

# Wind - the energy source for the future

## ANALYST

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## Key drivers

- **Rapid growth expected to continue in the future**
- **New technologies decreases fixed costs**
- **Supply of important mineral neodymium is expected to increase**
- **Uncertainty about future investments in US and UK due to new political landscape**
- **Lots of investment possibilities available**

## Growth and cost in the near future

The increasing requisite for renewable energy is becoming more and more prominent as the world and its leaders are becoming increasingly aware of the environmental consequences of fossil fuels. There are several different renewable energy sources available, all with different advantages, but one of the most developed and commonly used today is wind energy. Wind power is, together with solar energy, considered to be the most important source of renewable energy in the future.

The rapid expansion and commercialization of renewables and in particular wind power has been astonishing in the past decade and it shows no signs of slowing down. According to Clean Energy Trends 2014, global investment in wind energy has increased by 1500% between 2000 and 2013, with a compounded annual growth rate of 23%. Furthermore, the yearly investments in wind energy is projected to double by 2023. The total amount of installed wind energy capacity amounted to 318 GW in 2013 and is expected to increase to 725 GW by 2023 and 1100 GW by 2035 which, by then, is expected to correspond to 7,3% of the total energy production. On an even longer horizon, the International Energy Agency expects a 18% share of the total generation energy for wind power by 2050.

The most important factor that researchers rely on when predicting increased energy generation through wind is decreasing costs related to wind power. Compared to other technologies, the costs of wind power has decreased dramatically in the past five years and is approaching a level where it can compete with other, more conventional, sources of energy. Coal and natural gas remains cheaper, but the effect of the lower cost of wind causes coal- and gas fired plants to operate for a shorter period of time, which affects their profitability. On the flip side, decreasing costs of wind energy may lead to lower government-supported subsidies.

A potential setback with wind energy is that it is very capital intensive and much of the total cost is needed upfront. The turbine itself can account for up to 70 % of the total cost, which might discourage some investors. Another risk is the global supply of neodymium, which is a rare earth elemental that is important in the production of wind turbines as it increases efficiency and decreases weight. China are currently very dominant on the global market for rare earth elementals due to insufficient environment regulations, low production costs and illegal extraction which keeps prices at a very low level that can't be matched by other producers. However an increasing global demand for rare earth elementals is expected in the near future, along with improved environmental regulations in China. This would drive prices upwards and allow for more producers of neodymium, and consequently eliminate any uncertainty of future supply.

An increased market for neodymium and more advanced technologies in general will most likely result in rapidly decreasing prices of turbines. As the cost of the turbines is the dominant part of wind energy, the decreasing prices will result in substantially lower levelized costs. There is a growing global consensus that onshore wind power will reach parity at the end of the decade. Parity refers to the point in time when an energy source becomes a contender for widespread development without government subsidies.

