Industry dynamics
There is broad support for reducing CO$_2$ emissions and driving the development of sustainable energy supply, as underpinned by the 2015 COP21 Paris climate agreement and COP22 follow-up actions in Marrakech, Morocco, in 2016. Wind power is well-positioned to capture the greater demand for renewable energy. Wind as well as other renewable power sources are increasingly important elements in today’s energy mix. Renewables are among the solutions that can satisfy a growing demand for energy, whilst simultaneously lowering CO$_2$ emissions.

As wind energy costs continue to decline, the primary drivers for clean energy are expected to include replacement of existing generating capacity – fossil fuels and nuclear; further growth in global electricity demand; long-term policy stability; and country-specific targets amongst others driven by the Paris Climate Agreement.

Power market moving towards sustainable future
According to the International Energy Agency (IEA), electricity demand is expected to grow by almost 70 percent by 2040. In 2015, emerging markets outspent the Organisation for Economic Co-operation and Development (OECD) countries in clean energy investments.1) With around 1.2 billion people living without access to electricity, emerging markets are becoming increasingly important for the energy industry.1)

Vestas has a clear ambition to grow profitably in both mature and new markets. With more than 35 years of experience and a unique global reach with wind turbines in 76 countries across the globe Vestas has more experience than anyone else in the wind power industry when it comes to new and emerging markets.

Global electricity generation by source in 2014 and 2040 TWh


Onshore wind power industry is shifting from a growth to a stable market
The wind power industry is maturing and will face new opportunities and challenges towards 2020. The outlook for the industry remains positive, but now finds itself on a stable trajectory. The wind power industry has matured in recent years and is now seen as one of the main contributors to a more sustainable global energy mix.

Having witnessed a strong growth with new annual onshore wind power installations growing from 32 GW in 2013 to an expected level of 55 GW in 2016, the wind power industry is now expected to remain stable between 53 and 60 GW per year from 2017 to 2020 according to external market observers. As the markets transition from high growth to high and steady volumes, the competitive environment remains. So to continue to grow, winning market shares will be critical towards 2020.

Wind energy continues to increase its competitiveness

The cost of wind energy has reduced dramatically in recent years and has made wind an economically competitive power source with levelised cost of energy (LCOE) analysis for 2016 showing onshore wind energy to be fully competitive against gas and coal in many parts of the world. In simple terms, the reduction in cost of energy is driven by technological progress and scale – enabling everyone to benefit from the fact that wind is abundant and free and thus has low marginal cost – unlike fossil fuels.

On a global average, the price of wind energy has declined by 15 percent over the last five years, or 80 percent over the last 20 years, greatly supporting a strong underlying demand for wind energy. In fact, wind energy is expected to have accounted for approx 18 percent of new installed capacity globally in 2016.

On a regional basis, wind energy’s competitiveness only manifests itself further. For instance, Bloomberg New Energy Finance analyses show that in most major European markets, including the UK and Germany, new wind power projects are the cheapest new energy source when accounting for the carbon price – also cheaper than coal and gas.

In the USA, the real cost of wind energy has declined 66 percent since 2009 which among other things is expected to make wind power the largest new installed energy source in the USA in 2016.

In Brazil’s technology-neutral auction systems, wind power has a lower cost than any fossil fuel, and wind power was also the cheapest source of energy in Argentina’s first power auction after their recent policy changes. Additionally, in South Africa’s Renewable Energy Procurement Programme, wind power also proved cost competitive by offering a cost below all new coal and gas options.

While the general drive to reduce cost of energy does increase competition in the wind power industry, the sector also reaps the benefits from e.g. more developed supply chains and the improved overall perception of wind power from various decision makers. Hence, Vestas generally finds it positive overall that the wind power industry continues to improve its LCOE.

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**Levelised cost of energy (LCOE)
USD/MWh**

<table>
<thead>
<tr>
<th>Region</th>
<th>Onshore wind</th>
<th>Solar</th>
<th>Nuclear</th>
<th>Natural gas CCGT</th>
<th>Coal</th>
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</tr>
<tr>
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<tr>
<td>Global****</td>
<td>37</td>
<td>275</td>
<td>50</td>
<td>172</td>
<td>398</td>
</tr>
</tbody>
</table>


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4) Source: Danish Wind Association (online article): Market and Prices.
Whereas LCOE shows the cost of the energy source installed in a given market, including financing costs, the market price is often influenced by different support mechanisms of both direct and indirect nature. Although the objective of these varies across markets, a common driver is to incentivise investments in renewable electricity production, promoting energy sources with minimal environmental impact and external costs, i.e. costs borne by the society, as opposed to electricity production from fossil fuels or nuclear.

**Expected average LCOE developments for onshore wind USD/MWh**

![Graph showing significant decrease in LCOE from 2016 to 2030 across major markets.](source: Bloomberg New Energy Finance: Bloomberg New Energy Finance NEO. June 2016)

In 2015, the International Monetary Fund issued a study concluding that fossil fuel companies are benefitting from global subsidies of USD 5.3tn a year, once again highlighting that direct subsidies offered to various types of renewable energy sources are dwarfed by the consequential external effects from more traditional types of energy.9

**New policies generally very supportive of renewables and wind in particular**

Public policies that have supported renewable energy’s growth continue to evolve. Currently, investments in wind power are typically supported through financial incentive schemes remunerating the renewable power production. In some regions, support systems are becoming more market-based and moving towards systems providing support in addition to the market price – not in place of it.

The EU has asked all member states to decide by 2017 which form of market-based support they will introduce. Several EU countries are moving in the direction of using such systems, the most well-known being the transition in Germany to an auction-based system. As long as such market-based systems are structured in a way to create a level playing field for the different energy sources, Vestas does not expect this transition to be a disadvantage to the wind power industry.

In the USA, an extension of the American Production Tax Credit (PTC) was approved in December 2015, the main element of which was a two-year extension of the 100 percent value followed by a three-year phase-down period. The PTC extension provides the policy certainty necessary for effective business planning and investments. The longer-term certainty, alongside wind energy’s natural competitiveness against other power generation sources will ensure an expected solid future for wind energy in the USA.

In addition to the PTC, U.S. state policy efforts have been a priority focus in 2016 for Vestas. Following the successful passage of the Oregon Renewable Portfolio Standard (RPS) expansion, states including Maryland, Massachusetts, and New York have also approved favourable renewable energy expansions.

Asia’s two largest markets, China and India, reaffirmed their commitment to a greener future through various measures in 2016. Wind power development in China has become more mature in 2016, as policy makers strive to ease curtailment instead of continuously pursuing installation targets. The Indian government is very supportive of wind energy and has established ambitious goals – aiming to install 60 GW by 2022.10 Vestas is optimistic about the Indian market, yet also realistic about the time it will take to re-establish its footprint in the market.

Vestas continues to counterbalance local political uncertainties through a strong global footprint and presence in a large number of markets. Furthermore, Vestas continues to focus on LCOE reductions to decrease dependence on financial support to wind energy.

**Shift to auctions and tenders**

Over the past few years, renewable energy auctions have gained in popularity as a policy tool to allocate capacity at an optimal market price. The number of countries adopting auction schemes has significantly increased, whilst bidding prices continue to hit record low levels.

Rather than a temporary phenomenon, auctions repeatedly prove to be a strong market trend that is here to stay: while in 2009, only nine countries had called for renewable energy auctions, by 2015 the number increased to 64.11

Auctions are already taking place in markets like Argentina, Brazil, Chile, Mexico, Peru, Russia, and South Africa, while Germany is preparing to enter into auction systems starting early 2017. Taking into account only these markets, Vestas has helped customers secure projects of more than 3 GW in auction systems over the past five years.

There is no doubt that auctions have become “the new normal” for the wind power industry and Vestas finds itself well-positioned to reap the benefits from these developments due to its experience built on 82 GW of wind turbines installed in 76 countries, more than anyone else in the wind power industry.

In response to more auctions and tenders, Vestas customers are increasingly sophisticated and seeking greater collaboration. Earlier engagement with customers to build capabilities to jointly win auctions and tenders will be critical in the future for every wind turbine manufacturer. The importance of scale and full understanding of every element in the value chain will define the winners of the industry.

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10) Source: Recharge News: India is on track to installing 175 GW of renewable energy by 2022. 28 September 2016.
This is Vestas – from wind to customer

**Vestas’ business model**

Vestas’ commitment to continuous improvement in technology, service, and operational excellence will ensure that Vestas is the global leader in sustainable energy solutions. Something Vestas can achieve if it continues to put all its efforts into being the global leader in sustainable energy solutions. That is Vestas’ vision.

Developing and building wind turbines and service solutions are only part of Vestas’ business. Today, Vestas is involved in projects where scope of work ranges from “simple” supply and commissioning projects to turnkey projects involving the supply, installation, and commissioning of wind turbines as well as establishment of access roads, foundations, cabling, electrical substations, communication systems, and more.

Vestas’ value chain stretches from project planning over sourcing and manufacturing, construction and installation to operation and maintenance. It is a complex process that depends on a highly skilled and dedicated workforce.

**Corporate strategy**

The business model enables Vestas to execute its corporate strategy.

At Vestas, the mission is to deliver best-in-class energy solutions and set the pace in the industry to the benefit of our customers and our planet. To achieve that mission, Vestas is inspired by its values of Accountability, Collaboration, and Simplicity. These reflect guiding principles in terms of how Vestas’ employees work and engage with each other internally and with the full range of stakeholders externally.
Research and development

Vestas’ product portfolio covers a wide range of offerings from wind turbines across all wind classes to differentiated service packages and offerings to optimise the customers’ wind power plants.

Vestas has a strong focus on continuously developing and optimising the performance of its wind turbines, thereby meeting customer needs and remaining the technology leader in the wind power industry. Vestas’ product development strategy is to continue to optimise its technology to lower the cost of energy and hence, deliver increased value to its customers.

- **Product offering.** With multiple variants based on the 2 MW and 3 MW platforms being available, the customer can choose the wind turbines best suited for the specific site.
- **Options.** In addition, Vestas’ technology leadership continuously ensures that options like the Large Diameter Steel Tower and Vestas De-Icing are available for site specific conditions.
- **Test facilities.** In Denmark and the UK, Vestas’ testing facilities can provide unparalleled insight into global wind and weather conditions.
- **Minimising the environmental footprint** is a constant prerequisite for Vestas’ continued development and for reducing the use of the earth’s limited resources.

Project planning and design

Starting several years before wind power plant construction, Vestas engages with its customer to find the optimal wind sites, design the optimal layout, and secure grid compliance.

Efforts like these make it easier to get the wind power project financed and meet regulations, while providing the conditions for maximising return on investment over the wind power project’s lifetime.

- **SiteHunt** is an advanced analytical tool that examines a broad spectrum of wind and weather data to evaluate potential sites and establish which of them can provide the optimum conditions for the wind power project.
- **SiteDesign** optimises the layout of the wind power plant by finding the most effective balance between the estimated ratio of annual revenue and operating costs through a sophisticated analysis of lifetime energy costs for each wind turbine.
- **Electrical PreDesign.** By identifying the varying, complex, and specific grid code requirements across the globe and simulating extreme operating conditions, Electrical PreDesign provides an ideal way to optimise the design of electrical components for the wind turbines, creating a grid compliant, predictable, and reliable wind power plant.

Sourcing and manufacturing

Working closely with its customer in the project planning phase gives Vestas a competitive advantage in the sourcing phase. With a broad range of product offerings, Vestas offers industry leading, high quality wind turbines covering all wind speeds and wind classes, thereby securing an optimal fit to the wind power project’s needs and requirements. In general, Vestas follows a make-to-order principle.

- **Manufacturing footprint.** Vestas has manufacturing facilities in eight countries – in North and Latin America, Europe, and Asia – and has more than 35 years of experience in wind turbine manufacturing.
- **Outsourcing.** Depending on the type of component and in consideration of market specific local content requirements, Vestas outsources various parts of the wind turbines.
- **Close partnerships with large suppliers** involving these in the development of products and processes, as the suppliers often possess many years of knowledge and experience that can be utilised to the benefit of both parties.
- **Environmental performance.** Vestas strives to improve the environmental performance of its production and operations to match the performance of its products.

Construction and installation

During the construction phase, the wind power plant is built and connected to the grid. Depending on the customer risk profile, Vestas can provide everything from simply supplying the individual wind turbines to an all-inclusive package, including supply, installation, and calibration of the wind power plant as well as civil and electrical works.

- **Supply-only** simply includes supplying the wind turbines and may include supervising, commissioning, and transporting tasks.
- **Supply-and-install.** In addition to supply-only, supply-and-install further includes installation tasks such as cranes and manpower.
- **EPC/turnkey.** In addition to supply-and-install, EPC/turnkey projects also include balance of plant tasks such as roads, foundations, cabling, and substation.

Operation and maintenance

Once constructed and installed, the operation and maintenance phase begins, which is the longest phase, lasting up to 20 years or more. Wind turbines need to be serviced regularly to perform consistently at their best.

With its substantial knowledge of optimising wind power plants, Vestas offers a wide range of innovative service solutions ranging from pay-as-you-go to full-scope energy-based availability guarantees as well as completely customised solutions, which can help increase the production and profitability of the wind power plant – thereby reducing risks, increasing business case certainty, and ultimately lowering cost of energy.

- **Active Output Management (AOM)** 1000-5000 refers to Vestas’ standard service packages that ensure the highest possible output at all times.
- **Customised solutions.** Tied specifically to the customers’ needs, Vestas also tailor service solutions to optimise the business case.
- **Spare parts.** Often included in various service packages, Vestas also provides spare parts and repairs via its global supply chain and local presence.
- **Big data.** By monitoring more than 32,000 wind turbines 24/7 across the world and having the wind power industry’s largest wind data library, Vestas has an unparalleled insight into global wind and weather conditions.
Raising the bar towards 2020
After completing a successful turnaround, Vestas launched the Profitable Growth Strategy in 2014, with the objective to deliver profitable growth. Vestas is executing on the strategic objectives and meeting the targets with the result that Vestas is now stronger than ever across the business.

In the coming years, the strategic ambition is to further develop and expand Vestas’ market position. Profitable growth will continue to set the direction. Vestas will continue to work diligently on strengthening its position further by also taking advantage of the opportunities ahead. Vestas wants to grow in a profitable way, as generating profit will allow Vestas to further expand its business and achieve its ambitions.

And at the same time, Vestas needs to prepare for the future to beat the increasing competition on all parameters. To do so, Vestas will build further on its capabilities to integrate new technologies in its product portfolio and at the same time ensure the lowest possible levelized cost of energy. Improving its competitiveness also requires Vestas to adapt its organisation to succeed in rapidly evolving market conditions.

Vision and mission
Vestas’ vision and mission serve as important beacons for uniting all Vestas’ key stakeholders, most importantly its employees, setting a clear purpose and direction for where the company is heading and how the employees can support that journey.

Vision – To be the global leader in sustainable energy solutions, meaning:
- Lowest cost of energy solutions
- Preferred partner
- Leader in revenue
- Best-in-class margins.

Mission – Deliver best-in-class energy solutions to the benefit of Vestas’ customers and the planet.

Vestas corporate strategy update
The wind power industry is maturing and will face new opportunities and challenges towards 2020. The outlook for the industry remains positive while continuously evolving, as is Vestas and its overall strategy.

Strategy update in response to industry outlook
The 2017-2020 strategy update captures an evolving reality for wind power where the onshore sector is shifting from high growth rates to high but steady volumes. To be the global leader in sustainable energy solutions, Vestas need to do more in all parts of the business. Looking ahead to 2020, three key themes shape Vestas’ approach across the Group:
- Raising the bar – Vestas will set even higher, more ambitious targets to push ourselves to stay ahead of competition.
- Refining initiatives – Re-scoping or expanding Vestas strategic initiatives to reflect new market realities.
- Accelerating execution – Accelerating execution of new and existing initiatives to deliver on higher targets.

The 2017-2020 strategy provides Vestas with an attractive financial outlook towards 2020. In addition, Vestas continues to explore opportunities to accelerate growth and develop the company further.

The strategic direction for Vestas remains the same, but Vestas has refined and accelerated its strategic initiatives to effectively respond to a new reality as well as updated its vision and mission statements. The Vestas vision – to be the global leader in sustainable energy solutions – reflects the evolving nature of power markets and our customers who operate in those markets. Vestas plays in the sustainable energy solutions market and wind continues to be at the core DNA of Vestas offerings.

Vestas’ strategy revolves around four core objectives:
- Global leader in the wind power plant solutions market
- Global leader in the service solutions market
- Lowest cost of energy solutions
- Best-in-class global operations.
Vestas will continue to focus on profitable growth in mature and emerging markets, partnering more closely with its customers, expanding its key account programme, involving customers in product development, and working closely with them to deliver tailored solutions.

With its strong global footprint, Vestas has a competitive edge, allowing it to grow profitably in both developed and developing markets. Vestas will continue to scale production up and down in accordance with demand in different regions. Building on its long-standing global presence, Vestas will continue to pursue opportunities in markets where wind energy is set to expand.

As part of Vestas’ ambitions to grow profitably, Vestas is participating in project development to a limited extent as some markets require this. By entering into co-development activities under a more structured approach, Vestas expects to be able to engage earlier with certain customers and thereby potentially lock deals earlier than it would otherwise be possible in some cases, whilst simultaneously offering significant value to the customer. The short to medium-term financial effects from such initiatives are expected to be limited in the context of Vestas’ overall financials.

The repowering potential is increasing rapidly and Vestas is well-positioned to capture value in this market segment. The main repowering opportunity towards 2020 is in Germany with additional potential in Denmark, the USA, and India. Beyond 2020, the repowering potential will become global.

Vestas’ mid-term ambition to grow faster than the market remains unchanged for 2017-2020. Vestas’ ambition is to uphold its No. 1 global position in installed wind power capacity.

Vestas has installed 82 GW on six continents and services more than 71 GW across the globe. Together with Vestas’ industry-leading quality and a Lost Production Factor under 2 percent, Vestas has an unparalleled track record within operation and service of wind turbines.

As the majority of Vestas’ wind turbine contracts are sold with service agreements, typically running for five to 10 years, the stable revenue stream from the service business is set to continue its growth as the installed base of wind turbines increases.

As part of Vestas’ goal to become the leader in the service solutions market, Vestas will grow its multi-brand service solutions. Multi-brand service solutions offer a large opportunity as Vestas turbines cover approx 16 percent of the total installed fleet worldwide. With the acquisitions of UpWind Solutions Inc. and Availon Holding GmbH, Vestas accelerated its competences within multi-brand service solutions.

Vestas large installed base and unmatched data processing and analytics capabilities within the wind power industry serve as an important enabler for developing and expanding the service business further.

As a result of higher than anticipated growth in the service business, Vestas has decided to increase its strategic ambition for the area. The new target is to grow its service business by more than 50 percent organically towards 2020 versus 2016 revenue, while at the same time deliver best-in-class margins.
For more than 35 years, Vestas has been driving down the cost of energy in the wind power industry and been at the heart of the technological progress. Vestas has a clear ambition to sustain this downward trend and lower the cost of energy faster than anyone in the wind power industry by bringing commercially valuable products and services to the market. Vestas’ technology strategy derives its strength from market-driven product development and extensive testing at the wind power industry’s largest test facility, located in Denmark.

Coupled with utilising Vestas’ smart data capabilities across the entire value chain, Vestas’ approach to technology enables it to continuously integrate new and effectively innovate proven technologies to create high-performing products and services in pursuit of its over-riding objective: lowering the levelised cost of energy (LCOE).

During 2016, Vestas introduced new variants and solutions to support its ambition to reduce LCOE faster than market average. By reducing LCOE faster than market average, Vestas aims to provide its customers with the highest returns in the industry. Vestas’ investments in new technology are the highest in the wind power industry.

Vestas has a strong position within its three main business areas, onshore wind turbines, services, and offshore wind. Each area offers a solid base for continued growth and stability.

In the coming years, Vestas expects the onshore wind turbine market to transition from high global growth rates to high but steady volumes, while Vestas expects to see double-digit growth in the worldwide installed base creating important new opportunities to grow the service business. Finally, offshore wind is projected to become a large-scale renewable technology, creating the foundation for a high growth scenario in the offshore market.

Finally, working capital management remains an area of high priority for Vestas. Consequently, the focus remains on improving the cash conversion cycle and lowering the working capital tied up while transporting and installing the wind turbine projects.

Best-in-class global operations
Vestas will continue to build its strength within its core business in 2017 and beyond. The overall strategic ambition is to ensure profitable growth for Vestas and expand its global leadership. Vestas has come a long way and will continue its journey to create an even more flexible and robust company.

Vestas’ size provides a competitive foundation for lowering costs at every stage of the value chain. Vestas will optimise its production footprint to further improve its flexibility, labour cost efficiency, and CAPEX efficiency. Vestas will also continue to increase efficiency by leveraging on the scale of its operations.

Vestas’ corporate strategy positioned to support growth in all areas
Vestas has a strong position within its three main business areas, onshore wind turbines, services, and offshore wind. Each area offers a solid base for continued growth and stability.

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Vestas’ financial and capital structure targets as well as related dividend policy, link to the strategic aspirations of the company.

**Financial ambitions**
Vestas wants to exhibit the strongest performance in the sector. To achieve such a performance Vestas has set itself some high financial ambitions towards 2020.

Vestas’ mid-term ambition is to grow faster than the market and be the market leader in revenue, while at the same time deliver best-in-class EBIT margin.

By increasing earnings and keeping investment and net working capital requirements low, Vestas aims to generate a double-digit return on invested capital (ROIC) each year over the cycle. Vestas expects to be able to finance its own growth and thus, the free cash flow excl. marketable securities and short-term financial investments is expected to be positive each financial year.

**Capital allocation priorities**
The main priority is to invest in Vestas’ corporate strategy and use capital resources for required investments and R&D to realise this strategy.

As a player in a market where projects, customers, and wind turbine investors become larger, Vestas aims to be a strong financial counterpart. Capital resources will be maintained to secure compliance with the capital structure targets:

- Net interest bearing debt/EBITDA ratio is to be below 1.0% at any point in the cycle.
- Solvency ratio in the range of 30-35% percent by the end of each financial year.

Available capital resources may also be used for bolt-on acquisitions to accelerate or increase profitable growth prospects.

Any decision to distribute cash to shareholders will be taken in appropriate consideration of the capital structure targets and availability of excess cash. Determining the level of excess cash will be based on the company’s growth plans and liquidity requirements.

The dividend policy reflects the general intention of the Board of Directors to recommend a dividend of 25-30% of the year’s net result after tax, which will be paid out following the approval by the annual general meeting.

In addition, Vestas may from time to time supplement with share buy-back programmes to adjust the capital structure. Such share buy-backs, if any, will likely be initiated in the second half of the year based on realised performance.

In years without major extraordinary investments the total distribution to shareholders through dividends and share buy-backs may constitute the majority of the free cash flow.