June 27, 2017

[APPROVE BY MAIL]: NICARAGUA: GEOTHERMAL DEVELOPMENT PROJECT (SREP) (WORLD BANK)- XSRENI053A

WORLD BANK RESPONSE TO COMMENTS FROM SWITZERLAND

[#1.a.i]
As detailed in page 16, paragraph 36 & Figure 4 of the Project Appraisal Document (PAD), the primary owners of CCP are the Empresa Nicaragüense de Electricidad (ENEL) representing the Government of Nicaragua (GoN), and the private entity, Polaris Infrastructure Incorporation (Polaris). The Geothermal Law [Ley de Reforma a la Ley No. 443] in Nicaragua requires that the GoN, through ENEL, have at least a 10% ownership in geothermal concessions, which is the present case. As the development of the project progresses, the public-private share will adjust in accordance with the investments made by each party, but the majority ownership will remain with the private sector.

[#i.a.ii]
As indicated on page 10 paragraph 21, and page 16 paragraph 36 of the PAD, the GoN carried out an open international tender in January 2009, at the conclusion of which, the exploration rights to the Casita-San Cristobal geothermal field (i.e. concession) were awarded to a consortium that in accordance with the Geothermal Law, designated CCP as the entity that will carry out the development (i.e. concessionaire or implementing agency). Since the international tender took place prior to its involvement in the project, the World Bank, as a part of its due diligence, funded an independent legal review of the process by an internationally reputable law firm. The review confirmed that the tender process and the award of the concession for the Casita-San Cristobal geothermal field was in compliance with Nicaraguan law, and that it met the World Bank's requirements for PPPs.

[1.a.iii]
As mentioned on page 15, paragraphs 32 & 33 of the PAD, a Global Survey was carried out by the World Bank , which indicates that a cost-shared approach to resource risk mitigation has been successfully applied to advance geothermal development in several countries, especially when the private sector is involved. With regards to Nicaragua, the proposed approach was selected through a process of information sharing about global experience and a multi-stakeholder consultation. The cost-shared risk mitigation approach also fit well with the requirements under the Geothermal Law for private developers to partner with ENEL under a PPP arrangement, as is the case with the Casita-San Cristobal geothermal development.

The public funds, which make up about 30 percent of the overall estimated projects costs, are strategically injected to support the project with the activities where it is particularly challenging for the private sector to mobilize funds in order to have maximum impact in advancing the project. While CCP has invested US$8.49 million to advance the project thus far, Polaris, has been unable to raise the necessary risk capital since 2011 to complete the high-risk exploration stage. Therefore, public funds (SREP and IDA) are being first injected to overcome this hurdle by completing the high-risk exploration stage to confirm the geothermal resources at the Casita-San Cristobal field. While exploration and resource confirmation substantially reduces project risks, there is still considerable residual risks that remain when developing a greenfield geothermal project. Therefore, further risk capital (albeit less-riskier than during exploration) in the form of equity is still required to develop the full steam field. Experience indicates that raising funds to develop the full steam capacity (which is often required by financiers before extending loans) can be drawn out and lead to delays. Therefore, additional public funds (IDA) and private equity (Polaris) will be injected at this critical stage to advance the project so that it is well positioned to raise the larger amount of private financing for completing the steam gathering system (SAGS) and the power plant. Without the strategic intervention of IDA/SREP support, it is unlikely that the

project can complete the necessary upstream development and leverage private equity as well as debt.

[1.b]
The Power Plant is expected to be connected via a transmission link to the national grid, which is operated by ENATREL, the state-owned transmission company. A main, 230 kV, branch of the national transmission grid operated by ENATREL passes 6 km northeast of the planned power plant site of the Casita-San Cristobal geothermal field. CCP will construct the 6 km 138 kV transmission link to the national grid along with the substation in accordance with national transmission specifications, which will be handed over to ENATREL for operation and maintenance. The cost of the 6 km transmission line to interconnect the power plant is included in the estimated project costs.

[2.a]
As indicated in page 10, paragraph 21 of the PAD, Polaris has invested US$8.49 million in private equity in CCP to date, which covered the costs of the surface reconnaissance activities (geological, geophysical and geochemical studies), acquisition of necessary land, construction of a 12 km access road to the project area and a drilling pad, drilling of a 842 m slim/core hole, licenses and permits, and office and administrative expenses. CCP has provided the World Bank a detailed registry of the US$8.49 million invested from 2009 till 2015 that has been reviewed as a part of the due diligence. ENEL, as the partner in the PPP has also reviewed the costs, as a part of its ownership responsibility.

[2.b.i]
The goal of an exploration program is to gain maximum knowledge about the field characteristics so that the steam field can be developed efficiently with less risk. Therefore, the proposed 3-5 full-size well exploration program has been designed along the lines of good industry practice, and the resources allocated are expected to be fully utilized for delineating the reservoir capacity, productive resource area, and ascertaining the reinjection viability. It is anticipated that the SREP funds will be utilized entirely for the exploration program. Any cost savings would be due to lower drilling costs (i.e. depth or in less time), which cannot be predicted beforehand, except to apply industry standard costing, as is the case with the proposed drilling plan. The SREP funds, which will cover the initial costs of the drilling program, are expected to be fully utilized at the conclusion of the exploration program. We recognize that the explanation in the PAD may not be clear, and will revise the text accordingly, prior to seeking World Bank Board approval.

[2.b.ii]
As noted previously, the full exploration program is expected to be undertaken. Any savings may be in the form of lower drilling costs per well, which cannot be determined ex-ante.

[2.b.iii]
Given that the total cost of the exploration program ($40 million) far exceeds the SREP allocation of $15 million, the SREP funds are expected to be fully utilized to mitigate geothermal resource risks. IDA funds will also be utilized to cover the remainder of the costs. This will be further clarified in the PAD.

[2.b.iv]
This is not applicable to the SREP as no funding is expected to remain after the exploration drilling stage (see responses above). However, if there were any funds remaining, they will be used to fund production and reinjection drilling since there are still considerable resource risks and financing challenges at this stage.

[2.b.v]
See 2.b.i. and 2.b.iv responses above.

[2.c.]
To date the private partner of CCP has invested an estimated US$8.49 million for surface studies and reconnaissance, and has committed to contributing an additional US$27.7 million in equity for the production drilling stage, and an estimated US$10 million for the SAGS and power plant stage. This injection of considerable equity and the substantial de-risking of the project is expected to leverage and mobilize private financing to cover the remaining investments in the SAGS and the power plant. There are a number of multilateral private financiers [1], including the International Finance Corporation (IFC), which have financed geothermal facilities in the past, including in Nicaragua, that are likely candidates for extending loans to CCP. In fact, several of these financiers (IFC, CABEI, IDB, FMO, Canada Export Development, Cordiant Capital) have already extended credit to Polaris for the development of the San Jacinto-Tizate field in Nicaragua.

[2.d.]
GCF funding, as indicated in the SREP IP, was not contemplated to co-finance this proposed project. As mentioned in the response to 2c above, financing is being sought from the private partner of CCP, the IFC, and other interested financial institutions.
In the SREP IP (pg. 96, section 3), with regards to GCF funding it says that:
"Going forward, the proposed MDB/SREP supported intervention by the GoN will also better place future Nicaraguan geothermal developments to be able to access regional and global opportunities such as the GDF and GCF, should they become operational and available."
Thus, in the future the PPP cost-sharing approach demonstrated by the proposed project, could be replicated in other fields or to expand geothermal capacity at Casita-San Cristobal with financing from GCF or other sources if available.

[3.a.]
The beneficiary figures in the SREP IP were high-level estimates. For all the geothermal projects in the SREP IP it was estimated that 4.8 million people in Nicaragua connected to the national grid that could benefit from lower rates (see SREP IP pg. 53, row G2-potential in beneficiaries). The SREP IP figure of 400,000 mentioned in the question refers to the estimated number of improved cookstoves that could be adopted, which is for a different investment under the SREP IP (see SREP IP pg. 106, Subcomponent #2B).
For the geothermal resource risk mitigation project in the Casita-San Cristobal field, the WB estimates that the 35 MW power plant could supply enough electricity to meet the consumption needs of up to 1,236,642 people. See page 29, paragraph 19 of the PAD for more details.

[3.b]
Based on the progress made by CCP thus far, the GoN granted it an exploitation concession to develop the Casita-San Cristobal geothermal field in accordance with Nicaragua's Geothermal Law. The concession provides CCP the exclusive development rights to the field, consistent with good industry practice which is to not have multiple developers exploiting the same geothermal resource. Therefore, CCP can develop the 35MW initial power plant under the proposed project, and continue to expand the generation capacity in the field in the future.

[4.a.i]
A projected oil price of US$89.7/barrel (in real terms) was used based on estimates from the US Energy Information Administration's "Short Term Energy Outlook". Further sensitivity

analysis was also carried out to assess the impact of changes in the projected oil price, on the outcome of the project.

[4.a.ii.]
The biggest benefit from the project will be the lower electricity generation costs, which will be passed through to customers in electricity tariffs and will also help reduce the fiscal burden on the GoN of providing electricity subsidies for a significant portion of Nicaragua's electricity customers. This will free up GoN resources to invest in other important public programs and help the overall population by reducing the requested tax revenues needed to fund them. The electricity customers and GoN would also stand to benefit from the enhanced energy security given the reduction in fuel imports and since geothermal is an indigenous resource that unlike fuel oil power generation, is not subject to oil price volatility. Both the public sector (ENEL) and private sector (Polaris), the two owners of CCP, would benefit from the return on their geothermal investment. Moreover, the general population located in nearby areas of the project will benefit from the reduced local pollution, while the international community in general will benefit from the mitigation of greenhouse gases (GHGs).

[4.b.]
Consistent with common industry practice for geothermal projects, the off-taker price will be determined following the resource confirmation and the completion of the project's full feasibility assessment. The electricity off-take price that will be part of the power purchase agreement (PPA) will be established, as with all power projects in Nicaragua, through negotiations between the developer and the offtaker (two private distribution companies - Disnorte or Dissur), which will be subject to review by the Ministry of Energy and Mines and the Regulator (INE). Since the GoN, through ENEL, is integrally involved in the project, they will be in a position to ensure that the off-take prices that are agreed reflect the reduction in risks and costs due to the SREP/IDA intervention. The returns that are estimated for the private developer are based on industry estimates for each stage of the project (take into account the different risk/return profiles at each stage). The GoN's primary objective is to secure the lowest possible prices commensurate with the risks of the project.

[5.a.]
While not all project risks can be valued on a quantitative basis, Section 5 of the PAD (pg. 18, paragraph 41) describes the main risks and measures designed within the project structure to try to mitigate them to the extent possible. The WB also conducted sensitivity analyses on several key risks to determine the potential impact on the geothermal project's LCOE. The potential risks evaluated included reduced well productivity, increased investment costs, and a lower net capacity factor. The results of the analysis showed that even with moderate changes[2] in these key parameters, the project's LCOE would be significantly below that of a similar fuel oil plant and also under the GoN's indicative price cap for geothermal of 9.20 US cents/kWh. This indicates that the project is sufficiently robust to adapt to a range of potential risks.

[5.b.]
Electricity distribution in Nicaragua is through two private concessionaires - Disnorte and Dissur – that supply about 95% of the market. For the Project, the off-takers will be either Disnorte or Dissur, which have more than one million customers (roughly 5 million people) in a country of 5.8 million people. Polaris reports that the country's two distribution companies have a good track-record of fulfilling their Power Purchase Agreements (PPA) with power generation companies (including for the San Jacinto geothermal plant) so the risk of default is expected to be minimal. There are also other financially strong offtakers in

Nicaragua (including mining companies and large industrial customers). The geothermal project is also located very near the SIEPAC regional transmission interconnection so there is also potential to export energy to other offtakers. The existence of additional offtakers that power could be sold to, both within and outside of Nicaragua, further mitigates this risk.

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[1] (Other sources of potential multilateral and private financing include: the IDB, JICA, the Central American Bank for Economic Integration (CABEI), DEG, FMO and Proparco

[2] The specific scenarios tested included: (i) the project's total investment costs increase by 8%, or (ii) the project's well productivity declines from 7MW (base) to 5MW and investment costs increase by 4%, or (iii) the power plant's availability factor declines from 96% (base) to 90%

[3] Sanyal, Subir K., Ann Robertson-Tait, Migara S. Jayawardena, Gerry Huttrer and Laura Berman. 2016. Comparative Analysis of Geothermal Resource Risk Mitigation Mechanisms: A Global Survey. Washington, DC: ESMAP (Energy Sector Management Assistance Program), World Bank Group. www.esmap.org/node/56863