

2<sup>nd</sup> International Conference on

# Power and Energy Engineering

July 17-18, 2017 Munich, Germany

## Riding through the grid integration of solar photovoltaics in Germany

**Ramchandra Bhandari**

Technical University of Cologne, Germany

Germany is a “mature” market for renewable energy such as solar photovoltaics (PV) and wind energy. And the main attribute of this growth must be given to feed-in-tariff. The electricity production from renewables is already one third of the total electricity consumption. It grew from around 6% in 2000 to 33% in 2015. The increase in this share was not very simple; it shifted the technological background from the perspective of energy resources, production and even delivery of power to the customer. People started accepting the surcharge as a necessary thing to keep the environment clean. Governments came and changed but they could not change the renewable energy vision, even they kept on increasing the future projections for the renewable energy. In some cases, as seen the judiciary kept the established business aside and gave rulings in favor of the renewable energy. It transformed the society and the way they see and do business in energy. One of the single most important things which feed-in-tariff brought to Germany is the participation for the general public, which in turn helped to transform the Energiewende to a movement. The PV installation in the roof top boomed. This boom gave rise to a PV market, which led to development of new items for grid, new strategy for business, helped to decrease the cost of equipment, generated whole new employments and improved the learning rate for Germany and the rest of the world as well. Not only in Germany but also in many other countries (e.g. China, Japan, etc.) solar PV is growing at a faster rate than many people imagined. They are mostly seen as the next energy regime in many countries. Hence it is really necessary to model the future market growth and predict the further cost reductions under different scenarios of market dynamics. In this paper, an attempt has been made to analyze the historical market trends and to use the lesson learned to predict the future of solar PV in German electricity market. First the present and past situations on solar PV market, including their cost and total installed capacity are analyzed. Next the Renewable Energy Policy of Germany has been discussed with the previous background and future expectations. Then the future growth cases are proposed and the total installed capacity until 2030 for Germany and global cases are presented. Based on the used experience curve model, the respective future price trends (2030 prices for PV systems) are projected in a range from 250 to 500 €/kWp.

ramchandra.bhandari@th-koeln.de