RENEWABLE ENERGY SOURCES IN UKRAINE

O.V. Kondratyuk
Open international university of human development "Ukraine", Ukraine

At present Ukraine is developing as an independent state and defining its position in geopolitical system. Topical issue is Ukraine's integration into the world economy that will give advantages coming from participation in the world division of labour. Further development of international economic collaboration of Ukraine requires carrying out an energy policy coherent to the policy of leading world countries, first of all European Union. Discrepancy between energy policy and practical actions of Ukraine in this field may put us in discriminating position.

EU countries' goal is transition to sustainable development. In energy field they make great efforts to improve energy security, to increase the use of own renewable energy resources, to reduce negative influence of energetics upon environment. For the period till 2010 EU countries plan to raise the share of renewables up to 14.6% of the total primary energy consumption. Realisation of these plans and achieved big technological progress, particularly in wind energy and biomass utilisation, inspire them with more ambitious plans.

There are different scenario of energy supply in Ukraine. I would like to draw attention to possibilities in enlargement of renewable energy utilization in Ukraine, to show real resources and to avoid extremes in prediction of utilization of some types of renewables.

Wind energy. Ukraine has favourable conditions for the development of wind energy. In many regions average annual wind velocity is 5-5.5 m/sec at a standardized height of 10 m above ground level.

It is considered that installed capacity of wind power plant (WPP) that can be achieved as a part of centralised energy system of Ukraine may come up to 16000 MW, and power generation may come up to 25-30 TWh/year. This figure is often accepted as a potential of wind power. The area necessary for the construction of such a WPP capacity is 2500-3000 km2 that is quite real taking into account shoal of the Azov Sea and the Black Sea [1].

Solar heat energy. Existing programmes for energy development envisages increasing use of solar energy mainly for local hot water supply in summer season. Potential of solar energy for heat production is estimated at about 32 TWh [1].

In present investigation rate for the installation of solar collectors for the period till 2030 is accepted in accordance with [1] accelerating rate in 2030-2050. It may be assumed that by 2050 solar collectors will produce about 23 TWhth/year.

The use of firewood and wood residues. In Ukraine forests cover only 15.6% of the territory, at that nearly half of them have environmental value. The country lacks for merchantable wood that is why timber is imported. The main forest areas are located in the Carpathians and Polissia (Forest Land) were more than 90% of wood is harvested. According to estimations [3, 4] wood potentially available for energy production makes up 1.6 mill m3/yr of felling residues, 2.1 mill m3/yr of wood processing waste, 3.8 mill m3/yr of firewood that in sum is equivalent to 16 TWh/yr.

The use of agriculture residues. Ukraine has good prospects to revive highly efficient agriculture, which is able to satisfy domestic needs in foodstuff and feedstock and also produce products for export. The big part of the territory is steppe. It is characterised by low atmospheric precipitation, frequent draughts and other unfavourable phenomena.

In Ukraine some people have doubts as to possibility to use straw and stems for energy purposes. It can be explained by insufficient productivity of agriculture, big losses and burning of straw on fields, absence of stems storing.

In accordance with the prognosis for the development of bioenergy in Ukraine [4] the use of straw and stems for energy purposes will be equivalent to 23 TWh in 2030. Further increase to 50 TWh/yr in 2050 may be assumed that will require up to 60% of technically available potential.

The use of biogas. According to estimations [3, 4] technical potential of biogas available for energy production consists of the biogas from manure (animal husbandry and poultry farming) - 2308 mill m3, the biogas from sewage sludge - 334 mill m3, and landfill gas - 2300 mill m3. In sum it is equivalent to 28.2 TWh.

Formerly in Ukraine biogas was widely produced at wastewater treatment plants, total volume of installed digesters was 162000 m3. Now biogas production in many cases is stopped because of bad technical condition of digesters, and because the state does not stimulate this activity. In 2000 the use of biogas was equivalent to 0.02 TWh.

The "Energy Strategy of Ukraine till 2030" is under development by a group of Ukrainian energy experts on the decree of President of Ukraine. According to draft version targeted utilization of RES is 6.6 mtoe (4.7% of Primary Energy Consumption (PEC)) in 2010 and 21.8 mtoe (17% of PEC) in 2030.

Enlarged use of RES would allow solving a number of existing problems connected with environmental pollution and global warming; it would also reduce danger of energy and economy crisis.

References

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