

POWER SECTOR REFORM AND SUBSIDIES

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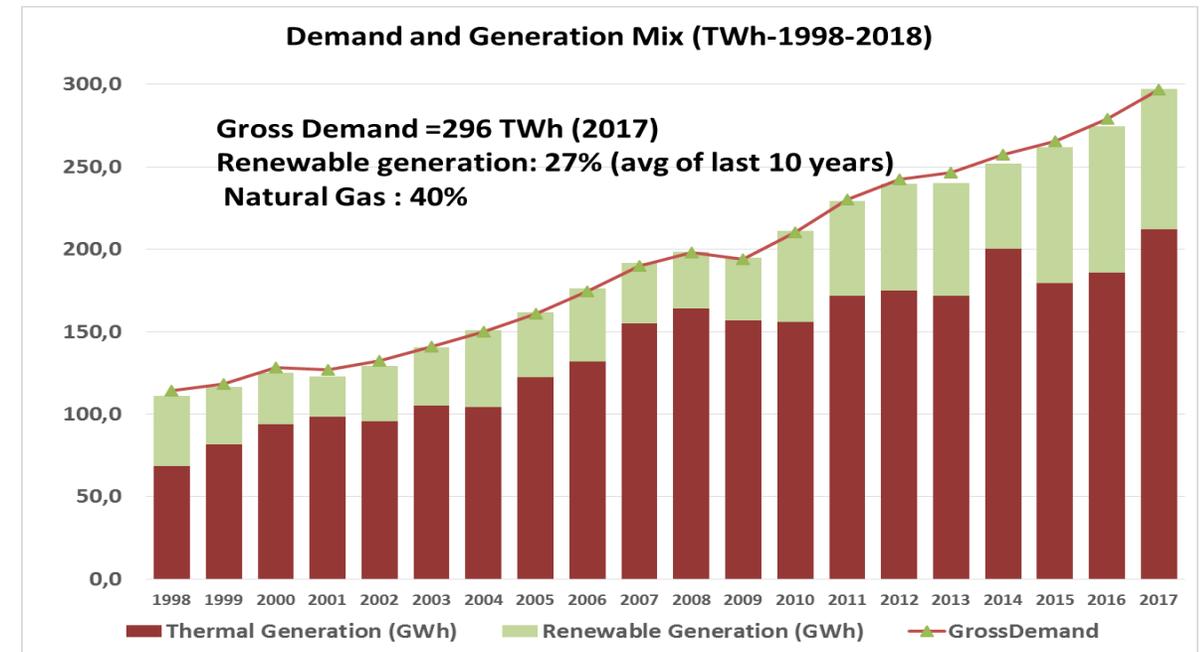
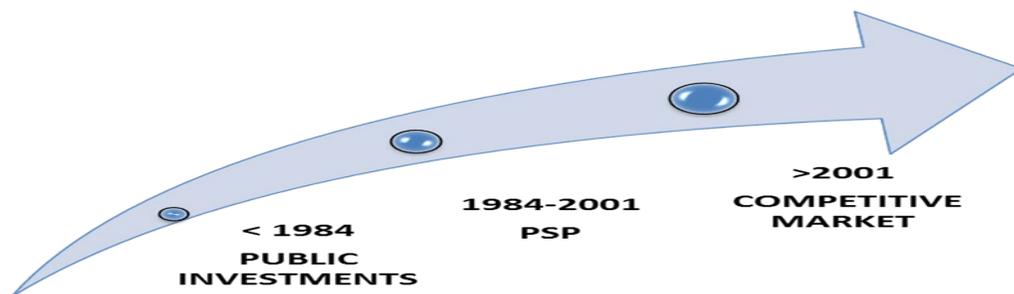
GENEVA

October 2018

OVERVIEW OF TURKISH POWER SECTOR

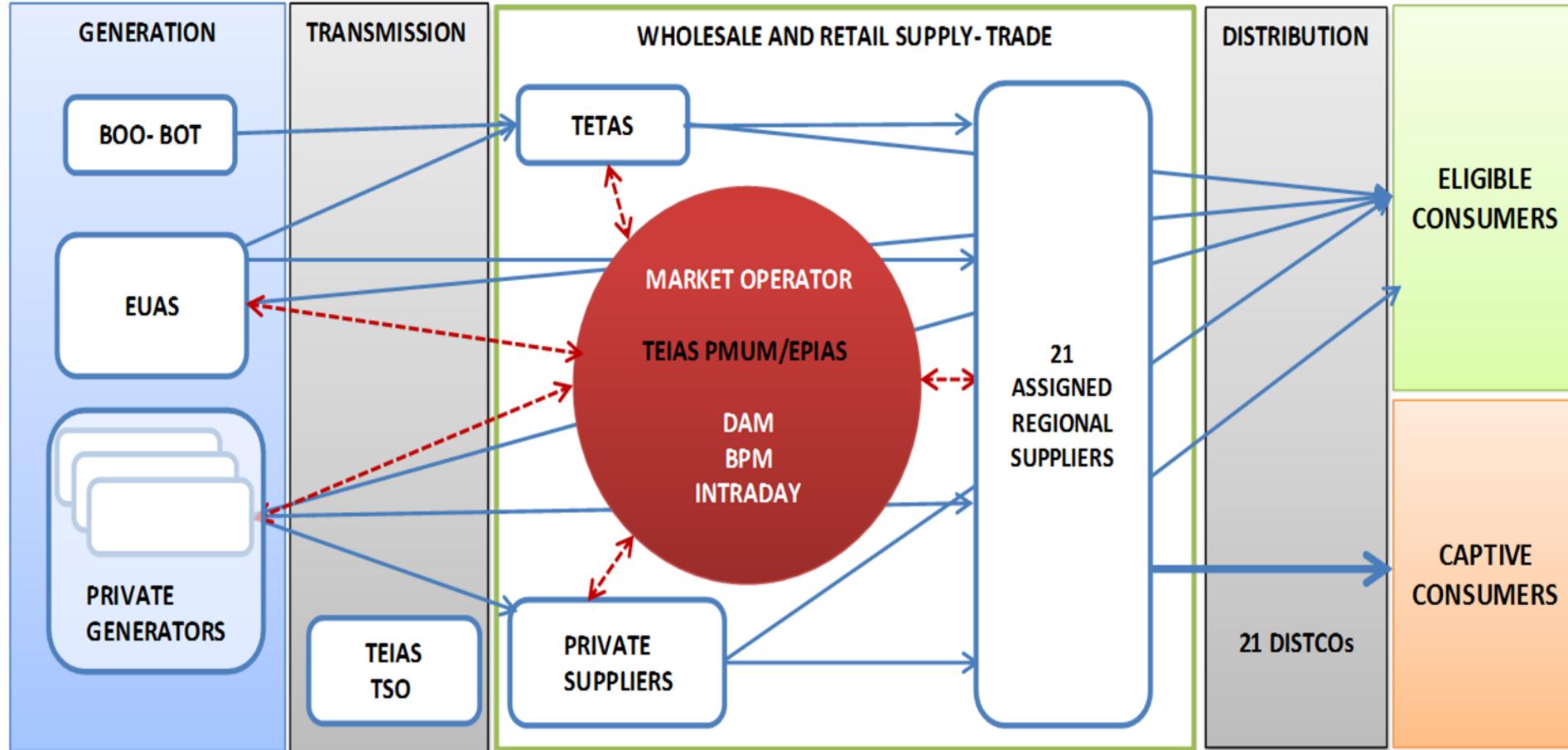
- Population :80 Million, Geographic Area :780,500 km²
- Rapid demand growth:
 - 9% (1984-2000), 6% (2001-2012), 4% last 5 years.
- High level of import dependency
- High investment requirements;
- Remarkable potential of renewables;
- Electricity Sector Reform: Transition from state-owned monopolistic structure to liberalized competitive market

- Installed power:
 - 88000 MW (October-2018)
 - 47% renewable capacity including big hydro
 - 7 % average annual increase
- Market share:
 - Distribution and retail 100% private
 - Generation: 80% private (2017)



POWER SECTOR REFORM

2001 onwards: Industry and market structure



Market Reform and Subsidies

Can Market Reform possible without Cost Reflective Pricing ?

According to Electricity Market Law:

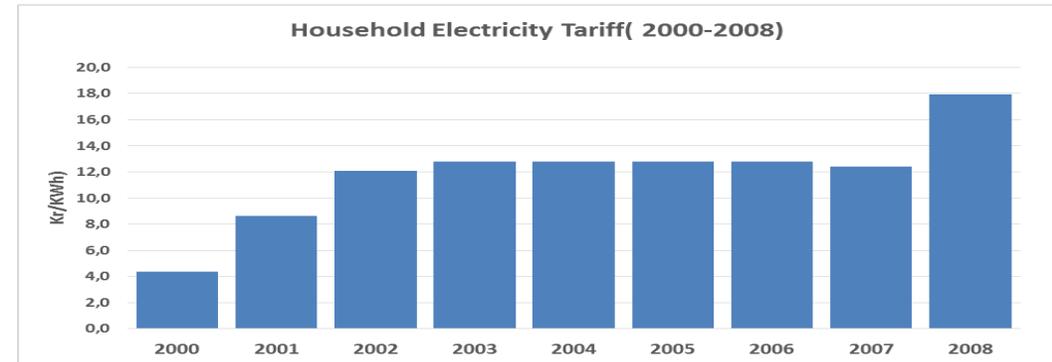
- All regulated tariffs must be cost reflective (distribution and transmission grid business);
- The price for energy is to be determined by the market under competition;
- **If there is a need to protect some consumers, subsidies shall not be provided through tariffs, but rather, through a direct subsidy mechanism.**

- **Actual Implementation up to 2008:**

Tariffs kept constant and below cost recovery level.

IMPLICATIONS:

- Accumulation of debts of State owned distribution company, generation and wholesale company and gas company (More than USD 7 billion in four years).
- Lack of adequate funding for new public investments;
- Discouraging private investors for new generation investments;
- Sending incorrect price signals;
- Delaying market opening through eligible consumers;



- **Reserve margin tightened and Supply security become main concern;**
- **No meaningful development in the reform program.**
- **Already programmed distribution and generation privatization postponed.**

Market Reform and Subsidies

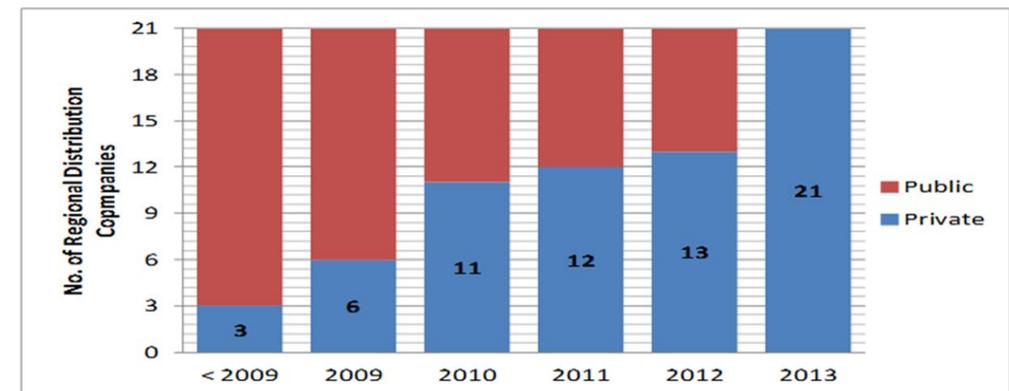
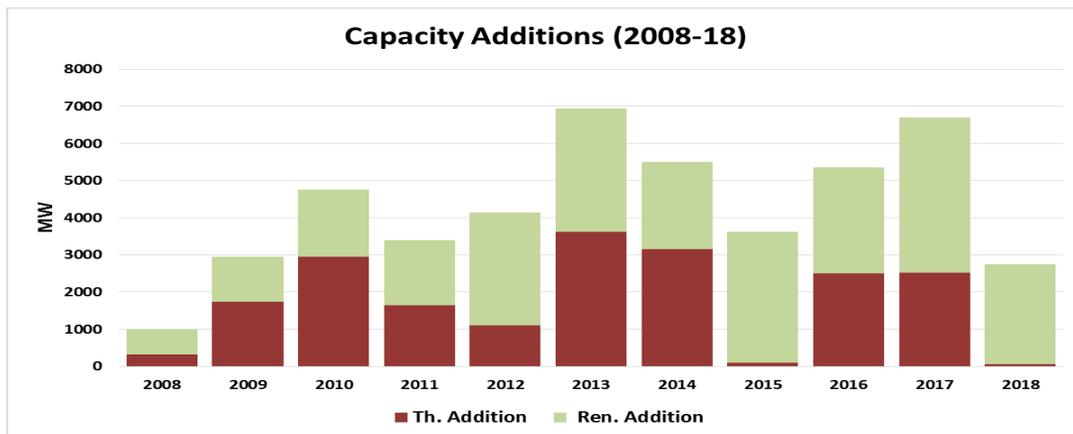
Cost Reflective Pricing and Consequences

Approval of Cost-based energy pricing mechanism (APM) approved by the Government in March 2008,

- Significant electricity tariff adjustments by EMRA for a total of about 60% by January 2009 – enabled financial recovery, clearance of arrears accumulated to private generators;
- All the tariffs and prices are adjusted at every 3 months by the regulator according to the costs. (Fuel costs pass-through).

CONSEQUENCES:

- “re-launch” the delayed distribution privatization program
- Substantial new generation investments by private sector,
- Successful distribution and generation privatization.
- Gradual increase in market opening (started with 30% in 2006 , now 90%), more than 900 market

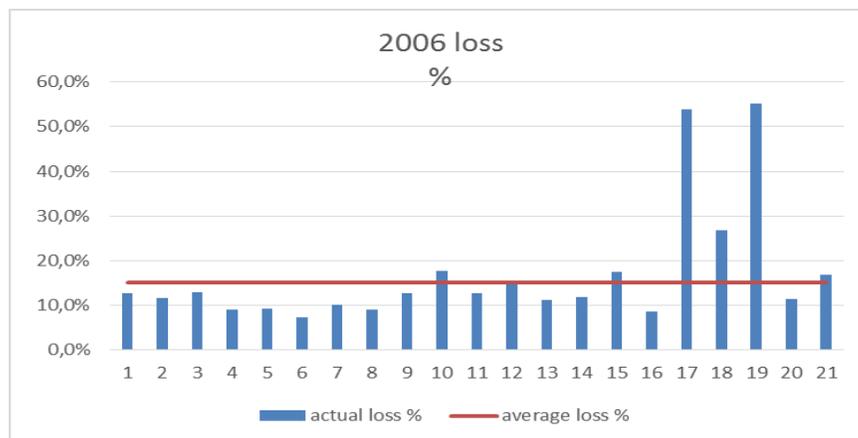


However, state owned gas company is exempted from APM shortly after introduction of APM. It undermined development of gas market, become a mean to control electricity prices until 2018.

Market Reform and Subsidies

Cross Subsidies as a Transitional Measure-1

- Tariff structure: Two main components of end user prices :
 - Energy price:
 - for captive consumers: regulated with revenue cap, cost of power procurement + a margin;
 - For eligible consumers: determined under competition, between supplier and consumer.
 - Distribution+ transmission grid price: fully regulated with revenue requirement methodology, depends on O&M, investment, **Loss (technical losses and illicit use)**.
 - **21 distribution regions, different distribution cost and loss rates vary considerably among Distcoms.**
 - **Hence, different cost reflective distribution tariffs for each region, some are very high due to high losses.**



It was decided that:

- Distcom revenues will be cost reflective for each region;
- However, as a transitional measure, the consumers in all regions will pay same price for each kWh of electricity.
- To enable this a temporary «**price equalization mechanism**» will be implemented until the cost differences reduced to a reasonable level (target year was 2011).

Market Reform and Subsidies

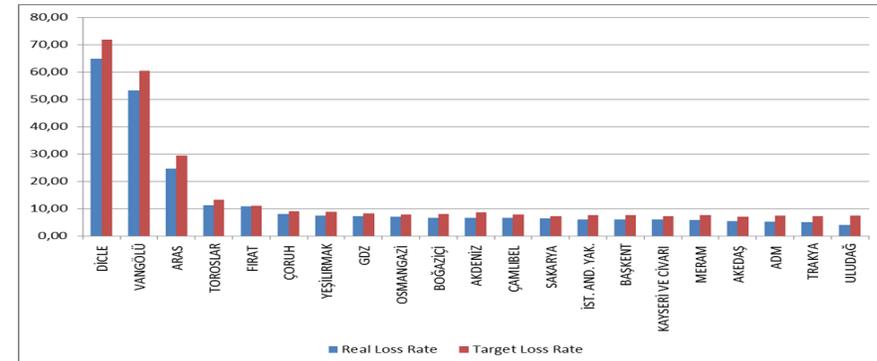
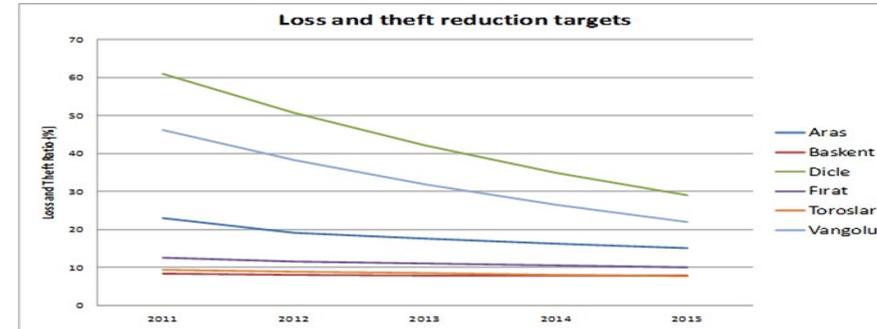
Cross Subsidies as a Transitional Measure-2

Price Equalization Mechanism:

- An universal tariff level is determined as an average cost reflected tariffs of each region;
- Consumers in the same tariff category in all regions pay this price (national tariff).
- Low loss regions collect more revenue than their cost reflected revenues, high loss regions collect less.
- Excess revenues are transferred to discos with lower revenues. **That is, consumers in lower loss regions subsidize consumers in higher loss regions.**

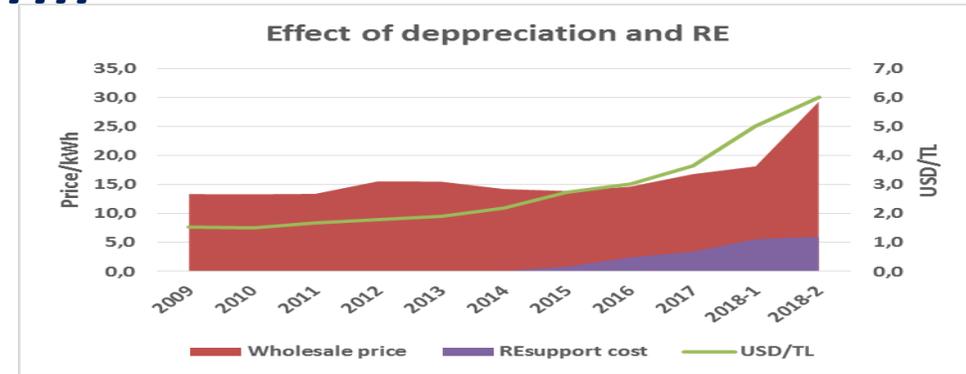
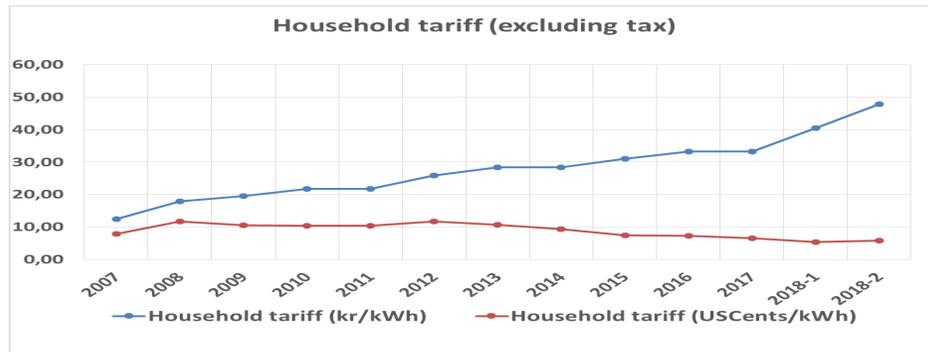
Loss Reduction Targets :

- 5 year targets set for 2006-2011. Targets revised and increased in 2011 due to delaying the privatization.
- Later, in 2013 and 2016 targets revised again.
- Although it was envisaged as an transitional implementation, it still continues. Although majority of the Distcos managed to reach the target, high price differences still remain for 3 regions.



Market Reform and Subsidies

Influence of macroeconomic problems and RE support on subsidy reform



Two opposing pressures on energy pricing since 2013

- Credits from commercial banks used by private sector for Generation and distribution privatization fees and generation investments paid in US Dollar (credit from commercial banks, payments in USD).
- Tariffs and wholesale prices in USD terms decreased. Private distco and gencos faced with deficits and asked for tariff increase.
- Although Cost of generation and renewable support mechanism increased (**forcing end user prices to increase since 2013**);
- Government tried to keep prices low through some support mechanisms, using public sector generation and cross subsidization. APM is not implemented effectively- (similar to 2002-2008).
- Starting from September 2018, tariffs increased by 44%, APM implementation started again. Affordability problem!
- Government now trying to implement targeted subsidies Instead of subsidizing everybody- tariffs will be staged according to consumption.

Summary and Lessons Learned

- 2002-2008 period proved that without cost reflective pricing, market reform is not possible.
- Transitional, subsidy implementation may be used; however it should be applied temporarily.
- Without solving structural problems and in the existence of macro-economic, social and fiscal problems (depreciation, inflation, debt service financing), subsidy reform may not be sustained; temporary implementations can be prolonged, reversions may occur as happened in Turkey.
- Market distorting support mechanisms should not be used to solve fiscal problems of private investors. Main solution is implementation of structural macroeconomic reforms and economic stabilization programs.
- In addition to macroeconomic problems, RE support mechanisms may create an additional cost and necessitates increase in tariffs.
- On the other hand, energy prices cannot be increased to unaffordable levels. (For low and even middle income consumers the tariffs are already unaffordable)
- Subsidy through interventions in pricing of energy and services through public sector generation and wholesale companies is not a solution. It distorts market, causes lost of confidence and investment appetite; which leads more expensive and out-of market measures to secure the investment needed.
- As decided recently by the Government, the solution is a transparent and well defined subsidy mechanism if needed. Instead of subsidizing everybody, a targeted subsidy implementation is better.