PROJECT INFORMATION DOCUMENT (PID)
CONCEPT STAGE

Report No.: PIDC16199

Project Name	Turkey Geothermal Development Project (P151739)
Region	EUROPE AND CENTRAL ASIA
Country	Turkey
Sector(s)	Other Renewable Energy (80%), General energy sector (20%)
Theme(s)	Climate change (50%), Infrastructure services for private sector development (50%)
Lending Instrument	Investment Project Financing
Project ID	P151739
Borrower(s)	Türkiye Sınai Kalkınma Bankası A.Ş. (TSKB)
Implementing Agency	Ministry of Energy and Natural Resources
Environmental Category	F-Financial Intermediary Assessment
Date PID Prepared/ Updated	20-Jan-2015
Date PID Approved/ Disclosed	20-Jan-2015
Estimated Date of Appraisal Completion	22-May-2015
Estimated Date of Board Approval	24-Jul-2015
Concept Review Decision	Track II - The review did authorize the preparation to continue

I. Introduction and Context

Country Context

Turkey's economic development over the past decade has resulted in impressive economic achievements. After a banking crisis in 2001, the country embarked on a concerted path of structural reforms supported by strong fiscal consolidation, strengthened banking supervision, and a shift to a flexible exchange rate regime with an independent central bank responsible for inflation targeting. Per-capita income almost tripled in less than a decade, and Turkey is now an upper middle-income country with the world's 17th largest economy. When the economy overheated because of loose global liquidity conditions, policy makers achieved a soft-landing and rebalanced the economy in 2012, resulting in an increase in the country's sovereign rating to investment grade level. As other emerging markets, Turkey has seen growth moderate since 2012. Given its high structural current account deficit (CAD) and dependence on foreign financing, Turkey is vulnerable to changes in investor sentiment, and hence growth has been volatile. Moderate growth since 2012 has allowed a narrowing of the CAD to about 5.7 percent of GDP by October 2014, from 7.9 percent at the end of

2013. Annual inflation accelerated to 8.2 percent in December 2014, up from 7.4 percent in December 2013, partly driven by higher than expected food prices during the summer period. Inflation was significantly above the central bank s 5-percent target.

Turkey's macroeconomic prospects have been buoyed in recent months by the fall in oil prices, changing the balance of risks. Oil prices have fallen some 55 percent since the summer, and are expected to remain at that level during 2015. This is likely to lead to substantial improvements in external and internal balances in 2015. We expect the CAD to narrow further to 4.5 percent of GDP, and inflation to decelerate to 6.7 percent in 2015 from 8.2 percent in 2014. We estimate GDP growth to have reached 3.1 percent in 2014 and expect it to rise marginally to 3.5 percent in 2015. Despite of this more beneficial outlook, risks related to a reversal of investor sentiment remain and capital buffers in the corporate and financial sector have been declining. Moreover, investment has now been subdued for over two years, raising questions over future productivity growth. The authorities may use the breathing space from declining inflation to lower monetary policy rates before the June 2015 elections, but this would accentuate vulnerabilities to the expected tightening of US monetary policy, now likely in the second half of the year. Over the medium-term, Turkey s growth prospects depend on the recovery of private investment. An increase in investment and innovation as well as in education and skills is needed to boost productivity growth and create enough high-productivity jobs to accommodate Turkey's rapidly rising labor force. Structural reforms and stronger economic institutions would lift Turkey's potential growth rate and could stimulate greater investment.

Sectoral and Institutional Context

Securing sufficient, reliable and affordable energy to a growing economy in an environmentally sustainable manner has been and remains the Turkish government's core energy policy priority. The policy for renewable energy in Turkey includes long term targets, feed-in tariffs, purchase obligation, connection priority, and access to financing provided by International Financial Institutions (IFIs) such as World Bank, IFC and EBRD and Bilateral Institutions such as AFD and KfW. A major milestone for the development of renewable energy was the 2005 Renewable Energy Law, which established purchase guarantee and Feed-in-Tariff mechanism for electricity produced from renewable energy sources. In 2009, the Electricity Sector Security of Supply Strategy identified a target of increasing the share of electricity generated by renewable energy to 30% of the total power generation by 2023, with specific targets for each resource (see Table 1). The private sector, now with a 67% overall electricity generation share, have a focus on wind and mini-hydro, which both enjoy access to finance and availability of technical capacity over other technologies.

The government of Turkey has set a target of developing 600 MW of geothermal generation capacity by 2023 and has put in place a supportive legal framework to facilitate geothermal development. The 2010 amendment to the Renewable Energy Law established a feed-in tariff of 10.5 USD cents per kWh for geothermal power, for a 10 year period from the commissioning date . A new amendment in 2010 established additional 2.7 USD cents per kWh (i.e. up to 13.2 USD cents) to reward the use of locally produced equipment. In addition, the Geothermal Law established in 2007 set out the rules and principles for effective searching, exploring, developing, producing and protecting geothermal and natural mineral water resources. The Law also clarified the right of economic use of subterranean resources, which was previously vague, and the applicable environmental regulation in project development, including proper reclamation after use. Under the law, the licensing procedure was also clarified; four-year exploration licenses are issued to developers – public, such as the General Directorate of Mining Research, MTA; and private

alike – by the provincial governments where the geothermal sites are located, while thirty year energy generation licenses (power/heat) are issued by the Energy Market Regulatory Authority (EMRA). The feed-in-tariff and the clarifications provided by the Geothermal Law stirred interest among private investors in geothermal development. At the end of 2013, geothermal generation capacity in the country had reached a total of 310 MW, with 13 installations located in the Aydin, Denizli and Manisa provinces.

Besides the enhanced regulatory framework, the exploration activities conducted by MTA have been a critical driver behind geothermal development. MTA, established in 1935, has been responsible for the exploration and mapping of geothermal resources in Turkey and has traditionally been the main institution advancing the development of geothermal utilization. MTA has prioritized 25 sites, out of a total of 190 geothermal sites discovered, which are suitable for electricity production. Those 25 sites were subsequently explored, mostly by MTA performing additional surface exploration and drilling exploratory wells, and developed by private developers. A total of 785 MW worth of generation licenses have been issued as of January 2014. The Government target of 600 MW to be developed would be exceeded if the remaining 165 sites were developed. However, MTA no longer has the resource and mandate to undertake extensive exploratory drilling.

Relationship to CAS

The project is consistent with the Country Partnership Strategy (CPS) for the FY12-15 period, approved by the World Bank's Executive Board on March 27, 2012. The CPS has three main strategic objectives and pillars: Strategic Objective 1 - enhanced competitiveness and employment; Strategic Objective 2 - improved equity and public services; and Strategic Objective 3 - deepened sustainable development.

The project will support the Strategic Objectives 1 and 3. Controlling the growth of demand and import of energy, which lead to worsening current account deficit, through increased utilization of domestic energy sources including RE is one of the pillar of the Government Policy as well. The project would also provide developers' with access to longer term credit than is usually available to them, facilitating the development of the geothermal market. Increase in RE capacity in Turkey has been identified in Turkey's first National Communication to the United Nations Framework Convention on Climate Change (UNFCCC), the National Climate Change Strategy and Action Plan, and other government programs, as a crucial component for energy security and climate change mitigation in Turkey.

Public Disclosure Copy

II. Proposed Development Objective(s)

Proposed Development Objective(s) (From PCN)

The Project Development Objective is to scale up private sector investment in geothermal energy development in Turkey. This will be achieved by reducing the risks taken on by the private sector in the exploratory phases, and by providing access to long-term financing for resource development phases.

Key Results (From PCN)

PDO Indicators

- Private capital mobilized (US$, core indicator)
- Geothermal energy potential confirmed by exploration wells drilled under the project (MWe)

- CO2 emission reductions catalyzed by the project (tons CO2, CTF core indicator)
- Generation capacity of Renewable Energy constructed under the Project (MW, Core indicator)
- Volume of direct financing catalyzed by CTF financing (US$, CTF core indicator)

Intermediate Indicators
- Number of exploration drilling projects supported under the Risk Sharing Mechanism
- Number of capacity drilling projects supported by the Loan Facility
- Financing provided for capacity drilling provided under the Project (US$)
- Financing provided for construction of geothermal power plant provided under the Project (US$)

III. Preliminary Description

Concept Description

Component 1: Risk Sharing Mechanism for Resource Validation

This component aims to stimulate investment in early stage geothermal exploratory and confirmation drilling activity by sharing the risk of failing to validate a geothermal resource among two parties: the administrator of a Risk Sharing Mechanism (itself capitalized by a CTF grant) and the exploration license holder. In case of failure, the Mechanism will cover part of the drilling expenditures (to be determined during Project preparation) incurred by the license holder.

The Mechanism will screen license holders applications based upon a clear set of technical, financial and corporate eligibility criteria to ensure that the applicants have carried out the appropriate surface exploration studies and have the necessary technical capacity to complete the resource validation process (i.e. drilling program) they plan to undertake and to verify the quality of the latter. For eligible applicants, results of their resource validation process will be measured according to a pre-established well testing methodology and assessed against specific success and failure criteria (e.g. MW output), which will be common for all eligible applicants and will be defined during project preparation. In case of failure, the Mechanism will cover the agreed portion of the license holder's drilling program expenditures. In the case of success, the license holder will be required to contribute to the Mechanism a specific percentage of their incurred expenditures, as a way to reduce the rate of depletion of the Mechanism's capital. This percentage will be defined during preparation, balancing the aim to maximize the number of projects to be supported under component 1, the willingness of license holders to contribute to the Mechanism and the expected success rates achieved.

The Directorate General of Renewable Energy (DGRE) of the Ministry of Energy and Natural Resources (MENR) is proposed as the Administrator for the Risk Sharing Mechanism. MENR would be taking on the fiduciary responsibility for the Mechanism and would hire a consultant to establish and operate the Mechanism. The Operational Manual for this component will clearly define the responsibilities of MENR and its consultant.

A technical assistance component may be elaborated during project preparation, to address MENR capacity building needs (on environmental management and early stage geothermal site assessments, among others).

Component 2: Loan Facility for Resource Development

This component aims to address the financing gap that license holders face today in the resource development stages of geothermal project development by providing debt financing to encourage and support both license holders and financiers investing in (i) the capacity/production drilling and (ii) the steam gathering and power plant construction stages.

The Project proposes to capitalize a credit line to a Financial Intermediary (FI), with an IBRD loan. The FI would on-lend at market rates, but offer longer tenors than currently available in the market, to license holders at the capacity drilling stage, and to a secondary extent, at the construction stage. The FI will be required to provide co-financing to the Facility from its own resources, for an amount yet to be decided, while a minimum equity contribution (e.g. 25 percent) will be required from concession holders (i.e. the sub-borrowers). The requirements and conditions for the Facility, including eligibility of sub-borrowers and projects, will be clearly outlined in a separate Operational Manual to be adopted by the FI for this component. Once the capacity drilling stage is completed, the FI shall be required to publicly disclose basic information about the potential project including sponsor, location, expected capacity and basic investment outline. This disclosure is intended to expand the financing opportunities of the project sponsor and to avoid market distortion through limits on access to information. The details of the disclosure shall be agreed upon with the FI and included into their loan agreement with the concession holder.

The Loan Facility will be open to any geothermal development that has reached the capacity drilling stage, regardless of whether it benefited or not from the risk sharing mechanism under Component 1. Once the capacity drilling is completed, the FI may proceed to provide additional funds to the concession holder for the construction of the geothermal facility.

The Industrial Development Bank of Turkey (TSKB) is proposed as the FI under this component, due to their technical capacity and experience in developing renewable energy projects in Turkey. TSKB will be provided with resources to procure technical assistance in assessment and monitoring of geothermal drilling projects, including training and knowledge transfer from international experts for their technical engineers.

IV. Safeguard Policies that might apply

Safeguard Policies Triggered by the Project	Yes	No	TBD
Environmental Assessment OP/BP 4.01	x		
Natural Habitats OP/BP 4.04	x		
Forests OP/BP 4.36		x	
Pest Management OP 4.09		x	
Physical Cultural Resources OP/BP 4.11		x	
Indigenous Peoples OP/BP 4.10		x	
Involuntary Resettlement OP/BP 4.12	x		
Safety of Dams OP/BP 4.37		x	
Projects on International Waterways OP/BP 7.50		x	
Projects in Disputed Areas OP/BP 7.60		x	

V. Financing (in USD Million)

Total Project Cost:	356.00	Total Bank Financing:	250.00
Financing Gap:	0.00		

Financing Source	Amount
Borrower	66.00
International Bank for Reconstruction and Development	250.00
Clean Technology Fund	40.00
Total	356.00

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