

## Cover Page for CTF Project/Program Approval Request<sup>1</sup>

<b>1. Country/Region</b>	Kenya	<b>2. CIF Project ID#</b>	(CIF AU will assign ID.)
<b>3. Investment Plan (IP) or Dedicated Private Sector Program (DPSP)</b>	<input type="checkbox"/> IP <input checked="" type="checkbox"/> DPSP	<b>4. Public or Private</b>	<input type="checkbox"/> Public <input checked="" type="checkbox"/> Private
<b>5. Project/Program Title</b>	Concessional Finance Program for Geothermal Generation		
<b>6. Is this a private sector program composed of sub-projects?</b>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
<b>7. Financial Products, Terms and Amount</b>			
	<b>USD</b> (million)	<b>EUR</b> (million) <sup>2</sup>	
Grant	0.00		
Fee on grant	0.00		
MPIS (for private sector only)	0.35		
Public sector loan			
• Harder terms	0.00	NA	
• Softer terms	0.00	NA	
Senior loan	29.65	NA	
Senior loans in local currency hedged	0.00	NA	
Subordinated debt / mezzanine instruments with income participation	0.00	NA	
Second loss Guarantees	0.00	NA	
Equity	0.00	NA	
Subordinated debt/mezzanine instruments with convertible features	0.00	NA	
Convertible grants and contingent recovery grants	0.00	NA	
Contingent recovery loans	0.00	NA	
First loss Guarantees	0.00	NA	
Other (please specify)	0.00	NA	
<b>Total</b>	<b>30.0</b>	NA	
<b>8. Implementing MDB(s)</b>	AfDB		
<b>9. National Implementing Agency</b>	NA		

<sup>1</sup> This cover page is to be completed and submitted together with the MDB project/program proposal when requesting CTF funding approval by the Trust Fund Committee.

<sup>2</sup> Please also provide USD equivalent in the column to the left

<b>10. MDB Focal Point</b>		Joao Cunha ( <a href="mailto:j.cunha@afdb.org">j.cunha@afdb.org</a> ) / Leandro Azevedo ( <a href="mailto:l.azevedo@afdb.org">l.azevedo@afdb.org</a> )
<b>11. Brief Description of Project/Program (including objectives and expected outcomes)<sup>3</sup></b>		
<p>The program involves the creation of a concessional lending program with CTF funds for co-financing high development impact mitigation projects through the increase in installed capacity of geothermal power in Kenya. CTF funds will be deployed to projects where sponsors and investors face challenges in sourcing sufficient levels of conventional financing with loan terms that support the financial viability of projects. CTF funding will be essential in filling the financing gap of these projects while offering flexible enough and catalytic loan terms that are compatible with the projects' financial profile and which are currently unavailable in the local market or from other commercial sources.</p>		
<b>12. Consistency with CTF investment criteria<sup>4</sup></b>		
(1) Potential GHG emissions savings	With USD 30 million, the program will contribute to a reduction in GHG emissions of roughly 6,847,720 tCO <sub>2</sub> for the lifetime of the project.	
(2) Cost-effectiveness	Based on a GHG emission reduction of 6,847,720 tCO <sub>2</sub> , the cost effectiveness of CTF funds will equal USD 4.38 per tCO <sub>2</sub> .	
(3) Demonstration potential at scale	See Page 7.	
(4) Development impact	See Page 8.	
(5) Implementation potential	See Page 8.	
(6) Additional costs and risk premium	See Page 8 and 9.	
<b>Additional CTF investment criteria for private sector projects/ programs</b>		
(7) Financial sustainability	See Page 9.	
(8) Effective utilization of concessional	See Page 9.	
(9) Mitigation of market distortions	See Page 9.	
(10) Risks	See Page 9 and 10	
<b>13. For DPSP projects/programs in non-CTF countries, explain consistency with FIP, PPCR, or SREP Investment Criteria and/or national energy policy and strategy.</b>		
<p>The program will be implemented in Kenya, a pilot-country under the Scaling-up Renewable Energy Program (SREP). Climate mitigation through the deployment of renewable technologies in general and geothermal in particular is a priority for Kenya as per the country's Vision 2030, the SREP Investment Plan approved in 2011 and the Least Cost Power Development Plan.</p>		
<b>14. Stakeholder Engagement<sup>5</sup></b>		
<p>AfDB has conducted initial engagement with institutional investors, other Development Finance Institutions, project developers, and government institutions with the feedback being overall positive. As part of the environmental and social assessment of the projects, consultations will be undertaken with other local stakeholders and projects' affected people. This will be well documented and presented for each project under the program once final appraisal reports are submitted for approval by the CTF Trust Fund Committee (TFC).</p>		

<sup>3</sup> Please provide the information in the cover page or indicate page/section numbers in the accompanying project/program proposal where such information can be found.

<sup>4</sup> Same as footnote 3.

<sup>5</sup> Same as footnote 3.

<b>15. Gender Considerations<sup>6</sup></b>		
The program will include gender benefits related to the development of clean energy. These will be documented in detail during appraisal of each specific project.		
<b>16. Indicators and Targets</b>		
<b>Project/Program Timeline</b>		
Expected start date of implementation <sup>7</sup>		June 2016
Expected end date of implementation <sup>8</sup>		June 2017
Expected investment lifetime in years (for estimating lifetime targets)		20 years
<b>Core Indicators</b>		<b>Targets<sup>9</sup></b>
GHG emissions reduced or avoided over lifetime (tonnes of CO <sub>2</sub> -eq)		6,847,720
Annual GHG emissions reduced or avoided (tonnes of CO <sub>2</sub> -eq/year) <sup>10</sup>		342,386
Installed capacity of renewable energy (MW)		70
Number of additional passengers using low-carbon transport per day		NA
Energy savings cumulative over lifetime of investment (MWh)		NA
Annual energy savings (MWh/year) <sup>11</sup>		NA
<b>Identify relevant development impact indicator(s)</b>		<b>Targets</b>
These will be developed during appraisal of each specific project.		TBD
<b>17. Co-financing</b>		
	Please specify as appropriate	Amount (in million USD)
• MDB 1		45.0
• MDB 2 (if any)		0.0
• Government		0.0
• Private Sector		45.0
• Bilateral		0.0
• Others (other lenders)		37.0
<b>Total</b>		<b>127.0</b>
<b>18. Expected Date of MDB Approval</b>		
AfDB has already been mandated by a selected bidder and is in discussions with another to appraise their projects with a view to make long-term financing available. An assessment by AfDB has shown that both projects require concessional funding to enhance their commercial bankability. Under this program, the first project is expected to be approved by June 2016 with the second approved by December 2016. It is noted, however, that CTF resources under this program are expected to be allocated by the AfDB to one or two projects, subject to the timing of the projects' financial close and the need for concessional resources vis-à-vis the CTF's principle of minimum concessionality.		

<sup>6</sup> Same as footnote 3.

<sup>7</sup> Insert N/A if dates cannot be determined at the time of submission (e.g. private sector programs).

<sup>8</sup> Same as note 7.

<sup>9</sup> Insert value or N/A if indicator is not applicable to the project/program.

<sup>10</sup> Choice of upon completion of the project/program, or on the maximum year, or on a representative year.

<sup>11</sup> Same as note 10.

## **DETAILED DESCRIPTION OF THE PROGRAM**

### **A. Country and Sector Context**

1.1 The energy sector in Kenya is largely dominated by petroleum (22%) and electricity (9%), with wood fuel and other biomass accounting for around 68% of the total energy consumption and providing the basic energy needs of the rural communities, urban poor, and the informal sector. Electricity access in Kenya is low despite the government's ambitious target to increase electricity connectivity from the current 23% to at least 70% by 2022.

1.2 In accordance with the Kenya's Power Sector Medium Term Plan (2015-2020), the total installed power generation capacity in the country is around 2,177 MW, of which 820 MW is hydro, 717MW is thermal, 588 MW is geothermal and the rest is wind and co-generation. By 2020, demand is estimated to reach 2,834 MW from 1,512MW in 2014, with an estimated yearly growth rate of approximately 11%. The main drivers for this demand will be growth in population, urbanization and economic activity that will spark investment in the energy sector to meet growing demand. The anticipated electrification of rail lines and the establishment of new economic zones, new urban centers and the objective of providing universal access to electricity in the country will spur further demand for power.

1.3 It is estimated that the projected installed capacity in the country will rise to 6,766 MW by 2020. Geothermal is expected to be the main technology by contributing with a total of around 2,000 MW. Kenya is believed to possess more than 10,000 MW of undeveloped geothermal energy resources in the Rift Valley.

1.4 In 2008, the Government of Kenya (GoK) presented the "Vision 2030", a program which objective is to transform Kenya into a "newly industrializing, middle-income" country providing a high quality of life to all its citizens by 2030 in a clean and secure environment. This goal is based on three pillars - political stability, social development and economic growth. The Vision 2030 identifies energy and electricity as a key element of Kenya's sustained economic growth and transformation. Currently, the total installed capacity in the country is insufficient to serve its population of more than 43 million and will pose significant challenges in terms of economic growth. Therefore, it is not surprising that Kenya aims at increasing generation capacity to 23,000 MW by 2030.

1.5 In order to achieve that goal, the GoK is focused on sustaining a stable investment climate for private-sector participation in the energy sector, expanding transmission and distribution networks to deliver power to customers, maintaining a creditworthy off-taker, maintaining cost-reflective tariffs, and reducing inefficiency in the sector to support more affordable end-user tariffs. Enhancing investment flows from the private sector into the power sector through the promotion of Independent Power Producers (IPP) schemes selected through international competitive bidding processes is one of the key measures put in place by the GoK.

1.6 The above is guided by the Least Cost Power Development Plan (LCPDP), a plan prioritizing implementation of generation projects within a short-term and medium-term framework. The LCPDP identifies geothermal as the main technology choice for the future, with the optimum solution indicating that geothermal capacity could be increased from 253MW in 2014 to 5,530 MW by 2031, representing around 26% of the total installed capacity.

1.7 The Geothermal Development Company (GDC) was established as a dedicated institution responsible for leading the deployment of the planned geothermal capacity into the National Grid. In line

with its mandate, it has identified more than 14 sites along the Rift Valley that potentially hold viable prospects. The Olkaria field is already under operations – though not to its full potential - while the Menengai Geothermal field is garnering considerable interest given the area’s huge geothermal power generation potential as well as the Bogoria – Silali fields.

1.8 In the Menengai geothermal field, GDC has implemented a phased approach with two independent phases. In the first, GDC assumed the exploratory risk by obtaining financing to undertake the required surface exploration and drilling activities that ultimately resulted in proven steam capacity that enables power generation. GDC has then – on a second phase - issued Requests for Proposals (RFPs) to attract bids from private investors that would be responsible for raising the needed equity and debt financing to implement the project under Build-Own and Operate (BOO) schemes. The merits of this approach entail effective utilization of resources, appropriate risk sharing between public and private sector and the release of public funds for other less productive yet vital sectors of the Kenyan economy.

1.9 **Feed-in Tariff Policy.** The Kenya Feed-in Tariff (FIT) Policy dates back to 2008 and it was last revised in 2012. The FIT policy intended to be an instrument for promoting generation of electricity from renewable energy sources. The objectives of the FiTs system are: (i) facilitate resource mobilization by providing investment security and market stability for investors in electricity generation from renewable energy sources, (ii) reduce transaction and administrative costs and delays associated with the conventional procurement procedures, and (iii) encourage private investors to operate their power plants prudently and efficiently so as to maximize returns. For geothermal generation, the FIT applies for 20 years from the date of the first commissioning of the power plants with a scalable portion embedded in the tariff. Table 1 shows the FIT values that apply to geothermal and other renewable technologies with a size above 10MW.

**Table I: FIT Values for Renewable Energy Project above 10 MW**

	Installed Capacity (MW)	Standard FIT (USD/kWh)	% Scalable Portion of the Tariff	Minimum Capacity (MW)	Maximum Capacity (MW)	Maximum Cumulative Capacity (MW)
<b>Wind</b>	10.1-50	0.11	12%	10.1	50	500
<b>Geothermal</b>	35-70	0.088	20% for first 12 years and 15% after	35	70	5000
<b>Hydro</b>	10.1-20	0.0825	8%	10.1	20	200
<b>Biomass</b>	10.1-40	0.10	15%	10.1	40	200
<b>Solar</b>	10.1-40	0.12	12%	10.1	40	100

1.10 **Request for Proposals.** On July 2013, GDC launched a tender for the supply and installation of three geothermal modular plants for a total capacity of 90-105 MW at the Menengai geothermal field on a BOO basis. The tender informed interested bidders that all power generated would be purchased by Kenya Power and Lighting Company Limited (KPLC) under the terms of a 25-year Power Purchase Agreement (PPA) and the needed supply of steam for these plants will be provided by GDC under the terms of a Project Implementation and Steam Supply Agreement (PISSA). These agreements were signed

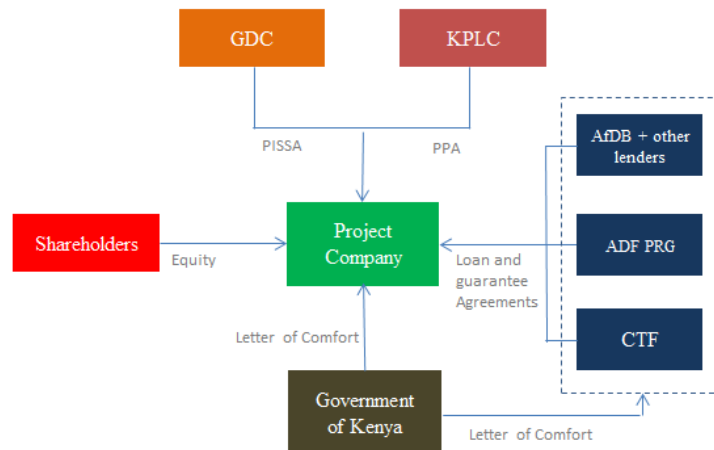
by the relevant parties in October 2014 following the official selection of the preferred bidders by end 2013.

1.11 Both the PPA and the PISSA stipulate a list of Conditions Precedents to effectiveness such as financial closing under the PISSA. Under the same agreement, GDC requires the counterpart to begin commercial operations 23 months following achievement of effectiveness. Under the terms of the PISSA, GDC will supply steam to the IPPs and will receive from KPLC an amount of USD 0.035 per kWh. As per the PPA, KPLC will pay an amount of USD 0.05 per kWh to the IPPs bringing the net tariff of these projects to USD 0.085 per kWh net of the escalable portion of the tariff. These key documents include provisions that rule the compensation of any party in case of underperformance. For example, if GDC fails (or underperforms) to supply steam to an IPP, it has to financially compensate the IPP in the amount of USD 0.05 per kWh that would have been potentially generated and KPLC stops the payment of USD 0.035 per kWh to GDC until the technical issue is solved.

**B. Overview of the Proposed Program**

2.1 The Dedicated Private Sector Program (DPSP), established under the CTF in 2013, was designed to finance programs or operations that can deliver scale (in terms of development results and impact, private sector leverage and investment from CTF financing) and speed (faster deployment of CTF resources, more efficient processing procedures), while at the same time maintaining a strong link to country priorities and CTF program objectives. The DPSP have utilized a programmatic approach where MDBs collaboratively identified private sector funding opportunities. Phase I of DPSP was approved in October 2013 (USD 150 million) and phase II was approved in June 2014 (USD 358 million). The concept paper for the DPSP II was endorsed by the CTF Trust Fund Committee at the June 2014 CTF meeting in Jamaica after being evaluated by the CTF MDB committee and nominated for consideration.

**Figure I: Project Structure**



2.2 The proposed program will be comprised of USD 15 million of CTF funds in the form of long-term concessional debt and will be fully allocated to up to two geothermal generation projects structured as Independent Power Producers (IPPs). Figure I shows an indicative schematic of the structure that will

apply to the projects being supported by CTF under this program. It is important to highlight that the GoK will not provide a Sovereign Guarantee to cover the contractual financial obligations of GDC and KPLC.

2.3 The availability factor of the power plants is estimated to be 94% with electricity being sold to KPLC at the price included in the proposals of the selected bidders. The RFP clearly stated that prices should not exceed USD 0.088 per kWh, a figure that is in line with the FIT policy last revised in 2012. The three projects are expected to have a combined installed capacity of 105 MW and will account for one of the biggest geothermal generation sites in Africa. With this program, the private sector department of AfDB aims at supporting at least two projects and it has already been mandated by a selected bidder, and is in advanced discussions with another. Currently, AfDB's investment teams are undertaking detailed due diligence on the two projects with a view to make financing available to them. Annex I provides further information on the transactions under active review by AfDB.

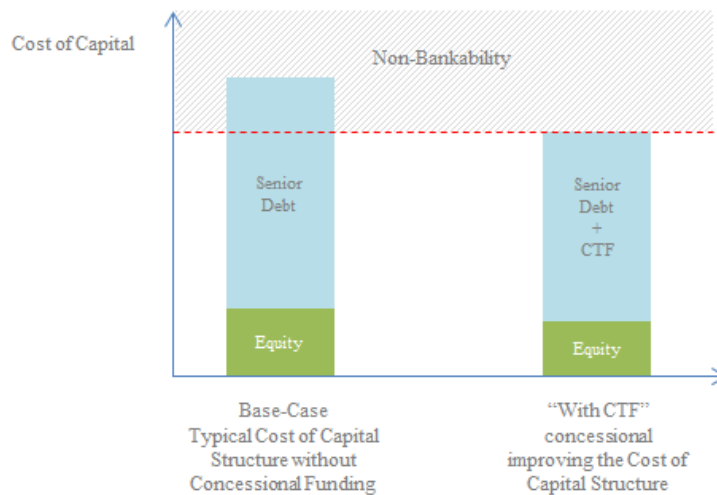
2.4 Following a preliminary assessment of the two projects, it became evident that the proposed structure would need to be improved if the projects were to reach financial close. A number of factors led lenders to this conclusion. These include: (i) no Sovereign Guarantee covering the responsibilities and obligations of GDC and KPLC shall be provided to the projects, (ii) minimum required Debt Service Coverage Ratio (DSCR) outside acceptable limits of lenders' underwriting guidelines (e.g. cash-flows available for debt service over debt service needs below 1.3x), and (iii) insufficient cash-flows to ensure an appropriate risk-return profile to the investors. As a consequence, CTF could play a vital role in:

- i. Enhancing project's bankability by improving the risk-return profile to equity investors and by strengthening the DSCR - through a decrease on financing costs - that have the potential to unlock co-financing from lenders;
- ii. Supporting the development of an abundant renewable energy source in a market where the electrification rate is about 23% and where private sector investment continues to be relatively modest. Support for IPP renewable energy projects will lead to greater demonstration effect, showing over time that the proposed structure is economically viable for private sector investors.
- iii. Providing support in a nascent market, especially as these projects will be the first ones with GDC acting as steam provider and therefore it is imperative that the company builds track record and strengthen their credibility and financial capacity so that concessional funding can be phased out over time.
- iv. Reducing the country's dependence on hydro - disrupted by seasonal patterns - and thermal power sources by contributing to the deployment of up to 70MW of clean, reliable and base-load power. This is especially important since the country is expected to continue requiring base load power.

2.5 For all transactions, the CTF funds will be deployed in tandem with those of AfDB taking the same risk position but with pricing being set at the level of minimum concessionality and considering relatively grace periods, sculpted repayment profiles and interest capitalization during grace period, with the ultimate objective of addressing specific barriers that are impeding these projects from reaching financial close. AfDB will aim to secure the remaining debt required for the individual projects from other lenders. This structure is ideal to create track record and support the evolution of the market. Over time, as a consequence of the track record gained by GDC and KPLC, it is expected that the perceived risk profile of future projects will be enhanced and the utilization of concessional funding can therefore be phased-out. This is already happening in countries such as South Africa and Morocco.

2.6 Figure II shows how the concessionality of CTF funds will catalyze investments for the projects that currently are unable to reach bankability. The Base-case scenario shows a typical project finance capital structure and the associated Cost of Capital of both equity and debt whereby project sponsors are not able to source debt and equity at a cost that renders projects' bankable. In order to overcome this barrier to entry, the "With CTF" scenario shows how the concessionality attached to CTF long-term debt financing is able to drive downwards the Cost of Capital to the point of bankability unlocking in this way the needed debt and equity to build and operate the infrastructure. The comparison of these two scenarios shows how CTF resources fulfill its catalytic and transformational role through the deployment of below-market interest rates.

**Figure II: How CTF concessional debt will assist projects to reach financial close**



2.7 The principle of minimum concessionality is of paramount importance in the establishment of the pricing associated with the CTF loans and shall be established on a case-by-case basis in order to catalyze investments that would not otherwise have occurred with market-based pricing. The ultimate goal is to avoid any market distortion. In addition, it is vital that the procurement procedures implemented by the project companies in sourcing the construction, operations and maintenance contracts are done in a competitive manner ensuring value-for-money.

2.8 The internal processing of CTF funds through AfDB's investment review and approval mechanisms will include ensuring adherence to AfDB's requirements in terms of environmental and social safeguards, as well as commercial viability of projects. AfDB will exercise the same degree of care with CTF funds as it exercises with respect to the administration of its own statutory resources.

2.9 The program proposes to deploy CTF funds in up to 2 transactions over an investment period of 1 year. Recognizing that the CTF amount proposed under this program is relatively small, the final number of transactions will depend on the financial needs of the projects and therefore it could end up restricted to only one project. A pricing floor of 0.75% is proposed with the final price and other terms to be determined during negotiations between AfDB and the borrowers. Table II below presents the indicative terms to be applied to the CTF loans.



**Table II: Terms and Conditions of CTF Funds**

<b>Tenor:</b>	15 to 18 years
<b>Grace Period:</b>	2 to 5 years
<b>Interest Capitalization:</b>	To be considered during grace period
<b>Seniority:</b>	To rank above common equity and <i>pari passu</i> with other senior lenders
<b>Security:</b>	To rank pari-passu with other senior lenders
<b>Pricing:</b>	A floor of 0.75%. The principle of minimal concessionality will be applied and final pricing will be determined based on the project's risk assessment and viability

2.10 The first transaction involving CTF funds is expected to be submitted to AfDB Board for approval by June 2016 with the second one to follow.

### **C. Key Benefits of the Program**

3.1 From a market perspective, the CTF funding offers project developers with a long-term and flexible financing instrument able to strengthen the bankability of projects by filling a recognized and existing financing gap in the Kenyan market. Concessional debt products are less restrictive than senior debt because they put less strain on projects' cash flows and directly contribute to level the risk-return profile of a project by improving project's equity Internal Rate of Return. The financing costs associated with the concessional debt would reduce the cash-flow burden to cover debt service throughout the life of the loans. For senior lenders, benefits from the program would include stronger DSCRs which are vital for lenders obtaining approvals from their respective credit committees. For example, AfDB's credit committee usually only allows for projects with average DSCR of 1.3x. Without this program, the projects would be significantly delayed or put on hold until an increase in tariffs is eventually agreed between KPLC, GDC and the project companies and/or the GoK agrees to provide Sovereign Guarantees which seems very unlikely. One other alternative would be tapping additional equity investors for these projects but this would significantly increase the overall cost of financing to prohibitive levels, thus diminishing the projects' viability.

3.2 The Letter of Support begin envisaged by the GoK provides limited comfort to the lenders. At the request of the GoK, AfDB is looking to provide a Partial Risk Guarantee to cover liquidity risk of both GDC and KPLC for a period of three months, but then again this coverage is seen as insufficient for a project with long-term credit exposure and do not cover for termination risk of both the PISS and the PPA. In this regard, these projects will test a structure that is not usual to financiers in the context of IPPs in Sub-Saharan Africa leading to high demonstration effects in the power sector of the country and the region; CTF could thus greatly enhance the bankability of the projects. Properly structured and well secured, these transactions could mark the beginning of a new paradigm in the financing of similar infrastructure in the country and in the region.

## **D. Market Transformation**

4.1 The longer-term vision of this program is to establish sufficient track record in Kenya so that concessional funding is phased out over time as the replication potential is fully unlocked, in Kenya and across the sub-region. This is even more important as the current projects will not directly benefit from Sovereign Guarantees on the payment and performance capacity of KPLC and GDC, respectively. This arrangement is by no means common in Sub-Saharan markets and carries significant risk to investors and potential lenders. This is especially relevant in the case of GDC which is a company with a limited track record as a steam provider for power generation. As a consequence, the relatively small amount of CTF to be used under this program can be highly catalytic.

### **FIT WITH CTF INVESTMENT CRITERIA**

#### **Potential GHG Emissions Savings**

5.1 With CTF funds of USD 30 million, the Program expects to leverage an additional USD 127 million in equity and debt from other investors<sup>12</sup>. This provides a leverage ratio of roughly 1/5 for a total installed capacity of 70 MW and the generation of close to 576.408 MWh per year of clean electricity assuming an availability factor of 94%<sup>13</sup>. Emission reductions for the program are expected to equal 342,386 tCO<sub>2</sub> per year or 6,847,720 tCO<sub>2</sub> for the estimated 20 year lifetime of the projects. More detailed information on the assumptions made in these calculations can be found in Annex II.

#### **Cost Effectiveness**

5.2 With total CTF funds of USD 30 million and estimated emission reductions of 6,847,720 tCO<sub>2</sub> over the life of the project, the cost effectiveness of CTF funds is roughly USD 4.38 per tCO<sub>2</sub>. Including all leveraged financing, with total funds of USD 157 million, the cost effectiveness will decrease to roughly USD 22.9 per tCO<sub>2</sub>. More detailed information on these calculations can be found in Annex II.

#### **Potential Replication and Scale-up**

5.3 The replication and scale-up potential in Kenya is significant given the estimated geothermal potential of 10.000 MW and the goals established by the country up to the end of its Vision 2030. The replication effect can in the medium to long-run materialize in Kenya and across different countries along the Rift Valley (namely Ethiopia, Djibouti and Tanzania) leading to further benefits in terms of GHG reductions at a regional level. It would send a strong message to larger institutional investors that climate-related investments can provide attractive risk-adjusted returns and deal appropriately with market, operational and regulatory risks associated with green investments in emerging markets. In developing countries, increasing the deal flow would provide authorities with the experience, familiarity and capacity to manage future similar transactions.

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<sup>12</sup> Assuming a total of two projects will be supported by the program. Since both projects have the same expected installed capacity, the cost effectiveness would be halved if only one project ends up being supported.

<sup>13</sup> As per ESMAP, the Olkaria I Geothermal Power Plant has an annual average availability factor of 95%.

## **Development Impact**

5.4 The program will lead to a direct increase in affordable and reliable electricity supply to households, businesses and industries. The program will contribute with a total of up to 70 MW in installed capacity that will result in 576.408 MWh of additional energy assuming a plant factor of 94% (typical for geothermal power plants). This additional power will contribute to meet the supply side targets set out in Kenya's Power Sector Medium Term Plan (2015-2020) by ensuring that the expansion in generation capacity is affordable, accessible and help the country meeting its international commitments on the deployment of clean energy.

5.5 Lack of access to productive electricity is increasingly acknowledged as a key obstacle to social and economic development in Kenya. If 70 MW are installed as a result of the program, the additional installed generation capacity will be equivalent to around 3% of the total installed generation capacity in the country and contribute to improve the availability of electricity for grid-connected households and businesses. Kenyan consumers will benefit in the form of more reliable and affordable electricity supply which will in turn stimulate economic activity and promote greater economic growth. The project will provide opportunities for the development of small businesses, and increase employment opportunities and incomes, thereby helping to improve overall quality of life. Kenya as a country will also reap the economic benefits of a diversified, climate-resilient and secure energy mix, by reducing its dependence on hydro and thermal generation.

5.6 The local communities surrounding the Menengai field are already benefiting from local job creation as well as business and other opportunities will arise in the services sector. In fact, these projects are expected to create a total of 300 jobs during construction and up to 50 during operations. Women will particularly benefit from the project, as the employment ratio of women is expected to be at least 30%, a figure above the current national women employment ratio in the country.

## **Implementation Potential**

5.7 Initial assessment indicates a strong demand for this program and therefore the implementation potential is considered high. AfDB has already began due diligence on projects, and it is expected that financial close for both projects will occur before the end of 2016.

5.8 It is worth mentioning that when the RFP was launched in 2013, the expectation was for these power plants to reach commercial operation date by the end of 2014. This did not happen because investors were not able to reach financial close due to unfavorable market conditions that included potential lenders requiring a degree of coverage and security that was underestimated by the bidders. All involved parties are keen to fast track the implementation of these transactions and as consequence the implementation potential of the program is very positive.

5.9 As of October 2015, the geothermal potential already proven in the Menengai field that allows for on-grid power generation amounts to around 180 MW. The 70MW proposed under this program are part of this amount. This suggests that new RFPs could be launched in the future by GDC.

## **Additional Cost and Risk Premium**

5.10 The fact that the GoK has decided not to provide a Sovereign Guarantee to cover the financial obligations of both the off-taker and the steam provider results in an investment framework that is perceived to be high-risk due to higher early first-mover risk with a GDC as a counterpart with zero track-

record as steam provider. This structure leads to higher entry costs when compared to conventional financial structures as perceived risks result in limited access to financing and high premiums for the projects.

5.11 Due to the degree of knowledge that AfDB has developed in Kenya by working with other IPPs, the economic viability of these projects is well understood when projects have access to financing at adequate terms and sound security packages. Currently, the interest from private sector companies in long-term investments in power infrastructure in the country is considerable but, these investments will only see the “light of day” if they have access to long-term debt financing.

### **Financial Sustainability**

5.12 The Program’s financial sustainability is inherent to the economic viability of the identified investments and the demonstration that these projects will offer over time as the risk perception by investors is positively affected due to gains in the evolution of geothermal generation in Kenya. As a consequence, financing costs should decrease in order to reflect this new risk-return profile. This should raise the interest of local financial institutions, institutional investors, other companies, and developers through co-financing, technical cooperation and training, and the dissemination of case studies profiling the projects supported. AfDB will aim at supporting one to two projects with this program. This is due to the limited amount of available CTF funding for the DPSP II for geothermal generation which limits this proposal to only USD 15 million. In the worst case scenario (one project only), CTF may finance up to 25% of a project’s total cost.

### **Effective Use of Concessional Finance and Mitigation of Market Distortions**

5.13 Concessional debt funding offers numerous benefits for project developers, and is particularly suitable for companies that are establishing themselves in countries where access to capital for equity and debt is limited. This situation is relatively common for climate finance projects in low-income countries. In contrast to non-concessional senior debt, concessional debt financing charges below market interest rates, which drives project costs downwards and/or improves the availability of cash-flow that is required to service debt. When utilized in conjunction with senior debt, the characteristics of concessional debt can highly improve the credit profile of the project.

5.14 In the context of this program, AfDB will ensure that no market distortions are created and that the interest rate charged on the CTF loan is set to a minimum value. The objective is to ensure that the financial covenants proposed under the loan agreements are realistic and achievable by the projects. This will be done through detailed sensitivity analysis of the projects’ financial models and in close cooperation between lenders and their technical and financial advisors.

### **Risks**

5.15 The table presents a summary of the key risks involving this program, corresponding severity and proposed mitigation measures.

<b>RISK</b>	<b>MITIGATION</b>	<b>SEVERITY</b>
<b>Technical</b>	The design of the power plants are based on single-flash steam cycles with condensing turbines. Nominal gross capacity is expected to be above the 35MW per plant and construction companies will be requested to guarantee net plant outputs of 35 MW. The technology is proven worldwide and no particular challenges are anticipated. In addition, a fixed turn-key contractual arrangement that will govern the design, supply, construction, assembly and delivery of each respective project. Liquidated damages and performance guarantee clauses will be embedded in these contracts.	Low
<b>Steam Supply</b>	GDC is responsible for the drilling, producing and delivering a pre-agreed quantity and quality of steam to the projects' site under the 25-year PISSA. Under this agreement, GDC will pay deemed energy payments which covers the generation portion of each project if the supply of steam is deficient and/or development of the steam gathering facilities is delayed. The envisaged PRG covers up to three months' worth (calculated on deemed energy capacity of each power plant) of financial compensations to the IPPs should GDC be unable to cover its obligations and until a financial injection is made by the GoK into the company.	Medium
<b>Power Evacuation</b>	The power produced will be sold under a take or pay PPA with KPLC. In addition, KPLC assumes the responsibility for the obligation of KETRACO in the construction of the transmission line. KPLC has a history of dealing with IPPs and has up to today fulfill its financial obligations. Lenders will closely monitor the construction of the transmission line	Medium
<b>Contract Termination</b>	In case of contract termination, the PRG will not be sufficient to fully mitigate termination risk as the guarantee was structured to cover up to three months of financial obligations of GDC and KPLCL under the PISSA and PPA respectively. Therefore, if no corrective measures are put in place by the GoK following contract termination and exhaustion of the proceeds of the PRGs, IPPs will enter into financial distress. This is a key project risk and lenders will seek to strengthen the GoK's Letter of Support to help mitigate it. In addition, lenders will explore the possibility of obtaining political coverage (e.g. MIGA) to fully mitigate this risk.	Medium
<b>Credit</b>	The size of GDC's balance sheet is currently incommensurate with the financial obligations the company will be assuming under the PISSAs should underperformance be an issue. If it materializes, GDC may face difficulties in settling the compensations due to the IPPs, which in turn may see themselves entering a situation of financial distress. This is exacerbated by the fact that KPLC would partially halt payments of steam to GDC as a result of that underperformance. In structuring the CTF loans, lenders will consider among others the following: (i) capitalize CTF interest during grace period, (ii) to implement a sculpted debt repayment profile, and (iii) extend the grace period during the first years of operations. The implementation of these measures, together with the PRG, would put less stress on the IPPs' cash needs required to service debt.	Medium

## PERFORMANCE INDICATORS

6.1 The performance indicators outlined below are derived from the CTF Results Measurement Framework and will be monitored and reported in accordance with CTF guidelines.

**Table III: Program Performance Indicators**

<b>Core Indicators</b>		<b>Result</b>
<b>GHG Emission Reductions</b>	Annual (tCO <sub>2</sub> per year)	Up to 342,386
	New renewable energy installed capacity (MW)	Up to 70
<b>Electricity Production</b>	Additional Power Generation (MWh/year)	Up to 576.408
<b>Cost Effectiveness of CTF funds (USD/ tCO<sub>2</sub>)</b>		3.47
<b>CTF Financial Leverage</b>		Up to 1 / 5
<b>Employment</b>	# of Jobs Generated	350

## Annex I: Pipeline of Projects

### **PROJECT I**

Capacity:	35 MW
Expected Date Financial Close:	June 2016
Estimated Total Cost:	USD 70 – 80 million

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### **PROJECT II**

Capacity:	35 MW
Expected Date Financial Close:	December 2016
Estimated Total Cost:	USD 70 – 80 million

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## Annex II: CTF Investment Criteria Calculations

<b>SOURCE OF FUNDS</b>	<b>USD million</b>	<b>%</b>
Senior Debt	82.0	52%
CTF Concessional Debt	30.0	19%
Equity	45.0	29%
<b>TOTAL</b>	<b>157.0</b>	<b>100%</b>

<b>LEVERAGE</b>	1 / 5
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<b>EMISSION REDUCTIONS</b>	
Estimated Cost per MW (USD million)	2.24
Installed Capacity of the Program (MW)	70.00
Capacity Factor	94%
Annual Generation (MWh / year)	576,408
Project Life Time Generation (MWh)	11,528,160
Grid Emission Factor (tCO <sub>2</sub> / MWh)	0.594
Annual Emission Reductions (t/CO <sub>2</sub> )	342.386
Project Life Emission Reductions (tCO <sub>2</sub> / 20 years)	6,847,727

<b>CTF COST EFFECTIVENESS</b>	
CTF Funds (USD million)	30.0
Emission Reductions for the Program (tCO <sub>2</sub> )	6,847,727
Cost Effectiveness of Total Funds (USD per tCO <sub>2</sub> )	4.38

<b>PROGRAM COST EFFECTIVENESS</b>	
Total Funds (USD million)	157.0
Emission Reductions for the Program (tCO <sub>2</sub> )	6,847,727
Cost Effectiveness of Total Funds (USD per tCO <sub>2</sub> )	22.9

<b>JOBS CREATED</b>	
Direct	350
<b>TOTAL</b>	<b>350</b>