

# Energiewende – Utilities' New Business Models

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This paper sheds light on how the diffusion of alternative energy technologies challenges of business model innovation in the energy sector.

The European utilities have been confronted with major changes in their markets and environment throughout the last two decades. The formerly very regulated and monopolistic market situation was completely changed by the EU-directive on energy market liberalization. Further major drivers of change in the energy industry were the EU's 20-20-20 goals and the "Strategic Energy Technology Plan" (SET-Plan) that started paving the way for a broad diffusion of alternative energy in the EU. These directives lead to the unbundling of the production and electricity distribution business from the grid ownership and grid operation as well as to the upcoming of decentralized energy supply systems. These systems produce the electricity where it is needed – near the end customer – and feed in the surplus energy into the grid. During the last few years the situation of the utilities has become increasingly complicated. Electricity from decentralized, alternative energy plants (wind power, photovoltaics, etc.) has priority in the grid and is supported by feed-in-tariffs ("Energiewende") as well. The big power plants have to be operated under partial load for long periods and therefore do not reach their full efficiency and earnings. So the investment in new centralized "classic" power plants does not pay off any more, although the need for electricity is still rising. Consequently, the classic utility business model of producing electricity in centralized plants and selling it over long distances to the customer is seriously challenged.

In this paper we address the questions of how utilities can survive the "Energiewende" and even benefit from the diffusion of alternative energy, which roles utilities can play in a combined centralized-decentralized electricity production, and which business models could be suitable for the new situation.

We applied the Business Model Canvas (Osterwalder & Pigneur, 2010) as a framework for exploring business models in the field of decentralized alternative energy supply. Based on that, we developed specific morphologic boxes (Zwicky & Wilson, 1967) for different energy technologies. These morphologic boxes were fed with criteria derived from a widespread qualitative analysis. In this analysis we investigated the worldwide business model situation of utilities using the alternative core technologies wind power, photovoltaics, hydropower, combined heat and power generation plants (internal combustion engine, gas turbine, Stirling engine, fuel cell and biomass gasification) with an electrical power smaller than 250 kW. We followed the theoretical sampling approach (Strauss & Corbin, 1998) and analyzed textual contents of the companies (homepages, product info folders, offers, blogs, etc.). The outcome of this analysis was used (1) to sketch the companies' business model with the help of Business Model Canvas and (2) to develop the different characteristics in the morphological boxes. Furthermore we developed five different future role models for the utilities in the field of decentralized energy systems. All these insights were integrated in the morphologic boxes, which give a comprehensive overview of specific factors and characteristics of alternative energy business models for utilities.

Finally we present six future business models based on specific technologies (photovoltaics, hydropower, etc.) and customers segments (domestic end user, different types of business users) that follow the approach of an over spanning energy concept for the customer (electricity, heat, cooling energy, heat recovery). These results reveal how utilities can ensure sustainable businesses development by using decentralized, alternative energy technologies.

Business models for decentralized energies can be seen as a contribution to an upcoming sustainable energy system based on renewables. Therefore we see this paper well connected to the conference topics of "Resource extraction, energy, and sustainable development" and "Sustainable Strategies and Strategies for Sustainability".

#### Literature:

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