

To realise the best possible return on customers' investment, an effective operations and maintenance strategy is just as important as reliable wind turbines. The AOM 5000 premium service concept is applied to the South Plains 1 Wind Farm in USA, which consists of 100 V100-2.0 MW turbines.



## Corporate **strategy**

The decarbonisation of the energy sector is underway, and estimates show that renewable energy will dominate future power generation. Wind energy is becoming a mainstream source of energy, and the long-term outlook for renewable energy creates multiple opportunities for the wind energy sector.

Vestas remains committed to its vision to be the global leader in sustainable energy solutions. Wind power will remain the core of Vestas' offerings, but at the same time the company envisions that a broadened focus on sustainable energy solutions will enlarge the wind turbine market, enable new revenue streams, and expand Vestas' presence in the market. In 2017, Vestas showcased what future sustainable energy solutions would look like by combining wind, solar, and battery energy storage in the world's first utility-scale on-grid hybrid project.

To support its overall vision, Vestas remains dedicated to its four strategic objectives of being the global leader in the wind power plant solutions market and global leader in the wind power service market, while delivering the lowest cost of energy solutions and best-in-class global operations.

At the same time as wind energy is becoming the lowest cost of energy solution in many markets, competition in the industry has become even more fierce, while renewable energy markets are transitioning away from tax and policy support to more competitive tender structures. In this environment, Vestas has delivered on its strategy to grow faster than the market and produce best-in-class margins, and has strengthened its global leadership in all three business areas: onshore, offshore, and service.

## Sustainable future for the wind power market

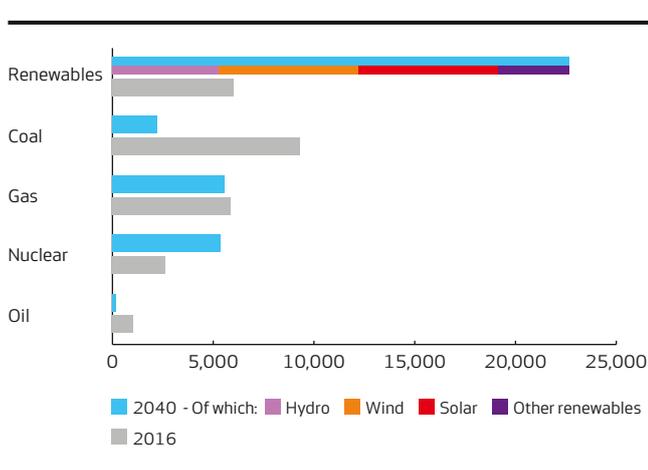
Renewable energy's journey to become mainstream energy continues to progress, driving a positive long-term outlook and creating multiple opportunities for the wind energy sector.

Driven by increasingly strong national commitments to reducing CO<sub>2</sub> emissions, as well as the phasing-out and replacement of older fossil fuel and nuclear generation capacity, more space is being created for renewable energy within the global energy mix. Concurrently, growth in global electricity demand is creating further prospects for renewables. The International Energy Agency (IEA) estimates that demand for electricity will grow by 60 percent towards 2040<sup>1)</sup>, driven increasingly by renewable energy generation investment in developing countries.

Government actions are also contributing to this trend, with growing long-term policy stability and country-specific CO<sub>2</sub> reduction targets creating a supportive environment for continued investment in renewables.

The decarbonisation of the energy sector is underway, with estimates showing renewables overwhelmingly dominating power generation capacity leading up to 2040.<sup>2)</sup> In the context of the transition from fossil fuels to renewables, and within the range of renewable energy technologies, wind is in a strong position.

### Global electricity generation by source in 2016 and 2040\*



Source: International Energy Agency: World Energy Outlook 2017. November 2017.  
\*Based on Sustainable development scenario.

The constant reduction in the levelised cost of energy for wind, as well as improvements in reliability and productivity of wind power plants, have seen the prospects for wind energy improve significantly. This trend is expected to continue over the coming years as wind energy continues to outcompete fossil fuel-based generation on cost, while reducing CO<sub>2</sub> emissions that cause global warming.

This scenario presents a strong environment for the stable growth of wind energy, leveraging the continued maturity and competitiveness of the sector in the context of a global market that is moving away from fossil fuels for energy generation.

### Vestas' vision – to be the global leader in sustainable energy

Vestas' vision to be the global leader in sustainable energy solutions builds on its pioneering legacy in the renewables industry and serves as a response to the emerging market opportunities Vestas sees ahead. As Vestas strives to achieve its vision, the company will continue to enable a more cost-effective and sustainable energy sector.

1) Source: The International Energy Agency: World Energy Outlook 2017. November 2017.  
2) Source: Bloomberg New Energy Finance: New Energy Outlook 2017. November 2017.

For Vestas, sustainable energy solutions comprise power-generating equipment, services, and digital solutions, as well as new business models that support a faster journey to a fully decarbonised energy sector.

Being a global leader means being actively present in all key markets. This requires offering the most competitive portfolio of solutions enabled by technology and service leadership. Combining these assets with industry-leading commercial capabilities will allow Vestas to win market share by being the preferred partner of its customers.

Being a global leader also enables Vestas to drive scale and sustain best-in-class margins, allowing for reinvestment into innovations for the benefit of customers, shareholders and the planet.

### Vestas' strategy – the route to continuing leadership in sustainable energy

Sustainable energy solutions will build upon Vestas' core business, widening its commercial playing field and opening the door to new, profitable revenue streams. Wind power will remain the core of Vestas' offerings and Vestas anticipates that sustainable energy solutions will enlarge the wind turbine market, enable new revenue streams and expand Vestas' global market share.

As a pioneer in the renewables industry, Vestas has vast experience in developing, installing, and managing complex energy solutions enabled by competencies across the broader energy system. Vestas has leveraged this experience and expertise to take significant steps on the journey from global leader in wind to a global leadership position in sustainable energy solutions.

Going forward, Vestas will continue to deliver solutions with the lowest cost of energy by enhancing its technology and service leadership. To ensure it stays ahead, Vestas will continue its lead in R&D and innovation to secure an industry-leading product portfolio, while investing into growing and differentiating the service business. Together, these imperatives will accelerate the transition to a more sustainable energy mix.

Vestas' global presence, position in the onshore and offshore power plant market and its service backlog, create a strong starting point for leading this transition. Building on global scale and continuous focus on improving operations, Vestas stays committed to preserving its best-in-class margins above industry competitors.

Furthermore, Vestas continues to future-proof and expand its commercial reach in order to realise its long-term vision and strategic objectives while meeting the evolving challenges of the renewable energy sector. A few recent examples illustrate this movement:

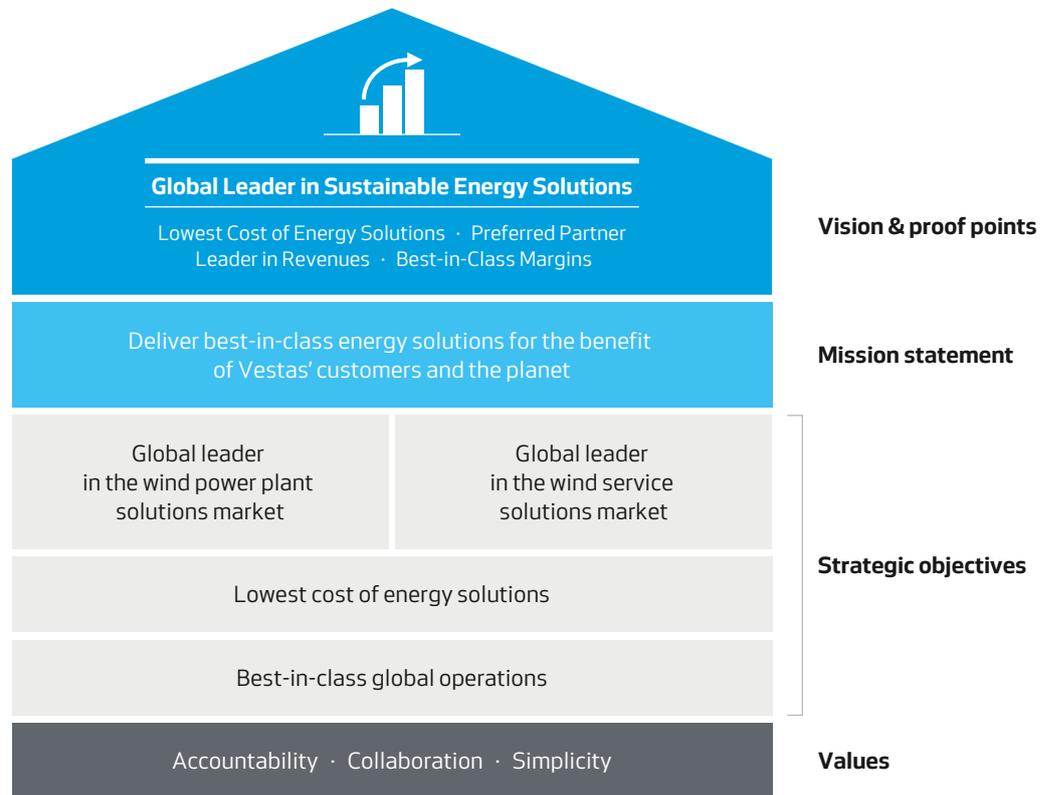
- In October 2017, Vestas announced a collaboration with energy developer Windlab Limited to build the world's first utility-scale, on-grid hybrid project integrating wind, solar, and battery energy storage. Projects like these enable a higher penetration of renewables, a lower levelised cost of energy and respond directly to customers' most important goal: business case certainty.
- In December 2017, Vestas signed a strategic partnership with battery technology provider Northvolt AB. The aim of the partnership is to bring the most competitive battery storage solutions to the market and determine how to better integrate storage and renewable energy generation technologies as a means to better integrate renewable energy into the power grids, ultimately leading to an increased uptake of renewables.

### Strategic objectives

Overall, Vestas remains dedicated to its strategic direction. The strategy towards 2020 continues to revolve around the four strategic objectives that enable realising Vestas' vision:

- Global leader in the wind power plant solutions market
- Global leader in the wind power service solutions market
- Lowest cost of energy solutions
- Best-in-class global operations

## The building blocks of the corporate strategy



For each of the strategic objectives, Vestas has set clear targets and defined a sub-set of strategic enablers to drive its organisation forward. Below, Vestas' high-level ambitions and selected strategic enablers tied to the four strategic objectives are outlined.

### Global leader in the wind power plant solutions market

Vestas' ambition is to grow faster than the market to uphold its global leadership position in wind power, while delivering industry-leading margins. To achieve this, Vestas will continue to focus on profitable growth in mature and emerging markets, partnering more closely with customers on project origination and collaborating to develop fully optimised solutions. Furthermore, Vestas will continuously focus on transforming its commercial capabilities to support a gradual transition of its offerings and enable customers to win in auctions and other competitive tendering schemes.

### Global leader in the wind power service solutions market

Vestas' ambition is to organically grow its service business by more than 50 percent towards 2020 versus 2016 revenue, while also delivering best-in-class margins. To achieve this, Vestas will continue to fast-track its multibrand business, further develop its digital service offerings, and lower costs through an end-to-end value chain optimisation logic.

### Lowest cost of energy solutions

Vestas' ambition is to reduce levelised cost of energy faster than market average. By doing so, Vestas aims to provide its customers with the highest returns on investment in the industry. Vestas' investments in new technology are the largest in the industry. Going forward, it is Vestas' ambition to sustain leadership in R&D investments in order to support an industry-leading portfolio of sustainable energy solutions. Furthermore, Vestas will increase focus on accelerating cost reductions through an end-to-end value chain focus.

### Best-in-class global operations

Vestas' ambition is to have the most flexible and lowest cost of operations within the industry. Vestas' size and subsequent scale provide a competitive foundation for lowering costs at every stage of the value chain. To fully leverage its scale, Vestas will continuously optimise its production footprint and level of outsourcing to further improve flexibility, labour cost efficiency, and capital expenditure. Finally, working

capital management remains a high priority for Vestas. Consequently, the company's focus remains on improving the cash conversion cycle and lowering working capital.

As the industry is currently going through a transition, during which new opportunities will emerge, Vestas also needs to continually change and expand its ambitions.

Looking ahead to 2020, three key themes span across Vestas' strategic targets:

- **Raising the bar** – Vestas will set more ambitious targets to push the company to stay ahead of competition
- **Refining initiatives** – Expanding Vestas' strategic enablers to reflect new market realities
- **Accelerating execution** – Accelerating execution of new and existing enablers to deliver on the targets

### Vestas' business areas – a strong and balanced portfolio

Vestas holds leadership positions in all three key areas of wind: onshore wind turbines, offshore wind turbines, and service. All three areas are attractive individually, and when combined, create a well-balanced portfolio of business at different stages of maturity in terms of growth, competitive dynamics, and profitability. Continuing to pursue leadership in all three areas allows Vestas to achieve significant and complimentary benefits commercially, operationally, and financially.

### Long-term market outlook: the transition to maturity, stability, and opportunity

Towards the early 2020s, the wind power industry will be entering a phase of significant change driven by increasing maturity, changing regulation, continued rapid reduction in levelised cost of energy, and shifts in the customer landscape. The overall challenge to decarbonise the energy sector remains in place, with further and longer-term decarbonisation of the energy sector being required in order to slow down the pace of climate change. This perspective is one rationale supporting the increased long-term commitments to renewable energy by nations, states, cities, and corporations, and ensures demand for sustainable energy solutions over the coming decades.

## Vestas' three main business areas

### Global leader in the onshore wind power plant solutions market



#### Stable growth

#### Onshore installations per year\* GW



#### Vestas' position

- 88 GW total installed (No.1 globally)
- 13 percent annual revenue growth 2013-2017

#### Priorities

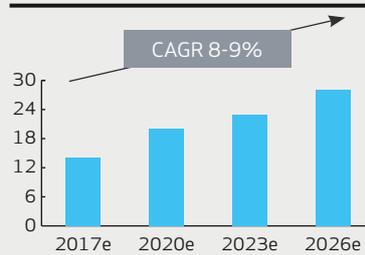
- Grow faster than the market
- Best-in-class margins
- Lowest cost-of-energy solutions

### Global leader in the wind power service solutions market



#### High growth

#### Global wind O&M revenue\*\* USDbn



#### Vestas' position

- 76 GW under service (No. 1 globally)
- 14 percent annual revenue growth 2013-2017

#### Priorities

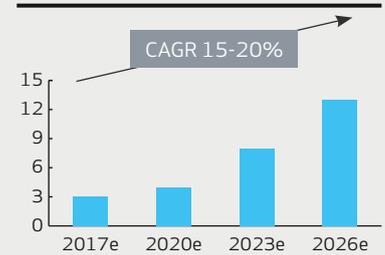
- >50 percent revenue growth vs. 2016
- Best-in-class margins

### Top player in the offshore wind power market via MHI Vestas Offshore Wind



#### High growth

#### Offshore installations per year\* GW



#### Position of offshore joint venture

- 3 GW total installed (No. 2 globally)
- Industry-leading offshore wind turbine

#### Priorities

- Lowest cost-of-energy solutions
- Claim a leading position

\* Source: MAKE Consulting: Q4 Global Wind Power Market Outlook Update. November 2017.

\*\* Source: MAKE Consulting: Global Wind Turbine O&M. December 2017.

Leading up to and during this period, policymakers and energy system stakeholders will increasingly focus on the total system value of new generation capacity beyond offering the lowest cost of energy. This will add further momentum to renewables that can provide energy at the time and location where it is most valued. Vestas is taking industry leadership in commercialising storage solutions, utility-scale wind-solar hybrids, and other long-term innovations that address the full value to the energy system.

While these trends add short-term volatility at industry level, they create opportunities and enable Vestas to leverage its strong position and exposure across wind power plant and service solutions.

The changes reflect a required step on the path to a more mature, unsubsidised renewable energy industry, which is now able to cost-effectively meet demand for large-scale, sustainable energy solutions. Globally, policymakers and stakeholders are increasing their commitment to renewable deployment. Notably, the EU has recently confirmed its commitment to renewables with a 27 percent target by 2030. In the USA, several states are increasing targets for renewable power in electricity systems. Countries like India and South Korea have increased

their targets for wind deployment. This is to a large extent driven by the increased cost-competitiveness of wind.

As such, the stakes for wind OEMs have increased. Delivering on the strategic priorities enables profitable growth through the mid term and enables Vestas to maintain leadership in an expanded and maturing industry through the long term.

### Onshore

Onshore wind power has crossed a threshold and is today the lowest-cost of energy solution in several parts of the world. Reductions in levelised cost of energy will accelerate in coming years, unlocking new markets and further expanding wind's competitiveness against conventional energy sources.

Towards the mid 2020s, global onshore markets are expected to grow at approx. 3-5 percent annually from the 2017 base<sup>3)</sup>, as healthy volume in mature markets is coupled with emerging market growth.

Vestas will leverage its global technical, commercial, and supply chain strength to manage the inevitable volatility across markets, claim a

3) Source: MAKE Consulting: Q4 Global Wind Power Market Outlook. November 2017.

strong position in emerging markets, and maintain a clear leadership position in mature markets.

As wind energy and other renewable technologies become more competitive, they serve to support the gradual but complete transition of market mechanisms towards large-scale tenders and auctions. Additionally, this trend will require an accompanying commercial transition – specifically, a stronger emphasis on partnering with customers to tailor packages that combine products, services, and commercial solutions for tenders and auctions, as well as taking an active role in deal origination.

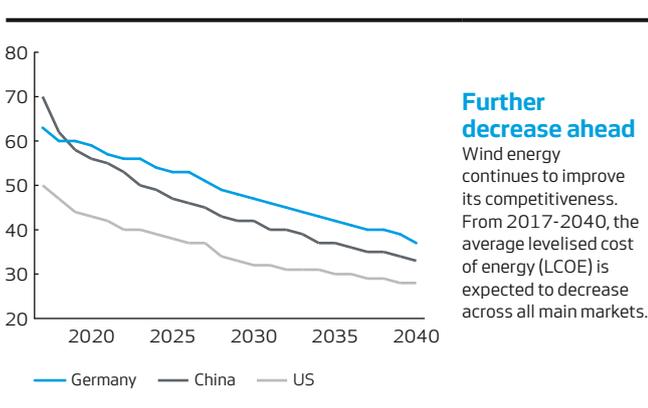
At the same time, intense competition for large auction orders is driving downward pressure on remuneration for owners of new wind power plants. This development also impacts the supply chain, including accelerated pressure on OEMs to reduce levelised cost of energy. However, experience also shows that markets tend to gradually stabilise after the introduction of new market mechanisms, leading to lower but more stable levels. Due to its global reach, Vestas is already very familiar with the transition to the new reality of auctions and believes to be stronger positioned to benefit here than most of its peers due to broad exposure to, and familiarity with, auction and competitive tender schemes.

Beyond auctions, repowering is another significant opportunity. In traditional wind markets such as North America, Europe, and China, repowering will drive an additional valuable supplement to greenfield installations, as customers recognise the strong business case of replacing ageing turbines at high-wind sites with more efficient and productive technology. This adds to the strength of the long-term forecasts.

Long-term opportunities are also driven by the evolution of other commercial elements. As renewables gradually replace fossil-fuel generated energy, the requirements of grids and energy systems will evolve and challenge OEMs to provide solutions that integrate multiple technologies, including effective energy storage, provide more efficient and effective asset management, and utilise data and digital solutions to enable renewables to better integrate into power grids.

Vestas will continue to accelerate its focus on introducing new and more efficient wind power plant solutions while reducing costs at all levels of the wind power value chain. In sum, the added emphasis on levelised cost of energy reduction places a premium on Vestas' position with global scale efficiency, technology leadership and industry-leading R&D capabilities.

### Expected average LCOE developments for onshore wind



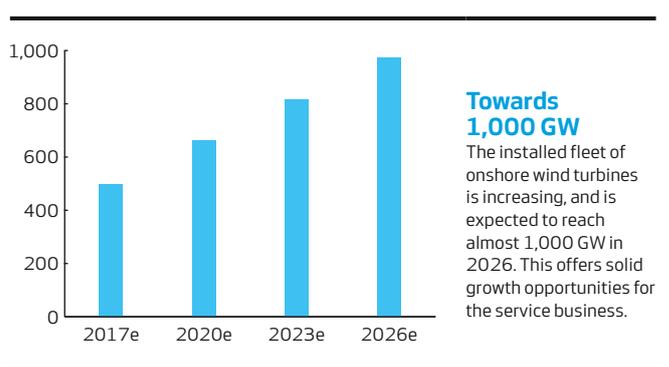
Source: Bloomberg New Energy Finance: New Energy Outlook: Wind. June 2017.

### Service

Service will continue to see high volume growth of more than 10 percent annually throughout the period, driven by growth in the installed base. Service growth is key to Vestas by providing a highly predictable and profitable component of its overall business portfolio.

4) Source: MAKE Consulting: Q4 Global Wind Power Market Outlook. November 2017.

### Expected development of total onshore installed base



Source: MAKE Consulting: Q4 Global Wind Power Market Outlook Update. November 2017.

Vestas is in a strong position to grow its service business even faster than the market, and from the level in 2016, Vestas aims to grow service revenue by at least 50 percent towards 2020, while also continuing to deliver industry-leading and stable service margins. The strong performance in 2017 indicates that Vestas is on the pathway of achieving this ambition.

Achieving this requires Vestas to differentiate itself by delivering more value to customers than its peers and to deliver services at the lowest cost. Vestas is strongly positioned to deliver through its focus on operational excellence across the service value chain and by having the largest fleet under service globally (76 GW). Towards 2020, Vestas will continue to enhance its service leadership and value-add to customers through the expansion of its multibrand capabilities, the deployment of new digital tools, and other means to increase customers' energy production, reduce their operating expenses, and increase their revenue. At the same time, continual efficiency improvements will ensure the quality of Vestas' service offerings and help maintain its cost leadership.

Beyond 2020, the growth of the service market is expected to continue as the onshore installed base is projected to double to approx. 1,000 GW by 2026.<sup>4)</sup> Given the strong growth and Vestas' high profitability in this segment, service is likely to become the company's largest profit stream. Vestas will continue to expand its volume leadership position through Vestas' own wind turbines and increasing multibrand sales.

### Offshore

The offshore segment is expected to accelerate growth, with projected industry volumes growing at 15-20 percent annually from a small base of roughly 3 GW installed in 2017.<sup>4)</sup>

Northern Europe will remain the core market for installations in the near-term, and the overall market is expected to grow moderately towards 2020. However, as other regions come on line, strong growth is expected beyond 2020 – mainly driven by Asia Pacific. Due to long lead times, the segment is characterised by a relatively high degree of certainty of minimum market volumes.

Through MHI Vestas Offshore Wind, Vestas' offshore joint venture with Mitsubishi Heavy Industries, Vestas will continue to invest to claim a leading position and expand the joint venture's reach in offshore wind throughout this period. MHI Vestas Offshore Wind has established itself as a leading offshore wind player, with orders over the last few years from the UK, Germany, Denmark, Belgium, and the Netherlands. With the outlook for offshore wind energy looking positive through the opening of new markets and further reductions in the cost of energy, MHI Vestas Offshore Wind is now shifting its strategic focus to expand into new markets and further consolidate its position in mature markets.