Bottlenecks of hydropower development in Central Asia: Failure of aid coordination by development banks

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Abstract:

The Central Asian countries have abundant but unevenly distributed natural resources including water. The Central Asia Power System (CAPS) project initiated by the Asian Development Bank and the Central Asia-South Asia Electricity Transmission and Trade Project (CASA-1000) initiated by the World Bank are planned to catalyze trade of electricity in this region. However, the existing surplus of the hydropower generation capacity of Tajikistan in summer may only meet the anticipated power demand by one project. The CAPS project (to be completed in 2023) may monopolize the surplus in Tajikistan and the CASA-1000 project (to be completed later) may suffer from the shortage of electricity. It stems from the failure of aid coordination between the Asian Development Bank and the World Bank. This study reveals (a) how the assumptions made for the CAPS and CASA-1000 projects differ, and (b) possible causes of the failed aid coordination. It turned out that (a) the officer in a development bank who is in charge of project development has little motivation to submit his or her project to aid coordination, (b) only “geographic demarcation” between two projects was discussed and agreed upon in the aid coordination, and (c) no technical detail of these projects was discussed in the aid coordination.

KEYWORDS aid coordination; Central Asia; hydropower; Rogun Dam; Tajikistan; transboundary trade of electricity

INTRODUCTION

Aid coordination as an old and new issue

The need of coordination among aid organizations was pointed out even in the late 1960s (Pearson, 1969) for the purpose of increasing the efficiency of donor agencies. It then, through the 1970s and 1980s, gained the attention of donor organizations as a major cause of deteriorating effectiveness of aid provided by these organizations (World Bank, 1984). It was also suggested that uncoordinated project development and implementations among donor agencies tended to abuse the human resources in the government of the recipient countries, in addition to the observed waste of time and money at donors (Morr, 1984). Some scholars in the early 2000s suggested that multilateral assistance became more selective than before as a result of aid coordination (Dollar and Levin, 2006). Aldasoro et al. (2010) nevertheless cautioned that “political manifestations (that) make us believe that aid has become less proliferated and more coordinated (p. 13)”. This study therefore illustrates the consequences which originate from lack of effective aid coordination, with transboundary hydropower trade projects in Central Asia as the study case. This study addresses the “donor coordination” between the World Bank and the Asian Development Bank. Both of these organizations belong to the category of “development banks”, which give assistance to the recipient countries by provision of loans, not by grants.

Hydropower generation in Tajikistan

The Central Asian countries, namely Kazakhstan, Uzbekistan, Kyrgyz Republic, Tajikistan and Turkmenistan, have abundant natural resources including water, while these resources are unevenly distributed. Kazakhstan, Uzbekistan and Turkmenistan are rich in coal, natural gas and petroleum. Kyrgyz Republic and Tajikistan are poor in fossil fuels, while these countries have an abundance of water resources (Granit et al., 2012; Stucki and Sojamo, 2012).

These water rich nations in Central Asia intend to benefit from the blessing by producing hydropower. Tajikistan has developed many small-scale to large-scale hydropower stations. Tajikistan is presently constructing the Rogun Dam on the Vakhsh river, which is a tributary of the Amu Darya, flowing into the Aral Sea through Uzbekistan. The Rogun Dam will have a height of 335 m, and will be the highest in the world, with storage volume of 13.3 km³, and a power generation capacity of 3,600 MW (i.e. six generators of 600 MW each will be installed).

Winter in Tajikistan is very cold due to high elevation of the lands. People in Tajikistan require electricity to warm their houses in winter. Ironically, the discharge of the rivers in Tajikistan peaks in summer, for the water originates from snow and glacier melt. It results in more power generation capacity in summer rather than in winter. The hydropower station at the Rogun Dam is supposed to become fully operational in 2028 at the earliest. Tajikistan would then have more electricity generation capacity than needed in sum-
mer. Still, the power deficit of the country in winter will persist (Nakayama et al., 2015; Nakayama and Salewicz, 2017). Presently, the power demand in winter peaks is partly met by newly constructed thermal power stations (World Bank, 2019).

Transboundary trade of electricity

A viable strategy for Tajikistan is to sell “surplus electricity” in summer to foreign countries to secure money, with which either electricity or (as it is presently practiced) fuel for thermal power generation should be purchased from abroad. In this study, the authors focused on the two major transboundary electricity trade projects in the region, namely the Central Asia Power System (CAPS) project and the Central Asia-South Asia Electricity Transmission and Trade Project (CASA-1000).

CAPS project supported by the Asian Development Bank

The idea of transboundary trading of electricity is not new for the Central Asian countries. In the Soviet Union era, the CAPS functioned as a mechanism for transboundary sharing of electricity among five Central Asian countries. The power trade through the CAPS was established by connecting the Central Asian countries through the power lines built in the 1970s and 1980s. However, following the collapse of the Soviet Union in 1991, the volume of power trade through the CAPS sharply declined, from 25.4 TWh/year in 1990 to 2.08 TWh/year in 2016 (Asian Development Bank, 2019). It was because each country in Central Asia started using their natural resources only to meet their domestic needs, not the needs of other nations. Turkmenistan, which is very rich in natural gas reserves, withdrew from the CAPS in 2003. Uzbekistan followed Turkmenistan in 2009 by disconnecting Tajikistan from Uzbekistan’s power grid (Central Asia-Caucasus Analyst, 2009).

Tajikistan severely suffered from the lack of power trade with other Central Asian countries, as Tajikistan was obliged to import electricity from Turkmenistan through CAPS in winter. Tajikistan also lost the opportunity of selling 3 to 5 TWh of electricity in summer to other countries through the CAPS.

The ceasing of CAPS’s operation also posed difficulties to Uzbekistan. Cheap hydropower from Tajikistan in summer became unavailable. Uzbekistan was obliged to consume locally produced fossil fuels for power generation, which could have been sold abroad for national revenue.

The Asian Development Bank in Manila in 2018 started assisting rehabilitation of the transboundary power trade system through the CAPS. This project will enable Tajikistan to export up to 5 TWh per year of electricity to other countries in the region (Asian Development Bank, 2018).

CASA-1000 project supported by the World Bank

From the viewpoint of Tajikistan, the former Soviet Union countries in Central Asia may not be promising customers to sell surplus hydropower to in summer, as their power demands in summer are relatively small. Countries such as Afghanistan, China and Pakistan may be targeted because of their large power demands in summer.

The World Bank initiated the Central Asia-South Asia Electricity Transmission and Trade Project (CASA-1000) to catalyze power trade in this region. This power trade project aims at transferring 4 TWh/year of electricity from Kyrgyz Republic and Tajikistan to Afghanistan as well as Pakistan through a to-be-developed HVDC (High Voltage Direct Current) transmission line with a capacity of 1,300 MW during summer season (i.e. 128 days per year). Out of 1,300 MW of electricity to be produced by Kyrgyz Republic and Tajikistan, 300 MW will be consumed by Afghanistan and 1,000 MW (1GW) by Pakistan (World Bank, 2014).

CASA-1000 was originally planned to be completed by 2023, however according to the mass media in Afghanistan (Zabihullah, 2019) a delay in implementation of the project has been observed. The electricity for trading from Tajikistan to abroad through CASA-1000 is supposed to be generated by the existing hydropower stations in Tajikistan.

Objectives of this study

This study aims at finding out (a) how the assumptions made for the CAPS and CASA-1000 projects differ, and (b) possible causes which have prevented the aid coordination from functioning effectively.

METHODS

This study was conducted by literature review and interviews. The authors reviewed the articles about the CAPS...
RESULTS AND DISCUSSION

Supply side capacity in each project
CAPS initiated by the Asian Development Bank
From 2000 to 2010, Kyrgyz Republic exported electricity to Kazakhstan, Tajikistan and Uzbekistan through the CAPS, with the annual volume of 2,214 GWh (Asian Development Bank, 2012). In the same period of 2000 to 2010, Turkmenistan exported on average 356.1 GWh per year mainly to Tajikistan.

From 2000 to 2010, on average, Tajikistan annually exported 681 GWh and imported 1,105 GWh through the CAPS, before Tajikistan was disconnected from the CAPS in 2009. Tajikistan was then a net importer of electricity (on average 424 GWh per year) through the CAPS.

CASA-1000 initiated by World Bank
Kyrgyz Republic and Tajikistan respectively presently have around 2,150 GWh and 3,750 GWh of surplus power production in summer (SNC-Lavalin, 2011). This surplus power is supposed to disappear by 2040 due to the forecasted increasing of domestic power demand.

Demand side capacity in each project
CAPS initiated by the Asian Development Bank
Uzbekistan has sufficient power generation capacity to meet domestic demand, while Uzbekistan wishes to replace the power generation by thermal power stations with relatively cheaper imported electricity from Tajikistan. The CAPS project assumed that the energy surplus in the Central Asian countries should be exported to Afghanistan and Pakistan, where power demand is forecasted to increase rapidly.

CASA-1000 initiated by World Bank
The CASA-1000 project aims at supplying electricity to Afghanistan and Pakistan through the transmission line from Tajikistan and Kyrgyz Republic. The total generation capacity in Pakistan in 2012 was 20,433 GW (World Bank, 2014). This power generation capacity cannot meet the domestic demand due to high generation cost. Nevertheless, Pakistan’s domestic power demand is estimated to increase rapidly due to growth of economy and population.

In Afghanistan, the diesel-fired power plants do not operate in full due to high cost of fuel. The total generation capacity of hydropower stations is reducing due to the aging of infrastructures. Afghanistan thus imported 2,250 GWh of electricity from Uzbekistan, Tajikistan, and Iran in 2011.

Supply capacity
Both the Asian Development Bank and the World Bank estimate the export capacity of Kyrgyz Republic to be over 2 TWh per year. The Asian Development Bank and the World Bank had completely different pictures about Tajikistan’s export capacity. Asian Development Bank (2018) suggests that the volume of power exports in Tajikistan will increase to 5 TWh per year, however how this amount of surplus electricity will be generated in Tajikistan is not specified. On the other hand, the World Bank assumes 3,750 GWh per year of surplus for export.

Whatever figure is correct, only a half of the combined power requirement by the CAPS and CASA-1000 may be met. If the CAPS would be put into operation first, no surplus power should be made available for CASA-1000. The authors find it a major drawback caused by the absence of effective aid coordination between the Asian Development Bank and the World Bank.

Possible breakthrough for the bottleneck
According to the World Bank (2014), the Rogun Dam is technically, economically and environmentally feasible. Its construction was delayed in early 2000s by Uzbekistan’s opposition, which was based on the possibility of reduced water discharge from Tajikistan to Uzbekistan for irrigation in summer. However, following the death of the previous president of Uzbekistan in September 2016, the relationship between Uzbekistan and Tajikistan improved drastically, to the extent Uzbekistan agreed to Tajikistan constructing the Rogun Dam. The construction of the Rogun Dam started in late 2016. The first turbine for its hydropower station was installed and commissioned in October 2018, followed by the second turbine in September 2019. Once the Rogun Dam is completed, the anticipated power demand both by the CAPS and CASA-1000 projects may be fully met.

Causes of the failed aid coordination
The donors assisting Tajikistan in the mid-2000s established the coordination mechanism among themselves called Donor Coordination Council (DCC) (Government of Japan, 2009). They also developed the strategy, called Tajikistan Joint Country Support Strategy. While the DCC still exists, it is more for coordination in the level of macro economy, not for particular development projects (Development Coordination Council, 2018).

The aid coordination was conducted between the World Bank and Asian Development Bank for the CAPS and CASA-1000 projects (Anonymous informant, 2019a). Tajikistan participates in both CAPS and CASA-1000 projects. Tajikistan, as a matter of principle, should have reviewed these projects to make sure that they were based on the same assumptions and that Tajikistan has sufficient power generation capacity to meet the power demand by two projects. Apparently, Tajikistan failed to accomplish the role of making these projects consistent.

Tajikistan’s failure to coordinate two aid projects may not be a big surprise, as the administrative capacity of a recipient is often insufficient to coordinate donors. Tajikistan is no exception. The demand for data and paperwork by donor agencies tend to abuse the manpower of the recipient.

The authors found, through interviews with those working in aid organizations (e.g. Anonymous informant, 2019b), that absence of effective aid coordination stems from the “culture” of the aid organizations. One of the
authors used to work as a staff member of the World Bank and dealt with water and energy related projects. He then found that the only achievement indicator for a task team leader (who develops lending projects through consultation with the recipient) is the amount of money lent. Putting his or her project on the table of donor coordination simply increases the risk of delay or cancellation of the project. Under such a circumstance, few task team leaders would have been eager to have involved donor coordination, for it merely endangers his or her project as well as his success and survival in the development bank (Anonymous informant, 2019c; Anonymous informant, 2019d). The Asian Development Bank also has the same issue (Anonymous informant, 2019e).

Provided two aid organizations are formulating one project each in the same sector but with different geographical coverage (like the CAPS and the CASA-1000 projects), they are likely to be regarded as successful by making "geographical demarcation" between two projects. Typically, "aid coordination" works only to this extent, not further. It is because "aid coordination" is usually a high-level consultation, not at the level of engineers to discuss a particular set of the projects. The authors had an opportunity to ask the country coordinators for Afghanistan and Tajikistan of the CASA-1000 Secretariat Office about how the CAPS and CASA-1000 projects had been coordinated, only to find that aid coordination between these projects had not taken place to their knowledge1.

Another inherent difficulty about donor coordination is applicable for the CAPS and CASA-1000 projects. Aid coordination usually takes place either for a country (e.g. Tajikistan) or for a sector in a country (e.g. energy sector in Tajikistan) (Anonymous informant, 2019d). Since both the CAPS and CASA-1000 projects involve multiple countries as stakeholders, the issues among these projects may not be fully addressed by the mechanism which exists for the sake of a single country (Anonymous informant, 2019d).

Furthermore, donor organizations are reluctant to disclose the details of projects under development, as they are often in competition with other donors. They do not want to become a loser (i.e. cancelling a project under development) by showing their “enemies” what they have in mind. Therefore, “aid coordination” typically takes place between the “winner” and the “loser” as a high-level consultation, in a relatively latter stage of project development, as a face-saving effort of the “loser” to make the project a joint venture if possible (Anonymous informant, 2019b).

**CONCLUSION**

*Different assumptions made for the CAPS and CASA-1000 projects*

Tajikistan and Kyrgyz Republic are presently unable to make full use of their hydropower potentials, for the domestic demand for power is smaller than the potential. The total surplus of electricity by two countries is approximately 5 to 7 TWh per year. This volume of electricity is enough to realize either the CAPS or the CASA-1000, not both. Two projects are based on the different assumptions about demand by the importers (i.e. Central Asian countries, Afghanistan and Pakistan) and supply by the exporters (Tajikistan and Kyrgyz Republic). To meet the demand by the CAPS and the CASA-1000 in full, the Rogun hydropower station should become functional. The CAPS project assumes that the Rogun hydropower station is a source of electricity, while only the existing hydropower stations in Tajikistan are supposed to meet the demand by the CASA-1000 project.

*Causes behind the absence of aid coordination*

The officer in a development bank, who is in charge of project development, has little motivation to submit his or her project to aid coordination, for it simply endangers his or her success and survival in the organization. Aid coordination between donors may only take place between a “winner” and a “loser” at a fairly latter stage of project development. A “loser” may at best ask the “winner” to make the winner’s project a “joint venture” as a face-saving effort.

Aid coordination seldom takes place in the power sector (Anonymous informant, 2019b). A project with multiple countries as stakeholders may not fit with the framework of the aid coordination for a particular country. The CAPS and CASA-1000 proved exceptional, for aid coordination between donors took place even when the donors did not know which party should become the “winner” or “loser” for the regional (not national) projects. The “geographical demarcation” between projects was regarded as the successful outcome of the aid coordination between donors. Since the aid coordination took place as a high-level consultation between two aid organizations, no technical details were raided or discussed in the consultation.

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