Growth in the Midwest wind energy sector

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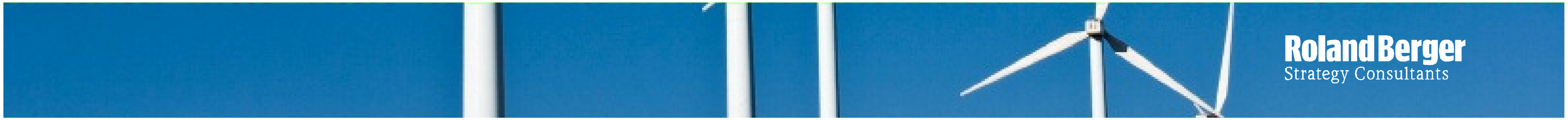
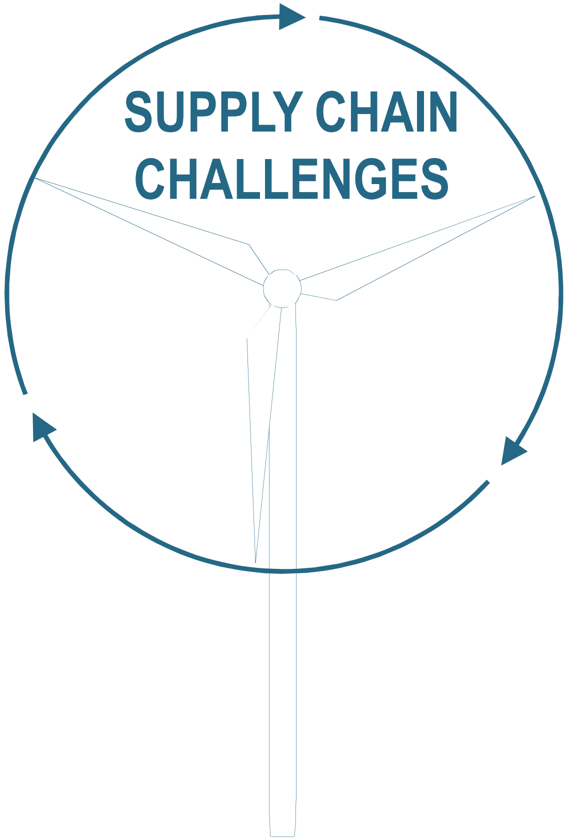


The wind energy supply chain is facing two challenges

Wind turbine demand

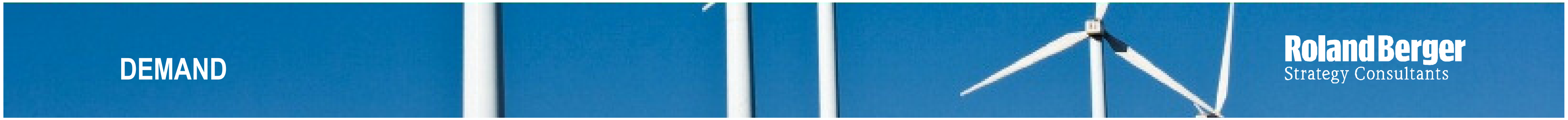
- Capacity installation doubled between 2006 and 2007
- Production tax credits were extended through 2008
- However, the likely expiration of PTC will hurt capacity installation in 2009
- New capacity installation in the US is forecasted to grow at 30% p.a. – faster than global growth



Component supply

- Lead time in key components can be over a year
- Increasing raw material prices are pushing up the overall costs
- Uncertain demand (based on PTC uncertainty) is limiting the willingness of suppliers to invest in additional capacity

Source: Roland Berger



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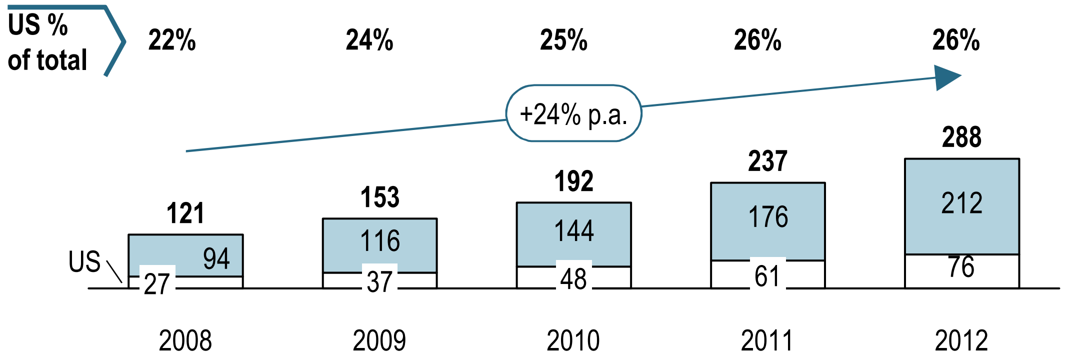
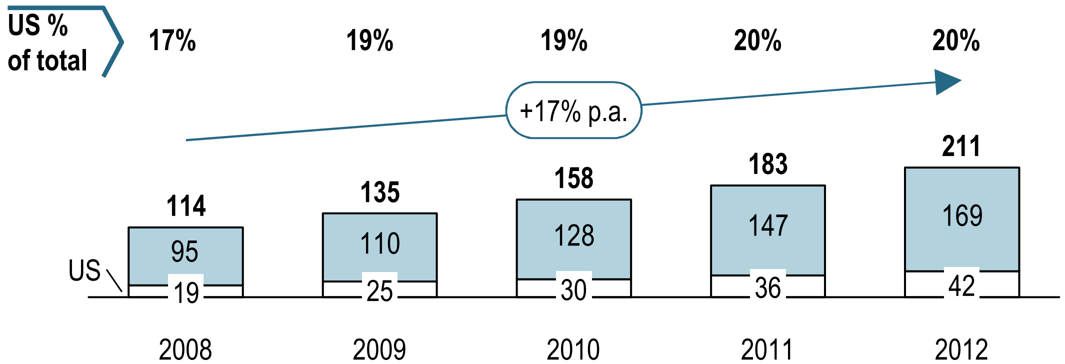
The US installed base of wind turbines is expected to grow faster than the global market

Growing installed base calls for wind turbines

Installed base of wind turbines ('000 MW)



Installed base of wind turbines ('000 units)



Remarks

- The growing rate of new installations will contribute to a global installed base which will gain more importance for global energy supply
- The US is expected to grow faster than the global market
- However, the US forecast is highly dependent on US regulations (particularly the PTC)
- The growing number of installed turbines will also require a professional maintenance, repair and overhaul (MRO) management

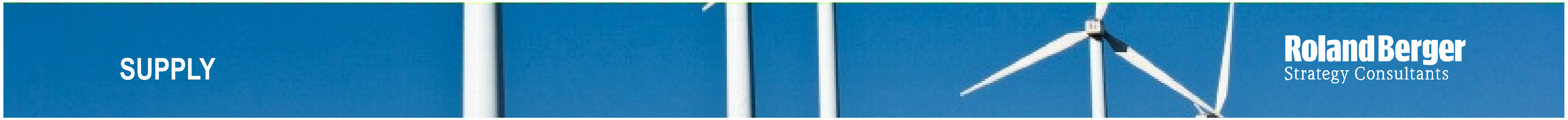
Source: BTM 2008; Roland Berger

Roland Berger Strategy Consultants

Roland Berger Strategy Consultants has identified several key trends in the wind energy supply chain

1. Increasing prices for raw materials
2. Increasing lead time for key components
3. Increasing vertical integration and/or strategic sourcing with wind turbine manufacturers
4. Emerging trend of "building capacity where the demand is" – for large components
5. However, global suppliers (tier 2 and tier 3) are not rushing to enter the US market
   - They don't want to focus too much on the WTG market (other business is also doing well)
   - They are not convinced in the stability of the US market

Source: Roland Berger



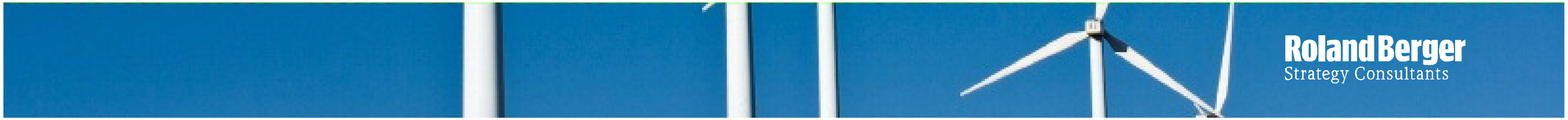
Currently, domestic supply of WTG components does not meet domestic demand, creating lead-time and pricing challenges

Supply chain challenges

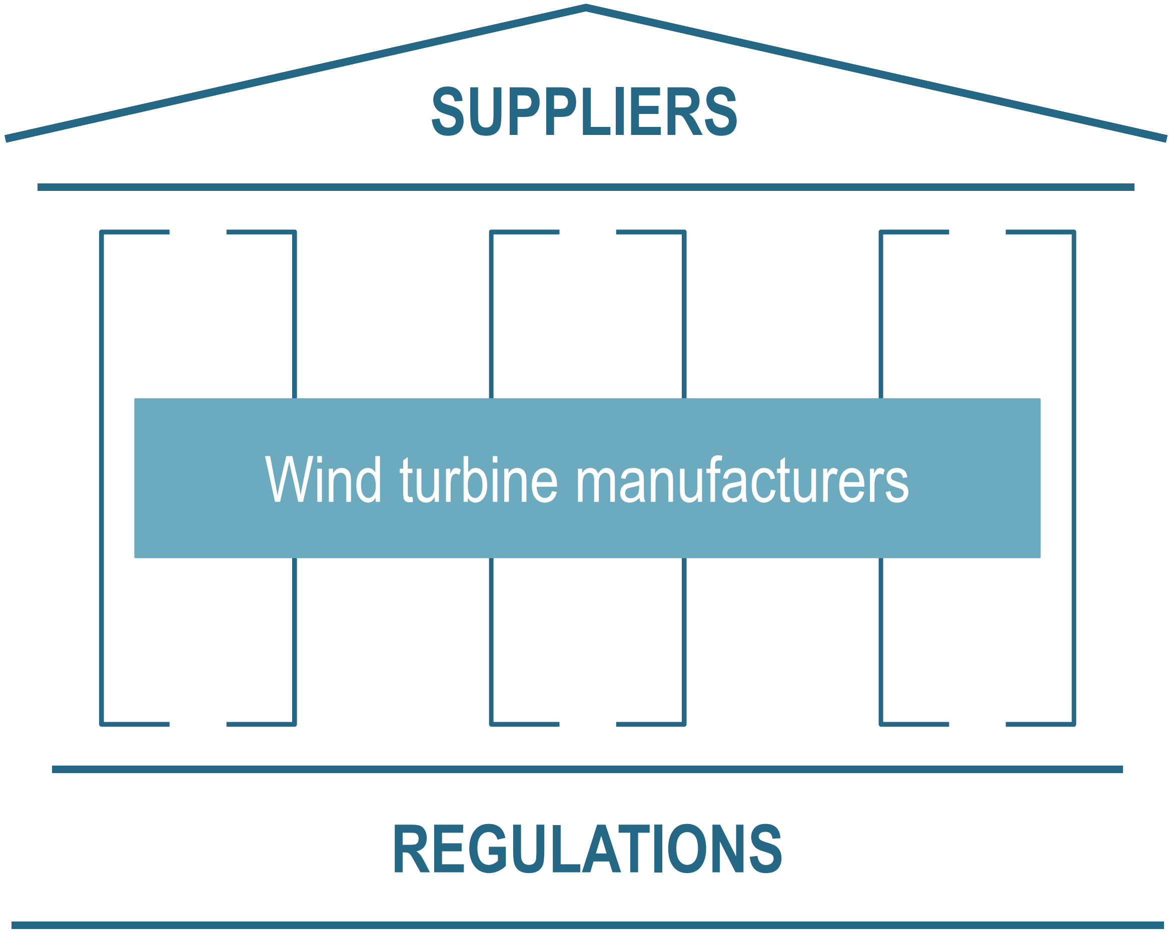
	BLADES	GEARBOXES	GENERATORS	BEARINGS	TOWERS
Material prices	◑	◑	◑	◕	◑
Lead times	◑	◕	○	◕	◔
US capacity	◔	◔	◔	◔	◔
Vertical integration	◔	◕	◔	○	◔
Current situation (US)	🟡	🟡	🟢	🟡	🟢
2012 situation (US)	**Depends on investment decisions made today by suppliers**				
Comments	• Limited US production • Competitors for carbon fiber	• Limited US production • Growth in Chinese supply	• Many options exist	• Long lead times • Suppliers ramping up	• Low tech. requirements • Local suppliers

○ Low ● High

Source: Roland Berger



Suppliers cannot invest in growth without commitments from manufacturers, based on a stable environment



Suppliers can invest in additional capability

Wind turbine manufacturers can offer long-term commitments

Consistent long-term regulations are needed from regulators (RPS, PTC)

Source: Roland Berger