

Project Title: Turkey: Mitigating Risks to Medium Term Electricity Supply

Project ID (if available):

Region/Country: Europe and Central Asia/ Turkey

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ESMAP Thematic Area (M – Main; S – Secondary (if applicable)):

Energy Security	M
Energy Markets	M
Energy Poverty	
Renewable Energy	
Energy Efficiency	

Brief Description:

The Turkish electricity sector is undergoing comprehensive reform and restructuring with a view to creating a liberalized, efficient and economic sector. These reforms were conceptualized in the Electricity Market Law (Law No. 4628) promulgated in February 2001 and in the Strategy Paper accepted by the High Planning Council in March 2004. These reforms are broadly in line with the requirements of the EU, and comprise basically the following: (a) restructuring of the industry into independent corporate entities; (b) creation of an independent regulatory framework; (c) privatization of the distribution and generation businesses; (d) creation of a competitive market in electricity both at the wholesale level as well as the retail level.

Competitive Electricity Market The Turkish wholesale electricity market, when it is fully implemented, will consist of an organized Day-Ahead market operated by TEIAS as Market Operator, a real-time system balancing and operational mechanism operated by TEIAS as the Transmission System Operator, and a bilateral contracts market. In addition, there will be one or more organized markets for procurement of ancillary services. At the present instance, the market is operating in a transition phase through day-ahead scheduling and real time balancing of energy. In February 2007, the final balancing market is expected to become operational. At present, there are three metering periods in a day with settlements on a monthly basis. By December 2007, it is expected that daily settlements will commence supported by hourly metering.

Electricity supply security: The economy in Turkey has been growing at a very fast pace after the economic crises of 2001. In FY 2005, GDP grew at 7.6%, while in 2004 it grew at 10%. The fast pace of growth has had a direct impact on electricity demand growth, which grew at 7% in 2005 and 10% in 2004. In the current year, demand growth has been between 7.5-8% on average, higher than forecast. The Government’s high case demand growth shows an 8.4% compounded annual growth over the next 5 years, while the low case shows a 6.5% growth per annum. The trend this year shows that the high case looks more likely.

A recent Bank report¹ on electricity supply security reviewed Turkey’s demand and supply forecasts and concluded that, in the absence of serious mitigating measures, Turkey could experience shortfalls in electricity supply in 2009 – 2011. This is a serious concern for the government since electricity shortages will have immediate impacts on economic growth and welfare more generally. The study, among other elements, recommends that a capacity incentive scheme be implemented to complement the energy-only balancing market, and that future generation (including the ones under construction or licensed) be procured through competitive auctions. The capacity scheme would provide adequate signals to future (and existing) generating companies and would give them adequate comfort in terms of dispatch, thus incentivizing them to enter the Turkey market. The government has requested for support in designing the auction process and the capacity scheme.

¹ Turkey: Improving Medium Term Security of Electricity Supply in Turkey (October 2006), by ECA Ltd, UK and PSR Inc, Brazil

Institutional capacity for market implementation: The Government and TEIAS, the main electricity utility involved with implementing the market, also recognize that the balancing market and the capacity scheme are highly complex processes and that significant capacity building and training support will be required, not just for utility staff involved in the market but also for other market participants such as public and private generators, wholesalers, distribution companies etc.

Bank assistance for energy reform: The Bank has assisted in the design and implementation of the reform program in Turkey in several ways over the last decade. First, through PPIAF, ESMAP, and TA components of investment operations, the Bank has financed advisors and consultants who are assisting in reform implementation. Second, the Bank is financing key infrastructure, in terms of the market models, software and hardware, system dispatch and control tools, etc., through its investment operations. Finally, the Bank is supporting a panel of international experts who independently advise the government on various aspects of its reform program.

ESMAP Support: ESMAP support for the design and implementation of the auctions and the capacity scheme and for institutional capacity building in TEIAS and other market participants is thus a natural extension of the work that the Bank has been doing in Turkey over the last few years in the area of sector reform. The team looked at the feasibility of financing this capacity building initiative from ongoing loans, but the loans are already earmarked for project investments. Other ongoing sources of financing, such as PPIAF and the Spanish Trust Fund, have either stopped or are about to stop, and therefore there is little room there for additional work.

We therefore request ESMAP funding for the following:

1. **Survey of ongoing and existing capacity incentive schemes and auctions in other parts of the world** – Other countries, both in Europe and elsewhere, have implemented such schemes, or are designing them for implementation in the near future. Countries such as Spain, Greece, Romania, and others such as the US and Brazil, can provide examples which could be customized for Turkey.
2. **Design of capacity incentive scheme and auction mechanism** – It would be critical to ensure that the advisors who are selected demonstrate “neutrality” in their outlook. Experience elsewhere suggests that markets have to be customized for the specific situations, and not every type of market can be implemented successfully in different countries. This work will include advice on amendments needed to existing legislation and regulations, to enable the preferred model to be implemented.
3. **Implementation support** – Once the design is complete, the advisors will continue to advise the government on the implementation of this design.
4. **Design of capacity building efforts, such as through workshops, training, twinning arrangements etc.** – At this point, TEIAS needs support on various key aspects of market operations, such as, using the water value and dispatch models, determining system marginal prices based on bids and offers, managing the settlement system, etc. A short review of the current implementation status, and the key areas requiring support, would be the first step of the work. Once the areas requiring support are identified, the specific efforts most suited to the needs would be required to be designed, and presented in the form of a plan.
5. **Implementation of capacity building plan** – Support will also be required for implementing the plan designed earlier. This could also require preparation of toolkits, etc., which TEIAS could use later for training other staff or market participants as required.
6. **Dissemination** – Appropriate dissemination of the design and early lessons from implementation would help leverage ESMAP resources to other countries which may be facing similar problems. This could take the form of a report, workshops etc.

Consistency with ESMAP’s Business Plan (2005-07): This endeavor is consistent with ESMAP’s business plan since it directly addresses the thematic areas of **energy markets and energy security**. This work will have a significant impact, not just in the sector, but also more broadly for the Turkish economy, and by setting a successful example, will serve as a role model for other countries which face similar problems:

- (a) This work will assist Turkey in putting in place a capacity market which will be critical in ensuring that the country manages to mitigate supply shortage risks in the medium term. Aversion of shortages will imply that the economy does not suffer.
- (b) Successful implementation of the capacity market in Turkey, and the demonstration that this can assist in ensuring supply security will provide a viable solution for other countries which face the same risk. Several countries in South-East Europe face impending shortages, and are looking for solutions that are consistent with market liberalization.
- (c) The support for capacity building will have significant impacts across the electricity sector in Turkey, and more generally, the economy, by (i) enabling more efficient (energy and capacity) market operations, and (ii) more critically, by ensuring that pricing in the market is based on principles of economy and efficiency. Without the capacity building support, it is unclear whether utilities and private participants will be able to operate in the market effectively. The first few months of the operation of the balancing market has already shown the difficulties that market participants are facing.

Reporting arrangements: The main counterpart for the advisors will be the Ministry of Energy and Natural Resources (MENR), TEIAS, and the Government Task Force that is planned to be set up to monitor Security of Supply conditions. The advisors, for administrative and other operational aspects, will report to the Bank team working on Turkey, represented by Iftikhar Khalil and Sameer Shukla.

Delivery Schedule:

PCN Review	QIII 2007
Completion draft final/formal review meeting	Task 1: Q IV 2007 Task 2: Q IV 2007 Task 3: Q I-II 2008 Task 4: Q IV 2007 Task 5: Q I-II 2008 Task 6: QII-III 2008
Final delivery to client	Q III 2008

Outputs expected:

	Yes?	Delivery date (Quarter, FY)
Formal AAA Report		
Informal AAA product (e.g., policy note) – indicate:	No	
Workshop/Conference	Yes	Q II-III 2008
Training course/materials/knowledge products	Yes	Q I-III 2008
Others (indicate) Task-wise reports	Yes	Task 1: Q IV 2007 Task 2: Q IV 2007 Task 3: Q I-II 2008 Task 4: Q IV 2007 Task 5: Q I-II 2008 Task 6: Q II-III 2008
Final report		Q III 2008