Realising the potential of native microbes in the agricultural and medical sectors, in accordance with the Nagoya Protocol

Review CEO Endorsement and Make a recommendation

Basic project information

GEF ID

10142

Countries

Panama

Project Name

Realising the potential of native microbes in the agricultural and medical sectors, in accordance with the Nagoya Protocol

Agencies

UNDP
Date received by PM

2/4/2020
Review completed by PM

Program Manager

Jaime Cavelier
Focal Area

Biodiversity
Project Type

MSP

PIF □
CEO Endorsement □

Part I – Project Information

Focal area elements

1. Does the project remain aligned with the relevant GEF focal area elements as presented in PIF (as indicated in table A)?

Secretariat Comment at CEO Endorsement Request
3-29-20

Yes

Cleared

Agency Response

Project description summary

2. Is the project structure/ design appropriate to achieve the expected outcomes and outputs as in Table B and described in the project document?

Secretariat Comment at CEO Endorsement Request

3-29-20

General

1) Please prepare a table with information on the scientific research (including compounds) that this project is using as a baseline, and the proposed interventions to follow. The information appear to be scattered in the text, and this table will facilitate the reading and understanding of the project. The table should allow a non-specialist to understand the trajectory of the proposed research and where the program stands in terms of deliverables. Extracts and identification of compounds were suggested outcomes of the previous project, and are being proposed as outcomes and outputs of this project too.

2) The GEF kindly request to split and merge the proposed activities under Component 3 in the corresponding Component 1 and 2. Not clear why there are activities on crop protection and medical sector separated from the components where these activities are being presented.

Component 1.

2) Outcome 1.1. Can't be delivered with proposed outputs.How can extracts be identified and components tested with Protocols and Training only?

3) Outcome 1.2 What are the "two known compounds" to be tested for safety and efficacy?

4) What medical uses are being tested here specifically? Please narrow down the scope of the work to be done (*Cultures of these microorganisms will be undertaken using different culture conditions at both the small and large scales for further confirmation of their potential effects as anti-parasitic, antimicrobial or anticancer and on the central nervous system*). What is the focus of the research anyway? It is very difficult to believe that this project can tackle *anti-parasitic, antimicrobial, anticancer and on the central nervous system*)

5) No *in vivo* testing in mice ca'tn be funded with GEF resources. Please remove in project and all related budget lines.

Component 2

5) Please elaborate on the rationale for more extracts, isolation of compounds and formulations. isn't this what the previous project did? How far did it go? This was noted above

6) What has been done already in terms of the "*chemical profiling, the isolation of active principles and spectroscopic studies for the structural determination of extracts*? This reads as something done already in the previous project. Idem

7) How far is the program in developing "*a crop protection product for use against coffee pathogens*"?

Component 3

6) What are the parties involved in the the ABS agreement?

7) The term "Conservation-based biological crop protection" is used more than 20 time in the project without a definition. At least in the CEO Endorsement. Please explain what this is in operational terms (i.e. Practice, not theory).

8) What equipment will be provided to the two National Parks to claim that they will contribute to their "improved management"? This is hard to believe with a budget of $145K for the entire component. Suggest removing the area of the parks as indicators of GEBs.

7-6-20

Cleared

Agency Response

6-11-20

Reference: CEO ER, 2) The baseline scenario and any associated baseline projects.
Project Document, Annex 10

Thank you for your comments.
1) Please see the table with information on the scientific research that was included as Annex 10 in the Project Document.
2) The Ministry of Environment kindly requests maintaining the proposed biodiversity conservation and environmental education activities under Component 3 (i.e., now Component 2 in the revised draft) as approved by the GEF Secretariat in the PIF. While these activities are connected to the research undertaken by INDICASAT under Component 2 (i.e, now Component 1 in the revised draft), they will be implemented by the Ministry of Environment in the buffer areas of La Amistad National Park and Volcán Barú National Park, where coffee is cultivated. The Ministry of Environment also requests maintaining these biodiversity conservation and sustainable use activities under Component 3(i.e., now Component two in the revised draft) to facilitate their financial management and operations.
Component 1
Responses to questions 2), 3), 4 and 5) are no longer needed as Component 1 has been eliminated in response to the GEF comment on the need to downsize the scope of the project.
Component 2 (Please note that this is Component 1 in the revised draft)
5) The previous project achieved baseline information on the taxonomic composition of the microbial communities associated with Coffea arabica in Panama and the identification of native fungi strains that inhibit coffee rust fungus (Hemileia vastatrix) spore germination and native fungi strains that inhibit the mycelial growth of American Leaf Spot of Coffee Fungus (Mycena citricolor). Further, extracts were obtained from two strains mentioned in the first ABS project, and partially purified extracts showed bioactivity remaining in some of the extracts. The compounds in these extracts have not been fully purified, structurally identified, or tested on the coffee pathogens. This is why trials with these strains and their extracts and purified compounds are being proposed in this new ABS project. New nuclear magnetic resonance equipment is being purchased and will be installed in 2020; this investment will be key for compound identification.
More preparations are proposed, as there are now more strains identified with antifungal activities and for which extracts are needed, and to select the best possible biocontrol agents or extracts from the available culture collection.
6) As explained above, in the first ABS project extracts were obtained from two strains of microbes. These extracts still must undergo compound purification, be structurally identified, and tested against the pathogens. Further experiments have been carried out on the interaction between the coffee rust fungus and one of the strains using the MALDI-imaging technique and a metabolite profile has been obtained; however, this metabolite profile must be identified. Basically, these experiments have established how many different metabolites are in the different coffee rust fungus-endophyte conditions tested in vitro, but more of these experiments are needed for validation and metabolite identification.

7) The crop protection program has achieved the following outcomes: 1) generated new knowledge on the taxonomic composition and community ecology of the Coffea Arabica microbiome; 2) identified novel native endophyte strains in Panama associated with Coffea arabica that inhibit the germination and/or growth of coffee pathogens; 3) developed a system for testing endophytes or their extracts against two coffee pathogens in vitro and in vivo, including an obligate biotroph (H. vastatrix) that can be grown on standard microbiological media; 4) obtained extracts of two strains and showed the bioactivity in the derived extracts; and 5) developed a collaborative agreement with a company to scale-up the future crop protection product to be developed by this ABS project.
Component 3
6) The parties involved in the ABS agreement are the government (MiAMBIENTE/INDICASAT) and Advanced Bio Controllers.
7) The concept of "Conservation-based biological crop protection" was defined in paragraph 37 of the Project Document as follows: “The management of ecosystems to improve the survival, physiological capacities, and/or effectiveness of biological control agents on target organisms in a specific area.” It therefore involves not only applying the control agent to the crop, but also ensuring that the required ecological conditions and host plants are maintained in order to ensure the presence and status of the populations of the biological agents, as well as their effectiveness.
The project is aware that microbial species are common and abundant in the forest and that some of these species are rare in coffee crops. It is also well known that biocontrol microbes are present in the coffee crops. As part of the proposed activities, the project will carry out an additional survey in La Amistad National Park to compare the composition of microbial communities found in common trees of the buffer zones of the protected area (PA) with those found in the coffee crops. Basically, the trees in the forest will serve as a source of inoculum of biocontrol fungi for the coffee plantations.
In this context, the project will be increasing populations of biocontrol fungi in the coffee crops and will contribute to their conservation in the forest, which is also their natural habitat. Conserving the forest is also essential to ensure the protection of beneficial microbes for agriculture. Many endophytes can be airborne; thus, measuring microbial population before and after intervention (application of biocontrol agent) in the crops and the buffer zones of PAs (Amistad National Park and Volcán Barú National Park) is needed.
8) The equipment for this component was listed in the Project Document and it includes laptop computers, USB, digital camera, 64-GB memory card, tripod, multimedia projector, and two TB external hard drives to support environmental education activities in the PAs’ buffer zones The cost of this basic equipment is US$3,500 (please refer to budget note 9, page 39). The budget for the new Component 2 (adjusted to $156,756) will also cover salaries of consultants and materials for environmental education, communication, and outreach during project implementation.
Also, please note that Output 2.3.1 was updated as follows: Communication, education, and public awareness about ABS strengthened in line with the management plans for La Amistad National Park (World Heritage Site and Biosphere Reserve) and Volcán Barú National Park, prioritizing as target audiences communities and stakeholders within the PAs and their buffer zones (locations of endophytic fungus collections).
As suggested, the area of the parks as indicators of GEBs was removed.

3. If this is a non-grant instrument, has a reflow calendar been presented in Annex D?

Secretariat Comment at CEO Endorsement Request N/A

Agency Response

Co-financing

4. Are the confirmed expected amounts, sources and types of co-financing adequately documented, with supporting evidence and a description on how the breakdown of co-financing was identified and meets the definition of investment mobilized, and a description of any major changes from PIF, consistent with the requirements of the Co-Financing Policy and Guidelines?

Secretariat Comment at CEO Endorsement Request

3-29-20

The LoC from INDICASAT with $10,000,000 comes from India for an specific purpose. "T*esting of natural compounds for a number of diseases such as Alzheimer. The US$10 million grant of the government of India and US$175,000 of Esai will cover these activities"*. If that is the case, the co-financing for the other Components don't add-up. Please explain how the remaining co-financing of $3.0+ million can be cover the other activities listed under Table B.

Please include the LoC for the following two

Government	Ministry of Environment (MiAMBIENTE)	Grant	Investment mobilized	840,000
Government	Ministry of Environment (MiAMBIENTE)	In-kind	Recurrent expenditures	300,000

7-6-20

Cleared

Agency Response

6-11-20

Reference: CEO ER, B. Project Description Summary
Project Document, IX. Financial Planning And Management, page 34
INDICASAT co-financing letter

Since the medical Component (originally Component 1) was eliminated from the project, the US$10 million from the government of India is co-financing for research activities under the new Component 1 (Development of a product for the crop protection industry). This co-financing will cover salaries, research facilities, and equipment (Outputs 1.1.1, 1.2.1, 1.2.2, 1.2.3, and 1.2.4) as noted in the co-financing letter and on page 34 of the UNDP Project Document.

The co-financing letter from the Ministry of Environment is included.

Please refer to revised co-financing letters document uploaded in the RoadMap.

GEF Resource Availability

5. Is the financing presented in Table D adequate and does the project demonstrate a cost-effective approach to meet the project objectives?

Secretariat Comment at CEO Endorsement Request

3-29-20

The request for GEF $863,242 appears to be insufficient to achieve the proposed outputs. If Co-financing is for $13.0+ but $10M for Component 1 (medical use), that leaves $3.5M for the rest of the project, with only $3.0+ in investments for the rest of the project.

The project needs to be downsized significantly. This was discussed at PIF stage when the project was proposed to do both medical and crop-protection industry sectors with a limited GEF funding. There are only GEF $50,000/year x 4 years for Component 1; $98,000/yer x 4 years for Component 2 and $48,000/year for Component 3.

The GEF strongly suggest to downsized the project SIGNIFICANTLY so it is easier to understand and the resources can deliver the proposed outcomes. As it, it is over-promising and will under-deliver.

7-6-20

Following the decision to eliminate Component 1 (Medical Sector), please remove the following references to this sector in the following parts of the project:

Project Justification: Under Barriers (paragraphs 8 & 9), Medical Baseline (paragraph 12); Gender Equality (3 references on "medical" including those associated with "1000 people trained..." and "200 people trained...."; Risks of achieving project objectives; Benefits.

7-9-20

Cleared

Agency Response

7-7-20

The CEO ER has been updated accordingly

6-11-20

Reference: CEO ER, B. Project Description Summary

In response to this comment Component 1 (medical sector) was eliminated. The US$10 m of co-financing is going to be used to achieve the proposed outcomes under the new Component 1 (agricultural sector). Also, the project duration has been reduced from 4 to 3 years and this facilitated adjusting the project management costs. The co-financing from the government reflects the importance and commitment given by the country to the project and to INDICASAT's long-term mission to continue investigating the uses of genetic resources. GEF´s support of this project will contribute to further the future and success of this important project for the country. We hope that this project will deliver global solutions in terms of a crop-protection product for agriculture.

Project Preparation Grant

6. Is the status and utilization of the PPG reported in Annex C in the document?

Secretariat Comment at CEO Endorsement Request

3-29-20

Please indicate where the utilization of the PPG is located, in addition to the information presented on 3.2 (pages 91-92) of the Project Document. Thanks.

7-6-20

Cleared

Agency Response

6-11-20

Reference: Project Document, page 24; Annex 1; Annex 7; Annex 8; Annex 10; cofinancing letters

Additional to the information presented on 3.2 (pages 91-92), the PPG was used to contract three consultants:

1. International Consultant: Consultations (Inception workshop, PRF workshop, and validation workshop), and drafting of Project Document and CEO Endorsement Request
2. Social National Specialist: Interviews, Gender Plan, Engagement Stakeholder Plan (Project Document, page 24; Annex 7; Annex 8); Socioeconomic Analysis of Coffee Activity (Annex 10), and Other Support

3. Biodiversity National Specialist: Legislation and Capacities Baseline (Project Results Framework: training baselines and targets), Interviews, Georeferenced Maps (Project Document, pages 16, 18, 19, 20, 21, 22; Annex 1), securing cofinancing letters

Core indicators

7. Are there changes/ adjustments made in the core indicator targets indicated in Table E? Do they remain realistic?

Secretariat Comment at CEO Endorsement Request

3-29-20

Please remove Indicator 1. Level of investment and related activities does justify claiming 270,000 ha of Improved Management.

Name of the Protected Area	WDPA ID	IUCN Category	Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)
La Amistad International Park	107315	National Park	270,000.00	6,210.00
Volcán Barú National Park	240	National Park		14,323.00

7-6-20

Cleared

Agency Response

06-11-20

Thank you, Indicator 1 was removed as suggested.

Part II – Project Justification

1. Is there a sufficient elaboration on how the global environmental/ adaptation problems, including the root causes and barriers, are going to be addressed?

Secretariat Comment at CEO Endorsement Request

3-29-20

Cleared

Agency Response

2. Is there an elaboration on how the baseline scenario or any associated baseline projects were derived?

Secretariat Comment at CEO Endorsement Request

3-29-20

For the Medical- and Crop Protection Industry, please provide a table of the status of the R&D in the form or a table.

> How is it possible that the baseline for the different "extracts" and "compounds" is "zero" after the initial GEF project on the subject matter? Please list the "extracts", "compounds" and "formulations" that were obtained in the previous GEF project or other projects that serve as Baseline, explain what is expected from the this project and how far is R&D to reach market products. This should be understandable to the non-specialist.

7-6-20

Cleared

Agency Response

06-11-20

Reference: CEO ER, 2) The baseline scenario and any associated baseline projects.
Project Document, Annex 10

As noted above, the Component 1 on the medical sector was eliminated from the project.
As mentioned in the response to question 2, the previous project achieved baseline information on the taxonomic composition of the microbial communities associated with Coffea arabica in Panama and the identification of native fungi strains that inhibit coffee rust fungus (Hemileia vastatrix) spore germination and native fungi strains that inhibit the mycelial growth of American Leaf Spot of Coffee Fungus (Mycena citricolor). Further, extracts were obtained from two strains mentioned in the first ABS project, and partially purified extracts showed bioactivity remaining in some of the extracts. The compounds in these extracts have not been fully purified, structurally identified, or tested on the coffee pathogens. This is why trials with these strains and their extracts and purified compounds are being proposed under this new ABS project. A table with information about the scientific research has been included in Annex 10 in the Project Document. The project baseline was updated to indicate the results obtained in the previous GEF project or other projects that serve as baseline.

3. Is the proposed alternative scenario as described in PIF/PFD sound and adequate? Is there sufficient clarity on the expected outcomes and components of the project and a description on the project is aiming to achieve them?

Secretariat Comment at PIF/Work Program Inclusion

3-29-20

No. Unless there is clarity on what was achieved in the previous GEF project, it is not possible to elaborate on the "alternative scenario". While the description of the components is there, there is no clarity on how these components represent an alternative scenario.

7-6-20

Cleared

Agency Response

06-11-20

Please see responses to question 2 above.

4. Is there further elaboration on how the project is aligned with focal area/impact program strategies?

Secretariat Comment at CEO Endorsement Request

N/A

Agency Response

5. Is the incremental reasoning, contribution from the baseline, and co-financing clearly elaborated?

Secretariat Comment at CEO Endorsement Request

As discussed above

Agency Response

6. Is there further and better elaboration on the project's expected contribution to global environmental benefits or adaptation benefits?

Secretariat Comment at CEO Endorsement Request

3-29-20

Please add more specific benefits to this table. Information is already scattered through the project. This would allow the reader to see at a glance what this project is suppose to deliver

Baseline scenario	Alternatives to be put in place by the project	Global Environmental Benefits
• Strong baseline of policy, regulatory and planning instruments, and interinstitutional (as well as public/private) cooperation in support of ABS. • Strong scientific base of explorations of microbes for medical use, but not as yet for agricultural use as biological crop protection agents. • Achievements have yet to be translated into functioning value chains for microbes and their derivatives in the agricultural and medical sectors.	• Development of scientific and technical and policy-based capacities for the realization of the potential of native microfungal biodiversity, from crop protection and medical uses, and as a source of income for users and providers of genetic resources. • Development of technical capacities among resource managers to use microfungal crop protection agents and so to reduce agrochemical use • Development of negotiation. capacities among stakeholders for participation in satisfactory ABS arrangements that recognize their role as custodians of microfungal biodiversity.	• Fair and equitable sharing of the benefits arising from the utilization of genetic resources (to local communities, resource managers and PA authorities). • Improved conservation of native microfungal biodiversity • Improved conservation of ecosystems and host plants from which microfungal biodiversity is collected. • Reductions in the impacts of agricultural chemicals on native biodiversity, due to increases in the use of biological crop protection practices.

7-6-20

Cleared

Agency Response
06-11-20

Reference: Project Document page 9, paragraph 16
CEO ER, 5) Incremental/additional cost reasoning and expected contributions from the baseline, the GEFTF and co-financing

Thank you for your comments. Presented below are other benefits that will be delivered through the project; the table was updated accordingly:
- Fair and equitable sharing of the benefits arising from the utilization of genetic resources (to local communities, resource managers, and PA officials)
- Improved conservation of native microfungal biodiversity (20,533 hectares [ha] of PAs)
- Improved conservation of ecosystems and host plants from which microfungal biodiversity is collected
- Reduction in the impacts of agricultural chemicals on native biodiversity, due to increases in the use of biological crop protection practices (1,000 ha of coffee landscapes under improved practices)
- Increased awareness of the existence, use, and option values of biological resources among key audiences (1,370 direct beneficiaries)
- Contribution to the generation and potential replication of ABS best practices (agreements)
- Contribution to national development strategies and economic growth

7. Is there further and better elaboration to show that the project is innovative and sustainable including the potential for scaling up?

Secretariat Comment at CEO Endorsement Request
3-29-20

There are serious doubts about the Financial Sustainability of this project. Please elaborate why the previous project was not financially sustainable and had to return to the GEF for additional resources.

7-6-20

Cleared

Agency Response
06-11-20

Reference: CEO ER, 7) Innovativeness, sustainability and potential for scaling up.

The previous project was a first step in the process of biodiscovery, improving human and institutional capacities in the country, and the transfer of equipment and experience to Panama from international projects. In addition, the national legal framework was updated to include all the provisions of the Nagoya Protocol.

Panama has been investing financial resources in biodiscovery through the Center for Biodiversity and Drug Discovery of the Institute of Scientific Research and High Technology Services of panama (INDICASAT) to strengthen research and development in the country. Recently the government updated the national framework to generate agreements with the private sector to develop products from biodiversity in full compliance with the Nagoya Protocol. This new project will add to this national commitment and will further advance ongoing research of native microbes in the agricultural sector with potential for developing ABS products.
The sustainability of this new project also relies on the government's commitment to implementation of the Nagoya Protocol and the partnerships that will be established with multiple stakeholders, including the participation of the private sector for the development of a crop protection agent for the coffee industry.

Project Map and Coordinates

Is there an accurate and confirmed geo-referenced information where the project intervention will take place?

Secretariat Comment at CEO Endorsement Request

3-29-20

Yes

Cleared

Agency Response

Child Project

If this is a child project, is there an adequate reflection of how it contributes to the overall program impact?

Secretariat Comment at CEO Endorsement Request

N/A

Agency Response

Stakeholders

Does the project include detailed report on stakeholders engaged during the design phase? Is there an adequate stakeholder engagement plan or equivalent documentation for the implementation phase, with information on Stakeholders who will be engaged, the means of engagement, and dissemination of information?

Secretariat Comment at CEO Endorsement Request

3-29-20

Cleared

Agency Response

Gender Equality and Women's Empowerment

Has the gender analysis been completed? Did the gender analysis identify any gender differences, gaps or opportunities linked to project/program objectives and activities? If so, does the project/program include gender-responsive activities, gender-sensitive indicators and expected results?

Secretariat Comment at CEO Endorsement Request

3-29-20

Yes. Detailed information under 3. Gender Equality and Women's Empowerment

Cleared

Agency Response

Private Sector Engagement

If there is a private sector engagement, is there an elaboration of its role as a financier and/or as a stakeholder?

Secretariat Comment at CEO Endorsement Request

3-29-20

The engagement of the Private Sector is not clear. Please list the companies in the Stakeholder engagement. If confidentiality issues are a concern, please send an email to the PM to be filed under Confidential Documents.

7-6-20

Cleared

Agency Response

06-11-20

Reference: CEO ER Part II, Private Sector Engagement, paragraph 36, page 17.
Project Document, Section V. Results and Partnership; and Annex 7

Thank you for your comment; yes, the project engaged the private sector company Advanced Biocontrollers S.A. Please see the co-financing letter of Advanced Biocontrollers S.A.
The project will also promote the negotiation of an ABS agreement between the government and Advanced Biocontrollers S.A. (private sector company) for the crop-protection product developed by national scientists under the new Component 1. Advanced Biocontrollers, S.A. is now explicitly mentioned in the stakeholder engagement section and Stakeholder Engagement Plan.

Risks to Achieving Project Objectives

Has the project elaborated on indicated risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved? Were there proposed measures that address these risks at the time of project implementation?

Secretariat Comment at CEO Endorsement Request

3-29-20

Cleared

Agency Response

Coordination

Is the institutional arrangement for project implementation fully described? Is there an elaboration on possible coordination with relevant GEF-financed projects and other bilateral/multilateral initiatives in the project area?

Secretariat Comment at CEO Endorsement Request

3-29-20

1) Is the "National Technical Coordinator also involved in providing technical support to research of active compounds for the medical sector. (Total cost: $25,932 over four years -all outputs in component)?

2) Budget items 6c), 6d) and 6D) are not GEF eligible. Use co-financing

6	a) Lab supplies related to the production of bioactive compounds from the target fungi. Total cost: $9,990 over 3 years (Outputs 1.1.1). b) Lab supplies related to refining bioassay for medical sector in vivo. Total cost: $10,000 over 4 years (Output 1.2.1). c) Mice (30/experiment) for in vivo bioassays for medical sector (safety and efficacy of antiparasitic activities of compounds). Total cost: $3,480; $870 per experiment (4 experiments) for four years ($29/mouse) (Output 1.2.1). d) Maintenance of mice (30/experiment). Total cost: $30,000; $100/week/mouse during 2.5 weeks for four experiments (Output 1.2.1). e) Other supplies associated to in vivo/mice testing. Total cost: $2,500 over 4 years (Output 1.2.1).

3) No work with Mice is GEF eligible. Provide details on the international travel.

3	a) Travel cost for international training of key staff. Total cost: $7,000 during years 2 and 3 (Output 1.1.2). b) Travel expenses for staff responsible for handling mice for biomedical trials. Total cost: $22,500; $1,500/trip for 15 trips over 4 years (Output 1.2.1).

4) Reconsider budget items under 8. Are they strictly necessary?

8	a) Undergraduate and postgraduate internships (15). Total cost: $10,500; $700/internship during years 2 to 4 (Output 1.1.2) b) Visits from institutions (e.g., MiAMBIENTE, IDIAP, MIDA, others) to the laboratory to learn about the identification and analysis of promising extracts and compounds produced by endophytic fungi, for medicinal use. Total cost: $3,040 during year 2 to 4 (Output 1.1.2). c) Visits from laboratory staff to local schools to build awareness about biodiversity and interest in biosciences. Total cost: $6,000 during years 2 to 4 (Output 1.1.2). d) Participation in conferences related to antiparasitic research for the medical sector. Total cost: $7,000 during year 2 or 3 (Output 1.2.1) e) Workshops and internships for local student related to biomedical research. Total cost: $2,000 during year 4 (Output 1.2.1)

5) Is the National Technical Coordination an expert on "crop protection" in addition to "research of active compounds for the medical sector) (Point 1 in this review). This person needs to be under PMC.

Component 2. Development of a product for the crop protection industry	
9[17]	a) National Technical Coordinator: Technical support for development of a product for the crop protection industry. Total cost: $45,381 over four years (all outputs in component).

6) Remove incidentals and allocate to specific uses. Is 13) Necessary?

12	Incidental expenses related to development of a product for the crop protection industry. Total cost: $18,860; $4,715/year during four years
13	Participation in scientific conferences related to development of a product for the crop protection industry. Total cost: $5,000 during years 2 and 4.

7) Also an expert on ABS?

15	National Technical Coordinator: Technical support for facilitating access, benefit-sharing and biodiversity conservation based on the development of a product for the crop protection industry. Total cost: $28,093 over four years.

8) Are all these training events really necessary?

21	a) Training workshops (3) for negotiation of ABS agreements directed to representatives of coffee farmers. Total cost: $4,500 during years 1 and 2 (Output 3.1.1). b) Training workshops (2) for negotiation of ABS agreements directed to technical staff and legal advisors of MiAMBIENTE. Total cost: $4,000 during years 1 and 2 (Output 3.1.1). c) Information and awareness-raising events (5) in the farms involved in the project regarding native microbes and biodiversity conservation. Total cost: $7,500 during year 2 (Output 3.3.1). d) Events (2) for the dissemination of a guide manual for farmers and extensionists on the use of conservation-based biological crop protection agents in coffee. Total cost: 2,000 during year 2 (Output 3.2.2). e) Meetings (2) to establish agreements with the owners of the farms for demonstration plots on the use of conservation-based biological crop protection agents in coffee. Total cost: $1,500 during year 3 (Output 3.2.3). e) Training events (3) for farmers on the use of biological agents for protection of coffee crops (theoretical and practical). Total cost: $4,650 during year 3 (Output 3.2.3). f) Training events (4) on conservation and use of biodiversity and genetic resources, with specific reference to microbes. Total cost: $6,000 during year 2 (Output 3.3.1). g) Meetings (3) for the design of a public media campaign on protection and use of microbe biodiversity and genetic resources, with a gender approach. Total cost: $900 during year 2 (Output 3.3.2). h) Community extension presentations (15) explaining the uses of microbe biodiversity and genetic resources. Total cost: $4,500 during years 1 to 4 (Output 3.3.2). i) Events (5) carried out for local colleges, associations, civic groups, NGOs, etc., explaining the uses of microbe biodiversity and genetic resources. Total cost: $5,000 during year 4 (Output 3.3.3). j) Scientific workshops for national and international researchers related to native microbes in the agricultural and medical sectors in accordance with the NP. Total cost: 5,128 during years 2 and 3 (Output 3.3.3).

9) Remove and allocate to an specific activity

28	Incidental expenses related to project management. Total cost: $4,868; $1,217/year during four years.

7-7-6-20

Cleared

Agency Response

06-11-20

Reference: Project Document, Section X. Total Budget and Work Plan, budget notes

1. The National Technical Coordinator was removed from the technical components and is now under PMC as Project Coordinator, which will be paid with GEF funds (13%) and co-financing (87%).
2. Budget items 6c), 6d), and 6D) were removed as suggested.
3. In vivo trials with mice were removed.
4. Budget items under 8 were removed.
5. Please refer to the answer to comment 1 above.

6. Line 12 was reallocated as suggested. Line 13: Yes, it is necessary for stakeholder engagement.
7. Please refer to the answer to 1 above.
8. The training events listed are necessary for stakeholder engagement, strengthening skills, and knowledge for public officials, scientists, lawyers, private sector, NGOs, and other stakeholders that are relevant for the implementation of the Nagoya Protocol.
9. Incidental expenses related to project management were reallocated as suggested.

Consistency with National Priorities

Has the project described the alignment of the project with identified national strategies and plans or reports and assessments under the relevant conventions?

Secretariat Comment at CEO Endorsement Request

3-29-20

Cleared

Agency Response

Knowledge Management

Is the proposed "Knowledge Management Approach" for the project adequately elaborated with a timeline and a set of deliverables?

Secretariat Comment at CEO Endorsement Request

3-29-20

KM needs to have activities. They don't need to be numerous, but need to be listed.

The following is not acceptable "The cost of the implementation of the project knowledge management strategy is represented in the National Technical Coordinator's salary".

7-6-20

Cleared

Agency Response

06-11-20

Reference: CEO ER Part II, Knowledge Management, paragraph 40, page 18

The project will develop several KM activities, including:
1. Relevant knowledge, good practices, and lessons learned are captured annually by the project team and used to inform management decisions.
2. Drafting of guidance manual and protocols related to ABS/conservation-based biological crop protection in coffee production systems (Outputs 2.2.1 and 2.2.2).
3. Sharing of experiences and expertise (e.g., participation in communities of practice, organizing seminars, trainings, and conferences) with relevant stakeholders (Outputs 2.1.1 and 2.2.3).
4. Ensuring coordination in terms of building complementarities, sharing best practices, and generating knowledge products of best practices related to ABS and biodiversity conservation and sustainable use with other ongoing initiatives.
5. Virtual platforms and innovative social media approaches will be considered.

Environmental and Social Safeguard (ESS)

Are environmental and social risks, impacts and management measures adequately documented at this stage and consistent with requirements set out in SD/PL/03?

Secretariat Comment at CEO Endorsement Request

Agency Response

Monitoring and Evaluation

Does the project include a budgeted M&E Plan that monitors and measures results with indicators and targets?

Secretariat Comment at CEO Endorsement Request

2-29-20

Cleared

Agency Response

Benefits

Are the socioeconomic benefits at the national and local levels sufficiently described resulting from the project? Is there an elaboration on how these benefits translate in supporting the achievement of GEBs or adaptation benefits?

Secretariat Comment at CEO Endorsement Request

Agency Response

Annexes

Are all the required annexes attached and adequately responded to?

Secretariat Comment at CEO Endorsement Request

Agency Response

Project Results Framework

Secretariat Comment at CEO Endorsement Request

Agency Response

GEF Secretariat comments

Secretariat Comment at CEO Endorsement Request

Agency Response

Council comments

Secretariat Comment at CEO Endorsement Request

Agency Response

STAP comments

Secretariat Comment at CEO Endorsement Request

Agency Response

Convention Secretariat comments

Secretariat Comment at CEO Endorsement Request

Agency Response

Other Agencies comments

Secretariat Comment at CEO Endorsement Request

Agency Response

CSOs comments

Secretariat Comment at CEO Endorsement Request

Agency Response

Status of PPG utilization

Secretariat Comment at CEO Endorsement Request

3-29-20

Please point in the direction of the report or include if missing

7-6-20

Cleared

Agency Response

06-11-20

Reference: CEO ER Annex C
Please see response above to comment under question 6. Is the status and utilization of the PPG reported in Annex C in the document?
Also, please see Annex C of the CEO Endorsement Request document

Calendar of expected reflows (if NGI is used)

Secretariat Comment at CEO Endorsement Request

Agency Response

Project maps and coordinates

Secretariat Comment at CEO Endorsement Request

3-29-20

Cleared

Agency Response

Termsheet, reflow table and agency capacity in NGI Projects

Does the project provide sufficient detail in Annex A (indicative termsheet) to take a decision on the following selection criteria: co-financing ratios, financial terms and conditions, and financial additionality? If not, please provide comments. Does the project provide a detailed reflow table in Annex B to assess the project capacity of generating reflows? If not, please provide comments. After reading the questionnaire in Annex C, is the Partner Agency eligible to administer concessional finance? If not, please provide comments.

Secretariat Comment at CEO Endorsement Request

Agency Response

GEFSEC DECISION

RECOMMENDATION

Is CEO endorsement recommended? (applies only to projects and child projects)

Secretariat Comment at CEO Endorsement Request

3-29-20

No. Please address outstanding issues listed in the windows above. Please work with the OFP and Executing Agencies to DOWNSIZED the project, describe in detail and in simple terms what was achieved in the previous project, and what are the proposed activities in this new project. The GEF is available for consultation.

7-6-20

No. Please address issues under GEF Resource Availability. 5. Is the financing presented in Table D.....

7-9-20

Yes. This MSP is recommeded.

Review Dates

	Secretariat Comment at CEO Endorsement	Response to Secretariat comments
First Review		
Additional Review (as necessary)		
Additional Review (as necessary)		
Additional Review (as necessary)		
Additional Review (as necessary)		

CEO Recommendation

Brief reasoning for CEO Recommendations

CONTEXT: There is major potential for native species of endophytic fungi to be used in medical and agricultural applications. In agriculture, endophytic fungi have the potential to help control commonly occurring diseases of commercial crops, which are increasingly resistant to the limited range of biological crop protection agents that are currently available in the market. The realization of this potential would provide an environmentally sustainable alternative to the use of agricultural chemicals, in the vulnerable and globally important protected and production landscapes of Panama. The fair and equitable sharing of the economic benefits generated through the commercial use of these fungi would provide an income flow to local resource managers, including protected areas (PAs) authorities and farmers, thereby motivating and enabling them to continue acting as custodians of these microorganisms in their native landscapes. The objective of this project is to support the

realization of the potential of native microorganisms to contribute to the agriculture sector while generating global environmental benefits, in accordance with the provisions of the Nagoya Protocol.

PROJECT: The project has the following Components and Outcomes: COMPONENT 1. Development of a product for the crop protection industry. Outcome 1.1. Promising active compounds identified from endophytic fungi as biological crop protection agents in the agricultural sector. Measured by 200 active extracts and four (4) compounds isolated in order to develop a product for the crop protection industry focused on the coffee sector. Outcome 1.2. Strengthened research and development of novel biological crop protection agents. COMPONENT 2. Facilitating access, benefit-sharing and biodiversity conservation based on the development of a product for the crop protection industry. Outcome 2.1. Increased capacity to negotiate an ABS agreement by the end of the project; outcome 2.2 Increased technical capacity for conservation-based biological crop protection in 1,000 ha of coffee farms in the La Amistad National Park (World Heritage Site and Biosphere Reserve) and the buffer zones, with potential to contribute to the conservation status of two globally important microbes (endophytic fungi) and their host ecosystems. Component 3 Monitoring and Evaluation (M&E) with a gender focus. Outcome 3.1. M&E assesses project impact and guides adaptive management, measured by

RESULTS: 200 active extracts and four (4) compounds isolated in order to develop a product for the crop protection industry focused on the coffee sector; Four (4) formulations with potential for crop protection product development, based on field trials of the prioritized formulations; 150 authorities and technical staff and local stakeholders trained in negotiation of ABS agreements (75 men and 75 women); One (1) ABS agreement negotiated between the government and users of the crop protection product by project end; 100 coffee producers who have received training on the use of conservation -based biological crop protection agents (50 men and 50 women). 1,000 ha of coffee landscapes under improved practices (excluding protected areas).

INNOVATION, SUSTAINABILITY, SCALE-UP: Innovation will reside in the testing of native microbes as crop protection agents for coffee. This research entails in vitro trials of candidate biological crop protection agents (endophytic fungi and extracts) under different conditions of temperature, in vivo growth chamber and greenhouse trials to determine the most promising formulations of fungi, and field trials of at least 4 formulations of selected endophytic fungi (and/or their extracts), in coffee crops in five farms. Innovation will also reside in the application of results from research through the promotion of conservation-based biological crop protection in coffee farms that will allow to apply the formulation to the crop, allowing at the same time that the required ecological conditions, such has host plants are maintained in order to ensure the presence and status of the populations of the biological agents and their effectiveness, while promoting the maintenance of high levels of biodiversity in the coffee production systems. Panama has been investing financial resources in biodiscovery through the Center for Biodiversity and Drug Discovery of the Institute of Scientific Research and High Technology Services of panama (INDICASAT) to strengthen research and development in the country. This new project will add to this national commitment and will further advance ongoing research of native microbes in the agricultural sector with potential for developing ABS products. The sustainability of this new project also relies on the government’s commitment to implementation of the Nagoya Protocol and the partnerships that will be established with multiple stakeholders, including the participation of the private sector for the development of a crop protection agent for the coffee industry. The project model, based on the realization of the commercial potential of native biodiversity for the crop-protection industry and the equitable distribution of the resulting benefits to local stakeholders, has major potential for scaling up to other coffee landscapes and other ecosystems in the country where it is likely that similarly high levels of potentially useful genetic resources exists

COFINANCING: Will be provided by the Government (Institute for Scientific Research and High Technology Services -INDICASAT, Ministry of Environment - MiAMBIENTE, and the National Secretariat of Science and Technology -SENACYT), the Private Sector (Advanced Biocontrollers SA) and the GEF Agency.