



## Abstract

M&A among turbine manufacturers has increased competition and is driving down both the cost of turbines and financing costs. The joint venture (JV) between Vestas and Mitsubishi; GE acquiring the offshore turbine business of Alstom; and the Areva Gamesa offshore JV have created new businesses with the scale to bear the costs of developing new turbines. These alliances will innovate to reduce the Levelised Cost of Energy (LCOE) and offering stronger and longer service contracts which reduce risk and so cut financing costs by an estimated 0.1% - 0.2%. Together technical innovation and reduced financing costs have shaved an estimated €11.5/MWh from the LCOE. This is a significant contribution to reducing the dependence of offshore wind on subsidies which bring with them political risk.

## Approach

The approach is based upon analysis of evidence since 2010 of changes in the intensity and nature of competition in the offshore turbine market.

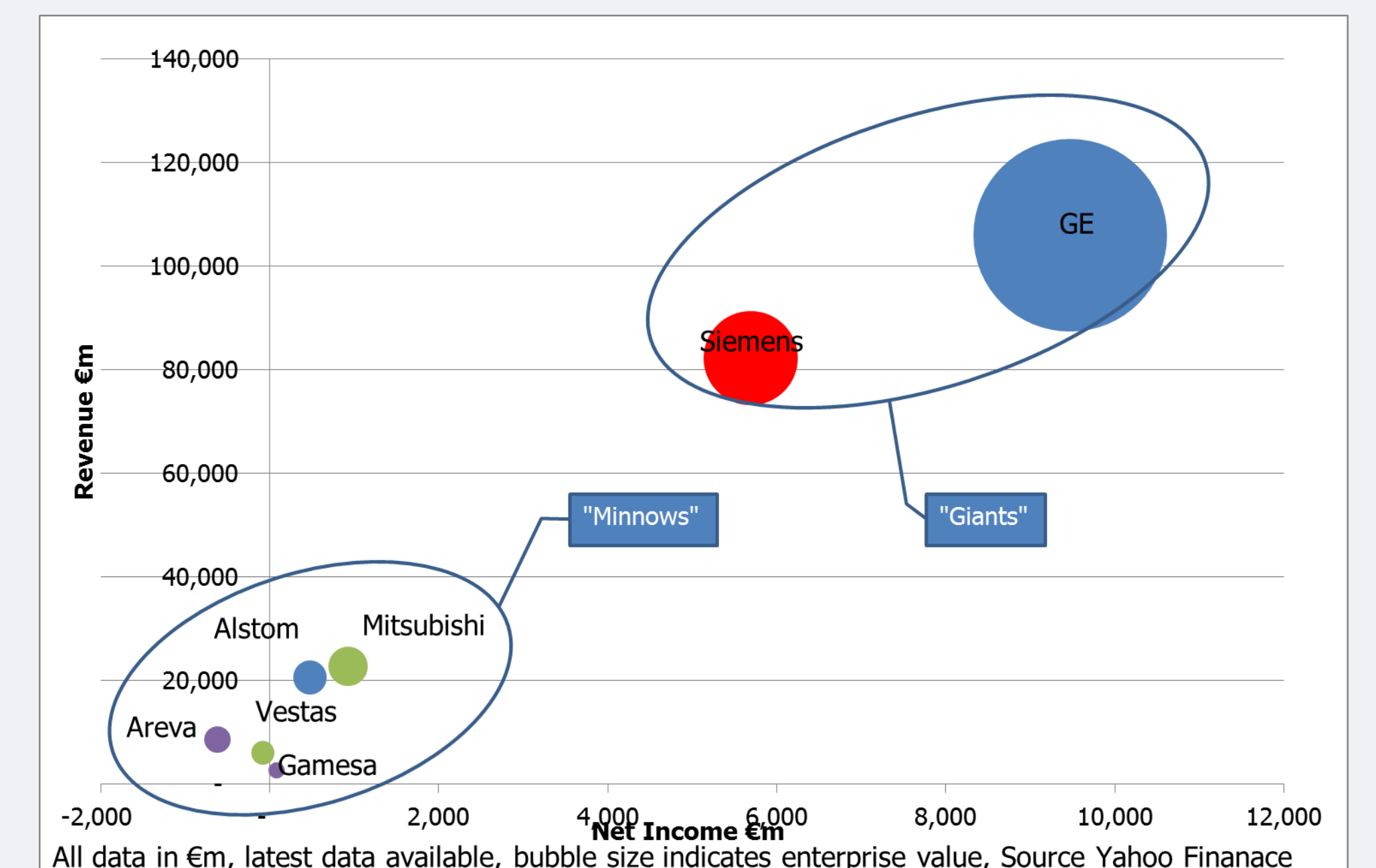
## Analysis

**Figure 1: M&A has driven the share price of the "Minnows"<sup>1</sup>**



Siemens' financial strength and ability to invest in support of equipment sales has provided a competitive advantage in the offshore wind market. The comparative financial weakness and lack of scale of the "Minnows" (Vestas, Gamesa, Areva, Alstom and Mitsubishi) is illustrated in Figure 2. All five firms are significantly smaller than the "Giants" (Siemens and GE) in the three key financial metrics of revenue, net income and enterprise value (the market value of the company).

**Figure 2: The "Giants" dwarf the "Minnows"**



This competitive weakness of the Minnows and their small share of the offshore wind market was a contributor to the fall in their share price in 2010 and 2011 (see Figure 1). In 2014, the shares of turbines installed in the European offshore market were: Siemens 86%; Vestas 10%; Areva 3%; and the other four each had a share of less than 0.4%.<sup>2</sup>

The Minnows led by Vestas addressed their lack of scale and financial strength by forming alliances and by innovating. The principal innovation was marketing larger, more cost effective turbines and providing long-term O&M coupled with performance guarantees which both introduced a new profitable business stream and took operating risk from wind farm investors.

The turbine manufacturers are seeking to drive down the LCOE with longer blades which increase the amount of energy captured, while reducing operational and maintenance costs by enabling customers to run fewer, larger turbines, with fewer service visits. The largest operational turbines are Siemens' SWT-6.0 154 which is a direct drive machine and the MHI Vestas V164-8.0 MW, one of which is capable of supplying electricity for 7,500 average European households.<sup>3</sup>

Siemens, GE and Alstom provide strong, credible performance guarantees over the life of their gas turbines which drive sales. For example, in 2013 GE signed a service agreement as part of a deal to provide more than 300MW of gas turbines. The 13-year contractual service agreement includes power output efficiency, reliability and performance guarantees. This points the way forward for offshore wind.

Industry consolidation positions manufacturers to offer stronger performance guarantees and so reduce risk for investors. This risk allocation makes sense as manufacturers have the knowledge and the reputational incentive to maintain their products, and their long-term guarantees are credit worthy. The €2bn of debt for the Project Gemini offshore wind farm was catalysed by a risk transfer package which included Siemens signing a 15-year project service and maintenance agreement. This managed the operating risk efficiently with the minimum of interfaces and Siemens' equity in the project aligned the interests of all parties. The Gemini project provides a template for long-term turbine sales.

## Conclusions

The conclusions based on this analysis are:

- Alliances have resulted in a more competitive market with four or more strong groups able to invest, innovate and provide long-term product support
- Innovation and particularly developing large turbines has driven down the LCOE by an estimated €10/MWh
- Turbine manufacturers are providing more O&M with performance guarantees as an important sales tool as well as a growing source of income and profits
- Credible, long-term performance guarantees gives financial investors comfort, reduce the cost of capital and so cut the LCOE by an estimated €1.5/MWh
- Together these reductions in LCOE are an estimated saving of €11.5/MWh or 8%

## References

1. Yahoo Finance, 13 February 2015;
2. EWEA European Offshore Statistics 2014, January 2015;
3. Vestas Wind Systems A/S, News release of 28 January 2014

