

Energy Sector in Ukraine

Challenges and Chances



January 2017

Hans-Josef Fell

Former Member of the German Bundestags (1998 bis 2013)

President to the Energy Watch Group

Challenges

(1) Ukraine was among the countries that ratified the Paris Climate Agreement early on, ahead of the EU and Germany. This move signalled a political will to contribute to global efforts to halt climate change and to significantly reduce the currently high shares of gas, coal and oil in the energy mix of the country. The country needs to accelerate the currently slow deployment of renewable energy and energy efficiency measures. Energy security of the entire Europe is under question and can be destabilized, as it was the case in 2006 and 2009, as the gas-price disputes between Russia and Ukraine disrupted deliveries to Europe.

(2) One of the biggest geopolitical challenges of Ukraine is its high dependency on energy supplies, especially natural gas and oil, from Russia. This dependency significantly decreased in the last two years. In 2015, gas imports from the EU have doubled, reaching 10.3 bcm, and have for the first time exceeded imports from Russia. The latter decreased dramatically from 14.5 bcm in 2014 to 6.1 bcm last year. Dependency on coal, coming especially from the war-torn eastern regions of the country, is another major problem. Coal provides 40% of primary energy supply and 30% of electricity production. This further undermines energy security in the country.

(3) Ukraine is heavily dependent on nuclear power generation, accounting for more than 50% of the country's electricity production and 20% of primary energy supply. Yet, the existing 15 reactors are out-dated and a major safety hazard, as proved by Chernobyl. Ukraine receives most of its nuclear services and nuclear fuel from Russia.

Combined with the economic weakness, high debts, driven by the import costs of the energy raw materials and high unemployment rate leads to lack of political independence.

Chances and Solutions

Diversification within the fossil and nuclear energy sector cannot serve as a solution. A new gas pipeline the EU has built in Ukraine serves only as a short-term solution since the EU is still heavily dependent on the Russian natural gas supplies. At the same time as own production of natural gas in the EU, especially in the UK, the Netherlands, Germany goes down, the EU will have problems with its own energy security.

Therefore, the only long-lasting and economically and environmentally reasonable solution is rapid deployment of energy efficiency measures and a transition to domestic renewable energy sources. Ukraine has a high potential across all renewable energy sources: solar, wind, water, biomass due to large rural areas and geothermal energy. All these sources need to be deployed, as they will create many jobs, especially in the rural economy.

(1) A decisive factor will be a modern efficient and 100% renewables based energy system in Ukraine. Fluctuations of renewable energy can be balanced by means of different storage methods, incl. power-to-gas, power-to-heat, battery, pumping stations, etc. and the integration into demand-oriented flexibility of hydropower, bioenergy, hydropower and geothermal energy across all energy dependent sectors: electricity, heating, cooling, transport and industry. Oil and gas in the heating and transport sector should be replaced by electrification. Sustainable biofuel will play a significant role in the transport sector (construction machinery and agriculture). Fertile and degraded land areas in Ukraine offer great chances for biofuel production and at the same time will help to protect the climate through carbon sinks.

The recent study of the Lappeenranta University of Technology [“Transition towards a 100% Renewable Energy System by 2050 for Ukraine”](#) that such transition is not only possible but also cost-effective.

(2) One of the most important drivers hereto is a favourable political framework, including laws providing financial security to investors in renewable energy and energy efficiency both domestically and abroad. Such laws can also enable a wide range of actors to invest, especially private people, small and medium enterprises, farmers, public utilities and financial institutions. A feed-in-tariff and a privileged grid access can guarantee such long-term investment security. A feed-in-tariff law should be based on the German model of the year 2000 and non-tendering models, as tenders ultimately benefit only large business investors. Also key is a change in the energy industry framework legislation, stimulation of competition through unbundling as well as reduction of monopolies and oligopolies and combating corruption.

(3) Know-how transfer, education and training in the energy sector through offensive programs at universities and vocational training schools as well as a state-financed campaign on raising public awareness about renewable energy and energy efficiency through decentralized energy agencies and energy consultants will be key. Also important is establishment of partnerships of municipalities in Ukraine with many best-practice municipalities in Europe and Germany.