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Boston Consulting Group report says emergence of distributed power generation is the “biggest transformation to the power sector since invention of the light bulb”

Leading international consulting firm Boston Consulting Group says the emergence of distributed generation (producing energy where it is needed, rather than centrally) is the biggest transformation to the power sector since Thomas Edison's invention of the light bulb.

It also says that by 2020 renewable technologies and combined heat and power units could jointly provide more than 50 percent of all electricity consumed within the European Union.

In its report *Toward a Distributed-Power World: Renewables and Smart Grids Will Reshape the Energy Sector* Boston Consulting Group says the power generation landscape worldwide is “facing disruptive changes”.

“Europe's power utilities are entering a period of great uncertainty and change, with seismic shifts transforming the energy landscape,” the report says. “Energy security concerns and related worries about price and political volatility are driving governments across Europe to re-examine the source of energy supplies. The climate imperative has moved up the agenda, with European policymakers expressing clear political support for the move to a low-carbon society.”

Notably, the report analyses the investment needed to maintain the European power grid and concludes that the model of large centralised generation is “no longer sustainable”.

It says there are prospects for a distributed-energy system in which decentralised and renewable-power generation eventually displace conventional power plants, reducing the balancing role of the transmission grid and shifting intelligence to the distribution grid through the creation of local and regional energy systems.

“This scenario is much more disruptive because it transforms many of the industry's common beliefs. It does create many more opportunities for business model innovation. However, it also presents severe challenges to the leading incumbents,” the report says.

The report says old centralised systems that deliver a one-way supply of electricity to consumers will be increasingly displaced by localised generation, and the future power landscape will include a larger proportion of small-scale sources, such as cogeneration through combined heat and power (CHP) plants.

“Some energy will be produced by consumers themselves, through a distributed network of power that incorporates everything from rooftop wind turbines and solar panels to CHP microplants (micro-CHPs) in consumers' cellars,” the report says.

“Studies of the utilities in Germany forecast investments of €40 billion to €30 billion for the renewal of the conventional generation fleet by 2020, and the United Kingdom is expected to see investments of €20 billion to €30 billion during the same time period. However, the political drive toward cleaner energy is creating barriers to the construction of new power plants. These barriers are driven both by resistance to new large-scale plants and the challenges to profitability resulting from fewer expected running hours.”

The report says that an increasing share of renewable and other forms of decentralised energy is entering the power supply. "We project major growth in wind power, solar-photovoltaic (PV) power, and CHP (especially small-scale plants) in the European Union's 27 member states (the EU-27) by 2020, and that decentralised generation will account for as much as 40 percent of the installed base by that date."

Boston Consulting Group has developed a "distributed-world scenario" to demonstrate the impact on traditional power generation. It says renewables and other forms of decentralised generation will be backed by strong regulatory support in the form of feed-in tariffs for CHP and renewables. It concludes that by 2020 renewable technologies and CHP units could jointly provide more than 50 percent of all electricity consumed within the EU-27.

"Smaller CHP plants (serving commercial and residential customers) show particular promise and are already starting to be commercialised. We believe that if they apply the right business models and tap all revenue sources, utilities will be well positioned to generate power with small-CHP units at costs that can compete with large-scale power plants over the next few years."

Meanwhile, the possibility for two-way power flows and the rising share of distributed-energy sources will push value creation downstream and create the opportunity for new business models.

The new energy landscape will present an opportunity for utilities to rethink their businesses and transform themselves from commodity suppliers to energy solutions providers. Boston Consulting Group notes that the biggest opportunities for utilities include establishing virtual power plants (VPPs), networks of connected small-scale generation devices, where a utility would pay homeowners to site solar-PV or micro-CHP equipment on their properties.

"If utilities do not want to be crowded out of the power generation market and marginalised as mere downstream commodity suppliers, they need to act now," the report says. "The evolution of a decentralised power landscape will not only change the relationship of the different energy-sector players to the electricity value chain, it will also change the very structure of that value chain."

The full report is available at

http://www.bcg.com/expertise_impact/publications/PublicationDetails.aspx?id=tcm:12-51645.

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About Ceramic Fuel Cells Limited

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Ceramic Fuel Cells employs 100 staff in Australia and Europe and is listed on the London Stock Exchange AIM market and the Australian Securities Exchange (code CFU).

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