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# About this report

Combined with Vestas annual report, this report constitutes Vestas' 'Communication on Progress' (COP)¹¹ under the UN Global Compact. In this way, Vestas applies the option stipulated in section 99a of the Danish Financial Statements Act concerning the statutory duty of large enterprises to report nonfinancial information by referring to the COP report.

This report is framed around the UN Global Compact's 10 principles for responsible business conduct in the areas of human rights, labour, environment and anti-corruption.

<sup>1)</sup> Read more: www.Vestas.com/en/about/sustainability.

# Leading the energy transition

To combat the climate crisis the world is facing, we need to fundamentally change our energy system. The key to reduce CO<sub>2</sub> emissions and simultaneously meet the world's increasing energy demand lies with renewable energy. As wind and solar has become cost competitive with fossil fuels, a world powered solely by renewable energy is not only needed, it is possible.

The world is being digitalised and electrified creating vast opportunities to speed up the decarbonisation of the energy system. In Vestas we want to drive this urgently needed transition of the energy system by developing the solutions that can make a world powered by renewable energy a reality as soon as possible - and we want to do it in a sustainable way.

The enormous transition towards renewable energy will impact the lives of many and we want to make sure that the impact is positive. Our ambition is to deliver the solutions that can realise the needed change, while ensuring that the transition is built on a sustainable foundation.

#### Social license to operate

We have developed a unique framework to obtain a social license to operate from the local communities when we construct new wind projects in complex markets. We work closely together with our customers to develop a wind park that is financeable and sustainable with a strong engagement of local stakeholders. We identify and prioritise local development and engagement opportunities to ensure that the local communities experience concrete improvements in their daily lives when affected by our projects.

We do this to minimise the risk related to our projects and because we believe it is the responsibility of an industry leader to ensure a positive impact towards the communities you operate in and rely on.

One of our highlights in 2018 has been the award-winning project Taiba N'Diaye in Senegal. We are proud to be entering this new market with Lekela to deliver this first utility-scale wind power project in Senegal. This project will expand the country's generation capacity by 15 percent, supporting the development of affordable renewable energy, and diversifying Senegal's energy mix, as well as providing social and economic opportunities for the local communities. In our partnership with Lekela, Vestas will be participating in an extensive social investment programme focused on continuing engagement, creating local job opportunities, and providing vocational training opportunities for youth.



We believe that obtaining and maintaining a social license to operate when developing renewable energy projects should be the basic standard for the entire industry. Only by ensuring that the energy transition includes local communities, can we truly succeed in creating a sustainable world without fossil fuels.

All our sustainability activities are directly linked to our commitment to the Sustainable Development Goals (SDGs). Vestas' core business touches upon all 17 SDGs either directly or indirectly, however, we have identified six SDGs where we believe to have the greatest impacts: 7, 13, 8, 4, 12, 17. As a member of the UNGC since 2009, we continue to support the ten principles throughout our business and value chain. I invite you to read more in the pages that follow and on vestas.com.





































# Social and environmental highlights

	2018	2017	2016	2015	2014
SOCIAL AND ENVIRONMENTAL KEY FIGURES					
OCCUPATIONAL HEALTH & SAFETY					
Total recordable injuries (number)	210	243	303	335	384
- of which lost time injuries (number)	80	92	82	56	53
– of which fatal injuries (number)	0	1	0	1	0
CONSUMPTION OF RESOURCES					
Consumption of energy (GWh)	614	569	567	516	501
- of which renewable energy (GWh)	294	325	296	283	278
- of which renewable electricity (GWh)	262	264	268	257	255
Consumption of fresh water (1,000 m²)	470	454	428	427	366
WASTE DISPOSAL					
Volume of waste (1,000 tonnes)	81	71	75	67	51
- of which collected for recycling (1,000 tonnes)	42	39	37	33	27
EMISSIONS					
Emission of direct CO <sub>2</sub> (1,000 tonnes)	69	60	58	49	50
Emission of indirect $CO_2$ (1,000 tonnes)	32	26	26	25	29
LOCAL COMMUNITY					
Environmental accidents (number)	0	0	0	0	0
Breaches of internal inspection conditions (number)	0	0	1	0	3
EMPLOYEES					
Average number of employees	24,221	22,504	21,625	18,986	16,325
Number of employees at the end of the period	24,648	23,303	21,824	20,507	17,598
SOCIAL AND ENVIRONMENTAL INDICATORS					
OCCUPATIONAL HEALTH & SAFETY					
Incidence of total recordable injuries per one million working hours	4.0	5.3	6.9	8.7	11.8
Incidence of lost time injuries per one million working hours	1.5	2.0	1.9	1.5	1.6
Absence due to illness among hourly-paid employees (%)	2.1	2.3	2.2	1.9	2.3
Absence due to illness among salaried employees (%)	1.1	1.2	1.2	1.1	1.3
PRODUCTS					
$\rm CO_2$ savings over the lifetime of the MW produced and shipped (million tonnes of $\rm CO_2)$	275	317	281	224	173
UTILISATION OF RESOURCES					
Renewable energy (%)	48	57	52	55	56
Renewable electricity for own activities (%)	100	100	100	100	100
EMPLOYEES					
Women in Board of Directors 1) and Executive Management (%)	15	23	23	23	23
Women at management level (%) <sup>2)</sup>	19	19	19	18	18

<sup>1)</sup> Only Board members elected by the general meeting are included.

<sup>2)</sup> Employees at management level comprise Leadership Track positions, i.e. managers, specialists, project managers, and above.

#### Sustainability at Vestas

Vestas recognises its responsibility to be an active citizen and respect the rights of the stakeholders in the areas where it operates. Through its Social Due Diligence and local community development and engagement activities, Vestas translates this responsibility into action.



Operating responsibly is core to Vestas' work. The company's high health and safety standards are non-negotiable and Vestas continuously works with the supply chain to ensure that the standards are reflected down the chain.













Vestas strives to provide renewable energy solutions in a sustainable way, ultimately contributing to addressing climate change. Assessing the environmental impact and contribution of its products and its business in general is part of how Vestas tracks its performance and ensures constant improvements.

# Sustainability at Vestas

Vestas produces renewable energy solutions across the globe. From manufacturing, installing, and servicing wind turbines, the heart of the business is anchored in producing affordable and clean energy for the benefit of the world's population.

Vestas understands that reaching its vision to be the global leader in sustainable energy solutions also requires delivering on its social and environmental performance. Continuous improvements in these areas form the baseline for how Vestas works, and partnerships are an important element contributing to this work.

Vestas' business connects directly or indirectly with all the UN Sustainable Development Goals (SDGs). There are six SDGs that Vestas has selected where Vestas has the greatest possible impact:

**SDGs No. 13 Climate action and No. 7 Affordable and clean energy:** the core of Vestas' business model is to produce affordable renewable energy solutions, and to continuously innovate to improve wind turbine efficiency, thus contributing to the fight against climate change.

**SDG No. 4 Quality education:** Vestas' community development activities are anchored in bringing education opportunities to locals.

**SDG No. 8 Decent work and economic growth:** how the organisation engages with Vestas employees, the suppliers' employees and in creating opportunities for local communities is a significant contribution to this goal.

**SDG No.12 Responsible consumption and production:** continuously improving wind turbine efficiency and reducing Vestas' environmental impact is part of the company's environmental commitment.

**SDG No. 17 Partnerships for the goals:** to reach the SDGs, Vestas works with partnerships where possible.

Combined with additional information about Vestas' sustainability initiatives at the corporate website, this Annual report constitutes Vestas' Communication on Progress (COP) pursuant to the UN Global Compact. Vestas applies the option stipulated in section 99a of the Danish Financial Statements Act concerning the statutory duty of large enterprises to report non-financial information by referring to the COP report. 1)

One of Vestas' current main risks is adapting to markets with greater complexity. In some of these markets there are increased non-technical risks such as corruption, sanctions, increased security concerns, community

1) Read more at www.vestas.com/en/about/sustainability

impact, etc. In addition to this risk, the principal sustainability risks and opportunities related to Vestas' operations are identified as: occupational injuries of employees and contractors and carbon footprint of wind turbines. Policies and associated due diligence address these risks and opportunities. Read more about Vestas' main risks on page 046.

## Social and environmental governance

Vestas is signatory to international initiatives in the UN Global Compact and the World Economic Forum's Partnering Against Corruption Initiative. These global commitments are reflected in the way that the company works. The Vestas Employee Code of Conduct and Business Partner Code of Conduct outline the rules and principles by which Vestas expects its employees and business partners to behave. Core to this expectation is to conduct business with high integrity.

Supporting the governance is Vestas' whistleblower hotline "Ethics-Line". Ethics-Line works to ensure that compliance violations are always brought forward and dealt with accordingly. It is mandatory for managers to report Code of Conduct compliance violations to EthicsLine, and employees are strongly encouraged to report compliance violations to their managers, or directly to EthicsLine.

The substantiated cases closed in 2018 (including cases originating from 2017 but closed in 2018) have led to disciplinary actions including 15 warnings and 27 dismissals.

#### **EthicsLine cases**

Number

	2018	2017
Questions submitted to EthicsLine	8	14
Compliance cases reported	165	105
– hereof substantiated	42	31
– hereof non-substantiated	92	74
Cases under investigation end of year	31	19

Supporting its public commitments to health, safety, and environment, Vestas' operations specifically build on global certificates for these three standards: ISO 9001 for Quality, ISO 14001 for Environment, and OHSAS 18001 for Health and Safety.

In addition to Vestas' social and environmental governance, there are two material themes cutting across its sustainability pillars: business ethics and human rights.

#### **Business ethics**

Vestas works actively to continuously assess the company's exposure to the risk of bribery and corruption and establish robust preventative procedures. In 2018, the company has focused on strengthening its compliance programme in the regions by revising the compliance governance structure and anchoring compliance in the Sales Business Units.

To support the regional units in this process, Vestas has established a global compliance network to facilitate knowledge sharing on compliance initiatives across the organisation. In 2018, all regions performed country risk assessments and consequently developed mitigating actions. In addition, Vestas has strengthened its business partner screening and due diligence processes covering business ethics and sanctions.

#### **Human rights**

Vestas recognises its responsibility to respect human rights as set out in the UN Guiding Principles on Business and Human Rights. This commitment, which includes Vestas' expectations to its business partners, is outlined in the Vestas Human Rights Policy <sup>2)</sup> and implemented across the organisation.

In 2018, Vestas, together with qualified external experts, updated its corporate-wide Human Rights Impact Assessment (HRIA). The results of the HRIA are currently being translated into updating and/or initiating new activities, starting with addressing the most salient human rights impacts.

## Citizenship

#### **Social Due Diligence**

To support Vestas' emerging markets entry strategy and ensure that Vestas obtains the social license to operate, the company has developed a Social Due Diligence (SDD) methodology. The SDD focuses on identifying social risks and impacts associated with Vestas' wind parks, and preventing or mitigating such impacts.

Vestas strives to work closely with customers to assist them in securing and maintaining the social license to operate during construction and operation of wind park projects according to international standards. Overall, working with the customers on building a good relationship with the local community contributes to developing a wind park that is financeable and sustainable in the long term with local stakeholder approval.

Vestas understands the importance of sustainably investing in local communities, which is why it identifies and prioritises local community development and engagement opportunities via the SDD process.

In 2018, Vestas has been active in investing in several local community development initiatives, such as:

- In Honduras, close to the two wind parks Chinchayote and San Marcos II, Vestas has been active in both creating local jobs in connection with the wind parks and empowering local communities' development. During construction, Vestas created 1,645 jobs, of which 1,019 were filled by Honduran workers, including 323 workers from local communities. Vestas also initiated a poultry project with the purpose of developing self-employment and the local community's capacity to create sustainable and environmentally friendly food production. The initiative proved to be successful with more than 50 families benefitting from the first roll-out phase of this initiative.
- In Jordan, connected to the Fujiej project, Vestas has worked together
  with the developer to maximise local employment, employing over
  75 percent of project workers from local communities. Vestas is
  also active in the local communities, and has, for example, provided
  support to 200 families during religious holidays, and donated
  sunshades, school materials, and furniture to four local schools.
- In India, Vestas is engaged in multiple community development activities connected to the wind farm project sites, the blade factory in Ahmedabad and service sites. For example, close to the Taralkatti wind farm, Vestas has invested in community skills development, focusing on training 60 young rural women in tailoring, sewing, and stitching, and providing equipment to a local industrial training institute supporting over 80 rural youths. Vestas has also prioritised education initiatives in the local area; approximately 550 school children from four local schools have benefitted from a solar powered digital education platform installed by Vestas, and the company has furthermore supported several schools with donating educational supplies impacting over 1,050 students.

To further understand the potential socio-economic impact of wind park developments in emerging markets, and contribute towards building knowledge in this area, in 2018, Vestas partnered with an external consulting specialist to develop a methodology and accordingly map the socio-economic impacts of the Lake Turkana Wind Farm in Kenya. Preliminary results assessing the socio-economic impact of the 208 km access road has already shown that increased development has reduced transport time, increased economic activity, and increased accessibility for education and health authorities in the area.

<sup>2)</sup> The policy can be found at www.vestas.com/en/about/sustainability#!antislavery-statement

The study provides valuable input for the continued discussion on how to minimise impacts from large-scale renewable energy projects in emerging markets, and how to enhance potential positive contributions to the host country and the local communities.

#### Responsible operations

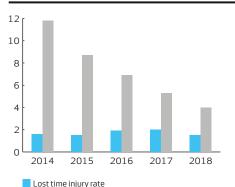
#### Health and safety

Vestas considers its employees to be its most important asset. Therefore, health and safety are consistently given highest priority to provide and maintain a safe and secure workplace for all employees.

Vestas has seen significant improvements in relation to reducing the number of injuries. From 2005 to 2018, Vestas has reduced the incidence of lost time injuries by 96 percent.

#### Incidence of injuries

Per one million working hours



# A decrease of 25%

In 2018, Vestas reduced the rate of total recordable injuries to 4.0 compared to 5.3 in 2017 meeting target for 2018 of 4.8. The target for 2019 is 3.6.

■ Total recordable injury rate

To anticipate injuries before they occur, Vestas employees register near-misses and hazard observations as well as injuries. Part of the incident handling is to assess if the incident in question had potential for serious injury, thereby preventing more injuries.

Although Vestas has achieved a significant improvement in the occurrence of workplace injuries, it has still seen a number of serious injuries and fatalities in past years.

Vestas is now placing increased focus on the incidents with high potential for serious injury or fatality. The incident management process has been strengthened in the identification and management of incidents with fatal exposure. Such incidents must be prioritised and immediately acted upon to ensure any potential risk to life is eliminated, and subsequently control mechanisms will follow up to ensure that no reoccurrence will take place.

In addition, Vestas is placing increased focus on Safety Leading indicators. These indicators give an overview of the country-specific and regional performance on a number of essential safety initiatives to ensure sufficient focus on safety is embedded.

Vestas has three behavioural safety programmes. The first, Safety awareness training, which explains why safe behaviour is critical to making Vestas a safe place to work and includes safety walks by managers, has been implemented globally.

The Vestas Behavioural Change program is an employee-led programme of peer-to-peer feedback loops of observed safety behaviour and improvements. The programme is currently implemented in 70 percent of the factories worldwide and will be further implemented as safety culture matures.

These two safety programmes were in 2017 supplemented by My Team My Responsibility (MTMR) as a pilot programme in selected segments of the business. In 2018, MTMR was implemented in most

manufacturing facilities and launched in the Sales Business Units, including selected contractors. The MTMR programme focuses on changing identified at-risk behaviours to safe behaviours throughout all levels of the business.

An occupational health and safety strategy was launched in 2017. In 2018, ergonomics and chemical exposure were identified as the main risks for Vestas employees and activities were initiated to improve both current practices as well as the design of new workplaces. The ultimate goal is that when employees leave or retire from Vestas they should be able to reflect on their career and consider that their physical and mental wellbeing has been enhanced due to the conscientious focus Vestas places on occupational health and safety.

#### Responsible supplier management

Vestas works very closely with suppliers and sub-suppliers of components and raw materials to improve the sustainability of Vestas' products and operations.

The risk management process spreads over the whole product lifecycle, starting from supplier selection. The expected conduct of Vestas' suppliers is deployed via the Business Partner Code of Conduct and is an integral part of purchase agreements. Vestas takes action to ensure that suppliers comply with its policies by screening significant suppliers on compliance with the Code of Conduct, environment, health, and safety through the standards in a supplier assessment tool.

In 2018, monthly supplier scorecards have officially been rolled out to 165 key suppliers with significant focus on safety and other sustainability aspects. The supplier's scorecard performance and agreed development activities are evaluated as part of monthly performance dialogue meetings.

In 2018, 154 suppliers were assessed on site by Vestas globally. Of these, 98 were approved, 14 were rejected, and 42 are under approval.

#### Sustainable products and services

Creating sustainable energy solutions and thereby contributing to the fight against climate change calls for a constant improvement of both the environmental impact of Vestas' products and of the overall environmental impact of Vestas' activities – in designing, manufacturing, installing, and servicing wind turbines.

A Vestas wind turbine in operation saves  $CO_2$  emissions compared to electricity generated from fossil fuels; a clear contribution in moving away from a carbon intensive energy mix. In 2018, the  $CO_2$  savings over the lifetime for the capacity produced and shipped by Vestas amounted to 275m tonnes, a decrease of 13 percent compared to 2017, due to a lower amount of MW produced and shipped in 2018 and lower world average  $CO_2$  emissions from fuel combustion.

As the wind power industry is expected to account for a growing share of the future energy mix, it is important that Vestas acknowledges that when producing solutions to harness wind energy, a small negative impact on the environment is made.

Vestas is committed to reducing this impact to the extent possible, together with its suppliers and customers, and believes that it is a prerequisite for Vestas' continued development.

## Environmental impact of a Vestas wind turbine

Since 2010, Vestas has defined targets and pushed the bar on two essential parameters to reduce the environmental impact of wind turbines: carbon footprint and waste. These targets are informed by the Life Cycle Assessments (LCAs) that measure the 'cradle to grave' environmental impacts of Vestas' products and activities throughout the lifetime of a wind power plant.<sup>3)</sup>

The product carbon footprint over the lifetime of a Vestas wind turbine has been reduced significantly since the first target was set in 2010. The current target is a 10 percent reduction of carbon footprint by 2020 from a baseline of  $6.60 \text{ grams } \text{CO}_2 \text{ per kWh in 2017}$ .



The current target for product waste is a 7 percent reduction by 2020 versus a baseline of 0.178~grams waste per kWh in 2017. Progress towards the targets is documented when new wind turbine versions are released

Around 83-89 percent of a Vestas wind turbine is recyclable, depending on turbine type. On the road to achieving 100 percent recyclability, the composite materials of the blades comprise the largest component yet to be made recyclable. To address this issue, Vestas continues to work in the DreamWind project (Designing Recyclable Advanced Materials for Wind Energy) that aims at developing new sustainable composite materials for blades.

Furthermore, during wind turbine operation and maintenance, Vestas has developed new advanced repair services which include a comprehensive offering of up- and down-tower repair solutions for gearboxes, generators, minor components, and blades. This retains the maximum value of materials from an environmental and circular economic perspective. For example, Vestas' LCA is used to determine the environmental benefits of repair, which shows up to 90 percent savings in material weight and up to 95 percent saving of carbon footprint for the repaired item.

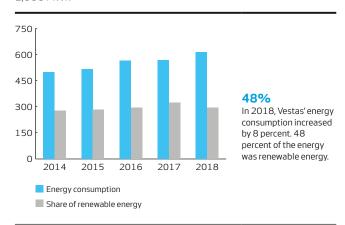
# Environmental impact of Vestas' operations

The LCAs reveal that Vestas accounts for 5-10 percent of the carbon footprint of a wind turbine. For Vestas' activities, performance is reported in terms of inputs of resources and outputs of  $\text{CO}_2$  emissions and waste. Increased service in 2018 compared to 2017 was not to the same degree reflected in the consumption of water and energy and emissions of  $\text{CO}_2$  and waste, which increased relatively less than the increased service level. With more frequent product upgrades, the manufacturing resulted in relatively higher energy and water consumption and emissions of  $\text{CO}_2$  and waste than the change in production level.

Vestas' focus on increasing renewable energy share continues. 50 percent of the non-renewable energy is used in Service and the share is increasing as the business grows. Vestas is committed to increase

the carbon efficiency and reduce the carbon emissions from its Sales Business units relative to kWh produced from the wind turbines where Vestas has service agreements.

# Energy consumption and share of renewable energy $1,\!000\,\text{MWh}$



It is Vestas' ambition that 100 percent of its electricity consumption must come from renewable energy sources, subject to availability, which continued to be fulfilled in 2018. This was achieved partly by purchasing renewable electricity where available, and partly by compensating for the consumption of non-renewable electricity with Vestas-owned wind power plants. In 2017, Vestas joined the organisation RE100, whose members commit to 100 percent renewable electricity.

3) 100 percent of MW delivered by Vestas are covered by LCAs based on ISO 14040/44 and are publicly available at www.vestas.com/en/about/sustainability#!available-reports



# One approach, globally

Vestas' commitment to sustainability goes beyond producing, installing and servicing turbines. We are a signatory to international initiatives the United Nations Global Compact and the World Economic Forum's Partnering Against Corruption Initiative. These public commitments form the foundation to our global business approach and are expressed in Vestas Code of Conduct for employees and business partners.

Our approach is also informed by the current global agenda: Vestas is committed to supporting the UN Sustainable Development Goals ("SDGs). We have integrated the SDGs into our sustainability approach, which allows us to identify the goals where we can add most value. We have identified six SDGs which support our approach on how sustainability is powering development for Vestas and for our stakeholders and the many communities where we play a role. The six SDG's are: Affordable and clean energy (7); Climate action (13); Decent work and economic growth (8); Quality education (4); Responsible consumption & production (12); and Partnerships for the goals (17).

Supporting our public commitments, Vestas operations specifically builds on global certificates for these three standards: ISO 9001 for Quality, ISO 14001 for Environment, and OHSAS 18001 for Health and Safety.

In committing to, and implementing, international sustainability initiatives, standards, and goals spanning the sustainability spectrum, Vestas is able to back its intent to power sustainability, both within the organisation and beyond.

# **Commitments**

Vestas is a signatory to the United Nations Global Compact and the World Economic Forum's Partnering Against Corruption Initiative. These commitments support our intent to power sustainability, both within the organisation and beyond.

Vestas commitments are reflected in the Code of Conduct and supporting policies, guidelines and procedures.

# **Code of Conduct**

At Vestas, we act with integrity in everything we do. This means making the right decisions when faced with difficult situations, and ensuring that our actions match our values of Accountability, Collaboration and Simplicity. For us, a global company of more than 23,000 employees operating in over 40 countries, our Code of Conduct embodies this commitment and is supported by top management.

In 2016 we revised our Code of Conduct, splitting it into two: Employee Code of Conduct and Business Partner Code of Conduct. To read more about how we work with our Business Partner Code of Conduct, click here. Our Employee Code of Conduct is a set of rules and principles for how Vestas employees are to act and behave as part of a global company. The Employee Code of Conduct goes beyond national borders, cultures and local traditions, and sets the global standard for all employees in Vestas.

All salaried employees were required to sign off on the Vestas Employee Code of Conduct in 2017. By signing off the document, all employees acknowledged that they have familiarised themselves with and understand all the topics covered in the Vestas Employee Code of Conduct. The sign off is a part of the effort at Vestas to ensure that all employees live up to the Code of Conduct rules and principles in their daily work – no matter location or position.

#### **Policies**

- · Vestas Code of Conduct
- · Vestas Decision Tree
- · Vestas Business Partner Code of Conduct
- · Vestas Business Partner Code of Conduct Guidelines
- · Quality, Health, Safety and Environmental policy
- · Human Rights Policy
- · Freedom of Association Policy

#### **EthicsLine**

Vestas' whistle-blower system, EthicsLine, was introduced in 2007

Vestas is committed to securing an ethical environment in our company, and Vestas' EthicsLine has been established to ensure that inappropriate behavior or incidents are brought forward and handled in a fair and timely manner.

The purpose of the EthicsLine is first to ensure that Vestas employees, business partners or anyone associated with Vestas have a place to report inappropriate behavior or practices which may be experienced within the Vestas workplace. Secondly, the EthicsLine provides guidance when in doubt about ethical issues.

#### Vestas' EthicsLine can be used to:

- · report malpractice that has been observed or is suspected;
- ask questions about Vestas policies, or difficult issues of behaviour or ethics, when the answers cannot be found elsewhere

Vestas' EthicsLine is operated by an independent company. Except where specifically prohibited by local law, anyone using Vestas' EthicsLine may remain anonymous. Subject to applicable laws, all matters reported through Vestas' EthicsLine will be investigated. Everyone involved will be treated fairly. Vestas will not tolerate retaliation against anyone who files a report in good faith, regardless of whether or not the claim can be substantiated.

## **UN Global Compact**

Vestas committed to the United Nations Global Compact in 2009. The United Nations Global Compact is a strategic policy initiative for businesses that are committed to aligning their operations and strategies with ten universally accepted principles in the areas of human rights, labour, environment and anti-corruption.

With the participation in United Nations Global Compact, Vestas commits to report and publish its progress on implementing these principles in the organisation on an annual basis. The implementation of these requirements in the organisation is an integral part of the Vestas Management System.

## Local networks

At Vestas, we have made an effort to demonstrate our sustainability leadership locally by joining the United Nations Global Compact Nordic Network. Vestas considers this as an opportunity to promote stronger sustainability efforts for businesses in their local context.

#### Memberships

- · Global Wind Energy Council (GWEC)
- · World Economic Forum
- · Global Green Growth Forum (3GF)
- · Member of 20 national wind associations around the World

#### Organising sustainability

To take sustainability at Vestas to the next level, a Sustainability Committee with cross-functional participation has been established. The role of the Sustainability Committee is to oversee, prioritise, and coordinate cross-functional sustainability initiatives in Vestas and ensure sustained conformity according to UN Global Compact. The committee reports to the Executive Management and has met four times in 2018, with a planned meeting frequency of six times a year going forward.

Responsibility for sustainability performance lies in the line organisation. To support the line organisation the following departments are responsible for global policies, procedures, and overall guidance related to sustainability: Health, Safety and the Environmental is managed by the Global Quality, Safety & Environment (QSE) department, CSR and the Business Ethics function are managed by the Legal & Compliance department.

#### **Board committees**

Vestas board committees oversee Vestas' focus on sustainability. In 2018, the Board of Directors held five Audit Committee meetings, five Nomination & Compensation Committee meetings, and four Technology & Manufacturing Committee meetings.

The Audit Committee evaluates the adequacy and effectiveness of Vestas' ethics and anti-corruption programme pursuant to Vestas' Code of Conduct and the World Economic Forum Partnering Against Corruption Initiative (PACI). The cases filed in Vestas whistle blower system, Vestas Ethics Line, are reported here.

The Nomination & Compensation Committee supports the Board of Directors in overall staff-related topics, including diversity. The Technology & Manufacturing Committee evaluates sustainability performance.



# Human rights

Vestas recognises its responsibility to respect human rights as set out in the United Nations Universal Declaration of Human Rights and according to the framework outlined in the UN Guiding Principles on Business and Human Rights. This commitment, which includes our expectations for Vestas' business partners, is described in the Vestas Human Rights Policy and implemented across the organisation globally.

The Human Rights Policy is communicated to internal and external stakeholders on Vestas's intranet and website. In case of any complaints by employees or business partners on breaches of the Policy these can be submitted to the Vestas EthicsLine.

Vestas Human Rights Policy is also supported by our Employee Code of Conduct and Business Partner Code of Conduct.

#### Due diligence

To support Vestas' emerging markets entry strategy, Vestas has developed a Social Due Diligence (SDD) methodology. The SDD is targeted at ensuring that social risks and impacts are identified, prevented and mitigated in Vestas wind power plant projects. For projects in scope, Vestas conducts an assessment of the project and the affected local communities.

The results from the SDD include mitigation actions, which are integrated into project plans to ensure integrity in the project execution. The SDD is based on the International Finance Corporation's Environmental and Social Performance Standards and the World Bank Group's Environmental, Health, and Safety Guidelines for Wind Energy, ensuring that, regardless of where the customer obtains financing from, Vestas supports the project's execution according to accepted international standards.

As a wind turbine supplier, Vestas strives to work closely with its customers to assist them in securing and maintain the social license to operate during construction and operation, according to international standards.

#### Suppliers

Our business partners play an important role in Vestas' drive to reach our sustainability goals and in promoting wind energy as a beneficial solution for society as a whole.

In order to improve the sustainability of our products, Vestas works closely with sub-suppliers of components and raw materials, which today account for more than 80 per cent of the energy consumed in the product manufacturing process.

In order to ensure the health and safety of all persons involved, customers and sub-suppliers must be both aware of – and follow – the Vestas safety rules and procedures, during all stages of the turbine installation process through to service.

In order to support this partnership, Vestas has prepared a Business Partner Code of Conduct in accordance with the UN Global Compact, the International Bill of Human Rights and the International Labour Organization conventions. Vestas works diligently to ensure that partners also respect the Code of Conduct, and, to the greatest extent possible, will prioritise working with business partners who are dedicated to and support Vestas' view on sustainability.

A wind turbine consists of several thousand components each with its own sub-suppliers. We also have to consider construction sites in several countries worldwide. Thus, Vestas' supply chain is broad and complex. In total, there are thousands of partners worldwide.

#### **Responsible Supplier Management**

Vestas is devoted to the principle of Responsible Supplier Management.

Purchase agreements with our suppliers today include our policies regarding human rights and environment, as well as a commitment to work with our suppliers on initiatives relating to sustainability going forward.

With 94 per cent of our signed purchase agreements based on Vestas templates, and with all of these including either directly or by reference the above principles, we believe we are well on the way.

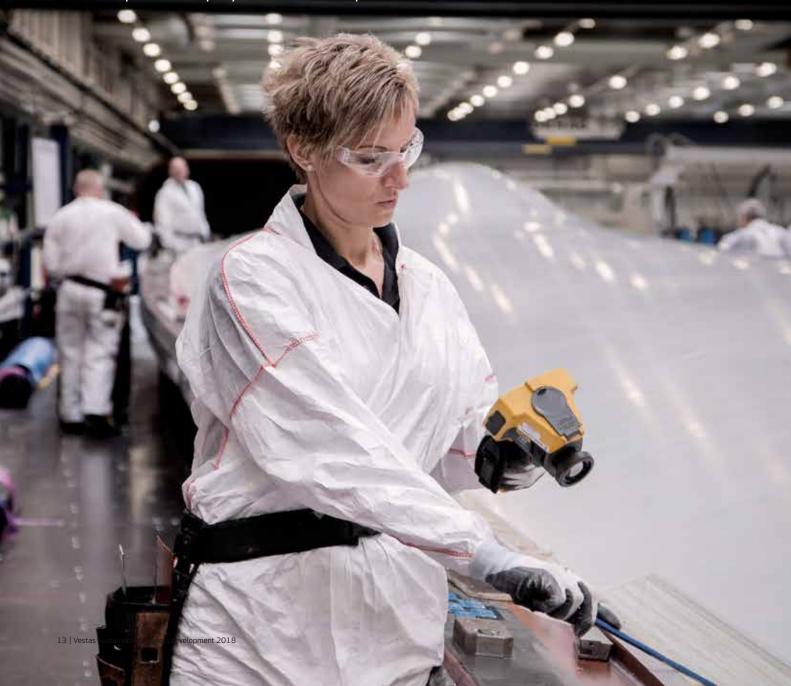
Vestas also takes action to ensure that suppliers comply with our polices by screening significant suppliers on sustainability issues, including human rights and labour standards using the supplier qualification and selection tool. In 2018, 154 suppliers were assessed on site by Vestas in all regions. Of these, 98 were approved, 14 were rejected, and 42 are under approval.

When so-called red flags are identified – that is when suppliers are not living up to the Vestas standards - the suppliers are requested to take corrective action.

Vestas has a formal target on sustainability, which is monitored on monthly basis: Suppliers safety and sustainability maturity is reported on frequent basis throughout the year for more than 100 suppliers using a standard to track the development...



- **3.** Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining.
- **4.** Businesses should uphold the elimination of all forms of forced and compulsory labour.
- **5.** Businesses should uphold the effective abolition of child labour.
- **6.** Businesses should eliminate discrimination in respect of employ ment and occupation.



# Labour

#### Safety first

It is recognized that working with wind turbines is not hazard-free. Large heavy components, dizzying heights, remote locations and demanding processes, to name but a few, present a challenging work environment. Vestas' unprecedented experience in the wind industry ensures these risks are identified early and where achievable eliminated by design. Unavoidable residual risks are meticulously assed and mitigated to the lowest levels possible.

In 2018, Vestas again achieved a record low number of total recordable injuries. Significant improvement was seen across the business in the sales and manufacturing segments with an approximate 25% decrease, further proving that Vestas ambitious goal of zero injuries is achievable. Vestas Behavioural Change (VBC) program and My Team My Responsibility (MTMR) were a main contributor once again to this success however there is still more to be done.

Vestas' close collaboration and work to drive and improve overall industry safety performance continues. The contractor and supply networks are often shared across the industry and improving our work partners performance on safety is considered extremely important. In 2018 Vestas delivered Safety workshops for contractors in Europe, China, USA. India and Australia. These workshops were very positively received and attended by the main contractors of the region. Regional Key account customers were also invited to deliver presentations and actively attend the sessions further strengthening the bond and prioritizing safety. The workshops once again clearly delivered and outlined the expected Safety standards required to work for and with Vestas, reiterating the clear statement "If you can't work Safely you can't work for Vestas"

Vestas has again throughout 2018 continued to support the Global Wind Organization (GWO), providing resource competency, support and market insight to enable the development of Industry Safety related training courses. This standardization of safety training ensures a minimum standard of competence is achieved by the applicable Vestas employees or contractors prior to any work onsite taking place. Having a recognized set standard also contributes to the efficiency and associated costs by preventing duplication of training for the industry.

It is essential that safety culture is embedded in the DNA of the global Vestas organization. This culture must be driven and cascaded down through the business by senior management and leaders. Accountability for safety is embedded and delegated throughout each level of management, however each and every employee must accept their personal responsibility for their own and their colleagues' safety. Working safely is a condition of employment at Vestas, every employee's behavior is critical to the safety effort and ultimately achieving our goal of zero injuries.

In Vestas, we continually raise awareness to the dangers of complacency. The life-saving Rules were introduced and are now firmly embedded in the foundations of safety at Vestas. These seven Rules act as a permanent reminder to employees that non-compliance or complacency could result in a serious injury or fatality.



## The road to zero injuries

# Near miss reporting and hazardous observations

Vestas has seen significant improvements in relation to reducing the number of injuries and we proactively act to close out any significant gaps with identified remedial action plans. To further mature we are now placing equivalent focus on the incidents with high potential for injury/fatality. Studies have identified that in industry approx. 20% of all incidents, company employees could be exposed to a life-threatening situation.

Vestas have identified a process called Life Incidents with Fatal Exposure LIFE. This process filter uses the now well-established lifesaving rules to identify any reports with potential exposure to a life-threatening situation. We simply go through each life-saving rule individually to identify if the incident was related or a contravention to that rule. Any LIFE incident identified must be prioritized and immediately acted upon to ensure any potential risk to life is eliminated. Also ensuring that control mechanisms are reinforced or created, to ensure the LIFE incident will not reoccur.

#### Occupational health

Vestas has an ambition that when employees leave or retire from employment with Vestas that they should be able to reflect on their career and consider that their physical and mental wellbeing has been enhanced due to the conscientious focus Vestas place on occupational health and safety.

In 2017, a project on occupational health and safety was launched. Working on the data and information initially collected, two main work streams were identified and prioritized; Potential Chemical Exposure and Ergonomic Hazards. Mitigating measures for each area of these important topics are currently being implemented

# Safety awareness

## Fostering a safety culture through awareness

Being aware of the safety hazards are key to managing and preventing them. Since 2007, Vestas has deployed a Safety Awareness Program for employees and managers to raise the awareness of safety with the ultimate objective of eliminating all lost time injuries. All operational managers and team leaders in factories, service, construction sites and offices attend courses to strengthen the safety culture throughout Vestas and instil safe behaviour.

Through safety awareness, recognition programs and safe behaviour programs Vestas is moving towards establishing a team-based responsibility for safety. Top management's commitment to keep all employee's safe and emphasize safe behaviour is being expressed through their participation in safety awareness programs and their completion of Safety Walks.

A Safety Walk is an opportunity for managers in production, construction, service or administration areas to have a constructive dialogue and discuss safe behaviour identifying ways of improving safety with employees in their actual job function. The program has been successfully running since 2007 with consistently more managers participating every year. In 2018, 21,000 Safety Walks were conducted whereby the ambition of an average of twelve Safety Walks per manager was achieved once again.

# Focusing on behaviour

Behaviour is identified as the main root cause in an incident or injury in the workplace. The My Team My Responsibility (MTMR) program builds on a foundation of engagement of all employees and will once again be the primary safety behavioural program implemented in 2019. The MTMR framework encourages agreement to which safe behaviours we want to see more of, which will inevitably lead to employees at all levels in the organisation working safer. Front line managers and supervisors work with their teams to select the behaviours they want to improve

together. They take ownership as a team and drive the change led by the supervisor. A full review of the initial behaviours identified by Manufacturing and Sales areas will take place in 2019 and new behavioural areas of improvement identified.

Vestas Behavioural Change (VBC) program is an employee led safety observation program. It actively encourages employees to observe each other's behaviour while carrying out specific work-related tasks. Safe behaviours are encouraged, recognized and rewarded, whereas any identified at risk behaviours are stopped assessed and improved to remove the risk. The program encourages safety dialogue and taking collective responsibility for safety.

Units, functions and areas that have adopted and implemented the Vestas Behavioural Change program (VBC) have dramatically reduced the number of reportable injuries. Vestas will continue to implement and encourage these programs to eventually reach the overall ambition of zero injuries.

#### Safety standards

Customers and employees expect a unified approach to safety regardless of region or country. Vestas agrees. That's why we have developed a wide variety of global processes, such as:

#### Incident management

A sustained effort to increase the flow of knowledge in regards to corrective and preventive actions against safety is a priority. Global knowledge sharing on a monthly basis enables proactive learning to establish best practices for reducing the number of injuries.

#### **Contractor safety**

As Vestas' own safety performance has improved strongly over the years, the performance of contractors has become increasingly important to protect both Vestas' and its contractors' employees from potential harm as well as to live up to customer expectations of safe operations. Measures implemented so far to improve the performance of contractors include pre-qualifications, standardisation of safety requirements and intensified tracking of safety performance.

#### Safety Induction programmes

A safety induction programme for managers and employees is part of the induction programme for new employees. We do this as employees must know what to expect - and what is expected of them - as soon as they arrive.

#### **Electrical safety**

Global standards on "Electrical Safety" and "Control of Hazardous Energy" have been developed in order to eradicate electrical injuries. A range of Master Instructors cascade their knowledge into the business.

#### Risk and opportunities

As part of Vestas' strive for continuous improvements, its processes of assessing risks and opportunities accommodate a growing demand for alignment across areas of sustainability. The processes will ensure that all sustainability-related risks and opportunities are systematically and effectively identified, quantified, mitigated and monitored in an aligned way throughout the organisation.

#### **Employees**

Employees are crucial to staying competitive and providing customers with the best service. The company's People Pipeline – employee lifecycle – ensures that the right people are in the right functions throughout the organisation. It enables Vestas to attract, employ, reward, develop and retain the best.

Vestas attempts to foster an inclusive and diverse environment to attract employees of different nationalities. We are also dedicated to continuous improvement of competences. We do that through a variety of internal learning possibilities as well as career development. Vestas has among other things developed three leadership tracks and attractive benefits.

Being a global business entails employing people of different nationalities and cultures. The business must be 'in the region, for the region.'

#### Recruiting

Vestas is active in over 79 countries and is constantly seeking opportunities to expand into new markets. We always seek to hire the best-suited candidates for vacant positions, based on qualification, experience and competencies. We do thorough assessments of both external and internal candidates, so as to offer the best talent the right opportunity.

#### **Training**

In 2018, a total of 1,957,935 hours of training were registered resulting in an average of 81 hours of training per FTE. Trainings are focused on continuous improvement of the individual, team and department's performance and it starts from the day the employee starts with the organisation. In Vestas we believe that training blended with the work brings in positive impact to the individual and the organization. Hence trainings are integrated into the employee's development programme.

#### Development

The Continuous Performance and Development process (CPD) and People Review are two of our key tools within the area of employee development.

The People Review aims to create insight into the performance and potential of our employees, and to have a structured and proactive approach to performance management, competency development, talent identification and management, and succession planning. All employees at our corporate leadership levels are mandatorily in review, but many business units choose to review all employees.

Continuous Performance & Development is about performance management, employee development and especially the continuous, realtime feedback culture supporting our leaders and employees in their everyday work life. CPD is about ensuring that all employees receive feedback on their performance and behaviour for the year, and that performance objectives are set for the coming 12 months. Development objectives focuses on ensuring the right competencies with the right people. CPD check-ins are recommended as minimum once per month aims at following-up on performance and adjusting where necessary, building manager and employee relationship, focusing on work/life balance and ensuring real-time feedback both from stakeholders and from the immediate manager.

In 2018, 95 percent of Vestas' employees responded to the Employee Survey and 84 percent of Vestas' employees conducted a Performance Feedback dialogue with their manager and 88 percent have Objectives documented.

#### Compensation & Reward

Vestas aims to ensure all employees a fair pay commensurate to their performance, expertise, and market value. Vestas is a responsible employer that recognises the need to maintain the value of salary levels with the market by having one global approach to salary and benefits and supports managers in making pay decisions aligned to local market practices.

Vestas regularly assess and evaluate the compensation levels including auditing gender inequality and other undesirable tendencies.

#### Exit

All employees leaving Vestas, regardless of the reason for their departure, are offered an interview as part of the exit process. This way, the company learns more about why the employee has chosen to leave Vestas, and can devise new methods for making the company more likely to attract and retain talent in the future.

When having to lay-off employees in large numbers, Vestas always ensures negotiations are conducted as quickly as possible and result in decent severance packages for all those affected. In such incidences, Vestas offers laid-off employees support for further education and outplacements.

## Employees by region and function 1)

Number

	Europe, Middle East, and Africa	Americas	Asia Pacific	Total
Manufacturing &	4702	2140	2 241	11 172
Global Sourcing Sales and service	4,783 6.070	3,149 2,518	3,241 1,715	11,173 10,303
Power Solutions	1,379	40	399	1,818
Others	730	115	443	1,288
Total	12,962	5,822	5,798	24,582

## Employees by age group and gender 1)

Percent

	<31	31-45	>45	
	years	years	years	Total
Female	3%	6%	4%	13%
Male	25%	45%	17%	87%
Total	28%	51%	21%	100%

# Employees by employment contract and gender 1)

Number

	Standard		
	employment	Temporary	Total
Female	3,045	142	3,186
Male	20,293	1102	21,396
Total	23,338	1244	24,582

# Employees (standard employment) by employment type and gender 1)

Number

	Full time	Part time	Total
Female	3,147	39	3,186
Male	21,361	35	21,396
Total	24,508	74	24,582

# New employees by region and gender 2)

Number

	Europe, Middle East, and Africa	Americas	Asia Pacific	Total
Female	253	234	144	631
Male	1,825	1,598	1,219	4,642
Total	2,078	1,832	1,363	5,273

# New employees by age group and gender 2)

Number

	<31	31-45	>45	
	years	years	years	Total
Female	357	210	64	631
Male	2,634	1,618	390	4,642
Total	2,991	1,828	454	5,273

# Turnover by region<sup>3)</sup>

Number · Percent

	Europe, Middle East,		Asia	
	and Africa	Americas	Pacific	Total
No. employees	12,218	5,737	5,360	23,315
No. employees leaving	984	1,552	636	3,172
Turnover	8.1%	27.1%	11.9%	13.6%

# Turnover by gender<sup>3)</sup>

Number · Percent

	Female	Male	Total
No. employees	3,096	20,217	23,313
No. employees leaving	410	2,762	3,172
Turnover	13.2%	13.7%	13.6%

# Turnover by age 3)

Number · Percent

	<31	31-45	>45	
	years	years	years	Total
No. employees	6,182	12,062	5,070	23,313
No. employees leaving	1,296	1,364	512	3,172
Turnover	21.0%	11.3%	10.1%	13.6%

# Employees by level and age 1)

Percent

	<31	31-45	>45	
	years	years	years	Total
Management level	0.4%	7.8%	4.2%	12.5%
Other	27.5%	43.4%	16.6%	87.5%
Total	27.9%	51.2%	20.8%	100%

# Employees by level and gender 1)

Percent

	Female	Male	Total
Management level	2.4%	10.1%	12.5%
Other	10.6%	76.9%	87.5%
Total	13.0%	87.0%	100%

# Board of Directors by age group and gender 4)

Percent

	<31	31-45	>45	
	years	years	years	Total
Female	0%	0%	12.5%	12.5%
Male	0%	0%	87.5%	87.5%
Total	0%	0%	100%	100%

<sup>1)</sup> Frozen report end 2017. Full time employment is FTE 0.9 and above. Availon not included.

<sup>2)</sup> Entries report (employees hired January 2017 to December 2017, report not frozen)

<sup>3)</sup> Turnover report (report not frozen)

 $<sup>4) \ \ \</sup>text{Only Board members elected by the general meeting are included. See http://www.vestas.com/en/investor/corporate_governance\#!bd$ 



- **7.** Businesses should support a precautionary approach to environmental challenges.
- **8.** Businesses should undertake initiatives to promote greater environmental responsibility.
- **9.** Businesses should encourage the development and diffusion of environmentally friendly technologies.



# Environment

#### Climate change

Climate change poses one of the most serious challenges for mankind. The predicted effects could be both devastating and irreversible. According to the Intergovernmental Panel on Climate Change (IPCC), the effects of climate change will be broad-ranging, affecting water supplies, ecosystems, food availability, health and the economy, and will devastate coastal regions. It is crucial that greenhouse gas emissions are limited, that low carbon energy generation technologies take over, and that they provide power to more sectors through electrification

Fossil fuel-based power generation causes poor air quality, contributes to global climate change and consumes significant amounts of water. As water becomes more scarce in many regions (a tendency that may be amplified by climate change), existing water supplies will not be sufficient in many countries to support the installation of new water-intensive power plants – putting economic growth at risk.

To mitigate climate change, power generation must globally become low-carbon, more sectors such as transport and heating need to use this low carbon electricity as a power source, and wherever water locally is or is expected to become scarce, power generation must become low-water. During operation, wind power plants do not consume water nor do they emit climate-changing greenhouse gases. Wind power is among the solutions to the challenges our world is facing today.

#### Sustainable Energy for All

More than 1 billion people across the globe still lack access to affordable and reliable electricity – with dramatic consequences for human health, education and economic well-being. These numbers show us that there is still much work to be done to ensure a sustainable global energy supply.

Vestas actively supports partnerships and collaborative efforts intended to advance the sustainability agenda. One of our most notable partnerships is with the UN as members of the Global Compact.

Looking into the coming years ahead, there is no doubt that the UN Sustainable Development Goals (SDGs) will be a key driver for the transition towards a sustainable and clean energy economy. The SDGs offer a universal plan to address economic, social and environmental dimensions of sustainable development.

#### Sustainable products

A single Vestas wind turbine will generate around 25 to 50 times more energy than it uses in its entire lifecycle and return this back to society. And, a single Vestas wind turbine only emits around one percent of carbon dioxide when compared to a coal power plant. However, it's important that we acknowledge that when producing solutions to harness wind energy a small negative impact on the environment is made. Vestas is committed to reducing this impact to the extent possible together with our suppliers and customers. This is achieved through a range of initiatives and programs that simultaneously reduce stress on the environment and improve business case certainty for our customers.

# **Carbon footprint**

## Product target for 2016-20

Even though wind energy's lifecycle carbon footprint is extremely low when compared to other sources such as coal, oil and gas, Vestas continuously strives to improve the environmental performance of its production and operations in order to further improve product performance.

The target for reduction in product carbon footprint of 5 percent by 2020 from a baseline of 6.9 grams  $CO_2$  per kWh in 2015, has been met in 2017. Carbon footprint has been reduced by 7.1 percent  $^{1)}$  on wind turbines on the 4 MW platform. This is primarily due to significantly increased energy production in all wind classes and optimised wind turbine design, leading to lower material requirement per kWh.

As such, a new target is established to reduce carbon footprint by 10 percent by 2020 from a baseline of 6.60 grams  $\rm CO_2$  per kWh in 2017. The carbon footprint performance has been adjusted from the 2015 baseline, which gives a slight increase in  $\rm CO_2$  emissions due to these accounting changes.

In order to further reduce its carbon footprint, Vestas needs to continue improving and optimizing wind turbine performance through technology development and innovation, as well as lowering material and energy consumption in our factories and within the supply chain.

#### Product achievements for 2011-15

Results released in Q3 2015, which have been externally reviewed, confirm that the turbine's environmental performance has improved significantly; where the carbon footprint of the V112-3.3 MW turbine has reduced by over 15% to 5.9 grams of  $CO_2$  per kWh.

The reasons for improvements are firstly due to environmentally-led initiatives. Vestas has introduced a take-back scheme for customers to safely dispose worn-out switchgears. This avoids potential release of a highly potent greenhouse gas, called SF6 gas, which is reclaimed. Secondly, the wind turbine has undergone significant design improvements which have had a great impact on performance, for example, through implementing. an increased generator rating that has increased from 3.0 MW to 3.3 MW, leading to increased energy production of the wind turbine, as well as the design optimisation giving reduced material requirements, particularly in relation to the turbine tower and foundations.

Today, Vestas contributes approximately seven per cent of the total  $\mathrm{CO}_2$  emission for the V112-3.3 MW turbine. Of the remaining amount, approximately 85-90 per cent is contributed by material and component suppliers, and 5-10 per cent is for transport of materials and components for construction, decommissioning and recycling.

#### **Quick facts**

#### Target for 2020:

# Reduce Carbon Footprint by 10%

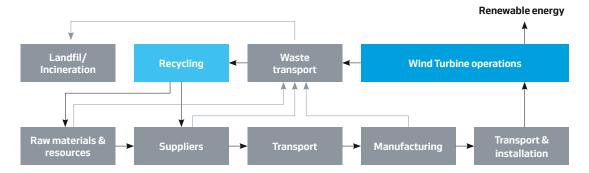
In 2018: 6.6 g CO<sub>2</sub>/kWh\*

The sum of the net greenhouse gas emissions that contribute to global warming. Quantified by 5.95 grams CO<sub>2</sub> equivalents/kWh.

\* Baseline is the Life Cycle Assessment performed on the 4MW Platform (Mark 3A/B) which accounts for turbine performance in all wind classes: V117-3.45 MW (IEC1B, 10 m/s), and V126-3.45 MW (IEC2B, 8.5 m/s)

1) Results are based on the ISO LCA reports published in July 2017 for the V112-3.45 MW (IEC1a), V126-3.45 MW (IEC2a) and V136-3.45 MW (IEC3a).

# Life Cycle Assessment scope



#### Life cycle assessment

Vestas strives continually to improve people's lives through having a responsible interaction with the environment, respect for society and a productive economy. To make that goal a reality Vestas works with Life Cycle Assessments (LCA) to develop increasingly energy-efficient products and production hilst mitigating the environmental impacts throughout the turbine's lifetime.

Transparency, in all instances, and especially in regards to the environmental impacts and benefits of wind power, is vital to affirm Vestas' product performance and financial competitiveness when stating the Cost of Energy.

Since 1999, Vestas has been developing Life Cycle Assessments of wind power to give a 'cradle to grave' evaluation of the environmental impacts of Vestas' products and activities. These concentrate on two key actions:

- · Document the environmental performance of Vestas wind turbines
- Analyse the results to improve or develop wind turbines with less environmental impact

The studies assess a wind turbine's entire bill-of-materials accounting for the approximately 25,000 parts that make up a wind turbine. In a Life Cycle Assessment, a complete wind power plant is assessed up to the point of the electricity grid, including the wind turbine itself, foundation, site cabling and the transformer station.

# **Available reports**

Current Portfolio

	Year
V90-1.8/2.0 MW	2011
V100-2.0 MW	2015
V110-2.0 MW	2015
V116-2.0 MW	2018
V120-2.0 MW	2018
V90-3.0 MW	2013
V105-3.45 MW	2017
V112-3.45 MW	2017
V117-3.45 MW	2017
V126-3.45 MW	2017
V136-3.45 MW	2017

#### **Energy payback**

#### Comparing energy payback

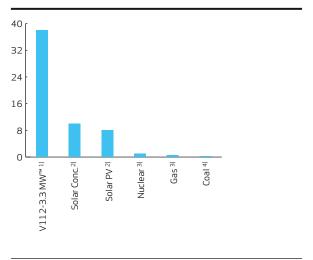
The long-term impact on the environment for a wind turbine's life cycle of 20 years is minimal when compared to that from average European electricity production by other means.

The energy balance of a wind power plant shows the relationship between the energy requirement over the whole life cycle of the power plant (i.e. to manufacture, operate, service and dispose) versus the energy generated by the wind power plant. This energy payback period is measured in 'months to achieve payback,' where the energy requirement for the life cycle of the power plant equals the energy it has produced. Alternatively, energy payback may be measured by 'number of times payback,' where this shows the number of times more energy the wind plant generates over its lifetime versus the amount consumed during its lifetime.

For Vestas wind turbines, the breakeven period generally ranges from around five to 12 months. For instance, a V112-3.3 MW wind power plant has a payback period of  $6 \frac{1}{2}$  months for medium wind conditions. While over the life cycle of a V112-3.3 MW wind power plant it will return 38 times more energy back to society than it consumed. So when 1 kWh is invested in a wind energy solution you get 38 kWh in return. Whereas if you invest 1kWh in coal you typically get 0.28 kWh in return 1.

## Energy payback by energy source

Number of times



#### Sources:

- 1) Vestas, (2015). Life Cycle Assessment of Electricity Production from an onshore V112-3.3 MW Wind Plant 21 September 2015, version 2.1. Vestas Wind Systems A/S, Hedeager 42, Aarhus N, 8200, Denmark.
- The Offshore Valuation: A valuation of the UK's offshore renewable energy resource.
   Published in the United Kingdom 2010 by the Public Interest Research Centre. ISBN 978-0-9503648-8-9.
- 3) PE International (2012). PE International GaBi 6 databases 2011, LBP, University of Stuttgart and PE INTERNATIONAL GmbH.

#### Material use

By knowing how Vestas' products and materials contribute to the environmental performance of the wind plant it is possible to make fact-based and informed decisions that will minimise overall environmental impacts. Life Cycle Assessment is used to provide the detailed knowledge regarding the material composition of the wind plant from a life cycle perspective. The figure shows a typical material breakdown of Vestas turbines. Typically, for example, a V112-3.3 MW turbine which is composed of around 86% metals (e.g. steel, iron, copper and aluminium), 12% polymers and composite materials, and the remainder a mixture of electronics/electrical items, lubricants and fluids, etc. A brochure of material use can be downloaded here for all turbines.

# Rare Earth Elements from a Life Cycle Assessment perspective

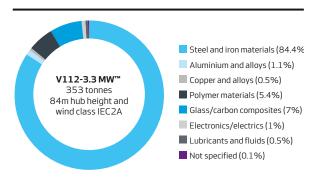
Rare earths elements are naturally-occurring elements that, once mined and processed, can be used in a variety of industrial applications such as permanent magnets in wind turbines, hybrid car motors, components for military hardware and other high-tech applications.

In Vestas, rare earth elements are used in the magnets found in the towers of all new models of Vestas turbines, whereas rare earth elements used in permanent-magnet generators are used in the older GridStreamer™ turbine models (i.e. the V112-3.0 MW and the 2.0 MW GridStreamer™ platform) and are used in the EnVentus platform. Compared to older permanent-magnet generators, the EnVentus generator uses less light rare-earth material per MW and has eliminated use of heavy rare earth materials altogether. The rare earths elements are used to improve the performance of turbines by making the generators more efficient and more grid-compatible. This allows Vestas to reduce the overall size of the generator and powertrain therefore using fewer other resources (such as steel and structural materials, etc.) which creates a smaller carbon footprint.

It is also important to understand the difference between different types of turbine designs and how each design uses rare earths elements. There are two types of turbine drive train concepts using rare earth elements: conventional geared drive train and direct-drive (without a gearbox). The amount of rare earths elements used in direct-drive turbines is substantially higher – up to 10 times as much as a generator in a conventional drive train. Today, all Vestas turbines are based on proven technology using conventional drive trains.

The contribution of rare earth elements used in the turbine generator magnets, and also in the magnets used in the tower, make a negligible contribution to total resource depletion, contributing below 0.1% of total life cycle impacts 1.

# Material breakdown of a V126-3.3 MW™ wind turbine Percent



Source: Vestas, (2014). Life Cycle Assessment of Electricity Production from an onshore V112-3.3 MW Wind Plant – 6 June 2014, Version 1.0. Vestas Wind Systems A/S, Hedeager 42, Aarhus N, 8200, Denmark.

#### **End-of-life solutions**

Constantly and simultaneously lowering the Cost of Energy for wind and the environmental impact of wind power is the focus of end-of-life solutions. Through research and application on how best to recover and recycle the various components and materials in a wind turbine, after its power production ceases, the end-of-life phase enhances the overall environmental performance seen from a lifecycle perspective.

The studies also supplement knowledge on how best to design the next generation of wind turbines from an environmental perspective, as well as, how to gain the most value at end-of-life from both existing turbines and new turbines being developed.

#### Product waste

#### Product target for 2016-20

In 2016 the target for recyclability was replaced with a measure for the amount of product waste per kWh. It indicates the materials or components not recycled or reused at end-of-life.

Vestas' target for product waste has been met and significantly exceeded, achieving an improvement of 12.5 percent, compared to a target of at least 3 percent versus a 2015 baseline. This is primarily driven by advanced blade design and construction increasing wind turbine energy production without increasing product waste in all wind classes.

A new target for product waste is adjusted to reflect the same scope as carbon footprint, with a target of 7 percent reduction by 2020 versus a baseline of 0.178 grams waste per kWh in 2017.

On the road to achieving 100 percent recyclability, the composite materials of the blades comprise the largest component yet to be made recyclable. To address this issue, Vestas continues to work in the DreamWind project (Designing Recyclable Advanced Materials for Wind Energy) that aims at developing new sustainable composite materials for blades; a project initiated in 2016.

In 2013 Vestas joined the GenVind Innovation Consortium to develop enabling technologies for a sustainable recycling of plastic composites and demonstrate the reuse of composite waste.

In 2011/12, Vestas carried out a complete dismantling of a wind turbine nacelle to trace additional possibilities for increasing the recyclability rate of Vestas' wind turbines.

#### **Quick facts**

#### Target for 2020:

# Reduce Product Waste by 7%

In 2018: 0.178g Waste per kWh\*

A material or component which is not recycled or reused at endof-life. Quantified by grams Waste per kWh.

\* Baseline is the Life Cycle Assessment performed on the 4MW Platform (Mark 3A/B) which accounts for turbine performance in all wind classes: V117-3.45 MW (IEC1B, 10 m/s), V126-3.45 MW (IEC2B, 8.5 m/s) and V136-3.45 MW (IEC3B, 7.5 m/s).

#### **Product responsibility**

Vestas' wind turbines, options and service offerings are the result of not only a thorough development process but also comprehensive analysis of market forecasts. The top-level Vestas process which allows us to fulfil our customer requests is known as the Vestas product market

strategy. The product market strategy is the result of a complex series of analyses including market forecasts, customer trends, competition, technical predictions and grid requirements. Macro-economic factors such as national government targets for renewable energy are also studied. Based on this input, a series of strategic decisions are made regarding which products, technologies, configurations and service offerings to make available in which markets and when. By involving relevant stakeholders in the development process, requirements can be built into the design of the products at an early stage.

By knowing how Vestas' products and materials contribute to the environmental performance, it is possible to make fact-based and informed decisions at an early stage in the product design and development phases. Life Cycle Assessment is used to provide in-depth knowledge regarding the environmental 'hot spots' of the wind plant life cycle i.e. from raw material production, through to manufacturing, operation, servicing and plant decommissioning.

When designing our products, sustainability requirements are taken into consideration and ensured through Vestas' development process, the 'Vestas Way to Market'.

#### **Vestas Way to Market**

Vestas' Way to Market is Vestas' global framework for planning, managing and executing technology and product development projects and actively involving the whole value chain in our company. As such, we strive to ensure that these projects start and end with customer requirements in focus.

The core of Vestas Way to Market is the stage-gate process consisting of seven stages and seven gates with a group of gatekeepers at each stage. The gatekeepers decide whether to let the project move on to next stwage, whether to rethink some aspects or stop the project. This process ensures, amongst other things, that the specification requirements are met. The specifications are based on internal Vestas commitments such as Vestas' chemical black list, international legislation such as the European directives, and internationally recognised codes and standards such as the ASMA, ISO and IEC.

In order to ensure regulatory compliance, it's our ambition to share knowledge of how regulatory requirements, including transportation and HSE requirements and grid codes requirements as well as standards and certification should be complied with in the respective departments in Vestas. The purpose is to strengthen Vestas' product regulatory compliance to ensure market access.

It is vital to identify business risks early in the development process in order to ensure that the project will not have a negative impact on Vestas' business and strategy, reputation etc. as well as on our customers' business. Risk management is a continuous process throughout the entire project, and a business risk overview is presented and reviewed at each gate meeting. It is the project manager's responsibility to identify and assess key risks and present mitigation actions. The risk analysis must include input regarding health and safety aspects, product and commercial issues, process risk analyses as well as an investigation into the IPR issues.

## **Continuous improvement**

Part of Vestas' business approach is to constantly develop new and better technical solutions that can improve the performance of our current operating fleet or the safety connected to operating the products.

Use of new technical solutions will very often have a positive influence on the Lost Production Factor (LPF) for a given wind farm. The LPF is the share of the potential energy from the wind not harvested by the turbines. The LPF has been substantially reduced in recent years. The average LPF has been below two percent since 2012.

#### Operational impact

#### Renewable energy

As a company, Vestas aims to decrease our overall use of energy, increase our use of renewable energy, and use less carbon-intensive energy forms.

Vestas has a commitment to source renewable electricity where available, which is primarily done through local renewable power purchase agreements. The consumption of non-renewable electricity is compensated for with Vestas-owned wind power plants. Vestas' share of renewable electricity is today 100% and the objective is to stay at this level.

With focus on transforming the global energy market, Vestas joined RE100 in 2017. RE100 is a group of global companies dedicated to increasing demand for renewable energy and committed to sourcing 100% renewable electricity. The commitment to this collaborative initiative of influential businesses underlines Vestas' dedication to a future powered by renewable energy and our joint efforts to make renewable energy an easy choice for companies. Vestas already gets 100 per cent of its electricity supply from renewable energy, and commits to stay at this level even as our operations and electricity consumption grow.

## **Quick facts**

# 100% renewable electricity

#### Impact assessment

When establishing a wind farm, an important part of planning should be an assessment of the proposed location and how the proposed wind farm could potentially impact the surrounding environment. In many countries, environmental impact assessment is required by law, or is part of the environmental requirements of international financial institutions which support infrastructure projects.

In most cases Vestas' main business partner – our customers – have the primary responsibility for undertaking the environmental assessment and for developing the environmental management system for the wind plant. Vestas seeks to work closely together with our customers throughout the project life.

The environmental aspects of such an environmental assessment typically take into account direct and indirect impacts, including, for instance:

- · Landscape and visual impressions
- · Flora
- · Fauna (e.g. birds and bats)
- Noise
- Shadows

## Chemical management

Being in control of the chemicals and hazardous substances used in development, manufacturing and service of the turbines is part of our management system and essential for a sustainable company.

Only when actively working on finding safer and more environmentally friendly products does Vestas ensure a healthy workplace for our employees and minimum impact to the environment.

Chemical management at Vestas includes global procedures for approval of new chemicals, local instructions for handling, transporting and storing chemicals and a global chemical database for sharing knowledge from suppliers.

Vestas has, in cooperation with a global provider of chemical, regulatory and compliance information services, implemented a global chemical management system. This includes an online system where all employees can enter and obtain essential information about the chemicals and hazardous substances used in Vestas. Some of the essential information which is available to the employees in the database includes Safety datasheets (SDS's) and information about dangerous goods facilitating safe handling, usage, transport and disposal.

In order to adapt to continuously changing chemical legislation globally like GHS/CLP and REACH, Vestas has updated our criteria. Two lists apply; a Material and Chemical Blacklist which identifies substances that are prohibited by law and a Material Restricted list which aims to phase out substances in our product and manufacturing and service processes. The restricted list is based on the decision by Vestas management to limit the use of the most hazardous substances.

Vestas requires our suppliers to fulfil the requirements on the Chemical and Material Blacklist for all products delivered to Vestas. Vestas cannot buy products containing substances that are prohibited. If the product contains chemicals or materials restricted according to the Vestas Material Restricted list, an HSE evaluation must be performed by the supplier to ensure correct use of the chemicals and materials. Furthermore, it is expected that the supplier creates an action plan for phasing out these restricted substances and finding alternatives. In parallel, Vestas needs to assess if a time bound dispensation can be signed off and/or if the product can be substituted.

#### Selected environmental data for 2018

In 2018 Vestas' energy consumption was divided into the following types:

# **Energy consumption by source**

1,000 MWh

	2018
Fuels for heating (direct energy)	
Oil	17
Gas	130
Indirect energy	
Electricity (100% renewable)	262
Heat (68% renewable)	36
Fuels for transportation	
Liquefied petroleum gas (LPG)	1
Diesel oil	123
Petrol	46

In 2018 Vestas' water consumption was divided into the following types:

#### Water consumption by source

 $1,000 \, \text{m}^3$ 

	2018
Fresh water withdrawal	
From municipal water supplies or other water utilities	397
From ground water	72
Fresh water from surface water, including water from wetlands, rivers and lakes	1
Non-fresh water withdrawal From surface water, including water from wetlands and oceans	0
Cooling water	
From surface water, including water from wetlands, rivers, lakes, and oceans	0

In 2018 Vestas emitted waste water to the following destinations:

#### Waste water

 $1,000 \, \mathrm{m}^3$ 

	2018
Treated by Vestas to public treatment facility	48
Treated by Vestas directly to environment	42
Non-treated waste water to public treatment facility	272
Non-treated waste water directly to environment	12

In 2018 Vestas' waste disposal was divided into:

# Waste disposal

1,000 Tonnes

	2018
Non-hazardous	74
Hazardous	7

In 2018 Vestas disposed waste to the following destinations:

# Waste disposal

1,000 Tonnes

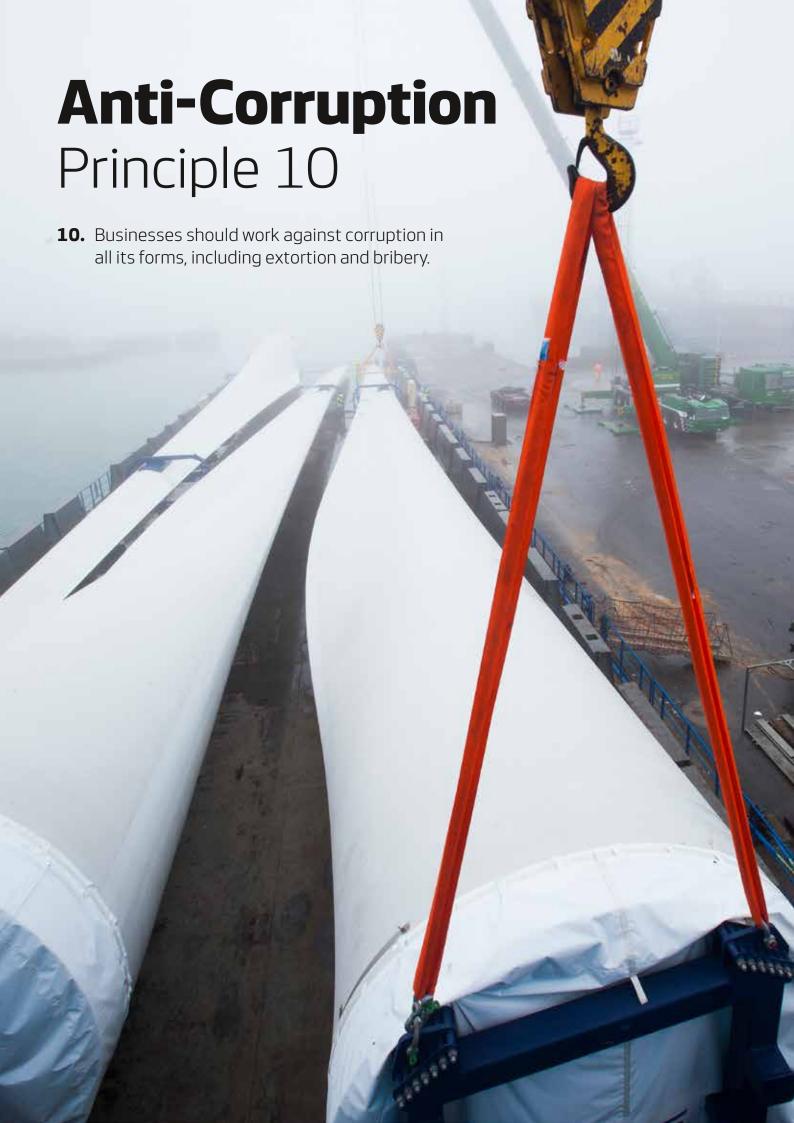
	2018
Recycling	42
Incineration	19
Landfill	20

In 2018 Vestas had the following air emissions:

#### Air emissions

Tonnes

	2018
VOC	264



# Anti-corruption

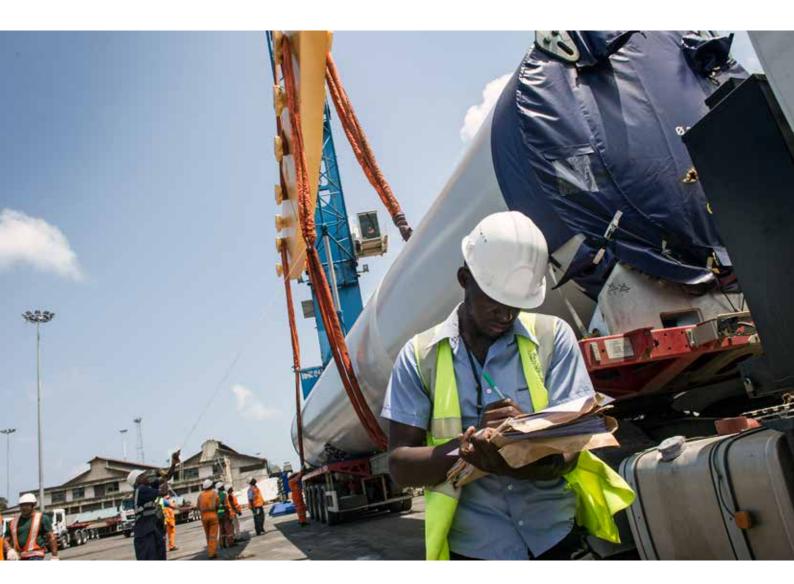
## **Business ethics**

Vestas has been a signatory to the business-driven global anti-corruption initiative Partnering Against Corruption Initiative (PACI) within the World Economic Forum since 2010. As a signatory to PACI, Vestas firmly believes that corruption cannot be countered without leadership and commitment from the top management.

The Vestas Code of Conduct has a zero tolerance towards any form of bribery and any form of corruption. Vestas works actively to assess the company's exposure to risk of bribery and corruption and establish robust preventive procedures based on these assessments.

Vestas continuously strengthens its supporting business ethics guidelines and procedures to enable Vestas to abide by anti-corruption laws and regulations applicable to the company. The aim of Vestas' due diligence program for its business partners is to ensure that Vestas' business partners hold at least a similar business ethics standard to that of Vestas.

All salaried employees are required to complete a Code of Conduct e-learning training as part of their induction. Face to face business ethics training is provided to employees in high risk countries or in high risk business areas.





# Managing sustainability

To encourage a company-wide sustainability culture, Vestas invests in nurturing and developing knowledge and skills of our employees, so everyone is empowered to work towards a shared vision of sustainability. At every level of the organisation awareness is raised to minimize sustainability risks. Decisions should always take into consideration not only the financial impacts, but also the ecological and social consequences.

#### Stakeholder engagement

As a global company, Vestas has many stakeholders who are interested in our sustainability performance.

We understand that our sustainability performance is an important determinant of our relationship with stakeholders. We proactively engage with stakeholders to understand their needs and concerns, and in return we address these in our decision making process.

Transparency is a fundamental concept in our engagement strategy and this underpins our different engagement efforts. We publicly disclose key sustainability information in our annual report and on Vestas.com whilst also entering into more detailed dialogues with key stakeholders.

We actively collaborate with stakeholders to positively influence not only our own sustainability performance but also that of the wider communities we operate in. For example, Vestas took a leading role in the Global Wind Organisation, developing a standard for Basic Safety Training within the framework of the organisation. Vestas has been a driving force in establishing the Sustainability forum in the Wind-Europe association for consolidating best practice in the wind power industry and driving improvements. As a first outcome, two public papers were published in spring 2017 consolidating insights on "Blade waste" and "Circular economy".

Vestas, at the Group level, has both categorised and prioritised stakeholders in an effort to rationalise and focus engagement efforts. Initially stakeholders are categorised based on their relationship

with Vestas, for example, customers, NGOs and policy makers. Subsequently, each stakeholder is considered in the context of a number of criteria to determine how relevant Vestas' sustainability performance is to them and conversely how important they are to Vestas' sustainability performance. Engagement can range from forming active partnerships to address common sustainability issues to a more passive engagement through, for example, the publication of the annual report. The priority given to a stakeholder is used to determine the most appropriate approach to engagement.

Our ambition to build closer partnerships and support our stakeholders is reflected in Vestas' materiality analysis.

## Main stakeholders

# Our main stakeholder groups

Here at Vestas, we have many different stakeholder groups with whom we interact. These include customers, shareholders, employees, policy makers, suppliers and sub-suppliers, non-governmental organisations, local communities and the media.

#### 1. Customers

We prioritise customers as our number one stakeholder group, and to ensure an open and honest dialogue we have implemented a Customer Loyalty survey. Vestas is working with customers on an on-going basis to address sustainability issues.

# 2. Shareholders

Transparency is at the heart of our outreach to the investment community. The stock market experts look at Social, Economic, Environmental and Health & Safety initiatives to rate listed industrial companies.

#### 3. Employees

Employees are Vestas' most important asset and we have a range of offerings aimed at them to ensure continuous learning and development as well as competitive benefits.

We reach out to employees through different channels to ensure that they are engaged and committed to Sustainability issues. One channel is Vestas' Safety Walks. A Safety Walk is an opportunity for managers in production, service or administration to discuss safe behavior and ways of improving safety with employees in their actual job function. We also use our Employee Survey to measure the employees' perception of their working environment. The survey is followed up by the drafting of action plans in all departments in order to act on the feedback we receive.

To ensure that employees can report malpractice or ask questions they may need an answer to if faced with ethical dilemmas at work; a Whistle-blower system, named EthicsLine is available. Except where specifically prohibited by local law anyone filing a report may remain anonymous.

#### 4. Policy makers

At Vestas, we work closely with political stakeholders to drive the market for wind energy. As the energy industry is a regulated industry, we are naturally in dialogue with governments, political leaders, civil servants, interest groups and non-governmental organizations all over the world. We offer advice and information about the benefits and potential of wind power and continuously engage with policy makers in the regions and countries where we operate advocating reforms and providing best practice experience.

#### 5. Local communities

The acceptance and trust from local communities where the wind farms are erected are important elements to obtain and maintain the social license to operate. Obtaining and maintaining the social license requires, for example, timely and effective communication, meaningful dialogue, sensitivity to local cultural norms, creating realistic expectations, and developing fair grievance mechanisms.

Vestas works together with our customers to gain and maintain the social license. We do this as a part of our Social Due Diligence. Activities related to obtaining and maintaining the social license can differ depending on the local context and the project set-up. In order to identify and prioritise activities, Vestas primarily focuses on education, training and job possibilities (linked to SDGs 4 and 8) in the local area.

#### **Material issues**

Understanding our stakeholders' opinions and priorities enables us to make better decisions and ensure that we are both a successful company and a responsible member of the community. We have therefore engaged with internal and external stakeholders to define what matters most to them and in doing so have identified what the material sustainability issues are for Vestas.

A materiality analysis is mapping topics and indicators that reflect the organization's significant economic, environmental, and social impacts. By identifying material issues we can focus our sustainability-related programs on the areas that are most important to Vestas and our stakeholders. The materiality analysis also influences how we report on sustainability issues. For example, we comment on the most material issues in the annual report and provide additional information and updates on Vestas.com.

The identification of material issues is performed through an internal stakeholder consultation involving many parts of the organization. To prioritise issues, we use internal knowledge of stakeholder expectations, Vestas surveys, external stakeholder sustainability reports, consultant input and global sustainability studies.

The materiality analysis is enhanced by consulting directly with external stakeholders such as customers and investors. Doing so gives us additional insight into their priorities and provides a useful platform for meaningful dialogue.

In 2016, the Vestas materiality analysis has identified a range of sustainability issues. Amongst these, Business Performance, Innovation, Health & Safety, Product Environmental Performance and Local Community Development are understood to be some of the most important sustainability issues.

## Management systems

At Vestas, all employees must work according to Vestas Management System, which sets the standards for the environment and occupational health and safety.

Vestas has established, documented and implemented Vestas Management System (VMS) as an integrated management system. The VMS is maintained and continually improved to support the business strategy, the quality, environment and health & safety policy, Code of Conduct and CSR policies by setting objectives, analysing audit results, performance data, corrective actions, risks and opportunities and performing management review.

The Vestas Management System serves to put all external and internal Vestas sustainability requirements systematically, efficient and effectively into practice. It is Vestas' intent to make sustainability an integral component of all business processes.

In order to ensure continual improvements for sustainability performance in each area, our daily working practices are governed processes and supported by various tools – including databases and IT systems.

For example, in order to enhance communication we insist on regular internal reporting on all significant environmental aspects and reporting of health, safety and environmental incidents through our Incident Management System. This helps us identify and investigate the most relevant issues to be addressed. The solutions implemented to these issues help to continuously improve the overall Vestas sustainability performance throughout the organisation.

#### Certificates

Vestas is fully covered by an umbrella certificate for the management system standards OHSAS 18001:2007, ISO 14001:2015 and ISO 9001:2015.

# Reporting

At Vestas we believe in being open about the way we operate with regard to the sustainability aspects of our business. To demonstrate this, we report and document the facts using readily accessible tools.

The annual report describes our overriding objective for our work in the context of sustainability. It also contains statistics on key indicators, as well as expectations for the future. Vestas' Communication on Progress to UN Global Compact consists of the Annual Report combined with additional information about Vestas' sustainability initiatives at Vestas.com. A pfd is prepared of the additional information on the web and both documents are uploaded to UN Global Compact.

Quarterly reporting gives detailed data on significant environmental and health and safety aspects.

#### Recognitions

- · Member company of the FTSE4Good index
- · Member company of the STOXX Global ESG Leaders
- Member company of the MSCI Indices (ESG, SRI, Environmental, Climate)
- Vestas Wind Systems has been reconfirmed as a constituent of the Ethibel Sustainability Index (ESI) Excellence Europe since 21/09/2018.
- · Carbon Disclosure Project

#### **GRI** and **GC** index

Vestas signed up to the United Nations Global Compact in 2009. We report on our implementation of the ten Global Compact Principles in the areas of human rights, labour, environment and anti-corruption.

Based on the guidance and requirements of the Global Reporting Initiative, Vestas' reporting contains Standard Disclosures from the GRI Sustainability Reporting Guidelines in the combined reporting in the Annual Report and online.

The index lists references in the Annual Report as well as online information. In addition to the GRI reporting elements, the index also contains details of topics relevant to the Global Compact Principles. The ten principles have been linked to the GRI indicators.

Vestas is implementing the UN Global Compact Advanced Programme.

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