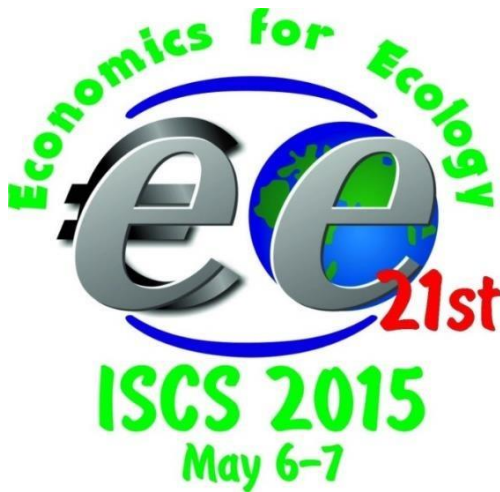


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GREEN TECHNOLOGIES AS AN OBJECTIVE NEED OF UKRAINIAN REGIONS' SUSTAINABLE ENERGY

Anastasiya Yudina

*National Technical University of Ukraine "KPI", Kiev,
Ukraine*

Today, one of the major global issues the humanity is facing is an issue to provide a sustainable economic World and national development with the needed fuel and energy resources and, respectively, to provide global and national energy safety. For Ukraine today the very topical is GDP radical energy and resource intensity decrease and, as a consequence, strengthening of independence and increase of economy's competitiveness. Energy and environmental problems faced by Ukraine today are the result of long-term neglecting of the laws of development of relationship between a human being and nature, these are lessons of inefficient, irrational, wasteful use of natural energy resources by humans, as well as unwillingness and inability to use Green technologies [1]. Green technologies do not only help to reduce greenhouse gas emissions but are developed for a more efficient use of available energy resources, water and various kinds of raw materials. Green technologies can be a part of solving the problems of traditional energy carriers crisis (when significant fluctuations affect the availability of thesis resources), the crisis of food availability; they help to reduce greenhouse gas emissions and gain increasing importance in the coming decades. Analyzing green technologies as phenomena, one should note that at this stage in most countries only certain projects can be observed, while in the USA, EU and certain Asian countries trends and even industry reviews can be already singled out [2]. Only several projects and local initiatives could be seen in Ukraine. These initiatives will undoubtedly become a part of the World's transition to a green economy paradigm, as well as the fact that in Ukraine the share of these technologies will be dominated and used. Ukraine has one of the highest green house gases (GHG) emissions per unit of GDP in the World and is a country where certain environmental initiatives are very slow to introduce, considering not only the need for funds for their implementation, but also on the inertia of consumers. In Ukraine the main types of green technologies must be: renewable energy sources (solar and wind energy, biomass, hydropower, etc.); green construction and green design, changes in the infrastructure; water purification, green information

technologies (IT); clean and improved transportation. This list can also include different types of waste disposal (paper, industrial, solid, etc.), energy saving technologies, energy storage technologies (batteries), the concept of green offices and buildings and so on.

Wind power potential is estimated at 20-30 mln tons of c.e. a year. Network wind power plants are projected to be built with total capacity of 2000 MW, which will provide energy savings of 1.8 mln tons a year. Ukraine has substantial wind power resources: annual technical wind energy potential is 30 billion kWh. However, according to the level of wind energy deployment Ukraine is ranked as only 21 number among the European countries and 30th among the World countries. For the development of wind power inventory sites suitable for efficient wind farm construction needs to be made. Map of the level of natural wind power potential of Ukraine in view of industrial and autonomous wind power throughout Ukraine requires additional research and refinement.

Ukraine has favorable natural and climatic conditions for solar energy. For example, solar energy reaching us annually is estimated at 400 mln tons of c.e. Average annual total solar radiation arriving at 1 m² of surface in Ukraine is in the range from 1070 kWh/m² in northern Ukraine to 1400 kWh/m² and more in AR Crimea. These energy parameters of solar radiation access are fundamental in the implementation of solar energy equipment and are recommended for use, primarily, by solar energy facilities designers to select the type of equipment (solar thermal, photovoltaic systems) and to establish their optimal power and time of efficient operation of equipment in a particular area.

Energy potential of small rivers is estimated at 50 billion kWh of electricity per year, which is four times more than the average annual production of entire HPP cascade on the Dnieper river. The capacity of small, mini and micro-HPP can reach 600 MW, which will provide savings of 17 mln t. of c.e. At the end of 2008, 78 small HPP with capacity of about 110 MW were in operation, annually producing 300-390 mln kWh of electricity. They have fairly guaranteed renewable energy resource, meeting the complex of ecological requirements to preserve biological, geomorphological and hydro-chemical processes in the canal and river valleys. Besides, small hydropower contributes to the solution of other important economic problems: water supply, fisheries management, managed protection of the neighbor areas from flooding, transfer of these lands from the category of non-guaranteed agricultural into the category of guaranteed agriculture due to the irrigation.

Potential of geothermal energy are primarily thermal waters and the heat of heated dry rocks. Besides, promising for use in the industrial scale include the heated underground waters resources that are brought off with oil and gas with the existing oil and gas wells. The most promising for mining of high-grade energy resources is the Carpathian geothermic region, having high geothermal gradient and, respectively, high-temperature rocks. Heat recovery is also an energy-saving technology of the diversified application with energy-saving potential at the level of 7-8% of the volume of energy resources consumed, or 16-17% of total energy-saving potential. Distribution of this potential at implementation objects is appraised in the following way: 50% - industrial and heating boilers, 25% - industrial furnaces and 25% - other equipment. Recovered heat can be used for heating and hot-water supply of satellite towns of industrial enterprises.

In Ukraine impediments to the implementation of green technologies are certain political and economic risks that are inherent in transforming society, business, thinking of consumers, including [1]: lack of favorable economic and regulatory conditions for investments in low carbon and resource saving technologies; subsidies to traditional technologies, which using traditional energy sources and making a negative impact on the environment, proved to be relatively reliable, but with the significant negative externalities; limited willingness of society to adopt new technologies; especially inertia and limitations of the current educational system, excellent economic opportunities for the introduction of new technologies in the context of the needs of different technologies by different countries (depending on which country provided the resources, and what resources are missing); high riskiness of investing in new technologies, as well as the adverse economic and regulatory situation in many countries, which make the venture capital investments even more risky.

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