

# Attracting External Financing in Ethiopia's Power Sector

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## Summary

Ethiopia is one of the poorest countries in Eastern Africa but has ambitions to become a middle-income country by 2025. In the last decade, the country has demonstrated the capacity to achieve this goal; it is one of the fastest-growing economies in the world and has introduced the proper reforms to support its industrialization agenda and attract foreign investment.

Furthermore, Ethiopia's economic development follows its Climate Resilient Green Economy (CRGE) strategy, which was presented at COP 17 (the UN Climate Change Conference in November 2011) and then enshrined into law. This strategy establishes the country's vision of achieving middle-income status in a climate-resilient green economy development path and commits to limit its annual greenhouse gas (GHG) emissions at 145 MtCO<sub>2</sub>e (metric tons of CO<sub>2</sub> equivalent) by 2030, approximately the level of emissions in 2010.

The four pillars of the CRGE strategy are: (1) reducing agricultural emissions, (2) protecting and expanding forests, (3) expanding renewable electricity generation, and (4) adopting energy efficient technologies, especially in transport, industry, and buildings.

To achieve its development goals, Ethiopia realized that it needed to introduce policies and reforms to attract private investment, as the country could not continue relying on public borrowing. The country's public-private partnership (PPP) framework (2018) and investment law (2020) were critical in opening up the country to foreign investors. Furthermore, relevant regulations were strengthened with the assistance of multilateral development banks (MDBs) and bilateral aid.

As a result, substantial progress has been made. Foreign direct investment (FDI) and official development assistance (ODA) have increased exponentially since 2012. In the last few years, FDI has been in the \$2.5 to \$4 billion range, and ODA has been between \$3.5 and \$4 billion per year. MDBs add another \$2 to \$3 billion per year in loans and technical assistance.

While the country has made substantial progress, there are still issues remaining which keep investment from scaling up. This paper focuses on the power sector to illustrate FDI-related developments, progress, and outstanding issues.

The key policies and development goals for the power sector have been: (1) full electrification by 2025, from 44 percent presently; (2) diversification of power supply (away from hydropower) while utilizing domestic energy resources and maintaining the country’s near-zero carbon footprint; (3) increased FDI, especially private investment; and (4) increased power exports.

By 2025, Ethiopia hopes to install about 10 GWs of renewables and hydropower. The country is well endowed with renewable resources, including solar, wind, geothermal (one of the best resources in the world), run-of-river hydropower, and biomass. But their goal remains challenging, as it requires tripling the installed capacity (from 4.3 GW to 14 GWs) in five years.

The decision to open up the power sector to private investors is a step in the right direction. The PPP framework, the new investment law, and the development of a power-sector reform roadmap are all significant developments that send the right signals to the investment community. As a result, there is strong interest in investing in power projects, especially solar, wind, and geothermal.

Successful tenders have been completed, and a number of projects have made progress toward financial closure. Corbetti (a 150 MW geothermal project) and two solar projects, Metehara (100 MW) and Scaling Solar (250 MW), are close to reaching financial closure, but issues remain which are resulting in delays. The most important issues are:

- Retail tariffs remain below power supply costs, undermining the financial sustainability of the power sector. However, the government has developed a plan to increase tariffs by 2021. Also, a partial risk guarantee (PRG) program (provided by the World Bank) covers off-taker risks.
- Lack of hard currency (to pay debt obligations and repatriate profits) is a serious issue for foreign investors. The national bank has offered to provide some indication about preference to infrastructure projects, but this is not adequate; a firm commitment or guarantee is needed by most investors.
- Final approval of project documents (e.g., power provider agreements (PPAs) and implementation agreements) and project guarantees still depend on the Council of Ministers and the parliament. This is proving to be very time consuming and creates uncertainty.
- Social unrest and political instability continue to be a concern for investors.

The case of the power sector illustrates that substantial progress has been made in attracting FDI—but also that more needs to be done. The situation is similar in other sectors of the economy. One positive element is the government’s willingness to get involved and resolve outstanding issues. As a result, the overall outlook is cautiously optimistic.

## *Background*

Ethiopia has a population of 109 million people (2018) and a GDP per capita of \$772 (2018), making it one of the poorest countries in the region.<sup>1</sup> Yet, the country’s goal is to become a middle-income economy by 2025, and it has made substantial progress toward this end. In the last 20 years, Ethiopia has been one of the fastest-growing economies in the world. The country’s economy experienced strong, broad-based growth, averaging 9.9 percent a year from 2007–2008 to 2017–2018, compared to a regional average of 5.4 percent. In fact, from 2000 to 2018, Ethiopia had the third-highest growth rate in the world, right behind Myanmar and China; during this period, Ethiopia grew by 189 percent. In the meantime, poverty has been reduced from 44 percent in 2000 to 24 percent in 2016.

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1. “World Bank in Ethiopia-Overview,” World Bank, September 26, 2019, <https://www.worldbank.org/en/country/ethiopia/overview>.

The majority of the population (around 70 percent) is involved in agriculture, which is the backbone of the economy and includes primary exports such as coffee, oil seeds, pulses, flowers, vegetables, sugar, and food for animals. There is also a thriving livestock sector, which exports cattle, hides, and skins. Over the last few years, Ethiopia has attracted investments in the textile and garment industry, but it hopes to attract more investment in other industries as well.

While Ethiopia continues to draw strong interest from both foreign governments and private investors, it faces a number of development challenges, including:

- Limited competitiveness, which constrains the development of the economy, the creation of jobs, and the growth of exports;
- Heavy participation and interference of the public sector in most economic activities but also an underdeveloped private sector;
- Rapidly increasing government debt and limited ability to continue borrowing (even though the total debt is not very high (around 60 percent of GDP), it is short-term debt with high debt service due in the next few years);
- A negative trade deficit, resulting in a lack of hard currency in the country, among other issues;
- Inadequate and unreliable power supply, which limits new industrial activity; and
- Corruption and social unrest.

The government has a bold industrialization agenda and has taken steps to address many of the above challenges. A number of reforms have been introduced to attract FDI and encourage private-sector participation. Among the many initiatives, the following are the most noteworthy:

- **Framework for Public-private Partnerships:** In 2018, the government put in place a state-of-the-art legal and regulatory framework for PPPs.
- **Ethiopia's New Investment Law:** On January 30, 2020, the House of People's Representatives approved the "New Proclamation," which replaces earlier regulations and aims to attract FDI. Key provisions include:
  - Opening up many sectors of the economy to foreign investors;
  - Expanding the definition of "investment" and "capital" to include not only new investments but also the expansion and upgrading of existing assets and acquisition of existing enterprises (also, "capital" was redefined to include intellectual property rights and other tangible and intangible assets); and
  - Requiring regions to establish a transparent and predictable system for land allocation.

Ethiopia's CRGE, which was launched at COP 17 in November 2011, is also particularly noteworthy. This strategy established Ethiopia's vision of achieving middle-income status by 2025 in a climate-resilient green economy development path. It defines the country's commitment to limit its annual emissions at 145 MtCO<sub>2</sub>e by 2030.

The CRGE strategy is based on four pillars: (1) reducing agricultural emissions, (2) protecting and expanding forests, (3) expanding renewable electricity generation, and (4) adopting energy efficient technologies in transport, industry, and buildings. Since the majority of GHG emissions come from the agricultural and forestry sectors, these are the focus of mitigation and adaptation activities (e.g., landscape and forest management). Nearly 100 percent of electricity comes from hydropower, so a fundamental part of the strategy is to ensure that new power generation comes from carbon-free renewables. It is noteworthy that the use of coal has not been considered and that natural gas reserves which were

discovered in Ethiopia are targeted for export (through Djibouti). Furthermore, by exporting electricity to South Sudan and Djibouti (which rely on oil for power generation), Ethiopia contributes to the reduction of GHG emissions in the region.

Freight and passenger transport are the primary drivers of a projected 36 MtCO<sub>2</sub>e emissions growth in the transportation sector from 2010 to 2030 under a business-as-usual scenario. The Ethiopian government plans to increase fuel efficiency standards and promote the uptake of hybrid and electric vehicles; construct an electric rail network (including Ethiopia-Djibouti and light rail in Addis Ababa, the capital); improve public transportation in Addis Ababa (e.g., bus rapid transport); and increase the use of biofuels.

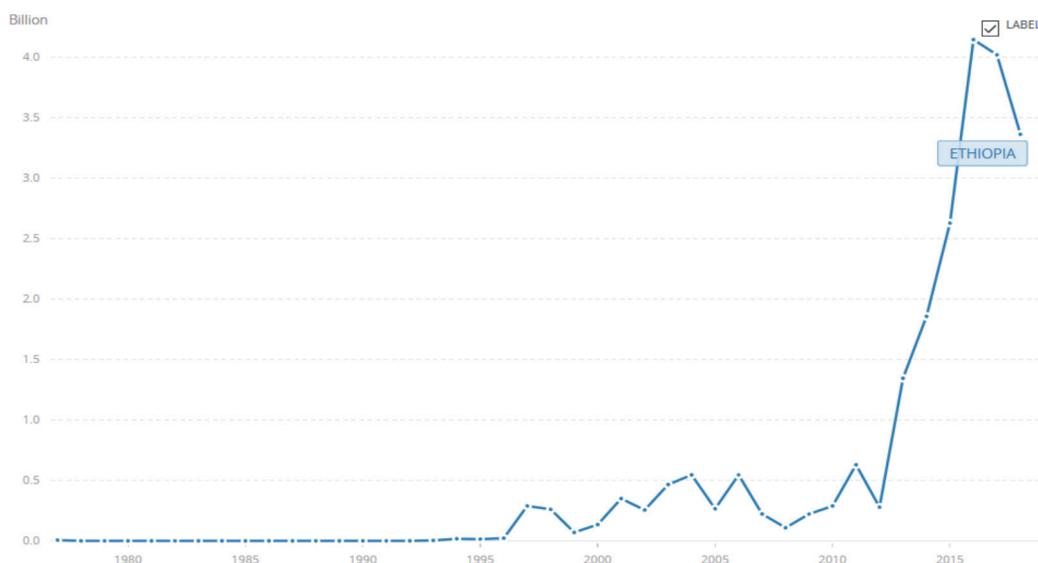
The country is committed to the CRGE strategy, further demonstrated by Ethiopia enshrining its Nationally Determined Contribution (NDC), part of the Paris Agreement, into law. As a result, all government plans and projects are checked for compliance with the CRGE before final approval and financing. The MDBs are playing an important role in supporting Ethiopia to implement this strategy.

To illustrate the success, as well as the remaining challenges, this paper will provide information on FDI and ODA. Then, it will use the power sector as an example to highlight both the progress and remaining issues.

### Foreign Direct Investment (FDI)

As the following figure shows, FDI inflows in Ethiopia exploded in the last eight years. In 2012, FDI was a meager \$279 million. By 2016, FDI had reached \$4.14 billion, declining somewhat to \$3.36 billion in 2018 and \$2.5 billion in 2019.

Figure 1: Foreign Direct Investment, Net Inflows (BoP, current US\$) - Ethiopia



Source: "Foreign direct investment, net inflows (% of GDP) - Ethiopia," World Bank, 2018, <https://data.worldbank.org/indicator/BX.KLT.DINV.WD.GD.ZS?locations=ET>.

It is not yet clear why there was a decline in FDI during 2018 and 2019. On the positive side, the new government of Prime Minister Abiy Ahmed (which took over April 2, 2018) introduced many sector reforms and earned substantial international goodwill and interest from investors. On the negative side, ethnic violence and an attempted coup on June 22, 2019 may have contributed to the downturn in FDI. Investors are looking at the upcoming elections (scheduled for August 29, 2020 but postponed due to

Covid-19) and the burgeoning ethnic conflict for further positive signals before they commit to large investments in the country. The Ethiopian Investment Commission, a government agency, projects FDI to increase to \$5.1 billion in the coming years.

China is the largest source of FDI, representing 60 percent of the capital inflows to Ethiopia in 2019. Most of the Chinese investments go to transport, power, sugar, food processing, and industrial parks and come in the form of loans to the government or public enterprises. Noteworthy examples include \$4 billion for a new railroad from Addis Ababa to Djibouti and \$5 billion to the power sector, including \$4 billion in hydropower and \$611 million in wind projects.

However, the inflows of investments are becoming more diverse. The United States, India, and Saudi Arabia make up a substantial portion of the remaining FDI, and there is increasing interest from France, Italy, the United Kingdom, Turkey, and the United Arab Emirates (UAE).

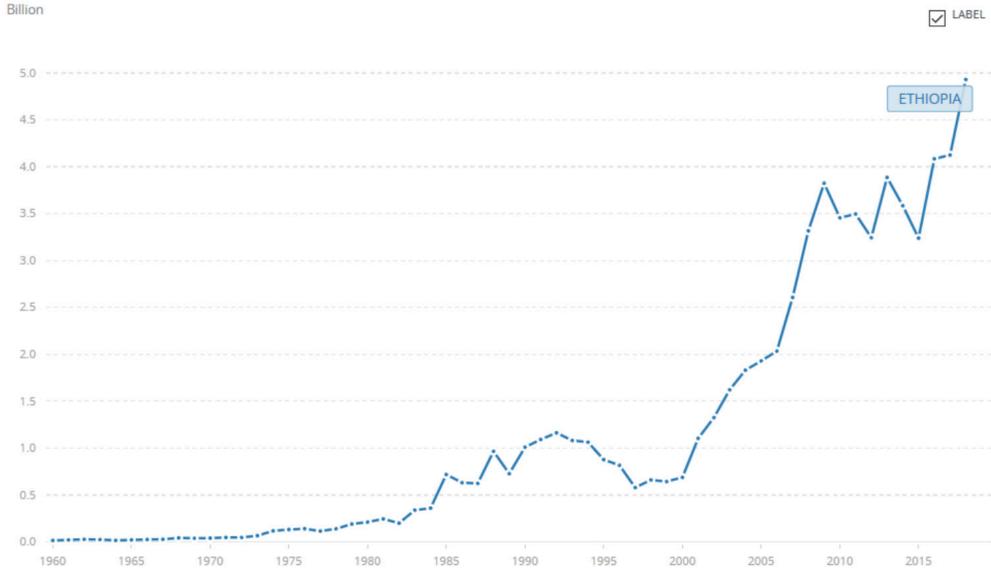
The key sectors of the economy which are targeted for FDI include: agriculture and agri-processing; textile and apparel; leather products; pharmaceuticals; information and communications technology (ICT); tourism; mining; and power. The concept of industrial parks is particularly relevant and successful, especially in agri-processing and textiles. Global brands such as Calvin Klein and H&M have invested in such parks recently in Ethiopia.

Privatization of state-owned enterprises has been announced, but no major deals have been consummated yet. The railroads and Ethio Telecom, the telecom monopoly, are the first targets for privatization. Also, two new entrants will be allowed in mobile telephony.

*Official Development Assistance (ODA)*

ODA has followed a similar upward trend as FDI in the last 20 years (see following figure).<sup>2</sup>

Figure 2: Net Official Development Assistance and Official Aid Received (current US\$) - Ethiopia



Source: “Foreign direct investment, net inflows (% of GDP) – Ethiopia,” World Bank, 2018, <https://data.worldbank.org/indicator/BX.KLT.DINV.WD.GD.ZS?locations=ET>

2. ODA includes grants and loans, the latter on concessional financial terms (e.g., well below market rates and/or a grant element of at least 25 percent) calculated at a discount rate of 10 percent per OECD’s Development Assistance Committee (DAC).

Before 2012, annual ODA was less than \$1 billion. In 2012, it reached \$3.24 billion, increasing further to \$4.08 billion in 2016 and \$4.93 billion in 2018.

The largest Organization for Economic Cooperation and Development (OECD) donor is the United States, which provided more than \$820 million in 2018. On March 14, 2020, the United States renewed its commitment to continue providing assistance, including an allocation of \$230 million to the Development Partnership Agreement, which focuses on health, education, agriculture, economic growth, good governance, and resilience. Other major donors include the European Union, the United Kingdom, Japan, Canada, Saudi Arabia, the UAE, Germany, and France.

**Multilateral Development Banks (MDB):** The role of MDBs cannot be underestimated in both FDI and technical assistance (TA). The World Bank and the African Development Bank (the two MDBs which are most active in Ethiopia) provide loans and TA, averaging \$2 to \$3 billion per year over the last five years. For example, the World Bank has provided Ethiopia with \$9.18 billion from 2016 to 2020.

While it is not easy to separate MDB loans from TA, it is estimated that TA adds another 50 percent to the ODA provided by donor governments. MDBs play an important role in supporting the government to develop and implement strategies, policies, and regulations. Also, MDBs provide funding and TA for environmental and social projects, including climate change mitigation and adaptation. Finally, MDBs contribute substantially to capacity-building, which is particularly important for Ethiopia in attracting investors and developing well-paid positions to keep its educated citizens in the country (reducing “brain drain”).

### *The Power Sector: Attracting FDI in Ethiopia*

Historically, Ethiopia’s electricity infrastructure has been developed through central planning and public financing. However, increased public debt and retail tariffs below power supply cost have made the power sector unsustainable. The need to increase energy access from 44 percent (33 percent grid-connected and 11 percent off-grid) in 2019 to 100 percent by 2025 requires substantial resources, both financial and human, which cannot be mobilized by the public sector alone. The commitment of the country to stay green while substantially expanding the capacity of the power system makes such expansion even more challenging.

Power companies have generally performed well on technical aspects, designing and executing large-scale infrastructure development projects, but more resources and skills are needed to deploy renewables and modernize the power grid. Power generation costs are low (based on hydropower). Also, compared to regional peers, the aggregate technical and commercial losses are relatively low (around 23 percent), and the bill collection rate is relatively high (85 to 90 percent). However, retail tariffs below the cost of power supply undermine the sustainability of the sector.

Ethiopia has responded to these challenges aggressively and has taken steps in the right direction. Key components of Ethiopia’s policy priorities in the power sector include:

- Expanding power supply to meet the needs of the rapidly growing economy and providing full energy access by 2025;
- Diversifying power supply (away from overreliance on hydropower) while utilizing domestic energy resources and maintaining its near-zero carbon footprint;
- Attracting foreign investment, especially private; and
- Increasing power exports; becoming a regional power supplier by exporting to Kenya, Tanzania, South Sudan, and Djibouti as part of the East African Power Pool.

While Ethiopia has plenty of energy resources and substantial progress has been made during the last decade, only 44 percent of its population has access to energy. The most recent National Electrification Plan (NEP 2.0), issued in March 2019, aims to achieve universal energy access by 2025 (65 percent through the power grid and 35 percent through off-grid).<sup>3</sup> This means 8.2 million new grid connections and 6 million additional off-grid customers, at a cost of \$6 billion. Whether or not this goal will actually be achieved is yet to be seen, but the country is making significant progress in the right direction.

As of 2019, Ethiopia had an installed power generating capacity of 4.5 GWs, nearly all of it from clean technologies; the majority comes from hydropower (89 percent), with wind (8 percent) and diesel (3 percent) providing the remaining 11 percent. Just 10 years ago, installed capacity was only 850 MWs. Looking forward, Ethiopia plans to increase its power generation capacity to 14 GWs by 2025.

The country's power-sector development plan aims to continue its reliance on clear energy sources, even though it seeks diversification from hydropower, which is seasonal and affected by droughts. Severe droughts during the last decade (especially during 2011 and 2012—the worst drought in the last 60 years) and climate change (particularly through the impact of El Nino in 2015 and 2016) led to country-wide blackouts and have provided additional impetus to accelerate the deployment of renewable energy resources (geothermal, solar, wind and biomass).

Ethiopia's power-sector strategy called for generating 15 to 20 percent of electricity from non-hydropower renewables by 2020. This means at least 7 GWs of non-hydropower renewables generating more than 25 TWh. While it does not seem that this goal will be achieved this year, substantial progress has been made in this direction.<sup>4</sup>

The following table illustrates that there are vast amounts of hydro, solar, wind, and geothermal which have not been exploited, providing an opportunity for Ethiopia to grow rapidly while maintaining its near-zero carbon footprint. Around the country, 45 GWs of hydro are yet to be exploited, as are 7 to 10 GWs of geothermal and 1,350 GWs of wind; similarly, less than 1 percent of solar potential has been exploited.

The institutional structure of Ethiopia includes the Ministry of Water, Irrigation and Power (MoWIE), which is responsible for policy, planning, and overall coordination. Key directorates under the ministry include:

- The Alternative Energy and Technologies Development and Promotion Directorate;
- The Hydropower Design and Study Directorate; and
- The Energy Policy, Strategy and Information Directorate.

The vertically integrated power company—the Ethiopian Electric Power Company (EEPCo)—has been split into two entities:

- Ethiopian Electric Power (EEP), responsible for generation, transmission, and bulk power sales; and
- The Ethiopian Electric Utility (EEU), responsible for power distribution and retail sales.

These two entities are complemented by the power-sector regulator: the Ethiopian Energy Authority (EEA).

Following PPP Proclamation #1076/2018, which was ratified by the parliament in February 2018, a PPP framework was established for private investments. Directives and guidelines detailed the options and requirements for PPP projects. Also, a PPP Directorate General was established in the Ministry of Finance,

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3. Seleshi Bekele, "National Electrification Program 2.0," Ethiopian Government, March 2019, <https://www.africa-energy-forum.com/article/ethiopia-national-electrification-program-20-report>.

4. It should be noted that this report was written before Covid19.

along with PPP teams in all relevant ministries and authorities. Dedicated Independent Power Plant (IPP) / PPP units were established at the EEP and EEU, which will be the key counterparts for private investors in the power sector.

Furthermore, the government is preparing a power-sector reform roadmap that will include further unbundling and liberalization of wholesale and retail electricity markets. Following a World Bank Development Policy Operation (DPO), the government has increased retail tariffs twice and plans to have two more increases by 2021 to bring them to full cost recovery. Subsequently, the tariff will be adjusted every four years and will ensure full cost recovery.

Finally, Ethiopia is looking at improving its debt management. Public borrowing over the last decade (primarily through domestic bonds) has created unsustainable debt service obligations. Overreliance on short-term loans to finance long-term assets (mostly hydropower plants) has created a cash-flow problem which cannot be covered with revenue collection, as retail tariffs are below power supply costs.

The remaining part of this paper will cover hydropower, geothermal, wind, and solar to assess the ability of Ethiopia to attract foreign investments and achieve its power development goals. Tenders for hydropower and wind have been delayed, so while all renewable resources will be mentioned, more emphasis will be given to geothermal and solar.

## *Hydroelectric Power*

As mentioned earlier, Ethiopia has huge hydro potential. A recent survey of hydro potential by Hydro China Corp indicates that Ethiopia has a technical exploitable potential of 48,030 MW; only 8.5 percent of this has been exploited.

Most of the existing power plants (3,800 MW) are hydroelectric. The latest large hydro project in operation, Gilgel-Gibe III (1,870 MW), was added in 2016 as part of the Gilgel-Gibe cascade, with a total installed capacity of 2,474 MWs. But the largest hydro project in the country is the Grand Ethiopian Renaissance Dam (GERD), which is currently under construction and could have an installed capacity of 6.45 GW at an estimated cost of \$4.8 billion. The GERD cascade is expected to be completed in phases:

- GERD 1: 750 MW in 2020
- GERD 2: 3,256 MW in 2023
- GERD 3: 2,442 MW in 2024

Another large hydro project under construction is the Kaysha, with an installed capacity of 2,160 MWs.

All the hydro projects have been financed with public-sector borrowing. For example, the GERD was financed by bonds (\$3 billion) which were issued by the government targeting Ethiopian investors in the country and abroad. The mechanical and electrical equipment of the hydropower plants, costing about \$1.8 billion, were financed by Chinese banks.

In 2016, Ethiopia realized that public-sector borrowing was not adequate to finance its power development program and decided to try to attract private investors. For example, the Chemoga Yeda (280 MW), Halele Werabeca (436 MW), and Tams (1,700 MW) hydro projects have been identified for private financing. Also, there is discussion about privatizing existing hydro plans, but no action has been taken yet.

## WIND

Ethiopia has already built three wind projects at the Ashegoda, Adama 1, and Adama 2 sites, with a total installed capacity of 324 MW. All three projects were financed by public debt and bilateral assistance (mainly from Denmark). All three also faced operating and reliability problems either due to equipment of questionable quality or inadequate operations and management (O&M) support.

The World Bank Group received a mandate from the government of Ethiopia to develop wind projects deploying an approach similar to Scaling Solar (see below). The first project was to be 100 to 150 MWs. Preparatory work commenced, but release of the request for proposal (RFP) was put on hold.

## GEOTHERMAL

Ethiopia is well endowed with geothermal resources along the Ethiopian Rift, running in a northeasterly direction along the entire length of the country. It is estimated that up to 10 GWs of geothermal capacity can be developed. Adequate geological studies have been done to identify the most promising areas for development (e.g., Aluto Langano, Tullu Moye, and Tendaho).

Three steps are needed to develop a geothermal power project<sup>5</sup>:

- 1. Identify and Confirm the Geothermal Energy Resource:** This includes geological surveys to identify the promising areas, further exploration, and test drilling. The investment requirement for this phase may be \$10-35 million for a plant up to 100 MWs.
- 2. Develop Geothermal Field:** This involves drilling to secure the geothermal energy resource and may require \$50-100 million for each site.
- 3. Construction of the Power Plant, Including Steam Gathering System:** The investment required is proportional to the size of the plant as well as the properties of the geothermal energy resource. For a 50 MW plant, the investment may be in the \$100 to \$150 million range.

Each of the above steps could be financed by the public or the private sector or a combination of both. Considering that steps one and two represent 40 to 50 percent of the total investment and are risky, the most common approach (around the world) has been for the government to invest in these two steps and then tender the third step. However, such an approach requires substantial financial commitment from the government and specialized knowhow to implement them, both of which are in short supply in Ethiopia.

For this reason, the government of Ethiopia decided to implement two small projects with public financing but open up the geothermal energy field for larger projects to private investors. The government funded Tendaho (12 MW) and Aluto Langano (70 MW) with support from bilateral agencies such as Agence Française de Développement (AFD), the Japan International Cooperation Agency (JICA), and the World Bank.

In parallel, the government introduced relevant laws and regulations and entered into negotiations with private developers for specific projects<sup>6</sup>:

- Corbetti: 1,000 MW capacity to be implemented in phases, with the first step to be 50 MW; and
- Tulu Moye: 500 MW capacity to be implemented in phases, with the first step to be 50 MW.

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5. Magnus Gehringer and Victor Loksha, *Geothermal Handbook: Planning and Financing Power Generation* (Washington, DC: World Bank, ESMAP, June 2012), <https://openknowledge.worldbank.org/handle/10986/23712>.

6. The author participated in a team led by the International Finance Corporation which advised the government on regulations related to geothermal exploration and development.

The development of the Corbetti project provides insights into the progress Ethiopia has made in attracting private investment as well as the remaining issues which need to be resolved.

Reykjavik Geothermal (RG) signed a framework agreement, called “Heads of Terms,” with the EEP in October 2013. This agreement aimed to develop a 1,000 MW geothermal power plant in Corbetti. As a first step, a 50 MW project was to be implemented.

RG established Corbetti Geothermal Plc. (CG) and brought in Berkeley Energy and Iceland Drilling, two major investors. Initially, the equity structure of CG was as follows: RG owned a 28.5 percent stake, Berkeley Energy owned 53.5 percent, and Iceland Drilling owned 18 percent. The first phase was to be fully equity funded, while the second phase will be funded through debt financing.

Early development funding was provided by the EU-Africa Infrastructure Trust Fund’s Geothermal Risk Mitigation Facility, the UK Department for International Development’s East Africa Geothermal Energy Facility, the U.S. Agency of International Development’s (USAID) Power Africa initiative, and the African Development Bank Group’s African Legal Support Facility.

In spite of the availability of financing and broad support for the project, substantial time has gone by without financial closure. In early 2020, the project was restructured with the hope that it will proceed soon. The size of the project was reduced to 150 MW to be implemented in two phases. In the first phase, a 50 MW plant will be built by 2023, followed by another 100 MW at a later date.

For the first phase, four to six exploratory wells will be drilled with support from the Geothermal Risk Mitigation Facility. The remaining four to seven wells needed for the 50 MW plant would be financed through debt.

Recently, Corbetti signed a PPA (with a tariff of \$0.07 per kWh) and implementation agreement. However, the PPA, associated guarantees, and amendment of the current geothermal law need endorsement by the Council of Ministers and the parliament. As of the end of May 2020, such endorsements have not been obtained, and the project has not reached financial closure.

The issues facing geothermal, as well as other renewables, are discussed at the end of this paper, as they are similar for all such projects.

## **SOLAR**

Ethiopia has excellent solar energy potential which is completely unutilized. Solar would be highly suitable for both off-grid applications and to diversify power supply in the grid. The intermittency of solar could be addressed easily by storage hydropower, which is plentiful in the country.

The introduction of solar coincided with Ethiopia’s decision to open up the power sector to private investors (the 2018 PPP Proclamation). For this reason, it used the first two solar projects to test its procurement and financing models. To do so, it sought the assistance of USAID (through the Power Africa program) and the World Bank Group, which includes the World Bank, the International Finance Corporation, and the Multilateral Investment Guarantee Agency (MIGA).

**The Metehara Project:** USAID, through Power Africa, provided support (including a transaction adviser) for the Metehara solar project, which was to be implemented in two phases, each 100 MW. This was the first solar project and arguably the first privately financed power project in Ethiopia. The Corbetti geothermal project, which had started negotiations much earlier, has not yet reached financial closure, leaving Metehara as a path-blazing project. As such, it had to address key issues, especially managing risks associated with the creditworthiness of the off-taker (EEP), the lack of hard currency in the country, and the unfamiliarity of the government with private transactions.

Metehara Round 1 (100 MW) launched a competitive bidding process and received five offers (received on due date: February 6, 2017) from a list of pre-qualified bidders. In October 2017, the project was awarded to a consortium of Enel Green Power and Orchid Business Group, a local company. A letter of intent was signed between the project development company and the EEP ahead of a 20-year PPA, which was to be signed later. A fixed tariff of \$0.05898 per kWh was specified in the proposal submitted by the project developers.

In spite the early signing of the memorandum of understanding, the project has not yet reached financial closure. Following competitive bidding under the Scaling Solar project, which resulted in a tariff of \$0.0256 per kWh (September 2019, see below), the government is requesting renegotiation of the tariff with the winning consortium.

**Scaling Solar:** The World Bank Group deployed its Scaling Solar concept, which is a PPP model designed to mitigate and optimize risks by allocating them among three parties (the investor, the off-taker, and the government). It also utilizes standardized commercial documents [PPAs; government service agreements (GSAs); and grid connection agreement (GCAs), if necessary]. Finally, it involves extensive project preparation up front (before the RFP is released) and makes land available, which results in a “shovel-ready” project with minimum risks for the investor. The end result is a very competitive price, as was demonstrated by projects in Zambia and Senegal. This will likely be confirmed again in Ethiopia.

The World Bank Group obtained a mandate from the government to develop 500 MW of solar initially. Later, the targeted capacity was increased to 750 MW. After comprehensive assessment of multiple sites (including environmental and social assessments), the Gad and Dicheto sites in the eastern states of Somali and Afar were selected for Scaling Solar Round 1; 125 MW were to be installed in each site. After prequalification of 12 out of 28 bidders, a tender was launched in January of 2019, and the winning bidder, ACWA Power, was selected (among five bidders) on September 16, 2019, with a proposed tariff of \$0.0256 per kWh. The project (as of the end of May 2020) is still in the process of reaching final agreement.

**Partial Risk Guarantee:** A critical element of the solar projects (both Metehara and Scaling Solar sites) was a partial risk guarantee (PRG) provided by the World Bank to mitigate some of the project risks. The Ethiopia Renewable Energy Guarantees Program (REGREP), valued at \$200 million, was designed to mobilize more than \$1.5 billion in investment for over 1 GW of renewable (solar and wind) projects. The REGREP provided guarantees to backstop certain obligations of the government for the country’s first set of competitively procured renewable energy projects to be developed under the PPP framework.

The REGREP provided mainly:

- **Payment guarantees** covering up to six months of payments by the EEP to the investor. The EEP would have to provide a letter of credit for each of the planned projects. Such a letter would be issued by an acceptable commercial bank and backed by the REGREP; and
- **Loan guarantees** to commercial banks which finance the project, mitigating risks related to the off-taker or government performance.

A total guarantee amount of \$40 million is estimated to be sufficient to attract private investment for a 100 MW solar project that has an investment cost of about \$200 million.

## **SUCCESSSES AND REMAINING ISSUES IN CLOSING PRIVATE DEALS IN THE POWER SECTOR**

Ethiopia has made substantial progress in attracting foreign investment in the power sector. The introduction of the PPP and new investment laws established the legal and regulatory framework for private investments. Furthermore, laws and regulations associated with geothermal exploration have been introduced, allowing private investors to participate in this challenging energy resource. The

continuing increase of FDI and ODA in the country is an indicator of success. The positive response of many Tier 1 global investors (such as Enel GreenPower and ACWA) illustrates that the country is becoming attractive for foreign investment.

Furthermore, the competitive bidding approach deployed in the solar projects seems to be the right approach, and it is likely to result in very competitive tariffs. In particular, the utilization of Scaling Solar with comprehensive derisking and guarantees provided by the World Bank have proven to be an efficient model for procurement of renewables.

However, the above examples also illustrate that there are remaining issues which need to be addressed if FDI is to increase in the coming years. If anything, the recent experience indicates that the government has not appreciated the complexities of private financing. While the government is fully engaged and interested to address the issues which emerge during project negotiations, key issues remain, including:

- **Retail tariffs below power supply costs undermine the financial sustainability** of the sector. However, as mentioned above, the government, working with the World Bank, has put together a plan to increase tariffs, and they are considering further reforms to the sector to improve competitiveness and financial viability.
- Related to the sustainability of the sector is the **credit-worthiness of the off-taker of electricity (the EEP)**. To cover the obligations of the off-taker, the government of Ethiopia obtained a PRG from the World Bank to support many renewable projects which are planned over the next few years. The PRG will be designed to address the specific needs of each project, but typically it will provide payment guarantees (e.g., six-month coverage) and loan guarantees; in other words, it will address the off-taker risks.
- **Land acquisition** has proven to be a substantial issue in both geothermal and solar projects. In the future, the government has committed to facilitate land acquisition on behalf of the project developers.
- **Project permitting and licensing** is very complicated, involving many different agencies which have limited knowhow on renewable technologies; often, some of the responsibilities of these agencies are not clear and conflict with one another. The government is considering establishing a “one-stop shop,” where project developers can obtain all permits and licenses.
- Other risks, such as **potential change of laws, assignability of project agreements, and dispute resolution**, seem like they are being resolved.
- As the following table shows, Ethiopia is counting on substantial exports to neighboring countries: an estimated 4,612 MWs by 2025 and 5,012 MWs by 2028. While such exports will bring in badly needed hard currency, they pose an **export risk** as well. If demand for exports is reduced for some reason (e.g., lower demand or increased supply in the neighboring countries), Ethiopia may be left with too much overcapacity, which would burden the financial viability of the sector.
- **Lack of hard currency** (to pay debt obligations and repatriate profits) has emerged as a critical issue in Ethiopia due to the negative balance of payments. Insufficient hard currency in the country makes it difficult to satisfy foreign investors. The National Bank of Ethiopia issued a directive indicating that preference will be given to infrastructure projects. In other words, the national bank may provide a generic letter indicating preference, but it stopped short of guaranteeing hard currency or providing a clear priority list of projects.
- Finally, **ultimate approval** of the PPAs, implementation agreements, and guarantees rests with the Council of Ministers. This approval has been delayed for the above projects, especially Corbetti (geothermal), Metehara (solar), and the Scaling Solar 1 sites.

As the power-sector case illustrates, Ethiopia has made substantial progress in attracting foreign investment, which is essential for its economic development, but issues remain that need to be addressed. On the positive side, the Ethiopian government has demonstrated willingness and commitment to address these issues, so the outlook is cautiously optimistic. ■

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