

**COLOMBIA**

**INVESTMENT GRANT FOR THE FINANCING AND RISK TRANSFER PROGRAM  
FOR GEOTHERMAL POWER**

**(CO-G1007)**

**ENVIRONMENTAL AND SOCIAL MANAGEMENT REPORT**

**(ESMR)**

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## I. INTRODUCTION

Country	Colombia
Sector	Financial Markets
Project Name	Financing and Risk Transfer Program for Geothermal Power
Borrower	Banco de Comercio Exterior de Colombia S.A. (Bancóldex)
Executing Agency	Banco de Comercio Exterior de Colombia S.A. (Bancóldex)
Transaction Type	Loan with Sovereign Guarantee
Project Cost (in US Dollars)	US\$9.53 million
Environmental Category	Directive B13 (High risk, FI-1)

## II. PROJECT DESCRIPTION

- 2.1 The objective of the program is to scale up investment in geothermal power generation projects by making available a financial mechanism tailored to meet the specific needs of a project's earliest development stages, specifically at the exploration phase. This is expected to trigger power production from geothermal sources and, thus, contribute to the reduction of GHG emissions in Colombia. This will be delivered through two components:
- 2.2 **Component I - Risk mitigation grant facility.** Contingent recovery grant funds<sup>1</sup> from the CTF, managed by Bancóldex, will be used to guarantee credit provided by financial intermediaries (including Bancóldex itself) for the drilling at the initial stage, where the aforementioned risks inhibit financing and investment. In case of unsuccessful drilling at the initial stage, the payment for the credit component of the funding incurred by the developer for drilling will be covered by the contingent recovery grant fund. By providing resource risk coverage to loans granted by financial intermediaries to projects in early drilling stages<sup>2</sup>, this component aims to contribute to overcoming geothermal reservoir risks and enabling projects to advance towards subsequent phases of development<sup>3</sup>. Initial surface exploration phases (geothermal resource studies, field surveys and detailed geothermal exploration surveys) are not included, as they can generally be financed by the developer. The rules to access the grant funds will be developed in the Operating Manual and, in particular in the credit regulations of the program. These rules will specify the technical, regulatory and financial access criteria, as well as agreed environmental due diligence processes between IDB and Bancóldex to ensure the sub-projects comply with the Environment Safeguards Policy.
- 2.3 **Component II - Implementation and technical assistance activities.** CTF resources will finance independent third party expertise to provide advice on the

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<sup>1</sup> The term contingent recovery grant obeys to the fact that the CTF will recover the funds of the grant facility only if there are funds remaining at the end of the executing period (ten years).

<sup>2</sup> Early stage refers to first exploration wells drilled, after significant knowledge of the geothermal resource has been attained. Developer must present due diligence of surface studies and have them certified by an independent consultant in order to be eligible.

<sup>3</sup> Even when a first well is not successful, the information gathered from this process provides a basis for understanding the reason for failure, thus improving the probability of success on subsequent wells.

- technical validation of eligibility of projects and to carry out the required studies, as well as verifying success and failures on drillings. If needed resources could also be used to provide technical cooperation to the authorities in order to support their efforts in updating the required regulation. These resources will help guarantee a sound and efficient program, while also ensuring local capacity building of their financial system so that a permanent mechanism remains in place after its conclusion. Project structuring and evaluation (support to banks), technical studies (including evaluation of environmental and social issues, and any particular gaps relative to the IDB's Environmental Safeguards Policy) and other related costs are also considered in this envelope.
- 2.4 The intended beneficiaries of the program will be developers of geothermal projects. Public, private or privately led PPPs will be eligible and the program will seek to build a model that guarantees competitive practices and maximizes return on the public sector accumulated assets (i.e. know how, studies, land permits). Based on the amount of resources available, only a limited number of projects may benefit from the program, though its design will seek to maximize its impact in terms of the number of ventures<sup>4</sup>. Eligibility will be determined by Bancóldex and the IDB, based on technical reports, according to a pre-established set of conditions to be specified in the program's Operating Regulations (OR). Specific to environmental and social issues, the IDB and Bancóldex will engage in a hand-in-hand due diligence process to ensure that the specific geothermal projects meet international best practice standards.
- 2.5 Based on the concentration of these sub-loans in geothermal energy exploration and development, along with the sensitive physical locations (proximity of protected areas) of the projects under consideration, this operation is characterized as high risk (FI-1) with the potential for significant environmental and social (E&S) impacts.

### **III. COMPLIANCE STATUS AND PROJECT STANDARDS**

- 3.1 Based on Directive B.13 of the Environment and Safeguards Compliance Policy (OP-703), the Program is classified as a Financial Intermediary and as such this operation is not categorized according to its potential E&S impacts and risks. The Program's target grants are to support early phase geothermal exploration. The specific location of these exploration activities are not yet determined, but will most likely be in the volcanic region of Tolima and Nevado del Ruiz, the latter of which is adjacent and partially within a national park. These projects are considered high risk and are likely to be classified Category A investments. Based on the information presented, this Program is categorized as high risk (FI-1).
- 3.2 The project was granted eligibility by the Eligibility Review Meeting Committee with the approval on July 6th, 2015 of the Project Profile (PP). As part of this PP a strategy for E&S due diligence was defined and focused on an assessment of Bancóldex capacity to manage E&S aspects in high risk projects, as well as the

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<sup>4</sup> The actual beneficiaries of the grant facility shall not be pre-defined. It is expected that program resources under this component would be sufficient to support the successful development of at least one geothermal plant in the country, as well as to develop the financial and technical capabilities to further encourage geothermal exploration and development in the country.

process and standards that would apply in reviewing, managing and monitoring the particular risks pertaining to geothermal exploration and development. It was agreed that for this Program and all sub-projects in geothermal under it, the IDB would undertake a hand-in-hand due diligence approach on evaluating the environmental and social impacts and mitigation measures. This will be done in accordance with international best practice standards, including the IDB Environmental Safeguard Policy or the International Finance Corporation (IFC) Performance Standards, as well as the World Bank Environmental, Health and Safety (EHS) Guidelines (i.e. : General EHS; Geothermal Power Generation; and Electric Power Transmission and Distribution).

- 3.3 All eligible geothermal sub-projects will have completed preliminary 3G analysis and require grant/financing for exploration. While some projects have completed Environmental Assessments, or Environmental Impact Assessments, it is expected that updating may be required to meet the Standards defined within this loan agreements.

#### **IV. KEY ENVIRONMENTAL AND SOCIAL IMPACTS, RISKS AND MITIGATION**

- 4.1 The potential key environmental, social, health and safety, and labor issues and risks associated with this Program are those related to geothermal sub-projects financed directly by Bancóldex. The Program envisions providing grant resources for a maximum of three separate geothermal sub-projects, all at exploration phase. Currently, there is no detail on a projected pipeline of projects. The potential environmental and social risks for geothermal exploration drilling can be considered moderate to significant.
- 4.2 The exploration phase of each project will include possible negative environmental impacts and risks, though the more significant impacts are expected during construction. Each of the projects will involve drilling and testing of new production wells, reinjection wells, construction of the power plants buildings, and installation of equipment and, potential new access roads and electrical transmission associated facilities (which may include submarine cables).
- 4.3 Main construction impacts expected are: (i) potential contamination of soil and ground water by drilling mud (essentially a suspension of a natural clay material –bentonite—with some additives added), drilling mud with cuttings, or through the reinjection of the geothermal fluid (essentially a mixture of hot water and steam, at temperatures that can reach 290°C, with dissolved salts and gases); (ii) increased water demand from wells drilling and testing and for the cooling system; (iii) potential land contamination due to the disposal of drilling mud and solid wastes; (iv) noise and vibrations generated during drilling; and (v) effects of drilling on groundwater aquifers, nearby hot springs, natural thermal features, and induced micro-seismicity and/ground subsidence; (vi) increased heavy traffic and potential traffic accidents in the vicinity of the project site; (vii) noise and dust emissions; (viii) soil erosion and loss of vegetation; y (ix) potential impacts to thermal features; and potential impacts to marine habitat and fauna. Most of these construction impacts and risks can be adequately mitigated through the implementation of appropriate environmental, health and safety management plans and standard operating procedures (SOPs).
- 4.4 Once in operation, main impacts and risks are: (i) an increased level of micro-seismicity in the region; (ii) land subsidence; (iii) surface and underground water contamination due to accidental spills; (iv) mud contamination; (v) air emissions

of hydrogen sulfide; y (vi) health and occupational accidents; and (vii) increased exposure of community and workers to explosions, well blowouts and pipeline failures.

## V. MANAGEMENT AND MONITORING OF ENVIRONMENTAL AND SOCIAL IMPACTS

- 5.1 Bancóldex has developed institutional capacity in the management of environmental and social risks and implemented a portfolio-wide Environmental and Social Management System. The system was developed with the technical assistance of the IDB (CO-T1198), and was designed for previous operations targeting SMEs, energy efficiency, and leasing. It is applied only for sub-loans at or above USD\$5 million. Unique among banks in the region is that Bancóldex, as a second tier bank, has developed tools and screening forms to assist its first tier banks in undertaking E&S analysis on its on-lending. It on-lends through five first tier banks.
- 5.2 In integrating E&S analysis into its loan appraisal process, Bancóldex evaluates individual projects on a case by case basis in all instances where the sub-loan is in excess of US\$5 million. On these operations it relies on the evaluation conducted by the first tier bank in addition to information provided by the end-borrower. Gaps are identified relative to local law, and on particular permit and/or licensing gaps, Bancóldex will incorporate an action plan and agree deadlines with the commercial banks to submit necessary documentation. The current breakdown of its portfolio for sub-loans above US\$5 million is Category A (26%), Category B (19.7%), and Category C (54.3%). Categorization is determined on the severity of issues identified. For sub-loans below US\$5 million, Bancóldex does a more limited evaluation and categorizes on the basis of sectors financed. Bancóldex does not do site-specific due diligence itself but instead relies on its first tier banks.
- 5.3 Bancóldex does not have significant experience with high risk energy projects, and with geothermal being a new energy investment area in Colombia, it has no prior experience in on-lending or evaluating opportunities in this sector. As such, IDB and Bancóldex have agreed that technical assistance funds will be set aside to pay for additional technical, financial, and environmental and social analysis where necessary. Additionally, to help build Bancóldex’s capacity, a hand in hand due diligence process will be agreed for particular high risk geothermal sub-projects within the Operating Manual agreed between IDB and Bancóldex. In all instances, Bancóldex will apply the IDB Environmental Safeguard Policy or the International Finance Corporation (IFC) Performance Standards, as well as the World Bank Environmental, Health and Safety (EHS) Guidelines (i.e.: General EHS; Geothermal Power Generation; and Electric Power Transmission and Distribution).

### Process stages for sub-project evaluation and hand-in-hand due diligence

Bancóldex Approval Cycle	Bancóldex E&S Role	IDB E&S Role
1. Grant application received (may or may not include E&S analysis)	<ul style="list-style-type: none"> <li>Bancóldex reviews E&amp;S analysis, if any, presented by project sponsor/ developer</li> <li>Bancóldex determines validity / eligibility of grant application. If advancing,</li> </ul>	<ul style="list-style-type: none"> <li>IDB receives application and corresponding E&amp;S analysis. IDB comment on gaps identified / provides additional suggestions.</li> </ul>

Bancóldex Approval Cycle	Bancóldex E&S Role	IDB E&S Role
	<p>provides IDB with corresponding E&amp;S documentation, and a pre-classification (A, B, or C)</p> <ul style="list-style-type: none"> <li>• Bancóldex identifies E&amp;S gaps particular to international best practice standards</li> </ul>	
2. Bancóldex defines/ reviews Terms of Reference (TOR) for pre-investment activities	<ul style="list-style-type: none"> <li>• Bancóldex prepares TOR for E&amp;S Scoping Analysis as a component of wider TOR.</li> <li>• Sends TOR to IDB for review and comment</li> </ul>	<ul style="list-style-type: none"> <li>• IDB reviews and inputs into prepared E&amp;S TOR scope, and coordinates comments with IDB review of wider TOR</li> <li>• IDB returns TOR with comments within five working days.</li> </ul>
3. Appraisal	<ul style="list-style-type: none"> <li>• Bancóldex begins work with selected consultant, and liaises with consultant in execution of the additional E&amp;S analysis, as necessary. Bancóldex engages IDB on an as needed basis for advice/offer of opinion.</li> <li>• Bancóldex coordinates site visit with consultant and IDB to evaluate progress and specific impacts</li> <li>• Bancóldex and consultant confirm environmental classification and send draft of Scoping Analysis to IDB, along with proposed Environmental and Social Management Plan.</li> </ul>	<ul style="list-style-type: none"> <li>• IDB informed of any particular E&amp;S risk concerns (in event of project visit).</li> <li>• IDB provides comment on draft of Scoping Analysis and Environmental and Social Management Plan. <i>Formal Sign-off</i></li> <li>• IDB provides formal sign-off and non-objection for Grant to proceed.</li> </ul>
4. Grant Awarded	<ul style="list-style-type: none"> <li>• Bancóldex coordinates with project sponsor and EPC contractor, monitors E&amp;S issues and submits to IDB necessary reports and on agreed schedules.</li> </ul>	<ul style="list-style-type: none"> <li>• IDB reviews periodic reports.</li> </ul>

## VI. REQUIREMENTS TO BE INCLUDED IN THE LEGAL AGREEMENTS

6.1 For this operation which will involve investment grants to geothermal sub-projects, the IDB will require Bancóldex as part of the Loan Agreement to:

### A. Throughout the Life of the Loan

- i. Comply with all applicable national environmental, social, health and safety, and labor regulatory requirements, and in relation to the financing of sub-projects with IDB's proceeds ensure that each sub-project complies with: (a) Bancóldex's Environmental and Social Management

System; (b) in-country regulations; (c) the IDB List of Excluded Activities; (d) the Fundamental Principles of the Rights at Work; and (e) the IFC Performance Standards and World Bank Environmental, Health and Safety Guidelines.

- ii. For all geothermal sub-projects, follow the specific procedures as defined in section 5 of this document. This includes, among others, notifying IDB of new operations, presenting an initial classification, providing for comment draft Terms of Reference for E&S analysis, coordinating due diligence and supervision when and as necessary, and receiving IDB's non-objection at defined stages. The final process will be agreed in the Operating Manual between IDB and Bancóldex.
- iii. Ensure adequate provision of financial resources as a component of Bancóldex's project costs for supervision and independent review of environmental and social performance for high risk sub-projects.
- iv. Notify IDB within five days in any instance of sub-project non-compliance with regard to any environmental, social, health and safety issues, and Loan Agreement Requirements, agreed Action Plans, or other pertinent legal covenants.
- v. Ensure the EIA or SIA is publicly disclosed and available prior to Bancóldex's (and IDB where required) appraisal mission, in whichever case is greater: (i) conformance with the time required by the laws of the respective country or (ii) 30 days prior to Bancóldex's Board of Directors approval.

#### **B. Prior to First Disbursement**

- i. Implement the Operating Manual designed for this Program as a condition for first disbursement, and specifically apply the contractual conditions detailing particular environmental and social procedures and standards as defined within this ESMR.

#### **C. Reporting, Monitoring and Supervision**

- 6.2 During the life of the Loan Agreement, Bancóldex will prepare and submit an Environmental and Social Compliance Report (ESCR), in form, content and frequency acceptable to IDB. This is expected to be annual, and include a list of individual investments each with their environmental and social impact and risk categorization, a summary of key impact and risk issues identified during screening, a summary of mitigation measures agreed, as well as the status of compliance with these mitigation measures (for those projects that have moved into execution/supervision), and/or status of compliance with a CAP (if any).
- 6.3 The IDB will supervise the environmental, social, health and safety, and labor aspects related to the use of the proceeds of the Program semi-annually/annually. This supervision will be conducted by an in-house specialist (and as needed, with the assistance of an external independent environmental and social consultant).