Global Wind Market Supply Side Update –

Impact of market consolidation on global supply chain

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About GWEC

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GWEC
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GWEC is a trade association that acts as the **authoritative voice for the wind energy sector**

Key Activities

Taskforces and working groups

Market Intelligence

Best practices initiatives

International partnerships

Members Area

Events

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GWEC Taskforces

GWEC OFFSHORE WIND TASK FORCE

Focus on China, India Taiwan, Japan, Korea, US, Vietnam

GWEC LATIN AMERICA WORK FORCE

Focus on Brazil, Mexico, Argentina, Colombia

GWEC SOUTH EAST ASIA TASK FORCE

Focus on Vietnam, Philippines, Thailand, Indonesia

GWEC GLOBAL WIND ENERGY COUNCIL AFRICA

Just launched in May 2019
Focus on South Africa, East Africa

GWEC Events


WindEnergy Hamburg
The global on- & offshore expo
GLOBAL OFFSHORE WIND SUMMIT
CHINA | 1-2 June 2019
CHINA WINDPOWER
GLOBAL OFFSHORE WIND SUMMIT
TAIWAN
Mexico WindPower
EXHIBITION & CONGRESS
VIETNAM WIND POWER
COLOMBIA
windergy
INDIA 2019
WIND POWER FOREVER
WINDABA
ARGENTINA ENERGÍA EÓLICA 2018
Brazil Windpower 10 anos

GWEC Market Intelligence

About GWEC Market Intelligence

GWEC Market provides a series of insights and data-based analysis on the development of the wind industry. This includes a market outlook, country profiles and policy updates, deep-dives on the offshore market among other insights.

GWEC Market Intelligence derives it insights from its own comprehensive databases, local knowledge and leading industry experts.

The intelligence team in GWEC consists of three strong experts with long-standing industry experience.

GWEC Market Intelligence collaborates with its regional and country member wind association as well as with its corporate members.

Karin Ohlenforst – Director of Market Intelligence
Joyce Lee – Policy and Operations Director
Feng Zhao – Director of Strategy

How to access GWEC Market Intelligence

- Corporate GWEC-Members
- Wind energy associations
- Non-GWEC Members

Subscription
Contact Feng Zhao feng.zhao@gwecnet

GWEC Market Intelligence Areas

Market Insights
Market statistics, market outlook, auction/tender updates

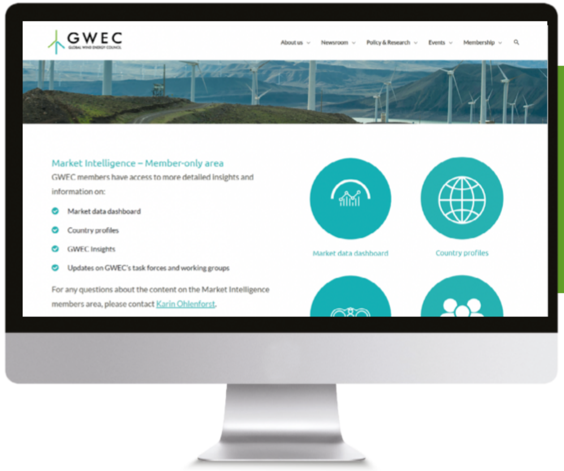
Policy and Regulations
Country profiles, policy updates, offshore updates

Asset Owners
Database of asset owners in key markets

Technology/ Supply Chain
Wind turbine data, technology trends, component assessment

Energy Transition
Shift to value-focused, new wind-based solutions

O&M
ISP - OEM - Self Perform database for key markets



GWEC Market Intelligence created a Member only area to provide more in-depth market intelligence to GWEC's members and their employees.

Click here to get your login

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C0 Members

Vestas
SIEMENS Gamesa RENEWABLE ENERGY
GE
ENERCON ENERGY FOR THE WORLD
GOLDWIND
ENVISION
MHI VESTAS OFFSHORE WIND
NORDEX We've got the power.
IBERDROLA RENEWABLES
Ørsted
acciona Energía
edp renewables
Shell
equinor
ACWA POWER
DNV·GL
ReNew Power

C1, C2, and C3 Members

MAINSTREAM RENEWABLE POWER
Ingeteam
VAISALA
bachmann.
NRGSystems
THE SWITCH
PNE WIND
WKN AG
Mita-Teknik Great at Control
LM WIND POWER
UL AWS TRUEPOWER
FFC ENERGY
SentientScience
Hamburg Messe und Congress
dulas
AIRES
BVGassociates
ARCVERA RENEWABLES
meteodyn
RAMBOLL
Gardline
BECKER BÜTTNER HELD
CRE CENTRUM ROZWOJU ENERGETYKI
FTI CONSULTING
MAKE CONSULTING
K2 MANAGEMENT
MESSE HUSUM CONGRESS
Fraunhofer IWES
Nexans
Resolux
LOC RENEWABLES
VENTUS
MAN | PrimeServ
SGB Group
polytech
energiasdelplata SMART ENERGY MANAGEMENT
ZX Lidars
TITAN
SUPERNODE
noble group
DAFA
Panticon
CATAPULT Offshore Renewable Energy
PRICE FORBES
VORTEX
UTOPUS INSIGHTS

Associations

ABEEólica Associação Brasileira de Energia Eólica
AWEA
anev
amdee Asociación Mexicana de Energía Eólica
audee
BWE
canwea
CREIA
wind denmark
DWEA Danish Wind Export Association
Hellenic Wind Energy Association
HOLLAND HOME OF WIND ENERGY
JWEA
IWTMA INDIAN WIND TURBINE MANUFACTURERS ASSOCIATION
Norwegian Energy Partners
JWPA
한국풍력산업협회 KWEIA
TUREB TWEA
SAWEA
VDMA
Wind EUROPE

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GWEC Membership

Corporate Membership

Category Eligibility	Annual Fee
C0 Corporations with an annual turnover in the wind energy sector exceeding €100 million. 1 automatic board place.	€36.000
C1 Corporations with an annual turnover in the wind energy sector between €50 million and €100 million. 1 board place for every 3 C1 members.	€12.000
C2 Corporations having an annual turnover in the wind energy sector between €10 million and €50 million. 1 board place for every 6 C2 members.	€6.000
C3 Corporations having an annual turnover in the wind energy sector under €10 million. No board place.	€1.200

Association Membership (reserved for non-profit organisations)

AC1 Continental associations representing at least 3/4 (75%) of the existing national wind energy associations on that continent, and where the continent has at least 20.000 MW of installed wind energy capacity. 3 automatic board places.	€10.800
AC2 Continental associations representing at least 3/4 (75%) of the existing national wind energy associations on that continent, and where the continent has less than 20.000 MW of installed wind energy capacity. 1 automatic board place.	€6.000
A1 Associations and organisations active in the field of wind energy. This category includes National wind industry associations. 1 automatic board place.	€3.600
A2 Associations and organizations active in the field of wind energy. This category also includes academic institutions and non profit institutions. No board place.	€0

Consolidation in global wind industry

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Consolidation (horizontal integration) in wind industry, 2001-2019

2001
Vestas & Gamesa signed JV.
Vestas sold its 40% share to Gamesa.

2002
GE bought Enron Wind and formed GE Wind.

2003
Gamesa took over MADE.

2004
Vestas & NEG Micon merged.

Siemens bought Bonus.

2005

2006
Suzlon acquired 86.5% of the voting rights in Repower, now fully owned.

Alstom acquired Ecotecnia.

2007

2008
Goldwind took over 70% stakes in Vensys.

2009
XEMC took over DarWind.

GE Wind bought ScanWind.

STX acquired Harakosan.

Daewoo bought Dewind.

2010
Areva completed the purchase of Multibird.

2011
Toshiba bought a 35% stake in Unison.

2012
Hitachi acquired FHI`s wind business

2013
MHI signed offshore JV with Vestas

Mingyang took majority share in GWPL

2014
GE took over Alstom`s energy business
Gamesa and AREVA signed offshore JV

2015
Nordex and Acciona merger announced

2016
Senvion Buys Wind Turbine Maker Kenersys

Siemens-Gamesa merger approved by shareholders and Siemens-Gamesa buys 50% of Adwen from Areva

2017
SGRE merger came into legal effect and Adwen Discontinued

Enercon took over Dutch Lagerwey

2019
SGRE in talks to acquire selected services and onshore assets in Europe from Senvion

Key brands involved 2014-2019

Source: GWEC Market Intelligence, September 2019

Tier 2 and 3 turbine OEMs suffered globally, 2009-2019

Source: GWEC Market Intelligence, September 2019

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Impact of market consolidation on global supply chain

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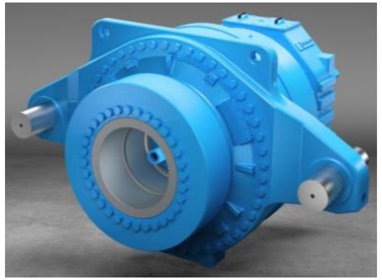
Recent examples of negative impact of market consolidation on key component suppliers

Main gearbox



Eickhoff

RENK

moventas

Power converter

VERTIV

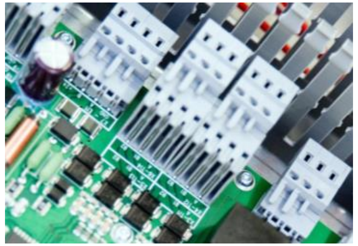
EMERSON NETWORK POWER IS NOW VERTIV

WOODWARD

Ingeteam

科诺伟业 CORONA

Turbine controller



KK Wind Solutions®

Mita-Teknik

Ingeteam

Source: GWEC Market Intelligence

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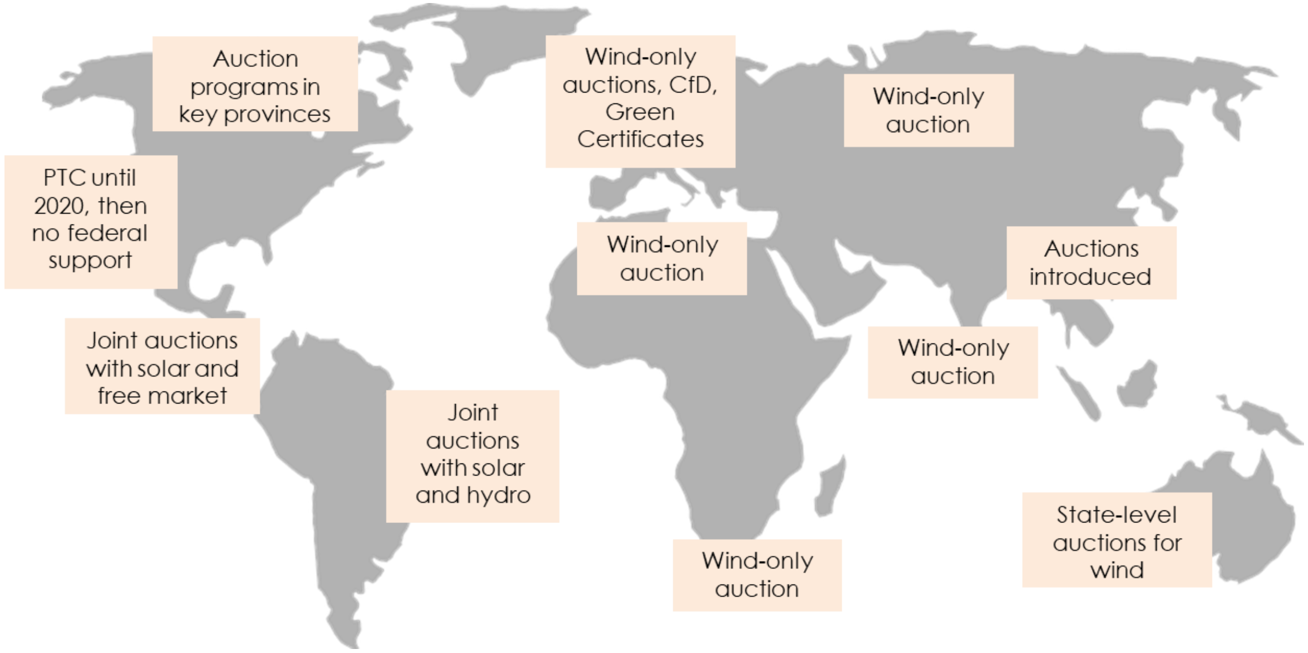
Is the consolidation going to continue?

Market-based mechanisms dominate the global wind market

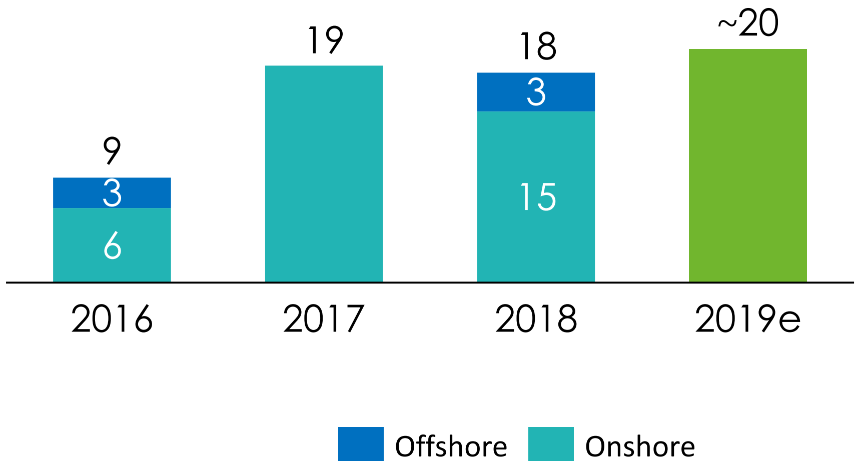
Support scheme and capacity allocation mechanism

Status Jan 2019



Auction capacity for wind

MW, capacity captures by wind during auctions

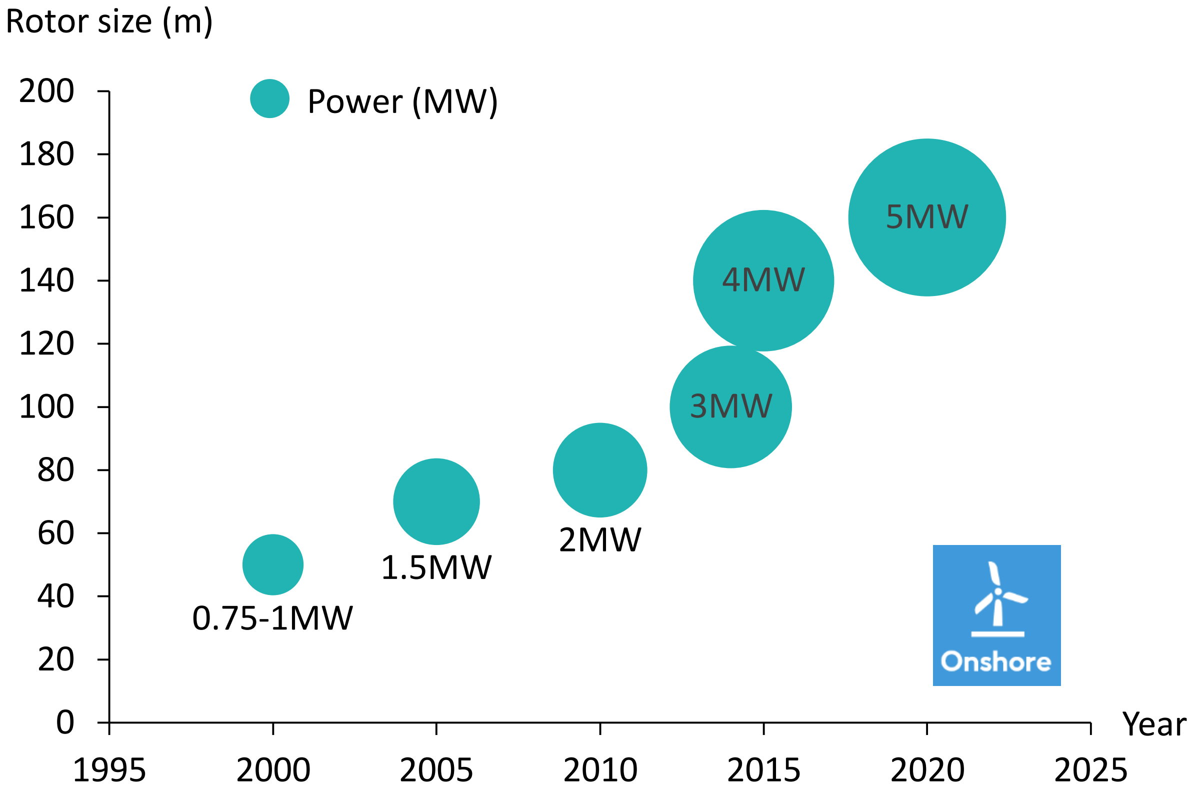


- **Technology-specific auctions and tenders ("Wind only") dominate to allocate onshore and offshore capacity**
- **Several markets have or plan to move to neutral or joint technology auctions to increase competition and reduce cost even further**
- **Subsidy-free onshore and offshore wind is already in the horizon**

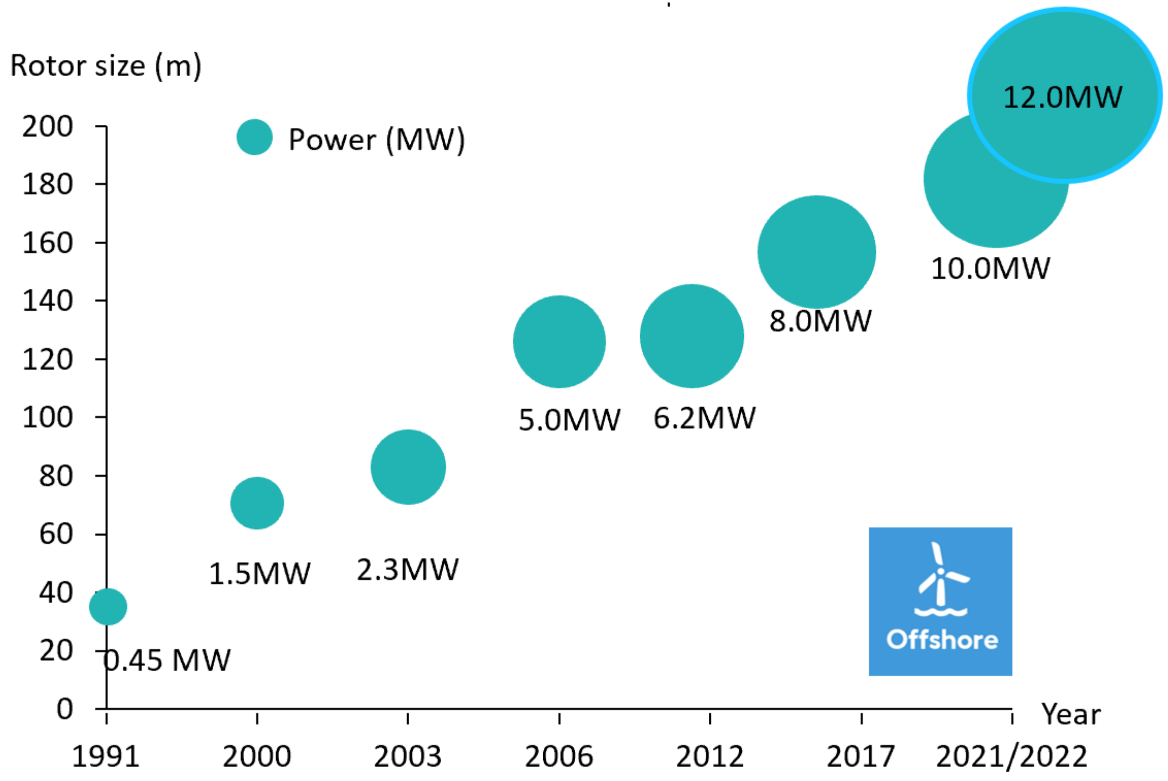
Source: GWEC Intelligence, National sources

Innovation and volume are key for competition, hard for tier 2&3 turbine OEMs to follow

Rotor sizes and power rating to increase
Commercial offshore wind turbine development



Turbine sizes and power rating to increase
Onshore wind turbine size development*



* Average turbine size
Source: GWEC Market Intelligence, June 2019

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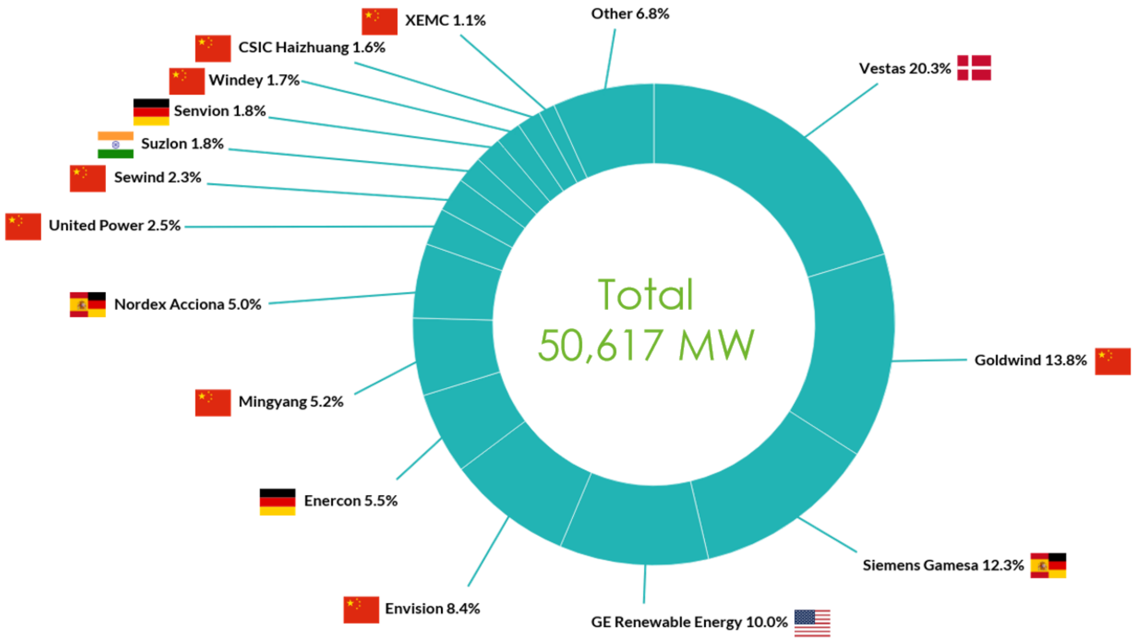
Wind industry is getting maturing and consolidation will continue

Top 15 Turbine suppliers in annual global market 2018



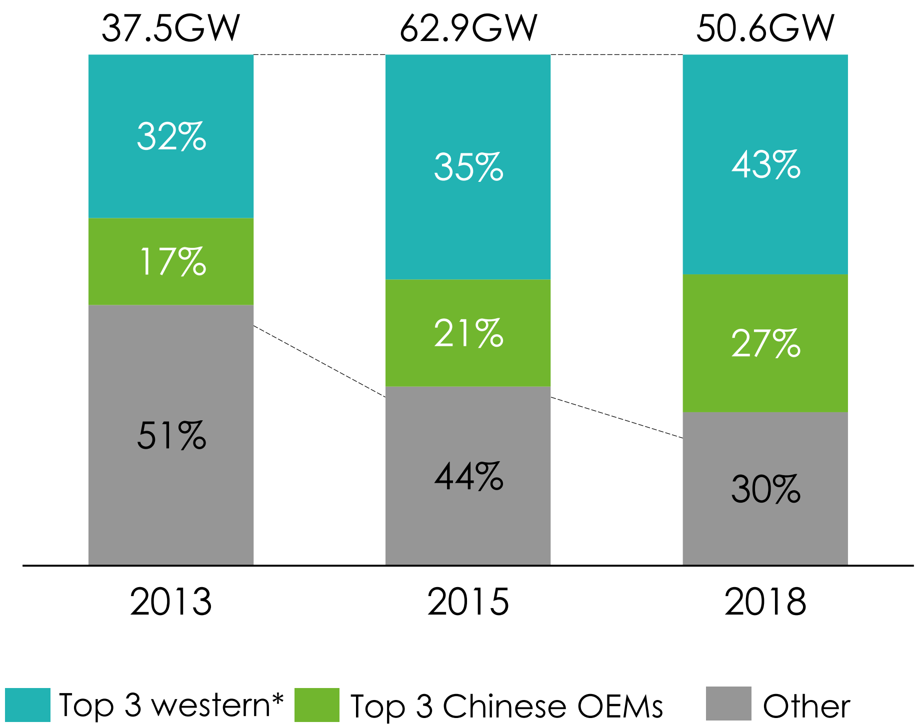
Note: The 2017 new installation data used for comparison in this report is from FTI Intelligence Global Wind Market Update 2017 report released in April 2018

Source: GWEC Market Intelligence, April 2019

Top 15 turbine OEMs – accounted for 93.2% global market share in 2019, which was 82.3% in 2015.

Market shares of top 3 western and top 3 Chinese OEMs show market dominance and consolidation

(per cent)



*** Top 3 western** – Vestas, GE Renewable and SGRE
Top 3 Chinese – Goldwind, Envision and Mingyang

Source: GWEC Market Intelligence, April 2019

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Then, what is your strategies as a supplier?

Strategies by key component suppliers

- Building the new relationship with tier one turbine OEMs
- Looking for partnership with low cost suppliers (technologies vs. volume)
- Capitalizing the opportunities in service market incl. retrofit market
- Providing the value-added solutions in innovation, modulization

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- **What is your strategies as a supplier?**

Thank you

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