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Opportunities and challenges for development of electricity trade in ECO Region

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Opportunities and challenges for development of electricity trade in ECO Region

As an intergovernmental organisation ECO has become an important regional entity covering an area rich in natural resources in particular with energy resources. It is worth mentioning that ECO region contains countries that are richly endowed in energy resources but have relatively low energy demand and others that have high and growing energy demand but whose indigenous supply options are relatively limited. Currently in some ECO Member States energy demand growth is far outstripping domestic supply, and in the foreseeable future, the demand-supply gap will become even wider unless the domestic supplies are supplemented by imports. Enhancement of national energy security depends on various factors, including diversification of energy forms and supply sources and lowering the cost of energy supply.

It has been recognized that there is a lack of regional analytical studies which would quantify and evaluate the potential for regional energy trade, estimate cost of transnational physical infrastructure and investigate non-physical barriers to regional energy cooperation, especially in the field of electricity trade. Back in 2005 ECO along with World Bank and Islamic Development Bank (IDB) organized a workshop on regional electricity trade (June, 2005, Tehran). As an outcome of the workshop it was agreed that the lack of clear understanding of the comparative costs and benefits of electricity trade opportunities, institutional and regulatory issues that govern electricity trade were among the key barriers to increasing cross-border electricity trade.

Electricity sector is capital intensive and it is therefore prudent that efforts for infrastructure development are extended beyond the physical boundaries of the country. Seeking participation for gainful utilization of resource potential in a region by taking advantage of peak diversity is a world-wide trend and several countries are already exchanging power with the neighbouring countries.

Today the existing electricity trade in ECO region with the exception of some Central Asian countries is conducted mainly in island mode, in which part of the national electricity system of one of the countries is synchronously connected with the power system of the other country, but disconnected from the rest of its own power system. The electricity trade is typically done through short-term arrangements, agreed on bilateral basis, rarely involving more than two countries. It is obvious that for full realization of regional potential, trading arrangements should become multilateral, longer term and technically more comprehensive.

In this regard the following factors could be taken into account as a basis for future electricity trade in the ECO region.

1. Energy trade picture of the region

Regional electricity trade development could initially be in respect of strengthening intra-regional trade within the Central Asian countries, where an interconnected grid already exists but much needs to be done to ensure adequate supplies of energy and security of supply. By strengthening existing links with Iran, and through Iran to Azerbaijan and Turkey, the benefits of larger integrated systems can be accessed. Another important element in interconnecting the power systems of the ECO countries is the potential of regional power exchange, instead of only as a power export opportunity for the Member States. The electricity demand and supply situation in the region may be divided generally into different groups with each country having potential as a predominantly export, import or transit state.

- Afghanistan is an importing and transit country and has existing interconnections with Iran, Turkmenistan, Uzbekistan and Tajikistan
- Pakistan is an importing country with rapidly growing demand
- Kazakhstan and Uzbekistan are exporting countries with fossil-fuel based generation
- Tajikistan and Kyrgyz Republic are exporting countries with hydropower based generation
- Turkmenistan is an exporting (mainly oriented to Iran) and transit country
- Turkey is an importing country
- Iran is an importer of electricity, but is also a major exporter of electricity. Iran is also a transit route to Turkey. With such versatile role Iran may be classified as a market integrating country
- Azerbaijan is an exporting country with fossil-fuel based generation

2. Legal arrangements/supportive documents

There is scope to build on the following existing energy related and general ECO documents.

- Treaty of Izmir. Treaty provides the framework for the possible establishment of a regional institution for electricity trading
- Economic Cooperation Strategy for the ECO region
- ECO Trade Agreement (ECOTA)
- ECO Vision 2015
- ECO Plan of Action for Energy/Petroleum Cooperation 2011-2015

3. Possible risks

Possible risks in regional electricity trade issues can be divided into 3 main areas – country risks (political, regulatory and legal), commercial risks and financial risks.

Complex risk mitigation is quite a challenging task. Still a starting point for risk mitigation is to strengthen intercountry coordination as a potential political risk reducer. The complexity and various commitments in international electricty trade issues requires strict monitoring, coordination among the parties to reach consensus and effective dispute resolution mechanism. The risks are compounded when projects span more than one country and involve cross-border transmission lines. Fundamental risks related to political, legal and regulatory environemnt can be reduced by strengthening the institutions and enhancing favorable investment climate.

4. Capacity building and enabling framework

Regional electricity trade in ECO region will most likely begin as a government-to-government initiative than a pure commercial venture, requiring government commitments. These two things put together would certainly help bring in the multilateral financial institutions and the private sector investors on board of these projects to see the culmination of the tightening of loose ends. Many of the electricity trade options will inevitably take a long time to come to fruition, but still there is much that ECO Member States can do immediately to create the favorable environment. In this regard establishment of comprehensive legal framework for commercial investments in power sector is essential. There is a vivid need for legally enforceable comprehensive commercial documentation to facilitate long term regional power trade. Improving the competitiveness of the domestic power sector in each country is also an important prerequisite for regional trade. Many ECO Member States have already undertaken extensive electricity sector reforms, but there is still room for further progress.

5. International experience

Development of interconnections of large electric power system is a worldwide phenomenon but varies between countries and regions. Since the first trans-country interconnection between Sweden and Denmark established in 1915 numerous bilateral and multilateral agreements on cross-border interconnection and electricity trade have been made. New and potential interconnections developed in different parts of the world are the evidence of economic benefits for all trading partners.

NORDPOOL Spot represents Northern Europe interconnections and runs the largest market for electrical energy in the world. It has gone a long way since founding of Nordel in 1963. It currently operates in 7 countries and more than 77% of the total electrical consumption is traded through it. It offers both day-ahead (Elspot) and intraday (Elbas) markets. Prices are determined through a transparent pooling mechanism that matches demand and supply for the common reference price and taking into account available transmission capacity.

South African Power Pool (SAPP) is the first formal international power pool in Africa. SAPP consists of interconnections among the utilities of the 12 countries in Southern Africa – Angola, Botswana, Congo, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe. These countries have a diverse mix of hydro and thermal power stations. SAPP partners have signed an Inter-Utility Memorandum of Understanding (MOU) regarding adherence to common standards, participation and operation of regional power pool through the various committees. Currently Short-Term Energy Market (STEM) for hourly, day ahead and longer-term contracts functioning within SAPP.

ASEAN Power Grid. Quite similar to ECO ASEAN region is known to be rich in energy resources on one hand and experiencing fast economic growth which drives power demand on the other. The optimization plan for power development of these countries has recommended various high voltage direct current (HVDC) and high voltage alternating current (HVAC) interconnections, based mainly on three principles - power exchange, power purchase and emergency exchange. 16 priority cross-border projects were selected for implementation up to 2020.

Of course, the task of development ECO regional electricity trade is quite challenging and is not limited just following policy recommendations and roadmaps. Financial support from international financial institutions is essential to undertake complex and ambitious multinational projects.

ECO`s role in facilitation of regional electricity trade shouldn`t be underestimated, as it seems most appropriate organization for promoting and facilitating regional energy trade.
The 3rd ECO Ministerial Meeting on Energy/Petroleum held on March 2013 in Tehran called for the optimal use of capacity of existing ECO power grids interconnection for electricity trade.

The 1st Experts Group Meeting on "Establishment of the ECO Regional Electricity Market" held on 5-6 November 2013 in Tehran revealed a great potential for future electricity trade in the region. Hopefully this kick-off meeting will define future strategy/roadmap for regional electricity trade and stimulate proper follow-up activities.

The Meeting agreed to hire local and international consultants for conducting the feasibility study. This study should be conducted with the cooperation of the financial and technical support of interested international financial institutions/donors.

The Secretariat is in constant contact with the Islamic Development Bank (IDB). The IDB has an interest and keen of realization of this project and in this regard financial support from IDB for hiring an International Consultant and a local Consultants from

Iran and Turkey for preparation of the feasibility study for harmonizing and merging the electricity markets of Iran and Turkey, is expected.

The meeting established an initial agreement between Turkey and Iran to set up a joint electricity market that could lead to trading possibilities, although the exact details of such a project are to be clarified.

The 2nd Experts Group Meeting on "Establishment of the ECO Regional Electricity Market" is scheduled to be held at the end of September 2014 in Turkey.