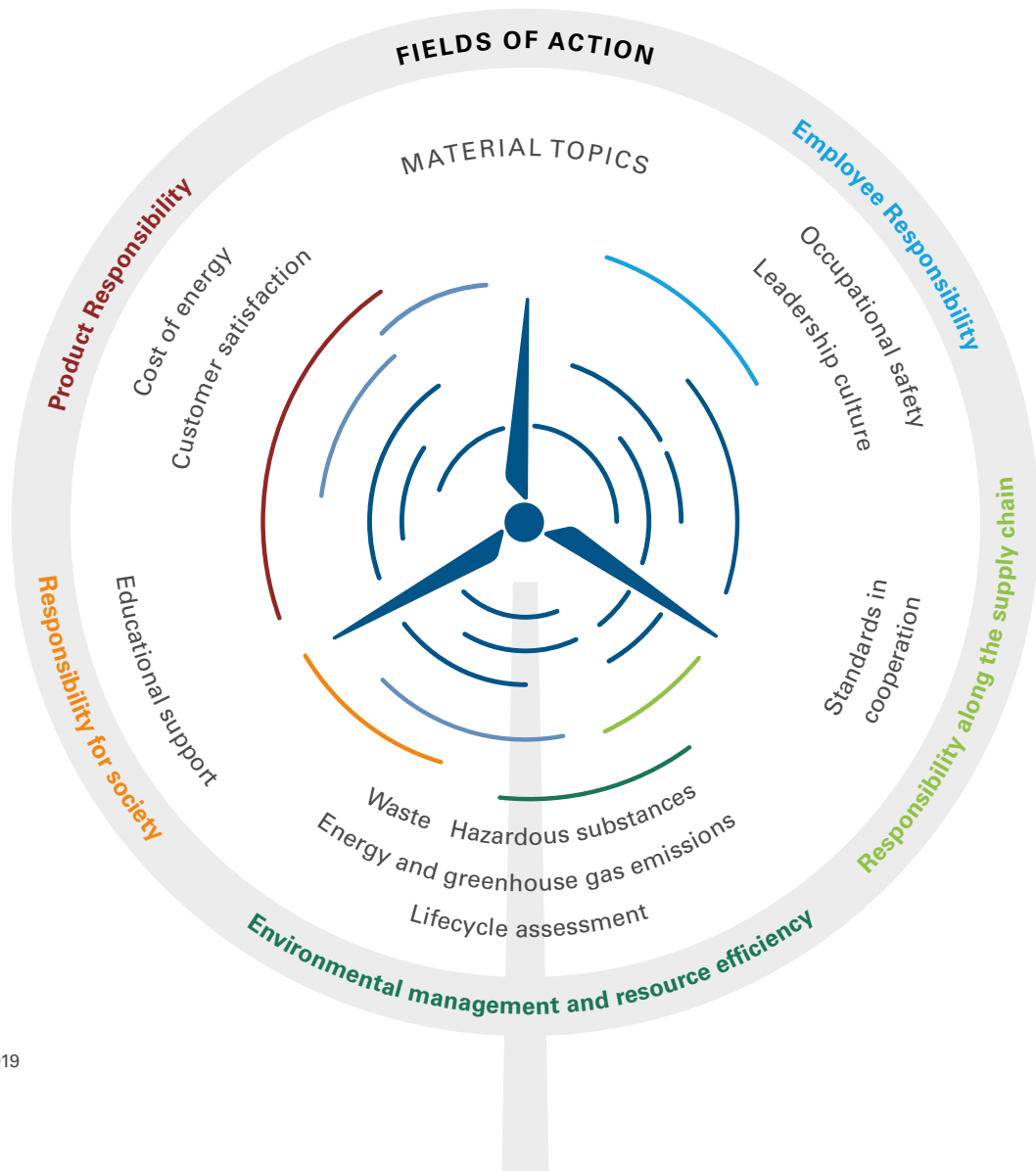
➤ GRI 102-47

## Making progress together in efficient and sustainable energy generation.


Our Sustainability Strategy 2019 to 2021 builds on our first Strategy 2015 to 2018 and continues our sustainability approach under the banner of 'Use wind intelligently – live sustainability.' It comprises the material strategic fields of action and the sustainability topics for this period derived from these fields. We have set specific objectives for our focus topics in order to launch the next stage of the consistent implementation of sustainable development in our Company.

The following table provides an overview of the status of implementation of our goals after the first year of the current Sustainability Strategy up to 2021; detailed information is available in the individual chapters.

In the following chapters we present the sustainability topics grouped into five fields of action, which represent the overarching challenges we constantly work to meet.



**SUSTAINABILITY TARGETS**



Fields of action	Material topic	Goals	2019	2019 target achievement and explanation
 <b>Product Responsibility</b>	<ul style="list-style-type: none"> <li>Cost of Energy (COE)</li> </ul>	<ul style="list-style-type: none"> <li>Continuously reduce cost of energy</li> </ul>	✓	The Nordex Group was again able to achieve its goal of ongoing reductions in the cost of energy.
	<ul style="list-style-type: none"> <li>Customer Satisfaction</li> </ul>	<ul style="list-style-type: none"> <li>Achieve a satisfaction rating of more than 4 (1=very unsatisfied; 6=very satisfied)</li> </ul>	✓	In 2019 we developed a new concept for analyzing our customer satisfaction, setting ourselves the goal of achieving a satisfaction rating of more than 4. Analysis of the Service area in the reporting year resulted in an overall satisfaction rate of 4.4. Positive feedback from the survey in the Sales area was confirmed by a high recommendation rate.
 <b>Employee Responsibility</b>	<ul style="list-style-type: none"> <li>Occupational Safety</li> </ul>	<ul style="list-style-type: none"> <li>Reduce accidents to a lost time injury frequency (LTIF) of less than 5 per 1 million working hours</li> </ul>	✓	We already achieved our goal in the reporting year, reducing the Group-wide accident frequency rate to 4.6 (2018: 5.6) by the end of 2019. We therefore set ourselves new targets for 2020 and 2021, and are aiming for an LTIF below 4 in 2021.
	<ul style="list-style-type: none"> <li>Leadership Culture</li> </ul>	<ul style="list-style-type: none"> <li>Further strengthen leadership culture and values</li> <li>Continue established programs and processes for employee development</li> <li>Promote diversity in the Company</li> </ul>	↗	By the end of 2019, 74% (2018: 60%) of all managers had completed the globally standardized 'Trust. Listen. Lead.' training program, which communicates our values and leadership guidelines. In the reporting year we also obtained feedback from employees on our Compass development program with the aim of constantly improving it.
 <b>Responsibility in the Supply Chain</b>	<ul style="list-style-type: none"> <li>Supply Chain</li> </ul>	<ul style="list-style-type: none"> <li>Optimize the supplier due-diligence process</li> </ul>	→	In the reporting year we revised and harmonized the supplier qualification process. The implementation is planned for 2020.
 <b>Environmental Management &amp; Resource Efficiency</b>	<ul style="list-style-type: none"> <li>Waste</li> </ul>	<ul style="list-style-type: none"> <li>Avoid and reduce waste by 10%</li> </ul>	→	As a result of commissioning new production sites and increased production figures in the reporting year, the volume of waste relative to revenues rose by 40% compared with the previous year.
	<ul style="list-style-type: none"> <li>Hazardous Substances</li> </ul>	<ul style="list-style-type: none"> <li>Reduce hazardous substances and minimize their hazard potential</li> </ul>	↗	Consistently recording all hazardous substances is fundamental to the reduction of hazardous substances. We therefore focused on completing our list of hazardous substances in the reporting year, which led to an increased number of 752 (2018: 679). In the reporting year we excluded and substituted six hazardous substances on the basis of the black list and gray list.

✓ Target achieved   ↗ Progress made   → Measures planned

Table is continued on the following page.



**SUSTAINABILITY TARGETS**

Fields of action	Material topic	Goals	2019	2019 target achievement and explanation
 <b>Environmental Management &amp; Resource Efficiency</b>	> Energy & Green-house Gas Emissions	> Procure 100% of the electricity we consume from renewable energy sources	→	For Division Europe, 100% of purchased electricity is sourced from renewables. We converted several other locations in Division International. Due to new production sites in Brazil and Mexico, however, as at the end of 2019 the share across the Group had fallen to 73.5% (2018: 88.1%).
	> Environmental life-cycle assessment	> Improve the environmental footprint of wind turbines	↗	In the reporting year, we conducted a life-cycle assessment of a wind farm equipped with our new Delta4000 turbine. Based on these calculations we will analyze environmental-impact hotspots and initiate countermeasures.
 <b>Responsibility for Society</b>	> Educational Support	> Support education initiatives in the region of our sites	✓	In the reporting year the Nordex Group supported education initiatives in Brazil, Pakistan, and South Africa, as well as several other locations.

✓ Target achieved    ↗ Progress made    → Measures planned

**Product Responsibility**

Our goal at Nordex is always to be customers' first choice for new projects and their execution.

Right from the development and construction of our wind turbines, alongside technological development we prioritize environmental and social aspects: These include recyclability, serviceability, use of materials, noise emissions, and health aspects. To ensure wind power remains competitive it will be essential to continually reduce our cost of energy; this is therefore a material business KPI for the Nordex Group.

**Employee Responsibility**

Nordex's success is based on a corporate culture that focuses on employee recruitment, retention, and further training, as well as the satisfaction, health, safety, and diversity of our workforce.

**Responsibility in the Supply Chain**

A significant share of Nordex's added value is created in the pre-production phases. This makes it vital to enforce compliance with environmental and social standards throughout the supply chain.

**Environmental Management & Resource Efficiency**

As a manufacturer of wind turbines we act in the interests of our customers and the environment. We aim to continually reduce our environmental footprint through the considerate use of resources.

**Responsibility for Society**

As a dynamic global company, engaging for the benefit of society at a local level is part of the way we see and understand ourselves.





## NORDEX AND THE SUSTAINABLE DEVELOPMENT GOALS (SDGS)

At the heart of its Agenda 2030, the United Nations General Assembly adopted 17 global Sustainable Development Goals (SDGs) in 2015. The Nordex Group has integrated these objectives into its sustainability approach. We see our potential for influence particularly in the three SDGs 'Affordable and Clean Energy' (7), 'Decent Work and Economic Growth' (8), and 'Climate Action' (13), as our business activities can make a significant contribution to their implementation.



### 7 | Affordable and Clean Energy

As a supplier of innovative onshore wind turbines we make a sustainable contribution to steadily increasing the share of renewable energies in the global energy mix. The turbines already installed by the Nordex Group with a combined rated output of 28 GW also ensure a reliable, future-oriented power supply in over 40 countries worldwide that is expanding year after year. The successes in reducing the cost of energy in recent years have enabled wind energy to prevail over conventional generation capacities in economic competition. As part of our Sustainability Strategy 2019 to 2021 we will consistently pursue an ongoing reduction in the cost of energy.

### 8 | Decent Work and Economic Growth

Through our sites in Brazil, India, Mexico, and South Africa we create jobs for the local population in emerging markets. Further, we require full compliance with ethical guidelines such as the principles of the UN Global Compact, the OECD Guidelines for Multinational Enterprises, and the UN Universal Declaration of Human Rights – not only internally but also externally through our Code of Conduct for Suppliers. Nordex is also committed to corporate diversity and gender-independent pay levels. Safety culture also plays a special role at the Nordex Group, where in order to promote safety awareness and develop the qual-

ifications of our employees we offer corresponding programs and training courses at all locations. In addition, we are committed to establishing a safety culture in the wind industry by participating in industry-specific initiatives.

### 13 | Climate Action

Through our product portfolio we contribute to the transformation of energy systems on a global level. Through constant innovations in wind turbine technology, including to improve their environmental scorecard, we are able to make an important contribution to the implementation of this development goal. Climate protection is also a top priority within the Company: In 2019 we already purchased 73.5% of our electricity from renewable energy sources. Additionally, our Sustainability Strategy includes long-term goals to counteract climate change and its effects. For example, we aim to completely switch over our electricity procurement to renewable energy sources, and reduce our waste generation by 10% by 2021.



<https://sustainabledevelopment.un.org>

## > Sustainable Development Goals

The Nordex Group is committed to the goal of sustainable development and actively contributes to the SDGs.





# MANAGEMENT AND CORPORATE COMPLIANCE

## VALUES AND GUIDELINES

➤ GRI 102-12, 102-16, 419/103

### Management Approach

Our Company is committed to handling resources in full awareness of our environmental and economic responsibilities. We treat the people employed by the Nordex Group with a clear sense of social responsibility. Respect characterizes our collaboration with customers, suppliers, service providers, and shareholders, as well as with our neighbors and local communities.

Our corporate culture is based on our core Company values of Integrity, Respect, Collegueship, and Ownership, as well as on the principles and standards of conduct set out in the Company guidelines, leadership principles, and in particular in our Codes of Conduct for employees and suppliers.

Integrity is one of our core Company values and thus a cornerstone of our corporate culture. Acting with integrity, along with compliance with legal requirements, forms the basis of the good reputation we enjoy. The trust of our customers, shareholders, business partners, and the public is built on this important foundation. As a uniform guideline for behavior, the Nordex Code of Conduct describes our principles for legally compliant and responsible action. This Code of Conduct supplements our corporate guidelines and applies to all Nordex Group employees worldwide.

The Code of Conduct for Nordex employees comprises five core principles: Compliance with appli-

cable law; Avoiding conflicts of interest; Protecting Company property; Upholding the Code of Conduct; Aspiration towards ethical standards. The Code is binding for all employees of the Nordex Group. In the Code of Conduct for subcontractors and suppliers we adhere to the principles of integrity and ethical, lawful conduct throughout the entire duration of the business relationship.

The ethical guidelines of the UN Global Compact and the Organisation for Economic Cooperation and Development (OECD) provide fundamental guidance for all our business activities, in accordance with our Codes of Conduct.

Every Nordex Group employee is required to implement these values and guidelines in their daily work. Managers have a special responsibility here as role models, supporters, and representatives of Company management.

Specialists from the Nordex People & Culture and Corporate Compliance Departments support our employees and managers through training courses on values, guidelines, and our Code of Conduct, but also on a case-by-case basis. The People & Culture Department also reviews and updates the values and guidelines together with management as well as the Corporate Compliance and Occupational Safety Departments.

In 2019 there were no incidents of non-compliance with laws and/or guidelines in the social and economic areas that resulted in significant fines or non-monetary sanctions.

[www.nordex-online.com](http://www.nordex-online.com)  
Nordex Code of Conduct:  
[www.nordex-online.com](http://www.nordex-online.com)



## CORPORATE COMPLIANCE

➤ GRI 205/103

### Management Approach

The Corporate Compliance Department supports the specialist departments, managers, and employees in acting in alignment with their duties and guidelines. The core task of Corporate Compliance is to implement an effective Compliance Management system that successfully promotes risk awareness and integrity, as well as to identify, stop, and permanently prevent potential legal violations. This includes in particular the sustainable prevention of possible misconduct and violations with regard to bribery or corruption. The aim is to uncover and put an end to legal violations, to investigate potential ambiguities in this regard, and if necessary to intervene immediately, as well as to prevent future misconduct as far as possible. In addition to this specialist department there is also an interdisciplinary Compliance Team that leads the follow-up investigation in cases of suspected serious violations of the Code of Conduct.

Both the Corporate Compliance Department and the Compliance Team inform employees and management about general and current compliance issues, such as tackling corruption and preventing anti-trust law infringements. They support them in fulfilling compliance obligations and are available to employees, managers, and contractual partners for any questions about compliance. The focus is on promoting risk awareness and integrity, with the aim of strengthening a compliance culture in which there is zero tolerance for violations of the law.

The notify! whistleblower system introduced at the end of 2018 is another component of the Compliance Management system. Nordex Group employees as well as our business partners' employees can use notify! to submit and discuss any indications of misconduct or irregularities in connection with the Nordex Group's business activities. They have three reporting channels available to them to do this: Personal contact with staff in Corporate Compliance, an internet-based

whistleblowing platform, and a central hotline and e-mail address. There is an option to report issues anonymously, where this is not restricted by country-specific requirements.

As well as the existing contact points such as line managers and the People & Culture Department, the notify! whistleblower system provides Nordex Group employees with an additional means of discussing grievances or misconduct.

In 2019 there were 25 compliance-related enquiries as well as a total of 14 reports of potential misconduct or grievances.

### COMPLIANCE ENQUIRIES, REPORTS, AND CASES

	2019
Enquiries	25
Submitted reports	14
Ongoing reviews / investigations (at the end of the reporting period)	7
Confirmed reports with improvement / disciplinary measures initiated	5

### CHALLENGES, RISKS, AND OPPORTUNITIES

Integrity is a core value for trusting, ethical, and legally compliant cooperation – among employees, with our customers, our suppliers, all other business partners, and naturally with the general public. Against the backdrop of ever more extensive regulatory frameworks and in view of the global nature of today's business activities, legally compliant conduct to prevent corruption and infringements of competition law remains vitally important.

Unlawful behavior and misconduct by employees and third parties acting on behalf of the Nordex Group can cause considerable damage – economically, legally, and to the Company's reputation.



Supplier Code of Conduct:  
[www.nordex-online.com](http://www.nordex-online.com)



## 2019 PROJECTS

A key result in the 2019 reporting year was the realignment of Compliance Management, which entailed the redefinition of a Compliance organization with centralized and decentralized elements, and the setting up of a Compliance Program for 2020.

One component of the Compliance organization is the Business Ethics Committee, to be newly established in 2020, that will promote the implementation of and compliance with the Code of Conduct, continuously develop it, and lead the investigation of possible material violations of the Code.

In addition we made the business partner review more precise for a specific area of activity, and intensified related training measures for new employees and employees in high-risk activities.

## OUTLOOK 2020

Activities in 2020 will be managed through the 2020 Compliance Program and will focus both on the implementation of the decentralized elements of the Compliance organization and on various individual measures to sharpen awareness for corruption risks in business activities as well as through communication and training. In addition, we will focus on developing guidance for action that define guidelines and requirements for individual case assessments. Further key individual activities in 2020 will be revisions to the Nordex Group Code of Conduct and the Supplier Code.

## COMPETITION

➤ GRI 206/103, 206-1

### Management Approach

The Nordex Group conducts its business activities with integrity and in full compliance with the law. This means that we avoid any form of infringement of competition law and comply with all applicable competition regulations. This applies equally to our employees and our business partners, in particular to our suppliers and other third parties acting on our behalf.

To ensure this we train and commit our employees within the framework of the Code of Conduct, and require our subcontractors and suppliers to sign our Supplier Code of Conduct.

### Challenges, Risks, and Opportunities

Violations of competition law can result in substantial sanctions for companies and thus significantly jeopardize our current and future activities. We therefore identify and evaluate potential competition-relevant aspects before launching any business activity. We apply a high degree of sensitivity both to contractual agreements and to our business partner relationships. We do not permit agreements or actions that inhibit free trade or restrict competition.

In 2019 there were no cases of anti-competitive behavior, nor were there any criminal proceedings against the Company owing to violations of relevant laws or regulations.

## OUTLOOK 2020

In 2020 we will introduce the E-Learning Program on anti-trust issues and risks for employees in risk-prone areas of activity, which had originally been planned for 2019.

## PREVENTING CORRUPTION

➤ GRI 205/103, 205-1, 205-2, 205-3

### Management Approach

The effective prevention of corruption is the responsibility of every Nordex Group employee. We require the same of our business partners.

In this context, the Corporate Compliance Department provides support in the form of training, guidelines, assistance, and risk assessments. When joining the Company, all new employees are verifiably informed in detail about our Code of Conduct and the anti-corruption guidelines it contains. We formally require their compliance with the Code. Employees in risk-relevant functions and country organizations take part in a mandatory e-learning course. In addition, we inform employ-

ees with a particular focus on compliance topics in their daily work and organizational areas about current issues as required.

We commit our subcontractors and suppliers to ethical and lawful conduct through our Supplier Code of Conduct.

In order to set up the internal audit plan for each business year, at Nordex we rate 100% of our Group entities according to a risk-based ranking based on the following factors:

- Corruption Perceptions Index (CPI)
- Employee fluctuation
- Assessment by specialist departments and the Compliance Team
- Economic development.

The corruption risks are distributed according to the CPI within the Nordex Group. No significant risks were identified in the reporting period.

In 2019 we continued the training courses on corruption prevention for new employees in risk-prone areas of activity as part of the mandatory E-Learning Program as well as target-group specific classroom training (especially Purchasing).

At the end of 2019, the training measures achieved a higher level of coverage and depth of content. At the end of the reporting year, all members of the Management Board as well as 1,368 employees in risk-prone areas of activity had been trained through the E-Learning Program for preventing corruption, which is valid for two years (see table). 88% (2018: 70%) of employees in the risk-based target group had taken part in the corruption prevention training course.

#### OUTLOOK 2020

In 2020 our activities will focus on conducting a risk analysis of corruption and bribery risks, intensifying target-group specific training courses worldwide, and continuing to develop guidelines and specifications.

#### NUMBER OF EMPLOYEES TRAINED IN THE PREVENTION OF CORRUPTION

Region	Staff trained*		Of whom: Managers trained*	
	2019	2018	2019	2018
Africa	30	20	9	6
Asia (incl. Australia)	35	25	13	10
Europe (excluding Germany and Spain)	182	154	112	89
Germany	783	681	264	245
North America	215	143	111	80
South America	54	33	37	24
Spain	69	49	30	21
<b>Total</b>	<b>1,368</b>	<b>1,105</b>	<b>576</b>	<b>475</b>

\* by risk-based target groups



## HUMAN RIGHTS

➤ GRI 412/103, 412-2, 412-3

### Management Approach

Our business decisions and activities are subject to upholding human rights globally; this includes all our investment commitments. The principles of the UN Global Compact, the OECD Guidelines for Multinational Enterprises, and the UN Universal Declaration of Human Rights that stipulates zero tolerance for child labor, forced labor, discrimination, and retaliatory measures, serve as our guiding principles. These fundamental principles are also reflected in our core corporate values of Integrity, Respect, Collegueship, and Ownership. This is an essential foundation for the trust placed in us by our customers, shareholders, and business partners, as well as the public. We place the same demands on our business partners. Our corporate culture is based on our core Company values as well as on the principles and standards of conduct set out in the Nordex guidelines and in particular in our Codes of Conduct for employees and suppliers.

We continuously train new employees and suppliers as part of communicating our Codes of Conduct, and secure their commitment to our guidelines and principles. Our Supplier Code of Conduct applies to our security service providers as well as to all other subcontractors and suppliers. Within this, we explain our labor and human rights requirements and explicitly require our business partners to comply with them. We will continue our corresponding communication measures on this in 2020.

## MEMBERSHIPS AND COLLABORATIONS

➤ GRI 102-13

Nordex is a member of various international and sector-specific associations. As members of management or steering committees we play an active role in the following organizations:

- VDMA PS (Specialist Power Systems Association of the Mechanical Engineering Industry Association),
- WindEurope,
- GWEC (Global Wind Energy Council),
- FEE (France Energie Eolienne),
- SAWEA (South African Wind Energy) and
- CEA (Cámara Eólica Argentina).

The following associations and technical bodies are also particularly relevant to us:

- FGW (Federation of German Windpower and other Renewable Energies),
- ABEEólica (Associação Brasileira de Energia Eólica),
- AEE (Asociación Empresarial Eólica),
- AWEA (American Wind Energy Association),
- TUREB (Turkish Wind Energy Association),
- ANEV (Associazione Nazionale Energia del Vento),
- PSEW (Polish Wind Energy Association) and
- AMDEE (Asociación Mexicana de Energía Eólica).

## FINANCIAL ASSISTANCE

➤ GRI 201-4

As an international company in the wind power industry, energy-market policy decisions in particular greatly affect our business activities and projects. Nordex itself receives no subsidies for its products. The electricity we generate using renewables and which is fed into the consumer power grid is remunerated depending on the particular state's subsidy programs.

In 2014 Nordex received an investment grant for the expansion of the Rostock production site. The subsidized assets must remain at the subsidized site until the end of the five-year restricted period, which commences on payment of the final tranche of the investment grant. Furthermore, during the restricted period a yearly average of 1,026 jobs must be maintained. As in 2018, in the reporting year no investment subsidy was received.



In the research and development (R&D) area, in 2019 Nordex projects received subsidies of EUR 1,004 thousand (2018: EUR 822 thousand). These subsidies relate to Company and joint projects in experimental, industrial, and fundamental research that we are carrying out as part of topic-focused German federal republic and Mecklenburg-Vorpommern state specialist programs.

Our customers make regular use of export credit agency (ECA) financing instruments. As an exporter affected by this system, we support these guarantees by providing the necessary information and binding declarations; in doing so we are also directly involved in the financial guarantees. In individual cases we also apply for our own supplier and production coverage to safeguard against specific risks associated with customers' wind farm projects. In the reporting period, the Nordex Group concluded new business worth EUR 311.9 million (2018: EUR 729.4 million) that was partly or wholly covered by ECAs.

In the reporting year, Nordex received EUR 112 thousand in tax relief for 2017 in Germany under the German Electricity and Energy Tax Act. In 2019 the Company applied for tax relief for the 2018 financial year totaling EUR 101 thousand. At the reporting deadline this tax relief had not yet been received.

Nordex received no awards or any other benefits that included forms of financial support. Furthermore, no governments held stakes in Nordex SE in the reporting period.

## RISKS AND OPPORTUNITIES FROM CLIMATE CHANGE

➤ GRI 102-11, 201-2

Climate change is already having a global impact today and is a major driver of far-reaching changes in nature, societies, and economies. These result in both risks and opportunities for Nordex and its business development. The climate-change mitigation measures adopted by the international community are aimed primarily at reducing climate-damaging emissions, for example in elec-

tricity production. The Nordex Group can make an important contribution to this with highly efficient wind power solutions.

For many years now, renewable energies have been gaining importance not only in industrialized countries but also in developing and emerging countries. This trend could accelerate further as a result of the potential consequences of climate change and the resulting pressure to act, which will very probably lead to a further increase in the demand for wind energy technologies. At the same time, changes in the weather present manufacturers with challenges, since the availability and suitability of wind farm sites are determined in the first instance by the prevailing wind conditions. For several years now, the Nordex Group has been reacting to these new requirements by developing systems for areas of particularly low or strong winds, as well as project and site-specific solutions.

Nevertheless, rapidly changing conditions may negatively influence the efficiency of existing wind farms and cause a shift in suitable locations. In addition, climate change also harbors general risks for Nordex as a production and plant construction company. This includes, for example, risks to our own production sites and the supply chain, as well as adverse effects on logistics chains and in the construction of wind farms due to extreme weather events.

We are actively meeting the challenges described and see these as an incentive for optimizing our wind power systems with increasingly effective and innovative technologies and ideas. For further explanations of our product strategy and development, please see the section on Product Responsibility in this report.

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# PRODUCT RESPONSIBILITY

**31** Sustainable Product Development

**38** Customer Satisfaction

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We work constantly to lower the cost of energy for our customers in order to provide them with the highest-value, most sustainable product possible. This approach delivers a high customer satisfaction rate.

## Sustainable Product Development

➤ GRI 413/103, 413-1, 416/103, 416-1

### MANAGEMENT APPROACH

In recent years, renewables, particularly wind power, have gained in importance globally. 'Green' electricity generated from these sources helps reduce carbon dioxide (CO<sub>2</sub>) emissions arising from conventional electricity generation, which contributes significantly to global warming. High-performance wind turbines play a key role in this positive development: At Nordex we design and build these sustainably, safely, and in the highest quality, thus securing our customers' long-term satisfaction with our products and services.

Once connected to the grid, our wind turbines generate electricity for at least 20 years, making a major contribution to the environmentally friendly electricity supply as part of the overall transformation of the energy industry. A single Nordex large wind turbine with installed generating capacity of 4 MW can meet the average annual electricity requirements of around 3,000 four-person households.

Globally, Nordex and Acciona Windpower have many thousands of wind turbines installed, with a combined nominal power capacity of over 27 gigawatts. These turbines provide clean, safe electricity in more than 40 countries around the globe. To support the transformation of the energy sector with our partners we are also active in cross-regional project initiatives such as Norddeutsche EnergieWende 4.0 (North German Energy Transition / NEW 4.0).

### CHALLENGES, RISKS, AND OPPORTUNITIES

Sustainability aspects play a key role for us in all lifecycle phases of our wind turbines – from development, through sourcing, production, and operation, to dismantling and recycling. Taking these aspects into account comprehensively within the process is a challenge, but also an opportunity for us. With our Sustainability Strategy we have therefore set ourselves the objective of continually reducing our cost of energy (COE) as well as improving both our environmental footprint and the recyclability of our turbines.



#### INFORMATION

Find out more about the NEW 4.0 project on **PAGE 79f.**



Nordex Delta4000  
 N149/4.0-4.5 wind  
 turbine in Germany.

## SUSTAINABILITY STRATEGY 2019 TO 2021

The high priority of sustainability in the development and manufacture of our wind turbines is why we regularly review our core processes and use of materials for areas of optimization potential. A core strategic aim of product development is an annual reduction in cost of energy by a high single-digit percentage; we committed to this in our Sustainability Strategy 2019 to 2021. Electricity generation costs are calculated based on the total sum of a wind farm's project costs over its entire lifetime, divided by the revenue the wind farm generates after commissioning.

## PRODUCT DEVELOPMENT

As a manufacturer of reliable and cost-effective wind turbines we strive to meet the world's growing energy demand with renewable, environmentally friendly electricity and thus support the transformation of the energy industry. In times of increasing competition, also from other forms of energy generation, the development of ever more powerful and profitable turbines for the inexpensive generation of electricity was once again the driving force and focus of our product development in 2019. Following the successful launch of the 4 MW Delta4000 product

series in 2017 (N149/4.0 - 4.5 for medium to low-wind sites and N133/4.8 for strong-wind sites), we recently reached another milestone on our journey: The launch of our new Delta4000/5.X product series.

The Delta4000/5.X is based on the successfully tested and measured Delta4000 platform and transfers it to the 5 MW class. The models are N149/5.X for medium to low-wind locations, and N163/5.X for low-wind locations.

Through the intelligent reuse of components and production resources from the Delta4000 product range for the Delta4000/5.X, we were able to keep the need for additional resources to a disproportionately low level while significantly increasing the yield of wind turbines by up to 20%.

In addition, we launched the N155/4.5 turbine, which is specially designed for growth markets with low winds and little turbulence. The turbine is based on the existing Delta4000 architecture and the rotor blade shape of the AW148/3000, which allows us to reuse components and production molds to a very large extent.

## Lower Material Use and Efficiency Gains through New Product Series

In designing our new N149 wind turbine we paid particular attention to building a high degree of flexibility into the system. The core of the concept is the system's variable output design, which lies between 4.0 and 4.8 MW for the N149. This variable range is extended further from 5.0 MW to 5.X MW with the Delta4000/5.X. Thanks to this flexible concept, the turbine can be optimally adjusted via operation control software at any location within a wind farm, so that it achieves the maximum energy output within its design parameters. This allows the full potential of the turbines to be utilized – especially for larger wind farms, whose market share is increasing. Another advantage of this approach is that in most cases only one type of turbine is used on a wind farm. This in turn allows an improvement in spare parts management, for example by reducing the amounts of spare parts that need to be stocked.

### **Progressive Further Development of the AW3000 Platform**

In the reporting year our developers focused on further reducing the costs of electricity generation on the very successful AW3000 platform by implementing technical innovations, in parallel with the continued development of the Delta4000 product series. In the course of the cooperation with the Delta4000 development teams it was possible to transfer technological and methodological findings and incorporate them into the further development of the AW3000 platform.

In the AW148/3000, a new turbine with an almost unchanged design was also brought to market that optimally meets the special requirements of low-wind areas with low turbulence and less restrictive noise requirements. For this type of system, intended for installation particularly in growth markets, we are using our proven concrete tower technology. This type of tower is usually made locally in the immediate vicinity of the wind farm, contributing to adding value locally and minimizing transport emissions.

For the rotor blades of the newly launched N155/4.5 we use a large proportion of the AW148/3000 blade molds in production, which not only saves costs but also reduces the materials and emissions generated during manufacture, transport, and installation.

### **Reduction in Cost of Energy**

The cost of energy (CoE) from wind turbines can be reduced in two ways: Through cost reduction ('cost-down' measures), and through increasing our wind farms' productivity ('value-up' measures). The Company-wide COE Program targets the continual reduction of electricity generation costs. Over 300 employees from various functional areas and country subsidiaries are working together on this.

In 2019 we were again able to reduce COE for our wind turbines as part of this program. A successful 'cost down' initiative was the optimization of nacelle components, based on our experience with the Delta4000 prototypes. In addition, by

extending the scope of calculation methods we were able to significantly reduce the amount of material required for the tower. Further, due to the replacement of the oil type for the pitch and yaw gearboxes we were able to prolong the oil change intervals. By doing so we avoid up to two oil changes within the turbine lifetime, saving 150 liters of oil per change. Additionally, we introduced a condition-based approach for oil changes for the main gearbox, avoiding fixed change intervals and thus ensuring a more efficient use of resources.

A highlight 'value up' achievement is the development of our 5.X MW turbines, leading to a significant increase in yield and performance flexibility. We were also able to extend the certified lifetime of our Delta and Delta4000 4 MW turbines from the standard certification of 20 years to up to 30 years. With the same amount of materials used and a considerably longer service life, the cost of energy and the environmental impact are significantly reduced. Due to the various ratings and longer, more flexible operating times of Nordex turbines, we are able to offer our customers individually tailored wind farms.

### **Turbine Control Systems Protect Flora, Fauna, and Local Residents**

In order to enable operations at sites with particularly strict conditions, at Nordex we offer our customers a wide range of operating modes and equipment modules, such as aircraft detection lighting beacons, the shadow detection module, and special modules for species protection. These can be controlled individually for protected local animal species and their behavior, approaching flying objects, wind direction, sunshine intensity, outdoor temperature, time of day, and the local holiday calendar. This helps minimize environmentally polluting light and sound emissions, and ensures compliance with building requirements and regulations. For example, the option of reducing sound emissions by means of serrations was selected for around 60% of the projects with Nordex platform turbines sold in 2019. These serrated components significantly reduce trailing-edge related sound on the rotor blades. Approximately 50% were fitted with the shadow



detection module, while the bat-protection option was integrated in around 40% of projects with Nordex platform turbines.

### Expanded Range of Applications for Nordex Turbines Worldwide

Our Delta and Delta4000 turbines are in high demand in northern countries, as they can be operated at sites with average temperatures as low as  $-20^{\circ}$  Celsius. The tried and tested Nordex Cold Climate Package helps to develop profitable cold climate sites. In the cold climate variant (CCV), the turbine has an extended operating range and is ready for operation at an outside temperature of down to  $-30^{\circ}$  Celsius. We have also developed an option for the Delta4000 turbine that ensures a consistently high yield despite hot ambient conditions by using enlarged passive coolers.

Our effective advanced anti-icing system, which we continued to develop in the reporting period, heats the most aerodynamically important surfaces of the rotor blades as required and reduces ice build-up in an energy efficient way. This technical optimization delivers higher energy yields at sites with frequent ice formation on the rotor blades. This development consisted in particu-

lar of simplifying the system and extending the heated rotor surface.

### Repowering

“Repowering” describes the replacement of wind turbines, that have either completed or are close to the end of their specified design lifetime, with more efficient turbines. Due to technology improvements, today it is possible to generate more energy using fewer wind turbines. Wind farms can therefore be smaller and less land is needed.

Alternatively, it is possible to refurbish wind turbines to extend their lifetime. This means analyzing the performance of turbines about to reach the 20-year limit and calculating their actual remaining lifetime. If the analysis confirms that the turbine is fit to operate beyond year 20, provided some components are exchanged or overhauled, the license can be extended by up to 10 years. Refurbishment is a partial form of repowering in which the existing foundation and tower continue in service, for example, and only the nacelle and blades are replaced.

Repowering is relevant for all turbine manufacturers because new regulations restrict the development of new wind farms, while existing farms in many cases already occupy the prime locations with the highest energy generation potential. Repowering existing wind farms is a straightforward way of maximizing energy production, contributing to renewable energy targets, while increasing resource efficiency to a great extent. Spare parts from old turbines that have been dismantled can often be used in the maintenance of wind turbines still in service. It is also sometimes possible to sell old turbines to less developed wind markets.

Nordex has identified high repowering potential over the years to come. The biggest challenges to repowering are the lack of both a specific regulatory framework, and rapid processes for obtaining the relevant permits.

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## WIND POWER PLANTS

with a nominal performance of 3,090 MW were installed by **NORDEX** Group in 2019.



Service Team at the wind farm in Tyrinselkä, Finland.

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Everything is geared towards optimizing COE and continuously improving our Service. Our aim is to lead in competitiveness, profitability, and customer satisfaction.

**CHRISTIAN BUSDIECKER,**  
Senior VP Service Division Europe, Nordex Group

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## SERVICE DEVELOPMENT

With our global Service Strategy 2023, developed in 2019, the Nordex Group Service Department continually strives to provide reliable, cost of energy (COE)-optimized service solutions through talented employees, the extensive Nordex Group fleet, and deep product expertise. We therefore defined strategic initiatives in specific areas such as customer interface, operations, and digitalization to develop the Nordex Group Service business systematically towards achieving that goal. Many strategic initiatives have already been launched.

In addition, in 2019 we took further action to reduce our cost of energy and to support the maintenance strategy transition to predictive maintenance. By insourcing the online vibration monitoring of our turbines, we now have an in-house Condition Monitoring expert team: It combines its expertise with our engineering know-how as a wind turbine manufacturer to further improve



Nordex Service employees following the successful installation of a wind farm in Turkey.

failure prediction and thus reduce downtime for our customers. Inspecting rotor blades with drones has become standard procedure in our service business; thanks to this process we have reduced inspection times significantly, increased our reporting quality in terms of precision, repetition, and data consistency, and have further raised turbine availability.

In Service we also continuously work on optimizing the energy production of our installed fleet. In 2019 we released an upgrade for installed Delta turbines, called Xtended Power Delta. This upgrade can be installed during the service period of the turbines and increases the annual energy production for our customers by up to 3.5%. It therefore contributes to making wind power generation even more cost-efficient.

## PRODUCT SAFETY AND HEALTH

➤ GRI 416/103, 416-1

Safe products have always been a top priority for Nordex. To guarantee the health and safety of all people in or near a wind turbine we constantly monitor markets and identify the statutory and normative requirements in our relevant target markets.

It is extremely important for us to make our wind turbines safe places to work: Well-planned emergency escape and rescue routes, easily accessible systems, an on-board crane for swapping out components with a weight of up to one tonne, as well as rapid, and weather-protected access to the rotor hub reduce any maintenance-related downtime of our Delta-series turbines and are all measures that increase workplace safety. Additionally, we implement systems that constantly monitor and manage turbines' operating status and the required safety parameters.

Nordex develops wind turbines in accordance with the requirements of the European Union Machinery Directive and all applicable national regulations, such as the German Equipment and Product Safety Act. Fundamentally this also includes analyses of:

- **Environmental risks** relating to operating materials, hazardous substances, sonic emissions, bird migration, bat protection, ice cast-off and electromagnetic radiation
- **Stability risks** to the wind turbine identified through foundation surveys, analyses of foundation design and load-bearing structure, as well as site-specific geological and wind conditions.
- **Risks to personnel** during manufacturing, transportation, warehousing and storage, installation, and finalization, as well as during turbine commissioning, operation, maintenance, repair work, and system dismantling.
- **Functional risks** that could impact technical or power generation availability.

We ensure the implementation of the required health and safety quality standards through appropriate and targeted product-development support processes.

In the reporting period all material Nordex products and services were assessed on health and safety aspects. To implement the measures resulting from these checks, Nordex has specialized and qualified functional departments that monitor and perform the Company's own wind turbine construction, manufacturing, management, installation supervision and functional commissioning, as well as servicing and maintenance activities.

Nordex works with well-qualified companies such as crane providers and assembly specialists for installation activities and special tasks involving the lifting of turbine modules. We train these suppliers on the special requirements of the Nordex Group and our customers, and audit them on the requirements of our quality management system, occupational health and safety, and environmental protection. In the further development of our Delta series wind turbines the design changes were assessed on personnel and turbine safety and a targeted risk assessment was carried out to ensure human safety. Teams from our Engineering, Service, and HSE Departments evaluated adjustments to address potential new risks to people. Appropriate targeted measures were already implemented in the construction process to mitigate and wherever possible prevent any risks.

To guarantee the structural integrity of our turbines, continual functional hazard analyses are planned within the construction process. Based on analysis results, safety functions are integrated and adapted to the new system types to take new operating parameters into account.

### **Continued Focus on Quality**

2019 saw an expansion of our production facilities in Mexico. Our current own and third-party rotor blade production network comprises blade plants in Germany, Spain, India, Mexico, Brazil, and China. To drive this growth further we placed an increased focus on quality by strengthening both the local and global Quality Departments, as well as launching new quality processes and procedures.

Furthermore, the Nordex Group joined the APQP-4Wind community (Advanced Product Quality Planning), which is setting a quality standard for the wind power sector. The implementation of the APQP principles goes hand-in-hand with a more proactive approach to quality that focuses on prevention rather than remediation of failure. Systematic quality planning supports our effort to meet our customers' quality standards.



## Customer Satisfaction

### MANAGEMENT APPROACH

Our customers' satisfaction is decisive for our business success. Integrating our customers' perspectives, understanding their needs, and continually adjusting our range of products and services to meet these is therefore fundamentally important to us.

### SUSTAINABILITY STRATEGY 2019 TO 2021

As part of our Sustainability Strategy 2019 to 2021 Nordex set itself the goal of achieving a high satisfaction rate. On a scale from 1 to 6 (1=completely unsatisfied; 6=very satisfied) our target is 4 (rather satisfied). To achieve this we will continue to conduct regular customer surveys as key tools to identify optimization potential and derive required action. Through high customer satisfaction we want to strengthen customer loyalty for the long term.

### SURVEY OF CUSTOMER SATISFACTION IN SALES AND SERVICE

We carry out customer surveys regularly to measure the current satisfaction level of our customers, and enable us to optimize Nordex Group products and services correspondingly.

Measuring customer satisfaction also helps to identify reasons for and trends in customer emigration at an early stage and to take appropriate countermeasures.

In cooperation with other departments in the sales process, we continued to work closely with our customers in 2019. Our Project Optimization Department established in 2018 works together with our customers to reduce cost of energy on a project-specific basis. They develop customized solutions such as site-specific towers and foundations, or specific operating modes to optimize the customer's business case. The department also works with our Key Accounts in joint teams to find cost-saving and value-improving initiatives that can be applied in a portfolio of projects. For example, two workshops were held with our

larger customers on the topics of the Delta4000 platform launch and future technologies. The aim of the workshops was to involve our customers at an early stage and to provide them with the necessary information to help them contribute to optimizing their own wind turbines provided by Nordex. Our customers gave us positive verbal feedback on these workshops.

However, our focus was on event-based online surveys that were conducted globally. All projects booked as order intake, as well as certain other important projects involving negotiations, for instance, were included in the survey. On this occasion our customers were asked to share their experiences with our Sales Department. 29% of them provided valuable feedback. 47% of the participants said that they would definitely recommend the Nordex Group to a trusted business partner, while 49% said they would probably recommend us.

This result was also reflected in the individual categories. For example, at 1.79 on a scale from 1 to 4 (1=well informed; 4=not well informed), our customers feel "reasonably well informed" about the Nordex Group and our products, initiatives, and goals. Especially with regard to the different regional Sales teams our clients were "very satisfied" with the relationship.

In our Service Department we also systematically expanded the customer satisfaction survey in the reporting year. Service Europe conducted a standardized online survey to assess overall customer satisfaction and individual performance, services and upgrades. In total, 51% of customers surveyed provided valuable feedback by rating our performance in several categories. In general, customers are at least "rather satisfied" with our provided services, rating Nordex's overall performance at 4.4 on a scale from 1 to 6 (1= completely unsatisfied, 6= very satisfied). This is supported by positive results in every Service category surveyed.

According to our customers, Service Europe performs especially well in HSE. Appointments with representatives from our Company can be



made quickly, easily, and are usually kept, which is valued very positively. In terms of quality, our technicians were praised for their work with lasting impacts.

Apart from the standardized results, the survey also provides the basis for launching an active dialog with our customers. We are eager to discuss survey results individually with them in order to understand how we can carry out further positive changes across the organization, and to uncover what is required to improve the overall customer experience going forward. In our next survey we aim to achieve at least an equal rating of our overall performance compared to the previous survey.

### **OUTLOOK 2020**

In our Sales Department we will continue to expand and optimize the customer satisfaction survey and the process to gather useful feedback. We will also work on optimizing our global sales processes further in order to become more efficient.

Based on our experience and customer feedback it is important to involve our Quality Department much earlier in the Sales process. This enables us

to identify potential risks as early as possible and take appropriate action. For this reason, our Quality Department was reorganized globally in 2019 and this change will be further expanded and optimized in the coming years.

Also in our Service business, we will continue to drive the further reduction in COE and to minimize turbine downtimes. To achieve these goals, on the one hand we are relying on the concept of a self-hoisting crane that winches itself up the turbine tower on its own hoisting cable and installs itself in the nacelle. On the other we are counting on our highly effective predict-to-prevent program for proactive, condition-oriented maintenance. We will continue to pursue smart repair concepts. For instance these include the exchange of main components at minimal cost and effort thanks to up-tower repair options or smart converter-repair concepts. Moreover, we intend to focus further on the implementation and extension of our online customer portal. In order to optimize our resources we plan to take measures to improve the dispatching process.

Nordex service staff replacing a gear unit using a self-hoisting crane at a wind farm in Norway.



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# EMPLOYEE RESPONSIBILITY

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- 



We strive for a positive leadership culture and actively support continuous employee development. At Nordex, occupational safety and workforce diversity are decisive factors in our success.

## Employee Development

### MANAGEMENT APPROACH

➤ GRI 401/103

Achieving the Nordex Group's goals depends largely on the commitment, experience, and passion of its employees. The People & Culture Department therefore manages and takes responsibility for activities and initiatives to promote the satisfaction and motivation of our approximately 6,900 employees worldwide. The Department is committed to providing effective customer service to all departments and employees through the timely delivery of innovative, high quality P&C systems, processes, and services.

As a global company in which a variety of people with different backgrounds and cultures work, our corporate values of Integrity, Respect, Colleague-ship, and Ownership are the foundation of good cooperation between all employees. These values describe the principles of our work ethic and for our interaction with one another; alongside our internal rules and guidelines they provide all our

employees worldwide with orientation for their behavior. We have set out the corporate values in detail in the form of the ten Nordex Leadership Principles, in which our managers are instructed in training courses worldwide.

Besides continually developing our holistic view of people, the understanding of leadership within our Company, and promoting diversity, the People & Culture Department focuses on professional personnel management through all phases of working together. Starting with recruitment, through systematic integration and individual professional development, to a fair arrangement of employment exit options, the Department constantly accompanies our employees and managers.

### CHALLENGES, RISKS, AND OPPORTUNITIES

The Nordex Group continues to face the challenge of responding to the fierce competition and far-reaching changes underway in the wind power industry, also in its personnel management. Recruitment challenges are highly dependent on the regional market. Globally speaking, the biggest challenge is recruiting new employ-



ees within a short period of time: Regarding the German labor market we are experiencing a shortage of skilled personnel and facing a decline in the number of applicants. However, the crisis affecting our direct competitors in Germany in the reporting year had a positive effect on the number of applications we received and on the hiring of qualified staff. To attract new employees and keep existing employees on board, we offer them an attractive work-life balance through modern and flexible working time models.

Markets, customer demands, and the general conditions of the global wind industry have changed rapidly and profoundly in recent years. As a company and organization we have adapted to these new, challenging conditions at a good pace. In both organizational and operational terms we are making good progress towards becoming a global company, but we need to put further effort into aligning our actions globally to become sustainably profitable and to continue to face the future with confidence.

## SUSTAINABILITY STRATEGY 2019 TO 2021

➤ GRI 102-16, 102-18

As a major component of our Sustainability Strategy 2019 to 2021 we will continue to anchor our corporate values and strengthen our leadership culture.

### Corporate Values

Presenting our corporate values is part of our Welcome Days. These introductory seminars for new employees are held quarterly in Division Europe and monthly in Spain. At the Welcome Days, managers or People & Culture staff explain our values and how we should live by them. The values are also transmitted in the Global Management Meetings and further meetings in the countries where we are present. In 2019 we integrated the presentation of our values into the German edition of our globally established Trust. Listen. Lead. training program. As this program was very successful, we will now start including the corporate values in the Trust. Listen. Lead. programs in the rest of the countries in which we operate. In consequence, the corporate values will be integrated into all of the Trust. Listen. Lead. sessions in the course of 2020. To anchor the corporate values more deeply over the coming years we will strengthen our communication by training multipliers and supporting them in transmitting these values throughout the Company. In 2020, the values will also be part of the fourth module in the Upwind Program in which young talents with the potential to become future leaders in the Company receive training on the leadership and values of the Nordex Group.

### Leadership Culture

Our Nordex Leadership Principles are transmitted through the globally uniform Trust. Listen. Lead. training program. The goal is to standardize the way our managers lead people in our Company and for every manager in the primary Nordex markets to have participated in this program within their first year in a leadership role. More details on the training rates in 2019 can be found under Management Development.

An additional focus area of the Sustainability Strategy 2019 to 2021 is employee development: Here we will continue our established successful programs and processes. In addition we intend to promote diversity in our Company. You will find further information in the sections on Employee Feedback and Development, Management Development, and Employee Diversity.

### Employee Recruitment in the Reporting Period

After the headcount reduction in 2017 and a moderate increase in 2018, the topic of recruitment regained importance in 2019: The Nordex Group is on an expansion course and this is reflected in the increase in the number of employees. Vacant positions were filled and numerous additional positions were created. The number of employees rose considerably, particularly in the blue-collar area, but we also saw an increase in the commercial and specialist technical areas. In 2019 nearly 2,000 new employees joined the Company.

For Division International, in 2019 the main challenge was and remains recruiting qualified people for the specialist technical areas of our wind farm construction. In countries with no established wind power industry, finding skilled and experienced employees is a lengthy and difficult process. At the same time the demand for new employees in the Company has increased, since we are running several projects at the same time and have established new production units in countries such as Brazil, Argentina, and Mexico. For 2020 we set a clear focus on increasing our global workforce. In the blue-collar segment we expect a significant expansion in several markets such as Brazil, Mexico, Germany, Spain, France, and the USA. We are also preparing for an increase in the number of white-collar employees.

Reflecting this development, one of the core strategic focal points of the People & Culture Department is to continue to position and strengthen the employer brand of the Nordex Group.



**INFORMATION**  
Find out more about training rates on **PAGE 49f.**

## > Nordex Leadership Guidelines

1. Recognize yourself
2. Communicate appreciatively and transparently
3. Delegation & granting trust
4. Be able to endure difficult situations
5. Initiate, design, and implement changes sustainably
6. Create clarity and transparency – give orientation
7. Make decisions reflectively
8. Assume responsibility
9. Treat people positively and like them
10. Be a role model!



## 2019 PROJECTS

### Employee Involvement

In 2018 we conducted a stress analysis in Germany via an employee survey. The aim of this topic-specific survey was to identify possible sources of stress in order to improve working conditions within the Nordex Group and further secure the basis for healthy working practices. Based on the results we set up a series of measures in 2019, which ranged from optimizing our overall process landscape to locally required workplace adaptations or offering sport activities on site.

A particular strength to be highlighted in the area of healthy working practices was the positively viewed collaboration in teams and collaboration with managers. This strength was further promoted by an initiative in 2019 on expanding feedback culture, which was implemented worldwide.

### Feedback Culture

The focus of this project is to boost peer feedback within our Company and thereby further strengthen our feedback culture in general. It applies to our personnel development as well as to the development and improvement of our Company, and the very success of our business itself. In the Nordex Group the Compass Dialogs represent an important, established feedback tool that helps us expand and consolidate this feedback culture within our Company.

### Salary Grouping and Bonuses

As important steps in harmonizing Group-wide People & Culture processes following the merger of Nordex and Acciona Windpower, the following two projects deserve to be highlighted:

We carried out a grading project at an international level, surveying the Global Lead Functions with the aim of systematizing and assessing all management positions worldwide.

During the reporting period we also redesigned and harmonized the variable remuneration system. At the core of the new regulation is the conversion of individual targets into sustainable business goals. The performance of all employees worldwide is now measured by the same targets.

Nearly all of our processes are now digitalized. In terms of remuneration we have implemented the SAP Human Capital Management program in Spain, for instance. This helps Business Workflows to map the document path for approvals – for example, document flows for construction permits, or materials purchase requests.

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**DIFFERENT NATIONALITIES**  
were represented at NORDEX in 2019.

## EMPLOYEES BY EMPLOYMENT CONTRACT

	2019	2018	2017
Employees with temporary contracts	777	660	543
of whom male	602	497	418
of whom female	175	163	125
Employees with permanent contracts	6,103	5,016	4,717
of whom male	5,179	4,265	3,939
of whom female	924	751	778
Temporary employees*	618	182	165
of whom male	547	163	134
of whom female	71	19	31

\* Technical temporary employees outside of our production facilities are not included.  
Further temporary employees at all sites globally have been included.

[↗ GRI 102-8](#)

## EMPLOYEES BY EMPLOYMENT TYPE

	2019	2018	2017
<b>Total number of employees</b>	<b>6,880</b>	<b>5,676</b>	<b>5,260</b>
of whom male	5,781	4,357	4,357
of whom female	1,099	914	903
Full-time employees	6,500	5,366	4,969
of whom male	5,600	4,629	4,234
of whom female	900	737	726
Part-time employees	380	310	291
of whom male	181	133	114
of whom female	199	177	177

[↗ GRI 102-8](#)



## EMPLOYEES BY REGION

	2019	2018	2017
<b>Total number of employees</b>	<b>6,880</b>	<b>5,676</b>	<b>5,260</b>
of whom male	5,781	4,357	4,357
of whom female	1,099	914	903
Africa	104	53	53
of whom male	71	41	43
of whom female	33	12	10
Asia	220	137	133
of whom male	198	121	114
of whom female	22	16	19
Australia	5	4	4
of whom male	5	3	3
of whom female	0	1	1
Germany	2,490	2,244	2,456
of whom male	2,047	1,841	1,992
of whom female	443	403	464
Europe (excluding Germany and Spain)	1,191	1,040	1,025
of whom male	1,049	921	901
of whom female	142	119	124
North America	499	298	242
of whom male	445	271	215
of whom female	54	27	27
Spain	1,194	1,164	1,044
of whom male	921	912	834
of whom female	273	252	210
South America	1,177	736	307
of whom male	1,045	652	258
of whom female	132	84	49

➤ GRI 102-8

## NEW EMPLOYEES BY AGE STRUCTURE

	2019	2018	2017
<b>Total</b>	<b>1,995</b>	<b>1,246</b>	<b>1,165</b>
under 30	40%	20%	34%
aged 30–50	55%	69%	57%
aged over 50	5%	11%	9%

➤ GRI 401-1



## NEW EMPLOYEES BY REGION AND GENDER

	2019	2018	2017
<b>Overall total</b>	<b>1,995</b>	<b>1,246</b>	<b>1,165</b>
Africa	57	8	16
of whom male	33	4	14
of whom female	24	4	2
Asia	88	19	28
of whom male	83	19	23
of whom female	5	0	5
Australia	1	0	4
of whom male	1	0	3
of whom female	0	0	1
Germany	476	257	321
of whom male	395	190	248
of whom female	81	67	73
Europe (excluding Germany and Spain)	255	161	271
of whom male	214	139	228
of whom female	41	22	43
North America	239	91	109
of whom male	210	84	96
of whom female	29	7	13
Spain	284	234	349
of whom male	216	179	283
of whom female	68	55	66
South America	595	476	71
of whom male	533	430	55
of whom female	62	46	16

➤ GRI 401-1

## NEW EMPLOYEES AND EMPLOYEE FLUCTUATION\*

	2019	2018	2017
New employee hires	1,995	1,246	1,165
Ratio of newly recruited employees (in %)	31	23	22
Employees leaving	1,005	867	1,035
Fluctuation rate (in %)	16	16	20

\* 'Employees leaving' refers to employees who have left the Company, excluding interns, students, temporary staff, and trainees.

➤ GRI 401-1



## EMPLOYEE FEEDBACK AND DEVELOPMENT

➤ GRI 404/103, 404-3

We are certain that our employees want to learn new things every day and take responsibility for their own development. Every person has their very own drivers and aspirations. Whatever it is that drives them also shows in their own preferred career development path and we support them in fulfilling these goals in various ways. As part of the Sustainability Strategy 2019 to 2021 we intend to continue and optimize the established employee development programs and processes.

### Compass Process

The core process in the area of employee development is the Compass process. This consists of three steps:

1. During the Compass Dialog that takes place between January and March each year, our employees receive specific feedback on their performance over the preceding year. Together with their manager they then define a realistic personal development plan that meets the needs of the employee and the Company.
2. During the second quarter, the results of the Compass Dialogs are gathered in development meetings referred to as Compass Conferences, and discussed there in the management teams. This provides us with a cross-departmental overview of the talents and high-potential employees in the Nordex Group. Nominations for participation in the Upwind Management Trainee Program are also made during the Compass Conferences.
3. The Compass Review Talks take place in the third quarter, offering employees and managers an opportunity to review development plans and ensure that they are on the right track with the measures defined. We also introduced the Collaboration Review, a process aimed at further strengthening the collaboration between employee and manager.

Compass Dialogs are mandatory Group-wide. Compass Conferences and Compass Review Talks are mandatory for white-collar employees and take place on a needs basis for blue-collar workers.

2019 was the second year of our improved Compass framework, which supports Nordex employees in navigating their careers. We set up an online platform that provides access to all Compass process related information and materials. These include the Compass e-learning courses and the guidelines.

The People & Culture Department tracks the completion of Compass Talks and supports employees and managers in the process. With this structured approach we ensure that the wishes and expectations of our employees are taken into account.

In the reporting year, 53% of all possible Compass Dialogs took place, with managers holding discussions with a total of over 2,600 employees (2018: 83%; 3,500 employees). This decrease was a result of a reorganization process in which many discussions about people development and promotions took place using other channels than Compass Dialogs. In addition, the People & Culture Department facilitated 21 Compass Conferences in the reporting period (2018: 33).

The age structure of employees participating in the Compass Dialogs largely reflects that of the Nordex Group, with 73% of the employees in the 30 to 50 age group, 14% under 30, and 13% over 50. Measured by gender distribution in the Company, there were no significant differences between the participation of women (2019: 15%, 2018: 16%) and men (2019: 85%, 2018: 84%).

In 2019 we took the opportunity to collect feedback on the Compass process in order to learn about people's experience with the IT tool, process, and support. As a result, for 2020 further improvements will be prepared with a focus on the completion of the Compass process, including a new e-learning course.



**INFORMATION**  
 on the Upwind  
 program on  
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## Further Training

➤ GRI 404-1, 404-2

### Technical Training Center

The Technical Training Center is available both to the Group's own employees in Division Europe and to customers and subcontractors, with all its technical training courses on Nordex technologies. Besides test rigs, various large components are available for technology, service, and safety training to develop our employees' practical expertise, deepen their knowledge, and reinforce the high quality standards of the Nordex Group.

In 2019 more than 3,400 participants (2018: 4,000) attended Technical Training Center courses. The average of training hours per participant is 16 hours (2018: 15). The majority of participants came from the Service Department as well as Engineering, Commissioning, and Project Management.

In the reporting year we set up eight new training courses for our new Delta4000 platform and enlarged our training portfolio in order to qualify internal staff members, customers, and subcontractors. We further expanded our efforts in decentralizing training courses and knowledge to strengthen the local training facilities. We continued working on the digitalization of our learning formats and set a good example by launching the e-learning format Delta4K Safety and Handling. Additionally, the Nordex Group developed customized training courses for the Self-Maintainer target group and implemented them successfully in the reporting year.

At the Service Training Committee meetings, regional Field Support Managers from four regions and the International Division met twice in 2019 to exchange experiences on new learning. This meeting was a win-win situation as the participants exchanged new approaches to promoting effective learning on European and international levels.

### Digital Learning Formats

One focus area in the reporting year was the expansion of e-learning courses on the platform we introduced in 2017. These courses can be conducted from anywhere at any given time. The courses are aimed at all employees worldwide and are available in multiple languages. Some of them are produced internally while others were purchased from external providers. The three main topics are Security and Regulations, Turbine Technology, and Leadership. With 2,277 e-learning courses completed and 2,873 assigned in 2019, we achieved a completion rate of 79% (2018: 83%). We will continue this initiative in 2020, focusing on the in-house development of further e-learning courses.

### Management Development

Trust. Listen. Lead. –

#### Nordex Leadership Training

In 2019 we held 18 Trust. Listen. Lead. sessions (2018: 14) in different countries such as Brazil, Spain, Germany, and the USA. With a training rate of just over 80% (2018: 60%) of managers in our core markets, we reached our target of 80% in 2019. On a global level we trained 74% of all managers. Due to organizational changes and high staff turnover rates we are satisfied with the figure achieved and will continue to strive to meet our training rate objective of 80% for new managers, both new hires and employees promoted within the Company. In 2020 we will also continue our long-term efforts to train our people, and further local training modules will be offered in different countries.

#### Upwind – the Nordex Management Trainee Program

With Upwind, every year we identify and develop high performance employees with clear potential for a future managerial role with strategic impact. The Upwind International Management Trainee Program targets the sustainable promotion of talents from the Company's own ranks and seeks to increase the proportion of internally appointed managers.



In 2019 we introduced a new phase that facilitates the selection of participants: Nominated participants first undergo a potential and motivation-based interview and simulation that form the basis for further development during the program. The program's four modules focus on developing participants' management capabilities. We will continue this successful program to promote young talents in 2020.

### **Cooperation with the Government of Navarra, Spain**

In order to address the high demand for additional personnel at our Spanish blade production site in Lumbier, Nordex engaged in a cooperation with the Government of Navarra. The focus of the program that aimed to reintegrate the participants into the labor market was to train the participants by specialized staff in the area of composite and blade production. In total, 25 people took part in the training, of which 19 were hired by Nordex and started working at the production site in February 2020.

The approach is beneficial for all sides: Nordex is able to recruit workers with experience while the participants found employment again thanks to the support of the Government of Navarra and its Regional Employment Service.

### **EMPLOYEE DIVERSITY**

➔ GRI 401-3, 405/103, 405-1, 405-2, 406/103, 406-1

We understand the diversity of our workforce as one of our Company's assets. People of different sexes and ages with diverse cultural backgrounds, different attitudes, and lifestyles enrich our Company and contribute to the Nordex Group's success.

The Nordex Group wants to increase the participation of women in the area of operations and technical positions. In partnerships with the Turkish Women in Renewable and Energy Network (TWRE), the Nordex Group's affiliate in Turkey organized a three-day introductory training course for young women. Young female engineering students and new graduates from various schools

and cities gathered at the Nordex Academy Technical Training Centre in Izmir. The participants received information on the Nordex Group's history, our turbine portfolio, and our wind power development activities.

Another focus of the Nordex Group is to increase the number of women in corporate development programs. For instance, 55% of female mentees took part in our mentoring program (pilot), we had a 16% increase in the Upwind program, and a 25% increase in the Trust. Listen. Lead program. Internally produced e-learning courses have switched to gender-neutral wording. Female mentees at Nordex completed the external mentee program provided by Women of Wind Energy, of which Nordex is a member.

Additionally, the Nordex Group wants to increase the number of young people joining the Company, considering the importance of having young talents share their ambition and fresh point of view. In Spain, 2019 was the second consecutive year of the Young Talent Program, in which university graduates join the Company on a specialized two-year program that rotates them through the different areas within the Engineering Global Lead Function. During the reporting period the scholarship program included 71 students, 20 of whom are now Nordex Group employees, with a female share of 60%.

In Italy, students on the Master in Renewable Energies degree course at the University of Rome visited the Minervino Murge wind turbine in Puglia, Italy, with Nordex employees in May 2019. The Nordex Group operates the turbine for the Italian company Falck Renewables. Before the site visit, we trained the Master students at the Italian office, giving them an insight into how wind turbines work and in particular into the service business in the wind power sector.

We have not yet reached our objectives with respect to gender equality. On the one hand, a restructuring program was carried out in 2017/2018 that entailed a reduction in the workforce, also in the management structure. On the other hand, all management positions are now

graded according to a new method: This has led to an increase in the overall number of management positions, as well as to a reduction in the percentage of women in management. At the two highest management levels, however, the share of women employed by Nordex in Germany was 16% in the reporting period (2018: 10%). To achieve improvements in this area, we pay particular attention to including women in our managerial promotion programs. In addition, external recruitment consultants are obliged to put forward suitable female candidates for each vacancy as well. We will be increasing our efforts to gain more qualified female managers in future.



The female participants of an introductory training course at the Nordex Academy's Technical Training Center in Izmir, Turkey.

## MANAGEMENT DIVERSITY

	2019	2018	2017
<b>Management Board total</b>	<b>3</b>	<b>3</b>	<b>3</b>
of whom female	0	0	0
of whom aged under 30	0	0	0
of whom aged 30–50	2	2	2
of whom aged over 50	1	1	1
<b>Supervisory Board total</b>	<b>6</b>	<b>6</b>	<b>6</b>
of whom female	1	1	1
of whom aged under 30	0	0	0
of whom aged 30–50	0	0	0
of whom aged over 50	6	6	6

➤ GRI 405-1



**INFORMATION**  
on the diversity concept approved by the Executive and Supervisory Boards is provided in the Corporate Governance Report, Section 5 in the 2019 Annual Report on **PAGE 74f.**

The basic salary for women and men was at a relatively similar level across all the salary groups in scope. In some salary groups, the basic salary for women was higher than that for men, and in others vice versa. These differences are not systematic, which means there is no gender-related connection between position level and salary difference.

In the reporting period no instances of discrimination were confirmed by the respective committees.

#### **Inclusion**

In the reporting period the Nordex Group employed 51 severely disabled people in Germany (2018: 46) who had indicated their severely disabled status to their employer.

#### **EMPLOYEES WITH DISABILITIES IN GERMANY**

	2019	2018	2017
Employees with disabilities	51	46	55
of whom Administration employees	7	5	10
of whom Engineering employees	4	3	5
of whom Blade Production and Sourcing employees	20	19	21
of whom Nacelle and Tower Sourcing	13	14	13
of whom Project Management employees	1	1	3
of whom Service employees	6	4	3

➔ GRI 405-1

#### **Family and Work**

The Nordex Group attaches great importance to reconciling professional and private life. In addition to standard parental leave models, we offer our employees flexible working time models and the

option of mobile working. In the reporting period, 151 (2018: 147) employees in Germany took parental leave.

#### **EMPLOYEES ON PARENTAL LEAVE (GERMANY)**

	2019	2018	2017
<b>Employees total</b>	<b>151</b>	<b>147</b>	<b>138</b>
of whom male	112	105	91
of whom female	39	42	47

➔ GRI 401-3

## EMPLOYEES BY AREA AND AGE STRUCTURE

	2019	2018	2017
<b>Total number of employees</b>	<b>6,880</b>	<b>5,676</b>	<b>5,260</b>
of whom female	16%	16%	17%
of whom aged under 30	22%	20%	29%
of whom aged 30–50	67%	69%	61%
of whom aged over 50	10%	11%	10%
Administration	793	648	855
of whom female	43%	45%	36%
of whom aged under 30	19%	15%	13%
of whom aged 30–50	69%	73%	73%
of whom aged over 50	11%	11%	14%
Engineering	588	599	578
of whom female	19%	18%	19%
of whom aged under 30	11%	11%	9%
of whom aged 30–50	74%	76%	78%
of whom aged over 50	15%	13%	12%
Blade Production and Sourcing	807	910	974
of whom female	13%	12%	15%
of whom aged under 30	13%	16%	17%
of whom aged 30–50	65%	64%	60%
of whom aged over 50	21%	20%	22%
Nacelle and Tower Production and Sourcing	1,902	1,309	952
of whom female	13%	12%	17%
of whom aged under 30	25%	21%	14%
of whom aged 30–50	66%	68%	69%
of whom aged over 50	9%	11%	17%
Project Management	515	280	292
of whom female	20%	12%	13%
of whom aged under 30	22%	12%	13%
of whom aged 30–50	66%	72%	73%
of whom aged over 50	12%	16%	14%
Service	2,052	1,693	1,449
of whom female	7%	7%	7%
of whom aged under 30	28%	28%	30%
of whom aged 30–50	67%	67%	64%
of whom aged over 50	5%	5%	6%
Sales	223	178	160
of whom female	30%	20%	29%
of whom aged under 30	22%	21%	23%
of whom aged 30–50	72%	72%	68%
of whom aged over 50	6%	7%	9%

➤ GRI 405-1



## EMPLOYEE REPRESENTATION

➤ GRI 102-41, 402/103, 402-1, 407/103, 407-1

The Nordex Group attaches great importance to safeguarding the interests of its employees and working constructively in a spirit of mutual trust together with employee representatives. We take a constructive approach to discussions with employee representatives in all countries where we are present and promote collaboration based on mutual trust. In Germany, employee interests are protected by collective bargaining agreements that usually involve Group-wide or local works agreements. In Germany, co-determination law covers approximately 98% of employees; however, this does not cover Company managers at corporate level. In the rest of Europe, the European Works Council (known as the SE Forum) represents all employees. In individual countries such as France, Sweden, and Finland, local works council committees are also formed based on respective works agreements resulting from decisions taken jointly with local employee representatives.

Co-determination topics are managed by the People & Culture Department, together with the managers responsible. Compliance with co-determination law is an integral part of many processes within this department.

**Germany:** The Works Council in Germany has information, consultation, and co-determination rights in social, human resources, and economic matters, and otherwise represents the general interests of the workforce. Both the works councils and the employees are comprehensively informed about any significant operational changes by senior management and/or local management.

Communication takes place in particular through Company meetings, via the intranet and via telephone conferences.

If employees in Germany feel their salary scale grading is incorrect they can lodge an appeal with an Arbitration Board that will check their grading and their complaint. The Arbitration Board com-

prises two employer's representatives and two members of the local works council. In 2019, 19 complaints about salary scale grading were submitted via the formal procedure (2018: 7 complaints).

In the case of additional conflict issues, the works council in Germany and the People & Culture Department have recourse to Conflict Resolution Officers as points of contact and mediators within our organization. There was one case of discrimination in the reporting period which was closed in 2019.

**Worldwide:** We explicitly support the rights of our employees at all sites around the world, and provide all the representatives of country sites in Europe with the opportunity to exchange views and engage with senior management at least twice a year through the European Works Council. In the reporting period, there were no known cases of employees' rights of association or collective bargaining being breached or endangered at any Nordex Group business sites.

## OUTLOOK 2020

To further professionalize our People & Culture work and offer employees a uniform service throughout their time with the Nordex Group, we intend to revise and anchor our People & Culture processes in the coming years, from hiring through to employee development. We started with Division Europe and Corporate Functions in 2019, and plan to review a rollout to Division International in 2020. A new concept within the global People & Culture team was introduced for this purpose: A Global Standards People & Culture Department will hold responsibility for improving existing standards, defining new ones, and implementing global standards for our strategic People & Culture topics (Training & Learning, Compensation & Benefits, Analytics & Controlling, Recruiting & Marketing, and Projects) in order to support our common goals of being an attractive employer, improving operational excellence, and growing together as one People & Culture community.



## Occupational Health and Safety

### MANAGEMENT APPROACH

➤ GRI 403/103, 403-1, 403-2

Our employees' health and safety in the workplace is of critical importance to us. Both these areas are key elements of our Sustainability Strategy. As part of a continuous and systematic process we work constantly on further developing the safety culture that we live and breathe, and on making our work environment safer. This is a process that includes all our own employees as well as those of business partners, subcontractors, and suppliers.

We provide programs and training courses worldwide that advance participants' awareness of safety and their level of qualification. Our occupational health and safety organization supports management by providing professional advice on strategic topics in our business areas; it also assists operational implementation at our sites and in specific projects. With the aim of establishing a culture of health and safety in the wind power industry, our involvement extends beyond the confines of our own Company to include industry-specific initiatives such as the international Working Group Wind Industry Safety Culture. We became a member of the Global Wind Organisation (GWO) in April 2019 in order to meet the highest standards and actively participate in continuous improvements.

Organizations in each country establish occupational safety committees in accordance with locally applicable laws. In Germany, for example, there are the Occupational Health and Safety



Safety First!  
Service technicians inspecting rotor blades.

Committees at our main sites in Hamburg and at the two production facilities in Rostock.

These committees are chaired by the General Managers of each site; regular participants include the Works Doctor, the Occupational Safety specialist, and safety administrators, as well as representatives of the Works Council, the management, and the workforce as required.



## CHALLENGES, RISKS, AND OPPORTUNITIES

Notwithstanding the improvements achieved and the Company's high standard in occupational health and safety we intend to achieve a further clear reduction in the number of incidents. In parallel, harmonizing the occupational health and safety organizations of Nordex and Acciona Windpower remains a key topic and objective.

Occupational safety is becoming more and more significant, not only for our customers but also the general public. Damage to wind turbines and the resulting consequences are viewed increasingly critically. The safety of our employees and business partners as well as our products will therefore continue to take top priority for Nordex.

## SUSTAINABILITY STRATEGY 2019 TO 2021

The Nordex Group pursues a long-term target of zero occupational accidents. In our Sustainability Strategy 2019 to 2021 the Group has defined an interim target for the entire Company: To achieve a further reduction in occupational accidents and an LTIF (lost time injury frequency) below 5 per million hours worked by 2021. Thanks to numerous measures, and the conscientious and forward-looking work of our employees and service providers, we already achieved this goal in the reporting period. We therefore adjusted our target for 2021 and now aim for an LTIF of less than 4 per million hours worked; we have set an interim target of 4.5 for 2020. To realize this, Nordex Group processes will be further standardized worldwide and programs will be established to raise awareness of occupational accidents.

We regularly measure our performance against a range of parameters to continually document and review the effectiveness of the measures taken to improve our safety culture. Besides indicators that register unsafe behavior, 'near-misses,' and first aid incidents, thereby providing clear statements on accident prevention, one of the most important parameters is the number of occupational accidents per million working hours: the LTIF rate. This key figure includes all work accidents that result in one or more working days lost.

Thanks to our employees' and business partners' efforts we successfully reduced our LTIF from 6.5 in 2017 to 5.6 in 2018 and further to 4.6 in the 2019 reporting period for the overall Group. In Division Europe, which to a great extent comprises the pre-merger Nordex Group, we achieved an LTIF of 3.5 in 2019 (2018: 4.4). The Division International, which mainly comprises the former Acciona Windpower, we also achieved a significant improvement over the previous year: Here, the LTIF figure was 5.4 in the reporting period (2018: 7.5).

## 2019 PROJECTS

In the reporting period we introduced a new Group-wide, IT-based incident database with significantly improved user friendliness. It reports all incidents, near-misses, and unsafe conditions registered at our sites. The database allows us to analyze incidents precisely and transparently, on the basis of which we can develop preventive measures and allocate them to the affected areas. Clear indicators give us the opportunity to measure our performance and derive further measures that lead to continuous improvement and help prevent accidents over the long term.

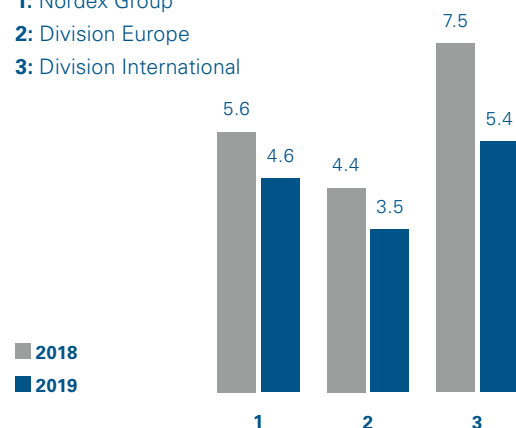
The higher reporting accuracy combined with Group-wide harmonized standards for defining LTIs and severity-rates led to an increase in reported accidents. As the revision and harmonization of reporting standards resulted in greater workforce coverage, this development ran parallel to an increase in hours worked.

## LOST TIME INJURY FREQUENCY (LTIF)

1: Nordex Group

2: Division Europe

3: Division International



### SIGNIFICANT OCCUPATIONAL ACCIDENTS\*

Region	Employees			Service providers		
	2019	2018	2017	2019	2018	2017
<b>Overall result</b>	<b>4</b>	<b>0</b>	<b>1</b>	<b>12</b>	<b>3</b>	<b>7</b>
Africa	0	0	0	0	0	0
Asia	0	0	0	0	0	0
Germany	2	0	1	1	0	3
Europe (excluding Germany)	1	0	0	6	3	1
North America	0	0	0	3	0	0
South America	1	0	0	2	0	3

\* 'Significant accidents' refers to all accidents with SR 3 or 4.

The recorded accidents are rated by means of a classification system. We differentiate between four rates of severity (SR):

- SR 1: No injury, or slight injury or health impact
- SR 2: Moderate injury or health impact
- SR 3: Severe injury or health impact
- SR 4: Fatal injury or extreme health impact

➔ GRI 403-2

Performing safety inspections has been a key component of the Nordex Group's health and safety culture from the outset. We revised the concept at the beginning of the reporting year:

The emphasis is now on constructive dialogs between managers and employees during 'Safety Walk & Talks' on how to carry out their work as safely as possible. To ensure focused discussions we require all managers to complete the 'Safety First' Leadership Training. This course is currently being established in various countries. In 2019, 54% of all managers worldwide had already attended.

To improve our service performance in turbine maintenance we launched a project in 2018 that also integrates occupational safety as a major topic. In the course of this project, various Company processes were standardized. A three-stage program consisting of a Health, Safety, and Environment (HSE) poster campaign, HSE stickers, and supported by the 'Human Factor' HSE film has positively influenced safety awareness among our employees. In the reporting year we rolled out this project from Division Europe to the entire Nordex Group. As part of our GWO membership, we

also contributed to a joint training course on the subject of 'Working@heights' in the wind industry and implemented it in our Company. Furthermore, in 2019 we introduced fire escape hoods for use across all activities on Nordex turbine systems throughout the Group. In case of fire, these offer our employees additional protection. In addition, visitor regulations for the entire Nordex Group were revised as part of our ongoing standardization process. Likewise, we standardized and harmonized the Group-wide procedures and information transfer following accidents at work. The 'Safety Stand Down' (SSD) process ensures that all employees who could be affected receive prompt information about incidents, and that countermeasures are introduced immediately.

In 2018 we rolled out the GEORG Compliance Manager Software to ensure a fully compliant organization. Managers and work supervisors have been using it since to document compliance with the statutory regulations governing the duties entrusted to them. GEORG also centrally logs and provides a clear status overview of duties carried out in the past. All users received training and are now supported by local administrators. To promote employees' use of the GEORG system fur-



As part of the 2019 health campaign, Nordex employees at the São Paulo site received ergonomics training at their workplace.

ther, we carried out corresponding informational campaigns in 2019 that specifically refer to the spectrum of responsibility. The system is currently being used at our office and production sites in Hamburg and Rostock, with plans to extend the platform to other locations throughout the Group.

### OUTLOOK 2020

In 2020 improving the safety and health of our employees will remain our core objective. To further strengthen the daily commitment of our employees and therefore their health as well, we are planning several campaigns. While the reporting year was driven by strategic topics, in 2020 we will focus on implementation in the operational business. For example, we plan an HSE roadshow that will deepen the practice-related exchange at service centers, sales offices, and wind farms through site visits. The focus will be on the preventive investigation of HSE incidents, especially for avoiding accidents.

The Nordex Group will continue to standardize its processes worldwide and establish programs that highlight the issue of occupational accidents, raise employee awareness correspondingly, and thus help avoid these risks. In the course of this, we will launch a successor to the current database for Personal Protective Equipment that will allow internal and external employees to enter and update their safety-related data at all times. In the area of health protection, we will continue our successful concept of different health campaigns, such as Health Days, make them more sustainable, and roll them out to further sites. Furthermore, cross-divisional collaboration will also continue to shape the work of the Health, Safety, and Environment Department. The focus here is on creating standard processes in the area of training measures. In 2020 we will standardize first aid and firefighting training, and launch GWO-compliant training on working with machines and tools Group-wide.

### Sustainability and Health Day

'Let's go green!' The Nordex Group held its first combined Sustainability and Health Day under this banner at the Hamburg site in the reporting year. Numerous stalls conveyed to employees the relevance and impacts that their everyday decisions and activities have on their own health as well as on the environment. For example, employees were invited to calculate their personal environmental footprint and learn about effective methods for stress management. There was also an opportunity to find out more about sustainable finance, insurance, and travel arrangements. Following the various activities on offer that included yoga, barbell training, an underwater simulator, and a 'brain gym,' the employees were also able to refuel with various delicious, sustainable, and healthy dishes from the region.

Action days and campaigns were also implemented at other sites. For example, at our facility in São Paulo, Brazil, we carried out a campaign on different health topics each month, such as

the importance of cancer prevention, and workplace ergonomics. Our production site in Rostock, Germany, ran a campaign promoting medical eye checks. For 2020 we are planning a health program there that will focus on back health.

For us, the importance of both sustainability and employee health goes beyond our daily work routine. We will therefore continue to drive the concept of Sustainability and Health Days in the years to come.

## Corporate Security

### MANAGEMENT APPROACH

It is fundamentally important to us at Nordex to protect our employees, the locations and assets with which they are entrusted, and the expert knowledge and reputation of our Company. The Corporate Security Department coordinates all our activities for protection against crime, terrorism, the effects of political disturbances, and natural disasters with the support of a worldwide security and crisis management organization. This includes identifying and avoiding any security risks when executing projects, and protecting people and property at our locations throughout the world as well as on trips abroad. Awareness and prevention are key elements of our risk-based and cross-disciplinary security systems; these systems also integrate a raft of prepared measures and contact people for support in emergencies and crisis management.

### CHALLENGES, RISKS, AND OPPORTUNITIES

The dynamics of geopolitical and local security developments require a continuous assessment of possible risks and the adjustment of security measures for our locations, projects, and our employees' worldwide travel activities. We constantly review and adapt our security measures to the changing security environment of our various activities through fundamental protection measures, as well as through our local and central security officers.

### 2019 PROJECTS

Last year we expanded our internal security organization in countries exposed to elevated risk levels. On the one hand this included hiring and integrating security experts in the organization and in our business processes in Brazil and Mexico. On the other hand, local employees were trained as local security coordinators to monitor security measures, especially in India, South Africa, and Turkey. In addition we continued to formalize the integration of security expertise in processes for Sales and Project Management.

### OUTLOOK 2020

For 2020 we intend to further expand the internal security organization in alignment with our growing business activities. This includes a plan to hire new security experts, for example. We will also continue to formalize security standards for projects, locations, and for handling security incidents with the help of specific guidelines and training courses. Further, we plan to establish specific security programs to better manage our security activities for those focus regions at increased risk.

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# RESPONSIBILITY ALONG THE SUPPLY CHAIN

61 The Nordex Supply Chain

64 Global Sourcing

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To fulfill our responsibility throughout the supply chain we have established standards that also apply to our collaboration with suppliers. Furthermore, we continually optimize our approach to monitoring this collaboration.

## The Nordex Supply Chain

➤ GRI 102-9, 204/103

### MANAGEMENT APPROACH

As a manufacturer of wind turbines we source products and services from numerous suppliers based in a wide range of countries, and generate a significant share of value in our upstream production stages. Our Global Sourcing Department ensures that the required products and services are sourced in the right quality, at the right time and at the right cost. At Nordex we are fully committed to the principle of sustainability: We therefore see it as vital to ensure that our own environmental and social standards are also maintained throughout our supply chain. The Nordex Group Code of Conduct for suppliers and subcontractors (the Supplier Code of Conduct) forms the basis for this, and we expect and require all our subcontractors and suppliers to comply with it. Furthermore, the Principles of the UN Global Compact on Human Rights, Labor, Environment, and Anti-Corruption provide fundamental guidance for our business activities. Given the Nordex Group's extensive supplier base, uphold-

ing our environmental and social standards in our overall sourcing process, as well as in our supplier management is a core objective.

The key materials, products, and services purchased by the Nordex Group:

- Direct materials: nacelle components, steel tower sets, concrete tower raw materials, blade sets, and blade raw materials
- Indirect materials: tools, equipment, ancillaries
- Services: transportation, cranes, and installation

### CHALLENGES, RISKS, AND OPPORTUNITIES

The main challenge for the Global Sourcing Department is to secure material procurement for the timely production and construction of wind turbines by the Nordex Group – at planned cost, and at all sites. The production and delivery reliability of our suppliers is a particular challenge here. Further main risks are as follows:

- Fluctuating raw material prices pose a risk to our suppliers and to the Nordex Group, which we counteract through hedging.



- Another major challenge is the development of new production capabilities in Argentina, Brazil, China, India, and Mexico.
- Due to unfavorable circumstances in the German wind power sector, several suppliers, especially tower manufacturers, faced financial difficulties. This causes a risk of supply shortages due to affected and delayed production operations.
- Since the size of wind energy turbines, especially blades and towers, is increasing, their transportation to sites is a challenge we are addressing.
- Additional restrictions on the import of goods in some countries such as the USA are causing a risk to financial viability.
- There were no major changes in our supplier base for major components compared to 2018, meaning that suppliers were able to enjoy benefits of scale for efficient production.
- A major focus was placed on reducing tonne-kilometers of outbound logistics by procuring high-volume freight items such as blades and towers from near-to-site production centers, as far as financially and practically possible.
- Continuing the practice of smart logistics developed last year for rotor hubs, drive train assemblies, and low-speed shafts to reduce outbound logistics costs and emissions thanks to denser packing.
- In addition, we expanded the production capacity of our suppliers in India and China, who manufacture rotor blades, converters, and hubs for the Nordex Group, in order to reduce cost of energy and thus enable higher 'green energy' penetration.

Our Risk Management Department monitors all material risks throughout the Group. Global Sourcing continuously monitors risks related to the supply chain, due diligence, and audits, as well as fallback action planning. Cost of energy (COE) management is fundamental in overcoming these challenges; at the same time it represents an opportunity to remain competitive in the demanding wind power market.

### **SUSTAINABILITY STRATEGY 2019 TO 2021**

In view of our extensive supplier base we regularly review our supplier due diligence processes for optimization potential. As a result we have identified setting standards for collaboration with our suppliers as a key component of our Sustainability Strategy 2019 to 2021. Our objective is to further optimize the supplier review process by 2021.

### **2019 PROJECTS**

After securing over 4.6 GW of orders in 2018, the Company continued on its growth track by securing orders in excess of 6.5 GW in 2019. This enormous increase demanded carefully controlled supply-chain practices to ensure timely and efficient fulfillment of order execution. These practices encompassed the following sub-strategies:

Further improvements in terms of logistics include the revised approach to nacelle protection for transportation. We achieved a major reduction in the amount of plastic foil required by covering only the front opening of the nacelles, ensuring that no moisture penetrates the interior, instead of wrapping the entire module. Other projects involve close cooperation with our suppliers on the reuse of transport equipment for gearboxes and generators, which decreases the consumption of new raw materials, especially timber and steel.

### **THE NORDEX SUPPLY CHAIN**

➤ **GRI 204-1**

In the 2019 reporting year the Nordex Group worked with around 6,500 suppliers (5,700 in 2018). The significant revenue growth in the past financial year went hand-in-hand with a strong increase in sourcing expenditure of 36% to approximately EUR 3,312 million (EUR 2,437 million in 2018). The share of sourcing expenditure with suppliers with their head office or production sites in Europe decreased to 56% (67% in 2018). In this region, 27% (26% in 2018) of total sourcing expenditure was on products and services from German



suppliers, while 15% (19% in 2018) was on Spanish suppliers. This development ran parallel to an increase of sourcing expenditure in Brazil, China, and Africa (see table below).

The higher share of sourcing expenditure in China reflects the success of the smart logistics project, which involves the production of sub-assemblies such as rotor hubs and drive trains in the most cost-efficient sourcing regions and shipping them directly to project sites for final installation. This way logistics costs as well as outbound logistics

emissions are reduced. At the same time, we expanded our sourcing and production facilities for concrete towers close to wind sites. This development is reflected, for example, in the significantly higher overall sourcing volume in Brazil and South Africa.

As the blade length of turbines increased, requiring more advanced materials to ensure superior power generation and higher durability in service conditions, blade costs increased to 18% of overall costs (12% in 2018).

#### SUPPLIER COUNTRIES OF ORIGIN IN %

	2019	2018	2017
Germany	26.7	26.1	42.6
Europe (excluding Germany and Spain)	14.7	15.8	24.3
Spain	14.7	18.9	15.2
China	11.4	7.4	3.4
North and South America (excluding Brazil)	8.8	12.3	6.3
Brazil	7.6	4.7	5.5
Turkey	6.8	6.5	0.1
Asia (excluding China)	6.3	8.2	2.7
Africa	2.9	0.0	0.0
Australia	0.1	0.0	0.0

Regarding the products and services the Nordex Group procures from suppliers, our sourcing activities were distributed as shown in the table across the following areas:

#### SOURCING ACTIVITY BY AREA IN %

	2019	2018	2017
Nacelle	39	43	38
Rotor blades	18	12	14
Services*	17	12	31
Tower	13	16	18
Site services	10	9	n.a.
Others	3	8	n.a.

\* Services include indirect expenditure.

Differences to totals may arise owing to rounding off.



## GLOBAL SOURCING

➤ GRI 308/103, 308-1, 308-2, 414/103, 414-1, 414-2

We organize our Sourcing Department by three main areas of activity:

### Components and Services

The Nordex Group has specialized teams for different components and services.

### Centralized and Decentralized Sourcing

Nordex sources components and services from globally active suppliers, where the collaboration is partially regulated through framework agreements. Over 90% of the Company's annual sourcing activities are focused on two global Sourcing Centers in Germany and Spain, as well as two regional Sourcing Centers in the USA and Brazil.

### Strategic and Operational Responsibility

The Strategic Sourcing Department is responsible for supplier and material-group management as well as for concluding framework agreements. The Operational Sourcing Department handles day-to-day business such as placing purchase orders.

Moreover, the Sourcing Department is involved in our cross-functional project to reduce the cost of energy and works closely with suppliers to achieve the goals of this project. All cost of energy (COE) initiatives are analyzed for their compliance with occupational health and safety aspects, as well as with the applicable environmental regulations, before being implemented.

### Compliance with Values and Standards

It is very important to us that our suppliers comply with the values and standards set out in the Group's Code of Conduct for the entire duration of their business relationship with the Nordex Group. Upholding human rights is especially significant: We strictly prohibit any kind of child labor, forced labor, discrimination, harassment, or retal-

iation. On the other hand, we actively promote equal opportunities for and equal treatment of employees, as well as full compliance with laws and regulations on freedom of association and collective bargaining. We require the same attitude and action from our business partners and suppliers. To ensure this, we subject our suppliers to a regular assessment program involving visits and audits. Alongside regular audits we perform special event-driven audits in cases of noticeable quality issues, relocations, or process changes, for example. The core aspects we review as part of each audit include the upholding of human rights, statutory occupational health and safety standards, as well as the quality of products and processes. Our Finance Department also continually monitors our main suppliers for credit risk, based on their supply volume and criticality to Nordex. The Finance and Sourcing Departments may decide to take preventive measures against any potential negative impacts on the Nordex Group's business activities.

We audit new suppliers before we engage in a business relationship with them. This audit result is then used to classify each supplier based on clearly defined indicators that also define the frequency of regular audits. If a potential supplier does not meet especially critical requirements – particularly if they are found to violate human rights for instance through using child labor, forced or compulsory labor, or if serious shortfalls in occupational health and safety are identified – we refrain entirely from working with the company concerned.

Overall in 2019 we conducted 188 audits of Nordex-specific component suppliers as well as construction and service-related suppliers (2018: 182). Our processes require that we qualify new suppliers regarding their working practices, upholding of human rights, impact on society, and environmental aspects. As in the previous year we are pleased to report that we registered no

## Global Supplier Day 2019

The Nordex Group relies on strong, long-term partnerships with its suppliers. 2019 saw 250 international suppliers take part in the Nordex Group Global Supplier Day in Hamburg, Germany. Management Board Members José Luis Blanco (CEO) and Christoph Burkhard (CFO) presented the Nordex Group and emphasized the importance of high-efficiency and thus sustainable wind turbines for a successful continued collaboration. Further presentations discussed the form of this future collaboration. The highlight of the Global Supplier Day 2019 was the presentation of the Nordex Supplier Awards for outstanding services.



Global Supplier Day 2019 at the Nordex headquarters in Hamburg.

incidents that were subject to disclosure requirements. We received no formal complaints in relation to the Nordex supply chain, nor did we terminate any business relationships owing to human rights violations, corruption, unacceptable work practices, or negative impacts on society or the environment. The aspects of compliance, environmental protection, and supply-chain responsibility are an integral part of the audits carried out.

In many instances our main suppliers have specific expertise and long-standing experience, which is why we cooperate with them in many areas such as product development and process design. We also communicate regularly with our suppliers at annual international congresses.

## OUTLOOK

The Nordex Group has set itself the goal of further reducing its cost of energy. Optimizing the existing supply chain and establishing a competitive supplier network in the regions relevant to the Nordex Group play a key role in achieving this goal. Our Global Sourcing Department is therefore working to further standardize sourcing practices, processes, and IT systems in line with our Company's main stakeholders' demands. 2019 was an important year in terms of orders booked and production ramp-up, with Nordex winning projects totaling 6.2 GW. In consequence, 2020 will be characterized by further ramp-up and geographic diversification of production capabilities for nacelles (Brazil and India), rotor blades (India, Mexico, and Eastern Europe), and steel towers (Asia), as well as for further important subcomponents. Alongside these activities, we will continue to optimize and harmonize our supplier due diligence processes as set out in the Sustainability Strategy 2019 to 2021.

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# ENVIRONMENTAL MANAGEMENT AND RESOURCE EFFICIENCY

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Only if our processes are environmentally friendly and resource-efficient can we offer our customers sustainable wind turbines. We work constantly to avoid waste, reduce hazardous materials, and draw our purchased electricity from 100% renewable energy sources.

## The Nordex Environmental Management System

### MANAGEMENT APPROACH

➤ GRI 301/103, 302/103, 303/103, 304/103, 305/103, 306/103, 307/103

As a wind turbine manufacturer, the Nordex Group's business activities are focused on generating electricity from the wind in an efficient, environmentally friendly way. In doing so, we attach great importance to comprehensive environmental protection aspects in all lifecycle phases of our systems – from development, through sourcing, production and operation, to dismantling and recycling. Our overarching aim for the years to come is to further improve our wind turbines' environmental footprint and reduce our consumption values.

Our Quality, Health, Safety, and Environment (QHSE) Department is responsible for operational environmental protection. Nordex has implemented an integrated quality, occupational safety, health protection, and environmental management system, and had it certified to the ISO 14001 standard. This system supports the Nordex Group in raising our environmental protection performance and ensuring we meet compliance requirements as well as our environmental objectives. Through regular internal audits, processes are reviewed and optimized as part of an ongoing improvement process. The most important environmental indicators are reported to the Management Board and senior management on a quarterly basis. We use the comparison of similar production sites in particular to identify potential for improvement, exchange best practices and proven processes, and implement efficient measures at other plants.



## ➤ Definition: Environmental Aspect

As an ENVIRONMENTAL ASPECT we understand all parts of our business activities that affect the environment – such as the consumption of natural resources and raw materials, and the emission of greenhouse gases (GHG). We always actively identify each aspect in detail, document it transparently, and develop specific and appropriate solutions to prevent negative environmental impacts as far as possible.

### CHALLENGES, RISKS, AND OPPORTUNITIES

The Nordex Group collects and assesses information on environmental aspects on a regular basis. This analysis captures all of the Company's global activities, services, and products that may have a negative environmental impact. The areas covered in the audit include production sites, our Project Management and Service Departments, as well as Service and administration sites.

The analysis results provide us with the basis for the continual improvement of our environmental protection measures. In the reporting period, 15 countries took part in the audit (2018: 15). At Nordex, identifying environmental aspects and impacts is a continual process, so with a view to the future we intend to audit additional sites in different countries as part of our regular process of collecting and analyzing information on environmental aspects. The transportation, storage, and

disposal of hazardous materials at our production sites during exceptional operating conditions or in emergencies continue to number among the most critical environmental aspects. Thanks to effective preventive measures, well-educated and well-trained employees, as well as a diverse set of protection systems, we constantly reduce existing risks through a continuous improvement process.

### SUSTAINABILITY STRATEGY 2019 TO 2021

As material environmental topics of our Sustainability Strategy 2019 to 2021 we identified waste, hazardous materials, energy, and greenhouse gas emissions, as well as Life-Cycle Assessments (LCAs) of our wind turbines. By 2021 we want to reduce waste per installed capacity by 10% compared with the 2018 reporting year. In particular, we want to avoid hazardous materials wherever possible and minimize their hazard potential. Further goals are to obtain 100% of our purchased electricity from renewable energy sources, and to further improve the overall environmental footprint of our wind turbines.

### REPORTING PERIOD AND SCOPE

➤ GRI 102-49

As in the previous year's report, the consumption key figures relate to the Nordex Group's active production sites in Germany, Spain, Brazil, and India, as well as to all office sites with 50 or more employees. In accordance with the materiality principle we therefore report on all sites that, due to their size and business activities, have a significant influence on the reporting data. Compared to the 2018 report, the following changes occurred within the scope of the 2019 report:

In mid-2019 we started manufacturing rotor blades at a plant in Mexico. Additionally, in the reporting year concrete towers were again produced at the tower facility in Areia Branca, Brazil, where production had been suspended in 2017 and 2018. Production of root joints was also launched at our Rotor Blade Technology Center in Denmark. These are prefabricated flange parts fitted with steel sleeves called 'root inserts.' They form the rotor blade root joint system on the rotor hub. Furthermore, we have now included a new office location in Spain in our reporting scope. Where information and data in the report relate to Group sites other than those stated above, this is highlighted accordingly.

**ENERGY**

➤ GRI 302-1, 302-3, 302-4, 302-5

Using energy efficiently and sensibly, both in environmental and economic terms, is a core goal of the Nordex Group. We are committed

to constantly increasing our energy efficiency through a continual improvement process, and for this reason our German production sites and office buildings have been ISO 50001-certified since 2014. The launch of our energy management system also enables us to document our engagement for environmental and climate protection.

In 2019 overall energy consumption for the Nordex Group increased by 25% to around 86,808 MWh compared to the previous year (2018: 69,399 MWh). This development was partly due to commissioning new facilities in Mexico and Brazil, as well as opening a new office in Spain. Additionally, the number of nacelles, rotor blades, and towers produced increased significantly at almost all production sites. Regarding the ratio between energy demand and installed capacity we recorded only a slight increase of approximately 2% to 28,096 kWh/MW (2018: 27,519 kWh/MW). Relative to revenues, consumption fell by around 6% year-

**SCOPE OF 2019 REPORT IN RELATION TO CONSUMPTION VALUES**

	Production sites			
	Nacelle	Rotor blade	Tower	Offices
Brazil	■		■ ■	■
Denmark		■*		
Germany	■	■		■ ■
France				■
India	■			
Mexico		■		
Spain	■ ■	■		■ ■ ■
USA				■

\* Rotor Blade Technology Center

➤ GRI 102-46

**Reporting Scope**

■ Old ■ New

In addition to the Company's own production sites, there are also supplier production sites where Nordex Group employees are assigned to guide quality and production. In 2019 this included a blade production site in China, and a nacelle production site in Argentina. Based on the same process model, work at various suppliers' concrete tower production operations continues at various mobile production facilities close to project sites in Argentina, Chile, India, Mexico, South Africa, and Spain. These sites are outside the scope of this report.



Start of nacelle production for the Nordex Delta4000 series at the Vall D'Uixó plant in Spain.

on-year to 26,429 kWh/EUR million (2018: 28,221 kWh/EUR million).

To ensure the required production conditions during the summer months, the rotor blade plant in Rostock, which was rebuilt completely in 2018, was equipped with an adiabatic cooling system in mid-2019. This type of evaporation cooling ensures the right air temperature while at the same time maintaining the required air humidity level in the production hall. The use of this cooling system saves some 812 MWh annually, compared to conventional compression-based refrigeration systems.

At our Rostock site we operate two combined heat and power (CHP) plants with power generation capacities of 387 kW and 70 kW respectively. This provides the process heat required for rotor blade production in an efficient, eco-friendly way. Our natural gas-fueled CHP plant provides heat and electricity for production, and additionally uses the thermal discharge from the power plant to heat the production halls.



## ENERGY CONSUMPTION IN MWH

	2019	2018	2017*
<b>Total energy consumption (direct and indirect energy consumption)</b>	<b>86,807.9</b>	<b>69,399.1</b>	<b>79,097.4</b>
Total direct energy consumption	50,230.0	44,904.8	54,865.5
Gas	23,859.9	23,342.6	29,357.0
Heating oil	1,831.0	1,788.6	1,575.0
Diesel	24,539.1	19,773.6	23,933.5
Total indirect energy consumption	36,577.9	24,494.3	24,231.9
Electricity	32,603.1	22,302.4	22,064.2
District heating	3,974.8	2,191.9	2,167.7
Total energy sold	0.0	0.0	9.0
Electricity sold	0.0	0.0	9.0

\* Previous reporting years' figures are not within the scope of the audit by PwC.

[↗ GRI 302-1](#)

## ENERGY CONSUMPTION BY INSTALLED CAPACITY

	kWh/MW
<b>2019</b>	<b>28,096</b>
2018	27,519
2017	29,306

[↗ GRI 302-3, 302-5](#)

## ENERGY CONSUMPTION RELATIVE TO REVENUES

	kWh/EUR million
<b>2019</b>	<b>26,429</b>
2018	28,221
2017	25,699

[↗ GRI 302-3, 302-5](#)

## Purchased electricity

In our Sustainability Strategy 2019 to 2021 we set ourselves the target of obtaining 100% of our purchased electricity from renewables. In the reporting year we converted our utility supply contracts at further sites in Denmark and the USA, thus increasing the share of renewable energies here to 100%. However, due to the commissioning of the new plants in Mexico and Brazil, where we currently still purchase electricity using the local electricity mix, the overall share fell to 73.5% as at the end of 2019 (2018: 88.1%). The calculation was generally based on the specific electricity mix of each energy supplier. For sites where this information was not available, the share of renew-

able energies in the country-specific electricity mix was used. At some of our leased sites where electricity consumption is included in the leasing contract, or at sites where local conditions restrict the availability of renewables, we are analyzing other options to attain our goal.



# 73.5%

**OF THE ELECTRICITY WE PURCHASED** in 2019  
 was from renewable energy sources (2018: 88.1%).



#### INFORMATION

on further information  
 on the life cycle  
 analysis of Nordex-  
 Delta4000 see  
**PAGE 13ff.**

#### EMISSIONS

➔ GRI 305-1, 305-2, 305-3, 305-4, 305-5

The major advantage of wind-generated electricity over fossil fuels in conventional power plants is that only a negligible amount of climate-damaging harmful CO<sub>2</sub> emissions is produced. Through our wind turbines we thus contribute to the elimination of several million tonnes of GHG emissions year after year. For instance, our latest wind turbine, the Delta4000, causes emissions of just 6.5 g CO<sub>2</sub>e per kilowatt-hour of electricity generated; by contrast, the electricity mix of the G20 countries currently causes 458 g CO<sub>2</sub>e/kWh<sup>1</sup>. This calculation is based on a life-cycle analysis and comprises all greenhouse gas emissions throughout the entire product lifecycle – from production, through the operating phase, to recycling.

Despite this, producing and transporting wind turbines generates significant emissions.

Through our holistic approach to environmental protection, in alignment with the Nordex Sustainability Strategy we make regular organizational

and technical improvements to continually reduce environmentally harmful emissions. The Nordex Group's GHG emissions are classified into three scopes:

- **SCOPE 1** emissions are caused by Nordex directly. We calculate these based on the fuel consumption of trucks and commercial vehicles as well as the direct consumption of oil, gas, and diesel fuel to generate energy, taking into account the standard factors published by the UK's Department for Environment, Food & Rural Affairs (DEFRA). In working out Scope 1 emissions, besides CO<sub>2</sub> we include the other greenhouse gases as CO<sub>2</sub> equivalents in the calculation (CO<sub>2</sub>e)
- **SCOPE 2** covers emissions produced by the consumption of purchased electricity. These indirect emissions were calculated based on consumption data for electricity and district heating. To calculate the emissions resulting from electricity purchases, we took specific emission factors of the energy suppliers into account. In a few cases where this information was not available, country-specific information was used. Nordex only procures district heating at one production site and the associated warehouse in Rostock. The district heating utility, Stadtwerke Rostock, provided us with the specific emissions factor.
- **SCOPE 3** includes emissions produced by third parties during the provision of services. Scope 3 disclosures made in this report relate exclusively to business travel (hire cars, rail and air travel) and are based on information supplied by our service providers. If they provide no direct CO<sub>2</sub> data, the calculation is based on the distances covered, taking into account the standard factors published by DEFRA.

<sup>1</sup> The Life-Cycle Analysis was externally audited by DEKRA and is not within the scope of the audit by PwC.

### GREENHOUSE GAS EMISSIONS IN T

	2019	2018	2017*
Scope 1 (CO <sub>2</sub> e)	10,666	9,672	11,429
Scope 2 (CO <sub>2</sub> )	5,345	1,908	2,022
Scope 3 (CO <sub>2</sub> )	5,753	4,465	4,318

\* Previous figures for 2017 are not within the scope of the audit by PwC.

➤ GRI 305-1, 305-2, 305-3

### GREENHOUSE GAS EMISSIONS BY INSTALLED CAPACITY

Emissions (Scope 1+2)/ installed capacity	Kg CO <sub>2</sub> /MW
<b>2019</b>	<b>5,182</b>
2018	4,591
2017	4,984

➤ GRI 305-4

### GREENHOUSE GAS EMISSIONS RELATIVE TO REVENUES

Emissions (Scope 1+2)/ revenues	Kg CO <sub>2</sub> /EUR million
<b>2019</b>	<b>4,874</b>
2018	4,709
2017	4,370

➤ GRI 305-4

As a result of a significant increase in production output and the commissioning of further sites, as described in the Energy chapter of this report, Scope 1 emissions across the Group rose to 10,666 t CO<sub>2</sub>e in 2019 (2018: 9,672 t CO<sub>2</sub>e), an increase of approximately 10% versus the previous year.

This was also accompanied by an increase of 180% in indirect Scope 2 emissions to 5,345 t CO<sub>2</sub> in the reporting year (2018: 1,908 t CO<sub>2</sub>), mainly due to the high level of electricity purchased from the Mexican electricity mix. In relation to installed capacity, Scope 1 and Scope 2 emissions increased by around 13% to 5,182 kg CO<sub>2</sub>/MW (2018: 4,591 kg CO<sub>2</sub>/MW). Relative to revenues, around 4,874 kg CO<sub>2</sub>/EUR million were emitted in 2019, approximately 4% more than in the previous year (4,709 kg CO<sub>2</sub>/EUR million).

Furthermore, Scope 3 emissions from business trips increased by a total of 29% year-on-year to 5,753 t CO<sub>2</sub> in the reporting period (2018: 4,465 t CO<sub>2</sub>). This development is mainly driven by two factors: Firstly, the commissioning of new plants as well as numerous new hires and workshops from efforts to harmonize and standardize

corporate processes throughout the Group, and secondly, the rise in the number of installations required an increase in project management employees' travel to the respective wind farms.

### WASTE

➤ GRI 306-2

In terms of our environmental footprint, the relevance of how much waste we produce depends mainly on the volume and type of waste, as well as the disposal methods we employ. We differentiate mainly between hazardous and non-hazardous waste, and our target by 2021 is to reduce waste relative to installed capacity by 10% compared to 2018.

Overall, however, the volume of waste in the reporting period increased by 87% to around 19,603 t versus the previous year (2018: 10,504 t). This enormous increase is due to the commissioning of additional sites, in particular the resumption of tower production in Areia Branca, Brazil. As at our second tower site in Lagoa do Barro, large quantities of concrete waste are produced here, resulting from breakage and distribution tests or from residues from mixers and casting tanks.



A major portion of this concrete waste is subsequently crushed by an external company and used as concrete aggregate.

An investigation in the reporting year showed that a tower weighing around 1,100 t produces a waste percentage of about 5% at both locations. It also revealed that the waste figures at the Lagoa do Barro plant had been underestimated in the previous reporting year. We have therefore corrected the 2018 figure from 7,983 tonnes to 10,504 tonnes. Particularly due to the expansion of in-house tower production, the volume of waste per installed capacity (per MW) also rose by around 52% to 6,345 kg/MW (2018: 4,165 kg/MW). Waste increased relative to revenues, with the volume of waste rising by 40% to 5,968 kg/EUR million compared to the previous year (2018: 4,271 kg/EUR million).

Excluding the recyclable concrete waste at the mobile tower production sites, an increase in waste volume of 56% (10,959 t) was recorded compared to 2018 (7,015 t). This development is mainly due to significantly higher production figures and the commissioning of the rotor blade plant in Mexico. At 3,547 kg/MW there was also a 28% increase relative to installed output (2018: 2,781 kg/MW), and a 17% increase relative to revenue of 3,337 kg/EUR million (2018: 2,852 kg/EUR million).

In the reporting year we carried out a large number of site-specific measures to reduce the volume of waste. For instance these included improving waste separation at the rotor blade and nacelle production facilities in Rostock, where we prepared a manual to show employees explicitly how to sort waste, which helps minimize incorrect waste disposal. We also included several other types of waste in the separation system in order to achieve a higher recycling rate. Recycling was a focus topic for 2019 at the West Branch office site in the USA, where a new recycling program for paper, plastic, and metal waste was developed as a result.

As part of a campaign with different focus topics each month, the 3R principle was one of those addressed at our office location in São Paulo, Brazil, during 2019. The local Nordex employees received information on the three Rs – reduce, reuse, recycle – in face-to-face meetings and via a newsletter. The goal is to produce less waste in the long term by paying more attention to these three aspects, thus protecting natural resources and saving energy.

#### WASTE PRODUCTION IN T

	2019	2018	2017*
Total waste	19,603	10,504**	7,489
Hazardous waste	1,190	751	832
Non-hazardous waste	18,413	9,753**	6,657

\* Previous year's figures for 2017 are not within the scope of the audit by PwC.

\*\* Value adjusted, explanation in the text.

➤ GRI 306-2

### WASTE PRODUCTION BY INSTALLED CAPACITY

	Kg/MW
<b>2019</b>	<b>6,345</b>
2018	4,165**
2017	2,775

\*\* Value adjusted, explanation in the text.

### WASTE PRODUCTION RELATIVE TO REVENUES

	Kg/EUR million
<b>2019</b>	<b>5,968</b>
2018	4,271
2017	2,433

## DISMANTLING AND RECYCLING OF WIND TURBINES

While progress in wind turbine technology is making electricity generation increasingly efficient and is delivering higher energy yields, the dismantling of the so-called 'first generation' of turbines will become increasingly important in the years to come. This necessitates environmentally friendly and economically sustainable disposal, and wherever possible, recycling. In the reporting year the Nordex Group proceeded with the dismantling and recycling of older wind turbines. The main challenge here is the dismantling and separation of the individual components and materials. The turbine owner is generally responsible for this; nevertheless, as a manufacturer Nordex sees itself as responsible for playing an active role here.

Internal analyses and sector-internal calculations show that currently around 85% to 95% of materials used in a wind turbine are recyclable. To raise recyclability further we are focusing intensively on composite materials in the rotor blades. Alongside existing methods such as material and thermal recycling in the cement industry, the wind power sector is investigating alternative methods in collaboration with the following associations: Wind-Europe, the European Chemical Industry Council (Cefic), and the Electronic Components Industry Association (ECIA).

The results of the Life-Cycle Analysis carried out in the reporting year show that the material and thermal recycling of wind turbines delivers a positive climate scorecard result in the 'dismantling and recycling' end-of-life phase. The

positive value recovered from dismantled and recycled material exceeds the negative climate impacts (machinery and transport) of the recycling technologies used in these processes. For further details please see the description of the Life-Cycle Analysis on page 13ff.

## HAZARDOUS MATERIALS MANAGEMENT

[GRI 304-2](#)

Hazardous substances are used in a very wide variety of ways, particularly in the operational departments. Their legally compliant use and logistics must be guaranteed at all times in order to avoid negative impacts on people, the environment, and common natural resources. During the development process of our production plants, and in connection with all activities and the associated material specification, we use an evaluation process to check whether the hazardous materials planned for purchase are compatible with our Company guidelines. With the help of this analysis and approval process we can identify possible challenges to later use at an early stage, and remove critical materials from the value chain in good time. In addition, we are already laying the foundations for safe handling at this stage in order to lower the risk level as far as possible.

Within our Sustainability Strategy we will identify potential for reducing the number of hazardous materials and lowering their hazard levels, and continue to drive the implementation of appropriate measures. A particular focus is on hazardous materials with water hazard level 3, such as isolated topcoats in rotor blade production. Under the



definition of the Water Resources Act, the water hazard classes describe the hazard potential of the materials in relation to groundwater. They are divided into three classes from 1 (slightly hazardous to water) to 3 (highly hazardous to water). Due to the additional inclusion of hazardous substances, the number of active hazardous substances listed in our register at the end of 2019 rose to 752 (2018: 679), 23 of which belong to water hazard class 3 (2018: 21).

In accordance with legal requirements, we regularly check whether material substitutions are possible to reduce the overall number of hazardous materials as well as the necessary protective measures. As a result, designing occupational safety, environmental, and health protection measures, and also logistics processing becomes much simpler. Besides operating expenditure, administrative effort is also reduced.

We take a range of measures at our production locations to protect against hazardous materials. We reduce the risk of hazardous materials coming into contact with the environment by means of special ground seals and collection sumps. We also have an established emergency system and spill kits for the safe handling of hazardous liquids are distributed at all of our production sites and Service Points.

Besides the environmentally friendly handling of hazardous materials we also pay extremely close attention to the transportation of these materials to project sites and regional Service Points. The importance of training courses on the use, disposal, storage, and transportation of hazardous materials continues to rise.

### 2019 PROJECTS

In the reporting year we stepped up our application of the black and grey lists, and integrated the hazardous substance evaluations into the existing online system. This means that the complete lifecycle (evaluation, hazardous substance data record, including safety data sheet, risk assessment, operating instructions, and potential substi-

tutions) of hazardous substances is now recorded in one system. Furthermore, all parties involved can view the status of the evaluation at any time. In the reporting year, six hazardous substances were thus excluded and substituted on the basis of the black and grey lists. Several substitutions for other existing materials were also initiated and will be implemented in 2020.

### OUTLOOK 2020

In the interests of greater sustainability in Nordex Group management of hazardous substances, in 2020 we will expand the cooperation between HSE, Engineering, and Purchasing, and update various guidelines and standards. We want to further reinforce the process of defining new materials with regard to hazardous materials and clean up our hazardous materials list through substitution tests and inspections. In line with these tests, we plan to substitute further hazardous materials with more sustainable, environmentally compatible products in the coming reporting year, thus reducing the total number of hazardous substances and lowering the overall hazard level.

### WATER

➔ GRI 303-1, 306-1

We use water at our nacelle and rotor blade production sites, as well as in our administration activities, for cleaning and cooling processes amongst other applications. The main share of our cooling water requirement is driven in a circuit through our central cooling water supply system. Related to the overall reporting scope, rainwater covered around 3% (2018: 4%) of our water requirements in the reporting year.

Overall, absolute water consumption in the reporting year increased compared to the previous year by around 48% to approx. 83,547 m<sup>3</sup> (2018: 56,318 m<sup>3</sup>). Reasons for this include the launch of production operations at the Areia Branca tower production facility, and the increase in output at the tower production site in Lagoa do Barro. In particular, production of the concrete segments at these two Nordex Group sites in Brazil requires a

great deal of water. The investigation mentioned above resulted in a correction to the groundwater consumption figures for Lagoa do Barro in the 2018 reporting year from 11,230 m<sup>3</sup> to 14,400 m<sup>3</sup>. Furthermore, the increase in water consumption is also due to commissioning additional sites and higher workforce numbers. These circumstances also mean that water consumption per installed capacity rose by around 21% year-on-year to 27.0 m<sup>3</sup>/MW (2018: 22.3 m<sup>3</sup>/MW). Relative to reve-

nues, water demand increased by 11% to 25.4 m<sup>3</sup>/EUR million (2018: 22.9 m<sup>3</sup>/EUR million).

In order to reduce water consumption over the long term, jet regulators were installed at the nacelle production plant in Chennai, India in 2019. These aerators reduce the flow rate by mixing air into the water. This reduces the flow rate from 5.5 l/min to 2.5 l/min, resulting in annual savings of approximately 80 m<sup>3</sup> at this production site.

#### WATER CONSUMPTION BY SOURCE AND WASTE WATER DISCHARGE IN M<sup>3</sup>

	2019	2018	2017
<b>Water consumption total</b>	<b>83,547</b>	<b>56,318*</b>	<b>40,150</b>
Municipal water supply	54,120	39,713	32,076
Rainwater	2,192	2,205	2,696
Groundwater	27,235	14,400*	5,378
<b>Waste water discharge total</b>	<b>50,258</b>	<b>39,467</b>	<b>35,731</b>
Non-hazardous waste water	50,258	39,467	35,731
Hazardous waste water	0	0	0

\* Value adjusted as explained in the text.

➤ GRI 303-1, 306-1

#### WATER CONSUMPTION BY INSTALLED CAPACITY

	m <sup>3</sup> /MW
<b>2019</b>	<b>27.0</b>
2018	22.3*
2017	14.9

\* Value adjusted as explained in the text.

#### WATER CONSUMPTION RELATIVE TO REVENUES

	m <sup>3</sup> /EUR million
<b>2019</b>	<b>25.4</b>
2018	22.9*
2017	13.0

## ENVIRONMENTAL INCIDENTS

To fulfill its environmental responsibilities the Nordex Group documents all actual and potential environmental incidents. Near-miss incidents are also reported and analyzed in detail, so that we can take preventive measures and minimize environmental risks. We then classify the recorded incidents based on their environmental impact using a classification system.

We differentiate between four rates of severity (SR):

- SR 1: No or low environmental impact
- SR 2: Moderate environmental impact
- SR 3: High environmental impact
- SR 4: Massive environmental impact

Significant environmental incidents include all incidents of severity categories 3 and 4. In the reporting year, the Nordex Group recorded no significant environmental incidents.

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# RESPONSIBILITY FOR SOCIETY

**79** Our Commitment to Society

**80** Projects

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We engage for education in the neighboring communities at all our Company sites, as this is vitally important for the further development of society. This way we contribute to realizing the UN Sustainable Development Goals.

## Our Commitment to Society

➤ GRI 413/103, 413-1, 415/103

Nordex is a dynamic company active in over 40 countries. As such, taking on corporate social responsibility at a local level is part of the way we see and understand ourselves. As an integral part of our Sustainability Strategy we consider CSR to be our opportunity to contribute to regional development and engage as a member of society at the sites where we operate.

Besides our Company's economic objectives we are committed to the United Nations 2030 Agenda for Sustainable Development principles of using global resources responsibly, protecting the climate, and ensuring people can enjoy prosperous and fulfilling lives. To achieve these aims, knowledge exchange and transfer are of key importance. This is why at the Nordex Group we focus our social engagement activities on supporting public and private training, on further education institutions active in the areas of renewables and climate protection, and on supporting social and humanitarian aid projects and institutions. Nordex has established a Group-wide Donations Guideline for the targeted management of activities like this.

As part of our projects and at our sites we are active in a range of local initiatives. We provide selected examples of these in the following.

### SUPPORT FOR UNIVERSITIES

We partner with the Hamburg University of Applied Sciences (HAW Hamburg). At the Energy Campus Hamburg run by the HAW Competence Center for Renewable Energies and Energy Efficiency, future issues are researched which may, for instance, eventually be used to optimize wind turbines. To ensure the course delivers hands-on training and that research is conducted under realistic conditions, a wind farm with five Nordex turbines was put into operation right next to the Energy Campus in 2017. A lithium-ion battery storage unit in this wind park was set up in the fall of 2018 in the course of the cooperation between Nordex, HAW, and Vattenfall Innovation Europe, as part of the NEW 4.0 (North German Region Energy Transition 4.0) research project.

The Energy Campus is also involved in NEW 4.0: This unique initiative brings together business, scientific and political actors, targets a sustainable energy supply in the north German federal states of Hamburg and Schleswig-Holstein, and aims to strengthen the future viability of the entire region. The initiative brings together around 60 regional and international partners, including the Nordex Group, to form a well-networked innovation alliance: This pools the partners' technical expertise



on implementing the energy transition and is supported by the governments of both German federal states. The core challenges facing this project are to be countered on the one hand by increasing electricity export to other regions via an efficient energy infrastructure and innovative grid technologies, and on the other by increasing the energy self-recovery rate. In doing so, NEW 4.0 systematically creates the prerequisites for supplying Hamburg and Schleswig-Holstein with safe, reliable, and renewable electricity from 2025 onwards, meeting up to 70% of these federal states' needs. At the same time, the electricity generated is to be used increasingly to supply heat as well as for industrial processes formerly powered by fossil fuels.

www.

Find out more  
 about NEW 4.0 at  
[www.new4-0.de](http://www.new4-0.de)

For Nordex the core objective of our involvement in NEW 4.0 is to develop and demonstrate system services that increase the stability of the power grid through decentralized, renewable energy generation. To do this, our focus is also on the future-proof integration of wind farms in the energy markets of the future that can meet the increasing demand for information and data exchange, and consequently form part of smart markets. Furthermore, at Nordex we have set ourselves the goal of becoming a supplier of hybrid power plants as well: To achieve this, the Company is researching and testing the integration of energy storage at wind farms along with potential operational control concepts.

### **SOUTH AFRICA PROJECT**

In South Africa, Nordex accompanied its market entry with its Nordex Education Trust. This foundation has a 20% stake in Nordex Energy South Africa (NESA) and supports disadvantaged population groups as well as projects in the fields of school education, sports, culture, and community work by providing scholarships and grants for study, research, and training. In this way, over the last few years we have been able to support numerous non-governmental organizations, schools, and universities as well as sports and cultural associations, and thus to establish robust partnerships in all communities where Nordex operates. The foundation has also entered into strategic partnerships with Stellenbosch University and Nelson Mandela University.

Additionally, NESA launched its Socio-Economic Development Project (SED) in 2017. In alignment with four major topic areas – youth development, promotion of women, early childhood education, and the support of disabled persons – the SED aims to help young entrepreneurs develop in all subject areas and supports the beneficiaries to achieve economic self-sustainability. Through regular direct communication with the communities, Nordex assesses their most urgent needs and targets the SED program respectively. Hence, along with our Broad Based Black Economic Empowerment strategy, we are contributing locally both to socio-economic as well as to business skills and competencies development in this region through our involvement in various development initiatives promoted by the Nordex Education Trust and the SED.

In 2019 Nordex celebrated its seven-year presence in South Africa. Our activities there target the further education of people to improve their development opportunities and thus their life prospects. In this effort, the Nordex Education Trust, which focuses on the education of engineering students, and the Socio-Economic Development Project, which is open to all study fields, concentrate on supporting individuals from the local communities where Nordex wind turbines operate.

In the reporting period the SED funded a total of nine students for higher education qualifications. Four of them completed their degrees towards the end of 2019. Similarly, the Education Trust had nine beneficiaries for the year 2019 of whom two successfully completed their degrees during 2019.

In the years to come we will continue to build on the successes of our support programs and collaborations in South Africa. We intend to make an active contribution to new and existing scientific educational projects, and provide even greater support to people with disabilities by assisting institutions and special training programs. Together with the communities, we plan to evaluate, reassess, and adjust our activities within the framework of the Socio-Economic Development Project in 2020.

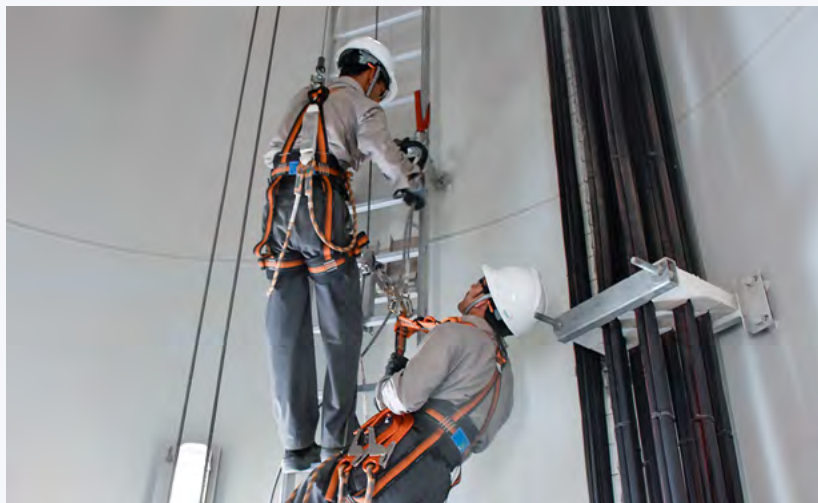
## Pakistan Project

As early as 2011 the Nordex Group collaborated with the wind farm developer Fauji Fertilizer Company Energy Limited (FFCEL) in setting up a wind farm in Jhimpir, Pakistan. In the course of the project, FFCEL launched a comprehensive Corporate Citizenship program with the goal of providing sustainable support for the local community and its development. The program includes educational, health, environmental protection, and local infrastructure creation projects.

Nordex supported FFCEL, amongst other aspects, in implementing the self-supporting lighthouse project 'FFCEL Technical Training Center' (TTC). Since 2017 young people from the immediate vicinity of the FFCEL site have received technical training: As part of the two-year training program they gain specialist knowledge of routine servicing tasks, and scheduled as well as unscheduled maintenance measures. Nordex provided technical support here and arranged on-site training led by qualified Nordex employees. Other training including hydraulic as well as a Basic Safety Training simulator have been arranged by FFCEL.

The Training Center is registered with and accredited by the local government authorities. The objective for 2019 was to obtain project accreditation by the Global Wind Organisation (GWO). During the year 2019, the TTC has been accredited for the Basic Technical Training as well as for the Basic Safety Training program. The GWO certification for trainees shall be achieved during 2020.

Twelve trainees from the first intake successfully completed the program in November 2019. The certificate qualifies them to work locally as well as internationally on various



Two participants of the FFCEL Technical Training Center during safety training in the tower of a Nordex wind turbine in Pakistan.

wind turbine types. As a result, the majority of the participants are now employed in the wind power industry. The second trainee intake will start in January 2020.

In cooperation with the project developer Yunus Energy Limited (YEL), Nordex is supporting the implementation of a further local community development project located in the same area of Jhimpir. While 120 houses have been provided with solar panels and other electrical fittings with appliances, and four tube wells for the local community were completed in 2019, the planned construction of a primary school was postponed to 2020. Further planned projects for the year 2020 are the construction of a reverse osmosis plant for the provision of safe drinking water, a permanent medical camp, and a vocational training school. Overall some 5,000 local inhabitants will benefit from this raft of measures, whom 20 were then hired by Nordex and started work at the production site in February 2020.



# GRI INDEX

➤ GRI 102-55

GRI Standard	Brief description	Page	Note
<b>GRI 101: Reporting Principles 2016</b>			
<b>GRI 102: General Disclosures 2016</b>			
<b>Organizational profile</b>			
GRI 102-1	Name of the organization	Imprint	Nordex SE
GRI 102-2	Activities, brands, products, and services	U2, 8ff.	
GRI 102-3	Location of headquarters	8, Imprint	Hamburg
GRI 102-4	Location of operations	8f.	
GRI 102-5	Ownership and legal form	9	For further information please see the Nordex Annual Report 2019, p. 10ff.
GRI 102-6	Markets served	9	
GRI 102-7	Scale of the organization	10	
GRI 102-8	Information on employees and other workers	10, 43f.	
GRI 102-9	Supply chain	61ff.	
GRI 102-10	Significant changes to the organization and its supply chain	–	There were no material changes in the size, structure, or ownership of the Nordex Group nor in the supply chain in the period under review.
GRI 102-11	Precautionary principle or approach	29	See also Annual Report 2019, p. 49ff., 'Principles of the risk management system'
GRI 102-12	External initiatives	24	
GRI 102-13	Membership of associations	28	
<b>Strategy</b>			
GRI 102-14	Statement from senior decision-maker	3f.	
<b>Ethics and Integrity</b>			
GRI 102-16	Values, principles, standards, and norms of behavior	24, 42	
GRI 102-18	Governance structure	11, 42	

### Stakeholder engagement

GRI 102-40	List of stakeholder groups	18f.	
GRI 102-41	Collective bargaining agreements	54	
GRI 102-42	Identifying and selecting stakeholders	18f.	
GRI 102-43	Approach to stakeholder engagement	18f.	
GRI 102-44	Key topics and concerns raised	18f.	

### Reporting practice

GRI 102-45	Entities included in the consolidated financial statements	6, 69	
GRI 102-46	Defining report content and topic boundaries	6, 69	
GRI 102-47	List of material topics	18f.	
GRI 102-48	Restatements of information	–	No changes from the previous year.
GRI 102-49	Changes in reporting	69	
GRI 102-50	Reporting period	6	
GRI 102-51	Date of most recent report	–	The last Sustainability Report was published in March 2019 and covered the 2018 financial year.
GRI 102-52	Reporting cycle	6, 83	The Nordex Sustainability Report is published annually.
GRI 102-53	Contact point for questions regarding the report	Imprint	
GRI 102-54	Claims of reporting in accordance with the GRI Standards 'Core'	6, 83	This Sustainability Report was prepared according to the Core option.
GRI 102-55	GRI content index	82ff.	
GRI 102-56	External assurance	89f.	

### Material topics

### Economic performance

#### GRI 201: Economic Performance 2016

GRI 103: Management approach		8	
GRI 201-1	Direct economic value generated and distributed	10	This indicator is not reported on an individual market basis.
GRI 201-2	Financial implications and other risks and opportunities due to climate change	29	
GRI 201-4	Financial assistance received from government	28f.	




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**Procurement Practices**


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**GRI 204: Procurement Practices**


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GRI 103: Management approach	61f.
GRI 204-1 Proportion of spending on local suppliers	62f.

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**Anti-corruption**


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**GRI 205: Anti-corruption 2016**


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GRI 103: Management approach	26f.
GRI 205-1 Operations assessed for risks related to corruption	26f.
GRI 205-2 Communication and training about anti-corruption policies and procedures	26f.
GRI 205-3 Confirmed incidents of corruption and actions taken	26f.

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**Anti-competitive Behavior**


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**GRI 206: Anti-competitive Behavior 2016**


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GRI 103: Management approach	26
GRI 206-1 Legal actions for anti-competitive behavior, anti-trust, and monopoly practices	26

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**Materials**


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**GRI 301: Materials 2016**


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GRI 103: Management approach	67f.
GRI 301-1 Materials used	14

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**Energy**


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**GRI 302: Energy 2016**


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GRI 103: Management approach	67f.
GRI 302-1 Energy consumption within the organization	69ff.
GRI 302-3 Energy intensity	70f.
GRI 302-4 Reduction of energy consumption	69ff.
GRI 302-5 Reduction in energy requirements of products and services	69ff.

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**Water**


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**GRI 303: Water 2016**


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GRI 103: Management approach	67
GRI 303-1 Water withdrawal by source	76f.

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## Biodiversity

### GRI 304: Biodiversity 2016

GRI 103: Management approach		67f.
GRI 304-2	Significant impacts of activities, products, and services on biodiversity	75f.

## Emissions

### GRI 305: Emissions 2016

GRI 103: Management approach		67f.
GRI 305-1	Direct (Scope 1) GHG emissions	72f.
GRI 305-2	Energy indirect (Scope 2) GHG emissions	72f.
GRI 305-3	Other indirect (Scope 3) GHG emissions	72f.
GRI 305-4	GHG emissions intensity	72f.
GRI 305-5	Reduction of GHG emissions	72f.

## Effluents and Waste

### GRI 306: Effluents and Waste 2016

GRI 103: Management approach		67f.
GRI 306-1	Water discharge by quality and destination	77
GRI 306-2	Waste by type and disposal method	74f.

## Environmental Compliance

### GRI 307: Environmental Compliance 2016

GRI 103: Management approach		67f.	
GRI 307-1	Non-compliance with environmental laws and regulations	–	Nordex was not aware of any significant fines in the period under review.

## Supplier Environmental Assessment

### GRI 308: Supplier Environmental Assessment 2016

GRI 103: Management approach		64f.
GRI 308-1	Percentage of new suppliers that were screened using environmental criteria	64
GRI 308-2	Negative environmental impacts in the supply chain and actions taken	64




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**Employment**


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**GRI 401: Employment 2016**


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GRI 103: Management approach		41	
GRI 401-1	New employee hires and employee turnover	46f.	
GRI 401-3	Parental leave	52	

**Labor/Management Relations**


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**GRI 402: Labor/Management Relations 2016**


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GRI 103: Management approach		54	
GRI 402-1	Minimum notice periods regarding operational changes	54	

**Occupational Health and Safety**


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**GRI 403: Occupational Health and Safety 2016**


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GRI 103: Management approach		55f.	
GRI 403-1	Workers representation in formal joint management-worker health and safety committees	55	
GRI 403-2	Types of injury and rates of injury, occupational diseases, lost days, and absenteeism, and number of work-related fatalities	56f.	

**Training and Education**


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**GRI 404: Training and Education 2016**


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GRI 103: Management approach		48	
GRI 404-1	Average hours of training per year per employee	49	
GRI 404-2	Programs for upgrading employee skills and transition assistance programs	49	
GRI 404-3	Percentage of employees receiving regular performance and career development reviews	48f.	

**Diversity and Equal Opportunity**


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**GRI 405: Diversity and Equal Opportunity 2016**


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GRI 103: Management approach		50f.	
GRI 405-1	Diversity of governance bodies and employees	50ff.	For further information on the controlling bodies please also refer to the Nordex 2019 Annual Report, p.143f.: 'Nordex SE corporate governance bodies'.
GRI 405-2	Ratio of basic salary and remuneration of women to men	52	



## Non-discrimination

### GRI 406: Non-discrimination 2016

GRI 103: Management approach		50ff.	
GRI 406-1	Incidents of discrimination and corrective actions taken	54	

## Freedom of Association and Collective Bargaining

### GRI 407: Freedom of Association and Collective Bargaining 2016

GRI 103: Management approach		54	
GRI 407-1	Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk	54	

## Child Labor

### GRI 408: Child Labor

GRI 103: Management approach			
GRI 408-1	Operations and suppliers at significant risk for incidents of child labor	–	Nordex was not aware of any risks relating to child labor in the period under review.

## Forced or Compulsory Labor

### GRI 409: Forced or Compulsory Labor

GRI 103: Management approach			
GRI 409-1	Operations and suppliers at significant risk for incidents of forced or compulsory labor	–	Nordex was not aware of any risks relating to forced labor in the period under review.

## Human Rights Assessment

### GRI 412: Human Rights Assessment 2016

GRI 103: Management approach		28, 64	
GRI 412-2	Employee training on human rights policies or procedures	28	
GRI 412-3	Significant investment agreements and contracts that include human rights clauses or that underwent human rights screening	28	

## Local Communities

### GRI 413: Local Communities 2016

GRI 103: Management approach		31, 79	
GRI 413-1	Operations with local community engagement, impact assessments, and development programs	31ff., 79ff.	




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**Supplier Social Assessment**


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**GRI 414: Supplier Social Assessment 2016**


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GRI 103: Management approach		64	
GRI 414-1	New suppliers that were screened using social criteria	64	
GRI 414-2	Negative social impacts in the supply chain and actions taken	64	

**Public Policy**


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**GRI 415: Public Policy 2016**


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GRI 103: Management approach		79	
GRI 415-1	Political contributions	–	The Nordex Group-wide Donations Guideline precludes donations to political parties.

**Customer Health and Safety**


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**GRI 416: Customer Health and Safety 2016**


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GRI 103: Management approach		31, 36f.	
GRI 416-1	Assessment of the health and safety impacts of product and service categories	31ff. 36f.	

**Socioeconomic Compliance**


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**GRI 419: Socioeconomic Compliance 2016**


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GRI 103: Management approach		24f.	
GRI 419-1	Non-compliance with laws and regulations in the social and economic area	–	Nordex was not aware of any significant fines in the period under review.

# AUDIT OPINION

➤ GRI 102-56

Independent Practitioner's Report on a Limited Assurance Engagement on Non-financial Reporting \*

To Nordex SE, Hamburg

We have performed a limited assurance engagement on the separate non-financial group report pursuant to § (Article) 315b Abs. (paragraph) 3 HGB ("Handelsgesetzbuch": "German Commercial Code") of Nordex SE, Hamburg, (hereinafter the "Company") for the period from 01 January 2019 to 31 December 2019 which comprises the sections marked with a grey line in the Sustainability Report 2019 of the Company (hereinafter the "Non-financial Report").

## RESPONSIBILITIES OF THE EXECUTIVE DIRECTORS

The executive directors of the Company are responsible for the preparation of the Non-financial Report in accordance with §§ 315c in conjunction with 289c to 289e HGB.

This responsibility of the Company's executive directors includes the selection and application of appropriate methods of non-financial reporting as well as making assumptions and estimates related to individual non-financial disclosures which are reasonable in the circumstances. Furthermore, the executive directors are responsible for such internal control as they have considered necessary to enable the preparation of a Non-financial Report that is free from material misstatement whether due to fraud or error.

## INDEPENDENCE AND QUALITY CONTROL OF THE AUDIT FIRM

We have complied with the German professional provisions regarding independence as well as other ethical requirements.

Our audit firm applies the national legal requirements and professional standards – in particular the Professional Code for German Public Auditors and German Chartered Auditors ("Berufssatzung für Wirtschaftsprüfer und vereidigte Buchprüfer": "BS WP/vBP") as well as the Standard on Quality Control 1 published by the Institut der Wirtschaftsprüfer (Institute of Public Auditors in Germany; IDW): Requirements for quality control for audit firms (IDW Qualitätssicherungsstandard 1: Anforderungen an die Qualitätssicherung in der Wirtschaftsprüferpraxis - IDW QS 1) – and accordingly maintains a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

## PRACTITIONER'S RESPONSIBILITY

Our responsibility is to express a limited assurance conclusion on the Non-financial Report based on the assurance engagement we have performed.

\* PricewaterhouseCoopers GmbH has performed a limited assurance engagement on the German version of the separate non-financial group report and issued an independent assurance report in German, which is authoritative. The following text is a translation of the independent assurance report.



Within the scope of our engagement, we did not perform an audit on external sources of information or expert opinions, referred to in the Non-financial Report.

We conducted our assurance engagement in accordance with the International Standard on Assurance Engagements (ISAE) 3000 (Revised): Assurance Engagements other than Audits or Reviews of Historical Financial Information, issued by the IAASB. This Standard requires that we plan and perform the assurance engagement to allow us to conclude with limited assurance that nothing has come to our attention that causes us to believe that the Company's Non-financial Report for the period from 01 January 2019 to 31 December 2019 has not been prepared, in all material aspects, in accordance with §§ 315c in conjunction with 289c to 289e HGB.

Within the scope of our assurance engagement, we performed amongst others the following assurance procedures and further activities:

- Obtaining an understanding of the structure of the sustainability organization
- Enquiries of personnel involved in the preparation of the Non-financial Report regarding the preparation process, the internal control system relating to this process and selected disclosures in the Non-financial Report
- Conduct of a site visit with focus on energy and occupational health and safety
- Identification of the likely risks of material misstatement of the Non-financial Report
- Analytical evaluation of selected disclosures in the Non-financial Report
- Comparison of selected disclosures with corresponding data in the consolidated financial statement and in the combined Group Management Report of Nordex SE
- Evaluation of the presentation of the non-financial information

## ASSURANCE CONCLUSION

Based on the assurance procedures performed and assurance evidence obtained, nothing has come to our attention that causes us to believe that the Company's Non-financial Report for the period from 01 January 2019 to 31 December 2019 has not been prepared, in all material aspects, in accordance with §§ 315c in conjunction with 289c to 289e HGB.

## INTENDED USE OF THE ASSURANCE REPORT

We issue this report on the basis of the engagement agreed with the Company. The assurance engagement has been performed for purposes of the Company and the report is solely intended to inform the Company about the results of the limited assurance engagement. The report is not intended for any third parties to base any (financial) decision thereon. Our responsibility lies only with the Company. We do not assume any responsibility towards third parties.

Frankfurt am Main, 20 March 2020

PricewaterhouseCoopers GmbH  
 Wirtschaftsprüfungsgesellschaft

Nicolette Behncke

ppa. Meike Beenken

**Wirtschaftsprüfer**

(German public auditor)



# GLOSSARY

## **CARBON DIOXIDE EQUIVALENT EMISSIONS (CO<sub>2</sub>E)**

A measurement unit that describes the contribution of all greenhouse gas (GHG) emissions to the greenhouse effect. To support comparison of their climate impacts, emissions of other GHG such as methane or nitrous oxide are presented in CO<sub>2</sub>-equivalent units.

**COE (COST OF ENERGY)** Describes the cost of converting a form of energy (e. g. wind) into electrical energy. It is also referred to as COE.

**E-LEARNING** E-learning denotes online learning formats.

**EMPLOYEES** We define employees as people employed directly at Nordex, excluding interns, students, and apprentices.

**ENGINEERING** Research and Development Company area.

**GEARBOX** The gearbox is located between the slow-rotating rotor shaft and the fast-rotating generator shaft. By using a gearbox, the generator shaft rotates up to one hundred times faster than the rotor shaft.

**GENERATOR** A wind turbine's generator converts mechanical energy into electrical energy.

**HIGH-CALORIE SYNTHETIC MATERIALS** Synthetic materials with a high-calorific value in the waste-to-energy process.

**HYBRID TOWER** Extremely high tower construction made from combined steel and concrete segments.

**INSTALLED CAPACITY** This describes the maximum total output of all power plants (here wind turbines) installed in one area.

**INVERTER** Wind turbines are typically operated using variable rotor rotation speeds. An inverter adjusts the electricity supplied by the generator, with its variable frequencies and voltages, to the network frequency, phase length, and voltage required by the electrical network so that constant, grid-compliant electrical energy can be supplied to the network.

**ISO 9001** Internationally recognized quality management standard.

**ISO 14001** Internationally recognized environmental management standard.

**ISO 50001** Internationally recognized energy management standard.

**KILOWATT** Power is defined as energy per time unit and is measured in Watts. One kilowatt (kW) equals 1,000 Watts.

**KILOWATT HOUR** A kilowatt hour (kWh) is the amount of energy measured in kilowatts (kW) that is generated or consumed within one hour.

**LOST TIME INJURY FREQUENCY** The lost time injury frequency (LTIF) indicates the number of occupational accidents per million working hours that cause one or more days' absence from work.

**MEGAWATT** One megawatt (MW) equals 1,000 kilowatts.

**MEGAWATT HOUR** One megawatt hour (MWh) equals 1,000 kilowatt hours.

**NACELLE** The key components to convert wind power into electrical energy (drivetrain, generator, part of the electrical system, backup systems, etc.) are installed in the nacelle. The nacelle is mounted on the tower. The rotor, including the rotor blades, is attached to the rotor shaft in the nacelle.

**OHSAS 18001** Internationally recognized occupational health and safety standard.

**ONSHORE SYSTEMS** Wind power systems installed on land.

**PROJECT MANAGEMENT** Once handed over by Sales, the Project Management Department assumes responsibility for a project until it is handed over to the customer, as well as internally to the Service Department.

**ROTOR** The rotor of a wind turbine comprises the rotor blades and the rotor hub. The rotor is mounted on the main shaft.

**SERVICE** Nordex Service comprises a number of activities – from remote monitoring, preventive maintenance, on-site repairs and retrofitting additions, to the complete modernization of wind energy systems.

**STAKEHOLDER** Stakeholders are both internal (e. g. employees) and external (e. g. customers, competitors, and the community) parties with an interest or concern in our activities and a relationship with our Company.

**WIND FARM** Wind farms comprise multiple, jointly-operated wind turbines.



# LIST OF ABBREVIATIONS

<b>AktG</b>	Stock Corporation Act	<b>HSE</b>	Health, safety, and environment
<b>AWP</b>	Acciona Windpower (Corporación Acciona Windpower S.L.)	<b>IPP</b>	Independent power producer
<b>CO<sub>2</sub></b>	Carbon dioxide	<b>IT</b>	Information technology
<b>CO<sub>2</sub>e</b>	Carbon dioxide equivalent	<b>kg</b>	Kilogram
<b>COE</b>	Cost of energy	<b>kW</b>	Kilowatt
<b>CPI</b>	Corruption Perceptions Index	<b>kWh</b>	Kilowatt hour
<b>CSR</b>	Corporate social responsibility	<b>LTIF</b>	Lost time injury frequency
<b>EBIT</b>	Earnings before interest and taxes	<b>NEW 4.0</b>	North German Energy Transition 4.0
<b>ECA</b>	Export Credit Agency	<b>Nordex BBBEE</b>	Nordex Broad Based Black Economic Empowerment
<b>EIB</b>	European Investment Bank	<b>OECD</b>	Organisation for Economic Co-operation and Development
<b>FFCEL</b>	Fauji Fertilizer Company Energy Limited	<b>R&amp;D</b>	Research & development
<b>GRI</b>	Global Reporting Initiative	<b>SDGs</b>	Sustainable Development Goals
<b>GW</b>	Gigawatt	<b>t</b>	1 metric tonne (1,000 kg)
<b>GWO</b>	Global Wind Organisation	<b>TTC</b>	Technical Training Center
<b>HAW</b>	Hamburg University of Applied Sciences		
<b>HGB</b>	German Commercial Law		

# CONTACT

➤ GRI 102-53

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# IMPRINT

## PUBLISHED BY

➤ GRI 102-1, 102-3

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