Research, Analysis & Strategic Solutions

Decentralised Power Generation Opportunities in Emerging Markets

Too Big to Ignore

Delta Research Brief

November 2005
Delta Energy & Environment

New power generation developments in non-OECD countries may be more than double that of OECD countries in the next ten years. As a result, decentralised power generation (DPG) developments in these countries are likely to significantly exceed those in OECD countries.

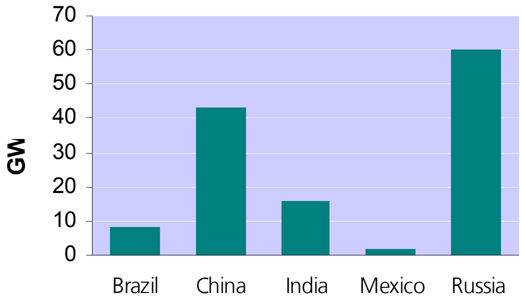
The uncertain and evolving policy framework for DPG in emerging markets means that forecasting the amount of new DPG is subject to some uncertainty, but research by Delta forecasts a base-case of 129-GW of new decentralised CHP (combined heat and power) up to 2015 in five of the largest markets.

Low case forecasts give 64–GW of capacity, with high case forecasts giving 193–GW up to 2015. While emerging markets present a range of challenges, there is nonetheless a large-scale opportunity for DPG developers and manufacturers in non-OECD markets.

Research carried out by Delta for the World Alliance for Decentralised Energy focussed on markets in Brazil, China, India, Mexico and Russia. *Figure 1*, below shows that Russia and China are expected to dominate, with four times as much as the rest of the markets combined.

Figure 1: Decentralised CHP Capacity Growth, 2006-2015

China and Russia are set to dominate decentralised CHP growth in emerging markets. This figure shows data for Delta's base case scenario.



Russia: Strong Underlying Drivers

Demand for power in Russia is expected to grow by at least 30% over the next fifteen years. Couple this with the expected retirement of three quarters of existing capacity and the scale of potential investment in the power generation sector – around US$160 billion – becomes clear.

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The significant penetration of district heating – which serves over 70% of the heating market, together with the experience of CHP in the industrial sector and the widespread availability of natural gas provides a solid base for decentralised CHP to capture a significant share of new power generation capacity. Uncertainties affecting the amount of new capacity include the nature of restructuring of the electricity market and how on-site generation will be treated compared to conventional generation.

The availability of natural gas in Russia means that gas turbines are expected to be the leading DPG technology, closely followed by steam turbines and CCGT plants. Approximately 40% of decentralised CHP is expected to be developed in each of the 50-MW plus and 15-MW to 49-MW size ranges. Gas engine sales will also benefit from the expansion of DPG in Russia.

China: A Potential DPG Giant

Delta's high case scenario for China shows that market growth may even exceed that of Russia, with around 77-GW of new decentralised CHP capacity by 2015. Power demand in China has been growing at double digit rates since 1990 and grew at around 15% in 2004. The country faces a chronic shortage of capacity in many areas. In addition, power prices have been edging upwards since 2004 and natural gas supply is extending to some of the main cities and industrial areas. While gas-fired DPG in industry and buildings is not yet able to compete with conventional coal generation, the gap is narrowing with sharp increases in coal prices.

Power market restructuring and emerging policy incentives for on-site systems will be critical to the evolution of the market. Until these are fully implemented, the market for DPG systems will be confined to certain niche applications. However, because of the sheer scale of demand growth, Delta expects opportunities in China to exceed all other world markets in due course. The inroads into the steam turbine market made by gas-fired DPG technologies (CCGT, gas turbines and gas engines) are expected to be particularly dramatic. Currently, virtually all DPG projects are steam turbine based in China. This share is projected by Delta to fall to around 65% in 2015.

Further details of Delta's research – commissioned and published by the World Alliance for Decentralised Energy (WADE) – are available in a series of five reports which can be purchased from WADE at www.localpower.org.

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