

Responses to the SREP Sub-Committee

Geothermal Sector Development Project (GSDP) SREP (World Bank)

1. We do not see an Independent Technical Review of this Project Proposal as is required by the SREP procedures. We would appreciate if this could be forwarded for our consideration in this process.

WB: There is no requirement from SREP to submit independent technical reviews for individual projects; it only applies to country investment plans. The WB, as part of its usual due diligence, reviewed this project in a Decision Meeting; where the project was reviewed by WB technical specialists outside of the Africa Region, on its technical design and scope, financial and economic feasibility, environmental and social safeguards, financial management, and other fiduciary aspects.

2. It appears that in spite of SREP's design principle to encourage private sector investments and recent shifts by the Government of Ethiopia in the structure of the market - this proposal excludes the possibility of private investment. In the context of the SREP objectives and the sector shift already in progress – why is it proposed that the SREP funds are used for an entirely donor-funded, state-delivered project? Might this in fact have a negative impact on market perception and investment?

WB: Consistent to the SREP Sub-Committee approved *Investment Plan for Ethiopia*, the Aluto project, first significant geothermal project in Ethiopia, is designed as a public sector financed project. The purpose of SREP support to develop the geothermal and wind projects is to show the technical and financial viability of long-term geothermal and wind power development in the country, thus opening the way for the sustainable improvement of the energy mix of the national grid by reducing over-dependence on hydro power, and consequently achieving a degree of climate resilience for the national power system. The goal of using SREP funding for grid connected renewable energy projects is to unlock the future potential of private sector investment in the sector which will have long-term benefits for reducing energy poverty in Ethiopia. The GoE has the intention of making this field a training center to enhance the national capacity to execute similar projects in other sites of the country by both the public and the private sector. This will add value to the local components of similar projects in the future and thus reduce costs and increase viability of geothermal projects in the country. Please also find attached the Q&A from the Investment Plan review stage which also addresses this point.

3. The PAD mentions in several places that the tariff is not at economic levels and that this should be reconsidered such that the energy sector can move towards financial viability. We would appreciate some information on the GoE's position on this, given that at present it appears that SREP is being asked to contribute financing to a power project in a non-viable market context - which does not match with SREP's ambition to support sectors which have transformational potential.

WB: The Bank shares the concern on the depressed domestic tariff rate and the overall financial viability of the sector. The Bank has raised these issues as part of the ongoing policy level dialogue with GoE authorities; and GoE plans to address this issue as part of its ongoing power

sector transformation program. It must be noted that the sector is able to meet all operating expenses from the operating revenue and generates operating profit (before interest, tax, and foreign currency fluctuation). The main concern to the sector's financial viability stems from the debt service obligations, as the sector financed its long term infrastructure investments through short term financing.

As the project will start generating revenue after commissioning the planned power plant, and the economic life of the project is assumed to be about thirty years after commissioning, the analysis assumed a conservative growth in tariff over the next few years, which is: US\$ 0.03/kWh (2014) increasing to US\$0.05/kWh (2017), increasing to US\$0.07/kWh (2020).

4. The PAD suggests that Geothermal is a “relatively new technology in the region” however geothermal exploration has been ongoing in East Africa since the 1970’s. The capacity issues of the proposed lead entity EEP with regards to geothermal, procurement and financial management is noted in several places. What evidence is there that the proposed delivery approach can overcome earlier barriers faced by the same (or predecessor) entities?

WB: Despite early stage activities ongoing in the rift valley, and in Ethiopia, the geothermal technology (assessment of resources, including exploratory drilling, harnessing of steam to generate power, etc.) remains a relatively new technology from an implementation expertise standpoint. In Ethiopia, there is only one experimental power plant that can generate 3MW when operating. In addition, the implementation capacity of EEP, being a new institution, are also concerns shared by the Bank. In this regard, the project will provide comprehensive capacity building and technical assistance support (funded by IDA, Component 4) to bolster the implementing agency as well as provide the appropriate international expertise, as appropriate. Furthermore, the project implementation design requires that EEP appoints a full service drilling contractor to drill and test the geothermal wells; assigns owner's engineer with on-site Advisor and off-site Advisory Committee to support implementation of the Aluto geothermal project.

5. While the PAD makes brief reference to a number of other initiatives, it is not evidenced that this project is fully co-ordinated and complementary to these – including the existing SREP support to the Geothermal Sector Strategy via IFC. Can the alignment between this proposal and the Geothermal Sector Strategy be explained more clearly (including the proposed \$3m Legal, Institutional and Regulatory Framework Development work)? How does this project link to the Geothermal Risk Mitigation Facility (this is referenced only once, in Annex 3)?

WB: The proposed project is the result of a coordinated sector approach amongst several donor partners. IDA and Government of Japan (GoJ) financed exploration activities at Aluto through a different project. To advance the Aluto project further; and to support geothermal sector development in future; GoE requested SREP financing. The SREP financing allocated to Aluto leveraged financing from IDA, ICEIDA, GoJ and GoE. While IDA and ICEIDA are supporting the upstream activities of developing the geothermal steam field, GoJ plans to support the proposed project through financing power generation and evacuation facilities. To support future geothermal sector development the IFC, using SREP fund, is supporting the GoE in the

preparation of a Geothermal Sector Development Strategy to attract private sector investment. GoE has started discussions to develop its Corbetti geothermal site through private sector and have received support from USAID for this transaction. Corbetti project sponsor has requested support from Geothermal Risk Mitigation Facility (GRMF). The IDA/GoJ supported Aluto exploration project couldn't benefit from the GRMF as the facility was not in place when that project was prepared. The current phase of the Aluto project is not eligible for GRMF as the exploration phase has already been financed by IDA/GoJ.

6. The requested SREP support is for 'drilling consumables'. We would appreciate further information on what is included in this, why this is considered the best use of SREP resources, and why SREP support in this area is additional.

WB: Drilling consumables are essential technical equipment (such as drill bits, drilling pipes, etc.) that are core parts of the cost, and hence the risk of exploration of geothermal sites. SREP's financing is proposed to be earmarked for the highly specialized and costly component of exploration which will assist the GoE in mitigating the inherent risk of geothermal development.

GoE allocated the SREP fund first to support this phase of Aluto geothermal project and effectively used it to leverage additional financing. At the time of SREP IP approval only US\$ 10 million of WB co-financing was secured for resource development phase with an indicative amount of US\$ 50 million for power plant construction phase. SREP supported Investment Plan was used as a strategic framework to mobilize additional funds. The Bank worked closely with GoE and through its compact with Government of Iceland, ICEIDA committed US\$ 3.5 million GoE. Bank has proposed about US\$ 179 million to support geothermal development in Ethiopia and a discussion with Government of Japan is ongoing to finance about US\$ 110 million to Ethiopia.

7. We would appreciate seeing the evidence to back up the 25% dry well assumption. The recent IFC proposal in Ethiopia on the Geothermal Sector Strategy cited 50-70% dry wells being typical.

WB: Overall, a failure rate of 50-70% has been factored in the number of planned wells to be drilled and in the economic analysis. For instance, for the planned 70 MW Aluto site, 14 wells will be needed (assuming 5MW capacity per well), whereas the project plans to support drilling of 26 wells. This will be clarified in the PAD.

8. We request that the expected financing from the Government of Japan to build the power plants should be counted in a consistent way and that the WB approved co-financing numbers match the TFC approved co-financing numbers.

WB: GoE plans to develop the Aluto geothermal project in two phases. The first phase focuses on upstream geothermal steam resource development with financing support from SREP, IDA, ICEIDA and GoE. The power plant and associated evacuation facilities will be developed in the second phase. The proposed GSDP development objective is limited to scope of the first phase only; and financing for this phase has been confirmed. GoE is fairly advanced in discussion with GoJ for a soft loan of up to US\$ 110 million to finance the second phase development. The

PAD explains this two phase project design in detail. Due to the World Bank internal procedures the co-financing for the Phase II is not presented in the financing table and only captured in the SREP annex..

9. It appears there are some resettlement issues associated with the Aluto drilling site, but the ESIA documents do not clearly state if resettlement will occur as a result of the project. Will resettlement happen at the Aluto site? If so, how many people will be affected and is there a resettlement plan the Bank can share?

WB: The EEP prepared the ESIA and RPF for the Aluto geothermal site considering the development of geothermal wells, steam gathering system, 70 MW power plant, substations and transmission line. However, this project scope will be developed in two phases. The first phase will be limited to drilling the geothermal wells and installing the steam gathering system. After completing the first phase, a feasibility study will be carried out to determine the power plant size, location, design; substation location, size; and rout of the transmission line. The proposed GSDP project scope is limited to the development of the first phase only; drilling of geothermal wells, and connecting the wells with pipes (steam gathering system). Specific location of these geothermal wells is at present unknown, and hence a RPF has been prepared and disclosed instead of a RAP. EEP is at present drilling 4 test wells in Aluto, and based on the information obtained from these test wells, the drilling plan for GSDP will be prepared. EEP will prepare the RAP, when the specific drilling locations have been identified and before starting implementation of the drilling plan.

10 On page 20 of the PAD, an 8% and 10% discount rate is used to estimate the EIRR. Typically, the World Bank recommends using a discount rate of 12% to calculate NPV of EIRR in developing countries. Why are 8 and 10 used instead of 12?

WB: This is a typographical error and has been fixed in the latest version of the document. The discount rate used in economic and financial analysis is 10% and 12%, as per the usual practice.

11. Power exports to Kenya and others play a prominent role in the eventual success of these projects. Please elaborate on the impacts to the long-term viability of the project if the interconnector to Kenya is delayed beyond 2017. Can these projects success without substantial power exports and does the focus on exports negatively affect domestic access?

WB: The PAD indicates that while regional exports are important for the GOE, the viability of the geothermal project is not dependent on the export market. There is fast growing domestic demand for power that can consume the additional 70 MW of power that the Aluto site is expected to produce.