

## 1. Project Data

Summary Project data			
GEF project ID		5812	
GEF Agency project ID		149959 (World Bank)	
GEF Replenishment Phase		GEF – 5	
Lead GEF Agency (include all for joint projects)		World Bank	
Project name		Geothermal Resource Development Project in Saint Lucia	
Country/Countries		Saint Lucia	
Region		Latin America and Caribbean	
Focal area		Climate Change	
Operational Program or Strategic Priorities/Objectives		Environment and Natural Resource Management	
Executing agencies involved		Ministry of Education, Innovation, Gender Relations and Sustainable Development; Ministry of Finance, Economic Growth, Job Creation, External Affairs and the Public Service; Ministry of Infrastructure, Ports, and Energy	
NGOs/CBOs involvement		None	
Private sector involvement		None	
CEO Endorsement (FSP) /Approval date (MSP)		20 November 2014	
Effectiveness date / project start		22-Dec-2014	
Expected date of project completion (at start)		31-Jan-2017	
Actual date of project completion		25-Jan-2019	
Project Financing <sup>1</sup>			
		At Endorsement (US \$M)	At Completion (US \$M)
Project Preparation Grant	GEF funding		
	Co-financing		
GEF project Grant		2	2
Co-financing	IA own		
	Government of New Zealand	0.8	0.8
	Other multi- /bi-laterals		
	Private sector		
	Borrower/Recipient (Government of Saint Lucia)	0.2	0.2
	NGOs/CSOs (Clinton Climate Initiative)	0.5	0.5
Total GEF funding		2	2
Total Co-financing		1.5	1.5
Total project funding (GEF grant(s) + co-financing)		3.5	3.5
Terminal evaluation/review information			
TE completion date		26 August 2019	
Author of TE		Not given	

<sup>1</sup> ICR, p21

TER completion date	1/17/2020
TER prepared by	Mourad Shalaby
TER peer review by (if GEF IEO review)	Molly Watts Sohn

## 2. Summary of project Ratings

Criteria	Final PIR	IA Terminal Evaluation	IA Evaluation Office Review	GEF IEO Review
Project Outcomes		S	-	S
Sustainability of Outcomes		(Substantial risk)	-	ML
M&E Design		-	-	MU
M&E Implementation		-	-	MU
Quality of Implementation		MS	-	MS
Quality of Execution		-	-	MS
Quality of the Terminal Evaluation Report		-	-	S

## 3. Project Objectives

### 3.1 Global Environmental Objectives of the project:

Saint Lucia is highly dependent on imported fossil fuels to meet its energy demand. Nearly all its energy is imported, principally from Trinidad and Tobago. The dependence on oil for electricity generation, transportation and other energy needs leads to high and volatile prices in the sector. The Government of Saint Lucia is actively exploring geothermal energy options, in keeping with the country's policy objective of reducing Saint Lucia's reliance on fossil fuels for energy generation. Geothermal energy is cleaner and emits almost no carbon dioxide.

The Project's global environmental objective is to explore Saint Lucia's geothermal energy potential with a view to reducing its dependency on fossil fuels and associated negative environmental impacts (ICR, p1).

### 3.2 Development Objectives of the project:

The stated development objective of the Project is "to provide support for Government of Saint Lucia to make an informed decision regarding geothermal exploration and development in Saint Lucia by undertaking key upstream preparatory activities. Such support would help the Government of Saint Lucia confirm areas for drilling, partner with a qualified developer, and design a geothermal exploration/resource confirmation program for sustainable implementation – all in line with good industry practices and international standards". (PID p.4).

The Project was structured in two components: (i) Upstream Geothermal Development Preparation and Project Management and (ii) Transaction Advice & Regulatory Support.

### 3.3 Were there any **changes** in the Global Environmental Objectives, Development Objectives, or other activities during implementation?

There were no changes in the environmental or development objectives of the Project. Rather, there were organizational changes during implementation. Specifically, there was a re-allocation of the energy portfolio within the Government of Saint Lucia in 2016, resulting in a change in the Implementing Agency for the Geothermal Resource Development Project (GRDP), from the Ministry of Sustainable Development, Energy, Science and Technology (MoSDEST)'s Department of Sustainable Development to the Department for Infrastructure, Ports and Energy (DIPE) within the Ministry of Infrastructure, Ports, Energy and Labor (MIPEL). This led to delays in implementing some of the Project activities as it took time for the new team to get up to speed with the Project objectives and activities. In addition, the transaction advisory work was delayed, in part, due to the re-structuring of Ormat Inc., a qualified global geothermal developer, with the appointment of a new management team, including a new head of Business Development and a new Legal Advisor (ICR, p23).

To account for delays in implementation, the Project was restructured twice (July 2017 and June 2018) to extend the Project closing date to allow more time to complete activities and utilize the grant funding, particularly for the Environmental and Social Impact Assessment (ESIA) consultant, Project Coordination Unit (PCU) staffing and public awareness materials. Additional regulatory and transaction advisory work was envisioned to be completed after the extensions but ultimately were not implemented under GRDP, as described further in section 5.2 (ICR, p6).

## 4. GEF IEO assessment of Outcomes and Sustainability

Please refer to the GEF Terminal Evaluation Review Guidelines for detail on the criteria for ratings.

Relevance can receive either a Satisfactory or Unsatisfactory rating. For Effectiveness and Cost efficiency, a six point rating scale is used (Highly Satisfactory to Highly Unsatisfactory), or Unable to Assess. Sustainability ratings are assessed on a four-point scale: Likely=no or negligible risk; Moderately Likely=low risk; Moderately Unlikely=substantial risks; Unlikely=high risk. In assessing a Sustainability rating please note if, and to what degree, sustainability of project outcomes is threatened by financial, sociopolitical, institutional/governance, or environmental factors.

Please justify ratings in the space below each box.

<b>4.1 Relevance</b>	Rating: Satisfactory
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The Implementation Completion and Results report (ICR) does not provide a specific rating for relevance but does provide discussion of the project's relevance to the objectives of the World Bank's OECS Regional Partnership Strategy. This TER rates relevance as satisfactory as the project is relevant to the Government of Saint Lucia and to GEF priorities.

The ICR states that the Project Development Objective (PDO) is fully consistent, and remained relevant throughout the implementation of the Project, with the objectives of the World Bank's OECS Regional Partnership Strategy (RPS, 2015-2019). The RPS identifies three thematic areas for support (a) enhancing productivity, competitiveness and employment; (b) modernizing the public sector; and (c) building social and climate resilience. By contributing to more predictable and lower energy prices to enhance competitiveness and inclusion through geothermal development in the region, the RPS supports both areas a) and c). Two of the three development objective-level 4 indicators remained relevant, and based on their achievement, the Project Development Objective is considered as having been fully achieved.

The Project is relevant to GEF's Climate change focal area under GEF-5, specifically its objectives to "Promote the demonstration, deployment, and transfer of advanced low carbon technologies", "Promote investment in renewable energy technologies" and its strategy to "guide developing countries and economies in transition toward a low-carbon development path" (GEF-5 Focal Area Strategies). The project is also relevant to GEF-5's Strategic Goal 2 to "Reduce global climate change risks by: 1) stabilizing atmospheric GHG concentrations through emission reduction actions; and 2) assisting countries to adapt to climate change, including variability"; and to GEF-5's Strategic Goal 4 to "Build national and regional capacities and enabling conditions for global environmental protection and sustainable development".

Finally, the Project is relevant to the Government of Saint Lucia's desire to develop its indigenous energy potential and promote self-sufficiency in power generation, reduce imports of fossil fuels and diesel, and reduce CO2 emissions. While electricity is supplied reliably in Saint Lucia, this comes at a significant cost "due to complete reliance on costly diesel for power generation as well as the dis-economies of scale due to the country's small market size that is typical of Small Island Developing States (SIDS)". Such high costs undermine Saint Lucia's economic competitiveness. The island's use of diesel for fueling power generation is 100 percent imported, creating economic vulnerabilities and undermining energy security. Geothermal could address some of the challenges faced by the power sector in Saint Lucia, as it is clean, reliable, and could be a lower-cost energy source that could help diversify the island's power generation mix (PID, p2).

## 4.2 Effectiveness

Rating: Satisfactory

The ICR puts forwards three project development objective level result indicators, and assesses and rates their effectiveness, instead of evaluating the Project's components. Overall, the ICR rates overall Project outcome as "fully satisfactory" (ICR, p5). This TER rates the Project's effectiveness as satisfactory.

The project development objective level result indicators are:

a) Pre-feasibility assessment technically confirming up to three areas as being sound for exploration drilling for geothermal resources, informing the government strategy for advancement;

The Project supported the Government of Saint Lucia to "undertake surface reconnaissance and related studies to identify potential locations for exploration drilling, including geological structural mapping, three-dimensional magneto-telluric resistivity testing, and Light Detection and Ranging (LiDAR) surveys based on aerial remote sensing technology". Following the conclusion of these studies, a pre-feasibility study of a proposed geothermal development was carried out by the firm GeothermEx during 2017. The resulting final report determined that it was reasonable to proceed immediately with a program of exploratory drilling at 3 sites. After the identification of the recommended sites, an ESIA was led by the firm Panorama and completed in April 2018. It concluded that most impacts of geothermal development would be temporary and would not result in significant residual negative impacts that could not be mitigated. In March 2018, formal public consultations (townhalls) were then undertaken in the three communities in the identified site areas as well as Castries (capital city). The key Project activities - the surface exploration studies, pre-feasibility study and the completion and publication of the ESIA - have all been successfully completed, according to the ICR. This work has informed the decision of Government of Saint Lucia to proceed to the next phase of exploratory drilling with support from a follow-on Bank operation, the Renewable Energy Sector Development Project (RESDP, P161316). THE ICR rates the Project outcome in this area is as Satisfactory (ICR, p4).

(b) Agreement reached with a qualified developer as a partner to carry out exploration drilling, informing the developmental finance for the program;

The ICR states that this outcome indicator is no longer relevant and "could have been removed during one of the two Project restructurings (July 2017 and June 2018)", given that the Government of Saint Lucia secured funding to support a publicly-led and funded approach to Phase II exploratory drilling. Negotiations with a qualified private developer stalled and ultimately failed in 2016 and public funding was secured for exploration drilling, specifically to complete the Phase II exploratory drilling as part of the follow-on Bank-supported RESDP. The ICR does not rate this indicator as it is no longer relevant, but states that "The realization of the other two Project Development Objective indicators, when taken together, result in a fully satisfactory overall Project outcome" as mentioned in this section's introduction (ICR, p5).

(c) Funding for implementing an exploration drilling program is confirmed.

The ICR states that "An additional financing package of more than US\$22 million of grant and concessional funding has been identified to proceed with the Phase II exploration drilling and related capacity building activities under the RESDP". This grant will be co-financed by several entities: US\$5 million IDA (International Development Association) credit, US\$4.2 million DFID (Department for International Development, UK) grant, US\$2.6 million SIDS DOCK SP grant, US\$9.575 million CTF (Clean Technology Fund) contingent recovery grant and a CTF Project preparation grant, and US\$1 million of Government of Saint Lucia counterpart funding. RESDP is currently under preparation and is set to proceed to the World Bank Group (WBG) Board in FY 2020. The ICR states that the inception and planning of RESDP "is surely a robust indication of the successful outcome of the Project". The Project outcome in this area is assessed as Satisfactory by the ICR (ICR, p6).

## 4.3 Efficiency

Rating: Moderately Satisfactory

The ICR rates overall implementation progress as Moderately Satisfactory, with no specific rating for ‘efficiency’. This TER rates the efficiency of this Project as moderately satisfactory. Despite several challenges and delays faced during implementation, mostly due to changes in institutional arrangements (see sections 3.3 and 5.2) which led to 2 project extensions (ICR, pvi), the majority of planned activities were completed under the Project.

A re-allocation of the energy portfolio within the Government of Saint Lucia in 2016, resulting in a change in the implementing Agency, led to delays in implementing some of the Project activities, in addition to internal re-structuring of the geothermal developer who had been negotiating with the government in the early stages of the project. The first extension was the result of a re-definition of the scope of work under the Light Detection and Ranging (LiDAR) Survey which led to more field work. The second extension was necessary to allow the Government of Saint Lucia to complete certain critical tasks (public consultations, staffing for overall project management and the preparation of the project procurement strategy for development). These extensions resulted in a 2-year delay of the project closing date.

At the Project appraisal stage, it was revealed that the total funding required for carrying out Project activities would exceed the combined grant amount from GEF and SIDS DOCK SP. The Government of Saint Lucia obtained financial assistance and technical support from a number of development partners during this project. In addition to the US\$2 million of grant financing from the GEF and the SIDS DOCK Support Program (SIDS DOCK SP), technical assistance valued at US\$800,000 for component 1 and US\$500,000 for component 2 was obtained from the Government of New Zealand and the Clinton Climate Initiative respectively. These funds further leveraged the GEF and SIDS DOCK funds and were utilized to provide the necessary technical, transaction and regulatory support to make informed decisions on moving the Project forward to the exploratory drilling phase.

For Phase II, the project had initially planned to setup a public-private partnership arrangement with a qualified developer to carry out exploratory drilling. This “risk-sharing” arrangement would help mobilize the US\$ 20 to 30 million in risk capital for the exploration drilling. However, negotiations between the government and the private developer failed to reconcile several outstanding issues between the parties. Following the further identification of grant and concessional funding deemed sufficient to complete the Phase II exploration drilling without the need for private sector co-investment, the government decided to implement the exploration drilling program using only public resources.

The Project Development Objective which is to provide support to the Government of Saint Lucia to make an informed decision regarding geothermal exploration and development, was deemed to have been successfully achieved. The ICR states that in 2017 the Government of Saint Lucia decided to request the Bank to proceed with the preparation of the follow-on RESDP, that will fund and support the Phase II exploratory drilling.

<b>4.4 Sustainability</b>	<b>Rating: Moderately likely</b>
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The ICR evaluates sustainability by assessing risks to the development outcome of the Project. The overall risk to development outcome is rated as ‘Substantial’ for the successful and sustainable implementation of geothermally generated electric capacity on the island. This TER rates sustainability as moderately likely (provide a few sentences here explaining your answer). Geothermal energy has the potential to become a viable source of clean energy for the Government of Saint Lucia, but there are inherent physical and financial risks in

the operation, namely the uncertainty surrounding the island's actual geothermal potential, and the associated financial risks of sponsoring exploration and drilling without a guaranteed return on investment. The implementation of phase 2 of the project mitigates the project's inherent risks, justifying the 'moderately likely' rating of sustainability in this TER.

#### Financial sustainability:

The ICR states that all "greenfield geothermal projects face very high financing risks due to high upfront costs during the exploration and confirmatory drilling phases before resource viability is fully confirmed", as well as the "long lead time" from the start of exploration to actual energy generation, power plant commissioning and first revenues. Geothermal exploration requires flexibility in the design of the Project, as there is uncertainty regarding the viability of the geothermal resource and the exact location and number of holes to be drilled in the Project area. This design uncertainty "bears a cost risk" since changes can be made to the location and the number of holes drilled.. The Geothermal reservoir that is at the center of this Project "may or may not be one that can be commercially developed". Its commercial viability "can only be ascertained by deep exploration drilling up to a total depth (TD) of 1,500 to 2,000 meters".

The ICR mentions the failed business negotiations with private sector developers to highlight the "substantial impediments to achieving a suitable business model and deal structure for geothermal power generation and supply in Saint Lucia". The involvement of the private sector is severely lacking. No concrete development investments have taken place, adding uncertainty to future geothermal Project development in Saint Lucia. The follow up RESDP project has secured more than US\$22 million of grant and concessional funding, which will ensure some financial sustainability in the short term...Nonetheless, the absence of private sector involvement, the costly nature of geothermal energy exploration and development, and uncertainty about the actual commercial potential of this source of energy in Saint Lucia, make financial sustainability an important risk for this project and its successor.

#### Socio-economic sustainability:

The ICR highlights the fact that the Caribbean economy, and particularly the Saint-Lucian one, offer relatively small markets, which presents a challenge in attracting qualified developers in significant numbers in the energy and other infrastructure sectors. Furthermore, geothermal energy "is a relatively nascent industry in the region and there is limited domestic sector capacity in the island", with a lack of effective competition.

Furthermore, the renewable energy sector is competitive and fast-changing. Geothermal energy must compete with solar and wind power. However, the ICR states that geothermal energy holds several advantages in this respect, as it is not affected by changes in precipitation and the installations are less likely to be affected by weather variability than solar power and wind. Geothermal energy thus has tremendous potential to substantially benefit the country economically and increase both its renewable energy penetration and domestic energy production.

The Project activities and technical work greatly supported consultations with local communities. Some community members had expressed skepticism about future exploration activities planned under the upcoming RESDP, given that past exploration attempts undertaken by the Government of Saint Lucia had been unsuccessful. The technical and environmental/social studies completed under this Project were able to inform the Government of Saint Lucia's responses to local stakeholders, "giving them comfort that best scientific and safeguards practices are being deployed for the RESDP" (ICR, p9) and increasing the community's confidence and interest, which bodes well for the Project's social sustainability.

#### Institutional sustainability:

The World Bank is assisting the Government of Saint Lucia in the exploration of the island's geothermal potential. Once this potential has been measured, and the viability of the resource established, the Project would be handed over to a private sector developer. The commercial success of the developer depends on the policy and regulatory environment in the country. Therefore, clarity in policy and regulations which impact geothermal development, such as "pricing and taxation, procurement procedures, environmental concerns, permitting, location and siting restrictions", is an important consideration. The current project does not explicitly address institutional sustainability, but the follow-on RESDP will include a component of advisory services to address these policy/regulatory gaps and capacity constraints.

#### Environmental sustainability:

Given that this project focused on simply identifying potential geothermal exploration sites, there were no documented environmental impacts, and thus no threats to environmental sustainability. The follow-on RESDP will involve drilling of identified sites. An Environmental and Social Impact Assessment (ESIA) was led by the firm Panorama and was completed in April 2018. It concluded that most impacts of geothermal development under the future RESDP would be temporary and would not result in significant residual negative impacts that could not be mitigated. In the long run, the 2 projects should have a positive effect on environmental sustainability, given that geothermal power plants are generally clean, typically emitting only about 10 percent of the carbon dioxide (CO<sub>2</sub>) of an equivalent size diesel power plant. Thus, by reducing the island's dependency on diesel and increasing its production of clean renewable energy, environmental sustainability should be positively impacted.

## 5. Processes and factors affecting attainment of project outcomes

**5.1 Co-financing.** To what extent was the reported co-financing essential to the achievement of GEF objectives? If there was a difference in the level of expected co-financing and actual co-financing, then what were the reasons for it? Did the extent of materialization of co-financing affect project's outcomes and/or sustainability? If so, in what ways and through what causal linkages?

GEF provided US\$ 2 million of the total US\$ 3.5 million project funding, or 57%. However, the level of co-financing is expected to increase dramatically under Phase II of the project, as explained below. There were no mentioned differences in the level of expected co-financing and actual co-financing at this phase.

Government of Saint LuciaThe Government of Saint Lucia obtained financial assistance and technical support from a number of development partners, in its effort to develop its geothermal resources. The World Bank assisted Saint Lucia in accessing US\$2 million of grant financing from the GEF and the SIDS DOCK Support Program (SIDS DOCK SP). In addition, technical assistance valued at US\$800,000 and US\$500,000 was obtained from the Government of New Zealand and the Clinton Climate Initiative respectively to aid this initiative. The ICR states that these funds were utilized to provide the necessary technical, transaction and regulatory support to make informed decisions on moving the Project forward to the exploratory drilling phase.

At the Project appraisal stage, it was revealed that the total funding required for carrying out Project activities would exceed the combined grant amount from GEF and SIDS DOCK SP. The World Bank coordinated through the Government of Saint Lucia to secure additional support from two key development partners. The Government of New Zealand agreed to provide parallel financial assistance to support part of component 1 (activities a-i: Surface reconnaissance and a-iii: Integration of technical work towards pre-feasibility assessment). These are areas where New Zealand has significant technical expertise, as stated by the ICR, and would further leverage the GEF and SIDS DOCK SP funds. The Government of New Zealand agreed to fully coordinate this work with the technical evaluations directly supported by the World Bank. Additional assistance for component 2 was provided

by the Clinton Climate Initiative to complement the efforts of the World Bank and further leverage the GEF and SIDS DOCK funds. The ICR adds that The World Bank and CCI have coordinated work in a similar effort in Dominica.

In Saint Lucia, the Government of Saint Lucia formed a “transaction team” that was jointly supported by the World Bank and CCI with technical expertise that complemented and reinforced the capabilities and experiences of each institution. CCI focused its assistance through parallel funding primarily towards financial and legal assistance while the World Bank assisted through expertise in financial, technical geothermal matters, and power sector issues including tariff setting. The ICR explains that the identified specializations are essential for successfully negotiating the various aspects of a complex geothermal transaction that is expected to have a profound impact on the overall power sector in Saint Lucia.

An additional financing package of more than US\$22 million of grant and concessional funding has been identified to proceed with the Phase II exploration drilling and related capacity building activities under the RESDP. This includes: US\$5 million IDA (International Development Association) credit, US\$4.2 million DFID grant, US\$2.6 million SIDS DOCK SP grant, US\$9.575 million CTF contingent recovery grant and a CTF Project preparation grant, and US\$1 million of Government of Saint Lucia counterpart funding. RESDP is currently under preparation and is set to proceed to the World Bank Group (WBG) Board in FY 2020. The progress of RESDP “is surely a robust indication of the successful outcome of the Project”.(ICR, p6).

## 5.2 Project extensions and/or delays. If there were delays in project implementation and completion, then what were the reasons for it? Did the delay affect the project’s outcomes and/or sustainability? If so, in what ways and through what causal linkages?

As explained in section 3.3, organizational changes during implementation led to delays in implementing some of the Project activities as it took time for the new team to get up to speed with the Project objectives and activities. The re-allocation of the energy portfolio within the Government of Saint Lucia in 2016 resulted in a change in the implementing Agency for the GRDP, from the MoSDEST’s Department of Sustainable Development to the DIPE within the MIPEL. In addition, the re-structuring of the geothermal developer Ormat Inc. led to further “transaction advisory work” delays (ICR, p23).

To account for these delays in implementation, the Project was restructured twice (July 2017 and June 2018) to extend the Project closing date to allow more time to complete activities and utilize the grant funding, particularly for the ESIA consultant, PCU staffing, and public awareness materials (ICR, p6).. These extensions resulted in a 2-year delay of the project closing date (see section 4.3). The Project was also affected by high turn-over of World Bank staff – the Project had five TTLs and five procurement specialists over its four-year life, the ICR states. This led to delays in providing clearances for some procurement activities (ICR, p6).

Despite some implementation delays, the ICR states that all the Project activities under Component 1 were completed by mid-2018, including:

- Surface reconnaissance studies
- Mobilization of experts
- Preparation and presentation of a prefeasibility assessment
- Preparation and presentation of an ESIA
- Advisory services from experienced geothermal energy specialists

Under Component 2, the two main activities envisioned were transaction advisory support and legislative and regulatory work. The envisioned outcome was to bring a qualified developer on board for geothermal exploration drilling. But this failed to materialize due to (i) changes in leadership of the negotiating teams from the Government of Saint Lucia and Ormat Inc., which resulted in delays in the negotiations; (ii) challenges to align incentives of all parties, particularly prior to having more information about the quality of the geothermal resource; and (iii) the Government of Saint Lucia’s identification of a potential financing package for exploration drilling under RESDP. This led to the Government of Saint Lucia’s decision “to proceed with the Phase II exploratory drilling as a publicly funded activity and not to continue with it’s previously contemplated approach of partnering with a private developer to undertake these activities” (ICR, p7).



In summary, despite the delays and challenges faced during implementation, the ICR states that most planned activities were completed under the Project, adding that “The PDO, which is to provide support to the Government of Saint Lucia to make an informed decision regarding geothermal exploration and development, was successfully achieved”, thus justifying the Government of Saint Lucia’s willingness to collaborate with the World Bank to proceed with the preparation of the follow-on RESDP (ICR, p8).

### 5.3 Country ownership. Assess the extent to which country ownership has affected project outcomes and sustainability? Describe the ways in which it affected outcomes and sustainability, highlighting the causal links:

Country ownership was strong at both the national and local level, as this project addressed a long-held interest of the government of Saint Lucia in geothermal power generation. In 2017 the Government of Saint Lucia decided to request the World Bank to proceed with the preparation of the follow-on RESDP, that will fund and support the Phase II exploratory drilling. The Project activities and technical work also greatly supported consultations with local communities. Some community members had expressed skepticism about future exploration activities planned under the upcoming RESDP, given that past exploration attempts undertaken by the Government of Saint Lucia had been unsuccessful. The technical and environmental/social studies completed under this Project were able to inform the Government of Saint Lucia responses to local stakeholders, “giving them comfort that best scientific and safeguards practices are being deployed for the RESDP” (ICR, p9).

Government of Saint Lucia jointly funding the Phase II exploratory drilling with a private developer. Government of Saint Lucia

## 6. Assessment of project’s Monitoring and Evaluation system

Ratings are assessed on a six point scale: Highly Satisfactory=no shortcomings in this M&E component; Satisfactory=minor shortcomings in this M&E component; Moderately Satisfactory=moderate shortcomings in this M&E component; Moderately Unsatisfactory=significant shortcomings in this M&E component; Unsatisfactory=major shortcomings in this M&E component; Highly Unsatisfactory=there were no project M&E systems.

Please justify ratings in the space below each box.

<b>6.1 M&amp;E Design at entry</b>	<b>Rating: Moderately Unsatisfactory</b>
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The ICR provides very little information about both M&E design and implementation, and no rating. This TER rates M&E design at entry as moderately unsatisfactory given that 1/3 of the indicators identified in the results framework became irrelevant during the project, while the remaining indicators lacked precision. .

The ICR states that the Project Development Objective is low on specificity; however, adequate Project Development Objective -level and intermediate indicators were identified in later stages of the Project. As reported in the “effectiveness” section, one of the three Project Development Objective -level indicators lost its relevance during Project implementation, the ICR adding that “this indicator should have been adjusted during implementation”. However, the other two Project Development Objective -level indicators “were sufficient [...] to measure the successful outcome of the Project”. The ICR adds that the M&E framework and design was simple, “which was appropriate given the nature of this operation”. However, all Project Development Objective level and intermediate results level indicators were binary in nature, making them less useful for tracking incremental progress throughout implementation, concludes the ICR (TE, p9).

<b>6.2 M&amp;E Implementation</b>	<b>Rating: Moderately Unsatisfactory</b>
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This TER rates M&E Implementation as moderately unsatisfactory, given that a mid-term review was not carried out, and the Project's M&E system provided barely any documentation or information. because XXXX.

In terms of M&E implementation, the ICR states that quarterly reports were provided by the PCU, "tracking progress of ongoing Project activities, identifying challenges and planned activities for the next period", however these were not available for this review. Aa mid-term review was not carried out, and the first Implementation Status and Results (ISR) Report "was completed only in January 2018" (ICR, p9).

## **7. Assessment of Project implementation and execution**

Quality of Implementation includes the quality of project design, as well as the quality of supervision and assistance provided by implementing agency(s) to execution agencies throughout project implementation. Quality of Execution covers the effectiveness of the executing agency(s) in performing its roles and responsibilities. In both instances, the focus is upon factors that are largely within the control of the respective implementing and executing agency(s). A six point rating scale is used (Highly Satisfactory to Highly Unsatisfactory), or Unable to Assess.

Please justify ratings in the space below each box.

<b>7.1 Quality of project Implementation</b>	<b>Rating: Moderately Satisfactory</b>
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The World Bank performance is rated as Moderately Satisfactory, and this TER also rates the World Bank's performance as moderately satisfactory.(again a line or two justifying your rating)

As explained in section 5.2, the Project was affected by multiple changes in its TTL-ship and a high turn-over of World Bank staff – the Project had five TTLs and five procurement specialists over its four-year life with "insufficient hand-over documentation that led to a loss of institutional memory on this Project". This led to delays in providing clearances for some procurement activities, for instance.

On the other hand, the ICR states that the client (the Government of Saint Lucia) required a significant amount of capacity building throughout the Project implementation, and the Bank support to the client "has been helpful to the Project meeting its development objectives" (ICR, p8).

The World Bank is also heavily involved in the follow-on to this Project, GRDP. The Government of Saint Lucia has requested the World Bank to proceed with Phase II exploratory drilling and further development of the island's geothermal energy potential, which in itself is also a positive indication of the World Bank's collaboration with the Saint-Lucian government

## 7.2 Quality of project Execution

Rating: Moderately Satisfactory

The executing agency was the Ministry of Finance, Economic Affairs, Planning and Social Security (MoF) of the Government of Saint Lucia. This TER rates project execution as moderately satisfactory, because the Project Coordination Unit succeeded in ensuring continuity during the project, despite changes in the implementing agency and organizational delays, but its capacity constraints, particularly related to procurement, affected the project's progress. . The Ministry established a Project Coordination Unit that would be responsible for: Project planning, carrying out and monitoring the Project's procurement activities, contract management and financial management, among other tasks. The newly-created PCU had experience with World Bank operations "since it handled other projects in Saint Lucia" (PID, p6).

The ICR states that throughout the Project, the PCU provided fiduciary support and was very important to ensure continuity during the changes in the implementing agency. On the other hand, the Project suffered at times due to capacity constraints within the PCU, particularly regarding insufficient resources available to support PCU procurement work related to this Project (ICR, p6).

Safeguards were triggered for "environmental assessment, natural habitats, physical cultural resources and involuntary settlement", an ESIA was performed and community consultations were held in three potentially affected communities, with no compliance issues identified and a satisfactory rating given by the ICR (ICR, p8).

The procurement performance under this Project "was previously assessed as Moderately Unsatisfactory due to delays on the procurement processes, delayed processing of necessary contract amendments, and lack of internal quality control of packages submitted for the Bank's review". The ICR states that valuable lessons regarding procurement were learned that are expected to result in strengthening the Government of Saint Lucia's procurement capacity for the follow-on RESDP, including the creation of a dedicated Project Implementation Unit (PIU) (ICR, p8).

In terms of financial performance, the ICR states that the PCU "had financial management arrangements in place that provided reasonable assurance that the funds were used for the purposes intended." The PCU's financial reports and completed closing procedures were deemed "acceptable to the Bank" (ICR, p9).

In sum, the implementation of the Project highlighted the need for strong procurement capacity and clear institutional arrangements. Overall, the PCU's procurement performance was mixed, the ICR states, "with some procurement packages proceeding quickly and others being substantially delayed". Though the causes of some of the delays "could be debated", the delays did not undermine the progress of the Project in achieving its objectives, the ICR states (ICR, p11).

## 8. Assessment of project Impacts

***Note - In instances where information on any impact related topic is not provided in the terminal evaluations, the reviewer should indicate in the relevant sections below that this is indeed the case and identify the information gaps. When providing information on topics related to impact, please cite the page number of the terminal evaluation from where the information is sourced.***

8.1 Environmental Change. Describe the changes in environmental stress and environmental status that occurred by the end of the Project. Include both quantitative and qualitative changes documented,

sources of information for these changes, and how Project activities contributed to or hindered these changes. Also include how contextual factors have contributed to or hindered these changes.

There were no environmental changes throughout this Project, as it involved mostly reconnaissance and pre-feasibility studies of the geothermal resource site. After the identification of the recommended sites, an ESIA was led by the firm Panorama and was completed in April 2018. It concluded that most impacts of geothermal development under the future RESDP would be temporary and would not result in significant residual negative impacts that could not be mitigated. The final report concluded that it was reasonable to proceed immediately with a program of exploratory drilling at 3 sites. The report notes that geothermal power plants are generally clean, typically emitting only about 10 percent of the carbon dioxide (CO<sub>2</sub>) of an equivalent size diesel power plant. Geothermal energy development would thus enable Saint Lucia to establish a cleaner and more environmentally friendly path to power generation and economic growth. Utilization of diesel for power generation results in local and global environmental impacts. The development of geothermal energy might not result in positive environmental change now, but the potential for diversification of Saint Lucia's energy portfolio, away from diesel and fossil fuels, should result in positive environmental change in the near future (PID, p2).

**8.2 Socioeconomic change.** Describe any changes in human well-being (income, education, health, community relationships, etc.) that occurred by the end of the project. Include both quantitative and qualitative changes documented, sources of information for these changes, and how project activities contributed to or hindered these changes. Also include how contextual factors have contributed to or hindered these changes.

This project mostly involved reconnaissance and pre-feasibility studies, so there was no major socioeconomic change. The Project activities and technical work benefited the consultations with local communities, who at first had expressed skepticism about future exploration activities planned under the upcoming RESDP, given that past exploration attempts undertaken by the Government of Saint Lucia had been unsuccessful. The technical and environmental/social studies completed under this Project were able to inform the Government of Saint Lucia responses to local stakeholders, "giving them comfort that best scientific and safeguards practices are being deployed for the RESDP" (ICR, p9).

**8.3 Capacity and governance changes.** Describe notable changes in capacities and governance that can lead to large-scale action (both mass and legislative) bringing about positive environmental change. "Capacities" include awareness, knowledge, skills, infrastructure, and environmental monitoring systems, among others. "Governance" refers to decision-making processes, structures and systems, including access to and use of information, and thus would include laws, administrative bodies, trust-building and conflict resolution processes, information-sharing systems, etc. Indicate how project activities contributed to/ hindered these changes, as well as how contextual factors have influenced these changes.

#### a) Capacities and governance

Under Component 2, additional activities that were not initially envisioned, including training, capacity building, and the hiring of a communications firm, were undertaken and provided critical support to the Government of Saint Lucia during the ESIA and stakeholder engagement process. Valuable lessons were learned that are expected to result in, inter alia, strengthening the Government of Saint Lucia's procurement capacity for the follow-on RESDP, including the creation of a dedicated PIU. The RESDP will include a component that will support the provision of advisory services to address policy/regulatory gaps and capacity constraints (ICR, p10).

8.4 Unintended impacts. Describe any impacts not targeted by the project, whether positive or negative, affecting either ecological or social aspects. Indicate the factors that contributed to these unintended impacts occurring.

There were no mentioned unintended impacts of the Project.

8.5 Adoption of GEF initiatives at scale. Identify any initiatives (e.g. technologies, approaches, financing instruments, implementing bodies, legal frameworks, information systems) that have been mainstreamed, replicated and/or scaled up by government and other stakeholders by project end. Include the extent to which this broader adoption has taken place, e.g. if plans and resources have been established but no actual adoption has taken place, or if market change and large-scale environmental benefits have begun to occur. Indicate how project-activities and other contextual factors contributed to these taking place. If broader adoption has not taken place as expected, indicate which factors (both project-related and contextual) have hindered this from happening.

The current GRDP Project is being replicated and upscaled under the follow-on RESDP. The key Project activities of GRDP - the surface exploration studies, pre-feasibility study and the completion and publication of the ESIA – were all successfully completed, thus informing the decision of Government of Saint Lucia to proceed to the next phase of exploratory drilling under the successor RESDP. This next phase intends to confirm the quality of the geothermal resources through a publicly financed exploration drilling program in the three areas identified under GRDP's preliminary surface studies which suggested the possible existence of a geothermal reservoir. An additional financial package of more than US\$22 million of grant and concessional funding has already been identified to proceed with the Phase II exploration drilling and related capacity building activities under the RESDP. This includes: US\$5 million IDA credit, US\$4.2 million DFID grant, US\$2.6 million SIDS DOCK SP grant, US\$9.575 million CTF contingent recovery grant and a CTF Project` preparation grant, and US\$1 million of Government of Saint Lucia counterpart funding. RESDP is currently under preparation and is set to proceed to WBG Board in FY 2020 (ICR, p6).

## 9. Lessons and recommendations

9.1 Briefly describe the key lessons, good practices, or approaches mentioned in the terminal evaluation report that could have application for other GEF projects.

The ICR offers five main lessons learned (ICR, p122-12):

- The Project has demonstrated that grants to support “upstream geosciences” and other Project preparation work are critical to informing stakeholder decisions to invest in geothermal exploration activities. The technical and environmental/social studies completed under this activity informed the Government of Saint Lucia responses to local stakeholders, increasing confidence in the Project and the follow-on RESDP.
- The successful outcome of the Project was facilitated by the early securing of additional funding that allowed the Project to evolve in the direction of a publicly funded exploration program, rather than the original plan to partner with a private developer to jointly fund the exploratory drilling program. This has enhanced RESDP preparation, “particularly in supporting the preparation of the pre-feasibility study to determine the likely exploration drilling locations, the ESIA including stakeholder consultants, and other community outreach activities.”
- The implementation of the Project also highlighted the need for strong procurement capacity and clear institutional arrangements. The PCU's procurement performance was mixed, with some procurement packages proceeding quickly and others being substantially delayed. A key lesson learned, the ICR states, is the need for Government of Saint Lucia to appoint a dedicated Procurement Officer to support the follow-on RESDP, and “to have more ownership and specialized skills within a PIU in the line ministry”.
- Global experience shows that publicly funded exploration drilling can serve to “de-risk” geothermal development, allowing private sector financing to enter once resource risk has been reduced, resulting in a better allocation of

Project risks and – ultimately – a lower tariff. the geothermal sector is a high-risk and uncertain one, with very significant viability risks that remain throughout the exploration and confirmatory drilling phases. The ICR states that there are no assurances whatsoever that these geothermal resources can be profitably developed for the benefit of the government and citizens of Saint Lucia, recommending that the Government of Saint Lucia proceed step by step and make a thorough evaluation and “go/no-go decision” at the end of, or during, each development step.

- The approach of pursuing a bilateral arrangement (with the private sector) for geothermal exploration and development has not delivered results for Saint Lucia to date. The business model for geothermal power development should be carefully considered, given the inherent difficulties of both the development of the resource and the local and regional market. The lack of competition and private sector involvement is problematic, but the publicly funded exploratory drilling (assuming it is successful), and “the establishment of a sound enabling and regulatory framework for geothermal power”, should “de-risk” the development and attract private developers.

## 9.2 Briefly describe the recommendations given in the terminal evaluation.

The ICR outlines several key recommendations in its ‘risk to development outcome’ section (ICR, p9-10) that are mentioned in the ‘sustainability’ section of this TER:

- To mitigate the cost risk of geothermal exploration, the ICR recommends hiring an Exploration Management Consultant (EMC) who oversees, guides and reviews this type of operation. The EMC would act under the general supervision of a technical staff in the PIU.
- To support the commercial success and private sector development of geothermal energy in Saint Lucia, clarity in policy and regulations which impact geothermal development, such as “pricing and taxation, procurement procedures, environmental concerns, permitting, location and siting restrictions”, will need to be addressed in the RESDP, which will include a component of advisory services to address these policy/regulatory gaps and capacity constraints.
- To address the issue of operating in small domestic and regional market, the ICR recommends that the Government of Saint Lucia address this “by market sounding at an appropriate time in the future”. A market sounding is defined as a communication of information prior to the announcement of a transaction, in order to gauge the interest of potential investors in a possible transaction, and the conditions relating to it such as its potential size or pricing to one or more potential investors.

In view of the planned follow-on RESDP Project, the ICR states that “future transaction and regulatory support will be required to advance the development process if suitable geothermal resource quality is demonstrated following the Phase II exploratory drilling”. The procurement performance under this Project “was previously assessed as Moderately Unsatisfactory due to delays on the procurement processes, delayed processing of necessary contract amendments, and lack of internal quality control of packages submitted for the Bank’s review”. The ICR states that valuable lessons regarding procurement were learned that are expected to result in strengthening the Government of Saint Lucia’s procurement capacity for the follow-on RESDP, including the creation of a dedicated PIU.

## 10. Quality of the Terminal Evaluation Report

A six point rating scale is used for each sub-criteria and overall rating of the terminal evaluation report (Highly Satisfactory to Highly Unsatisfactory)

Criteria	GEF IEO comments	Rating
To what extent does the report contain an assessment of relevant outcomes and impacts of the	The Project had few impacts as it mostly involved reconnaissance and exploration. The follow-on RESDP drilling project is expected to have more considerable impacts and is the subject of an ESIA. This Project’s most	<b>S</b>

project and the achievement of the objectives?	important achievements were explained in a satisfactory manner.	
To what extent is the report internally consistent, the evidence presented complete and convincing, and ratings well substantiated?	The report is consistent, in that its findings are consistently presented and explained. The ratings are substantiated although sometimes the information is insufficient (see 'Bank Performance' p8, 'Quality of Monitoring and Evaluation' p9)	<b>MS</b>
To what extent does the report properly assess project sustainability and/or Project exit strategy?	The report properly assesses "risks to development outcome", analyzing sustainability from different angles and perspectives (environmental, technical, financial, regulatory etc.)	<b>HS</b>
To what extent are the lessons learned supported by the evidence presented and are they comprehensive?	The report's 'lessons learned and recommendations' does well to summarize the Project's weaknesses and inform the successor RESDP.	<b>S</b>
Does the report include the actual project costs (total and per activity) and actual co-financing used?	The report includes Project and activity costs although the information is not presented in a very clear and organized way.	<b>MS</b>
Assess the quality of the report's evaluation of project M&E systems:	The report's evaluation of the Project's M&E system is very brief and severely lacking important information (budget, details on indicators etc.)	<b>MU</b>
<b>Overall TE Rating</b>		<b>S (4.5)</b>

## 11. Note any additional sources of information used in the preparation of the terminal evaluation report (excluding PIRs, TEs, and PADs).

GEF-5 Focal Area Strategies document for the relevance section.