

Movkebayeva G., Bimagambetova Zh., Karatayev M. (2018): Increasing utilisation of renewable energy sources: Comparative analysis of scenarios until 2050. In: ENERGY SECURITY: POLICY CHALLENGES AND SOLUTIONS FOR RESOURCE EFFICIENCY. Principal editors: Mouraviev N. & Koulouri A. International publisher: SPRINGER

Abstract:

This chapter examines the relationship between the development of renewable energy technology and energy security by assessing a range of scenarios at the global, regional and sectoral levels. It provides insights into the future energy consumption and supply mix, and the rate at which certain natural resources may be depleted. It discusses the forecast for technological development that supports the increasing power generation from RES, highlights scenarios of energy-related emissions to the atmosphere and analyses how energy prices might respond to the changing economic and technological conditions.

The analysis is based on a review of quantitative and qualitative scenarios released by international organisations, governments, companies and NGOs. The following studies have been compared and contrasted: World Energy Outlook 2012 (IEA, 2012), Energy Technology Perspectives - Pathways to a Clean Energy System to 2050 (IEA, 2012), Energy Revolution: A Sustainable World Energy Outlook (GWEC, EREC, 2012), The Energy Report: 100% Renewable Energy by 2050 (WWF and ECOFYS, 2011), Global Energy Assessment: Toward a Sustainable Future (IIASA, 2012), BP Energy Outlook 2030 (BP, 2013), The Outlook for Energy: A View to 2040 (ExxonMobil, 2012), Global Wind Energy Outlook (GWEC, 2013), International Energy Outlook 2011 (US DOE EIA, 2011), Future World Energy Scenarios (Enerdata, 2017).

The chapter argues that, under certain conditions, it is likely that scenarios forecasting a significant increase in the volume of renewable energy will materialise. The core requirement is extensive government involvement in the promotion of renewable energy technologies, whilst the principal benefit for most nations is that their energy security could improve by enhanced diversification of the energy supply. Nonetheless, despite the optimistic outlook, renewable energy technologies could undermine energy security in the short and medium term by diverting resources from the highly profitable and well-established oil and gas sectors to the marginally profitable (or subsidised) and nascent RES sector. This challenge implies the need to re-frame the existing approach to energy security and promote renewable energy.