

RENEWABLE ENERGY. FOCUSING: UKRAINE

VISION 2050

Andriy Konechenkov

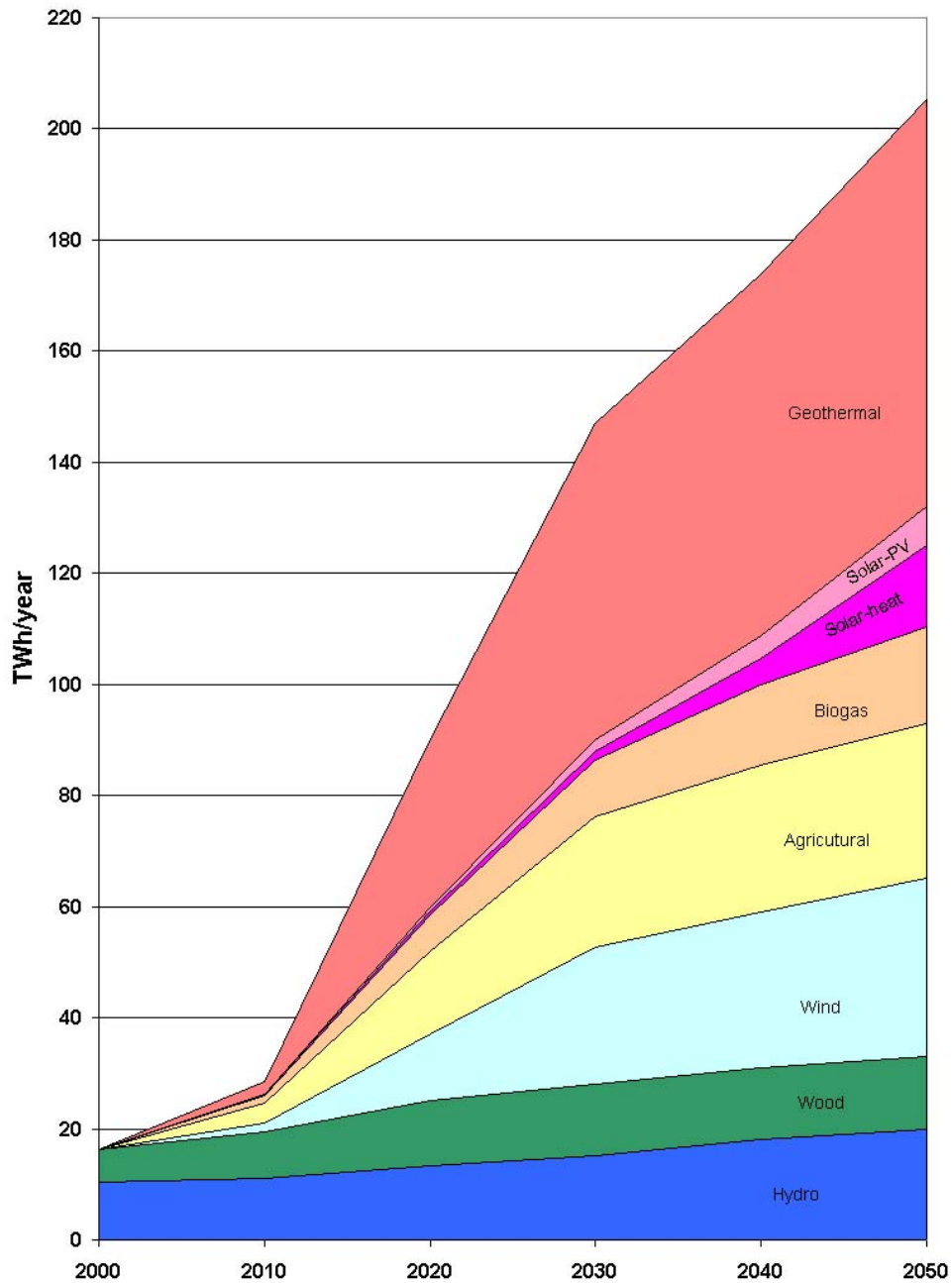
Renewable Energy Agency NGO (Ukraine)
P.O.Box 175, Kiev, 01033, Ukraine
Tel./fax: +380 44 235 3700
E-mail: fae@fae.kiev.ua ; www.rea.org.ua

The data for fossil fuel resources and renewable energy sources are given on the basis of the publications of the leading Ukrainian experts in corresponding fields.

In the submitted materials the data about rates of economic development of Ukraine for the period till 2030 are accepted according to data of the Institute of Economy of the Ministry of Economy of Ukraine which have been used for the development of Energy strategy of Ukraine.

The data on specific consumption of energy and fuel for the period till 2030 are accepted according to the forecasts of the Institute of Economy of the Ministry of Economy of Ukraine which have been used for the development of Energy strategy of Ukraine, and also estimations being made by experts of Renewable Energy Agency NGO.

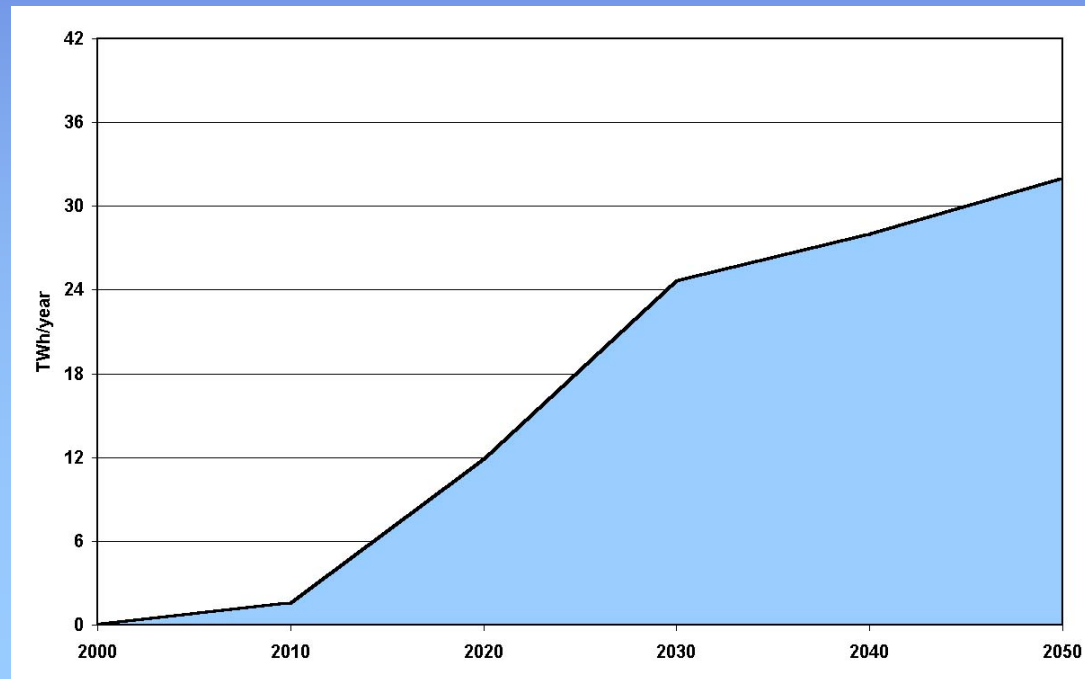
Forecast of renewable energy utilization in Ukraine (potential 15000TWh/year)



FORECAST OF WIND POWER GENERATION IN UKRAINE

(potential 42 TWh/year)

It is considered that total installed wind capacity that can be achieved as a part of centralised energy system of Ukraine may come up to 16000 MW, and power generation may reach 25-30 TWh/year. This figure is often accepted as a potential of wind power. Such achievement is quite real in the country taking into account shoal of the Azov Sea and the Black Sea. According to some estimations 7000 km² of Ukraine's territory can be used for the construction of wind farms of 35000 MW total capacity.

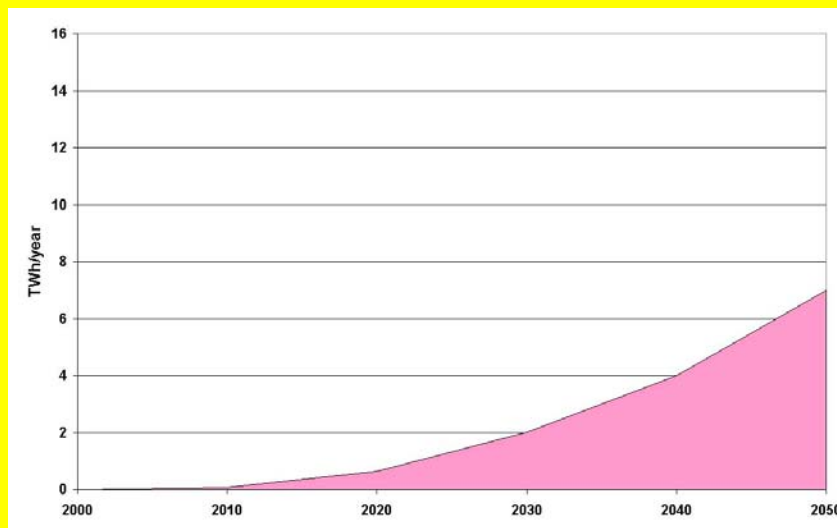


FORECAST OF SOLAR HEAT SUPPLY IN UKRAINE

(potential 75 TWh/year)

Climatic conditions of Ukraine allow also solar power usage for the heating of buildings, creating year-round centralised district heating systems with seasonal heat storage. Such technical solutions have been already realised in many countries located much more to the North than Ukraine. When using solar collectors (counting 3.9 m²/capita) and 400 kWh annual heat production by 1 m² of solar collector, potential of solar power for heat production is almost 75 TWh/year.

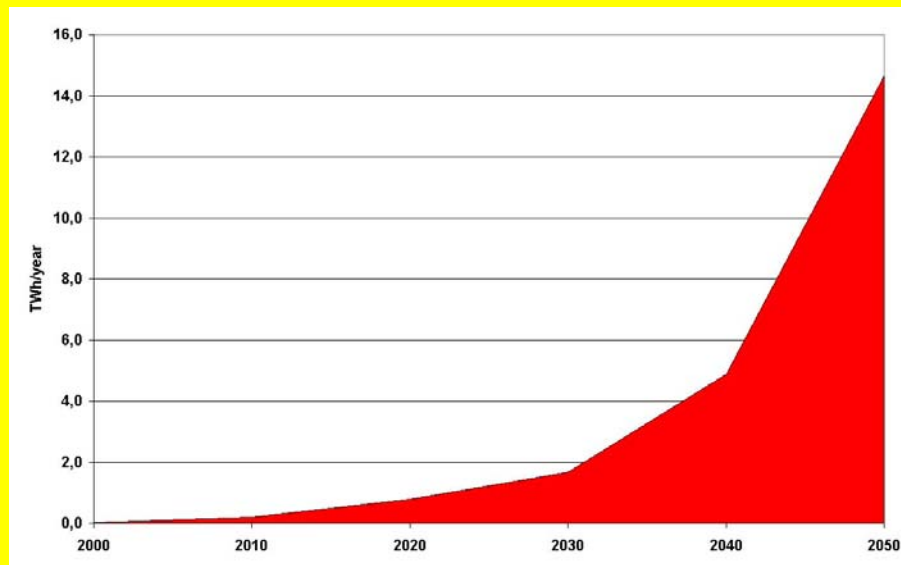
In present investigation predicted rate for the installation of solar collectors for the period till 2030 is accepted in accordance with accelerating rate in 2030-2050. It may be assumed that by 2050 solar collectors will produce about 14.7 TWhth/year.



FORECAST OF PV-POWER GENERATION IN UKRAINE

(potential 16 TWh/year)

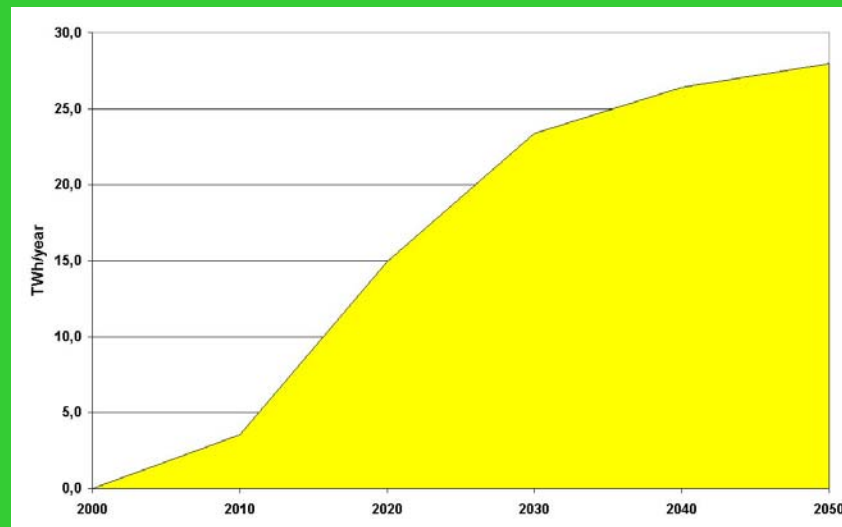
In Ukraine technical potential of solar energy for power production is estimated at about 16 TWh/yr that makes up in average about 3.3 m² of PV batteries per capita with the production of about 100 kWh/m²/year. Provided that a dwelling is equipped with modern and promising energy saving household appliances, indicated volume of power production could satisfy necessary household needs.



FORECAST OF AGRICULTURAL WASTE UTILIZATION FOR ENERGY PRODUCTION IN UKRAINE

(potential 82 TWh/year)

Ukraine has good prospects to revive highly efficient agriculture, which is able to meet domestic and export demands in foodstuff and feedstock. The big part of the territory is steppe. It is characterised by low atmospheric precipitation, frequent draughts and other unfavourable phenomena. Due to that yields of the main crops are not stable. In accordance with estimations performed for unfavourable year 1999 potential yield of straw and stems may come to 35 mln t/year. As agricultural sector itself annually consumes about 13 mln t of straw, the surplus of about 20 mln t/year (equals to 82 TWh) can be used for other purposes including energy production.

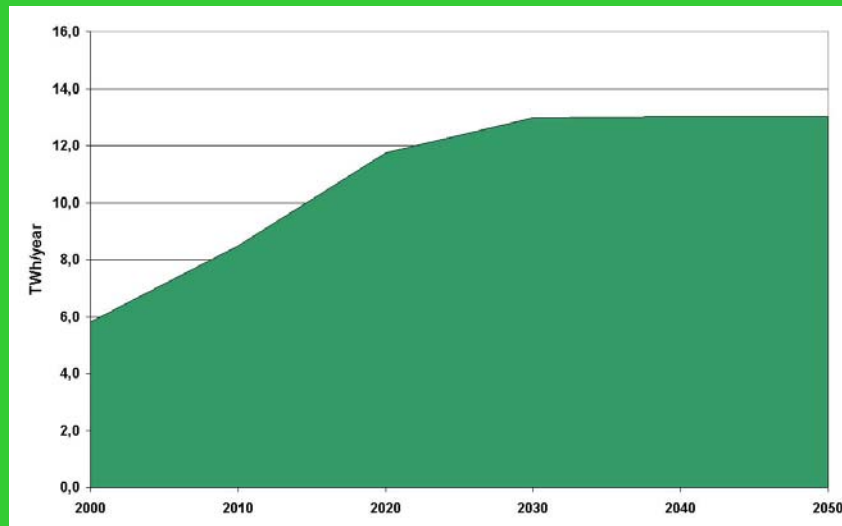


FORECAST OF WOOD UTILIZATION FOR ENERGY PRODUCTION IN UKRAINE

(potential 16 TWh/year)

In Ukraine forests cover only 15.6% of the territory. 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) where more than 90% of wood is harvested. Wood potentially available for energy production estimates as 1.6 mln m³/year as felling residues, 2.1 mln m³/year as wood processing waste, and 3.8 mill m³/year as firewood that totally equivalents to 16TWh/year.

In 2000 consumption of wood and wood waste for energy production amounted to about 5.8 TWh. In 2030 predicting consumption of wood and wood waste for energy production will be about 13 TWh and will stay at that level in further years.

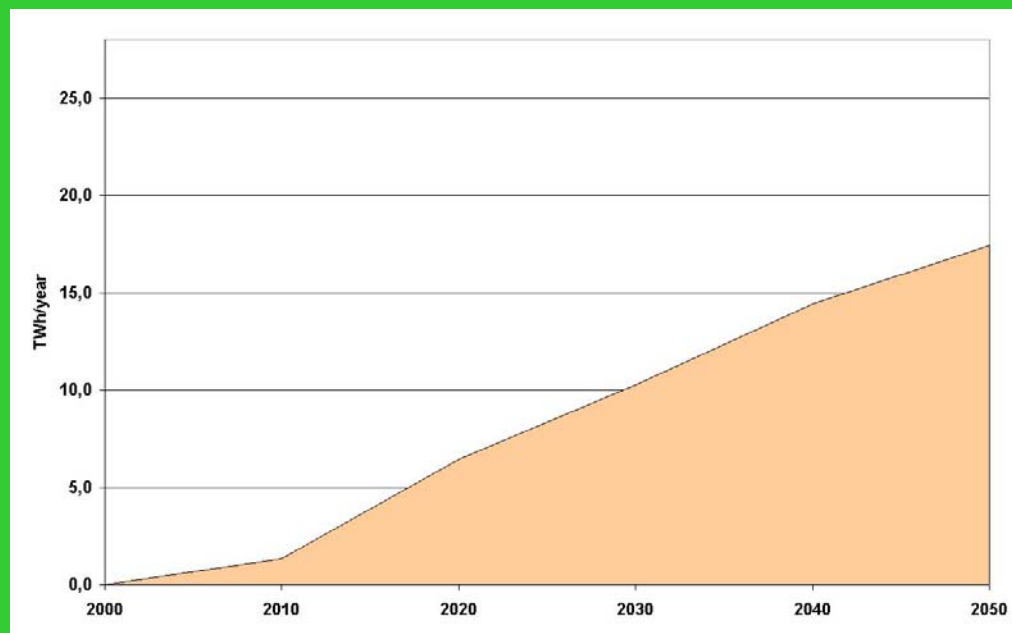


FORECAST OF BIOGAS UTILIZATION IN UKRAINE (potential 28 TWh/year)

Technical potential of biogas available for energy production includes biogas extracted from manure (animal husbandry and poultry farming) – 2308 mln m³, from sewage sludge – 334 mln m³, and landfill gas – 2300 mln m³.

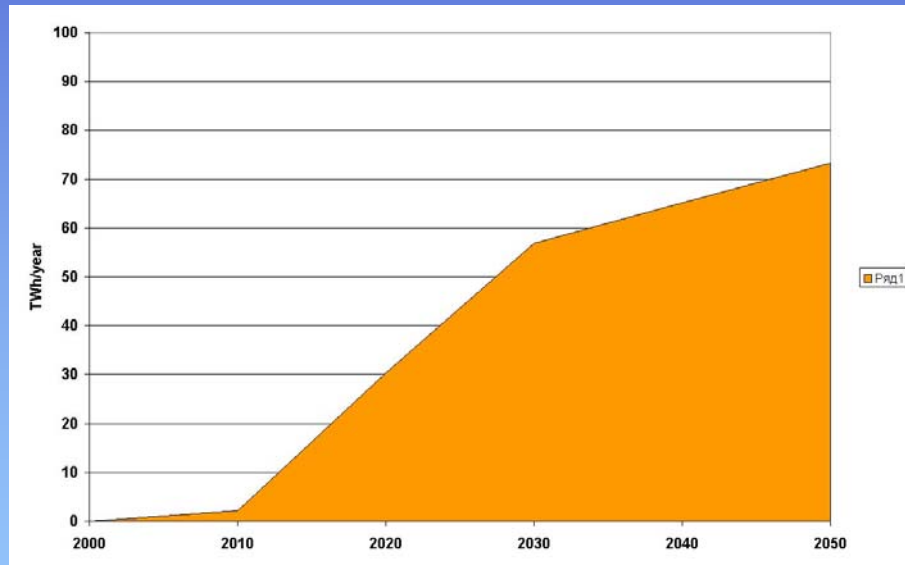
In sum it is equivalent to 28.2 TWh.

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



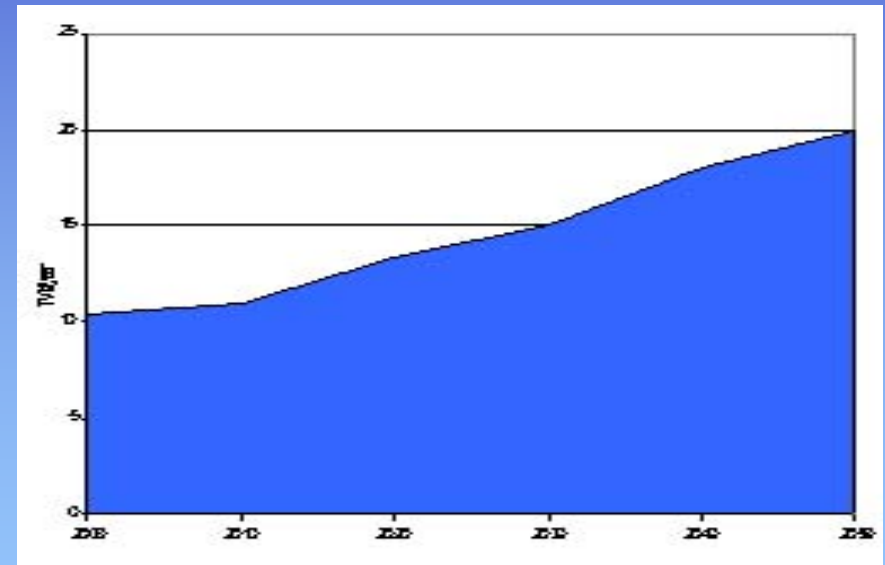
FORECAST OF GEOTHERMAL ENERGY UTILIZATION IN UKRAINE

(potential 97 TWh/year)



FORECAST OF HYDRO POWER GENERATION IN UKRAINE

(potential 33 TWh/year)



FOR YOU INFORMATION:

• www.rea.org.ua