

Pumped storage plants are not green investments

In November 2008, the National Environmental Investment Agency of Ukraine decided to direct money from the International Greenhouse Gases (GHG) Emissions Trading into the construction of pumped storage plants (PSPs). The Agency is responsible for the implementation of the “Green Investment Scheme” – designed to manage the funds received in exchange for emission quotas. The scheme has to ensure that funds are spent on projects that cut GHG emissions. Yet PSPs totally contradict the idea, as they do not lead to the decrease of carbon emissions and will harm the environment.

PSPs are accumulators, not energy sources

A PSP is not an independent energy source and can not be regarded as a renewable energy source (RES). Rather it is an accumulator, which stores the energy generated by other sources, mainly non-renewable sources: namely, nuclear power plants (NPPs) and thermo power plants (TPPs).

When there is an excess of electric power in the network, a PSP pumps water to the upper reservoir located at a certain height creating a reserve of potential energy, which is subsequently converted into electric power by a water outlet through a turbine from the upper reservoir to the lower basin. In this way PSPs supply electric power to the network at a time of high demand.

The need for extra-regulation of the electricity system is caused by the fact that Ukraine is currently producing about 46 percent of its electricity via non-manoeuvring NPPs, and at the same time the government is doing nothing to introduce electricity demand regulation measures.

PSPs use more energy than they produce

PSP technology is considered to be inefficient because it envisages large losses of power and its construction is extremely costly (more than USD 1 billion per plant). A PSP is designed so as to return to the integrated power system a maximum of roughly 70-75 percent of consumed electricity, and 25-30 percent is used for its own needs. This is according to an estimation given by the Ukrainian PSP promoter JSC Ukrhydroenergo.

However the overall power effectiveness of a PSP is even less if we consider power transmission losses (two PSPs at the construction stage in Ukraine are situated far from energy generating facilities) and if proper account is given to the fact that a PSP operates only a few hours per day. Thus, PSPs can not be regarded as a feasible and sustainable method for solving the problem of peak loads, because they in fact waste the energy which

was produced from costly fuels – moreover, with significant CO₂ emissions involved. If PSPs are deployed as a peak load regulation method, an extra 30 percent of energy is used that emits thousand of tonnes of CO₂. This could be avoided if different methods are used.

Extensive energy sector development

The construction of PSPs represents a wrong direction for Ukraine's energy sector development, gives a green light to further development of nuclear energy and eliminates financial resources from RES development and energy efficiency improvement. Electricity demand regulation measures and the creation of a system of power generation with a sufficient number of load-shifting capacities (TPPs upgraded with clean-coal technology, small hydro, biomass-fuelled plants) can provide the country with clean energy and solve the problem of peak loads while at the same time cutting overall CO₂ emissions.

PSPs are a big dam

PSPs fail to meet the standards set for renewable energy sources as they fall under the category of large dams according to the World Commission on Dams. For example, the Kaniv PSP in Ukraine envisages the construction of dams up to 90 metres high.

Recommendations

The Ukrainian government must commit to stream international emission trading funds only to those projects that lead to a decrease in CO₂ emissions. Emissions' purchasers must not allow their money to be spent on outdated and inefficient projects, such as PSPs.

PSPs increase the energy sector's overall carbon emissions.

Ukraine's municipal sector has great potential for GHG emission reduction projects and one which needs investments. It should be **the** priority for climate investments.

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