

Capital Projects and Infrastructure Spending in Turkey Outlook to 2023



January 2017



Methodology and terminology

This document mainly includes the Capital Projects and Infrastructure ("CP&I") spending outlook of Turkey covering the selected infrastructure investments of the public and the private sector within transportation, social infrastructure and power generation sectors. The content of this document is prepared based on the publicly available information, our analysis and market intelligence regarding selected sectors within the scope and the availability of the information.

This document is also available at;
www.pwc.com.tr ; and
www.garanti.com.tr/projectfinance

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Foreword

for the CP&I Spending in Turkey: Outlook to 2023



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Turkey takes the lead in the global CP&I spending with its dedicated vision and milestone projects. More than USD 100 bn of an investment amount has been spent in last 5 years for CP&I projects, most of which are solely for mega-size projects, such as Istanbul 3rd Airport and 3rd Bosphorus Bridge projects.

Public-Private Partnership ("PPP") model is successfully used in transportation, energy and healthcare projects. With the close partnership between Government Authorities, Turkish Private Sector, Local Banks, International Financial Institutions ("IFIs") and International Banks, the vision of 2023 and the future of Turkey is ensured and consolidated. The expected amount of investment for projects is to reach USD 325 bn until 2023, the hundred year anniversary of the foundation of the Turkish Republic. These mega projects and their bankable structures pave the way for the huge project pipeline of Turkey, which will support growth and prosperity.

Financing needs of these projects are both served by Local Banks and IFIs. The local banks lifted the burden mostly, whereas the IFIs also become more active in these projects with time. Team up of local and international players in these projects, empowers Turkey and supports development in a significant way. Having been proud of supporting Turkey's vision and ideals, our main motivation has always been to contribute to the sustainable development of Turkey.



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The global CP&I spending has started to recover from the global financial crisis and reached to annual spending of more than USD 4 trillion which is expected to exceed USD 5.3 trillion by 2020 and USD 9 trillion within the next decade. The main driver of this recovery and development is the infrastructure investments in the emerging markets driven by increasing infrastructure requirements due to the increasing GDP and the population.

Following China, Turkey has a key role in the global infrastructure market with the planned CP&I investments, amongst the developing countries. In consideration of the significant size of the planned investments in Turkey, the Turkish Government is supporting the involvement of the private sector in CP&I market through different PPP structures where PPPs are gaining momentum across the globe as a way to execute infrastructure investments. Based on a report published by the World Bank Group, global private participation in infrastructure projects is at USD 112 bn level in 2015 where USD 45 bn of this amount is committed for Turkish CP&I projects including PPPs.

Local Banks' and IFIs' continuous support is one of the key requirements for the sustainability and prosperity of Turkish CP&I market. The financing market also requires additional strategic and financial investors in terms of equity and debt as well as additional capital market solutions for the financing.

In addition to the challenges in financing side, the global megatrends of shifting demographics especially in population and life expectancy, shifting global economic power, accelerating urbanization, technological breakthroughs, climate change and its impacts on resource availability, have a compelling impact on CP&I environment and Turkish market itself. In this report, we present the overview of current status of the Turkish CP&I markets and the roadmap for the next decade in order to better equip all stakeholders of the Turkish CP&I market to identify the most promising opportunities, create solutions to the challenges and secure the best returns in the market.

Overview of Turkish CP&I Market

Public procurement vs PPP

Besides the traditional public procurement strategy of the Turkish Government, PPP structures are becoming significantly important for the infrastructure investments for more than a decade in Turkey. The Government aims to reduce the initial financial burden of CP&I investments as well as to create the most appropriate risk allocation structure to complete the projects within the planned timeline and the budget. Recently three main PPP structures became prominent; Build-Operate-Transfer ("BOT"), Build-Lease-Transfer ("BLT") and Transfer of Operating Rights ("TOR").

Healthcare Campus Transformation

The Turkish Government initiated a transformation project in 2003 to modernize the public hospitals and expanding their bed capacity through uniting the regional hospitals within one campus. The Turkish Government has an extensive healthcare PPP pipeline with an estimated total capacity of +50.000 beds and total investment cost of well exceeding USD 16 bn. Currently 34 projects are already announced, including already tendered projects and projects under planning.

The projects are tendered/planned to be tendered within BLT scheme specifically implemented for these projects. As of report date 11 projects reached or are about to reach financial close and two of them are expected to commence operations in early 2017.

Mega Road and Motorway Projects

The Turkish Government is planning to execute various infrastructure projects especially in roads and motorways with the total expected investment amount of exceeding USD 80 bn including upcoming motorway PPPs (+ 5,000 km) and Istanbul Big Tunnel Project. These projects are mainly planned to be tendered within BOT scheme.

Energy Projects

Liberalization process, that started in 2002, is continuing successfully. On the distribution side, privatizations of all regions have been completed in 2013 whereas on the generation business, Turkey's installed capacity increased by more than %140 and reached 78.1 GW in the last 13 years. More than %80 of this capacity increase has been realized by the private sector. In addition to these greenfield investments, projects with a total capacity of 6 GW have been privatized. The total investment cost of the investments realized by private sector is USD 85 bn and thanks to these projects, supply security is no longer a problem for the country. Therefore, Turkish Government aims to focus more on the localization and diversification of the generation mix by realizing renewable, local coal and nuclear projects. In addition to those, privatization of generation assets (mainly hydro power projects) is expected to continue in the following decade. Total deal size of these projects in energy sector including greenfield and brownfield investments is expected to be USD 100 bn.

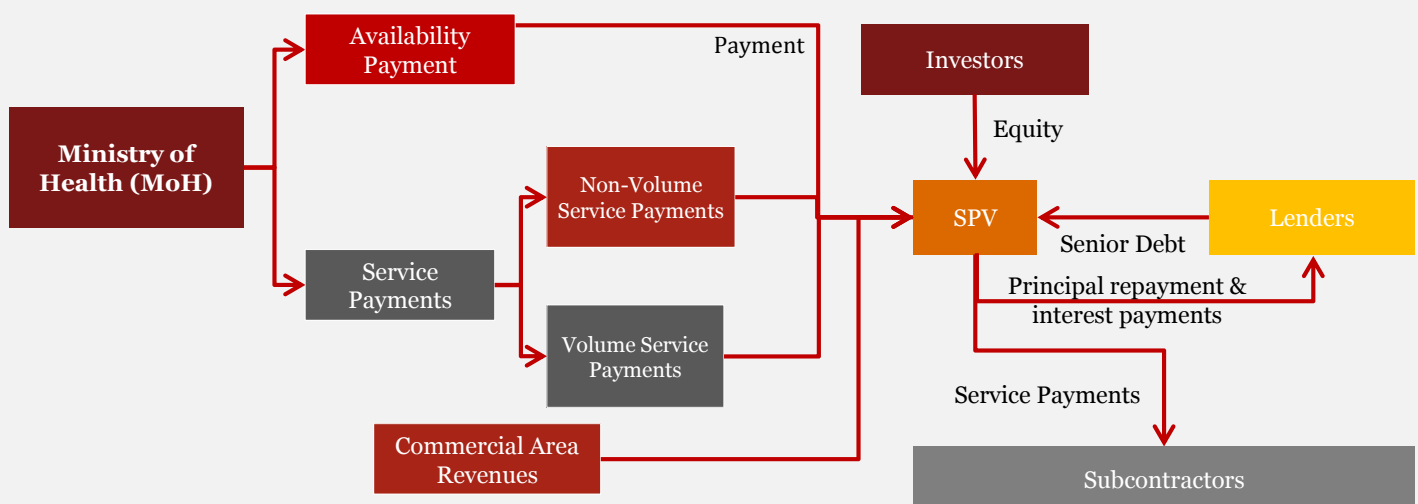


Figure 1: Main Structure of BLT Scheme in Turkey

CP&I Financing by Private

Local Banks' Strong Position balanced with international players

The local banks are highly active and have high appetite in financing Turkish CP&I investments.

The familiarity of the local banks with the current legislations, sponsors and projects agreements provide them advantage to finance these projects. The international banks and financial institutions also have experience and interest in these projects, especially within healthcare PPP scheme.

The recently financed CP&I projects highlights the significance of the local commercial banks in the financing.

The market conditions and recent deals indicate three main loan structures;

- Commercial banks tranche;
- Multilaterals tranche (A-Loans and international banks under B-Loan);
- ECA tranche (International banks and development banks under ECA cover).

General Financing Conditions

- Bank loans are the main financing tools whereas alternative financing tools remain limited
- Financings mostly in hard currency (USD or EUR) where TL denominated fixed and floating financing is also available
- Longest tenor reached to 18 years
- Debt to Equity ratio is varying between 60-40 to 80-20
- DSCR level is varying between 1,10-1,35x
- Recourse/limited-recourse structures are applied

Equity Financing Alternatives

As a market practice, the tendering authorities and lenders require an equity contribution of at least 20% for the financing of the CP&I projects. Considering the market is dominated by the local investors with limited capital, alternative equity financing solutions might be necessary to reach the expected growth in CP&I investments.

As a recent development, a local investor issued a TL denominated floating rate bond for the equity financing of its CP&I investments, where a multilateral financial institution invested in 50% of the issuance. International players are also providing equity financing through direct equity partnership in developer. In addition, the same investor obtained a development finance institution's political risk coverage for its planned bond issuance recently and also bond rating above Turkey's sovereign bond rating.

Newly Founded Turkish Wealth Fund

In August 2016, the Turkish wealth fund management company is founded by the Privatization Administration to establish the Turkish Wealth Fund to support the large-scale strategic infrastructure projects. The company will execute its operations under the Prime Ministry.

Refinancing as an Option

Following the initial senior debt financing, the refinancing of the existing debt is possible with more favorable financing terms including, lower interest margin, increased gearing and lower debt service cover ratios.

Key variants of the lenders' refinancing considerations are; decrease in construction risk, completion of ramp-up period and healthy implementation of initial financing structure.

A recent example of successful refinancing is the refinancing of the Gebze-İzmir Motorway Project (with inclusion of financing of the new phase). Local banks together with the participation of an international bank, improved the financing conditions through the refinancing.

Mersin Port refinancing and additional CAPEX financing in 2013 was the first refinancing with a project bond in Turkish market.

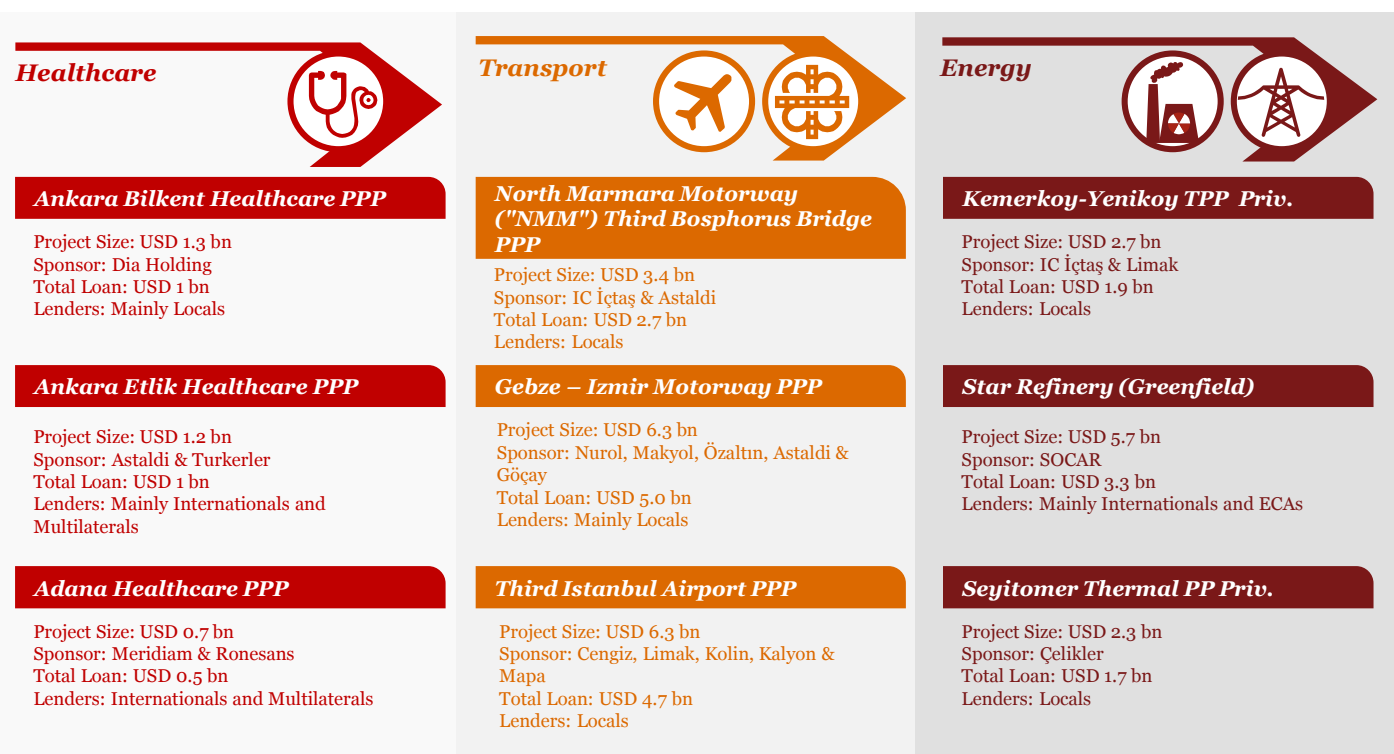


Figure 2: Recently Financed Selected CP&I Projects in Turkey

2023 Target of the Turkish Government

Hundred Year Anniversary of the Turkish Republic

The Turkish Government has planned and initiated a set of infrastructure investments both as public investments and PPP projects before the hundred year anniversary of the Turkish Republic in 2023.

A total of c.USD 325 bn is expected to be invested in CP&I projects within the following 7-8 years period.

Key Growth Areas

The main focus of the Government is to extend the motorway and divided road network, establish a wide range high speed train network, continue the healthcare campus projects to raise quality of the healthcare services across the nation.

In addition, to maintain the hub role in the region, high capacity port and airport investments are also key growth areas of the Government.

Total installed capacity of the power plants will be increased to secure the power supply through renewable, local coal and nuclear power plant investments.

Turkish telecoms sector is also one of the key growth areas in Turkey, which is mainly driven by the investments of private telecom companies rather than Government spending.

Potential in Further Areas

In addition to the 2023 target sectors, the following sectors are also considered to be developed through further CP&I investments;

- Education; The Government is planning to invest in Education Campus PPP projects in the following years in a similar structure with Healthcare PPP projects.
- Water Treatment and Sewage systems: The water treatment and sewage systems are within the responsibility of the municipalities in Turkey, where there is lack of sufficient systems especially in rural areas of Turkey.
- Natural gas pipelines; Being in a strategic location between the natural gas producer and consumer geographies, Turkey is acting as a bridge for the transmission of natural gas and with existing and future pipeline projects.

Sector	Investment Size (USD bn)
Transportation / Roads	80
Transportation / Railways	30
Transportation / Ports	30
Transportation / Airports	30
Healthcare	30
Telecoms	25
Energy Renewables	39
Energy / Nuclear	36
Energy / Local coal	15
Energy / Other	10
Total	325

Total CP&I spending is estimated to be c.USD 325 bn until 2023 for the selected sectors

Figure 3: Sectoral Breakdown of Estimated CP&I Spending in Selected Sectors

Project	Sector	Capacity	Investment Size (USD bn)
Gebze - Izmir Motorway	Transportation / Roads	433 km	6.3
NMM - Third Bridge	Transportation / Roads	114 km	3.4
Eurasia Tunnel	Transportation / Roads	15 km	1.2
NMM - European Sections	Transportation / Roads	95 km	1.0
NMM - Asian Sections	Transportation / Roads	178 km	1.7
İstanbul Big Tunnel	Transportation / Roads	7 km	3.5
Ankara - Niğde Motorway	Transportation / Roads	330 km	1.5
Dardanelles Bridge & Kınalı-Balıkesir Motorway	Transportation / Roads	385 km	6.0
Ankara - Istanbul HSL	Transportation / Railways	533 km	3.0
Ankara - Sivas - Erzincan HSL	Transportation / Railways	467 km	1.2
Third Istanbul Airport	Transportation / Airports	150 m passengers	6.3
Healthcare Campus Projects (total)	Social Infrastructure	50,000 beds	16.1
Akkuyu Nuclear Power Plant	Energy	4,800 MW	20.0
Sinop Nuclear Power Plant	Energy	4,400 MW	16.0
Eskisehir Coal Fired Power Plant	Energy	4,000 MW	5.0
Cayirhan Coal Fired Power Plant	Energy	800 MW	1.2
Karapınar Solar Power Plant & Factory	Energy	1,000 MW	1.2

Figure 4: Selected Key Projects to Reach 2023 Targets of the Government

Road to 2023

Nationwide Reach through Divided Roads

Total roads and motorways in Turkey reached nearly 66,4k km as of 2016 with the impact of the focus on divided road investments within the last decade. Increase in total roads and highways stayed limited due to priority of transformation of the existing roads into divided roads.

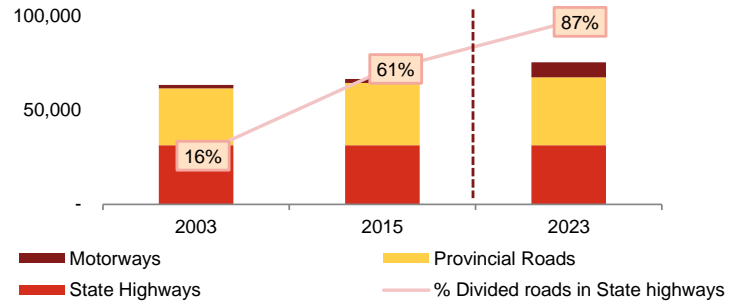
Total divided roads increased from 7,2k km in 2003 to 23k km in 2015 which increased the divided roads ratio in state roads to 61% in 2015 from 16% in 2003. Total divided roads are further targeted to reach 36,5k km by 2023, including motorways. The divided road investments of the Government is expected to exceed USD 10 bn until 2023.

Turkey plans to invest in c. 5,8k km new motorways until 2023 with BOT model and reach 7,9k km motorways in total including the Dardanelles Bridge, which will be tendered in January 2017 and the Istanbul Big Tunnel Project. The estimated total investment size for new motorway projects is exceeding USD 70 bn, which in turn will mean around USD 50 bn debt financing need and USD 20 bn equity investment.

The contractual and financial structures of the existing mega motorway PPPs are proved to be bankable and expected to lead the structures of upcoming projects.

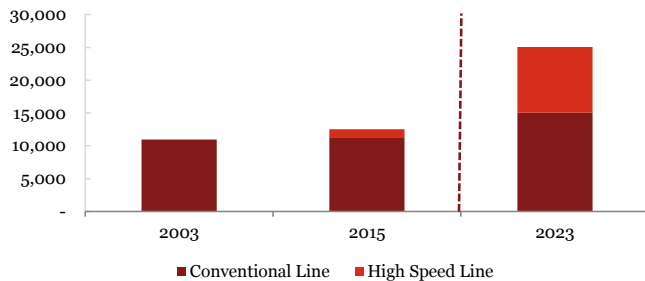
In addition to the local investors, international investors are also interested in Turkish road and motorway projects, which is beneficial considering the experience, technology and the financing capabilities of the international investors.

Turkey roads&motorways development (km)



c.USD 80 bn CP&I spending for roads and motorways

Turkey railway development (km)



c.USD 30 bn CP&I spending for railways

Iron Network of High Speed

National railway network length is 12,5k km as of March 2016 where only 1,2k km of this network is high speed lines ("HSL") and the remaining 11,3k km is conventional lines.

The Government aims to increase passengers using railways in total passenger transportation share from 1% in 2014 to 10% while cargo carriage via railways in total cargo carriage in Turkey is aimed to increase from 4.4% in 2014 to 15% in 2023.

The total length of planned additional railway lines is 12,6k km until 2023 which in turn will mean c.USD 30 bn investment in following 8 years time.

Currently the HSL projects are constructed through public procurement method.

Together with the road investments, international investors' interest is also increasing in Turkish railway sector investments. However localization strategy and the Government's support has a significant importance on the feasibility of the railway projects for the private sector for new HSL and train sets tenders.

Utilizing the Geographical Advantage of the Maritime

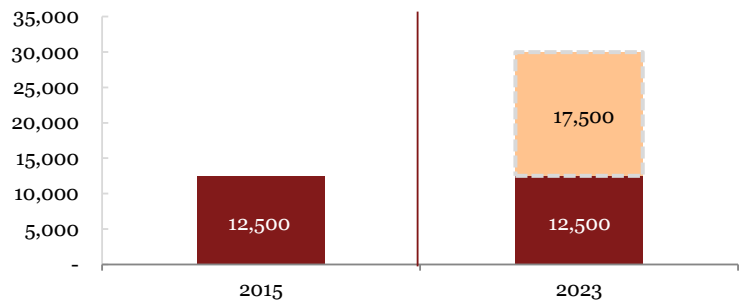
Turkey total port capacity increased by c. 1.4m TEU in 2014 and reached 12.5m TEU in 2015. Marmara region represents c. 55% of total port capacity. Mediterranean and Aegean regions follow Marmara region with their c. 25% and c. 17% share in total container capacity of Turkey.

The total port handling capacity is expected to reach 30m TEU in 2023 with and increase in the capacity by 17.5m TEU in 8 years time (2.2m TEU/year).

The estimated investment amount is well exceeding USD 30 bn to reach 2023 targets, considering the transformation of fishing ports into marinas in addition to new port investments and other investments in maritime transportation sector.

Speaking of the financing of these projects, funds exceeding USD 25 bn will be required in addition to equity financing.

Turkey port capacity development (k TEU)



c.USD 30 bn CP&I spending for ports

Road to 2023 (cont'd)

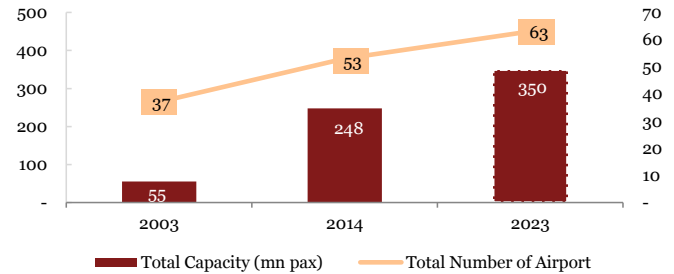
Focus on Aviation

The initial target for 2023 was to reach 60 airports operational with a total capacity of 350 million passengers per year through c.USD 30 bn investment.

In line with the 2023 targets, the Government plans to increase the number of operating airports in the domestic flight network from 55 to 63 with the construction of new airports in Yozgat, Rize-Artvin, Bayburt-Gümüşhane (Salyazi), Niğde-Aksaray, Karaman, İzmir Çeşme Alaçatı, western Antalya and Çukurova Regional Airports. These airport investments will be made either with PPP method or public procurement method.

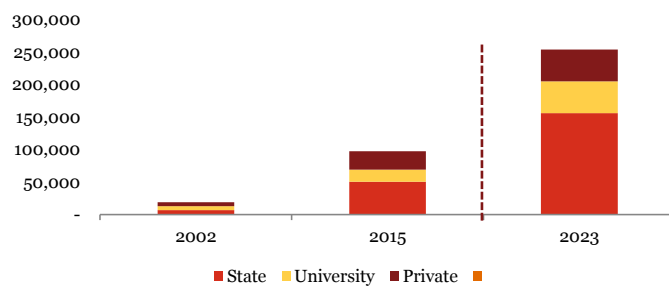
The most significant CP&I project in the aviation sector is 3rd Airport project in Istanbul which is expected to be partially operational in 2018. This airport is planned to replace the Ataturk Airport when it is completed with its total planned annual capacity of 150m passengers.

Turkey total number of airports and capacity



c.USD 30 bn CP&I spending for airports

Quality beds development (beds)



c.USD 30 bn CP&I spending for healthcare

Integrated Coverage for Better Healthcare Services

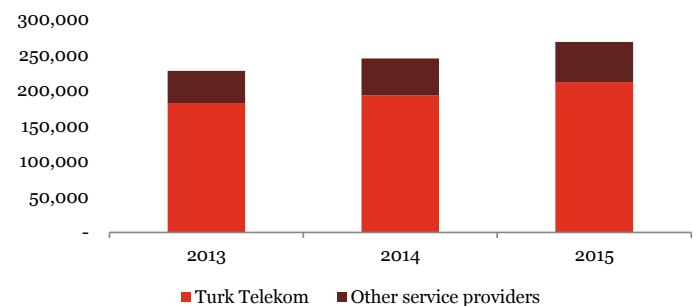
Turkey plans to add c. 32k additional beds to state hospitals by 2023 while transforming normal beds into quality beds and increase the quality beds ratio from current 41% level to 100% for state hospitals. In order to reach the Government's 2023 healthcare targets, total required additional bed capacity is c. 52,7k beds which means, 103,5k of the already existing beds need to be renewed to be quality beds.

50k of the total required new/transformed quality beds are planned to be introduced through ongoing healthcare PPP program where 34 projects are already identified nationwide. Total expected investment amount of these projects is exceeding USD 16 bn.

The estimated investment amount for the additional 105k quality bed investment is c.USD 14 bn, which will be executed by the Ministry of Health, the universities and the private sector.

Currently, 11 of the already identified 34 PPP projects has reached financial close or close to financial closing. 11 out of remaining 23 projects are still in the preliminary tender stage. The total number of the PPP projects is also expected to increase which will increase the total estimated investment amount as the integrated healthcare campus projects require significantly higher investments compared to the lower sized standard hospitals.

Development of fiber network (km)



c.USD 25 bn CP&I spending in telecoms

Connecting Globally

In line with the developing communication technologies, the importance of the CP&I investments in telecom sector is increasing. The total investment size in telecoms exceeded USD 20 bn level for the last decade and it is estimated to exceed annual investment amount of USD 3 bn for the following 8 years until 2023.

Apart from the Government's goals, the telecoms sector is structured to reflect to the requirements of the market. Currently the key growth areas in telecoms sector are;

- Extension of the fiber optic network to provide faster internet connection to the users and to support the Long Term Evolution ("LTE") mobile internet connection;
- LTE compatible base station investments of the mobile service providers, and;
- Establishment of data centers to support data collection and transfer.

Road to 2023

Localization and Diversification of Supply

Turkey's total installed capacity of the power plants has reached to 78,1 GW as of September 2016. Total electricity consumption has reached to 264,1 TWh in 2015 while the total production is 259,7 TWh. The main resource of the electricity generation is natural gas (37,8%), followed by the coal with 28,4% share in total generation.

The Government estimates that the total annual consumption will reach to 357 TWh in 2020. In order to meet the electricity demand, the Government aims to increase the total installed capacity to 125 GW by 2023 by mainly increasing the renewables and indigenous coal fired power plants in addition to the introduction of Nuclear Power Plants ("NPP"s) within the Turkish electricity generation environment.

Currently, two NPPs have already been identified and are in preliminary investment stage with total planned capacity of 9.200 MW. Total expected investment amount for these projects is c.USD 36 bn where a third nuclear power plant is also in consideration of the Government.

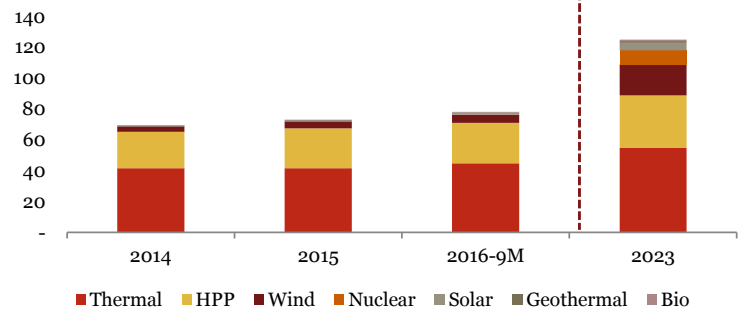
In addition to the NPP investments, excluding the replacement of the existing power plants, c.USD 60-65 bn additional investment is also required to reach the 125k MW installed capacity target in 2023.

c.USD 100 bn CP&I spending for additional power generation assets

Another focus area of the Government and private sector will be the privatization of existing energy assets which has become a standard practice in the last 5 years. After the successful handover of large thermal power plants and a number of hydro power plants, the pipeline in this area is mainly composed of several medium sized hydro power projects and a limited number of sizeable coal and natural gas power plants. The brownfield investments for the renovation in thermal assets not only will improve the environmental effects of the projects but also will impact the total installed capacity since the current utilization rates are very low.

In addition to the privatization of the existing assets, privatization of the coal mining and power generation areas is initiated in 2016 within TOR structure, in order to support the utilization of indigenous coal for the electricity generation. The first announced coal reserve to be privatized within this scheme is Çayırhan coal reserve in Ankara in province.

Turkish Electricity Generation Installed Capacity (GW)



Installed Capacity by Type - GW

Type - GW	2014	2015	2016-9M	2023	Additional Capacity (2016-9M/2023)
Thermal	41.6	41.6	44.7	54.8	10.1
HPP	23.6	25.9	26.3	34.0	7.7
Wind	3.6	4.5	5.2	20.0	14.8
Nuclear	0.0	0.0	0.0	9.2	9.2
Solar	0.0	0.2	0.7	5.0	4.3
Geothermal	0.4	0.6	0.7	1.0	0.3
Bio	0.2	0.3	0.4	1.0	0.6
TOTAL	69.5	73.1	78.1	125.0	46.9

The Government also initiated a new privatization model to increase the utilization of renewable energy resource areas for solar and wind power generation. This model includes the transfer of usage rights of the designated areas to be used for the construction of solar and wind power generation facilities. As of report date, for the solar projects the government conducted studies in five locations to assess the potential of the development areas where the first tender is announced for Konya Karapınar site. The total expected investment for this site is c. USD 1.2-1.5 bn for the construction of photovoltaic solar module production facility with annual production capacity of 500MW and solar power generation facility with 1.000 MW installed capacity.

The power generation asset investments are expected to be focused on the development of new renewable projects, especially solar and wind power plants. The utilization of indigenous coal fired power plants are also expected to increase based on a recent study of the Government to enhance the quality of the indigenous coal for power generation which is expected to lead an increase in indigenous coal fire power plant investments in addition to the privatizations, to replace gas fired power plants with low efficiency.



Looking ahead

Considering the size of the expected CP&I investments in the following years which will reach to c.USD 325 bn, the Turkish CP&I market will require significant amount of funds to realize the planned projects. Currently the main driver of the financing CP&I projects in Turkey is local commercial banks for the debt financing and the local investors on the equity side for private sector investments and PPP projects.

The Government's role has a significant importance for the realization of the planned investments in addition to the privatization transactions and the financial support to be provided through the Turkish Wealth Fund.

The continuity of the local lenders and investors appetite in Turkish CP&I market also has importance for the sustainable growth in the market as planned and expected. In addition to local lenders and investors, Turkish infrastructure and financing environment requires;

- Introduction of additional international infrastructure funds
- Additional international financial investors and sustainability of the existing appetite
- International corporates and strategic investors
- Further Capital Market Solutions
- Continuous support from the Multilaterals and ECAs for the realization of the planned projects.

The future of the Turkish CP&I market highly depends on the alternative financing tools and sources in both debt and equity financing.



Contact us

To have a deeper conversation about this subject

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