

Vestas[®]

Wind. It means the world to us.[™]

Vestas Corporate Slide Deck



Vestas®

Wind. It means the world to us.™



Fun facts on Wind power and Vestas Wind Turbines

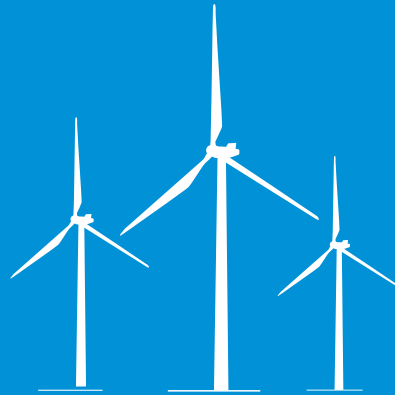
Global Marketing – Value Marketing

Vestas is the energy industry's global partner on sustainable energy solutions



+28,000

We employ more than 28,000 people worldwide and have 40 years of experience with wind energy



+55,000

We have a total of 55,941 combined turbines under service, or more than 144 GW



+ 85,000

We have a total of 85,335 turbines or more than 164 GW of installed wind power capacity in 87 countries across all continents



€ 14.5bn

Vestas' revenue for the full year 2022 was EUR 14.5bn

Agenda

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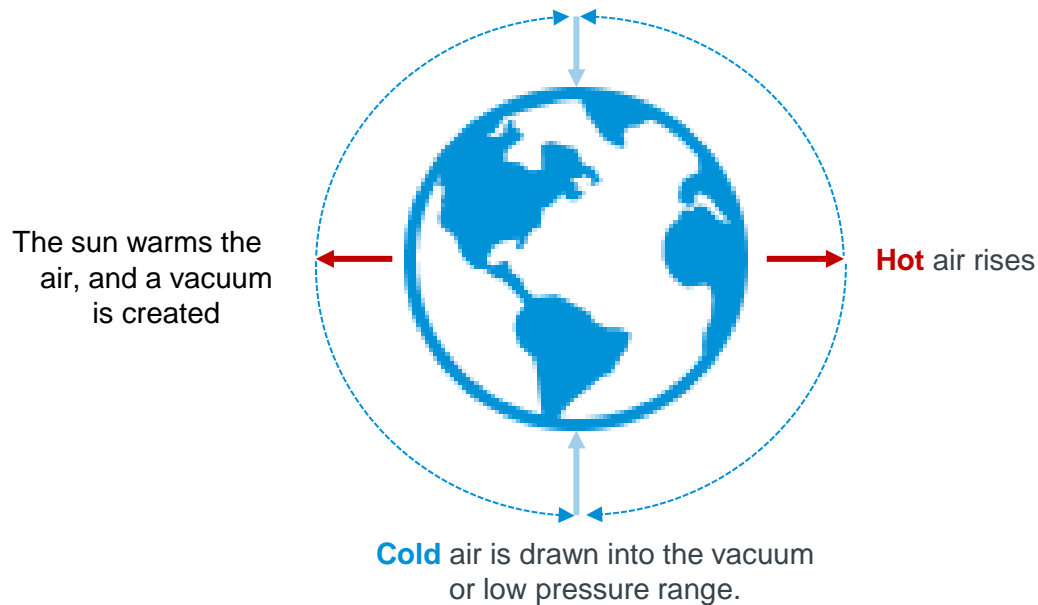
What is the wind?

The physics of the wind

Wind is caused naturally by an **uneven heating of the atmosphere** by the sun, the irregularities of the earth's surface and the rotation of the Earth. The sun is the main factor in the wind creation process.

The **wind flow** is the **motion energy caused by the movement of the air**, which is modified by the earth's terrain (mountains, valleys, cliffs...), bodies of water, and the vegetative cover.

Air circulation on the earth (without rotation).



The air moves

because it has different temperatures, and cold air is heavier than hot air.

174,000,000 GWh

Energy received by the earth from the sun every hour (approx.)

1%-2%

Of the energy transmitted from the sun is converted to wind energy

Wind power

Why the wind has energy and how do we capture it

What is the wind power?

Wind power is the **electricity generated** by harnessing the energy of wind. The **more velocity** and density the wind has, the **more energy** it will carry.

Every wind turbine is designed to **capture wind of a particular range of speeds**. For that reason, it is very important to know what is the range of wind speeds of every area with precision.

If we know where the wind blows harder...

we can place the wind turbines in the location where they can **produce more electricity**.



Macarthur Wind Farm, Australia

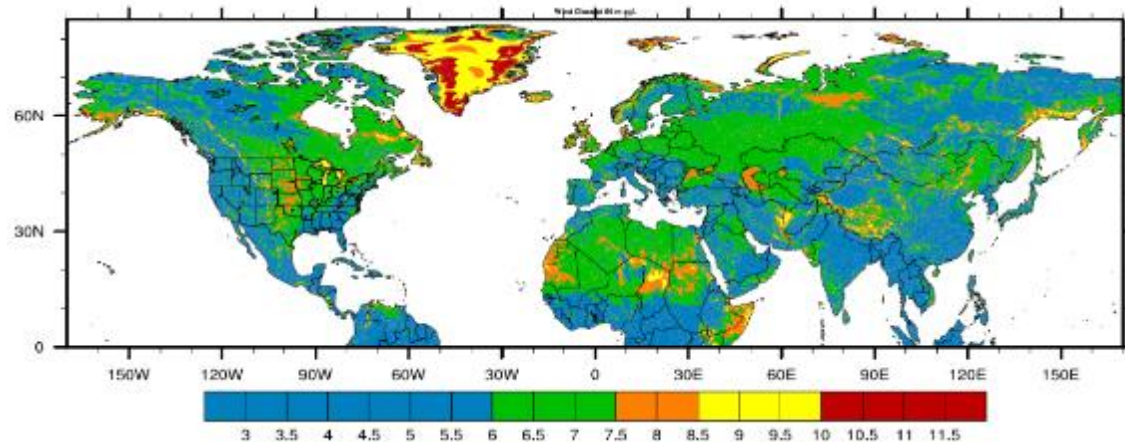
Wind Flow

Vestas monitors the wind flow across the globe

How do we know where the wind blows harder?

The **wind blows differently in every part of the world** because of the rotation of the earth and due to the irregularities of the landscape, which modify the wind flow.

In order to know the **range of speeds** and the **direction of the wind** in a certain area, Vestas' scientific team takes **millions of observations** of the atmosphere every day across the world.



Wind Speed (m/s). Vestas' Climate Library

50 million

Observations of the atmosphere are taken every day across the world by Vestas, building the **largest Wind & Climate Library in the world**

billions

of calculations per second are done by **Vestas' Super Computer**, facilitating the precision of our sites' planning

3 m/s

Speed from which a wind turbine can start to **generate electricity**

Wind Turbine placement

Where should we place the wind turbines to be able to capture more energy

Park Layout

As a rule of thumb, turbines in wind parks are usually spaced somewhere **between 5 and 9 rotor diameters** apart in the wind stream's direction, and between 3 and 5 diameters apart in the direction perpendicular to the wind stream.

Before determining where the turbines should be placed, Vestas siting experts realise **site assessments** for more than one year, placing measurement masts over the wind park area in order to obtain accurate information about wind speed and temperature.



As the measurement point vertically increases, **the wind's speed is higher**. But if there are two obstacles, such as mountains, the wind gets compressed and its speed increases considerably.

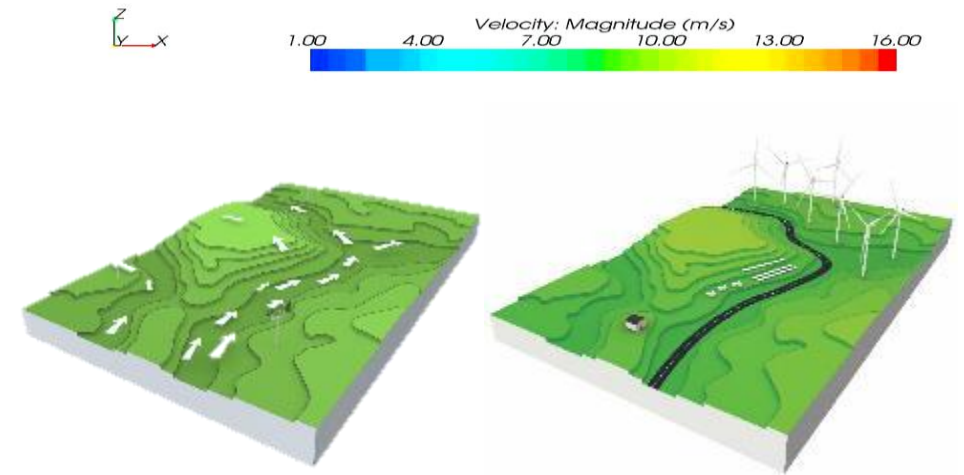
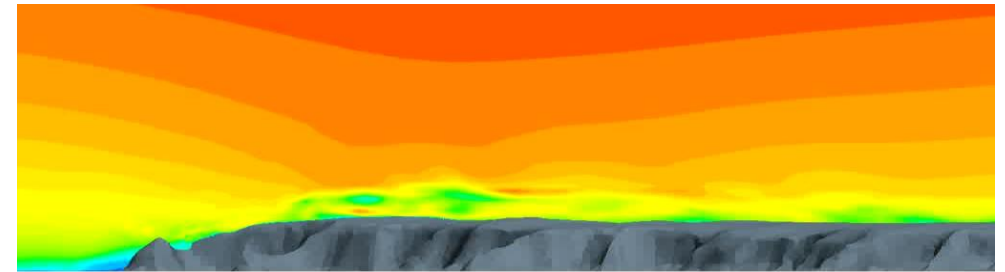


The wind is **strongly influenced by the presence of obstacles** in the landscape, such as buildings or hills.



The effect extends vertically to approximately **three times the height of the obstacle**, and downstream to 30 to 40 times the height.

Accelerated life-time simulation. Wind speed (m/s) depending on the landscape's irregularities.



Wind map for optimal met mast placement

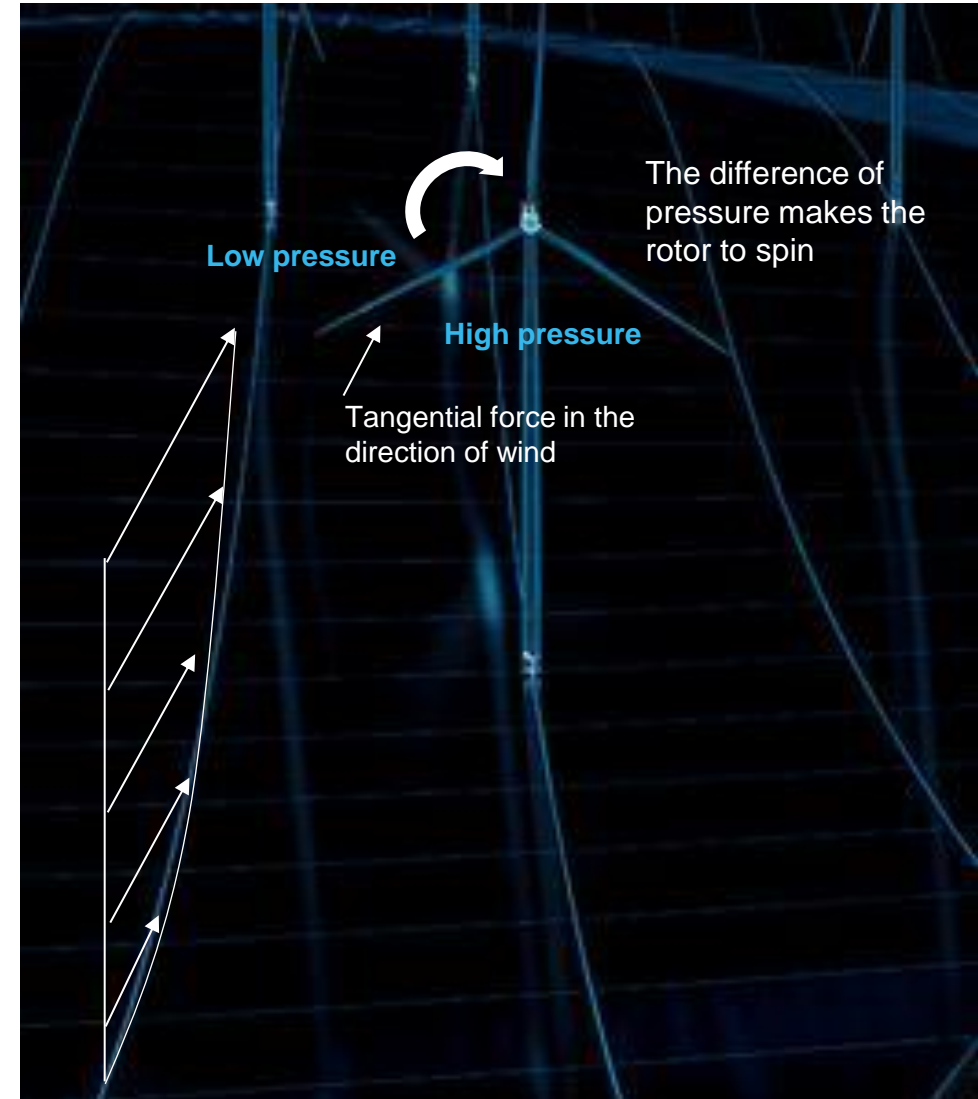
The rotation of the blades

The more velocity and density the wind has...

the more **power** is carried by the wind stream. Also, the **longer the blades** are, the more power they can capture.

For this reason, the higher the wind turbines are, the larger the swept area of the blades is, and more energy they can capture.

However, there is a limitation to that: no wind turbine can capture more than **59% of the energy of the wind** (Albert Beltz Law).



Wind speed distribution at this point

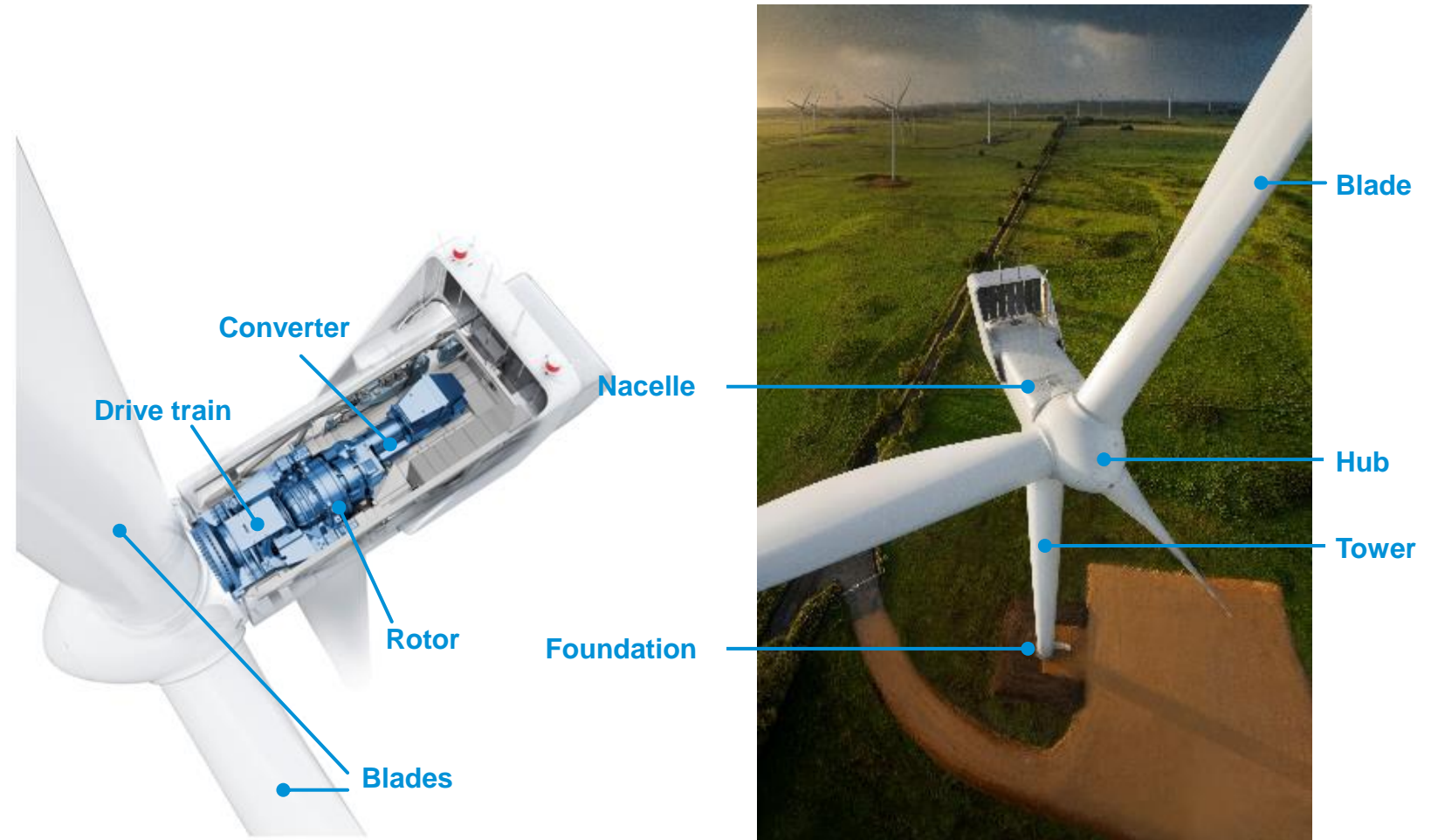
Capturing the power of wind

How does power go from blades to generator

The Wind power

is captured by the blades of a wind turbine, which provoke the spinning of the rotor.

Then, the generator placed inside the turbine's nacelle, converts the energy captured by the blades to electricity.



The transmission of power inside a wind turbine

How is wind power converted to electricity

How does the generator convert the movement of the blades into electricity?

- ✓ When the **blades spin**, they activate the movement of the **drive train** inside the nacelle, which provokes the movement of the **rotor** at a certain speed.
- ✓ Then, following the electromagnetism principles, **electricity is created** by the rotation of some magnets (rotor) inside a coil.
- ✓ The electric current generated by the engine has alternate direction, but to be able to **transport it to our homes**, we need it to have the same direction all the time. For that reason, the nacelles have a **converter** that transforms the direction of the electric current generated to the one we need.

Wind power

is the **electricity generated** by harnessing the energy of wind.

100 times

The **rotation speed of the rotor** multiplied by the gearbox to a 100 times the **blades' speed**.

250 km/h

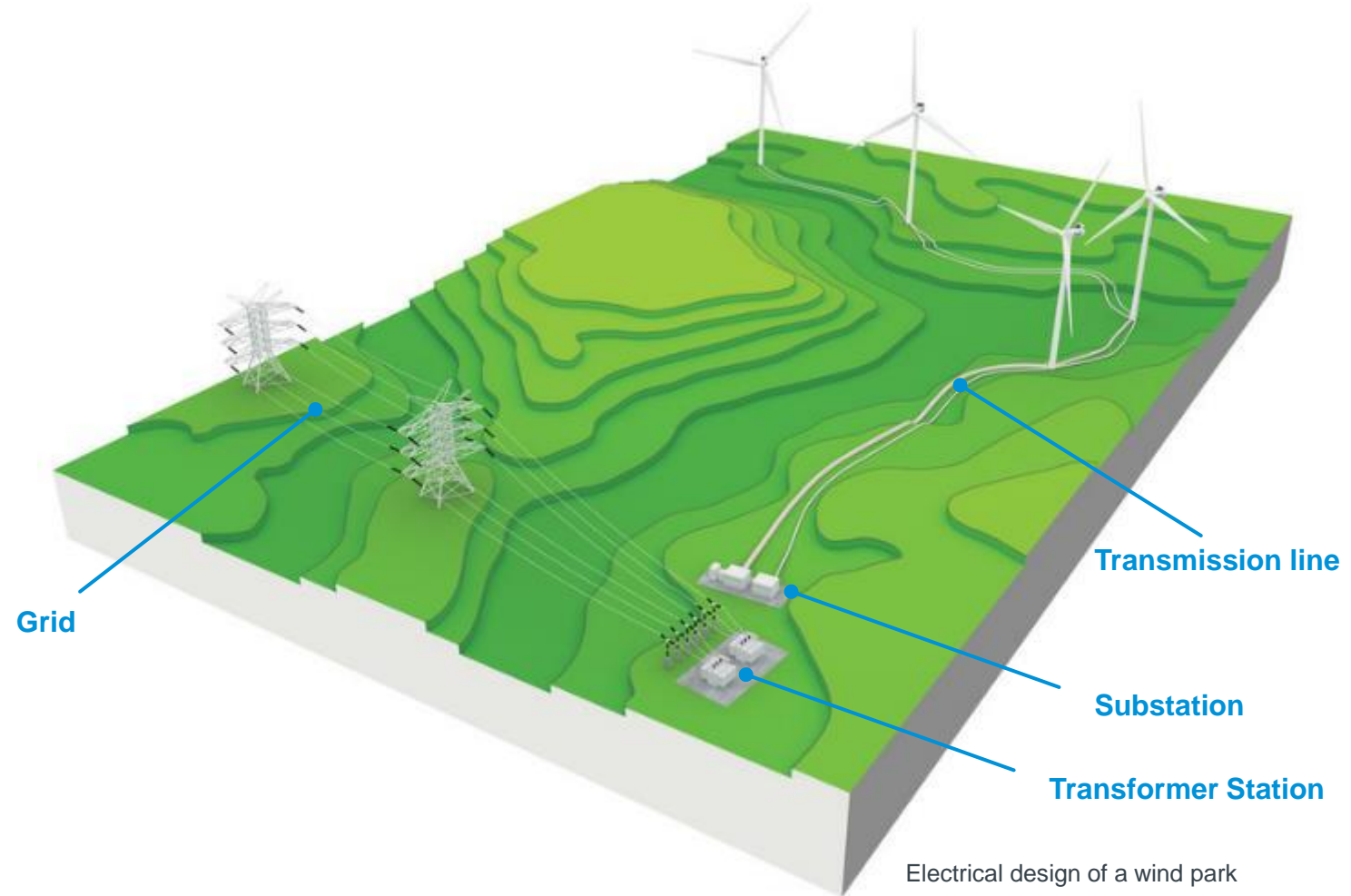
Average speed of the tip of a blade.

From the power plant to the end user

Transmission line and grid

How is the electricity brought to our homes?

- ✓ The **electricity** generated by the wind turbines is transmitted through wires underground, called, the **transmission line**, to a **grid management substation**, placed in the wind site. There, the voltage of the electric current is adapted to the grid, and directly connected to it grid.
- ✓ Once the electricity is in the **grid**, it travels all the way through the cables sustained by the voltage towers until it reaches every home. Then it is accessible by us, and we can use it through the sockets, light bulbs, electrical appliances... making our daily life better.



History of Wind Energy

From early systems to modern energy

The first wind energy systems

were built and used by an Ancient Civilisation in the Near East, Persia. They used sails connected to a **vertical** shaft, which moved a grinding stone for milling.

Horizontal axis wind mill

Was first introduced in Northern Europe in the Middle Ages. It was the first system to translate horizontal into rotation motion **through encasing gears and axles**.

Electricity generation from wind energy

Was achieved with the first wind turbines around **1880s**

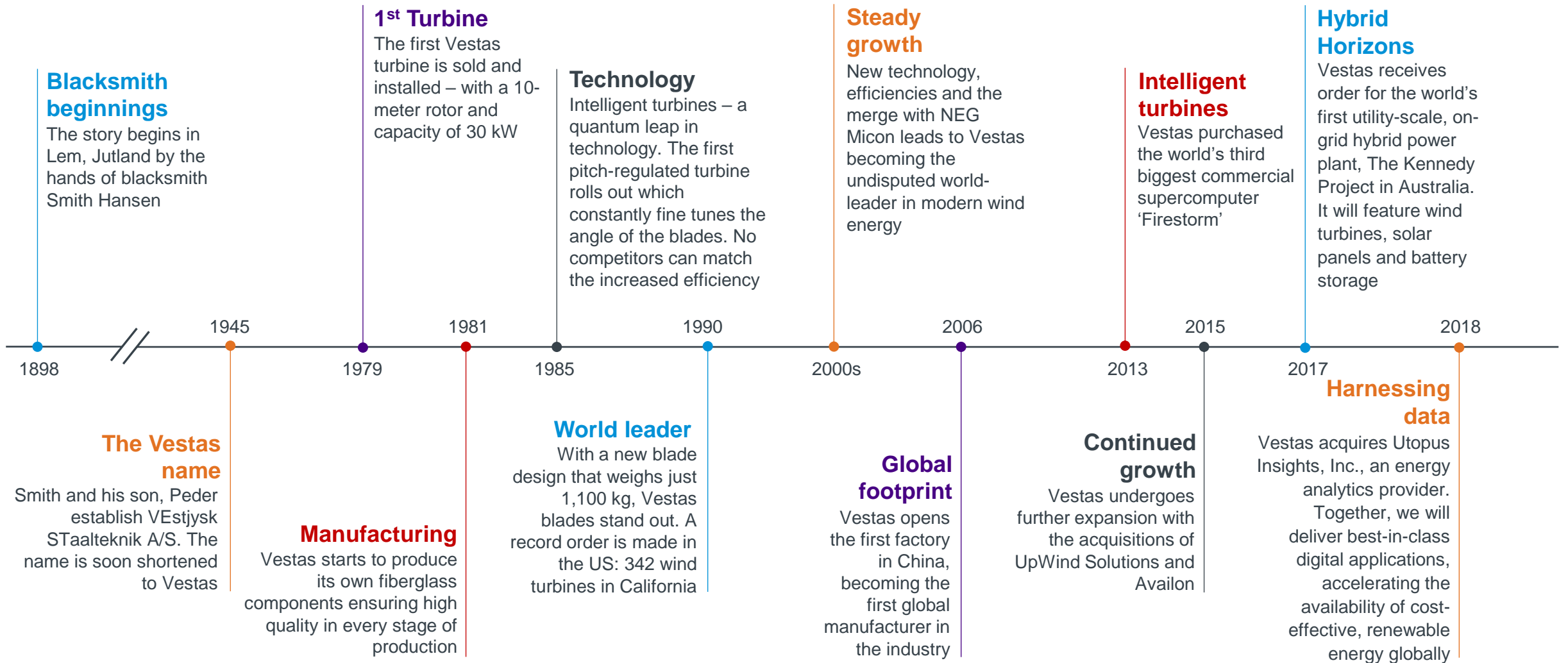


Vindkraftverken blir högre, större och mer effekt

	2010	2015	2020	2025	2030	2025, Offshore
MW / turbin	2,00	3,00	4,20	6,50	8,00	15,00
Kapacitetsfaktor	25 %	26 %	37 %	40 %	45 %	50 %
MWh / turbin	4 380	6 833	13 613	22 776	31 536	65 700
Totalhöjd (m)	130	150	200	240	260	250
Rotordiameter (m)	80	100	140	170	200	220
Tornhöjd (m)	90	100	130	155	160	140
Svepyta (m ²)	5 024	7 850	15 386	22 687	31 400	37 994
LCOE (öre/KWh)	ca 50	ca 40	ca 35	ca 30	ca 25	ca 40

The Vestas story

Technology, vision and leadership build the strongest brand in the industry

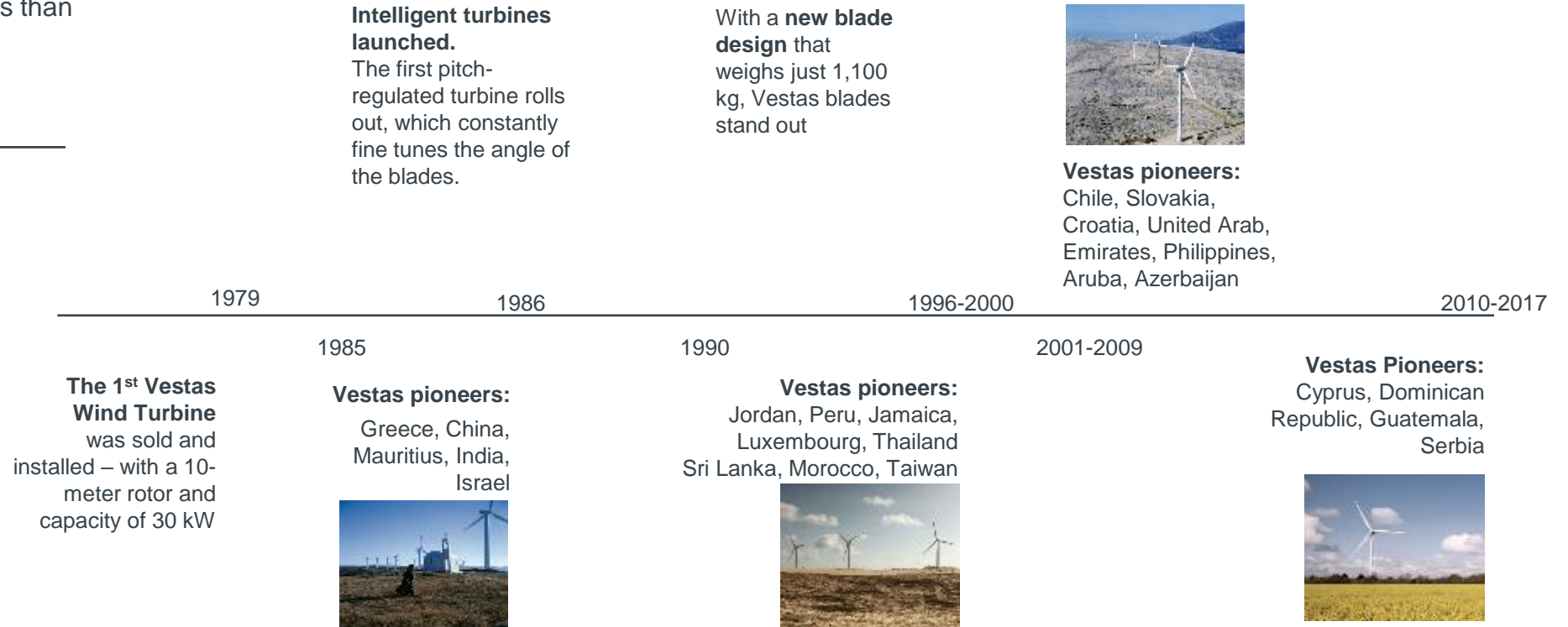


Vestas has pioneered the industry over the past 35 years

Vestas has succeeded in bringing renewable energy to 38 markets

Vestas is a wind power pioneer

since 1986 Vestas has installed the first wind power plant in more countries than anyone else



History of wind energy and Vestas Wind Turbines



Rongcheng, China, 1986

In 1986 Vestas installed three turbines in Rongcheng, Shandong Province, marking the establishment of the first ever wind power plant in China. These turbines ran safely for 29 years until retirement in 2015.

The success of the first wind power plant in China facilitated the establishment of the first Vestas office in Beijing in 1999. In 2005, Vestas began to build our largest integrated manufacturing complex in the world in Tianjin, producing generators, blades, nacelles and control systems.

Today, Vestas has installed more than 5,000 turbines in China. With our unparalleled track record, industry-leading know-how and proven experience, we will continue to be reliable and trustworthy partners of Chinese customers.

Site at a Glance

M100-110 kW
Turbine model

0.11 MW
capacity

1986
Installation Date



History of wind energy and Vestas Wind Turbines

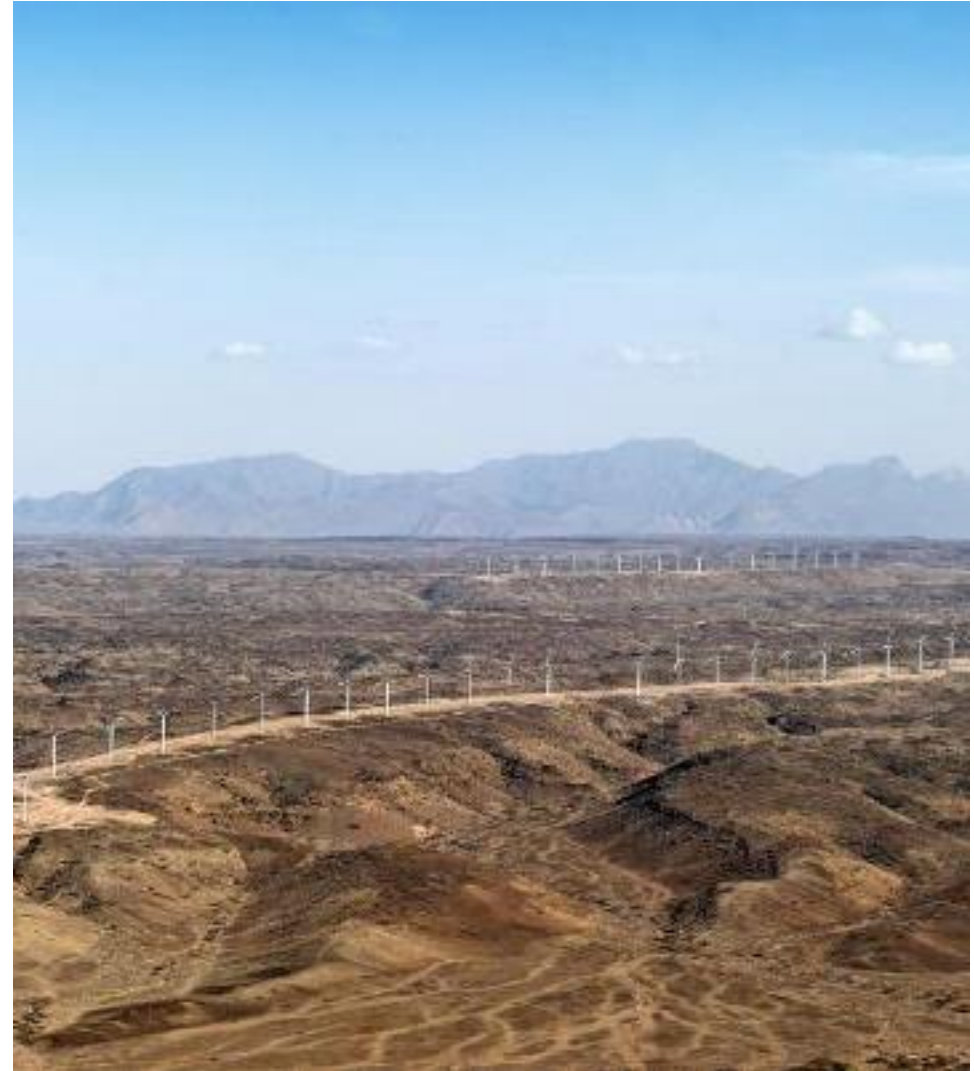


Kenya, March 2017

The 310 MW Lake Turkana wind park, the largest in Vestas' history by number of turbines, is a true testament to Vestas' strong capabilities in emerging markets.

The project will add more than 1,400 GWh of clean, reliable power to the Kenyan national grid per year. Based on current figures, Lake Turkana will supply approximately 15 percent of Kenya's electricity consumption. Early engagement meant greater optimization opportunities, ultimately arriving at one of the highest park efficiencies in the world.

Additionally, the project has improved access to the Lake Turkana area by establishing more than 200 km of roads. With a strong culture of safety, Vestas, along with its partners, ensured that the around 2,500 truckloads travelled the 1,200 km from Mombasa to the site seamlessly.



Site at a Glance

V52-850 kW
Turbine model

16 million
tonnes of CO2 saved

310 MW
Installed capacity

8.4 million
average household
needs will be covered

Vestas Wind Turbines, Today



+4,000 households*

Can be powered every year, in Europe, with only one **V136-3.45 MW™** Vestas Wind Turbine.



+110,000 tons of CO2*

Can be saved every year in Europe with only one **V136-3.45 MW™** Vestas Wind Turbine.



The yearly carbon consumption of around **11 million trees**

*Assumptions: One wind turbine, 100% availability, 0% losses, at an average wind speed of 7.5 m/s, k factor =2, Standard air density = 1.225, wind speed at hub height

Optimising the production of wind energy

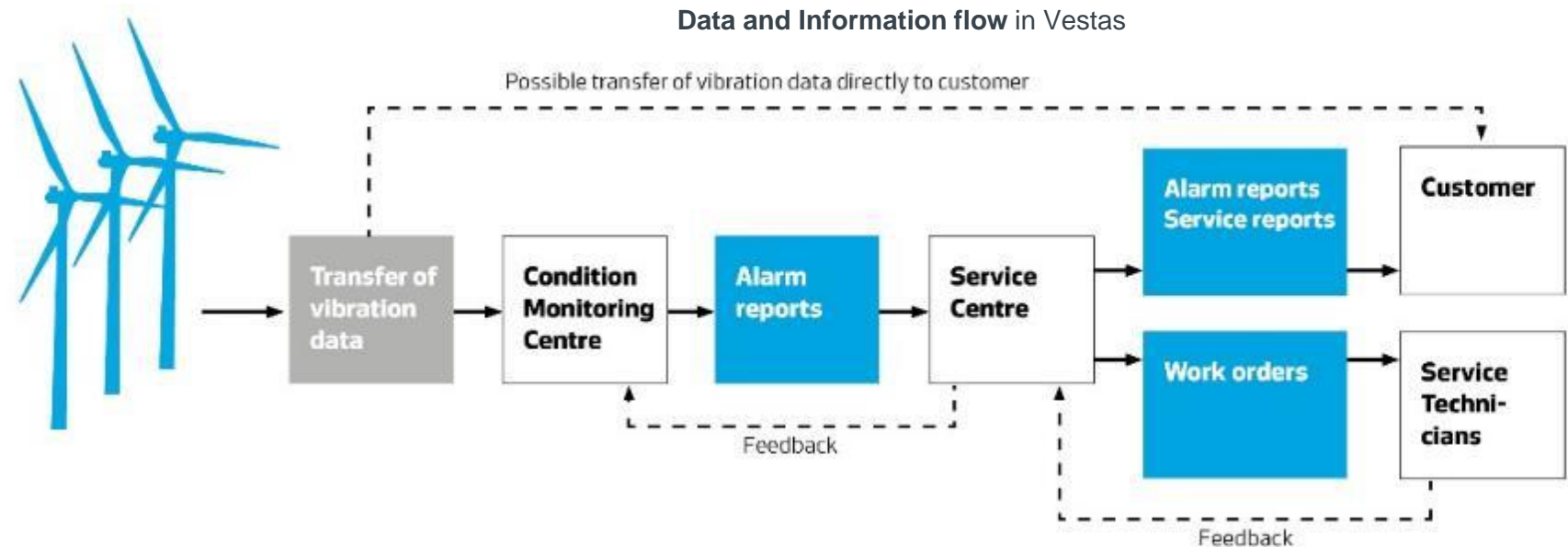
Vestas Wind Turbines have **sensors** that allow us to monitor their production. Vestas processes the data from more than 50 million sensors placed in wind turbines connected to the grid.

With this information it is possible to:


- **forecast** if the turbine will have a **technical problem** and prevent it before it actually happens
- **monitor the energy production** at all times.
- design better **innovative products**.

+50

Million sensors from connected wind turbines



Manufacturing Wind Turbines

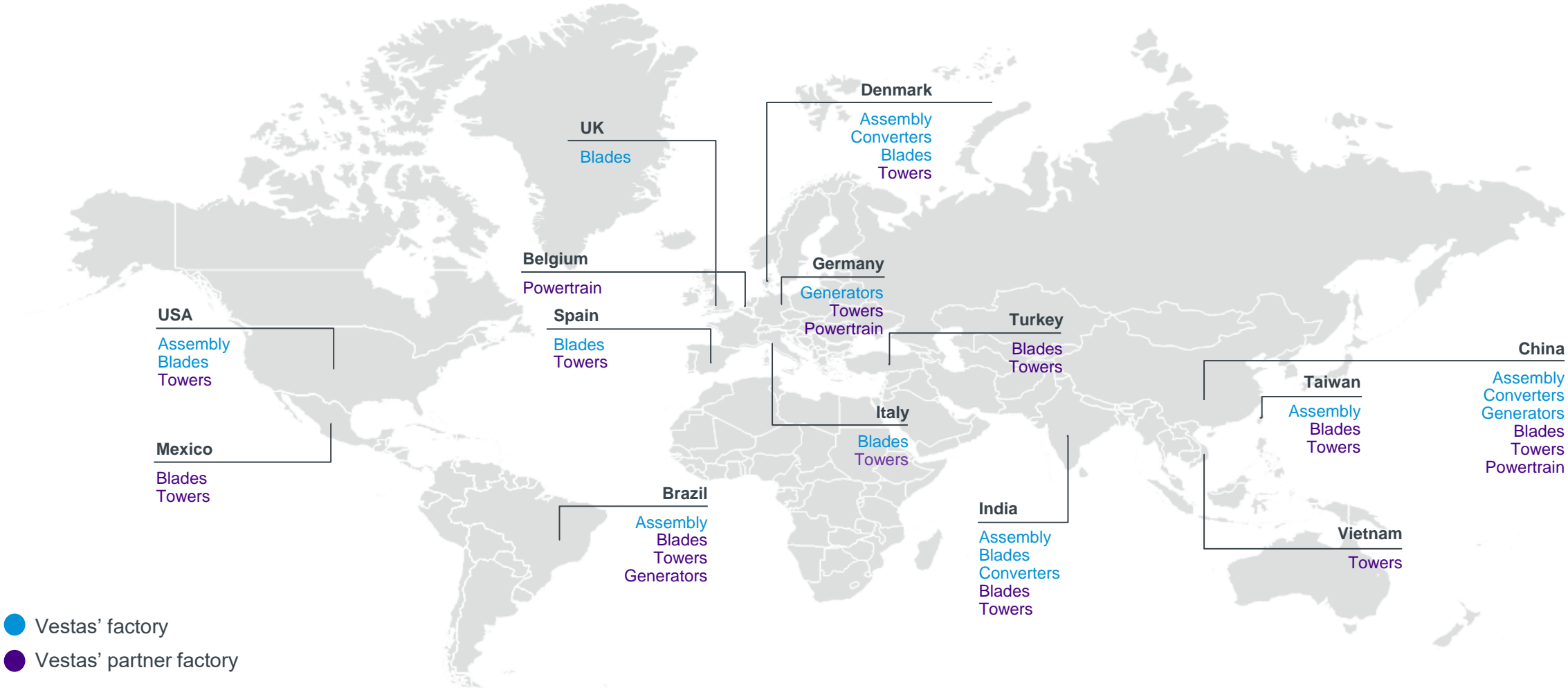
A large, white, cylindrical wind turbine nacelle is positioned horizontally in a spacious industrial factory. The nacelle is supported by a large, circular, brown metal flange structure on the right side. The factory has a high ceiling with exposed pipes and fluorescent lighting. The floor is a light-colored concrete with some markings. In the background, there are more industrial structures and a doorway leading to another area.

The parts of a wind turbine

Are produced separately at different locations across the globe, ensuring its high quality and reliability.

Global manufacturing footprint

A flexible setup with supply from Vestas' own factories and Vestas' partner factories



Transporting Wind Turbines



Transport of wind turbines

From production to installation site

Access to sites

Can become an important challenge when transporting large wind turbine parts such as blades, nacelles and towers. **Trucking** is the usual mean of transport used in the last delivery phase.

Shipment of parts

Vessel transportation is usually the most efficient way to transport big components from one point to another, but it requires high expertise and technology for unloading the parts.

Innovating to reduce challenges

Vestas has developed, and continues to develop **smart solutions** for transport of wind turbine parts, reducing the risks, as well as focusing on safety and quality.

[\(1\) Activity | Charlotte Reidhav ♦ □ | LinkedIn](#)



Installing Wind Turbines

Heavy-weight supporting cranes

are required to install the wind turbines. Sometimes this technology has to be carried from neighbor countries.

Maintaining Wind Turbines

+7,000 Service Technicians
around the world monitor, repair and
prevent failures of wind turbines scattered
across **more than 60 countries**





Vestas®

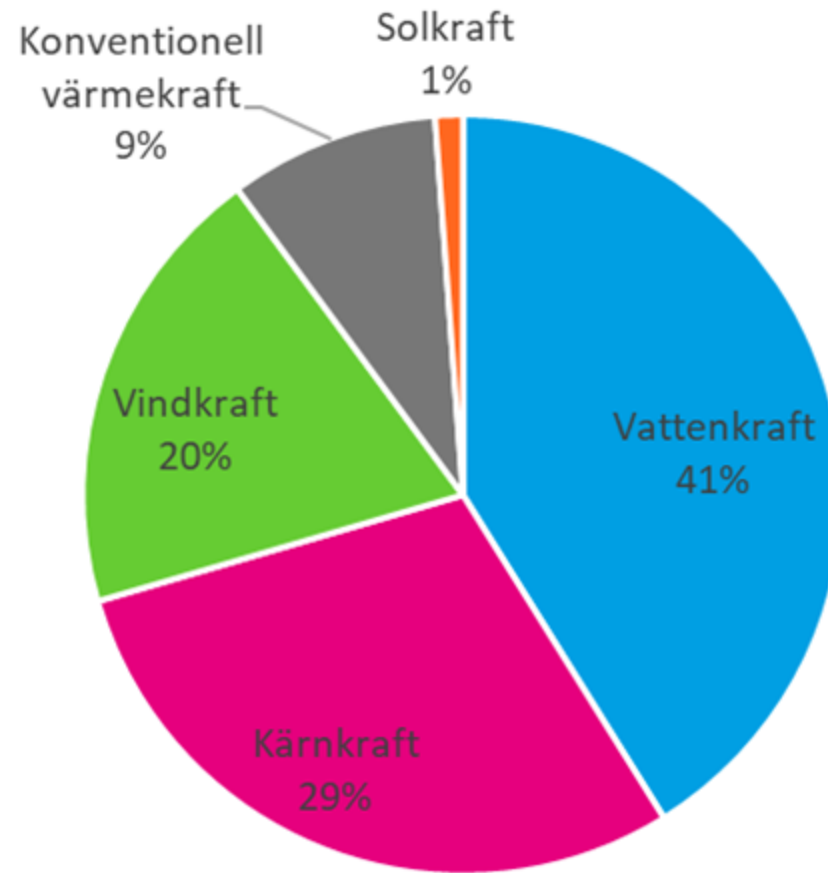
Wind. It means the world to us.™

Thank you for your attention

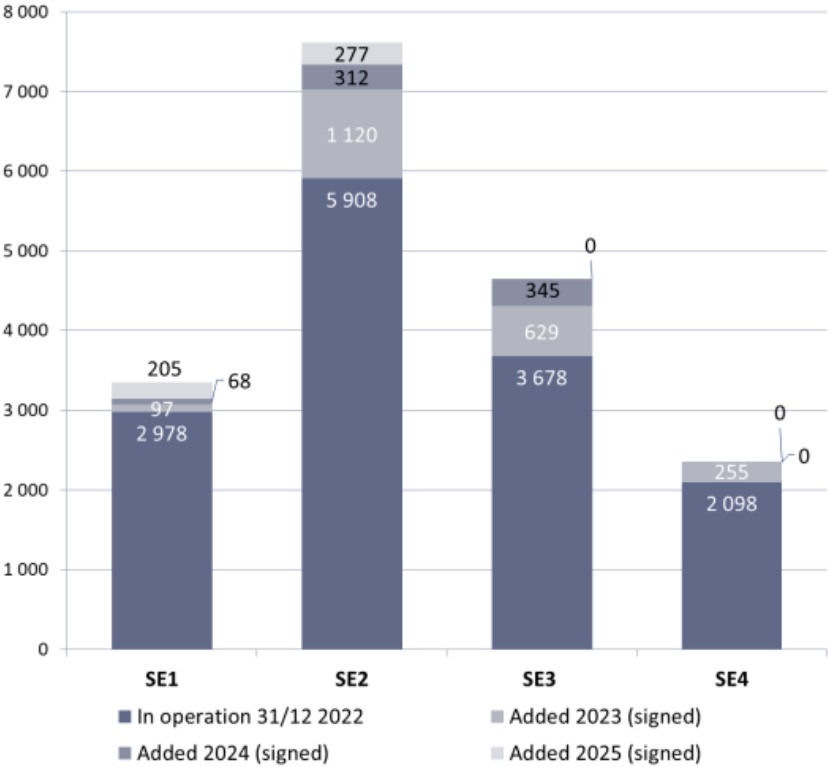
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Elproduktion 2022 170 TWh



Installerad effekt* (megawatt, MW)



* Rekräktade beställningar

Kortsiktig prognos (2023-05-17)

- Under årets första kvartal beställdes 103 MW turbiner.
- Fortsatt hög utbyggnad under 2023 med mindre justeringar mellan kvartalen från tidigare prognos.
- Utbyggnaden bedöms sakta ned efter 2024 – framförallt i södra Sverige.
- I slutet av 2025 bedömer vi att vindkraften når en installerad kapacitet på 17 500 megawatt (MW) och en årsproduktion på 52,6 terawattimmar (TWh).
- Den kortsiktiga prognosen bygger på investeringsbeslut och en bedömning av projekt som kan tänkas komma till, samt nya projekt som befinner sig i tillståndsprocessen.

Både svenska, europeiska och kinesiska ägare av svensk vindkraft

Ägargrupper

Andel av installerad effekt år 2026

61,7 %

27 stora ägare som vardera äger mer än 195 megawatt (MW)

29,2 %

73 medelstora ägare som vardera äger 20-195 megawatt (MW)

9,1 %

770 små ägare som vardera äger mindre än 20 megawatt (MW)

De stora vindkraftsägarna

Andel av installerad effekt år 2026

CGN	5,8 %
SR Energy	5,1 %
Prime Capital	3,9 %
Luxcara	3,9 %
Renewable Power Capital	3,5 %
EIP	3,4 %
Vattenfall Vindkraft	3,1 %
Statkraft	2,8 %
EIPP GmbH	2,7 %
Vasa Vind	2,5 %
TRIG	2,3 %
Rabbalshede Kraft	2,0 %
Orrön Energy	2,0 %
MEAG	1,8 %
Allianz	1,7 %
Ardian	1,7 %
Skellefteå Kraft	1,6 %
Enlight	1,5 %
Foresight	1,5 %
RWE Renewables Sweden	1,3 %
Fu-Gen	1,3 %
Greencoat	1,2 %
Jämtkraft	1,2 %
Blackrock	1,1 %
Fred.Olsen Renewables	1,1 %
Arise	1,0 %
Holmen Energi	1,0 %

Projektportfölj (2023-05-17)*, forts.

Tillståndsprövas	Land	Hav	Totalt
Vindkraftverk	1 180	1 193	2 373
Effekt (MW)	7 700	17 375	25 024
Normalårsproduktion (TWh)	25,6	80,5	106,2
Samråd	Land	Hav	Totalt
Vindkraftverk	115	3 160	3 275
Effekt (MW)	749	57 710	58 460
Normalårsproduktion (TWh)	2,5	250,9	253,4
Tidigt skede	Land	Hav	Totalt
Vindkraftverk	448	2 131	2 579
Effekt (MW)	3 120	39 840	42 960
Normalårsproduktion (TWh)	10,5	174,5	185,0

* Uppgifterna i Svensk Vindenergis projektportfölj bygger på inrapporterade uppgifter från Svensk Vindenergis medlemmar, Vindbrukskollen.se samt statistik som Westander Klimat och Energi har sammanställt på uppdrag av Svensk Vindenergi.

Snabbare och fler tillstånd avgörande

- I närtid kommer andelen beviljade miljötillstånd för elproduktion vara avgörande för om vi kan möta de kommande behoven.
- Åren 2014-2021 beviljades 45 procent av de landbaserade vindkraftverken miljötillstånd. Mellan 2020-2022 var det endast 36 procent som fick tillstånd.
- Det är positivt att regeringen nu gett miljötillstånd till två havsparker i Kattegatt och sedan tidigare gett Vattenfall tillstånd att lägga ut de undervattenskablar som krävs för att driva den planerade vindkraftsparken Kriegers flak i södra Östersjön.
- Det är dock nödvändigt att tillståndprocessen för både land- och havsbaserad vindkraft blir snabbare och att andelen tillstånd ökar för att möta elbehovet till år 2030.

Hårdare konkurrens kräver bättre förutsättningar

Sverige möter allt hårdare konkurrens från omvärlden samtidigt som våra egna problem inte är lösta:

- I april undertecknade 9 länder en [överenskommelse](#) om att bygga 120 GW havsvind i Nordsjön till 2030. Sverige var inte ett av dessa länder.
- Finlands vindkraft utökades med [75 procent](#) under 2022.
- I Europa planeras ett flertal auktioner för havsbaserad vind under 2023. I vårt närområde är det bland annat i [Tyskland](#), [Nederländerna](#), [Norge](#) och [Danmark](#).
- Enligt det brittiska konsultföretaget [Amber](#) är Sverige näst sämst i Europa när det gäller tillståndstider.
- Det kommunala vetot stoppar fortfarande allt för många nya vindkraftsprojekt i Sverige.
- Sammantaget kan ökad konkurrens, kostnadsökningar som inte är marknadsbaserade och en långsam tillståndsprocess riskera att Sverige blir mindre attraktivt att investera i jämfört med andra länder.

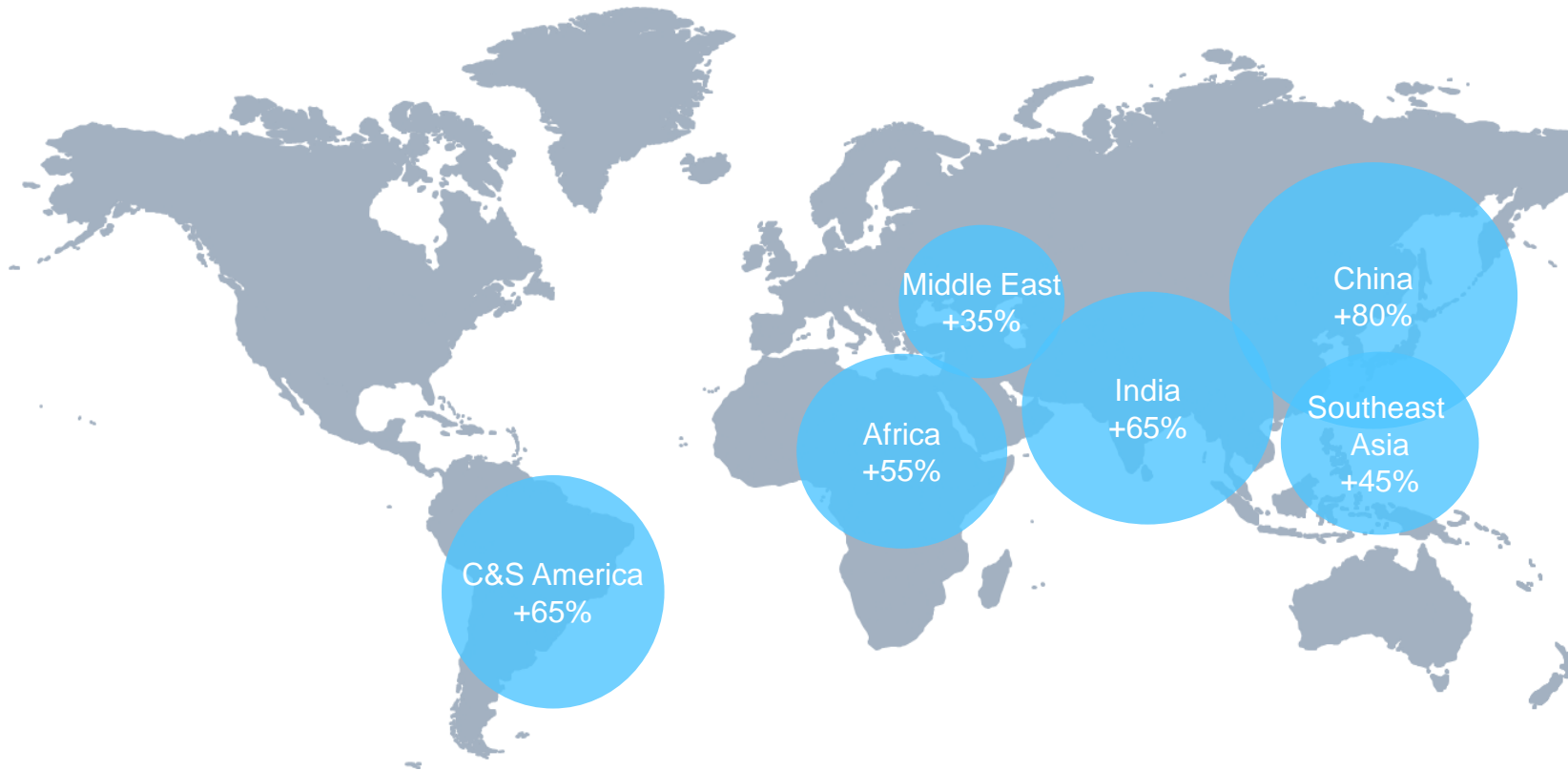
Tillståndsansökan Offshore Sverige



Wind in emerging markets

Vestas' expertise helps ensure successful investments, answering to the growing demand

Renewables share in capacity additions as in the Stated Policies, 2019-2040



Vestas possesses **40 years of experience** and a unique global reach, **including turbines in 47 non-OECD countries**

Vestas' approach to successful projects in emerging and new markets:

- **Building the foundation**
 - Establishing a positive investment climate and local capabilities
- **Creating the Business Case**
 - Crafting the right mix of products and services based on industry-leading experience across the full value chain.
- **Ensuring return on investment**
 - Excellent track record in the construction, operation and service of wind turbines, based on our industry-leading quality.

Source: IEA World Energy Outlook 2019, <https://www.iea.org/reports/world-energy-outlook-2019/renewables#abstract>



About Vestas

Pioneering the industry

Vestas has succeeded in bringing renewable energy to 39 markets



Over the past 40 years, Vestas has continuously pioneered new technologies and solutions that have allowed us, together with our customers, to be the first to bring reliable wind energy solutions to 39 markets, thus planting the seeds of the modern wind industry.

● Market Vestas has pioneered

Differentiators

Standing out from the competition – the key to Vestas' success



Global Reach

- Sales offices on every continent
- More than 144 GW under service agreements (of which +8.5 GW is non-Vestas)
- Service and construction on every continent



Leveraging scale

- More people dedicated to wind than anyone
- The market leader in revenue = high volume at reduced cost
- Global service leadership, manufacturing footprint and sourcing



Leading technology

- Driving down cost of energy
- Complete solutions and unparalleled turbine performance
- Industry leader in smart data and delivering the lowest cost of energy



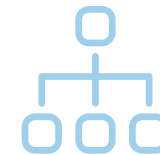
Service offerings

- A Fleetwide Lifetime Service Partner
- Differentiation through innovative and advanced service solutions
- Market leader in core Operations and Maintenance offerings
- Service organisation operating in 76 countries



Market making

- Driving "Why Wind?" and "How Wind?"
- Long-term approach and experts on the direction of the energy industry
- Providing knowledge and capabilities for successful investment in wind energy



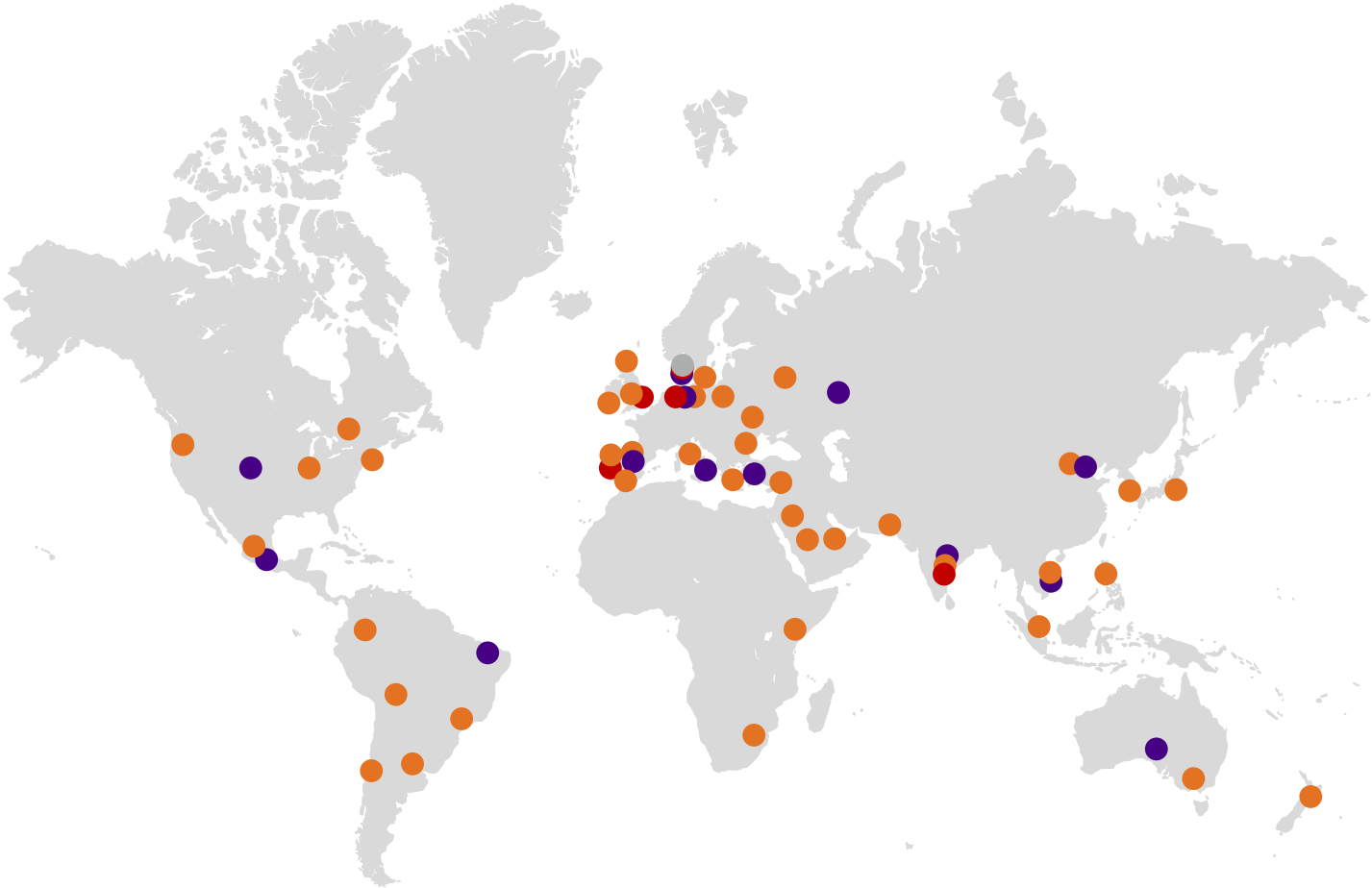
Flexible organisation

- Agile organisation to optimise every parameter for every customer
- Lean HQ and commercially empowered regions reduce cost and complexity
- Market-aligned sales, construction and service organisations

Vestas locations

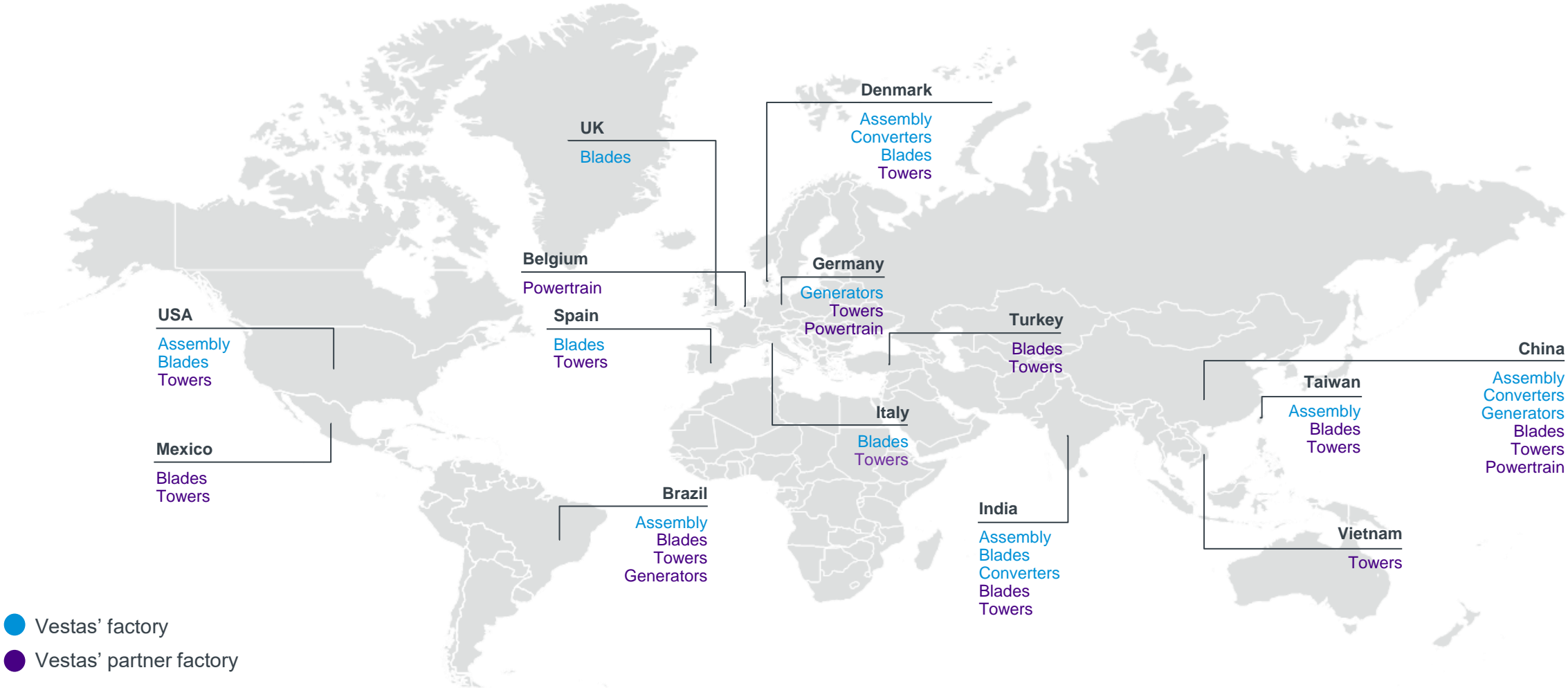
Vestas has a unique global reach in manufacturing, sales and installation

- Global Headquarters
- Sales & Service
- Production
- Research



Global manufacturing footprint

A flexible setup with supply from Vestas' own factories and Vestas' partner factories



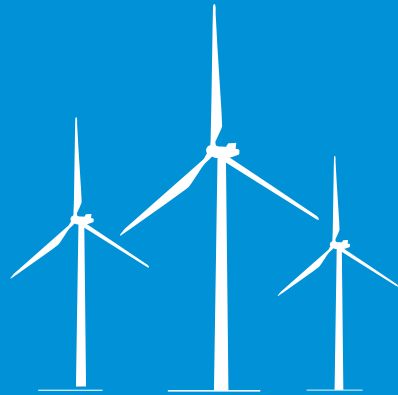
- Vestas' factory
- Vestas' partner factory

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We have a total of 55,941 combined turbines under service, or more than 144 GW



+ 85,000

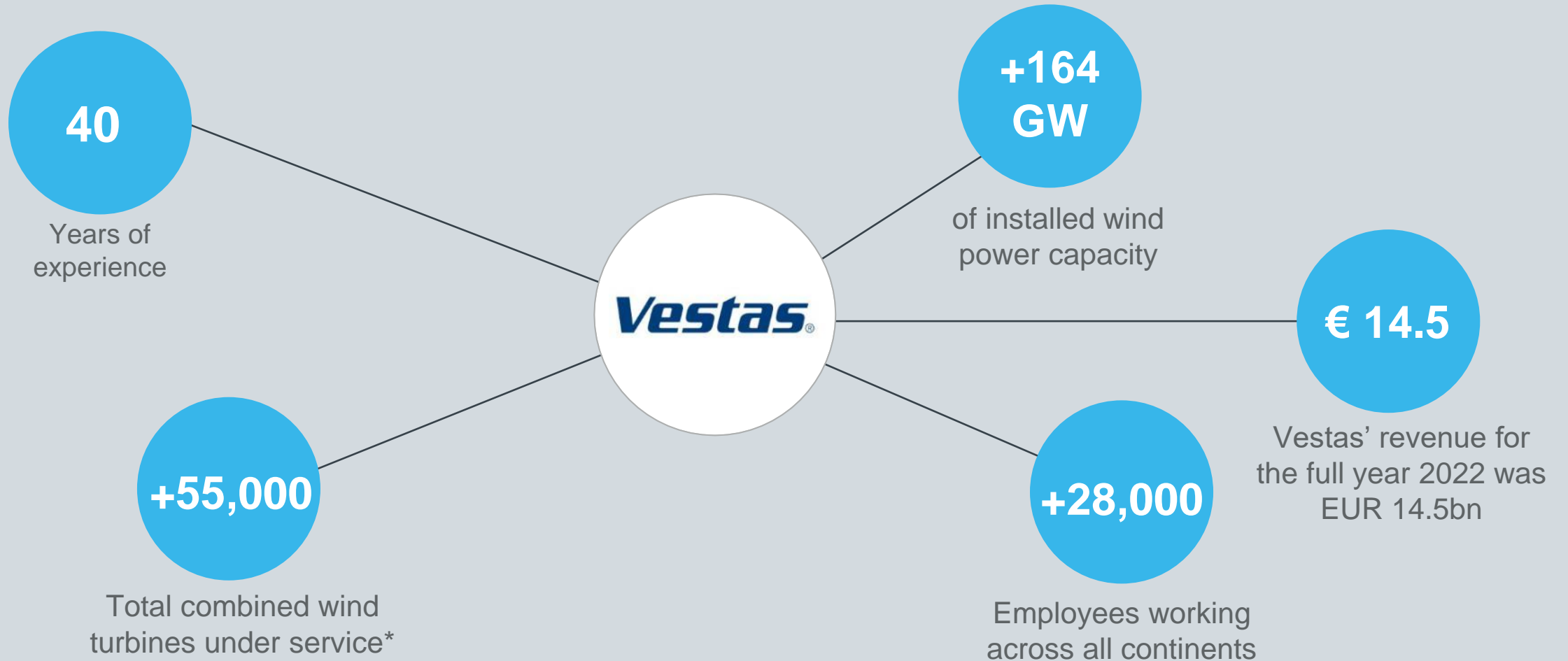
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€ 14.5bn

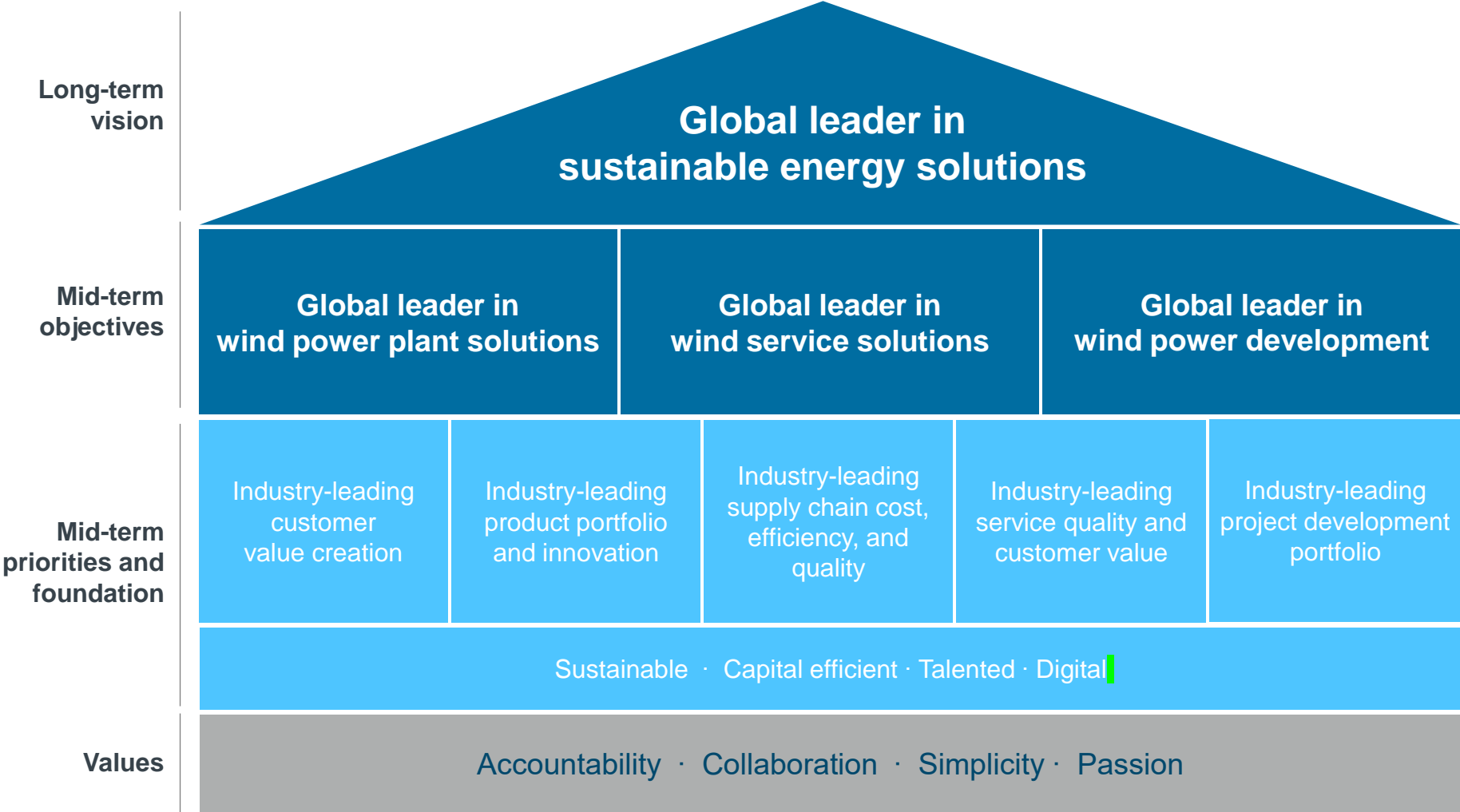
Vestas' revenue for the full year 2022 was EUR 14.5bn

Vestas leverages reach, scale, and technology to provide best-in-class solutions



*AOM2000-5000 service contracts and AOM1000 operational support

Vestas' corporate strategy



Organisation chart

A strong team for continued success



A woman with short brown hair, wearing safety glasses and a white protective suit with red trim, is focused on her work. She is using a blue pencil to mark a long, thin metal strip that lies across a large, white, reflective sheet. The background shows a large industrial facility with rows of bright lights and other workers in the distance.

Business performance

Business starts with safety

Safety is paramount in everything we do – safety comes first at Vestas

Safety a fundamental element of our business

- Unified approach to safety
- Global safety processes
- Safety introduction programmes

Incident management

- Vestas incident management system – global knowledge sharing

Contractor safety

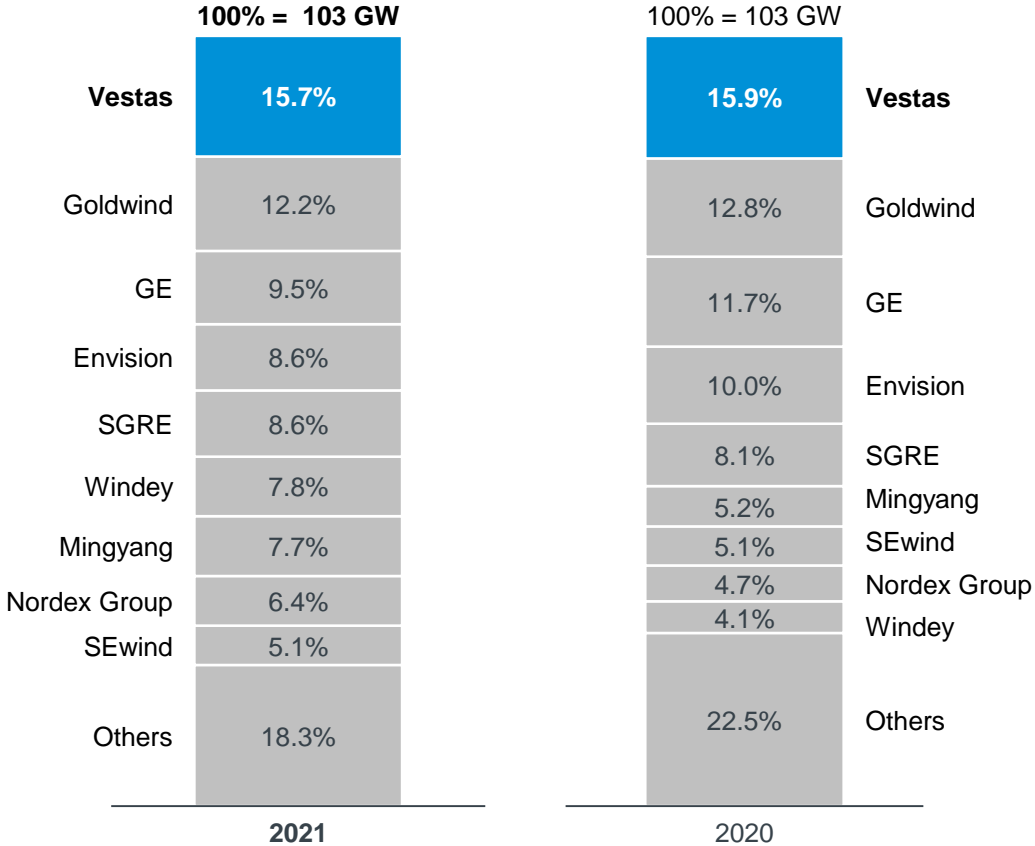
- Pre-qualification and intensified tracking of safety performance
- Global Contractor Health and Safety Requirements



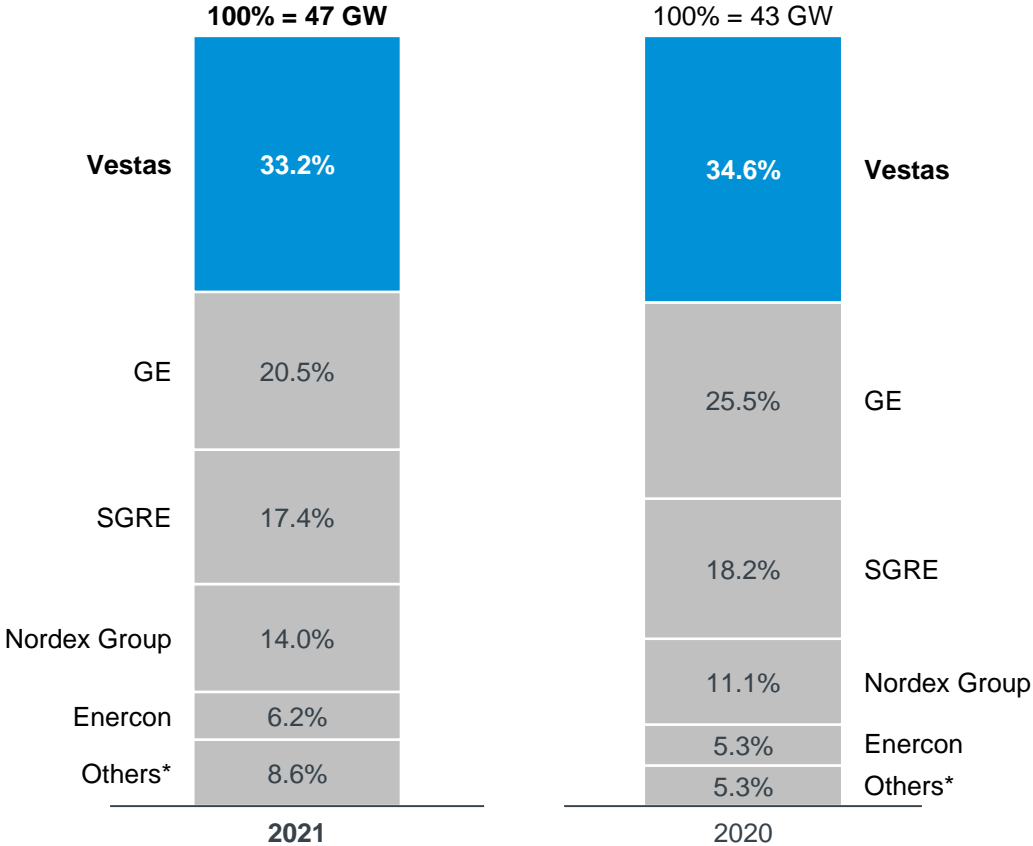
Market shares

Sustaining our global leadership position

Global onshore and offshore installations



Global onshore and offshore installations
Excluding China domestic market*



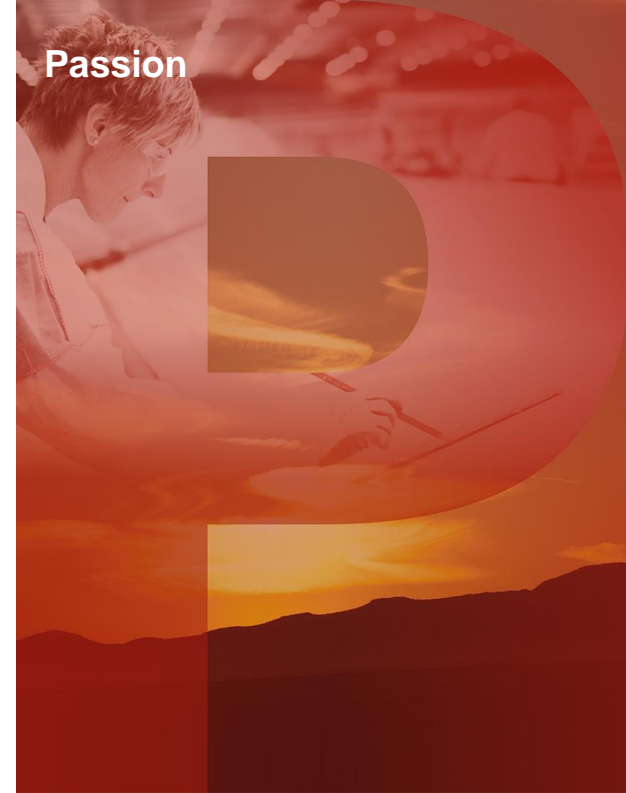
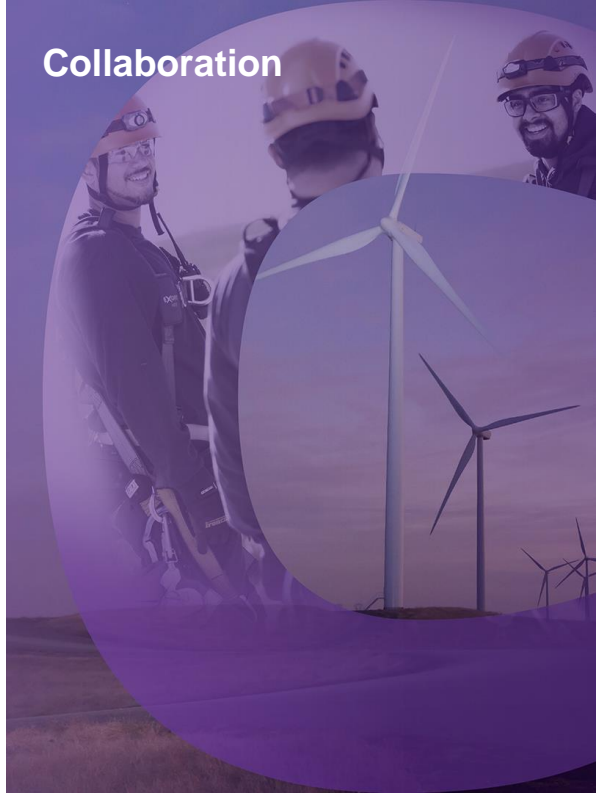
Source: Historic wind turbine OEM market share 2021 Wood Mackenzie Power & Renewables (April 2022)

*Others include Chinese OEMs volume outside China

Vestas Values



Vestas Values



Simplicity.

We strive to simplify our work and our solutions to the benefit of our customers.

Collaboration.

We win and lose together, and pick the best team for the job.

Accountability.

We have the courage to speak up and deliver on our commitments.

Passion.

We are dedicated to our Planet, People and Vestas.

Innovating to lower the cost of energy

Delivering value every step of the way

- Profitably bringing market-driven, innovative solutions to our customers.
- Custom configurations based on modularized building blocks.
- Broad and flexible product portfolio to precisely meet the unique needs of every site.
- Collaboration with external partners to develop innovative solutions and integrate external technologies in new ways.



Versatile solutions for any wind energy project

Ongoing innovation from the undisputed global wind leader



2 MW Platform



4 MW Platform



EnVentus™ Platform

Product

V90-2.0 MW® V100-2.0 MW® V110-2.0 MW® V116-2.1 MW™ V120-2.2 MW™

Product

V105-3.45 MW™ V112-3.45 MW® ** V117-3.45 MW® V117-4.2 MW™ V126-3.45 MW® V136-3.45 MW® V136-4.2 MW™ V136-4.5 MW™ V150-4.2 MW™ V150-4.5 MW™ V155-3.6 MW™ V163-4.5 MW™

Product

V150-6.0 MW™ V162-6.2 MW™ V162-7.2 MW™ V172-7.2 MW™

Year of prototype

2004 2009 2014 2017 2018

Year of prototype

2014 2013 2013 2018 2013 2016 2018 2021 2018 2021 2021 2023

Year of prototype

2020 2020 2023 2024

+57 GW Installed*

* As of 31 December 2022, including V80-1.8/2.0 MW™ and V90-1.8 MW™

+63 GW Installed**

**As of 31 December 2022, including V112-3.0 MW™

+3 GW Installed***

***As of 31 December 2022

Current offshore turbine platforms



9 MW Platform

Product

V164-
9.5 MW™

V164-
10.0 MW™

V174-
9.5 MW™

Year of prototype

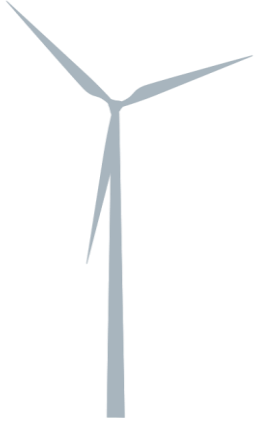
2014

2014

2020

+ 5.9 GW Installed**

**As of 30 September 2022



Next Gen. Offshore Platform

Product

V236-
15.0 MW™

Year of prototype

2022

Installation start 2025

Technology strategy and solutions

- Onshore turbine
- Offshore turbine

Technology evolution

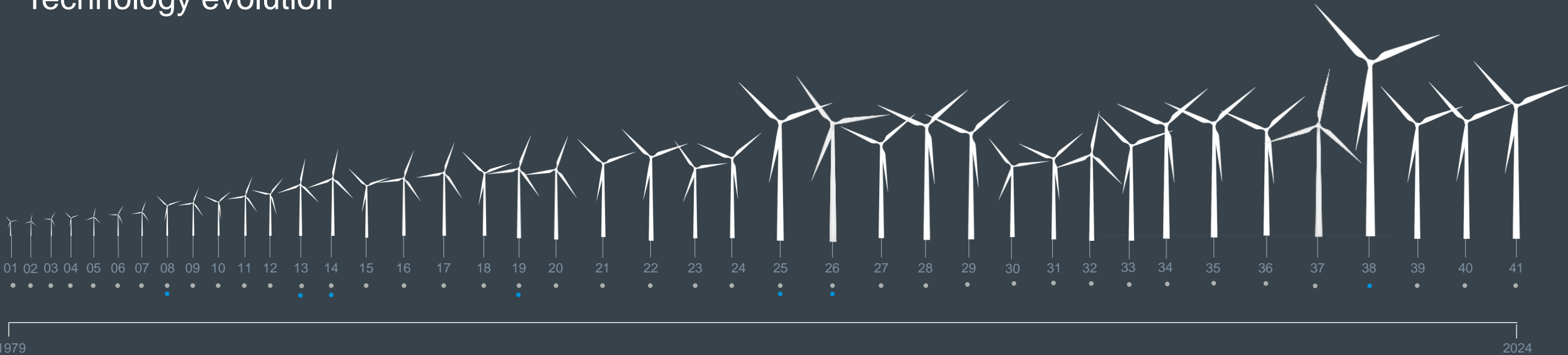


Diagram No.	Turbine model	Year of prototype	Diagram No.	Turbine model	Year of prototype	Diagram No.	Turbine model	Year of prototype	Diagram No.	Turbine model	Year of prototype
• 01	V10-30 KW	1979	• 11	V52-850 KW	2000	• 21	V117-3.3 MW	2013	• 31	V120-2.2 MW	2017
• 02	V15-55 KW	1981	• 12	V66-1.75 MW	1999	• 22	V126-3.3 MW	2013	• 32	V117-4.2 MW	2017
• 03	V17-75 KW	1984	• 13	V80-2.0 MW	2000 / 2002	• 23	V105-3.3 MW	2014	• 33	V136-4.2 MW	2017
• 04	V19-90 KW	1986	• 14	V90-3.0 MW	2002 / 2005	• 24	V110-2.0 MW	2014	• 34	V150-6.0 MW	2019
• 05	V20-100 KW	1987	• 15	V82-1.62 MW	2003	• 25	V164-8.0/9.5/10.0 MW	2014	• 35	V162-6.2 MW	2019
• 06	V25-200 KW	1988	• 16	V90-2.0 MW	2004	• 26	V174-9.5 MW	2014	• 36	V136-4.5 MW	2020
• 07	V27-225 KW	1989	• 17	V100-1.8 MW	2009	• 27	V136-3.45 MW	2015	• 37	V150-4.5 MW	2021
• 08	V39-500 KW	1991 / 1995	• 18	V100-2.6 MW	2009	• 28	V155-3.6 MW	2016	• 38	V236-15.0 MW	2022
• 09	V44-600 KW	1995	• 19	V112-3.0 MW	2010/2013	• 29	V150-4.2 MW	2017	• 39	V162-7.2 MW	2023
• 10	V47-660 KW	1997	• 20	V100-2.0 MW	2013	• 30	V116-2.0 MW	2017	• 40	V163-4.5 MW	2023
									• 41	V172-7.2 MW	2024

A photograph of a wind farm at sunset. The sky is a mix of blue, purple, and orange. In the foreground, a white service truck is parked on a road. Several wind turbines are visible, with the largest one in the center-left. The text "Service offerings and strategy" is overlaid in white in the center of the image.

Service offerings and strategy

Vestas Services

Business areas



Parts & Repair

Benefit from a truly global supply chain and a strong local presence to decrease your Operations and Maintenance (O&M) cost.



Maintenance Partnering

Maximise the availability of your wind park with the most experienced maintenance partner in the industry.



Fleet Optimisation

Optimise your business with upgrades designed to improve the performance of your wind park.



Smart Data

Benefit from our digital solutions, delivering greater predictability, increased renewable energy production, more efficient operations, and better integration with energy grids.

Proven and committed service partner

+144 GW

Servicing +136 GW onshore and +8 GW offshore, including +8 GW of non-Vestas capacity under service.

+55,000

total combined turbines under service

Unmatched ability to analyse turbine data and predict wind conditions anywhere in the world from a large fleet of monitored turbines

76

countries

Global service organisation operating in 76 countries worldwide providing unmatched reach and knowledge sharing

€ 30,4 bn

backlog

Strong service performance driven by high activity levels, providing a stable revenue stream to secure lifelong commitment

+15,000

service employees

Certified and experienced people dedicate to service across Vestas.





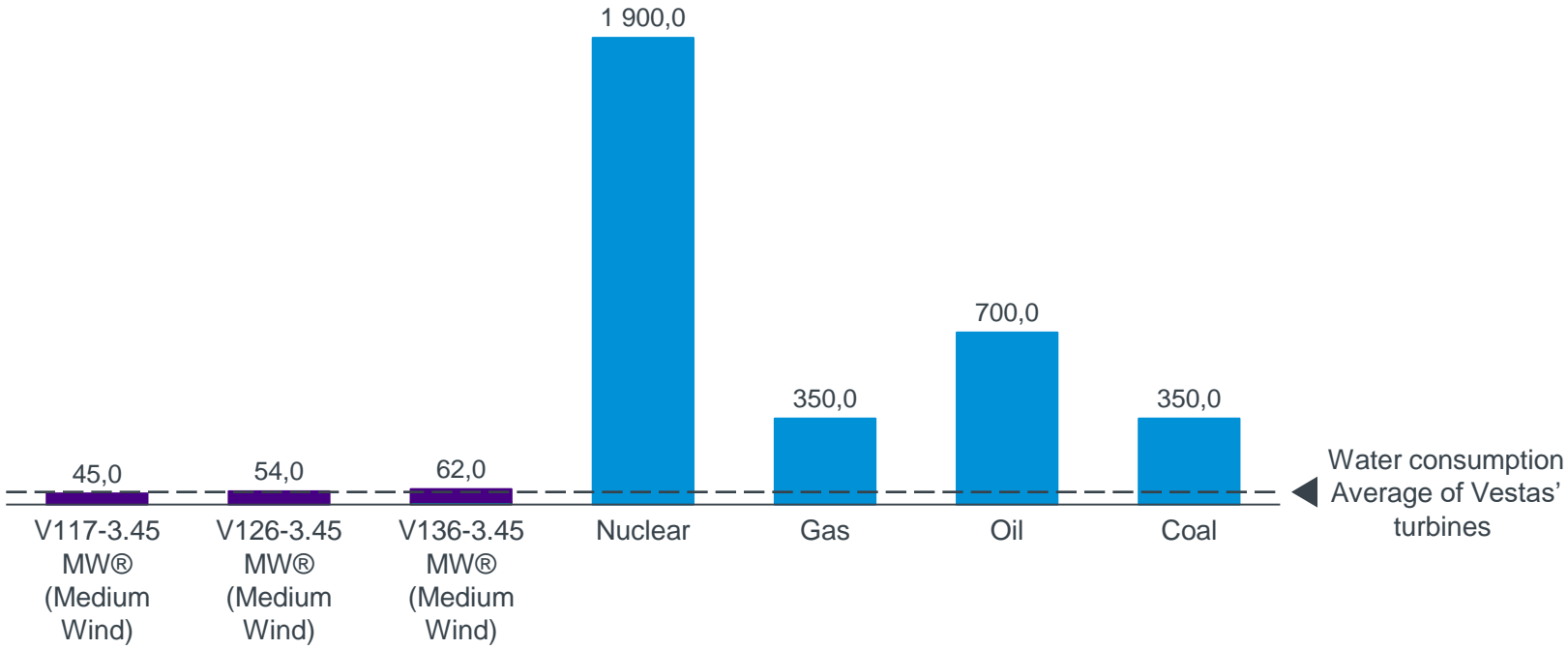
Development

Low water consumption

Vestas' turbines have a significant low net use of water during their lifecycle

Grams of water used per kWh

- Industry Average (minimum water consumption)
- Vestas' WTGs average



By 2050, nearly **half of the world's** population will be living in areas where **water is scarce.**

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.

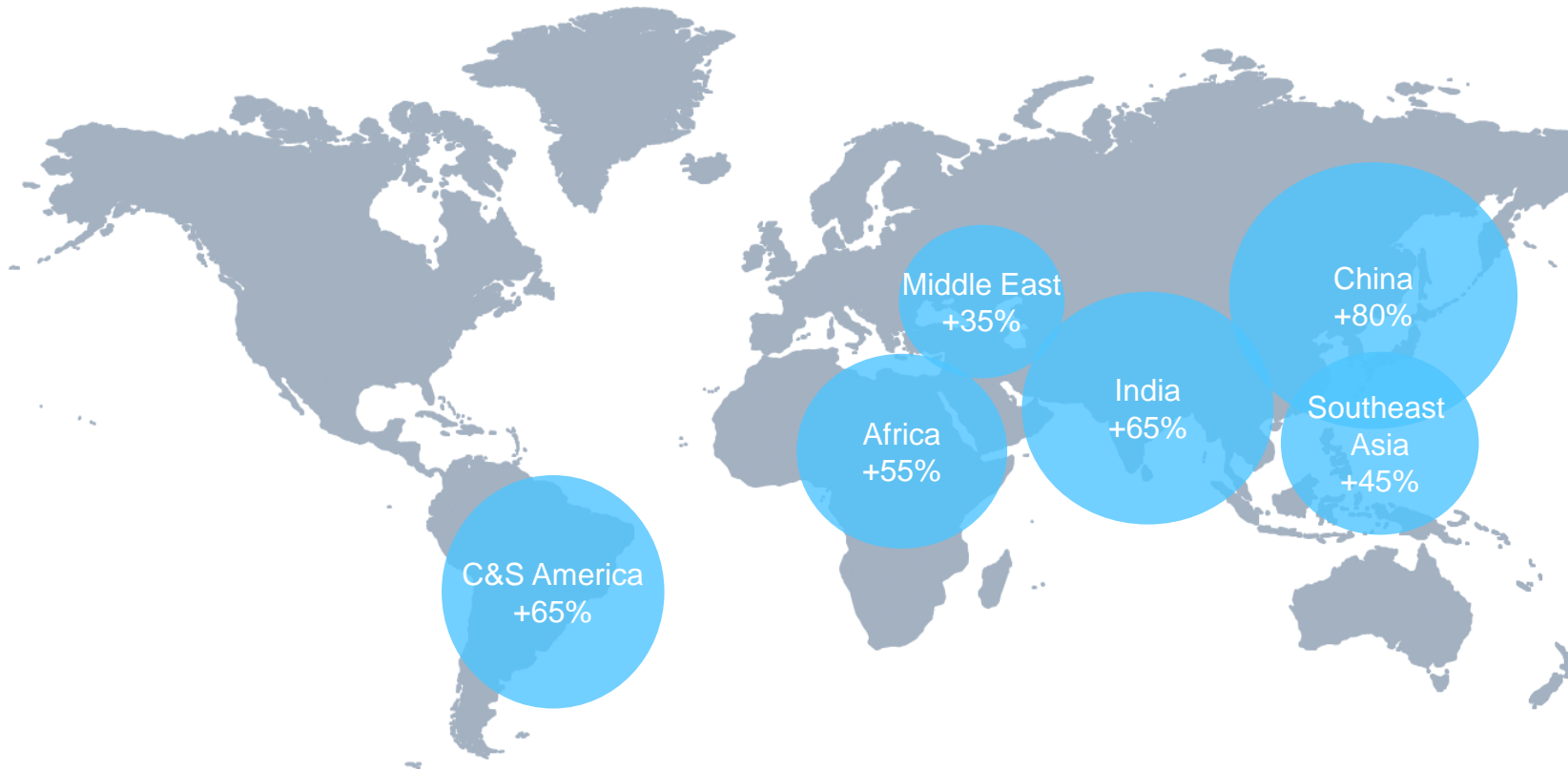
The market for wind continues to grow



Wind in emerging markets

Vestas' expertise helps ensure successful investments, answering to the growing demand

Renewables share in capacity additions as in the Stated Policies, 2019-2040



Vestas possesses **40 years of experience** and a unique global reach, **including turbines in 47 non-OECD countries**

Vestas' approach to successful projects in emerging and new markets:

- **Building the foundation**
 - Establishing a positive investment climate and local capabilities
- **Creating the Business Case**
 - Crafting the right mix of products and services based on industry-leading experience across the full value chain.
- **Ensuring return on investment**
 - Excellent track record in the construction, operation and service of wind turbines, based on our industry-leading quality.

Source: IEA World Energy Outlook 2019, <https://www.iea.org/reports/world-energy-outlook-2019/renewables#abstract>

Vestas[®]

Wind. It means the world to us.[™]

Thank you for your attention

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