

Responses to Comments and Questions from the CTF TFC Members on the Sustainable Energy Facility for the Eastern Caribbean Proposal

Prepared by the Inter-American Development Bank (IDB)

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We would like to thank the governments of Germany and the United Kingdom for their written comments and questions. Please find below our responses.

Questions from Germany

Q: On cost-effectiveness: please respect the TFC decision that cost-effectiveness has to be provided not only on a CTF investment but also on a total investment basis. Furthermore cost-effectiveness (or its inverse) must not be mixed up with (marginal) abatement costs.

A: We confirm that the unit abatement cost of the program as a whole is estimated at USD 52 per metric ton of CO₂e (or 0.019 tCO₂e/USD). The abatement costs considering only the CTF resources are 2.0 USD/tCO₂e (or 0.51 tCO₂e/USD). These figures correspond to cost-effectiveness, and not to marginal abatement costs.

Q: Saint Kitts and Nevis (SKN) is a non-CIF country and highly indebted. At its June 2014 meeting the CTF TFC decided for DPSP Phase II (see Summary of the Co-Chairs, para 14): “Should a project or program proposal foresee project activities in a country assessed at being at moderate or high risk of debt distress, the MDB is requested to conduct a macro-economic analysis to evaluate the potential for the CTF project or program to impact the country’s debt sustainability. Such analysis should be included as an annex when the project or program proposal is submitted for approval of CTF funding.” Has such analyses been conducted and if so what is the impact of the proposed program for SKN’s debt sustainability? Are there alternative solutions

A: The SEF program was structured in such a way that risk of debt distress for the countries was minimized. In the case of St Kitts and Nevis, it is expected that there will be no serious impact to the country’s debt sustainability by the CTF-supported project due to the fact that a public private partnership (PPP), most probably in the form of a Special Purpose Vehicle (SPV) with a majority owned by a private sector consortium, will be the one that takes debt, with no sovereign guarantee required by the country. Additionally, by developing contingent recovery grants (CRG), in this case with the use of CTF resources, the risk of failure during geothermal exploration is reduced. In any case, the IDB, together with the CDB, will accompany the entire process of financial structuring of the project by the Nevis Island Authority and private developers and will make sure that loans provided by the SEF will not have a negative impact on SKN’s debt sustainability.

Q: The geothermal potential in the Caribbean mainly concentrates on a few smaller islands. Is there any potential for replication / scaling up?

A: There is potential for scaling up in Saint Kitts and Nevis (SKN), Dominica (DOM) and eventually in Saint Vincent and the Grenadines (SVG). In SKN there is potential for scaling up through a second phase, adding another 25MW of geothermal generation capacity in order to supply St Kitts from Nevis through an undersea cable. SKN could also develop more GE to export to the neighbouring islands (Saba and Montserrat). In the case of DOM, the second phase is expected to develop a 100MW to 120MW geothermal power plant, with undersea cables for exporting electricity to Martinique and Guadeloupe. Finally in the case of SVG, depending on how promising the geothermal resource and how the first phase evolves, there is an interest to export additional geothermal power to Barbados, through undersea cables.

Questions from the United Kingdom

Q: The PAD does not currently include information on how the project meets the additional investment criteria applicable to private sector programs (i.e. financial sustainability, effective utilisation of concessional finance, mitigation of market distortions, and risks). We would need to see this before we approve. In particular can you confirm that CTF funding will only be used towards component 3 –the renewable energy component, and not the energy efficiency component or the regulatory framework, institutional strengthening and capacity building component, as the recipients of the first two will primarily be the public sector. We believe that table 2.2 on page 143 of the PAD confirms this, but there a couple of slightly contradictory comments in the proposal. For example, page 4 says “CTF funding is only requested to provide contingent grants for full-scale geothermal exploration drilling for the GE projects.” While pg 11 says “In addition, resources from the Clean Technology Fund (CTF) and the Global Environment Facility (GEF) will be available for the financing of non-reimbursable investment and technical assistance.” Apologies if we have missed something here but the proposal was very long so it was sometimes difficult to pick out the relevant information.

A: Answering first the second part of the question, the project team confirms the 100% of CTF resources (US\$ 19.05 million) will be used under component 3, particularly as contingent grants for full-scale geothermal exploration drilling for the GE projects. However, part of the fee from CTF to IDB (US\$ 950,000) could be used for technical assistance to support project execution (the sentence mentioned above refers to that portion of funding).

With regards to the first part of the question, we had not filled the sections on financial sustainability, effective utilisation of concessional finance, mitigation of market distortions, and risks, because this is a public sector operation. However, we understand that these issues are relevant since the program is targeting private sector developers, and furthermore is included in DPSP. Therefore our responses are as follows:

(7) Financial sustainability

The demonstrative effect of having at least one power plant operating in the region will help reducing the risk perceptions of private investors and commercial banks. Moreover, it is Responses to Comments and Questions on the SEF for the Eastern Caribbean Proposal p. 2

expected that for the second phases explained earlier, with the exploration risk mitigated and the geothermal resources fully identified, these projects could take commercial loans to further develop the geothermal projects for export of power. Given the challenging context of geothermal development, in particular in the region, we do not expect, however, that this industry will be fully based in private investment with no public support in the short or medium term.

(8) Effective utilization of concessional finance

The SEF, and particularly the Continent Recovery Grants (GRG) instrument funded by the CTF, play a substantial role in the ability to explore and unlock the geothermal potential. The Eastern Caribbean governments alone would not be able to develop geothermal power. The private sector alone, using commercial terms lending, is also unable to face the development of geothermal power on its own, even in more sophisticated market such as Mexico or Chile, where CTF resources are also being used to unlock geothermal resources. Needless to say, the small scale of the electricity markets in the Eastern Caribbean is a further disincentive for the private sector to invest and take risks in geothermal exploration. Therefore concessional finance and risk mitigation instruments such as CRGs are the only viable option (apart from pure grants, which the project is not promoting for exploratory phases) to mitigate the exploration risk at early stages and hence attract private sector investment.

(9) Mitigation of market distortions

As explained above, currently the barriers are such that the private sector cannot face the challenges of geothermal development on its own. Hence the program will crowd in, rather than out, private investment. In terms of tariff, there are no subsidies expected in the tariff structure. Therefore the tariffs in all the SEF beneficiary countries will reflect the full cost of the geothermal projects.

(10) Risks

The risk matrix is presented below:

TYPE OF RISK	RISK	RISK CLASSIFICATION	MEANS OF MITIGATION
Development Risk	Exploratory risk perceived by investors can deter investments in GE or increase the cost of capital for GE projects to levels that make projects and/or power generation cost reductions unfeasible	6 (High)	<p>The use of contingent grants to fund exploratory drilling will reduce the risk for project developers. Under this instrument, the CTF would take over the payments owned by the projects in case the exploratory drillings fail (a commercial geothermal resource is not confirmed)</p> <p>The use of grants to support governments in the pre-investment phase (surface studies and slim holes) will ensure that there is enough technical and scientific information for developers, governments, lenders, and investors to make sound investment decisions.</p> <p>For GE projects to be eligible for SEF funding there should be a contractual and/or regulatory mechanism that reflects the concessionality granted through this program on the electricity tariffs to end users.</p>

Monitoring and Accountability Risk	Duplication of efforts due to multiple actors in the region	2 (Low)	<p>Continuous coordination with the governments and other donors to avoid duplications and rather complement efforts. To do so, the CDB will map out the interventions of other donors in the RE and EE sectors in the Eastern Caribbean countries, with support from the other donors and during the execution of the first three years of the Program. The CDB will use this analysis to guide its interventions and ensure that the Facility complements rather than duplicates the support provided by other donors to specific projects or countries. The CDB is well suited to coordinate and collaborate with other actors, agencies, and donors.</p> <p>Deploy different financial instruments under a phased approach to address the financing needs present in each stage of geothermal development and not covered by other actors. Also, mechanisms for donor coordination in the ECC are already in place and CDB will leverage those in order to coordinate SEF activities with other donors as required to avoid duplication of efforts and foster collaboration and synergies.</p>
Macroeconomic and Financial Sustainability Risk, and Development Risk	Decreased commitment from potential beneficiaries to promote SE due to recent decrease in oil prices	2 (Low)	<p>The Caribbean Region is very motivated to pursue as much RE as possible, even with reduced oil prices. The Regional Caribbean Energy Policy, and the Policies at individual countries, shows that commitment. The EC countries have set targets for RE penetration as high as 100 percent, due to their potential for geothermal power.</p> <p>Offer concessional financing at rates below commercial lending rates. This lower cost of capital reduces the overall cost of the geothermal projects and ensures the geothermal projects remain economically viable despite reduced oil prices.</p>
Development Risk, Macroeconomic and Financial Sustainability Risk	Inadequate access to RE development sites.	2 (low)	<p>Establish in the SEF Operating Manual that the loans for subprojects must include a pre-disbursement condition requiring private sponsors and/or beneficiary governments to identify the investments needed, if any, for access roads and establish an action plan with timelines for ensuring that the access roads will be completed when needed.</p> <p>Access roads are eligible to be financed by the Facility.</p>
Macroeconomic and Financial Sustainability Risk	Pass through or on-lending mechanism does not maintain the concessionality to beneficiaries required to ensure uptake of geothermal projects and achieve reductions in the cost of electricity for customers	2 (Low)	<p>Establish in the SEF Operating Manual the on-lending mechanisms for the CDB to ensure that concessionality is maintained for beneficiaries for expected results to be materialized.</p>

Development Risk	Insufficient capacity of the CDB for implementing and managing the SEF, particularly for lending to private sector	6 (High)	<p>Through Component II of the SEF, the CDB will retain an expert consulting firm that will help the CDB develop the required capacity. The expert consulting firm will be retained for a number of years, but only used as needed. The expert consulting firm will train the CDB staff and source the required staff, on a needs basis, to evaluate geothermal projects and prepare the loans.</p> <p>The CDB will add a financial analyst to the SEF team. This analyst will be part of CDB staff.</p> <p>The CDB will have a special, independent account through which the SEF funds will be managed. This account will receive the funds from donors and any income from the investment of its funds, as well as the repayments, interest payments, and other fees charged to sub</p>
Public Management and Governance	Insufficient local geothermal and other technical expertise to accompany the pace of development of geothermal projects through PPPs	2 (Low)	<p>Through Component II of the SEF, provide technical assistance to:</p> <ul style="list-style-type: none"> ▪ develop local competence in the scientific, analytical, and technical skills needed to implement and operate a geothermal plant ▪ develop the legal and regulatory framework to develop geothermal energy (GE) and other renewable energy (RE) ▪ develop electricity sector regulations, policies, strategies, and integrated resource plans ▪ develop local competence in project financing, financial modelling, and PPPs ▪ provide transaction advisory support to governments to structure the projects and negotiate with private partners.
Environmental and Social Sustainability Risk	Adverse environmental or social impacts related to geothermal projects	6 (High)	<p>An Environmental and Social Management Report (ESMR) will be done to identify risks, impacts, and mitigation measures to be undertaken by all projects. The ESMR will be consistent with IDB safeguard policies and country regulations.</p> <p>Each project will conduct an Environmental Impact Assessment (EIA) that follows IFC guidelines.</p>
Macroeconomic and Financial Sustainability Risk	The ECC have limited fiscal space and limited resources to make contributions to PPP for GE development. At the same time the fiscal situation can be significantly alleviated by the implementation of GE potential in the region but could also be adversely affected in GE projects if they are not successful.	4 (Medium)	<p>The grants, risk mitigation instruments and concessional funds included in the program mitigate the risk that the macro situation could be adversely affected by GE project outcomes. This program provides resources that can help overcome the fiscal space limitation without requiring sovereign guarantees thus making PPP possible and crowding in private sector investments. The risk that macro situation could be adversely affect the as it could do so through contingent liabilities, bailouts or unforeseen fiscal implications associated with the geothermal energy projects and institutional reform.</p>

Public Management and Governance	Because not all countries have developed specific RE and GE legislation and regulation, it may be harder to establish PPP and move forward with GE projects in the region.	6 (High)	The OM will define a requirement for GE sub-projects to include, in the absence of supporting legislation and regulation, provisions in the PPP contracts defining: (i) the process for granting a license to develop geothermal resources and assigning responsibility for monitoring geothermal resources to a government body; and (ii) the tariff setting mechanism that will allow the electric utility to recover the cost of service regardless of the technology or fuel used to generate power, while reflecting any reductions in the costs of electricity generation. For other RE projects, Component 2 will help mitigate this risk by providing support to governments to make the necessary changes to the legal and regulatory frameworks.
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Financing instruments:

Q: We understand that up to 70% of investment required could be covered by the CTF grant/guarantee. Could we see more information on how interests will be aligned to reduce moral hazard risks (i.e. lack of incentive to guard against risk where one is protected from its consequences), together with illustrative examples of the potential structures.

A: The moral hazard risks will be reduced by not covering 100% of investment required for drilling activities and by a thorough due-diligence of geothermal projects by the CDB with support from an independent expert firm. Please note that 70% is a tentative cap and has to be further discussed with the CDB. Also, the CDB will negotiate this cap with the final beneficiaries.

Q: Also can you provide more information on how this structure was informed by IDB's other geothermal projects in Mexico and Chile where the financing instruments suggested were primarily loans convertible to grants.

A: The SEF envisions providing both grants convertible to loans and loans convertible to grants. The CDB will select the modality during financial structuring of the project with the developers. In general, using loans convertible to grants as a guarantee (which is the case in Mexico and Chile) is preferable in terms of leveraging a larger amount of other financing and therefore more number of well drillings. On the other hand, using CTF resources as grant convertible to loans would maximize the total resources available to fund investments.

Q: In addition, just to confirm the CTF guarantees/contingent recovery grants would only cover resource related risks, correct? What happens if the guarantee is not called upon and how long would the CTF be exposed?

A: As mentioned before, the CDB will have the flexibility to either offer loans convertible to grants (guarantee) or grants convertible to loans. In countries where the resource is less identified, the developers will be more inclined to use grants convertible to loans to mitigate the exploratory risk. In other countries where the resource is more identified (i.e. successful slim hole drilling), CTF resources could be used as a guarantee to repay loans in case of failure. In any case the risk of failure is high, because in each development at least three or four wells will have to be made, and therefore the likelihood of using all CTF resources is

high. However, in the case that the all exploration phases were successful and the guarantee provided was not called upon, the funding would go to another geothermal project of SEF beneficiary countries where the geothermal developments are less advanced, and where the probability of failure in the exploration phase is higher. In that case a grant convertible to loan will probably be the preferred option, and the CTF resources would likely be fully used. Nevertheless, if all wells are successful, CTF resources would be returned to the CTF.

Results framework:

Q: MW installed: It is unclear form the proposal how the 60MW expected generation capacity in 5 countries was derived. Are these all CTF attributable results, making use of the CTF provided risk sharing instruments in the exploration phase? The target appears to be in contradiction with information contained elsewhere in the proposal: the target number of projects supported in the project results framework, 4 (Annex 2 pg. 6) or the number of projects discussed in the cost-benefit analysis section, 2 or 3 (Annex 7, pg. 6) .

A: The results indicator for geothermal power generation capacity installed in projects facilitated or financed at some stage by the program has been set at 60MW. This is the total installed capacity that is expected to be developed with support from this facility in the five Eastern Caribbean countries that have geothermal potential. Since the program is mainly demand-driven, and sub-projects will be identified during execution, an indicative pipeline has been identified according to which CTF resources will be used in three of the five countries considered, namely, Saint Vincent and the Grenadines, Saint Kitts and Nevis, and Grenada. These three countries are at early stages of development, and therefore will be a good case for the use of CTF instruments.

The Results Matrix is in line with the indicative pipeline and with the assumption that for those countries that are already at more advanced stages of development, support from the SEF program could come mostly in the form of technical assistance for the development of sound legal and regulatory frameworks (or in the form of loans for energy efficiency projects or for transmission lines required for connecting GE plants to the power grid). As such, other results indicators defined in the Results Matrix are:

- Component 2: Grants provided for technical assistance to governments in ECC with resources from the program: The target is 4.
- Component3: Loans provided to geothermal projects at any stage of development with resources from the program: The target is 3.
- Loans provided to finance transmission lines required for connecting GE plants to the power grid: The target is 1.

The cost-benefit analysis discusses the results of the five geothermal projects that can benefit from this facility and two energy efficiency projects. The energy efficiency projects are in Saint Lucia and Dominica and consist of retrofitting public street lights with energy efficient lamps.

Q: CO2 savings: Based on the CO2 savings indicated the implied capacity factor is 94%. Is this based on technical studies?

A: CO2 emissions reductions from the operation of geothermal power plants were estimated considering geothermal power plant nameplate capacity of 60MW across five countries, the average emission factor for fuel oil, and a plant capacity factor of 85%. Please note that the capacity factor used is not 94% but 85%. Emission reductions per year in the five countries where the program will support geothermal development (ERy) were calculated as follows:

$$ERy = EGPJy \times EF_{fuel}$$

Where:

ERy = Emission reductions in all five countries in year y (t CO₂)

EGPJy = Quantity of net electricity generation supplied by the new geothermal plants to the grid in all five countries in year y (MWh)

EF_{fuel} = Emission factor of No.2 Fuel oil (t CO₂/MWh) = 0.7575 tCO2e/MWh
(Reference: US Energy Information Administration)

The quantity of net electricity generation supplied by the new geothermal plants to the grid in all five countries in year y (EGPJy) was estimated as follows:

$$EGPJy = 365 \times 24 \times PCF \times NC$$

Where,

PCF = Plant Factor Capacity = 85%

NC = Plant nameplate capacity = 60MW

Based on the above the Ex-Ante Calculation of Emission Reductions for the program is the following:

$$ER_y = EGPJ_y * 0.7575 \frac{tCO2}{MWh} = 338,421 tCO2$$

Where

$$EGPJ_y = 365 \left(\frac{\text{days}}{\text{year}} \right) * 24 \left(\frac{\text{hours}}{\text{day}} \right) * 85\% * 60\text{MW}$$

$$EGPJ_y = 446,760 \text{ MWh/year}$$

Q: Leverage: \$407m (or around 80% of the total capex costs) is expected to be leveraged from the private sector. Has IDB already identified the investors that would be interested in development of these projects once they are past the riskiest exploration stage?

A: The programme will provide funding for Public Private Partnerships in places where private investors have already undertaken investment commitments to develop geothermal

from beginning to end. Private investors in SVG and SKN are already working with the local governments to establish these PPP and structure the geothermal projects.

Total investment requirements in geothermal development in the Eastern Caribbean countries have been estimated at USD 526 million. The SEF Program, according to an indicative pipeline developed during project preparation, could make available a total of USD 113 million including parallel financing and excluding USD 40 million from the GCF (which is in preparation). The total amount, including potential GCF funding, represents 29% of the total investment needs. A part of the remaining capex costs is expected to be financed by other sources such as the World Bank, the International Renewable Energy Agency (IRENA), other donors and the private sector.

Q: GCF: The PAD mentions that [] a further \$40m funding is under request from the GCF. Would this funding enable additional projects/results or the same pipeline?

A: This funding would enable the same pipeline and contribute to increasing project feasibility, and electricity cost and tariff reduction, by developing steam gathering plants and transmission lines, among other investments.

Q: Some of the results as reflected in the Results Matrix in Annex 2 seem to be very modest and at odds with the overall ambition of the programme. For example, a target of 2 EE projects appraised by the [CDB] over 8 years and a target of 1 loan provided for EE projects over 8 years. Also a target of 3 RE projects appraised over 8 years. Are the results targets proposed very conservative or is this a realistic expectation over the 8 years?

A: The results expected in the Result Matrix are a realistic assumption based on the indicative pipeline that the project team identified. The SEF is a demand-driven facility and the largest demand identified in the region is for the geothermal power. Therefore the majority of SEF resources are expected to be allocated to Component 3, and not to Component 1 (EE projects). When the results matrix says that 3 RE projects are appraised, the idea behind is that it is likely that the three RE projects will be geothermal projects as reflected in the table below.

Q: The sub-total for Component 2 in Table 2.2 in Annex 5 doesn't add up correctly.

A: The table has been updated and reads as follows:

M&E Plan Table 2.2: Annual Costs by Output (US\$ millions)									
Outputs	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Target
Component I: Energy Efficiency									
Loans provided to energy efficiency projects with resources form the Program.	-	8.0	-	0.3	-	-	-	-	8.3
Component II: Regulatory Framework, Institutional Strengthening, and Capacity Building									
Policy Based Loans (PBL) provided to Governments in EC countries	-	-	10.0	-	-	-	-	-	10.0

Trainings provided to the EA and/or government employees with resources from the Program	0.2	0.4	0.2	0.2	0.1	-	-	-	1.1
Grants provided for technical assistance to Governments in EC countries with resources from the Program	0.8	1.5	0.7	0.7	0.5	-	-	-	4.2
Sub-total Component II	1.0	1.9	10.9	0.8	0.7	-	-	-	15.3
Component III: Renewable Energy									
Loans provided to geothermal projects at any stage of development with resources from the Program	-	-	24.8	24.8	5.2	5.2	-	-	60.0
Loans provided to finance transmission lines required for connecting geothermal plants to the power grid	-	-	-	10.0	-	-	-	-	10.0
Loans provided to finance other RE projects	-	-	0.2	0.2	-	-	-	-	0.3
Grants (in the form of loan guarantees or grants convertible to loans) provided to geothermal projects with resources from the Program	-	12.7	-	6.4	-	-	-	-	19.1
Sub-total Component III	-	12.7	25.0	41.3	5.2	5.2	-	-	89.4
Total SEF	1.0	22.6	35.9	42.5	5.9	5.2	-	-	113.0

Q: Regarding the compliance with the CTF's investment criteria, apart from section 12 of the Cover Note there is no further elaboration of how the investment criteria are met.

A: Instead of providing a Fit with CTF Investment Criteria annex, we have addressed these issues on the cover page. Additionally, we have elaborated further on this point on page 2 above (first question of UK).