

Колесніченко А.С.
assistant, Chair of economic analysis and accounting,
National Technical University "Kharkiv Polytechnic Institute",
Kharkiv, Ukraine

THE KEY TRENDS TRANSFORMING THE ELECTRICITY MARKET: OPPORTUNITIES AND CHALLENGES

Over the past year, global changing conditions continued to challenge the energy sector throughout the world.

As a result, significant changes in energy prices and production increase. At the

same time, the slowdown in economic growth in emerging market countries is occurring, along with geopolitical changes and instability, which effectively dragged energy demand and supply.

Many authors are investigating the problems of reforming electricity markets. There are Kopsakangas-Savolainen, Maria, Svento, Rauli (2012), Adrian Booth, Niko Mohr, and Peter Peters (2016), Joskow P (1987, 2008), Wolak F (2001) and others among them. At the same time, questions related to the peculiarities and problematic aspects of the formation of relations between the participants of the energy market in the context of key development trends still remain open for study.

Historically, the electricity industry has been characterized by economies of scale in the generation and necessity of an extensive transmission and distribution network in order to deliver the generated electricity to the final consumers. These bases aspects of electricity supply were integrated within individual electric utilities. However, in the mid-1980s it was realized in several countries that even though transmission and distribution networks are natural monopolies, the scale economies in electricity production at the generating unit level had exhausted at a unit size of about 500 MW (see e.g., [3-5]). This meant that the natural monopolistic characteristics of electricity supply and generation had vanished and thus they had become potentially competitive activities. As a consequence, it was noted that a separation of network activities from generation and supply and the introduction of competition to the potentially competitive parts of the industry might increase the overall efficiency [2].

Ensuring competition in world power markets is essential since electricity is a good that everyone uses.

Restructuring of the electricity market sector during last several years in Ukraine offers significant potential benefits in terms of improved efficiency in the production of electricity and in the allocation of resources across the economy, lower prices for consumers, improved risk allocation, and stimulus to national economic growth and competitiveness. However, to be able fully exploit and realize these benefits, the restructuring needs to be done properly.

Several key trends must be highlighted as the most significant important in the development of the electricity market.

First of all electricity market requires complex infrastructure and power intensive projects. It must be underlined that the short-term decisions have far-reaching and long-lived effects.

On the one hand national system needs to move to a low-carbon, energy-efficient economy, but on the other hand it also needs to be sure that there is positive dynamic for manufacturing sectors in the process.

In this wave the digital revolution is coming to the power industry making new strong impulse to improve organization and regulation functions on the electricity market. Renewables, distributed generation, and also smart grids demand new capabilities and are triggering new business models and regulatory frameworks. Data collection and exchange are growing exponentially, creating digital threats but also valuable opportunities.

These concerns particularly the competition for customers is shifting to the online channel; the Internet of Trade proposes new product and management options. Entrants from the digital economy are disrupting the industrial landscape, while governments and regulatory bodies seek to encourage smarter measuring systems and greener standards for generation and consumption [1].

New energy philosophy means to be closer to goal customer. First of all being close to customers means helping them to better understand and manage their energy consumption. Another understanding of being close to customers also means supporting companies and local authorities with their energy transition to strengthen their economic and environmental performance.

Another trend is coming renewable energy to replace aging coal fired power stations. It must be noticed that natural gas is currently cheap. It is considered the interest in nuclear is high. However work towards targets of energy efficiency has the key policies concerning microgeneration which includes solar, air source, ground source and Biomass energy.

Currently, renewable energy sources are becoming a significant part of the energy package and are rapidly gaining market share. They bring benefits such as diversification of energy consumption, with distributed generation growing at a rapid pace throughout the world, and its installed capacity is expected to more than double in the next decade. At the same time, as the energy production structure changes and energy sources diversifies, new problems arise that require changes in the business model of the electric power industry and regulatory policies to ensure reliable and reliable supply.

Finally, it should be noted that based on the experience of world energy markets, Ukrainian electricity market reforming can include more ambitious goals. In that case it is necessary to use such tools as confidently planning for transformative enhancements in productivity, reliability, safety, customer experience, compliance, and revenue management. The result dimensions of these exciting opportunities can be demonstrated in three developmental directions based on productivity and efficiency, the customer experience, and new frontiers.

References

1. Adrian Booth, Niko Mohr, and Peter Peters. (2016) The digital utility: New opportunities and challenges. Working paper : <https://www.mckinsey.com/industries/electric-power-and-natural-gas/our-insights/the-digital-utility-new-opportunities-and-challenges> (Accessed 28 March 2019).
2. Kopsakangas-Savolainen, Maria, Svento, Rauli (2012) Modern Energy Markets : Real-Time Pricing, Renewable Resources and Efficient Distribution. Working paper : https://www.researchgate.net/publication/296505737_Modern_energy_markets_Real-time_pricing_renewable_resources_and_efficient_distribution (Accessed 28 March 2019).
3. Joskow P. (1987) Productivity growth and technical change in the generation of electricity. Energy J 8:17–38.
4. Joskow P. (2008) Lessons learned from electricity market liberalization. Energy J 29:9–42.
5. Wolak F. (2001) Market design and price behavior in restructured electricity markets: an international comparisons. Working paper: http://www-leland.stanford.edu/*wolak (Accessed 28 March 2019).