

Issue paper

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Ukrainian transmission lines — a vehicle for dirty electricity to the EU

Since 2005 the EBRD has invested about EUR 400 million in a number of high voltage transmission line projects sponsored by Ukraine's state owned company Ukrenergo across Ukraine.

In October 2010, the EBRD published a procurement notice for the development of documentation for another Ukrenergo transmission line, the second backbone ultra high voltage corridor, which is to connect the substations at Kakhovska and Primorska with the Dnistrovska pumped storage plant and the Khmel'nitska nuclear power plant (NPP). With this official announcement, a strategic plan has been outlined to create an electricity transmission corridor for nuclear and coal energy from Ukraine to the EU. (See Map)

On 4 November 2010 the EBRD announced a procurement notice for the preparation of an environmental and social impact assessment and a feasibility study for the 330 kV Novoodesskaya - Arstyz transmission line, a project originally halted in 2009 due to the constructor's plans to cross a site designated under the Ramsar convention and problems with the implementation of the EBRD's Adjalyk-Usatovo project.

As of April 2011, these projects are still at an early stage of appointing consultants for technical, economical and socioenvironmental documentation. However the main concern that needs addressed is assessing the strategic necessity for such projects given the potential risks from nuclear energy to the EU and Ukraine

Second backbone ultra high voltage corridor – the largest piece of Ukraine's electricity export puzzle

Once all planned transmission lines projects are completed, with the second backbone ultra high voltage corridor being the major section, a continuous transmission corridor from east to west will connect three Ukrainian NPPs (totalling twelve nuclear reactors) and two hydro pumped storage plants (See Map 1) enabling up to 4 GW of electricity originating from coal and nuclear for export to the EU.

The Energy Strategy of Ukraine until 2030 also states the following about infrastructure necessary for increasing electricity exports:

- two transmission corridors (the second backbone and Rivne-Kyiv-Donbass) "to create conditions for the integration of the Ukrainian grid into the European network (UCTE) and significantly increase electricity exports"¹.
- the export of electricity will increase 3 times (from 8.3 TWh to 25 TWh in 2030).

This leaves little doubt that Ukrainian authorities are planning extra revenues from electricity sales and that EBRD investments in high-voltage transmission lines are necessary for this purpose.

The EBRD rationalises that these lines will "provide the remote part [of Ukraine] with the secure electricity supply"² and "make available excess generation capacity of Zaporizhzhia NPP"³. Yet in spite of these claims, the following remains true:

- The current design of the 330 kV Novoodeska-Artsyz transmission line as presented during public consultation in 2009 enables Ukrenergo to install electricity towers for two circuits of 330 kV that will enable transmission of power that exceeds local demand several times over.
- The South Ukraine transmission project, approved by the EBRD in October 2010, is to provide extra power supplies to southern Ukraine and develop missing output capacity of about 700 MW for the Zaporizhzhia NPP. However the designed capacity of the Kahovska substation and as well the overall project costs are two to three times higher than what is actually needed to achieve these particular goals. At the same time, this transmission line is essential for connecting the second backbone with the Zaporizhzhia NPP⁴.

The main problem with this export scheme is that by 2018 when it is predicted that the second backbone corridor could be operational, there would not be any extra generating capacities in Ukraine unless the expired lifetimes of Soviet-era nuclear reactors are extended. By that time seven of the twelve reactors connected by the second backbone will have reached the end of their projected lifetime, but the Ukrainian government has warranted a specific programme for these to be upgraded and continue running⁵. The lifetime extension of old NPPs significantly increases the risks of nuclear accidents with radioactive emissions and furthers the unresolved issue of spent nuclear fuel in Ukraine.

The other potential source of electricity for export would come from coal fired power plants, which in Ukraine have the lowest technical, economic and ecological indicators in Europe and are not currently at full load due to lack of demand. In 2010 Ukraine joined the European Energy Community and with this agreement is obliged to meet EU environmental standards by 2018, including those on emissions (EU Directive 2001/80/EC). However a majority of Ukrainian experts and think-tanks believe that Ukraine will be unable to fulfill its environmental commitments, because 12,2 GW or 42,4 percent of the total generation units will need to be replaced at a price tag of billions of euros. Those with a stake in the Ukrainian energy sector have already started lobbying to extend the period for compliance with these standards until 2030. Thus if export infrastructure will bring the demand, those outdated and heavily-polluting thermal power plants will ultimately contribute to an increase in greenhouse gas and other emissions.

Furthermore there are doubts also that there will be such demand for electricity from the EU. In 2010, Hungary and Slovakia significantly decreased the amount of electricity imported from Ukraine, and Poland has stopped importing electricity from Ukraine entirely. Ukraine's energy system is losing its competitiveness every year as the generating capacities worsens.

Recommendations

The EBRD must stop the practice of dividing major infrastructure projects into smaller parts and acknowledge that Ukraine's high voltage transmission line projects are components of an ambitious drive to integrate Ukraine into the European power network and will be accompanied by a number the issues outlined above.

The EBRD should require Ukrenergo to conduct a feasibility analysis for all components of system integration as well as a strategic environmental assessment for such integration. These studies must address all potential impacts to local people and the environment that until now have largely been ignored, including risks of nuclear accidents at outdated NPPs, spent nuclear fuel utilisation, greenhouse gas increases and so on.

In the Ukrainian electricity transmission field, the EBRD should focus its efforts on utilising the massive potential to increase the reliability and efficiency of Ukraine's energy system through the modernisation of existing grid, especially low-voltage local grid below 110kV where power losses now are two times higher than average in the EU⁶.

Notes

1. The Energy Strategy of Ukraine until 2030: 3.1.5. Present state and further development of electricity networks.
2. EIA Novoodeska-Artsyz
3. South Ukraine Transmission project, summary for EBRD Board of Directors.
4. 750 kV Zaporizhzhia NPP-Kahovska with substation 750 kV Kahovska. Project documentation, t.2 „Environmental Impact Assessment“, book 1.
5. Complex (Consolidated) Nuclear Power Plants Safety Upgrade Programme in Ukraine
6. 11 percent as of 2009

**UKRAINIAN TRANSMISSION LINE PROJECTS
FUNDED OR PLANNED TO BE FUNDED
WITH EU PUBLIC FINANCES**

- Odessa high-voltage grid update approved by the EBRD in 2005 - up to EUR 25 mln
- 330 kV Novoodesskaya - Arstyz transmission line - EUR 0.7 mln from NIF
- Ukrenergo power transmission project (Rivne NPP –Kyiv) approved by EIB and EBRD in 2008 - up to EUR 150 mln each
- South Ukraine transmission line approved by EBRD 2010 - EUR 175 mln
- Zaporizhska - Kahkovska line approved by the EIB in 2010 - up to EUR 150 mln
- Proposed 'second backbone' ultra high-voltage corridor

