SECTION 1. MODELS, METHODS AND INFORMATION TECHNOLOGIES IN ECONOMICS / МОДЕЛІ, МЕТОДИ ТА ІНФОРМАЦІЙНІ ТЕХНОЛОГІЇ В ЕКОНОМІЦІ

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RISK ASSESSMENT OF USE OF THE DNIEPER CASCADE RESERVOIRS FROM THE STANDPOINT OF SOCIAL WELFARE FUNCTIONS

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In the era of hydropower nuclear energy contribution to the energy balance FSU considered indisputable. Thus the negative effects associated with the creation of reservoirs on flat terrain (flooding large areas, destruction of settlements, a violation of historic monuments, the destruction of fish resources, increase the risk of technological disasters) into account not taken [3]. Subsequently, as the depreciation as the main equipment (turbines, generators) and related infrastructure (gateways and their equipment) to develop hydropower decreased both in absolute and relative terms and dam reservoirs become an insurmountable barrier to the annual shipping [1] .

There is a very clear question: by what may be offset 5.6% of the electricity produced by hydroelectric Dnieper?

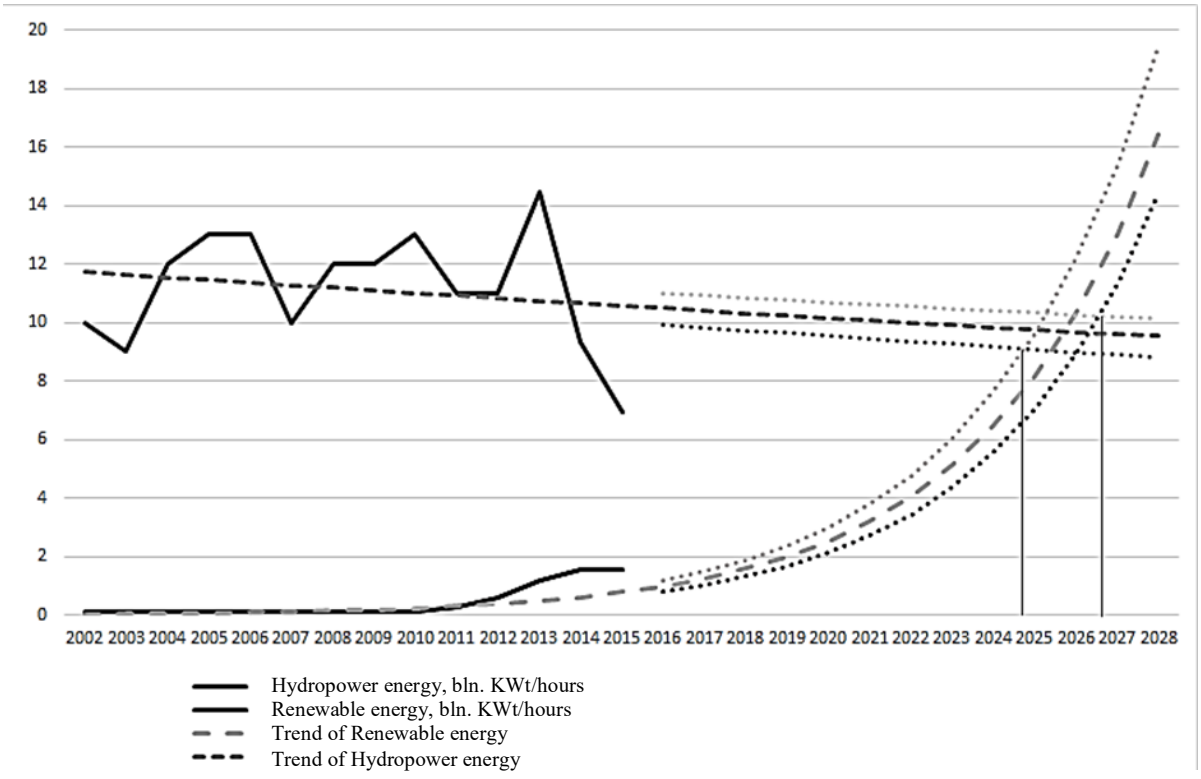

Figure 1. Projected volumes of energy through renewable energy and hydropower.

The answer to this question is the development of an renewable energy that presented by the forecast for the time period from 2024 to 2027 is able to fully offset potential losses generated by hydropower cascade of Dnieper HPP (fig.)

Regarding the risk of man-made disasters, the location of significant reserves of water masses above the territory of a particle cities endangers man-made tsunami, dangerous for the residents of the metropolis [2].

Estimates of potential losses from the man-made tsunami is 5% level of significance for the city are higher than the value of hundreds of millions of USD and these estimates do not account for the possible loss of life of Kiev residents who live in the area of potential flooding. It should be emphasized that the traditional global assessment of likelihood of abuse dam reservoir, equal to 0.01%, in terms of the continuation of hostilities in the territory of Ukraine shall be increased by at least an order [2] Total damage from further use of cascade hydropower plants are presented in Table.

Table Losses from further use Dnieper HPP cascade (mln. USD)

		Man-made		Ecological	
Type of losses	The volume and its error	Type of losses	The volume and its error	Type of losses	The volume and its error
Not using the transport potential of the Dnieper	$E(x_1) = 550;$ $\sigma_1 = 165$	Probable losses from the man-made tsunami due to violation of the dam of reservoir	$x_{0,05} = 100$	The deterioration of the quality of drinking water	It affects water supply for 6.5 million people
Alternative (agricultural) use	$E(x_2) = 250$ $\sigma_2 = 25$	Support dams and reservoirs security	No information	The deterioration of the recreational potential of the coastal zone	Reduces recreation opportunities near the dwelling to 6.5 million of population
				Quantitative and qualitative reduction of fishery resources	Negative impact on dependence on imported fish products

If you add up all the expenses they exceed 1 bn. a year, so in the near future should be decided concerning the future Dnieper cascade hydropower plants.

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